



HOUSE OF LORDS

Economic Affairs Committee

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6th Report of Session 2017–19

# Rethinking High Speed 2

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### *Economic Affairs Committee*

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See Appendix 1.

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Q in footnotes refers to a question in oral evidence.

## SUMMARY

Our 2015 report *The Economics of High Speed 2* raised a number of questions that the Government needed to answer on High Speed 2. Four years later, these have yet to be answered satisfactorily. This report addresses the unanswered questions on priorities for rail investment, the method used to appraise the High Speed 2 project and ways to reduce its cost.

### Priorities for rail investment

In 2015 we asked the Government to consider whether investment in rail infrastructure in the north should be prioritised over High Speed 2. But no assessment of the relative merits was carried out and over £4 billion has been spent already on the first phase of High Speed 2, which will run between Birmingham and London and has little benefit for northern cities. The second phase of the project, which will improve journey times between Leeds and Sheffield and alleviate pressure on some local services in the cities the new line will serve, awaits Parliamentary approval and is not expected to be complete until at least 2033.

The Government's priority for investment in British rail infrastructure should be the north of England. People travelling into northern cities are reliant on overcrowded and unreliable services. There has been a doubling of demand for local rail travel into central Manchester in the last 15 years but only a 50 per cent increase in passenger capacity. And many local services rely still on 'Pacer' trains, introduced by British Rail in the late 1970s, which were built cheaply using frames from Leyland National buses, to a design considered old fashioned for the rail network a century earlier.<sup>1</sup>

Rail connections between northern cities are poor. It takes just under an hour and a half to travel the 75 miles between Liverpool and Leeds by train, around the same time it takes to drive between the two cities. By contrast, it takes around two hours and a quarter to travel more than 200 miles between either city and London by train.

We are far from convinced by the Government's claim that the whole High Speed 2 project will be built within the £55.7 billion budget. The costs do not appear to be under control: Sir Terry Morgan, the former chairman of HS2 Ltd, told us that "nobody knows" what the final cost of the project will be. We are concerned that if costs overrun on the first phase of the project, there will be insufficient funding for the second phase and the northern sections of the new railway will not be built. The northern sections of High Speed 2 must not be sacrificed to make up for overspending on the railway's southern sections.

### *High Speed 2 and Northern Powerhouse Rail*

There is a plan—the Northern Powerhouse Rail Programme—to address comprehensively rail infrastructure improvements in the north through new lines and upgrades to existing lines. These works will not however begin until the mid-2020s and the whole programme is not expected to be completed until the end of the 2030s.

1 Simon Bradley, *The Railways: Nation, Network and People*, (London: Profile Books Ltd, 2015) pp 233–234

We regret that construction of High Speed 2 started in the south rather than the north. If construction on the first phase of High Speed 2 had not started already, we would be urging the Government to prioritise rail links between northern cities, rather than improving links with London which are already good.

Representatives from northern cities said that the Northern Powerhouse Rail Programme could not be completed without the second phase of High Speed 2 being built. The planning and construction of Phase 2b of High Speed 2 and Northern Powerhouse Rail should therefore be treated as one programme. Decisions on the timing of works should be made according to the needs of the rail network in the north: work could begin on improving connections between northern cities without having to wait for the second phase of High Speed 2 to be constructed fully. In any case, funding for Northern Powerhouse Rail should be ringfenced and brought forward where possible.

### Appraisal method for High Speed 2

The existing appraisal process for large infrastructure projects such as High Speed 2 is inappropriate. The appraisal method takes insufficient account of the transformative effect on local economies that the new railway may bring and it places too much emphasis on travel time savings. The estimated benefits of the project are very sensitive to demand forecasts for High Speed 2, particularly demand from business travellers, and the monetary value placed on travellers' time. But the evidence behind both assumptions is unconvincing.

We are concerned this appraisal process has driven the decision to build a railway to operate initially at a maximum speed of 360 kilometres per hour, faster than any railway operates in the world at present.<sup>2</sup>

A new appraisal of the business case, which takes account of the issues raised in this report, is essential and the final decision to proceed with the High Speed 2 project should await that assessment. Given the substantial sum of money already spent on the project, that assessment should be published urgently.

### Reducing costs

New analysis of the project is needed. With less emphasis on reducing journey times, the Government could reduce the cost of the project by designing a railway with a lower operating speed. A lower speed would provide the opportunity for a less expensive route alignment, reducing the need for tunnelling. Despite this Committee's recommendation to do so in its 2015 inquiry on High Speed 2, the Government has not explored the cost saving that could be achieved from this option.

The cost of the project could also be reduced if the London terminus of the new railway was at Old Oak Common in west London rather than Euston station (which requires expensive tunnelling underneath London). Again, despite this Committee's recommendation in 2015, this option has not been examined properly since 2010 and that analysis has not been made public.

2 'World's Fastest Bullet Train Starts High-Speed Tests', *Bloomberg*, 10 May 2019: <https://www.bloomberg.com/news/articles/2019-05-10/world-s-fastest-bullet-train-starts-high-speed-tests-in-japan> [Accessed 10 May 2019]

With the Elizabeth Line (the new west-east railway line across London being constructed under the Crossrail programme) due to provide a fast connection between Old Oak Common and central London, it is not clear why an expensive redevelopment of Euston to accommodate High Speed 2 is necessary.

Notwithstanding the result of that assessment, Old Oak Common should be the London terminus for Phase 1 (London to Birmingham) and Phase 2a (Crewe to Birmingham) of the project. This will also permit an earlier start on the northern sections.

## SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

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### Priorities for rail investment

1. The conclusions in our 2015 report on capacity problems remain valid: overcrowding is a problem on commuter services rather than long-distance services. This is a problem that High Speed 2 addresses indirectly and in full only for London commuters using Euston, who will be the main beneficiaries of the overcrowding relief provided by the project. (Paragraph 36)
2. The evidence suggests that Northern Powerhouse Rail is required more urgently than High Speed 2. If construction on High Speed 2 had not started already, we would recommend investing in northern rail infrastructure first. Northern Powerhouse Rail will better address overcrowding in the north and improve rail connections between northern cities that are poor at present, in contrast to north-south connections which are already good. (Paragraph 37)
3. Construction on High Speed 2 should have started in the north. The decision to build High Speed 2 from the south upwards means that London, already the city expected to gain most from the project, will also receive the benefits of the new railway long before northern cities will. (Paragraph 38)
4. Representatives from the north were clear they require both High Speed 2 Phase 2b and the Northern Powerhouse Rail Programme. Given the integration of the projects, the Government should consider Phase 2b and Northern Powerhouse Rail as one programme, rather than two separate programmes. A combined programme would allow investment in rail infrastructure in the north to be prioritised where it is needed most. (Paragraph 39)
5. In any case, funding for the Northern Powerhouse Rail needs to be ringfenced and brought forward where possible. Investment in rail infrastructure in the north is required urgently, and we do not see why High Speed 2 and Crossrail 2 are being prioritised over Northern Powerhouse Rail. (Paragraph 40)

### Costs and appraisal of High Speed 2

6. We have serious reservations about the cost-benefit analysis used in determining whether High Speed 2 provides value for money. Cost-benefit analysis is an important discipline for comparing the merits of different projects. But it has serious limitations as a technique for examining the transformational benefits that new infrastructure can provide. (Paragraph 62)
7. We do not believe that asking business rail travellers hypothetical questions—about how much they would be willing to pay for quicker journeys—is the most robust evidence base on which to base a calculation of the benefits that a £55.7 billion new railway will bring. (Paragraph 71)
8. We are concerned particularly that the time saved by long-distance rail business travellers has increased in value for the purposes of appraisal since our 2015 report, on the strength seemingly of a few hundred interviews carried out on station platforms. (Paragraph 74)
9. We welcome attempts to update the evidence for travel time savings. But the new values are based on unconvincing data. We note that 60 per cent of the estimated benefits of High Speed 2 (£55 billion) relate to business travel. (Paragraph 80)



10. The Government maintain the demand forecasts for long-distance rail are “conservative”. But for some of the routes which the modelling for High Speed 2 anticipates will provide the most benefits, this is not borne out by the observed demand growth in recent years. (Paragraph 92)
11. The forecast benefits of the project are very sensitive to the levels of demand predicted by HS2 Ltd’s model materialising: a revision to forecasts GDP per head growth in the latest business case caused the estimated benefits of the project to fall by £10 billion. We note HS2 Ltd’s analysis does not factor in the effect on business travel that developments in communications technology may have. (Paragraph 93)
12. The estimated benefits of High Speed 2 are highly dependent on the forecast numbers of business travellers on long-distance rail. The evidence upon which the number of business travellers used in HS2 Ltd’s modelling is based is now around 15 to 20 years old. It does not appear to correspond to the proportion of journeys undertaken for business that the most recent data from the National Travel Survey and the National Passenger Survey show. (Paragraph 107)
13. The sensitivities of the estimated benefits of High Speed 2 to values of time and demand forecasts demonstrate how important it is to the business case that the new railway is designed to be as fast as possible. (Paragraph 108)
14. New analysis of the project is needed which takes account of the transformative effects, including allowing for changes in land use, that new infrastructure can have. The assumptions behind values of travel time and the demand forecasts should be revised ahead of this new analysis. This analysis should be published alongside the full business case by the end of 2019. (Paragraph 109)

### **Reducing the cost of High Speed 2**

15. Our 2015 report recommended that the Government should review the cost saving from lowering the maximum speed of the railway. This work has not been carried out and it is disappointing that the Government’s rejection of the idea remains based on an assessment from 2012. (Paragraph 127)
16. We do not see why High Speed 2 is being built to accommodate trains operating at 400 kilometres per hour when the initial maximum operating speed will be 360 kilometres per hour, which itself is faster than the maximum operating speed of any railway in the world. The differences in journey times between a railway operating at 360 kilometres per hour, and one operating at 300 kilometres per hour, are minimal. (Paragraph 128)
17. We are concerned that the flawed appraisal method, where the vast majority of the project’s benefits are reliant on faster journey times, is behind the Government’s unwillingness to reduce the cost of the project by designing a railway to run at a lower speed. An appraisal method that took more account of the transformative effects of new infrastructure would be less sensitive to small changes in journey times. (Paragraph 129)
18. For Phase 1, the Government should instruct HS2 Ltd to update and publish its analysis of the cost saving that would be made from designing the line to a lower maximum operating speed. (Paragraph 130)

19. For Phase 2b, the 2016 analysis by Atkins suggested substantial cost savings could be achieved by alterations to the route and design of the railway. Further analysis of those options should be carried out and published. (Paragraph 131)
20. It is disappointing that the Government ignored our recommendation to assess the cost saving that could be made by terminating the line at Old Oak Common rather than Euston. The Government and HS2 Ltd cite a 2011 report from Atkins as the evidence base for rejecting the proposal, but that report assessed only the reduction in benefits and made no estimate of the possible cost saving. (Paragraph 151)
21. The Government has argued that High Speed 2 has to finish in 'central London', which is taken to mean Euston. But this does not follow. What matters is not the single point of the terminus, but the connections that enable passengers to get to their final destination. Onward journey times to final destinations using the Elizabeth Line from Old Oak Common appear in most cases to be comparable, or better than, continuing from Old Oak Common on High Speed 2 to Euston. (Paragraph 152)
22. We agree with Sir Terry Morgan that the redevelopment of Euston station should be removed from the scope of Phase One of High Speed 2. Old Oak Common should operate as the London terminus for Phase One and Phase 2a. (Paragraph 153)
23. Postponing the redevelopment of Euston station to Phase 2b will allow time for a full assessment of the modifications required to allow Old Oak Common to operate as the London terminus to the full High Speed 2 network, and the cost saving that would achieve relative to a terminus at Euston. (Paragraph 154)
24. The Government should publish its analysis of the cost savings from reducing speed and terminating at Old Oak Common alongside the full business case by the end of 2019. (Paragraph 155)

# Rethinking High Speed 2

## CHAPTER 1: INTRODUCTION

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“There are fast growing, infrastructure constrained cities spread across the regions of the UK, and addressing these constraints is the greatest opportunity for infrastructure to help each region to do better. Most major UK cities lag behind national productivity levels. This contrasts with large cities in many other European countries, which add to their countries’ productivity.” National Infrastructure Commission, July 2018<sup>3</sup>

1. The Committee fully supports investment in British rail infrastructure. But the present plan for High Speed 2 risks spending a large sum of public money on a project which addresses the wrong priorities for the railway network. As we concluded in our 2015 report *Economics of High Speed 2*, “there should be no embarrassment in being prepared to revise the project: the objectives and cost are too important.”<sup>4</sup>
2. Our 2015 report raised questions about the High Speed 2 project which the Government failed to answer. This report follows up on those unanswered questions in the context of three factors which require the Government to revise the project:
  - The rail network in the north of England requires investment as soon as possible: overcrowding is a major problem on commuter services in northern cities and connections between northern cities are poor;
  - The costs do not appear to be under control: the budget for the project is £55.7 billion but Sir Terry Morgan, the former chairman of HS2 Ltd, told us that “nobody knows” what the final cost of the project will be;
  - The Government’s cost-benefit analysis of the project needs revising—a more comprehensive analysis of High Speed 2 would give greater weight to the economic development opportunities the new railway would create and less emphasis on reductions in journey time.
3. Chapter 2 considers where rail investment should be prioritised, Chapter 3 examines the cost and appraisal of the High Speed 2 project and Chapter 4 considers how the cost of the project could be reduced.
4. Since 2015, Parliament has legislated for Phase 1 of High Speed 2. The legislation for Phase 2a had its second reading in the House of Commons in January 2018 and the legislation for Phase 2b is expected to be introduced in 2020.

