

# High Speed Rail Access to Heathrow

A Report to the Secretary of State for Transport by  
Rt Hon the Lord Mawhinney Kt

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# Contents

<b>Summary of Recommendations</b>	<b>2</b>
<b>The Report</b>	<b>4</b>
<b>Appendix 1 – Evidence from Meetings</b>	<b>17</b>
<b>Appendix 2 – Information Commissioned</b>	<b>26</b>
<b>Appendix 3 – Written Evidence</b>	<b>27</b>
<b>Appendix 4 – Site Visits</b>	<b>29</b>

# Summary of Recommendations

1. I agree with those who think that it would be desirable to achieve a more integrated and greater range of local rail connections to Heathrow, with an indication of how they might be integrated with a high speed rail network as well as with other public transport. I recommend that the Secretary of State commissions a separate and independent review of this topic. (paragraph 19)
2. I also recommend that separately or as part of that review the potential for Heathrow to have some airport car parking at a distance from the airport, together with an efficient transfer system for passengers and their baggage, is examined. (paragraph 20)
3. I judge it to be important that Heathrow should be made as accessible as possible by both high speed and traditional rail infrastructure. In my view this is more likely to take place if a staged building approach is adopted, in accordance with a pre-agreed master plan. This also makes economic and financial sense. I so recommend. (paragraph 22)
4. I recommend that the phasing of the high speed network is carefully planned, and that this plan should be concluded and agreed within the next two years. (paragraph 23)
5. I recommend that serious consideration be given to making Old Oak Common the initial London terminal for the high speed line – and that in the early stages it be designated London–Old Oak Common (just as Euston would have been designated London-Euston) – and that effective use be made of the £16 billion Crossrail project and other rail and tube connections to provide access to passengers` final destinations including Heathrow. (paragraph 32)
6. I recommend that a requirement for efficient, quick turn-rounds at stations should become an integral part of government policy and contracts covering rail operators. (paragraph 34)
7. I have concluded and recommend that, in the early stages of a high speed rail network, there is no compelling case for a direct high speed rail link to Heathrow, and that a London-Old Oak Common interchange

could provide an appropriate, good quality terminus and connection point to the airport. (paragraph 46)

8. In light of this conclusion, it is clear that changing the route of the main high speed line to run via Heathrow, at an additional cost of £2 billion to £4 billion, would connect Heathrow to HS2 at a point in time when this connection is not likely to represent value for money to the taxpayer or the train operator. In any event, such a route is not supported by the evidence of benefits. I recommend that this route should not be pursued. (paragraph 48)
9. However, as the high speed network is extended beyond Birmingham, the case for a more direct high speed rail link to Heathrow becomes more persuasive. As the network expands, and over time, there will be greater demand for access to Heathrow from cities in the North and Scotland, which might well make a direct high speed rail connection to Heathrow (which would be used by some trains) in addition to an airport connection to Old Oak Common, more viable and economically attractive. The evidence presented to me suggests that this would only be in prospect after the high speed network had been extended at least to Manchester and Leeds. I recommend that this option be given the most serious consideration. (paragraph 50)
10. I recommend that when the high speed line from London-Old Oak Common to Birmingham is built, appropriate junction engineering works should be included to make it possible for a high speed loop through Heathrow to be built at a later date. (paragraph 52)
11. I also recommend that early work be undertaken to enable rail/air through ticketing to be an integral part of any new high speed rail link to Heathrow. (paragraph 53)
12. I recommend that the Secretary of State gives serious thought to developing a more transparent, economically viable, user-friendly and competitive policy system of runway slot allocation. (paragraph 54)
13. I prefer a site for a Heathrow high speed rail station at the Central Terminal Area, which would complicate the engineering, but be of maximum utility to the maximum number of travellers. Rapid links to all terminals by automated people movers should be provided. One advantage of the CTA option is that it would be easier to provide short and rapid connections by people mover to all of the airport terminals. I so recommend. (paragraph 58)
14. Clearly it is for the Secretary of State to decide whether the original vision of a through train service from Scotland and the North East, the North West and the Midlands of England to Paris and beyond should become a reality. I recommend that further work on this issue be authorised urgently by the Secretary of State. (paragraph 61)

# The Report

## **Introduction**

1. On 5 March 2010 the then Secretary of State for Transport, Lord Adonis, invited me to undertake a review of high speed rail access to Heathrow Airport.
2. In a letter of 17 March 2010 Lord Adonis set out the purpose of the review. It was to:
  - assess the various options which have been put forward for a high speed station at or near Heathrow and the business cases in support of those options, and
  - provide advice to the Secretary of State on whether and if so when a high speed station at or near Heathrow might be needed and where it might best be situated.

The review was to take place within the context of government policy which then included a proposal to build a third runway at Heathrow.

3. Following the General Election, the new Secretary of State for Transport, Philip Hammond MP, confirmed that I should continue to undertake this review in accordance with the terms of reference set out in the 17 March letter. He also said that I should conduct this review in the context of the Government's policy, which now does not support the construction of a third runway at Heathrow. I have done so.
4. I should like to commend both Secretaries of State for having a vision for the future of public transport – with rail services at its heart – which stands in contrast to what was in danger of becoming a national antipathy to a more integrated transport system.
5. In the course of the review I invited a number of organisations to meet me; the list of those invited and concise notes of the meetings are at Appendix 1. I met privately, and separately, both Secretaries of State and the Mayor of London and held a private meeting with Sir David Rowlands, the former chairman of HS2 Ltd. This was primarily for the purpose of clarifying the assumptions which lay behind the modelling undertaken by HS2 Ltd.