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3 National Infrastructure Commission, ‘National Infrastructure Assessment’, July 2018: [https://www.nic.org.uk/wp-content/uploads/CCS001\\_CCS0618917350-001\\_NIC-NIA\\_Accessible.pdf](https://www.nic.org.uk/wp-content/uploads/CCS001_CCS0618917350-001_NIC-NIA_Accessible.pdf) [accessed 1 May 2019]

4 Economic Affairs Committee, *Economics of High Speed 2* (1st Report, Session 2014–15, HL Paper 134)

## CHAPTER 2: PRIORITIES FOR RAIL INVESTMENT

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5. This chapter considers overcrowding problems on the rail network, improving rail connections for northern cities and where investment in rail infrastructure should be prioritised.

### Capacity problems on the rail network

6. The latest strategic case for High Speed 2 said the project was a “once in a generation opportunity” to improve rail services on the West Coast and East Coast Main Lines:

“HS2 will deliver a step change in capacity on the UK’s long distance rail network. By providing direct intercity services on dedicated high speed lines, HS2 will free up train paths and platforms on the heavily congested WCML and ECML. This presents a once in a generation opportunity to improve services on these corridors, including passenger services to locations not directly served by HS2, and freight services. This will not only improve passenger experience by reducing overcrowding on peak time trains but will also allow train operators to run more varied and frequent services.”<sup>5</sup>

7. Our 2015 report accepted that the West Coast Main Line was nearing full capacity in terms of train paths but that technological innovations, such as in-cab signalling, could release capacity. We concluded “we have not seen convincing evidence that the nature of the capacity problem warrants building HS2.”<sup>6</sup> This was because:
  - Present overcrowding on long-distance services on the West Coast Main Line appeared largely to be a problem on Friday evenings and weekend services;<sup>7</sup>
  - No long-distance trains had passengers in excess of capacity<sup>8</sup>, and passengers found to be standing on long-distance services were commuters using services to travel short-distances;<sup>9</sup>
  - The main beneficiaries of the overcrowding relief provided by High Speed 2 will be London commuters on the West Coast Main Line.<sup>10</sup>

### Overcrowding on commuter services

8. Our follow-up work focused on overcrowding on commuter services. Table 1 details the percentage of passengers standing on long-distance and commuter services arriving at, and departing from, Birmingham, Leeds, London Euston, Manchester Piccadilly and Sheffield in 2017.

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5 Department for Transport, *High Speed Two: Phase Two Strategic Case*, (July 2017): [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/629393/high-speed-two-phase-two-strategic-case.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/629393/high-speed-two-phase-two-strategic-case.pdf) [accessed 1 May 2019]

6 Economic Affairs Committee, *The Economics of High Speed 2*, p 5

7 Our 2015 report said that the first off-peak services on a Friday evening, when cheaper tickets become available, and weekend services, particularly for sporting events such as when Manchester United Football Club had a home fixture, were the times when overcrowding was a problem on Virgin Trains services between London Euston and Manchester Piccadilly. Economic Affairs Committee, *The Economics of High Speed 2*, p 49

8 Train capacity includes an allowance for some standing passengers.

9 For example, commuters travelling from Stockport to Manchester Piccadilly on a Virgin Trains service. Economic Affairs Committee, *The Economics of High Speed 2*, p 53

10 Economic Affairs Committee, *The Economics of High Speed 2*, p 54

**Table 1: Percentage of passengers standing in the peak hours on a typical autumn weekday by city in 2017 (fast long distance services are highlighted in bold)<sup>11</sup>**

City	Train operator	AM peak arrivals (0700–0959)	PM peak departures (1600–1859)
Birmingham	Arriva Trains Wales	0%	11%
	Chiltern Railways	17%	7%
	CrossCountry	5%	7%
	<b>Virgin Trains West Coast</b>	<b>3%</b>	<b>8%</b>
	West Midlands Trains	18%	14%
Leeds	CrossCountry	2%	4%
	<b>London North Eastern Railway</b>	<b>0%</b>	<b>0%</b>
	Northern	13%	10%
	TransPennine Express	16%	15%
London Euston	London Overground <sup>12</sup>	55%	52%
	<b>Virgin Trains West Coast</b>	<b>2%</b>	<b>2%</b>
	West Midlands Trains	21%	18%
Manchester	Arriva Trains Wales	10%	5%
	CrossCountry	0%	13%
	East Midlands Trains	12%	0%
	Northern	15%	10%
	TransPennine Express	23%	17%
	<b>Virgin Trains West Coast</b>	<b>4%</b>	<b>1%</b>
Sheffield	CrossCountry	5%	1%
	<b>East Midlands Trains</b>	<b>0%</b>	<b>1%</b>
	Northern	5%	7%
	TransPennine Express	13%	12%

Source: Department for Transport, 'Rail passenger numbers and crowding on weekdays in major cities in England and Wales: 2017', Table RAI0214, 24 July 2018: <https://www.gov.uk/government/statistics/rail-passenger-numbers-and-crowding-on-weekdays-in-major-cities-in-england-and-wales-2017> [accessed 1 May 2019]

9. Table 1 indicates that the fast long-distance services are amongst the least crowded trains that serve the cities that will be on the High Speed 2 line.

<sup>11</sup> The overcrowding figures are based on the number of people on the train when it is at its busiest, which is when it departs from, or arrives at, the cities listed.

<sup>12</sup> London Overground trains are designed to accommodate large numbers of standing passengers and have longitudinal seating (similar to trains on the London Underground).

10. Ben Still, Managing Director of the West Yorkshire Combined Authority, said that for the cities in the north, “there is more overcrowding on the commuter routes.”<sup>13</sup> The problem was that “many of the trains are serving dual purposes; they are both inter-city and semi-fast, and serving commuter markets”:

“For example, the trans-Pennine services between York, Leeds and Manchester are most congested between Leeds and Manchester. They are at the very most congested from Leeds into Huddersfield, and in those areas there is standing room only.”<sup>14</sup>

11. He said there was also overcrowding on the fast long-distance services that are also used by commuters, but he accepted that present overcrowding problems were “a commuter and short-distance issue.”<sup>15</sup>
12. Simon Warburton, Transport Strategy Director at Transport for Greater Manchester, said that “rolling stock capacity and train capacity are now falling well behind passenger demand ... Rail demand into central Manchester has doubled in the last 15 years but there had been only a 50 per cent increase in rolling stock capacity”.<sup>16</sup>

#### *High Speed 2 and overcrowding relief*

13. Bridget Rosewell, founder of Volterra Partners, said that High Speed 2, by taking long-distance trains off the West Coast Main Line, would free up capacity for more commuter services: “you may well need the routes that are currently used for Manchester to London to be able to use more Stockport services, for example, which cannot be run because that capacity is used for the fast trains.”<sup>17</sup>
14. Chris Stokes, an independent rail consultant, however pointed out that the existing long-distance services on the West Coast Main Line already primarily serve commuters:

“If you take the morning peak as an example, there are two trains that arrive in Manchester before 9 am—only two trains during the morning peak ... one of those trains goes via Stoke and Macclesfield, and is not full of people who left Euston at half past six in the morning but full of people from Stoke and Macclesfield, while the other train goes via Crewe and Wilmslow and is similarly full of people from Crewe to Wilmslow. So those trains would have to run anyway, the position with Leeds is exactly the same, and the amount of additional train path capacity that HS2 brings to the northern cities is pretty much zero.”<sup>18</sup>

15. As we concluded in our 2015 report, the main beneficiaries of overcrowding relief from High Speed 2 will be London commuters who use the West Coast Main Line. The benefits to these commuters were made clear in a report by Steer Davies Gleave for the Department for Transport in 2017:

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13 [Q 55](#) (Ben Still)

14 [Q 55](#) (Ben Still)

15 [Q 55](#) (Ben Still)

16 [Q 55](#) (Simon Warburton)

17 [Q 41](#) (Bridget Rosewell)

18 [Q 41](#) (Chris Stokes). As we concluded in our 2015 report, it is likely that the standing passengers on long-distance services shown in Table 1 result from commuters using the services to travel short distances.

“Introducing extra train services to Milton Keynes when HS2 is built would decrease the crowding on services to Milton Keynes that depart London Euston between 5pm and 6pm. Load factors on these services were 115 per cent in 2015 (i.e. 15 percent more passengers than seats). The transfer of long distance passengers to HS2 services in 2026 and the introduction of additional services on the existing network could mean a fall in the load factor to 81 per cent for Milton Keynes passengers.”<sup>19</sup>

16. Chris Stokes said High Speed 2 was “a very expensive way of dealing with the Milton Keynes-Euston commuter peak.”<sup>20</sup>

*Northern Powerhouse Rail and overcrowding relief*

17. High Speed 2 will therefore offer limited benefits for addressing current overcrowding problems outside of London. But one project which would address these issues more comprehensively is the Northern Powerhouse Rail Programme.
18. Transport for the North published a ‘Strategic Transport Plan’ in February 2019 which outlined the scope of the programme. It consists of new lines, improvements to existing lines and improvements that will come from Phase 2b of High Speed 2. The programme is summarised in Box 1.

**Box 1: Summary of the main improvements under Northern Powerhouse Rail**

The main improvements under the programme include:

- Faster and more frequent links between Liverpool and Manchester Piccadilly via Warrington and Manchester Airport, including integrated hub stations at Liverpool City Centre and at Manchester Airport serving HS2, Northern Powerhouse Rail and local services;
- A new hub station at Manchester Piccadilly, including Northern Powerhouse Rail;
- Faster links between Manchester and Leeds, via a new line serving Bradford;
- Significant upgrades along the corridor of the existing Hope Valley Line between Sheffield and Manchester (via Stockport);
- Leeds-Sheffield delivered through HS2 Phase 2b and upgrading the route from Sheffield to/from the North;
- Leeds-Newcastle via a junction off HS2 and significant upgrades to the East Coast Mainline corridor (via York, Darlington and Durham);
- Significant upgrades to the existing lines from Leeds to Hull and Sheffield to Hull.

Source: Transport for the North, ‘Strategic Transport Plan’, 7 February 2019: <https://transportforthenorth.com/wp-content/uploads/TfN-final-strategic-transport-plan-2019.pdf> [accessed 1 May 2019]

19. Mr Warburton explained how a segregated railway between northern cities would address commuter issues:

19 Steer Davies Gleave, ‘HS2 Released Capacity Study: Summary Report’, July 2017: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/629168/high-speed-two-phase-two-strategic-case-appendix-hs2-released-capacity-study-summary-report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/629168/high-speed-two-phase-two-strategic-case-appendix-hs2-released-capacity-study-summary-report.pdf) [accessed 1 May 2019]

20 [Q 42](#) (Chris Stokes)



“[It] would allow us finally to deal with a railway that at the moment tries to do two things: to link city pairs and to provide commuter options. Frankly, it does neither of those things particularly well at the moment. The journey times between the cities are held back by the commuter, and the commuter is frustrated by the city-to-city movement that often means that services do not stop en route.”<sup>21</sup>

20. He gave Huddersfield as an example of a place where Northern Powerhouse Rail would benefit commuters, providing easier access for residents to Manchester and Leeds:

“At present, its residents are frustrated by a railway service which does not serve them as well as it could, because that rail service is also trying to run as fast as possible between two cities. If we remove the city-to-city connectivity from that rail line through a segregated railway, Huddersfield starts to present itself as a real locational choice for individuals, couples and families with talent so that they can look through their careers to trade across two northern cities rather than one.”<sup>22</sup>

### Improving rail connections for northern cities

#### *Northern Powerhouse Rail*

21. The Northern Powerhouse Rail Programme is expected to reduce substantially journey times between northern cities. The improvements it will bring are shown for selected routes in Table 2 and Figure 1.

**Table 2: Current service frequency and journey times between selected northern cities and expected improvements following Northern Powerhouse Rail**

Train route	Best existing frequency and journey time		Best possible frequency and journey time with Northern Powerhouse Rail	
	Number of services per hour	Journey time (minutes)	Number of services per hour	Journey time (minutes)
Newcastle-Leeds	3	88-95	4	58
Leeds-Hull	1	57	2	38
Sheffield-Leeds	1	39-42	4	28
Sheffield-Hull	1	80-86	2	50
Manchester-Sheffield	2	49-57	4	40
Leeds-Manchester	4	46-58	6	25
Liverpool-Manchester	4	37-57	6	26

Source: Transport for the North, ‘Strategic Transport Plan’, 7 February 2019, p 112: <https://transportforthenorth.com/wp-content/uploads/TfN-final-strategic-transport-plan-2019.pdf> [accessed 1 May 2019]

21 [Q 49](#) (Simon Warburton)

22 [Q 60](#) (Simon Warburton)



**Figure 1: Northern Powerhouse Rail Programme (including junctions with High Speed 2)**



Source: Transport for the North, *At a glance Northern Powerhouse Rail*, <https://transportfornorth.com/wp-content/uploads/TFTN - NPR At a Glance.pdf> [accessed 10 May 2019]

22. Barry White, chief executive of Transport for the North, said that transport links between northern cities had “held the jobs market back”. He said the benefits of the Northern Powerhouse Rail, although expressed in terms of journey time improvements, “are much more economically based and are about economic opportunities for individuals.” He gave Bradford to Manchester as an example:

“It is currently an hour’s journey. Under Northern Powerhouse Rail that journey will reduce to 20 minutes. Bradford is a very big northern city that is very poorly connected, so practically speaking this is a transformation opportunity that would allow Bradford citizens to access a wider jobs market or to study in Manchester but to continue to live at home, for instance.”<sup>23</sup>

### *High Speed 2*

23. The existing journey times between London and northern cities, and the improvements High Speed 2 will bring, are shown in Table 3.