6. I also commissioned some specific pieces of work; modelling and forecasts of passenger numbers and benefits, which are at Appendix 2.
7. I received written evidence from a number of organisations; this evidence is set out in Appendix 3. I also received some representations concerning the routing of the main line from London to Birmingham proposed by HS2 Ltd. To all such I made it clear that this was not a matter for me.
8. I visited possible sites for high speed rail stations at Heathrow, Iver and Old Oak Common. I visited Amsterdam Schiphol, Frankfurt and Paris Charles de Gaulle airports – the other main European hubs – and discussed with them their experience of high speed rail operations to those airports. Concise notes of all these visits are at Appendix 4.
9. I should like to express my appreciation for the invaluable assistance given to me in this review by Mr Mike Fawcett and Mr Vinal K Karania, both of the Department for Transport. I am also grateful to all who have contributed to the review.

### **Heathrow Airport**

10. Heathrow Airport is the UK's only major hub airport. For many years it has been subject to capacity constraint, especially relating to runway capacity. Over this period the number of short haul destinations served by flights from Heathrow has been declining, while at the same time demand for long haul runway slots has been increasing. In fact, the number of UK airports with air services to and from Heathrow has declined from 23 in 1991 to 6 today.
11. In parallel with these trends, there has been a significant growth in the number of travellers flying from UK regional airports to the other European hub airports, in order to connect there to flights to final destinations. Indeed, most people in the travel industry judge that the European hub airports are in competition with each other for long distance worldwide travel.
12. I have long believed that economically, politically, socially and from a business point of view, a strong hub airport is important to our national interest. Given that Frankfurt will shortly complete a fourth runway, Schiphol has five runways and Charles de Gaulle has four, present policy heightens the competitive challenge facing Heathrow. I judge that this challenge enhances the need for high speed rail access. In my meeting with them, the airlines appeared to concur as they confirmed that the number of short haul flights to and from Heathrow is likely to reduce even further.
13. I noted that the three continental hub airports already have thriving high speed rail interchanges, at the heart of each airport. Specifically, Frankfurt and Paris airports are already well linked into the national and international high speed rail networks, and are planning to extend further the reach of their high speed rail connections in the coming years. At these airports

significant modal shift from air to rail has already been achieved and they are likely to become even more competitive with Heathrow in the future. Schiphol is less directly comparable with Heathrow in this respect because there were few domestic air services in Holland, even before the completion of the high speed rail link to the airport.

14. Given this competitive context, considerable benefits would arise from enabling more travellers to access Heathrow by means other than by air:
  - high speed rail services between Heathrow and the Midlands, the North and Scotland would allow those areas to have better access to Heathrow and to enjoy the benefits of the wide range of air services which it offers, particularly to major business cities worldwide;
  - frequent, reliable, fast and direct rail links to Heathrow would allow airlines to review services to those cities which are so served by rail, thus creating the possibility of freeing up runway slots for long haul flights, and improving the international connectivity of all parts of the UK.
15. It was not part of my brief to analyse government policy other than with respect to high speed rail access to Heathrow. The viability of any airport, by definition, has to balance ease of access and economic, employment and business benefits against environmental disbenefits. These include aircraft noise, local air pollution and a potential increase in carbon/greenhouse gas emissions. I say “potential” because automobile generated increases could be reduced by better rail connectivity to the hub, coupled with more distant parking facilities connected to the airport by people movers. It is also a fact that aircraft carbon emissions per passenger are decreasing with technological improvements. There is no reason to believe that this trend is likely to stop, still less reverse, in the years it will take to build a high speed rail system – or beyond. Similar technology advances are likely to reduce carbon emissions from cars and trains.
16. I was not commissioned to conduct an environmental enquiry. The evidence presented for my consideration did not suggest to me that what is being proposed would seriously put at risk government’s environmental commitments. It is impossible accurately to predict carbon footprints over the next 30 to 50 years and I harbour some scepticism towards those who try to make long range projections sound like fact. Government should monitor carefully the environmental/carbon emission consequences of its policy, but I have seen no reason why such considerations should prevent or even delay implementation of a high speed rail link to Heathrow.

### **Rail connections to Heathrow**

17. My assignment was to consider how Heathrow could/should be linked to a future high speed rail infrastructure. As I considered this, it became clear to me that, more fundamentally, no coherent policy framework exists about how Heathrow should be linked into the existing rail network. At present,

Heathrow is reasonably connected by rail to central London and parts of west London, through the Heathrow Express, Heathrow Connect and Piccadilly tube line services. Crossrail will further improve connections to central London, east London and beyond.

18. However, there are no direct rail connections to the south, west or north of Heathrow. In particular, while I was visiting the Iver site with Arup I realised that while the Great Western Main Line (GWML) runs within about two miles of Heathrow, there is no rail connection between the GWML and the airport. BAA are promoting the Airtrack scheme, to provide a new railway south from Heathrow, to Staines and beyond (see Appendix 3) but this has not yet gained statutory authorisation. There are also proposals for a new rail link between Heathrow and the GWML near Langley, to allow services to/from the Thames Valley and further west, but the status of this scheme appears uncertain. And even these proposals seem to be being pursued separately.
19. I received evidence advocating improvements to Heathrow's more local rail connections, either in advance or instead of a connection to a future high speed rail network. Promoting local rail connections may be thought to be outside my terms of reference, though I note that such local connections would help to feed more traffic into any high speed rail station at Heathrow (much as Heathrow serves as a hub for air services, and indeed for long distance coach services). **I agree with those who think that it would be desirable to achieve a more integrated and greater range of local rail connections to Heathrow, with an indication of how they might be integrated with a high speed rail network as well as with other public transport. I recommend that the Secretary of State commissions a separate and independent review of this topic.**
20. **I also recommend that separately or as part of that review the potential for Heathrow to have some airport car parking at a distance from the airport, together with an efficient transfer system for passengers and their baggage, is examined.** The Secretary of State might want to give this further thought because distance parking is starting to happen at other major airports; and it would help to reduce carbon emissions, alleviate road congestion and improve local air quality in the vicinity of Heathrow.
21. During my visit to Heathrow I commented to BAA that some rationalisation of the railway stations at the airport would seem to be desirable, though I recognised that this might be expensive. If possible, in economic and engineering terms, the aim should be to facilitate well signed, easy interchange between the airport terminals and Crossrail, Heathrow Express and the Piccadilly tube line, as well as any direct high speed rail link. Such rationalisation would facilitate use of the airport and help strengthen the business case for further enhancement of rail connections to it.