**Table 3: Current journey times between London Euston and northern cities and expected improvements following High Speed 2**

London to	Existing journey time (minutes)	Journey time with HS2 (minutes)
Leeds	131	81
Liverpool	134	94
Manchester Piccadilly	127	67
Newcastle	170	137
Sheffield	121	87

Source: Department for Transport, ‘High Speed Two Phase Two Strategic Case’, July 2017, p 5: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/629393/high-speed-two-phase-two-strategic-case.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/629393/high-speed-two-phase-two-strategic-case.pdf) [accessed 1 May 2019]

24. The Government’s latest economic case for High Speed 2 however showed that London receives the most benefits from the full High Speed 2 network. Its distribution by region of the transport user benefits estimated to result from the project is reproduced in Table 4.

**Table 4: Distribution of the transport user benefits of High Speed 2 project by region, according to where a long-distance trip starts and finishes (figures are proportions from HS2 Ltd’s modelling for 2037)**

Region	Full network	Phase 2a increment	Phase 2b increment
London	40%	43%	36%
South East	3%	3%	3%
West Midlands	12%	1%	5%
North West	18%	39%	13%
East Midlands	4%	1%	7%

Region	Full network	Phase 2a increment	Phase 2b increment
Yorkshire and Humber	10%	3%	17%
North East	4%	0%	6%
Scotland	5%	4%	7%
Other (East England, South West, Wales)	3%	5%	4%

Source: HS2 Ltd, 'High Speed Two (HS2): Phase Two Economic case advice for the Department for Transport', Appendix 5, July 2017: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/628526/CS866\\_A\\_HS2\\_Phase\\_2a\\_Economic\\_case.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/628526/CS866_A_HS2_Phase_2a_Economic_case.pdf) [accessed 1 May 2019]

25. In terms of wider economic benefits, Tim Wood, Northern Powerhouse Rail Director at Transport for the North, said that “HS2 is the spine for us to see big businesses and opportunities in London and Birmingham coming to the north and to see that agglomeration effect that will happen.”<sup>24</sup>
26. The Committee’s 2015 inquiry however heard evidence that London was likely to be the biggest beneficiary from agglomeration (agglomeration refers to the productivity gains that occur when improved transport links allow easier interaction between businesses and give businesses greater access to the labour market, as businesses and workers are brought closer together). Witnesses said that High Speed 2 may encourage longer-distance commuting to London and the evidence from France’s experience of high speed rail was that Paris had benefitted more than other cities.<sup>25</sup> An academic study of high speed rail across different countries found that “for regions and cities whose economic conditions compare unfavourably with those of their neighbours, a connection to the [high speed] line may even result in economic activities being drained away and an overall negative impact.”<sup>26</sup>

### Prioritisation of rail infrastructure projects

27. The National Infrastructure Commission published its first ‘National Infrastructure Assessment’ in July 2018. It set out the ‘fiscal remit’ for infrastructure projects up to 2050 and recommended the Government adopt the funding profile for High Speed 2, Crossrail 2 and Northern Powerhouse Rail shown in Table 5. The Government will respond to the Assessment when it sets out its long-term funding plans following the Spending Review, which is expected later this year.<sup>27</sup>

24 Q 52 (Tim Wood)

25 Economic Affairs Committee, *The Economics of High Speed 2*, p 84

26 Albaete and Bel, ‘High Speed Rail: Lessons for Policy Makers from Experiences Abroad’, *Public Administration Review*, Vol. 72, Issue 3 (May/June 2012), p 346: <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1540-6210.2011.02492.x> [Accessed 1 May 2019]

27 HM Treasury, ‘Interim Response to the National Infrastructure Assessment Budget 2018’, October 2018: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/752340/NIA\\_Interim\\_Response.pdf.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/752340/NIA_Interim_Response.pdf.pdf) [accessed 1 May 2019]

**Table 5: National Infrastructure Assessment and fiscal remit for High Speed 2, Crossrail 2 and Northern Powerhouse Rail**

Project	Average annual expenditure over five year time period (2018/19 prices)				Total
	2020–2025	2025–2030	2030–2035	2035–2040	
High Speed 2	£4.5 billion	£3.9 billion	£900 million	n/a	<b>£46.5 billion</b>
Crossrail 2	£200 million	£2.2 billion	£2.9 billion	n/a	<b>£26.5 billion</b>
Northern Powerhouse Rail	£200 million	£1.1 billion	£1.7 billion	£1.8 billion	<b>£24 billion</b>

Source: National Infrastructure Commission, ‘National Infrastructure Assessment’, July 2018, Table 7.1: [https://www.nic.org.uk/wp-content/uploads/CCS001\\_CCS0618917350-001\\_NIC-NIA\\_Accessible.pdf](https://www.nic.org.uk/wp-content/uploads/CCS001_CCS0618917350-001_NIC-NIA_Accessible.pdf)

28. High Speed 2 and Crossrail 2 receive more funding under the proposed fiscal remit and receive it sooner.
29. Barry White, chief executive of Transport for the North, said the “high level cost estimate” for the Northern Powerhouse Rail Programme was £39 billion. He said the new lines would have to go through a hybrid bill process: “we have been told that would start in 2024 at the earliest ... and would take about three and a half years.” Construction could start at the end of the 2020s and “would be complete by the end of the 2030s.” Upgrading the existing lines “could start in the mid-2020s.”<sup>28</sup>
30. Chris Stokes said that “there is an opportunity cost about these projects, and for example I think Northern Powerhouse Rail will not be the scheme it might be if we were not spending all this money on High Speed 2.” On Channel 4’s ‘Dispatches’ programme in February 2019, the Mayor of Greater Manchester, Andy Burnham said that while both programmes were important for the north, he would prioritise the Northern Powerhouse Rail Programme if he had to choose between them. He described Northern Powerhouse Rail as “the single highest transport investment priority for our country.”<sup>29</sup>

#### *Dependency of Northern Powerhouse Rail on High Speed 2*

31. Representatives from the north who gave evidence to our inquiry argued that both projects were required. Ben Still said the choice was “akin to saying that you need only the M1 or the M62”:

“Through these programmes we are having to rectify decades of underinvestment in the north of England. Strong and efficient north-south routes are required, as are better east-west routes. Northern Powerhouse Rail is about joining up all the core metropolitan areas of

28 **Q 50** (Barry White). Mr White said the upgrade of existing lines “could go through Network Rail’s existing industry processes and be ready to go in what Network Rail would refer to as control period seven—the next period of investment.”

29 ‘HS2: The Great Train Robbery: Channel 4 Dispatches’, *Channel 4*, (11 February 2019): <https://www.channel4.com/press/news/hs2-great-train-robbery-channel-4-dispatches> [accessed 1 May 2019]

the north using the elements of HS2 that make sense and infilling where necessary.”<sup>30</sup>

32. He said the Northern Powerhouse Rail Programme could not work without High Speed 2. Barry White explained that as planned presently, Northern Powerhouse Rail used High Speed 2’s infrastructure in three places:

“the tunnel coming north into Manchester from Manchester Airport; east of Leeds heading out to York; and south of Leeds heading towards Sheffield. Because the Government have committed to HS2, we have planned on the basis of HS2 being delivered. Therefore, to make the best value-for-money proposals, we have used spare capacity on those tracks where available to make what we think is a very sensible proposition for Northern Powerhouse Rail. We are reliant on HS2 to that extent.”<sup>31</sup>

33. The links between High Speed 2 and Northern Powerhouse Rail are described in more detail in Figure 1. Chris Stokes was less convinced about the interdependency of the two projects: “The linkage between the two is not very strong, because Northern Powerhouse Rail is really about east-west access; obviously, HS2 is about north-south access.”<sup>32</sup>

34. Simon Warburton said that delivering only one of the programmes would not deliver the economic benefits:

“The level of transformation talked about in the northern powerhouse independent economic review is equivalent to trebling the size of the employment market in Manchester city centre and to nearly trebling the size of the employment market in our neighbouring city centre in Leeds and so on across the north ...

... the level of demand that that level of growth brings with it means that a choice between HS2 and NPR is not realistic in bringing about economic transformation. To deliver only one of those two elements will not bring about a northern powerhouse transformation.”<sup>33</sup>

35. Tim Wood agreed: “It is a programme—a network—so it requires High Speed 2 and the trans-Pennine upgrade, and it requires NPR to be built in full.”<sup>34</sup>

36. **The conclusions in our 2015 report on capacity problems remain valid: overcrowding is a problem on commuter services rather than long-distance services. This is a problem that High Speed 2 addresses indirectly and in full only for London commuters using Euston, who will be the main beneficiaries of the overcrowding relief provided by the project.**

37. **The evidence suggests that Northern Powerhouse Rail is required more urgently than High Speed 2. If construction on High Speed 2 had not started already, we would recommend investing in northern rail infrastructure first. Northern Powerhouse Rail will better address overcrowding in the north and improve rail connections between**

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30 [Q 53](#) (Ben Still)

31 [Q 53](#) (Barry White)

32 [Q 38](#) (Chris Stokes)

33 [Q 51](#) (Simon Warburton)

34 [Q 52](#) (Tim Wood)

**northern cities that are poor at present, in contrast to north-south connections which are already good.**

38. **Construction on High Speed 2 should have started in the north. The decision to build High Speed 2 from the south upwards means that London, already the city expected to gain most from the project, will also receive the benefits of the new railway long before northern cities will.**
39. *Representatives from the north were clear they require both High Speed 2 Phase 2b and the Northern Powerhouse Rail Programme. Given the integration of the projects, the Government should consider Phase 2b and Northern Powerhouse Rail as one programme, rather than two separate programmes. A combined programme would allow investment in rail infrastructure in the north to be prioritised where it is needed most.*
40. *In any case, funding for the Northern Powerhouse Rail needs to be ringfenced and brought forward where possible. Investment in rail infrastructure in the north is required urgently, and we do not see why High Speed 2 and Crossrail 2 are being prioritised over Northern Powerhouse Rail.*

## CHAPTER 3: COSTS AND APPRAISAL OF HIGH SPEED 2

41. This chapter sets out the planned cost of HS2 and examines the method by which the Department for Transport has determined the project provides value for money.

### Planned cost of High Speed 2

42. The Spending Review 2015 set the funding for High Speed 2 at £55.7 billion in 2015 prices. The latest breakdown of cost between the different phases of the project is in Table 6. Nusrat Ghani MP, Minister for HS2, said that the project “will be delivered within the envelope provided at £55.7 billion.”<sup>35</sup>

**Table 6: Breakdown of the £55.7 billion HS2 funding envelope (2015 prices)**<sup>36</sup>

Project phase	Budget
Phase 1: London-West Midlands	£27.18 billion
Phase 2a: West Midlands-Crewe	£3.48 billion
Phase 2b: West Midlands-Leeds/Manchester	£25.07 billion

Source: Department for Transport, ‘High Speed Two Phase Two Financial Case’, July 2017, p 7: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/629165/high-speed-two-phase-two-financial-case.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/629165/high-speed-two-phase-two-financial-case.pdf) [accessed 1 May 2019]

43. The Spending Review 2015 increased costs in line with inflation (at the time of our 2015 report, the total cost of the project was £50.1 billion in 2011 prices). Adjusting for construction price inflation since 2015 would suggest a cost in today’s prices of around £59 billion.<sup>37</sup>
44. HS2 Ltd told the Committee that spending to date on the project was £4.3 billion. The main costs have been £1.8 billion on land and property purchases and £1.3 billion on “indirect costs” such as consultation, design and workforce.<sup>38</sup>
45. A full business case for Phase One, with an updated cost estimate, was expected to be published by the Government in June 2019 alongside an

35 **Q 18** (Nusrat Ghani MP)

36 Prices include contingency and rolling stock. The 2015 Spending Review set the budget for Phase 2a at £3.72 billion and Phase 2b at £24.83 billion. The latest Financial Case for Phase Two, published in July 2017, said there had been a £241 million budget transfer from Phase 2a to Phase 2b in relation to a tunnel at Crewe. The Financial Case said this had not resulted in an increase to the overall funding of the project. Department for Transport, ‘High Speed Two Phase Two Financial Case’, July 2017: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/629165/high-speed-two-phase-two-financial-case.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/629165/high-speed-two-phase-two-financial-case.pdf) [accessed 1 May 2019]

37 The Office for National Statistics publishes an index of price increases for construction. This suggests that the price of new construction work for infrastructure rose by 6.7 per cent from 2015 to December 2018. Office for National Statistics, ‘Construction Output Price Indices (OPIs), UK: October to December 2018’, Table 2, 13 February 2019: <https://www.ons.gov.uk/businessindustryandtrade/constructionindustry/bulletins/constructionoutputpriceindicesopis/octobertodecember2018> [accessed 1 May 2019]

38 **Letter to the Chairman from Mark Thurston, Chief Executive Officer of High Speed Two (HS2) Ltd**, 7 March 2019. HS2 Ltd said that the indirect costs included technical designs and safety standards, IT systems, design of Phase One and Phase Two routes, HS2 Ltd workforce, HR, legal and facilities costs, consultation, communication and public engagement activities. The remaining spend was on Hybrid Bill development and delivery (£300 million), enabling works (£144 million), main works (£104 million), utilities (£72 million), ground investigation works (£65 million), network activity (£165 million), VAT provisions (£275 million) and other work on behalf of the Department for Transport (£60 million).



authorisation of notice to proceed with Phase One.<sup>39</sup> The Government however said in April 2019 that this would now “take place later in 2019” to allow HS2 Ltd “to finalise costs and plans with its contracted suppliers.”<sup>40</sup>

*Estimates the project will overspend*

46. There has been speculation that High Speed 2 will overspend its budget. A December 2016 internal report from the Government’s Infrastructure and Projects Authority, leaked to *The Sunday Times* last year, described the project as being in a “precarious position” and that it was “highly likely to significantly overspend, [by around] 20-60% with the likely cost increasing ... to more than £80 bn.”<sup>41</sup>
47. The rail consultant Michael Byng has estimated the total cost of Phase One will come to £48 billion excluding rolling stock (compared to HS2 Ltd’s estimate of £24 billion excluding rolling stock). He priced the scheme using costing methodology introduced by Network Rail in 2014.<sup>42</sup>
48. We asked Sir Terry Morgan, the former chair of HS2 Ltd, about these estimates. He said that “everybody has their own guesstimate on this” and he didn’t agree with the December 2016 report. When asked for his own estimate, he replied that “nobody knows yet”.<sup>43</sup>
49. Mark Thurston, the chief executive of HS2 Ltd, told the Committee that it was “important to keep in mind that HS2 is the largest and most complex infrastructure project undertaken in modern British history.” He said they were working with their supply chain to reduce costs: “we are challenging the supply chain to innovate, to work collaboratively and to draw on the experience of some of the world’s leading infrastructure companies working with us.”<sup>44</sup>

**Project appraisal of High Speed 2**

50. This section considers the Government’s appraisal of the High Speed 2 project and updates the analysis in our 2015 report on the assumptions used in the appraisal process.

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39 HL Deb, 24 July 2018, [col 1593](#). Baroness Sugg, Parliamentary Under Secretary of State for Transport, said the cost estimate “will be informed by supplier feedback where contracts have been awarded and will reflect expenditure to date and projected income and maintenance costs. Where contracts have not yet been awarded (e.g. railway systems, rolling stock) HS2 Ltd estimates will be used.”

40 Written Answer from Baroness Sugg, 12 April 2019, Grouped Questions [HL14997](#), [HL14998](#), [HL14999](#), [HL 15000](#).

41 A. Gilligan, ‘HS2 budget ‘will balloon to £80bn’, says secret report’, *Sunday Times*, 22 July 2018: <https://www.thetimes.co.uk/article/hs2-budget-will-balloon-to-80bn-says-secret-report-r9qtwpbpl> [accessed 1 May 2019]

42 Tony Berkeley, @tonyberkeley1, 17 March 2018: [https://twitter.com/tonyberkeley1/status/974946514379386880?ref\\_src=twsrc%5Etfw%7Ctwcamp%5Etweetembed%7Ctwterm%5E974946514379386880&ref\\_url=https%3A%2F%2Fwww.transport-network.co.uk%2FLabour-peer-suggests-HS2-costs-double-what-public-is-told%2F14910](https://twitter.com/tonyberkeley1/status/974946514379386880?ref_src=twsrc%5Etfw%7Ctwcamp%5Etweetembed%7Ctwterm%5E974946514379386880&ref_url=https%3A%2F%2Fwww.transport-network.co.uk%2FLabour-peer-suggests-HS2-costs-double-what-public-is-told%2F14910) [accessed 1 May 2019]

43 [Q 5](#) (Sir Terry Morgan). Sir Terry Morgan was the chair of HS2 Ltd from August 2018 to December 2018.

44 [Letter to the Chairman from Mark Thurston, Chief Executive Officer of High Speed Two \(HS2\) Ltd](#), 7 March 2019. In an interview with BBC Look North in February 2019, Mr Thurston said “We’ve always said we will know what it costs to build HS2 once we’ve got all our contractors mobilised, all our supply team mobilised. This is a huge economic project for the country.” Steve Bird and Edward Malnick, ‘True cost of HS2 not known, boss of controversial rail scheme admits’, *Sunday Telegraph*, 16 February 2019: <https://www.telegraph.co.uk/politics/2019/02/16/true-cost-hs2-not-known-boss-controversial-rail-scheme-admits/> [accessed 1 May 2019]



*Latest cost-benefit analysis*

51. The Department for Transport requires a cost-benefit analysis of all transport projects requiring Government approval. Its guidance on cost-benefit analysis explains why:

“The purpose of transport appraisal is to estimate the welfare impacts of transport investment to satisfy the accounting officer responsibilities that public expenditure represents value for money; this is in accordance with the requirements of the Treasury’s Green Book.”<sup>45</sup>

52. There are two main categories of benefits that are assessed for transport projects:
- Transport user benefits: the benefit which travellers enjoy as a result of a project, for example due to reductions in travel time or travel cost.
  - Wider economic benefits: these include an estimate of benefits not captured by the transport user benefits such as productivity gains through agglomeration, arising from the fact that businesses and workers are brought closer together through quicker travel times, and the benefits that arise as businesses and households relocate as a result of the project.
53. The results of the latest cost-benefit analysis for High Speed 2, published in July 2017, are in Table 7.

**Table 7: Estimate benefits, revenues and costs of the full High Speed 2 network (2015 prices)<sup>46</sup>**

Net transport benefits	£74.6 billion
Wider economic benefits	£17.6 billion
<b>Net benefits</b>	<b>£92.2 billion</b>
Capital costs	£55.8 billion
Operating costs	£27.6 billion
Revenues	£43.6 billion
<b>Net costs to Government</b>	<b>£39.8 billion</b>
<b>Benefit cost ratio with wider economic benefits</b>	<b>2.3</b>

Source: Department for Transport, ‘High Speed Two Phase Two Economic Case’, July 2017, p 13: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/634196/high-speed-two-phase-two-economic-case.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/634196/high-speed-two-phase-two-economic-case.pdf) [accessed 1 May 2019]

45 Department for Transport, ‘TAG UNIT A2.1: Wider Economic Impacts Appraisal’, May 2018, p 2: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/712878/tag-unit-a2-1-wider-impacts-overview-document.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/712878/tag-unit-a2-1-wider-impacts-overview-document.pdf) [accessed 1 May 2019]

46 The figures in the table cover the 60 year appraisal period which is up to 2093 for the full network.

*Appropriateness of cost-benefit analysis for assessing large infrastructure projects*

54. The Department's guidance on cost-benefit analysis says that the economic impacts of transport projects are "primarily captured by the estimation of [transport] user benefits."<sup>47</sup> For projects that reduce journey times, such as High Speed 2, transport user benefits are calculated by estimating the amount of time saved by travellers who will use the new railway, and applying a monetary value of time depending on the type of traveller (for example, a person travelling for leisure has their time valued at £6.04 an hour, see Table 8 below).
55. In an ideal scenario, according to the Department, "[transport] user benefits will capture the entire welfare effects of a transport investment." But additional benefits—the wider economic benefits—can also arise:
- "Wider economic impacts refers to economic impacts which are additional to transport user benefits. They arise because market failures in secondary markets (non-transport markets), such as the labour and land markets, mean that the full welfare impact of a transport investment may not be reflected in the transport market."<sup>48</sup>
56. These 'market failures' mean provision is made in the assessment to estimate the wider economic impacts, such as the productivity gains that result from businesses and workers being closer together.

*Limitations of Department for Transport's method of appraisal*

57. The Department's method for analysing the wider economic impacts of a project is limited however as it does not allow land use to vary as a result of new transport infrastructure: for example, if a new railway released capacity for more peak time trains to serve a town, the appraisal of the benefits would not take into account that more houses may be built in that town as a result of the greater capacity to serve commuters.
58. Nick Bisson, Director of HS2 Phase Two at the Department for Transport, acknowledged these limitations. He characterised the benefits of transport projects in three levels:
- "The first and most established one is merely the benefits to transport users ... The second attempts to quantify the wider economic impacts ... but based on fixed land use ... and trend-based growth in employment and population ...
- ... The third level, which is the most difficult to do, technically and analytically, allows that land use to vary ... this allows the growth in employment and population to vary as a consequence of the scheme."
59. The third level of benefits—which capture more fully the transformative effect new infrastructure can have—are not taken account of in the existing appraisal. Mr Bisson said "so far, we have not produced a robust quantification

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47 Department for Transport, 'TAG UNIT A2.1: Wider Economic Impacts Appraisal', May 2018: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/712878/tag-unit-a2-1-wider-impacts-overview-document.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/712878/tag-unit-a2-1-wider-impacts-overview-document.pdf) [accessed 1 May 2019]

48 Department for Transport, 'TAG UNIT A2.1: Wider Economic Impacts Appraisal', May 2018: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/712878/tag-unit-a2-1-wider-impacts-overview-document.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/712878/tag-unit-a2-1-wider-impacts-overview-document.pdf) [accessed 1 May 2019]

of that third level for HS2.”<sup>49</sup> We know from history however that transport infrastructure, in particular railways, can bring about profound change in land use, for example the new houses built alongside the expansion of the Metropolitan Railway into Buckinghamshire in the early 20th century.<sup>50</sup>

60. Bridget Rosewell told the Committee that assessing the project on the basis of transport user benefits was “looking at it from the wrong way up” and questioned how appropriate it was for large transport investments:

“It has grown out of a historic view of why we undertake transport investments, which was not really about large-scale investment, and which was based on the assumption that everything else was unchanged—the economy and the transport system were therefore independent of one another, which was a fundamental assumption of the modelling approaches.”

61. She said the Department’s analysis provided “a poor measure of benefits” for High Speed 2, “the business case is built on the proposition that people save time and that time is valuable to them, that is not the right way we should think about the benefits of large investments.”<sup>51</sup> She said the Department for Transport was now moving away from this, putting together cases that look first at some of those economic opportunities, “but it takes quite a long while for the modelling people to catch up.”<sup>52</sup>
62. **We have serious reservations about the cost-benefit analysis used in determining whether High Speed 2 provides value for money. Cost-benefit analysis is an important discipline for comparing the merits of different projects. But it has serious limitations as a technique for examining the transformational benefits that new infrastructure can provide.**
63. The limited appraisal method leads to the distribution of benefits in Table 5: 81 per cent of the estimated benefits of High Speed 2 are derived from the time savings (the transport user benefits) made by users of the railway. This makes the cost-benefit analysis very sensitive to the monetary value placed on travellers’ time and the estimated demand for the new railway. As our 2015 report concluded, the reliability of cost-benefit analysis “depends upon the quality of the evidence used in the analysis.”<sup>53</sup> We re-examine that evidence below.

#### *Value of travel time savings*

64. Our 2015 report was critical of the evidence behind the values allocated to travellers’ time. In the 2013 economic case (the most recent analysis of the project’s benefits at the time of the Committee’s previous inquiry) the value of business travellers’ time savings did not take account of the fact that time on a train can be used productively and the value of non-travel time savings was criticised for being based on surveys of motorists from 1994.<sup>54</sup>

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49 [Q 27](#) (Nick Bisson)

50 Andrew Martin, *Underground, Overground*, (London: Profile Books Ltd, 2013) p 169: “On what John Betjeman called ‘these mild home county acres’ the Metropolitan would create Metroland, a series of Tudorbethan havens for the office toilers of London”.

51 [Q 37](#) (Bridget Rosewell)

52 [Q 48](#) (Bridget Rosewell)

53 Economic Affairs Committee, *The Economics of High Speed 2*, p 104

54 Economic Affairs Committee, *The Economics of High Speed 2*, Chapter 8

65. These values, and the methods by which they are arrived at, have since been updated. Table 8 compares the value allocated to travel time savings in the 2013 economic case with the most recent economic case in 2017.

**Table 8: Comparison of values allocated to travel time savings for business (by journey distance), commuter and leisure passengers (£ per hour, 2010/11 prices)**

Travel purpose and journey length		2013 economic case	2017 economic case
Business	0-50km	£31.96	£10.02
	50-75km		£14.43
	75-100km		£18.41
	100-125km		£22.63
	125-150km		£26.77
	150-175km		£30.56
	175-200km		£33.80
	200-225km		£36.40
	225-250km		£38.40
	250-275km		£39.89
	275km+	£40.96	
Commuting		£6.81	£9.95
Leisure		£6.04	£4.54

Source: High Speed 2 Ltd, 'PLANET Framework Model: PFMv7.1 Assumptions Report', 2017, p 19: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/699029/CS866\\_D\\_Assumptions\\_Report\\_PFM\\_7.1.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/699029/CS866_D_Assumptions_Report_PFM_7.1.pdf) [accessed 1 May 2019]

66. The main difference for the purposes of appraising High Speed 2 is that the value allocated to business time travel now varies depending on the length of the journey. HS2 Ltd said that new evidence published by the Department suggested that “the value of business time savings increases for longer trips.”<sup>55</sup>

*Business travel time savings*

67. Before 2016 travel time savings for business travellers were determined by the ‘cost saving approach’. This approach assumed business travel time savings were equivalent to the average hourly incomes of travellers, “on the grounds that unproductive travel time when saved can be converted into productive time which has a value equal to the wage rate.”<sup>56</sup> This approach

55 High Speed 2 Limited, ‘HS2 Phase Two Summary of key changes to the Economic Case 2015 to 2016’, November 2016, p 15: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/574742/Summary\\_of\\_key\\_changes\\_to\\_the\\_Economic\\_Case.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/574742/Summary_of_key_changes_to_the_Economic_Case.pdf) [accessed 1 May 2019]

56 Institute for Transport Studies, Valuation of Travel Time Savings for Business Travellers, April 2013, p 15: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/251997/yttts\\_for\\_business\\_main\\_report-dft-005.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/251997/yttts_for_business_main_report-dft-005.pdf). The approach calculates the value of business travel time by adding the gross wage to non-wage labour costs. The gross wage rate was calculated for rail passengers using evidence from the National Travel Survey. A percentage increase was then applied to reflect non-wage labour costs such as national insurance and pensions contributions. Economic Affairs Committee, *The Economics of High Speed 2*, p 108

was criticised by witnesses during our 2015 inquiry because it did not take into account that people can work during a train journey.<sup>57</sup>

68. The new values of time for business travellers are based on ‘willingness to pay’ where surveys indicate how much business travellers are prepared to pay for a shorter journey. The Department introduced this approach in an October 2015 report.<sup>58</sup> This method was already used for calculating the value of commuting and leisure time.<sup>59</sup>
69. The values in Table 8 above are derived from surveys of travellers carried out in 2014.<sup>60</sup> Business travellers were presented with a number of scenarios where they had to choose between two options. One option was a slower but cheaper journey than the other.<sup>61</sup> Business travellers were told that for each pair of options, they should bear in mind their company’s travel policy.<sup>62</sup>
70. Responses from the surveys were combined with data from the National Travel Survey to produce “nationally representative values” for use in transport appraisal.<sup>63</sup>
71. **We do not believe that asking business rail travellers hypothetical questions—about how much they would be willing to pay for quicker journeys—is the most robust evidence base on which to base a calculation of the benefits that a £55.7 billion new railway will bring.**

*Increasing the value of travel time savings for business by distance*

72. The number of business travellers surveyed in the research who were travelling more than 50 miles is shown in Table 9 and compared with the data from the National Travel Survey.