22. For the reasons set out above, **I judge it to be important that Heathrow should be made as accessible as possible by both high speed and traditional rail infrastructure. In my view this is more likely to take place if a staged building approach is adopted, in accordance with a pre-agreed master plan. This also makes economic and financial sense. I so recommend.**

### **High Speed Rail Network**

23. HS2 Ltd has estimated the cost of a high speed rail network linking London to Birmingham, Manchester and Leeds to be around £30 billion. Developing the system to Scotland, which I hope will become policy, would add to that cost (HS2 Ltd have not yet estimated this figure). Such a system might take between two and three decades to complete. Some elements of the system could be viable and economically beneficial if built at the outset. Other elements will only become viable later in the programme. **I recommend that the phasing of the high speed network is carefully planned, and that this plan should be concluded and agreed within the next two years.**
24. My initial and uninformed reaction to the original estimated £30 billion cost was that it was a lot of money to spend, even if spread over 20 or more years. I believe a project spend of about £1 billion a year could be achievable and beneficial in transport terms, but the project would become more attractive both to government and the taxpayer if the cost was less. It was not my job to consider the affordability of the whole HS2 project. However, the Government's announcements on public debt and spending and the need for retrenchment accord with my own instincts and have influenced my thinking.
25. HS2 Ltd in their report to Government presented a strong case for a terminus station at Euston and an intermediate station on the high speed line at Old Oak Common (five miles from Piccadilly Circus) at which all HS2 trains would call. This would facilitate access via Crossrail and Heathrow Express to and from Heathrow, the West End, the City, Docklands and beyond, and reduce the scale of the additional passenger pressure on Euston (which is two and a half miles from Piccadilly Circus) and the tube lines serving it.
26. HS2 Ltd and Transport for London (TfL) estimate that approximately two thirds of passengers travelling on the high speed line between Birmingham and London, in 2033, would wish to travel to Euston. However, if the final destination of these passengers is not within a few hundred yards of Euston station, they would also need to access the transport system within London. This is time consuming. While high speed rail reduces long distance train times, it is important to remember that this is only one component of most people's overall journey times. Connecting at Old Oak Common on to Crossrail would give a quicker and more convenient overall

journey to many destinations in and around London than would travelling via Euston.

- 27.** The Old Oak Common site is also situated adjacent to two railway lines which form part of the London Overground network, linking Richmond and Clapham Junction in South West London with Stratford in East London. Effectively connecting these lines to the Old Oak Common high speed station would be likely to reduce further the number of passengers wishing to travel to Euston (because it would be more convenient for them to change trains at Old Oak Common). Still further reductions would follow if the London Underground were also connected to Old Oak Common (both the Central and Bakerloo lines pass within about half a mile). I will return later to the proposal of Euston as the London terminus.
- 28.** On 2 June 2010 a report by David Ross and others was published which advocated the construction of a core high speed line from Old Oak Common (with a good interchange with Crossrail) to Birmingham Airport and Manchester Airport, at an estimated cost of some £6 billion for the basic infrastructure. They suggested that city centre linkages, station development and other aspects could be funded (either publicly or privately) and justified separately.
- 29.** This report was published when my review was well advanced and I have not had any discussion with its authors. However, there is much in their analysis which resonated with me, as the first Secretary of State to authorise a Public Private Partnership motorway project in this country. I believe that the Secretary of State might find their report's suggestions worth considering.
- 30.** My recommendations, coupled with the views of Ross et al, suggest that it should be possible to reduce, perhaps considerably, the initial cost to the public purse of the high speed line – not least by questioning the immediate need for the expensive and time-consuming tasks of tunnelling between Old Oak Common and Euston and of rebuilding Euston station. This would be of great advantage in public expenditure terms. I am concerned that adhering to the proposal that Euston should be the terminus from the outset could make the cost prohibitive and therefore threaten the whole project. Having Old Oak Common as the initial London terminus – and calling it the London terminus – might have a further benefit to which I will return.
- 31.** Passengers wishing to make a journey to Heathrow via the high speed line would be able to interchange at Old Oak Common for Crossrail and Heathrow Express trains. TfL told me it believes that existing proposed services could accommodate the number of passengers wishing to travel to Heathrow and added that in the future it should be feasible to coordinate the timetabling of Heathrow Express and Crossrail services to provide a unified 12 trains per hour nonstop/one-stop service from Old Oak Common

to Heathrow. Clearly the Secretary of State will want to confirm this with TfL. In the meantime I will take such a connection via Old Oak Common as my base case, in considering the additional benefits which could be gained by providing direct high speed rail services to Heathrow.

- 32. I recommend that serious consideration be given to making Old Oak Common the initial London terminal for the high speed line – and that in the early stages it be designated London-Old Oak Common (just as Euston would have been designated London-Euston) – and that effective use be made of the £16 billion Crossrail project and other rail and tube connections to provide access to passengers` final destinations including Heathrow.** This is unlikely to add considerably, if at all, to the overall journey times of high speed rail passengers.
- 33.** I have also been impressed by the argument advanced by Ross et al about what could or should be financed by central government, local government and the private sector. I am clear from my visit to Old Oak Common that there is significant potential for private sector development and regeneration at this location which would enhance the passenger experience and help to defray some of the rail cost.
- 34.** If Old Oak Common is to be, at least for some initial period, the terminus for the HS2 high speed line, then some reconfiguring of the station layout would probably be required and more platforms may be needed. I believe, however, that a reliable high speed rail operation should adopt the principle of quick turn-rounds, not least to make maximum use of the expensive infrastructure and trains. All concerned should note that the airline which carries most passengers in Europe has also pioneered quick turn-round times in order to make the most efficient use of its resources. **I recommend that a requirement for efficient, quick turn-rounds at stations should become an integral part of government policy and contracts covering rail operators.**

### **High speed rail access to Heathrow Airport**

- 35.** There are five options for the connecting route to link Heathrow Airport to the proposed high speed rail network that I have considered:
- 1** an interchange at Old Oak Common, as proposed in the March 2010 High Speed Rail Command Paper (Cm 7827);
  - 2** a spur railway between Heathrow and a junction, north west of Old Oak Common, on the route to Birmingham set out in Cm 7827;
  - 3** a railway loop, running from such a junction, through a railway station at Heathrow and then back onto the main high speed line to Birmingham;
  - 4** changing the route of the main high speed line so that it runs via Heathrow; and

- 5 the option proposed by Arup for the main high speed line to run via a Heathrow Hub station on the Great Western Main Line near Iwer.

Proposals to link Heathrow to the existing rail network are dealt with by the recommendation in paragraph 19.

36. HS2 Ltd has made an initial estimate that the capital cost (excluding risk and optimism bias) of a direct high speed link to Heathrow might be between:
- £1.6bn and £2.0bn for a spur;
  - £2.0bn and £3.6bn for a loop connection; and
  - £2.2bn and £4bn for a direct route through Heathrow.
37. The lower end of the costs for each option represents a route that serves a station at Iwer, with the higher end of the costs representing a route via a station at Heathrow Terminal 5 or a potential Terminal 6 (see paragraph 57). I am not attracted to any of these options, as I will explain.
38. HS2 Ltd has undertaken modelling to illustrate the impact of a direct high speed rail connection to Heathrow via either a loop (served by one third of all trains on the HS2 route) or a direct through route. For a high speed line between London Euston and Birmingham, a connection to Heathrow is estimated to result in up to 16,000 high speed passengers per day travelling to Heathrow, but to reduce the total number of passengers using HS2 by up to 2,500 per day. This reduction in total passenger numbers is partly because the majority of passengers wish to travel to London, and for these passengers the longer journey times via Heathrow would make using HS2 less attractive.
39. The passenger demand for Heathrow is estimated to increase as the high speed network widens. In the context of a high speed network to Manchester and Leeds, a connection to Heathrow is estimated to result in up to 32,000 high speed passengers per day travelling to Heathrow, but to reduce the total number of passengers using HS2 by up to 4,500 per day.
40. The HS2 Ltd modelling suggests that a direct high speed connection to Heathrow would be likely to reduce the estimated overall benefit of their proposed high speed route. The benefit of lower journey times for passengers wishing to travel via HS2 to/from Heathrow is more than offset by the increase in journey times for those HS2 passengers wishing to travel to/from London. These overall effects are estimated to reduce the present value benefits of their proposed high speed route by up to £1.4bn (if the Heathrow station were connected to the main HS2 line via a loop), and by up to £1.8bn (if it were connected by a direct high speed line through Heathrow). These figures relate to benefits only, and do not take account of the costs of constructing and operating a Heathrow link, which would further reduce the net benefits. HS2 Ltd has indicated that a connection to

Heathrow by a spur would be even less attractive because it would reduce the number of high speed trains per hour to/from London in order to accommodate a service running exclusively to Heathrow.

- 41.** The illustrative modelling undertaken by HS2 Ltd is based on a train service pattern that seeks to match expected demand for their proposed London to Birmingham route, but on only a generic service pattern for trains stopping at a Heathrow station. A more optimised service pattern for a Heathrow link would better match the supply of train services and the demand to travel to/from Heathrow (which would develop over time). This would be expected to reduce the frequency of trains assumed to serve Heathrow. It would therefore also reduce the number of passengers to London who are expected in the modelling to suffer the disbenefit of a longer journey time. It should also be noted that, although the modelling suggests a disbenefit of longer journey times for passengers to London, those passengers would have a choice. Most HS2 trains would travel directly to London, not via the Heathrow station, and those passengers to London valuing a few minutes quicker journey time would be able to travel on one of those trains.
- 42.** I took into account that a direct high speed link to Heathrow from the north would also be likely to claw back some passengers who currently fly via continental hub airports. The HS2 Ltd modelling has not taken account of these benefits.
- 43.** Another benefit of a direct high speed link to the airport could be that passengers to Heathrow would also enjoy the greater reliability that results from a self-contained high speed route to Heathrow, as compared to part of the journey being on the classic network. There is evidence that passengers travelling to an airport attach a high value to a direct journey, which avoids the risks of missing a connection and the inconvenience of making a connection when carrying heavy bags. The full benefits of these improvements in reliability and convenience have not been reflected in the HS2 Ltd modelling.
- 44.** A direct high speed link to Heathrow is also expected by many to improve the international connectivity of those areas outside London and the South East which are to be served by the high speed rail network, and therefore to add to national productivity. BAA estimate this direct connectivity could add up to £3bn in present value terms to national productivity (on the basis of a high speed rail network to Scotland).
- 45.** Nevertheless, my assessment of advantages, disadvantages and the modelling results is that a direct high speed link to Heathrow fully funded from public expenditure, in the context of a high speed rail network extending only to the Midlands, is not likely to provide a good return on the public expenditure entailed. At least in the early years, this would be a disproportionately expensive option. I am convinced that the nation should

have a clear vision for the future high speed rail network, including a direct link to Heathrow. However, it is also important that there should be a reasonable business case for the measures needed to turn this vision into reality. If the business case is much weaker than the vision, it becomes harder to justify the project. However attractive the vision of a high speed rail link to Heathrow may be, it is important to have some regard to the strength or weakness of the business case, in deciding both how public expenditure should be deployed and when would be the best timing for the expenditure.