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57 Economic Affairs Committee, *The Economics of High Speed 2*, p 108

58 Department for Transport, ‘Understanding and Valuing Impacts of Transport Investment: Values of travel time savings’, October 2015: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/470998/Understanding\\_and\\_Valuing\\_Impacts\\_of\\_Transport\\_Investment.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/470998/Understanding_and_Valuing_Impacts_of_Transport_Investment.pdf) [accessed 1 May 2019].

59 Commuting is counted as non-work travel for the purposes of transport cost-benefit analysis. Economic Affairs Committee, *The Economics of High Speed 2*, p 107

60 Arup, ‘Provision of market research for value of travel time savings and reliability’, 14 August 2015: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/470231/vtts-phase-2-report-issue-august-2015.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/470231/vtts-phase-2-report-issue-august-2015.pdf) [accessed 1 May 2019]. The research was carried out by a consortium of Arup, the Institute for Transport Studies and Accent. The surveys also included scenarios that determined what people were willing to pay to avoid crowded and unreliable rail services. But for the values of time in Table 8, the results of the exercise described in paragraph 68 were used.

61 Accent, ‘Appendix E: Pilot Intercept Recruitment Questionnaire’, August 2015, page 82: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/470234/appendix-e-final-14-august-2015-questionnaires.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/470234/appendix-e-final-14-august-2015-questionnaires.pdf) [accessed 1 May 2019].

62 The Arup report acknowledged that this presented issues: “There continues to be a debate as to whether [stated preference] can elicit credible valuations of travel time savings and reliability. This challenge is especially vocal in the area of business travel, given that respondents might not act as agents for their employer’s best interests.” If an employee had said that their employer would not be interested in paying to save time, they were told to answer as if they were paying for the journey themselves. Arup, ‘Provision of market research for value of travel time savings and reliability’.

63 Department for Transport, ‘Understanding and Valuing Impacts of Transport Investment: Values of travel time savings’. The Department’s report describes how the results of the surveys were turned into values of time: “Results from the choice models allow estimation of a value of time for a given mode, journey purpose, trip distance, traveller income etc [but] the survey sample was not constructed to be nationally representative ... Therefore, the study team also developed an ‘Implementation Tool’, which applied results from the choice modelling to trips recorded in the National Travel Survey (NTS). Using NTS data from 2010 to 2012, this essentially estimated a value of time for each NTS trip, which could then be averaged to produce nationally representative values for use in transport appraisal.”

**Table 9: Number of surveys carried out for rail passengers travelling more than 100 miles, stated preference survey versus National Travel Survey**

	Stated preference surveys	National Travel Survey
100 to 150 miles	311	142
150+ miles	291	126

Source: Arup, 'Provision of market research for value of travel time savings and reliability, Phase 2 Report, 14 August 2015, page 79: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/470234/appendix-e-final-14-august-2015-questionnaires.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/470234/appendix-e-final-14-august-2015-questionnaires.pdf) [accessed 1 May 2019]

73. The higher values of time for the six travel bands above 150 miles, as shown in Table 8 above, are based on 291 responses from the stated preference surveys and 126 responses from the National Travel Survey. This is the evidence base for a large proportion of the estimated £55 billion of benefits (60 per cent of the project's total estimated benefits) that the project will provide for business travellers. The Department said that the number of rail trips in the National Travel Survey dataset was "sufficient for robust calculation of average values."<sup>64</sup>
74. **We are concerned particularly that the time saved by long-distance rail business travellers has increased in value for the purposes of appraisal since our 2015 report, on the strength seemingly of a few hundred interviews carried out on station platforms.**

*Using business travel time productively*

75. The 'willingness to pay' method in theory allows for the fact that a person can use travel time productively, as survey respondents were expected to factor this into their decision-making when deciding how much they were willing to pay for faster journeys. The stated preference surveys also collected data on how business travellers used their time on rail journeys, which are summarised in Box 2.
76. The Department's October 2015 report said that the data showed "two key results":
- "while travel time is not 'dead time', it is not necessarily used as productively as other 'work time', with the sentiment that "quicker journeys are always more desirable."
- "How business travellers used their travel time was not found to have a significant impact on the value of time in the choice modelling. The result that the values of time did not vary with time use does not necessarily mean that time use is not important - the values of time estimated in this study are representative of current travelling conditions and uses of travel time. The results could have been different if the opportunities to use travel time productively were significantly different."<sup>65</sup>

64 *Ibid.* The Department said there were "several reasons" why values of time for business travel could be expected to increase with distance. Longer trips "tend to be more costly ... are more likely to involve travel outside of normal working hours ... and while it is possible to work while travelling, [the] qualitative research highlighted the limitations on the sorts of tasks that can be completed during a journey."

65 *Ibid.*



## Box 2: Activities undertaken by business travellers during rail journeys

Arup's August 2015 report explained how data was collected on how business travellers used their time during rail journeys, and how to interpret the results

“Employees were reminded of their reported one way trip time and asked approximately how much of that time they spend undertaking work and non-work related activities ... these findings should be contextualised against the average travel times.”

The average travel time in the survey for business rail travel was 1 hour 58 minutes.

**Table 10: Activities undertaken by business travellers during trip (average minutes spent on each activity)**

Activity	Average duration	
Work related activities	Use laptop / tablet	26 minutes
	Use smartphone/Blackberry/ phone	17 minutes
	Other work related to employment	13 minutes
Non work related activities	Talking on phone	2 minutes
	Using smartphone/eBook/ tablet/computer	16 minutes
	Reading a book/magazine/ newspaper	15 minutes
	Eating/drinking	6 minutes
	Talking to travelling companions/other travellers	9 minutes
	Listening to music	14 minutes
	Planning things	4 minutes
	Doing nothing/relaxing/ looking out of window	22 minutes
	Other	3 minutes

The report concluded “it is clear that a large proportion of rail travel time is spent on non-work activities.”

Source: Arup, ‘Provision of market research for value of travel time savings and reliability’, 14 August 2015: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/470231/vtts-phase-2-report-issue-august-2015.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/470231/vtts-phase-2-report-issue-august-2015.pdf) [accessed 1 May 2019].

### *Non-work travel time savings*

77. The latest research also updated the values of travel time savings to apply to commuting and leisure journeys (the 2013 economic case had relied on surveys of motorists from 1994 to calculate these values).<sup>66</sup> The latest values, shown in Table 6, are based on surveys of commuter and leisure travellers from the same study, with travellers asked to pick between two options for different trips as described above.

78. The value of time for these journeys does not however differ by journey time. The Government said that “further analysis of the data is required to support possible further segmentation of the non-work values, for example by distance.”<sup>67</sup>

*Audit of latest research*

79. The new research was audited by Systra in 2015. Systra disagreed that the ‘willingness to pay’ approach was preferable to the ‘cost saving’ approach: “On the evidence provided, we would, perhaps, have drawn a different conclusion—which is that the issue is currently undecided. We do not think that the evidence presented here is strong enough to draw clear conclusions.”<sup>68</sup>
80. **We welcome attempts to update the evidence for travel time savings. But the new values are based on unconvincing data. We note that 60 per cent of the estimated benefits of High Speed 2 (£55 billion) relate to business travel.**

*Demand forecasts*

81. The other main factor that influences the size of the estimated benefits of the project is the expected demand for long distance travel and given the higher value of time for business travellers, the proportion of that demand who will be travelling for business. This section examines the latest forecasts for demand growth and compares them with recent trends.

*Forecasting demand for long-distance rail*

82. Our 2015 report concluded:
- “Partial information on current railway usage, as well as uncertainty about future technological developments in automative transport and working habits, makes it difficult to assess the plausibility of the Department’s forecasts of future demand for long-distance rail travel.”<sup>69</sup>
83. Nick Bisson from the Department for Transport said the modelling assumes an average annual growth rate in demand for long distance rail of “only” 1.9 per cent, “an argument could be made that that is conservative”:

“Since privatisation, the rail network as a whole has seen annual average growth of 3.9 per cent. On long-distance services, that has been 4.6 per cent. In the last five years, although the long-distance annual average growth has been 2.5 per cent, on the west coast main line it remained at 4.7 per cent. We have continued to see strong growth on the core markets that HS2 will serve.”<sup>70</sup>

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67 Department for Transport, ‘Understanding and Valuing Impacts of Transport Investment: Values of travel time savings’, October 2015: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/470998/Understanding\\_and\\_Valuing\\_Impacts\\_of\\_Transport\\_Investment.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/470998/Understanding_and_Valuing_Impacts_of_Transport_Investment.pdf) [Accessed 10 May 2019]

68 They concluded: “Nevertheless, this study has progressed our understanding of travellers’ values of time savings and we recommend that the DfT undertakes more frequent smaller-scale updating exercises in future.” Systra, ‘Value of Travel Time Savings - Peer Review & Audit’, 30 July 2015: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/470256/vtts-peer-review-final-report-v3.0.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/470256/vtts-peer-review-final-report-v3.0.pdf) [Accessed 1 May 2019]

69 Economic Affairs Committee, *The Economics of High Speed 2*, p 36

70 [Q 24](#) (Nick Bisson)



84. The Government argued similarly in our 2015 inquiry that the 2.2 per cent average annual growth in long-distance rail travel that the modelling assumed at the time, was “a very conservative estimate.”<sup>71</sup>
85. Growth in long-distance rail demand has varied in the last few years. Office for Rail and Road statistics show that long-distance rail journeys across Great Britain grew by 3.1 per cent in 2015/16, 3.8 per cent in 2016/17 and 0.9 per cent in 2017/18.<sup>72</sup>
86. Journeys between central London and the West Midlands increased by 6.2 per cent in 2016/17 compared with the previous year, but increased by 2.2 per cent between 2016/17 and 2017/18; journeys between London and the North West increased by 5.1 per cent in 2016/17 compared with the previous year, but decreased slightly between 2016/17 and 2017/18.<sup>73</sup>

*Sensitivity of cost-benefit analysis to demand growth*

87. The sensitivity of the project’s appraisal to demand was shown by the reduction in benefits caused by a reduction in forecast GDP growth between the 2016 and 2017 business cases.<sup>74</sup>
88. The 2016 model had assumed GDP per head annual growth of 1.5 per cent from 2014/15 to 2026/27, and 1.8 per cent from 2026/27 to 2037/38. The 2017 model assumed GDP per head annual growth of 1.25 per cent from 2016/17 to 2026/27, and 1.7 per cent from 2026/27 to 2037/38.<sup>75</sup>
89. The reduction in predicted demand reduced the estimated transport user benefits by almost £10 billion. Given GDP per head growth forecasts have been lowered again since 2017, the next business case for High Speed 2 may contain further reductions to estimated demand growth.<sup>76</sup>

*Reliability of long-distance rail statistics*

90. As mentioned in our 2015 report, we note that the rail usage statistics do not distinguish between local and long-distance journeys. For example, as Virgin Trains are classified as an operator in the long-distance sector, all journeys

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71 Economic Affairs Committee, *The Economics of High Speed 2* p 30

72 Office of Rail and Road, ‘Passenger journeys by sector - Table 12.6’: <http://dataportal.orr.gov.uk/displayreport/report/html/a10e3c7b-7766-40ae-a87a-14c56cf85a63> [accessed 1 May 2019]

73 Office of Rail and Road, ‘Regional Rail Usage - Table 15.4’: <https://dataportal.orr.gov.uk/browsersreports/15> [accessed 1 May 2019]

74 High Speed 2 Ltd, ‘High Speed Two (HS2) Phase Two PFM v7.1 Step-through report: Summary of key changes to modelling assumptions between PFM v6.1c and PFM v7.1’, July 2017: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/628528/CS866\\_C\\_PFMv7.1\\_Step-Through\\_Report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/628528/CS866_C_PFMv7.1_Step-Through_Report.pdf) [accessed 1 May 2019]

75 High Speed 2 Limited, ‘PLANET Framework Model: PFMv7.1 Assumptions Report’, July 2017: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/699029/CS866\\_D\\_Assumptions\\_Report\\_PFM\\_7.1.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/699029/CS866_D_Assumptions_Report_PFM_7.1.pdf); High Speed 2 Limited, ‘HS2 Phase Two Assumptions Report: PLANET Framework Model version 6.1c’, November 2016: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/574740/Planet\\_Framework\\_Model\\_Assumptions\\_Report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/574740/Planet_Framework_Model_Assumptions_Report.pdf) [Accessed 1 May 2019]

76 The reduction in benefits caused by the lower demand growth meant the overall cost-benefit ratio of the project was reduced to 2.0 from 2.6 in the 2016 analysis. However, following an update from the Department for Transport to its appraisal guidance, the cap on demand growth in the HS2 modelling was removed, allowing the number of journeys on the railway to increase with predicted population growth up to the end of the appraisal period in 2037. Previously, demand for the railway had been capped in 2037. The change increased the expected benefits by around 8 per cent and resulted in the cost-benefit ratio increasing from 2.0 to 2.3. Department for Transport, ‘High Speed Two Phase Two Economic Case’, July 2017, Annex C: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/634196/high-speed-two-phase-two-economic-case.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/634196/high-speed-two-phase-two-economic-case.pdf)

on their services are captured in the official statistics for long-distance rail travel, regardless of length.<sup>77</sup>

91. The Minister provided us with figures which show that 15 per cent of journeys on Virgin Trains services between London and Manchester in 2018 were shorter distance trips.<sup>78</sup> Without comparable figures for earlier years, it is not possible to determine whether demand growth in between London and Manchester is driven by an increase in long-distance or shorter-distance journeys.
92. **The Government maintain the demand forecasts for long-distance rail are “conservative”. But for some of the routes which the modelling for High Speed 2 anticipates will provide the most benefits, this is not borne out by the observed demand growth in recent years.**
93. **The forecast benefits of the project are very sensitive to the levels of demand predicted by HS2 Ltd’s model materialising: a revision to forecasts GDP per head growth in the latest business case caused the estimated benefits of the project to fall by £10 billion. We note HS2 Ltd’s analysis does not factor in the effect on business travel that developments in communications technology may have.**

*Forecasting the proportion of business travellers - 2015 inquiry*

94. Our 2015 report criticised HS2 Ltd for the large proportion of travellers it estimated were travelling for business. The Government told us that the High Speed 2 modelling assumed that in 2010, the then base year for the model, 39 per cent of long-distance trips over 100 miles were for business, 46 per cent for leisure and 15 per cent for commuting.<sup>79</sup>
95. Table 11 compares the proportion of business travellers travelling between the main cities on High Speed 2 that was assumed in the August 2012 economic case with the October 2013 economic case.

**Table 11: Weekday journey purpose proportions on main High Speed 2 routes used in modelling, August 2012 economic case versus October 2013 economic case (base year 2010)<sup>80</sup>**

	August 2012 economic case		
	Business	Leisure	Commuting
<b>London and Birmingham</b>	26%	49%	26%
<b>London and Leeds</b>	28%	56%	16%
<b>London and Manchester</b>	24%	54%	22%
<b>London and Sheffield</b>	23%	49%	28%

77 Economic Affairs Committee, *The Economics of High Speed 2*, p 53

78 [Letter for Nusrat Ghani MP to the Chairman](#), 18 March 2019

79 Economic Affairs Committee, *The Economics of High Speed 2*, p 114

80 These figures were considered in our 2015 report from paragraph 403. *Ibid.*

	October 2013 economic case		
	Business	Leisure	Commuting
<b>London and Birmingham</b>	56%	29%	15%
<b>London and Leeds</b>	56%	40%	4%
<b>London and Manchester</b>	64%	31%	5%
<b>London and Sheffield</b>	65%	31%	5%

Source: Atkins, *High Speed Two Atkins Model Development Report - PFMv3.0-PFMv4.3*, 25 September 2014, Table 2-23: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/640685/Atkins\\_Model\\_Development\\_Report\\_PFMv3.0-PFMv4.3.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/640685/Atkins_Model_Development_Report_PFMv3.0-PFMv4.3.pdf) [Accessed 1 May 2019]

96. The Department for Transport explained the reasons for the change in methodology to the 2015 inquiry:

“Prior to the October 2013 HS2 Economic Case the journey purpose of trips was determined by using ticket sales data to examine the type of ticket sold (full price, open etc.) and making assumptions about the relationship between the ticket type and the journey’s purpose. This approach had the following limitations:

- The relationship between ticket type and journey purpose was based on national averages and did not vary according to distance or region; and,
- Analysis of the National Passenger Survey data shows that more business trips are now being undertaken using reduced or advanced purchase tickets and this was not reflected in the data and assumptions used.”<sup>81</sup>

97. To reflect these limitations, the department revised their approach by directly sourcing journey purpose splits from the National Rail Travel Survey. This was a large survey of rail passengers (sample size 436,000) undertaken in London areas in 2001 and other areas of the country between 2004 and 2005.

98. Our 2015 report criticised the department for using this old survey data: “The substantial increase in forecast business travel in the latest economic case [compared to the 2012 economic case] is questionable: the supporting evidence was based on survey data that is over ten years old.”<sup>82</sup>

*Forecasting the proportion of business travellers - comparison with latest National Travel Survey data*

99. There have been three further updates to the modelling since the October 2013 economic case. None of the documents associated with those updates have published an update to the journey purpose figures in Table 11. We therefore assume the journey purpose proportions in the latest modelling remain similar to the 2013 economic case.

81 Written evidence from the Department for Transport to the Committee’s 2015 inquiry, *The Economics of High Speed 2* (EHS0090)

82 Economic Affairs Committee, *The Economics of High Speed 2*, p 118

100. We asked the Minister for updated statistics on long-distance rail journeys by purpose. She provided the figures in Table 12 for the journey purpose split for journeys over 50 miles from the National Travel Survey.

**Table 12: Weekday long distance rail journeys by route and purpose, National Travel Survey data, 2002 to 2017 average**

Route (both directions)	Purpose		
	Business	Leisure	Commuting
London - West Midlands	42%	40%	17%
London - North West	42%	52%	6%
All long distance rail travel (over 50 miles)	26%	44%	30%

Source: [Letter from Nusrat Ghani MP to the Chairman](#), 25 February 2019

101. During our 2015 inquiry, the equivalent figures for 2002 to 2013 were cited by the then Secretary of State for Transport in support of the modelling assumptions about journey purpose in Table 11.
102. We asked the Minister if the 2002 to 2017 figures could be broken down into shorter time periods. The Minister said however that the sample sizes were too small:

“the number of reported trips in the National Travel Survey is very small and these trips are being reported by a very small sample of respondents (in some cases fewer than 20 people across the five years in total) ... This makes any meaningful comparison across the time periods very difficult ... the data would not add clarity on changes in the purpose of weekday long distance rail travel on these routes.”

103. But the Minister did provide a breakdown of journey purpose for all long distance rail, below in Table 13, which shows the proportion of business travel has decreased over the period 2002 to 2017.

**Table 13: Weekday long-distance rail trips (over 50 miles) by journey purpose, National Travel Survey data for 2003–2007, 2008–2012 and 2013–2017**

Trip Purpose	Time period		
	2003–2007	2008–2012	2012–2017
Business	29%	25%	25%
Commuting	26%	29%	33%
Leisure	45%	45%	41%

Source: [Letter from Nusrat Ghani MP to the Chairman](#), 18 March 2019

104. The Minister’s suggestion that the sample size would be too small to make meaningful comparisons across a smaller period calls into question how

reliable the data in Table 12 is. Nevertheless, that data, and the data for all long-distance rail travel in Table 13, suggest that HS2 Ltd's estimate for business travel on High Speed 2 is too high.

*Forecasting the proportion of business travellers - comparison with latest National Passenger Survey*

105. The latest modelling of journey purposes remains based on the National Rail Travel Survey. We note the survey data is almost 15 years old and the data for London is nearly 20 years old. The latest modelling report from HS2 Ltd says that “analysis of the National Passenger Survey data suggested that the profile of travellers by purpose had remained fairly stable over the period 2004–2011.”
106. The latest National Passenger Survey for Virgin Trains services on the West Coast Main Line, from a weighted sample of 35,698 journeys, showed that 23 per cent of trips were for business purposes, 66 per cent for leisure and 11 per cent for commuting.<sup>83</sup>
107. **The estimated benefits of High Speed 2 are highly dependent on the forecast numbers of business travellers on long-distance rail. The evidence upon which the number of business travellers used in HS2 Ltd's modelling is based is now around 15 to 20 years old. It does not appear to correspond to the proportion of journeys undertaken for business that the most recent data from the National Travel Survey and the National Passenger Survey show.**
108. **The sensitivities of the estimated benefits of High Speed 2 to values of time and demand forecasts demonstrate how important it is to the business case that the new railway is designed to be as fast as possible.**
109. *New analysis of the project is needed which takes account of the transformative effects, including allowing for changes in land use, that new infrastructure can have. The assumptions behind values of travel time and the demand forecasts should be revised ahead of this new analysis. This analysis should be published alongside the full business case by the end of 2019.*

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83 Virgin Trains, National Rail Passenger Survey, June 2018 [https://www.virgintrains.co.uk/-/media/vt/files/pdf/national\\_rail\\_passenger\\_survey/national-passenger-survey-18-spring.ashx?la=en&hash=39CA6883C54D928809DD6F9D5CA21D7FE05DF5D9](https://www.virgintrains.co.uk/-/media/vt/files/pdf/national_rail_passenger_survey/national-passenger-survey-18-spring.ashx?la=en&hash=39CA6883C54D928809DD6F9D5CA21D7FE05DF5D9) [accessed 1 May 2019]

## CHAPTER 4: REDUCING THE COST OF HIGH SPEED 2

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110. The Committee’s follow-up work focused on two ideas which the 2015 report had recommended the Government should consider further: designing the railway to run at a lower speed and a London terminus at Old Oak Common rather than Euston.
111. The Government’s response to the 2015 report did not address either recommendation. The then Chairman of the Committee wrote to the Secretary of State for Transport in July 2015 to pursue these recommendations.<sup>84</sup> In his reply, the Secretary of State said that the Government’s position was “well established ... our analysis has shown that the reduction in benefits from changes to scheme design such as terminating at Old Oak Common or lowering speed would outweigh any cost savings.”<sup>85</sup> We examine the two ideas again below.

### Lower speed

112. High Speed 2 is being built to accommodate trains travelling at a maximum speed of 400 kilometres per hour, with trains expected initially to run at a maximum of 360 kilometres per hour. This compares to a maximum speed of 300 kilometres per hour on High Speed 1, and 320 kilometres per hour on the Train à Grande Vitesse (TGV) high speed train in France.<sup>86</sup>
113. Our 2015 report recommended:
- “The Government should review opportunities to reduce the cost of constructing HS2 through a change in the design of the scheme to one with a lower maximum speed—such as that used on continental railways—and publish the results of this exercise. This should include an assessment of the effect a lower speed would have on journey times, which is likely to be small.”<sup>87</sup>

114. Nusrat Ghani MP, the Minister for HS2, told the Committee that “Government requirements remain that HS2 should remain designed to a maximum speed of 360km/h, with its route alignment enabling speeds up to 400km/h in the future.”<sup>88</sup>

### *Questioning of the design speed*

115. Sir Terry Morgan said the HS2 team “have the challenge of what I would describe as cost, time and, not least, scope.”<sup>89</sup> But that “inside the project team, the determination is that the scope, as specified by government, is still being worked to.”<sup>90</sup> When asked whether HS2 Ltd could say a lower speed was necessary to build the project to budget, he replied:

“This is always dangerous territory. Something has to give in the triangle of scope, cost and time ... I think people will have to flex on the whole

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84 [Letter from the former Chairman to the Secretary of State for Transport](#), 21 July 2015

85 [Letter from Secretary of State for Transport to the former Chairman](#), 1 September 2015

86 Economic Affairs Committee, [The Economic Case for High Speed 2](#) p 23

87 *Ibid.*

88 [Letter from Nusrat Ghani MP to the Chairman](#), 19 February 2019

89 [Q 5](#) (Sir Terry Morgan)

90 [Q 6](#) (Sir Terry Morgan)



question of the value for money statement about whether we need the speed and frequency.”<sup>91</sup>

116. He thought that “most people regret calling it High Speed 2. It is about creating capacity ... Connectivity is a more important case for HS2.”<sup>92</sup>
117. Chris Stokes said that “with its relatively short distances, building something in this country that asserts to be the fastest high speed railway in the world is, frankly, close to ludicrous.” He described the present design as “an engineer’s pipe dream” and said “I see no reason to go faster than French TGVs. I think it is silly.”<sup>93</sup> Bridget Rosewell said that although speed was not irrelevant, “I said at the beginning, back in 2008–09, that I did not see why we were privileging 400 kilometres an hour for the cost that it would imply.”<sup>94</sup>

*Cost savings from reduced speed on Phase 1*

118. We asked HS2 Ltd what cost saving could be achieved by reducing the speed. Mark Thurston said that they had reviewed reducing operating speeds to 300 kilometres per hour and 200 kilometres per hour for Phase 1:

“HS2 Ltd was remitted ... to explore the optimal trade-off between journey time, maximum speed, and demand for the railway’s services. Part of this work reviewed operating speeds down to 300 km/h. This work concluded that the net present value of the capital expenditure for the project would be reduced by £600m, with greater savings being in the longer term operational costs (£1.25bn) largely due to reduction in energy costs.

However, the reduction in operating speed led to a greater reduction in revenue and benefits of £6 billion and hence a deterioration in the Benefit Cost Ratio (BCR) for the project.

HS2 Ltd also reviewed the Phase One consulted route at 200km/h (The same speed that Pendolinos travel at on the West Coast Main Line currently). The cost would be 9% lower than the cost of the route designed for 360km/h, but the increase in journey time would reduce passenger usage by 19%, leading to a reduction in benefits of 33% and revenue by 24%.”<sup>95</sup>

119. Mr Thurston said that as a result of the assessments, HS2 Ltd had recommended to the department that “the optimum maximum operating speed remained at 360km/h as the practical limit of deliverable technology at the time, noting that with future improvements in technology there is likely to be a case for higher speed.”<sup>96</sup>
120. Table 14 compares the effect of a lower speed on journey times on High Speed 2 between London and Birmingham, and London and Manchester.