- 46. I have concluded and recommend that, in the early stages of a high speed rail network, there is no compelling case for a direct high speed rail link to Heathrow, and that a London-Old Oak Common interchange could provide an appropriate, good quality terminus and connection point to the airport.**
47. In reaching this conclusion, I have been conscious that, while I can recommend that railway infrastructure be built, the use of a high speed rail station at Heathrow by a private sector train operator can only be guaranteed if its operation is required by the contractual agreement to operate on the high speed line. In the early life of such an infrastructure this sort of agreement would not aid the process of finding a train operator.
- 48. In light of this conclusion, it is clear that changing the route of the main high speed line to run via Heathrow, at an additional cost of £2 billion to £4 billion, would connect Heathrow to HS2 at a point in time when this connection is not likely to represent value for money to the taxpayer or the train operator. In any event, such a route is not supported by the evidence of benefits. I recommend that this route should not be pursued.**
49. I am also aware that re-opening the consideration of options for the line of route between London and Birmingham, which routing the main line through Heathrow would entail – which is a matter for the Secretary of State – would be bound to delay public consultation and Parliamentary authorisation. This in turn would delay construction, may add cost, and would push back the date at which the travelling public, both by rail and by air, would start to enjoy the benefits of the project. This was not the prime consideration in my judgement about whether to route the main line via Heathrow, but I have recognised it as a factor.
- 50. However, as the high speed network is extended beyond Birmingham, the case for a more direct high speed rail link to Heathrow becomes more persuasive. As the network expands, and over time, there will be greater demand for access to Heathrow from cities in the North and Scotland, which might well make a direct high speed rail connection to Heathrow (which would be used by some trains) in addition to an airport connection to Old Oak Common, more viable and economically**

**attractive. The evidence presented to me suggests that this would only be in prospect after the high speed network had been extended at least to Manchester and Leeds. I recommend that this option be given the most serious consideration.**

51. The point in time at which it would become attractive to provide a direct high speed rail link to Heathrow could be brought forward if a considerable contribution to the costs were to be received from the private sector. Such a contribution would both make the scheme more affordable and offer better value for whatever public expenditure would still be required.
52. In order to facilitate a subsequent link to Heathrow, **I recommend that when the high speed line from London-Old Oak Common to Birmingham is built, appropriate junction engineering works should be included to make it possible for a high speed loop through Heathrow to be built at a later date.** I understand that engineering the necessary junctions when the line is first being built would be both less expensive and less disruptive than engineering them after the main line is in service.
53. Arising from my visits to the European hub airports, and to maximise passenger benefits, **I also recommend that early work be undertaken to enable rail/air through ticketing to be an integral part of any new high speed rail link to Heathrow.**

### **Slot Allocation**

54. Many of the potential benefits of a high speed railway to Heathrow are linked with replacing domestic and other short haul air services by high speed rail services and with making the best use of the Heathrow runway slots thereby freed up. Achieving this would help to increase the number of passengers using Heathrow, which in turn would expand the market for high speed rail access to Heathrow. The allocation of airport runway slots might seem at first glance to be far removed from my terms of reference. However, because of the continually changing use of Heathrow's runways, I think this is something to which I should gently draw the Secretary of State's attention. **I recommend that the Secretary of State gives serious thought to developing a more transparent, economically viable, user-friendly and competitive policy system of runway slot allocation.** The hub airports I visited acknowledged that the current system of slot allocations inhibits a smooth transition to a greater number of long haul services, and is therefore relevant to the case for high speed rail links to airports such as Heathrow. So called "grandfather" slot rights at airports serve the interests of the airlines; usually historic national airlines. In my view a system should be devised more to the benefit of passengers. I recognise that such a change is a European rather than simply a national issue and would urge the Secretary of State to champion the cause of passengers in Brussels. Achieving success will not be easy but seeking to do so would sit comfortably with the ethos of the new government.

### **Heathrow high speed rail station location**

55. I am clear that, to achieve the benefits of a direct high speed rail connection to Heathrow, albeit initially using Crossrail and other rail systems as the link, it would be desirable for a high speed rail station to be conveniently located at the airport itself, in order to provide the best possible passenger experience.
56. It is the importance of creating the best passenger experience which leads me not to recommend a station at Iver. A station there would provide a slower total journey time, both due to the greater distance of travel to the airport terminals, even using automated people movers, and because it would require all rail/air passengers to transit two stations (at Iver and at their terminal) rather than just one. Interchanging at two stations rather than one would also be less convenient. Neither of these is likely to increase the use of the service.
57. Given that one consequence of the Government's decision not to support the construction of a third runway at Heathrow is that Terminal 6 is unlikely to be built, there are three realistic options for the location of a high speed rail station. These are at the Central Terminal Area (CTA), at Terminal 5, or just north of the existing airport perimeter, alongside the Bath Road (on land currently largely occupied by airport car parking). BAA estimate that the costs of each of these options, including airport transit links, would be some £1.8 billion to £1.9 billion.
58. **I prefer a site for a Heathrow high speed rail station at the Central Terminal Area, which would complicate the engineering, but be of maximum utility to the maximum number of travellers. Rapid links to all terminals by automated people movers should be provided. One advantage of the CTA option is that it would be easier to provide short and rapid connections by people mover to all of the airport terminals. I so recommend.**
59. I am aware that at the continental hub airports the high speed rail station is located in or adjacent to the terminal which serves the national airline. In the UK we do not have a national airline, and, anyway, it is my view that it is the passengers who should be facilitated, rather than any particular airline.