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91 [Q 6](#) (Sir Terry Morgan)

92 [Q 7](#) (Sir Terry Morgan)

93 [Q 39](#) (Chris Stokes)

94 [Q 38](#) (Bridget Rosewell)

95 [Letter from Mark Thurston to the Chairman](#), 7 March 2019

96 [Letter from Mark Thurston to the Chairman](#), 7 March 2019

**Table 14: Comparison of journey times between London and Birmingham, and London and Manchester, on High Speed 2 under different maximum speed designs**

Maximum operating speed of High Speed 2	Journey time between London and Birmingham	Journey time between London and Manchester
360 kilometres per hour (present configuration)	49 minutes	67 minutes
300 kilometres per hour	52 minutes	77 minutes
200 kilometres per hour	64 minutes	(no available estimate)
<i>Current journey time (West Coast Main Line)</i>	<i>81 minutes</i>	<i>127 minutes</i>

Source: [Letter from Nusrat Ghani MP to the Chairman](#), 19 February 2019

121. The assessments referred to by Mr Thurston were published by HS2 Ltd in a January 2012 report.<sup>97</sup> In Phase One, trains will operate at 360 kilometres per hour only on a 68 mile section between Amersham and the interchange station near the National Exhibition Centre in Birmingham. The assessment identified six areas on this part of the route where speed reductions could reduce cost. The conclusion was that cost savings would be minimal compared to route refinements which maintain the design speed:

“[cost] reductions are possible, but the small increases in flexibility of route alignment from a lower speed are not are not always sufficient to have a significant reduction in impacts ...

... Any gains that can be achieved through a lower speed are, for the most part, not significantly greater than can be achieved through the changes we have identified ... which maintain the design speed and so maintain benefits whilst allowing for future improvements in journey times.”<sup>98</sup>

122. On a 200 kilometre per hour route, the 2012 report said it “re-examined” earlier work on a conventional speed railway and had carried out a further noise assessment. The earlier work was published in a 2011 economic case for the project which said HS2 Ltd had appraised the case for a conventional speed railway “at a high level: we applied cost and journey time assumptions reflecting conventional speeds to our preferred route for the high speed line.”<sup>99</sup> The 2011 economic case concluded that “upgrading the line to high speed would have a relatively small net cost to Government, but would generate significant benefits (time savings) to passengers on HS2.”<sup>100</sup>

97 Department for Transport, ‘Review of HS2 London to West Midlands Route Selection and Speed’, January 2012: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/3659/hs2-review-of-route-selection-and-speed.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/3659/hs2-review-of-route-selection-and-speed.pdf) [accessed 1 May 2019]

98 *Ibid.*

99 Department for Transport, ‘Economic Case for HS2: They Y Network and London-West Midlands’, February 2011 <https://webarchive.nationalarchives.gov.uk/20110720164411/http://highspeedrail.dft.gov.uk/sites/highspeedrail.dft.gov.uk/files/hs2-economic-case.pdf> [accessed 1 May 2019]

100 *Ibid.*



*Cost savings from reduced speed on Phase 2*

123. In 2016 the Department for Transport commissioned Atkins to design and assess “potential strategic, alternative, rail based options to building Phase 2b of High Speed 2.”<sup>101</sup> These alternative schemes “consist of packages of infrastructure upgrades and other interventions.” The alternatives were not designed with the express intention of lowering the maximum design speed and some include parts of Phase 2b as planned.
124. The 2016 Strategic Outline Business Case for Phase 2b rejected all the alternatives on the basis they produce lower benefits than Phase 2b, “this is driven mainly by the smaller reductions in journey times that the alternatives achieve to key northern destinations when compared to using Phase 2b.”
125. Table 15 compares the total cost and journey times provided by Phase 2b against the best alternative as assessed by Atkins.<sup>102</sup>

**Table 15: Comparison of costs and journey times of Phase 2b and best alternative as assessed by Atkins**

	Phase 2b	Best alternative
Total costs (includes capital and operating costs.)	£39.9 billion	£26.6 billion
London to Leeds journey time	75 minutes	95 minutes
London to Manchester journey time	68 minutes	80 minutes
London to Sheffield journey time	69 minutes	83 minutes

Source: Department for Transport, ‘High Speed Two Phase 2b Strategic Outline Business Case: Economic Case’, November 2016: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/570845/hs2-phase-2b-sobc-economic-case.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/570845/hs2-phase-2b-sobc-economic-case.pdf) [accessed 1 May 2019]

126. The analysis indicates that the Government could save £13 billion of the cost of Phase 2b if it was willing to contemplate an extra 10 to 20 minutes additional journey time between northern cities and London.
127. **Our 2015 report recommended that the Government should review the cost saving from lowering the maximum speed of the railway. This work has not been carried out and it is disappointing that the Government’s rejection of the idea remains based on an assessment from 2012.**
128. **We do not see why High Speed 2 is being built to accommodate trains operating at 400 kilometres per hour when the initial maximum operating speed will be 360 kilometres per hour, which itself is faster than the maximum operating speed of any railway in the world. The differences in journey times between a railway operating at 360**

101 Atkins, ‘Strategic alternative to HS2 Phase 2b’, November 2016 [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/568309/strategic-alternatives-to-hs2-phase-2b-atkins-report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/568309/strategic-alternatives-to-hs2-phase-2b-atkins-report.pdf) [accessed 1 May 2019]

102 The alternative selected for the comparison here is Option 3 from the Atkins report.

**kilometres per hour, and one operating at 300 kilometres per hour, are minimal.**

129. **We are concerned that the flawed appraisal method, where the vast majority of the project’s benefits are reliant on faster journey times, is behind the Government’s unwillingness to reduce the cost of the project by designing a railway to run at a lower speed. An appraisal method that took more account of the transformative effects of new infrastructure would be less sensitive to small changes in journey times.**
130. *For Phase 1, the Government should instruct HS2 Ltd to update and publish its analysis of the cost saving that would be made from designing the line to a lower maximum operating speed.*
131. *For Phase 2b, the 2016 analysis by Atkins suggested substantial cost savings could be achieved by alterations to the route and design of the railway. Further analysis of those options should be carried out and published.*

### London terminus at Old Oak Common

132. The present plans for Phase One of High Speed 2 include a station at Old Oak Common in west London, with the London terminus of the line at a redeveloped Euston station. Old Oak Common is a planned station on the Elizabeth Line, the new west-east line across London (the line is being built under the Crossrail programme and an opening date has yet to be announced).<sup>103</sup> The station at Old Oak Common, due to open in 2026, will be in between the Elizabeth Line stations at Acton and Paddington and provide an interchange to High Speed 2.<sup>104</sup>
133. At the time of our 2015 inquiry, there were reports that the estimated cost of the redevelopment of Euston had risen to £7 billion from an initial estimate of £2 billion. The Committee said that a terminus at Old Oak Common would avoid the cost of redeveloping Euston station and of building a tunnel from Old Oak Common to Euston<sup>105</sup>. In light of this we recommended:

“The Government should estimate the overall reduction of cost to HS2 of terminating the line at Old Oak Common... including any necessary redesign of the station at Old Oak Common to make this possible, and calculate the effect on the cost benefit analysis.”<sup>106</sup>

103 The central section of the Elizabeth Line was due to open in December 2018 but it was announced in August 2018 that this would be delayed to Autumn 2019 as more funding was needed to complete the Crossrail project. But in early 2019 Crossrail admitted it could not commit to an opening date and more work was required to understand how to complete the project. London Assembly Transport Committee, ‘Derailed: Getting Crossrail back on track’, April 2019: [https://www.london.gov.uk/sites/default/files/final\\_-\\_london\\_assembly\\_transport\\_committee\\_crossrail\\_investigation\\_report\\_0.pdf](https://www.london.gov.uk/sites/default/files/final_-_london_assembly_transport_committee_crossrail_investigation_report_0.pdf) [accessed 1 May 2019]

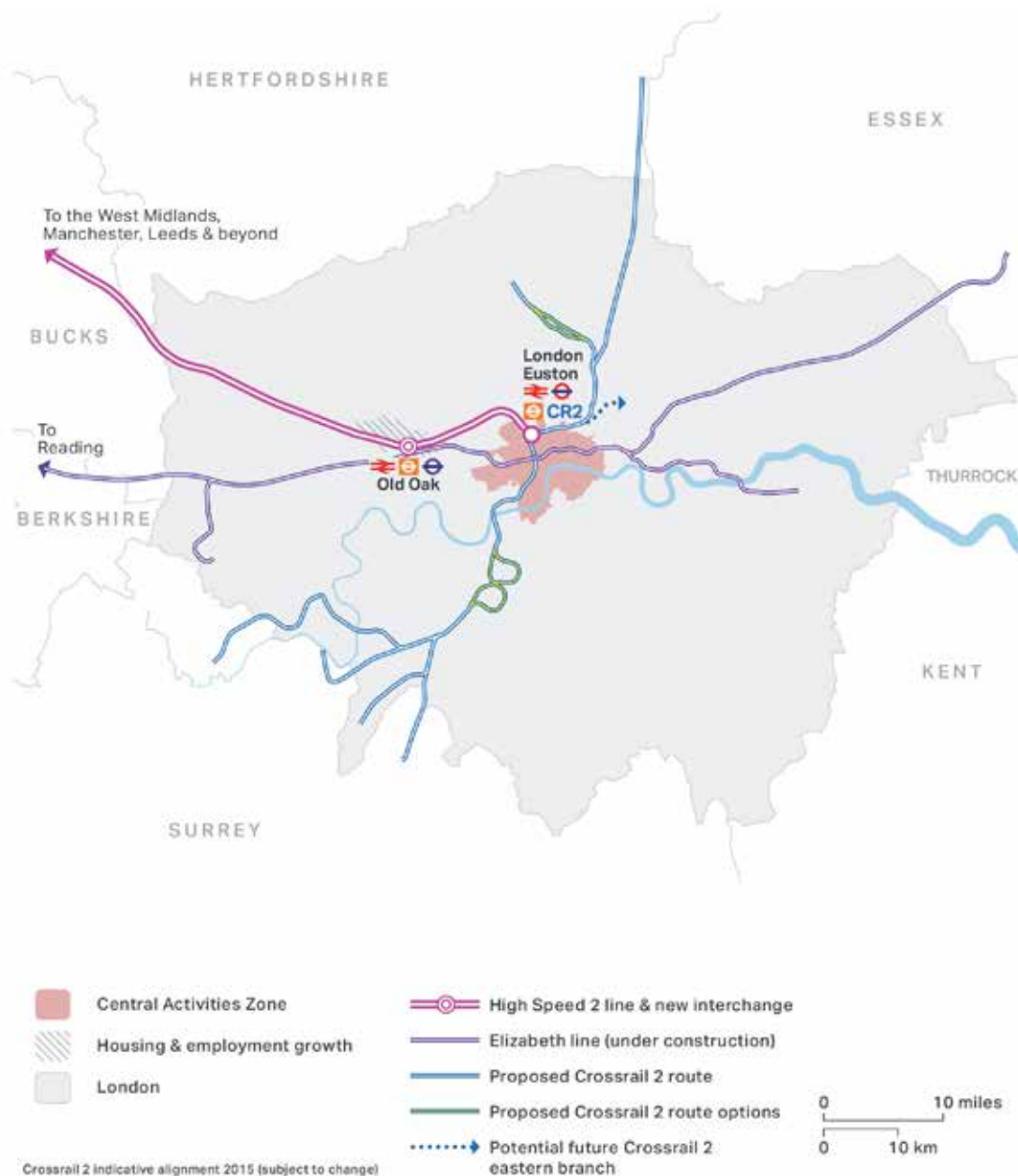
104 Transport for London, ‘Have your say on two potential new London Overground stations at Old Oak’, 19 December 2018: <https://consultations.tfl.gov.uk/london-overground/old-oak-common/?cid=old-oak-common> [accessed 1 May 2019]

105 The tunnel will be a 7.4 kilometre twin-bore tunnel. High Speed 2 Ltd, ‘London-West Midlands Environmental Statement Volume 1’, November 2013: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/259491/Volume\\_1\\_Introduction\\_to\\_the\\_Environmental\\_Statement\\_and\\_the\\_Proposed\\_Scheme.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/259491/Volume_1_Introduction_to_the_Environmental_Statement_and_the_Proposed_Scheme.pdf) [accessed 1 May 2019]

106 Economic Affairs Committee, *The Economics of High Speed 2*, p 18

134. Our follow-up work looked again at terminating at Old Oak Common rather than Euston and also considered whether Old Oak Common could operate as the London terminus for Phase 1 and Phase 2a, allowing more time for the redevelopment of Euston station.

**Figure 2: Integration of HS2 with the Elizabeth Line**



Source: Mayor of London, Mayor’s Transport Strategy, March 2018: <https://www.london.gov.uk/sites/default/files/mayors-transport-strategy-2018.pdf> [accessed on 10 May 2019]

*Onward journey times from Old Oak Common*

135. The onward journey times from Old Oak Common using the Elizabeth Line and High Speed 2 into Euston are compared to selected destinations in Table 16.