### **Connection with HS1**

60. I was not asked by either Secretary of State to look at whether or how Heathrow might be linked seamlessly to High Speed 1 (the existing high speed railway from London-St Pancras to the Channel Tunnel). As I have said, my view is that initially the London terminus of HS2 should be at London-Old Oak Common. However, when more of the proposed network has been established (and in keeping with the staged procedure advocated earlier) an additional more central London terminus might be appropriate for high speed rail. If this analysis is accepted, then in the intervening years

further work should be undertaken to explore whether such a central terminus could be so located that it would serve HS2, HS1 and perhaps the Heathrow Express and Crossrail. Such an exploration need not hold up work on a new high speed rail network, nor be allowed to do so.

61. I have been impressed by the negative criticism expressed to me about the building of new railway infrastructure with presently proposed London termini at St Pancras, Euston and Paddington. **Clearly it is for the Secretary of State to decide whether the original vision of a through train service from Scotland and the North East, the North West and the Midlands of England to Paris and beyond should become a reality. I recommend that further work on this issue be authorised urgently by the Secretary of State.** To me it is seminal to the issue of high speed rail and its access to Heathrow.
62. Only once in a generation, or less frequently, do we as a nation think strategically about national transportation. With the concept of high speed rail we are at such a moment. I believe we should grasp the opportunity with maximum, though realistic, vision.
63. In that spirit it seems sensible to me to link Heathrow into a high speed rail network which might extend from Scotland to Paris. Clearly, it is both right and important to develop confidence in the business case. This does not need to be overwhelmingly positive, but it does need to be reasonable enough to enable the Secretary of State to take a major decision in the national interest. It makes sense if possible to create a seamless link between HS1 and HS2, and I believe such a decision would be popular. We should aim to deprive our grandchildren of the opportunity to criticise our lack of vision or determination – as long as this can be achieved in a way that taxpayers deem reasonable.

### **Conclusion**

64. The project to construct a high speed rail network is likely to extend over 20 to 30 years and be broadly welcomed. The outline plan for this project should be decided now, taking into account the need to control public expenditure. It should also recognise that the use of the new railway would build as time passes and as more track is laid. It follows that elements which are not financially viable in the near future could become more viable over time. So there is merit in developing the project in a staged way which is sympathetic with that reality. I am confident that these recommendations can enhance the international competitiveness of Heathrow and improve the quality of the public's experience of rail services. Both are in the best interests of the nation and the travelling public.

# Appendix 1 – Evidence from Meetings

In the course of the review I invited a number of organisations to meet me. These organisations are listed below and concise notes of the meetings with those who accepted are included in this appendix.

- ARUP
- BAA
- British Air Transport Association (BATA)
- Campaign for Better Transport
- Campaign to Protect Rural England (CPRE)
- Greengauge 21
- Hillingdon Council
- Mayor of London
- Network Rail
- Transport for Scotland
- WWF

**Meeting with ARUP, represented by Alan Belfield, Mark Bostock, Peter Murray and Peter Gist, on 21 April 2010**

It was agreed the witnesses had not previously met Lord Mawhinney.

Arup made a short opening statement. Their proposal for the Heathrow Hub was supported by businesses to the West of Heathrow, SNCF, the Conservative Party and very strongly by airlines, and remained under consideration by BAA. Aligning the main high speed line directly close to Heathrow was better than connecting Heathrow via a loop or spur. They had considered station sites within the airport boundary, which were good for airport connectivity, but not good for connectivity to rail routes. The connection to the airport terminals would be via an Advanced People Mover, along a largely tunnelled route and with a maximum journey time of 7 minutes. The airport community agreed that this could be provided as an extension of the on-airport APM which was being planned.

Arup said that their proposal offered environmental benefits, in that it would achieve the greatest shift from road and air travel to rail, and would traverse the narrowest part of the Chilterns. It would avoid the expensive duplication entailed by a loop or spur, and would be hundreds of millions cheaper than the cheapest loop option. It could be built in phases, and would lever in private sector investment.

Lord Mawhinney asked whether they thought BAA would agree that the Hub should include an airport terminal. Arup said that BAA liked the fact that the Hub would be on the GWML, to improve access to the Western market, and would be on the HS2 main line, but were less keen on it including an airport terminal.

Lord Mawhinney asked, if there was not a complete terminal at Iver, what airport facilities might be provided there. Arup said that at the minimum there would be check-in and bag-drop facilities. Passport control and security could be either at Iver or Heathrow. If at Iver, this would require a segregated APM system. The cost of the APM and baggage transfer system would be between £500 million and £900 million, depending on how it would fit in with the wider APM system which BAA was planning. The airlines would pay the charges for the APM and baggage connections.

Lord Mawhinney asked why Arup proposed phasing all the other elements of their proposal ahead of the HS2 element. Arup said that this was partly to improve the business case, and because private sector funding could be obtained for the first phase, and partly because stage 1 could be completed before HS2 could be. Stages 2 and 3 could be done concurrently.

Lord Mawhinney asked about the form and scale of private sector funding. Arup said that the airlines and airport would be major beneficiaries, and wider development at the Hub site could also help to offset costs – this would depend on how much development would be permitted on this greenbelt land. Cordon

charging around the airport could also contribute. Arup undertook to provide further information on private sector funding.

Lord Mawhinney asked how this additional investment in the South East might be perceived in the Midlands or the North. Arup said that theirs was the only proposal which gives direct rail access to Heathrow from the North.

Lord Mawhinney asked why the Arup proposal was superior to the Greengauge 21 proposal. Arup said that they did not agree with the Greengauge 21 proposal, because their view was that only the Arup proposal would achieve a shift from air and road to rail. The international connections proposed by Arup were also important.

Lord Mawhinney asked how the costs of constructing the Arup and HS2 main lines compared. Arup said that their route would cost some £2bn more, and this broadly corresponded to HS2's estimate of the difference.

Lord Mawhinney asked why the taxpayer should pay for such additional costs if most high speed rail passengers would want to travel to London, not Heathrow. Arup said that, in addition to the wider benefits to which they had already referred, their proposal also had the benefit of providing access from the Great Western Main Line. The time penalty for travellers to/from Euston would be three minutes.

Lord Mawhinney asked whether the Arup main line would have 2 or 4 tracks. Arup said that it would have 2, and they envisaged Javelin style trains operating services on the line out to Princes Risborough, diverging there onto the classic rail lines, in order to provide benefits to the areas which would suffer disbenefits from the construction of the railway.

### **Meeting with BAA, represented by Colin Matthews, Mike Forster and Nigel Milton, on 21 April 2010**

It was agreed the witnesses had not previously met Lord Mawhinney.

Opening, BAA made three points:

- Today, many long-haul passengers from the regions of Britain have to make two flights, connecting at a hub airport which was often not Heathrow. High speed rail could provide a much better experience for the passenger and reduce carbon emissions.
- Passengers would only choose high speed rail if it offered a good frequency of services, and a high level of convenience – a tricky interchange would be no good.
- The business case was crucial and it would be important to understand properly the economic benefits, both for the regions and London.

BAA and the airlines both strongly preferred a high speed rail station to be at or near the airport, rather than a remote location such as Old Oak Common, which would not provide the good passenger experience needed to persuade people to switch from air to rail. The continental hubs with which Heathrow competes all have a high speed rail station located near to the terminal of the home-based carrier. This led BAA to favour an at-airport station, and they were keen that most passengers should be able to walk directly from rail station to terminal. A station adjacent to Terminal 5 had some attractions, but BAA would do further work on this and options at a potential Terminal 6 and at the Central Terminal Area (CTA) which would have the largest passenger traffic.

Lord Mawhinney asked about benefits to the national interest. BAA said that the carbon benefits would be in the national interest, as would the benefits to the national economy of being better connected to the global economy.

Lord Mawhinney asked what facilities BAA would require or prefer to be at Iver if that was the high speed station. BAA said that it would be essential for it to feel to the passenger like arriving at the airport – with level journeys, trolleys for baggage, and perhaps a check in facility. They would need to study the options for dropping off bags. To have passport control at Iver would lead to duplication of landside and airside systems and add to complexity, whereas their objective was to reduce complexity.

Lord Mawhinney asked about potential improvements to rail links from the South East and South West to Heathrow. BAA said that there were three projects: Airtrack, Crossrail and a connection to the Great Western Main Line. These were all in the shorter term than high speed rail, and did not compete with it; both were needed. BAA were going to do more work on the connection to GWML; an attractive scenario would be for all Crossrail trains to run through Heathrow and back onto the GWML via a Western connection, to serve stations in the Thames Valley such as Slough, Maidenhead and Reading.

Lord Mawhinney asked about the ability of the airport to fund the connections between the airport terminals and a high speed rail station at Iver. BAA said that the airport probably could support this, without relying on commercial development at Iver.

Lord Mawhinney asked whether, if a high speed rail station was at the airport itself, this would enhance the size of the funding contribution which the airport could provide. BAA said that it must enhance it a bit, because this would be a better option for passengers, and so provide greater income for the Heathrow airlines.

**Meeting with Greengauge 21, represented by Jim Steer and Julie Mills, on 21 April 2010**

It was agreed Julie Mills had not previously met Lord Mawhinney, and that Jim Steer had once met him when Secretary of State for Transport, as part of a consultation, but the meeting was not determinant of Government policy.

Julie Mills described the development of Greengauge 21 over the last four years.

Jim Steer said that, although they estimated 10% of Heathrow air passengers could be switched to rail with a full high speed network, the business case for any form of high speed rail link, whether spur or loop or main line to Heathrow, was weak, if this was aimed only at diverting air passengers. They agreed with HS2 that it did not make sense to distort the main North-South route via Heathrow, because this would slow down many journeys. Their Public Interest Group favoured connections to Heathrow, but did not want to compromise the advantages of the high speed rail link to central London. While Old Oak Common might have other virtues, the HS2 analysis was that few people would use that interchange to access Heathrow.

So the Greengauge proposal, building on the parallel of the TGV connection to Paris Charles de Gaulle airport, was to provide through high speed rail routes serving Heathrow. The business case for a high speed network serving Heathrow was good, and had been costed at a little over £3billion. As well as serving Heathrow, it would deliver large benefits by serving other parts of South East England – which had a travel market as large as London.

If the Heathrow connections were not included in the next stage, proper provision should be made for the necessary junctions on the main high speed line, because it might be much more disruptive and expensive to install the points and track after the main high speed line was in service.