**Table 16: Onward journey times to selected destinations from Old Oak Common via the Elizabeth Line and High Speed 2<sup>107</sup>**

Destination	Journeys from Old Oak Common via HS2 <sup>108</sup>		Journeys from Old Oak Common via Elizabeth Line <sup>109</sup>	
	Time (min)	Additional interchanges <sup>110</sup>	Time (min)	Additional interchanges <sup>111</sup>
Bond Street / Oxford Street	9	0	7	0
Canary Wharf	35	1	21	0
City of London (Moorgate / Liverpool Street)	15	0	14	0
Kings Cross St Pancras	8	0	20	1
London Bridge	19	0	20	1
Stratford	36	1	23	0
Victoria	13	0	23	1
Waterloo	16	0	19	1
Westminster	24	1	15	1

Source: Crossrail, ‘Journey Time Calculator’: <http://www.crossrail.co.uk/route/> [accessed 1 May 2019], Transport for London, ‘Plan a journey’: <https://tfl.gov.uk/plan-a-journey/> [accessed 1 May 2019] & WhatDoTheyKnow, ‘Gate-to-platform and interchange walking times’, 25 January 2012: [https://www.whatdotheyknow.com/request/gate\\_to\\_platform\\_and\\_interchange](https://www.whatdotheyknow.com/request/gate_to_platform_and_interchange) [accessed 1 May 2019]

136. This a rough comparison: the interchange time in between alighting at Old Oak Common or Euston, and proceeding via the Elizabeth Line or the London Underground, is not included. HS2 Ltd have said that there will be a walk “of less than 100m” between High Speed 2 and the Elizabeth Line at Old Oak Common.<sup>112</sup>
137. Of these selected destinations, only Kings Cross St Pancras and Victoria have a substantial time saving from continuing on High Speed 2 to Euston rather than using the Elizabeth Line from Old Oak Common (with London Bridge

107 The journey time from Old Oak Common to Paddington on the Elizabeth Line has been assumed to be 4 minutes—the Old Oak Common station on the Elizabeth Line will be situated in between Acton Main Line and Paddington, estimated currently to be a 6 minute journey. Crossrail, ‘Journey Time Calculator’: <http://www.crossrail.co.uk/route/> [accessed 1 May 2019]

108 HS2 Ltd have assumed in previous analysis of journey times that the arrival-to-arrival time between Old Oak Common and Euston is seven minutes. High Speed 2 Ltd, ‘Interaction between the London stations at Old Oak Common and Euston’, August 2016: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/549818/Exhibit\\_Y\\_Strategic\\_options\\_from\\_House\\_of\\_Commons.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/549818/Exhibit_Y_Strategic_options_from_House_of_Commons.pdf) [accessed 1 May 2019]

109 A five-minute interchange has been assumed between the Elizabeth Line and London Underground lines.

110 All journeys will require an interchange at Euston between High Speed 2 and the London Underground. This interchange is excluded for the purposes of the comparison.

111 All journeys will require an interchange at Old Oak Common between High Speed 2 and the Elizabeth Line. This interchange is excluded for the purposes of the comparison.

112 Department for Transport, The Strategic Case for HS2, October 2013 [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/260525/strategic-case.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/260525/strategic-case.pdf) [accessed 1 May 2019]

and Waterloo a similar journey time although with one fewer interchange via Euston).

*Old Oak Common as London terminus for full High Speed 2 network*

138. The Minister said that HS2 Ltd had assessed the merits of terminating at Old Oak Common rather than Euston, which “showed that terminating services at OOC would reduce benefits by over 15% and a revenue reduction of 10%.” Her “strong view is that permanently terminating at OOC would not offer the step change in connectivity that the nation needs, even if there is a cost saving.”<sup>113</sup>
139. These estimates of the reduced benefits are taken from a 2011 report by Atkins.<sup>114</sup> That report estimated that a terminus at Old Oak Common would reduce daily passenger numbers on HS2 from 157,500 to 142,500 which would reduce the net present value of the benefits by £3.8 billion and reduce revenue by £1.1 billion (2009 prices) relative to a terminus at Euston.
140. The Atkins report however did not consider what the corresponding reduction in cost would be: “these changes would need to be considered in association with cost implications of the change to identify the overall impact on the business case for HS2.”<sup>115</sup>

*Estimates of cost saving*

141. Michael Byng, a rail consultant, has estimated the cost saving of terminating at Old Oak Common rather than Euston to be £8 billion.<sup>116</sup>
142. Nusrat Ghani MP, Minister for HS2, said that the Department for Transport was aware of Mr Byng’s estimates:

“Neither HS2 Ltd nor my Department recognise the methodology behind Mr Byng’s cost estimate, and contest the underlying assumptions and the top line calculations which were developed without access to HS2 designs, specifications or standards. My officials have asked repeatedly for more detail behind these cost estimates and a number of assumptions remain unclear to us.”<sup>117</sup>

143. The Minister said that notwithstanding these issues, “£8bn is not an accurate representation of the cost saving from terminating at OOC.” She listed some costs by way of comparison, which Mark Thurston also provided to the Committee:

“HS2 Ltd has recently announced the Construction Partner Contract for Euston station which has a value of £1.65bn. This contract includes the provision of enabling works for Over Site Development above the HS2 station. The design and construction of the civils work required

113 [Letter from Nusrat Ghani MP to the Chairman](#), 19 February 2019

114 Atkins, ‘Report WP1 Analyses of London Interchange Options and Markets’, May 2011: <http://assets.hs2.org.uk/sites/default/files/inserts/Analyses%20of%20London%20Interchange%20Options.pdf> [accessed 1 March 2019]. Mark Thurston also referred to the same analysis in his [letter to the Chairman](#), 7 March 2019.

115 *Ibid.*

116 Lucy Pasha-Robinson, ‘HS2 ‘will be most expensive railway on Earth at £403m a mile’, *The Independent*, 16 July 2017: <https://www.independent.co.uk/news/uk/home-news/hs2-high-speed-railway-most-expensive-world-403-million-mile-michael-byng-a7843481.html> [accessed 1 May 2019]

117 [Letter from Nusrat Ghani MP to the Chairman](#), 19 February 2019



for the Euston tunnels and approaches is £0.6-0.9bn. We are not able to provide more granular details of other costs due to commercial sensitivity, but these are associated with acquiring land and property to enable the development of Euston station.”<sup>118</sup>

*Capacity of Old Oak Common to be London terminus for full HS2 network*

144. Mark Thurston reiterated what the Committee had been told during its previous inquiry: “the demand forecasting undertaken by HS2 Ltd indicated that around two thirds of HS2 passengers would choose Euston station over OOC.” He said Old Oak Common did not have the capacity to cope with passenger demand once the full High Speed 2 network opened:

“Permanently terminating all 18 trains per hour from Phase 2b services at OOC would require additional turnback facilities and/or platforms which would require additional land and therefore cost. The station is also currently sized for approximately one third of HS2 passengers to interchange there, meaning that the station would need to be resized at additional cost ...

... Passengers travelling north-south will tend to see onward opportunities from Euston station whereas those wishing to travel east-west will seek to interchange at OOC. OOC has onward connectivity to Crossrail [the Elizabeth Line] and the Great Western Main Line, but it does not have the capacity to cope [with] the additional demand from Phase 2b services permanently.”<sup>119</sup>

145. Ben Still, Managing Director of the West Yorkshire Combined Authority, said the “strength of strategic rail comes from the fact that you can locate it in city centres.” He said that maximised the connectivity benefits and therefore the economic benefits. “If HS2 terminates at Old Oak Common, there is a significant risk that you would lose some of that for both directions of travel.”<sup>120</sup>

*Old Oak Common as London terminus for Phase 1 and Phase 2a*

146. The Minister accepted that a terminus at Old Oak Common for Phase 1 and Phase would have fewer issues in terms of capacity but would require additional spending on the station:

“Temporarily terminating at OOC, for example until Phase 2b is operational, would have fewer issues in terms of onward travel connections but would still likely require additional infrastructure to turn around the 10 trains per hour envisaged in Phase One ... initial analysis indicates only 6-8 trains per hour can be reliably terminated at OOC with the existing infrastructure. It would also complicate the construction process ... completing the OOC to Euston section in Phase 2b, would require a new location for a tunnelling and spoil processing facility to be found at additional cost.”<sup>121</sup>

147. Sir Terry Morgan was however in favour of this option. He described the engineering work involved in redeveloping Euston station as “very

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118 [Letter from Mark Thurston to the Chairman](#), 7 March 2019

119 [Letter from Mark Thurston to the Chairman](#), 7 March 2019

120 [Q 58](#) (Ben Still)

121 [Letter from Nusrat Ghani MP to the Chairman](#), 19 February 2019

complex”“just getting the ground cleared at Euston ready to start the build means spending an extraordinary amount of money. There is a lot of history in the area. Tens of thousands of bodies will have to be moved away from the Euston area, which is hugely challenging.”

148. He said he would “disconnect Euston from Phase One. I would let it come as safely and quickly as it can and take a slightly more balanced view on whether we need Euston on the critical path.” He warned that if too much pressure was put on the redevelopment of Euston to be completed in time for the opening of Phase One in 2026, “it will cost ... Take Euston off the critical path and allow the programme team to work out the best way to manage that project ... it is possible to vary the timing of Euston versus Old Oak Common. Old Oak Common would be ready. It is a much simpler thing to do.”
149. Bridget Rosewell said she was “very worried” about the redevelopment of Euston over the next decade and the disruption that would cause: “We should do anything we can to simplify that, such as phasing it a bit more slowly.” She said Phase One should be built to Old Oak Common, “get some trains running, see how people use them and see what the interchange actually looks like in practice when people use it.”<sup>122</sup>
150. Chris Stokes also referenced the disruption that will be caused to existing services at Euston and said Old Oak Common was “probably capable” of dealing with passengers from Phase One and Phase 2a. A delay to redeveloping Euston “would allow an opportunity to, frankly, review more radically whether Euston was the right place to terminate the service in any case.”<sup>123</sup>
151. **It is disappointing that the Government ignored our recommendation to assess the cost saving that could be made by terminating the line at Old Oak Common rather than Euston. The Government and HS2 Ltd cite a 2011 report from Atkins as the evidence base for rejecting the proposal, but that report assessed only the reduction in benefits and made no estimate of the possible cost saving.**
152. **The Government has argued that High Speed 2 has to finish in ‘central London’, which is taken to mean Euston. But this does not follow. What matters is not the single point of the terminus, but the connections that enable passengers to get to their final destination. Onward journey times to final destinations using the Elizabeth Line from Old Oak Common appear in most cases to be comparable, or better than, continuing from Old Oak Common on High Speed 2 to Euston.**
153. *We agree with Sir Terry Morgan that the redevelopment of Euston station should be removed from the scope of Phase One of High Speed 2. Old Oak Common should operate as the London terminus for Phase One and Phase 2a.*
154. *Postponing the redevelopment of Euston station to Phase 2b will allow time for a full assessment of the modifications required to allow Old Oak Common to operate as the London terminus to the*

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122 [Q 40](#) (Bridget Rosewell)

123 [Q 40](#) (Chris Stokes)



*full High Speed 2 network, and the cost saving that would achieve relative to a terminus at Euston.*

155. *The Government should publish its analysis of the cost savings from reducing speed and terminating at Old Oak Common alongside the full business case by the end of 2019.*

## APPENDIX 1: LIST OF MEMBERS AND DECLARATIONS OF INTEREST

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### Members

Baroness Bowles of Berkhamsted  
 Lord Burns  
 Lord Darling of Roulanish  
 Lord Forsyth of Drumlean (Chairman)  
 Baroness Harding of Winscombe  
 Lord Kerr of Kinlochard  
 Baroness Kingsmill  
 Lord Lamont of Lerwick  
 Lord Layard  
 Lord Livermore  
 Lord Sharkey  
 Lord Tugendhat  
 Lord Turnbull

### Declarations of interest

Baroness Bowles of Berkhamsted  
*No relevant interests*

Lord Burns  
*No relevant interests*

Lord Darling of Roulanish  
*Director of Morgan Stanley*

Lord Forsyth of Drumlean (Chairman)  
*Non Executive Director J&J Denholm Ltd*

Baroness Harding of Winscombe  
*No relevant interests*

Lord Kerr of Kinlochard  
*Deputy Chairman, Scottish Power PLC*

Baroness Kingsmill  
*No relevant interests*

Lord Lamont of Lerwick  
*Adviser, Global Board of Advisers, Meinhardt Group (Singapore)*  
*Consultant, RSK Group Limited (environmental consultancy)*

Lord Layard  
*No relevant interests*

Lord Livermore  
*No relevant interests*

Lord Sharkey  
*No relevant interests*

Lord Tugendhat  
*No relevant interests*

Lord Turnbull  
*No relevant interests*

A full list of Members' interests can be found in the Register of Lords' Interests:  
<http://www.parliament.uk/mps-lords-and-offices/standards-and-interests/register-of-lords-interests/>

## APPENDIX 2: LIST OF WITNESSES

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Evidence is published online at: <https://www.parliament.uk/hleconomicaffairs/publications> and available for inspection at the Parliamentary Archives (020 7219 3074).

Evidence received by the Committee is listed below in chronological order of oral evidence session and in alphabetical order. No written evidence was accepted for this inquiry.

Sir Terry Morgan CBE, former Chairman of HS2 and Crossrail	<a href="#">QQ 1–16</a>
Nusrat Ghani MP, Parliamentary Under Secretary of State, Department for Transport	<a href="#">QQ 17–36</a>
Clive Maxwell, Director General, High Speed and Major Rail Projects Group, Department for Transport	<a href="#">QQ 17–36</a>
Dr Nick Bisson, Director, HS2 Phase 2 and Northern Powerhouse Rail, Department for Transport	<a href="#">QQ 17–36</a>
Bridget Rosewell CBE, Founder, Volterra	<a href="#">QQ 37–48</a>
Chris Stokes, Independent Rail Consultant	<a href="#">QQ 37–48</a>
Dr Ben Still, Managing Director, West Yorkshire Combined Authority	<a href="#">QQ 49–60</a>
Simon Warburton, Transport Strategy Director, Transport for Greater Manchester	<a href="#">QQ 49–60</a>
Barry White, Chief Executive, Transport for the North	<a href="#">QQ 49–60</a>
Tim Wood, Northern Powerhouse Rail Director, Transport for the North	<a href="#">QQ 49–60</a>