Lord Mawhinney asked how Greengauge 21 would reconcile their proposals with his terms of reference. Jim Steer replied that while some of the benefits of their proposal did fall outside the terms of reference, their proposal did include a solution to his remit, and if a more restrictive view of the terms of reference was taken, the conclusion would have to be that there was no business case for a high speed rail connection to Heathrow.

Lord Mawhinney asked how their estimated benefit to cost ratio of 5:1 would be altered if based on a high speed rail network to Leeds as well as to the West Midlands and Manchester. Jim Steer said that this would probably further improve the benefit cost ratio.

Lord Mawhinney asked about the basis for the estimated transfer of 10% of Heathrow air passengers, out of a total 19% in scope. Jim Steer said that the 19% was based on work done in 2006, in which they had assessed which destinations might be within four hours by rail from Heathrow (at which journey length they would expect rail to attract 50% of the demand). The 10% estimate was based on more detailed modelling.

Lord Mawhinney asked to what extent Manchester Airport was an alternative to Heathrow. Jim Steer said that there was a lot less choice of long haul flights from Manchester – Heathrow totally dominated the UK market for long haul business flights.

Lord Mawhinney asked about Greengauge 21's priorities: if public money was limited, would they prioritise: (1) high speed rail from London to the Midlands, Manchester and the North East, or (2) upgrading existing railway lines and connecting the South East and South West into Heathrow. Jim Steer said they would prioritise option (1).

**Meeting with Stephen Joseph (Campaign for Better Transport), Peter Lockley (WWF – UK) and Ralph Smyth (CPRE) on 28 April 2010**

It was noted that Stephen Joseph had previously worked with Lord Mawhinney when he was Secretary of State for Transport.

Stephen Joseph (SJ) explained that the three organisations had not done detailed work on this topic, but they wished to set out the context for consideration of the business case for a high speed rail link to Heathrow. They suggested that Lord Mawhinney could recommend that DfT should commission more sensitivity testing than had been possible for HS2 in the time available. For instance, the assumption on future levels of air and rail fares might be changed, not least by the 2009 Government policy that carbon emissions from aviation in 2050 should be no more than in 2005. No growth in car traffic was also in their view a realistic scenario, which had been considered by the Climate Change Committee (CCC). Ralph Smyth (RS) said that CPRE considered that there needed to be an end to growth in motor traffic. Emissions trading would add to the pressure for this.

Lord Mawhinney referred to statements by Lord Adonis that improvements in the efficiency of aero engines would permit both an increase in travel and reduction in carbon emissions. Peter Lockley (PL) said that the CCC's "likely" scenario was for an annual efficiency improvement of 0.8%, compared to the DfT assumption of 1.5%

Lord Mawhinney asked about the overall views of the witnesses relating to a high speed rail link to Heathrow. SJ said they did not favour a high speed link, and supported a connection via Old Oak Common. The only context for revisiting this conclusion would be the network proposed by Greengauge, but this would be far into the future. RS said that the key issue driving high speed rail is that rail capacity will run out, so he agreed that a connection via Old Oak Common was preferable. A Heathrow high speed link would give CPRE concerns about green belt and highways impacts, especially if Heathrow were to become a parkway station.

Lord Mawhinney asked about how they would prioritise between environmental, economic and social objectives. SJ said this now needed to be considered within the key driver of the Climate Change Act. RS said that CPRE did not accept that a high speed link to Heathrow would reduce carbon emissions. PL said that the key objective for high speed rail should not be to "feed the beast of Heathrow", but link cities, and to the Continent, which would be best for the economy and the environment, as long as it secured transfers from cars and air to rail. SJ added that a link between HS2 and HS1 was far more important than a link to Heathrow.

Lord Mawhinney asked about the trade-off between fewer domestic flights at Heathrow and more long haul flights. PL said that the Government target for aviation carbon emissions in 2050 provided a top-down control, so Government did not need to micro-manage.

Lord Mawhinney asked about their views on the options for stations at Iver and Heathrow. RS said CPRE were concerned about the Iver option, since this was in the green belt. SJ said that CBT had not done enough work on this to have a view.

**Meeting with Roger Wiltshire (BATA), Steve Ronald (British Airways), Huw Hopkins (BMI) and Nathan Stower (Virgin Atlantic Airways) on 12 May 2010**

It was noted that none of the witnesses had had any previous dealings with Lord Mawhinney.

Steve Ronald (SR) said that British Airways (BA) were very supportive of the principles of high speed rail, and were convinced of the need for a high speed rail station at or near Heathrow, so as to provide an integrated network and deliver the greatest benefits. The proposal made by HS2 Ltd did not link into the airport at all. He urged Lord Mawhinney to consider the whole system and the total benefits.

While Heathrow had good rail connections to London, there are no rail links to the North, West or South, which resulted in people either driving or flying to Heathrow or flying via a connection at another European hub airport. As well as a high speed rail link, links to classic rail lines were also required.

BA had submitted modelling analysis to HS2 Ltd, which Lord Mawhinney would consider. In short, around 4 million passengers a year fly from UK regions to Heathrow to connect to other flights, and more than 5 million passengers a year fly to continental airports to connect there, giving a total potential market for transfer from air to a Heathrow high speed rail link of some 9 to 10 million passengers a year, in addition to which there would be some transfer from car to rail.

Nathan Stower (NS) said that Virgin Atlantic wanted the best possible rail passenger experience, which meant a station on the airport. The station should not favour any specific terminal and should not disturb the Heathrow Express service. SR said a station at or near the airport would be equally attractive; a station near the airport could give better integration with other rail services, while a station at the airport would be better for air passengers.

In reply to a question from Lord Mawhinney about integration between the existing West Coast Main Line and Heathrow, NS undertook to provide a response.

Huw Hopkins (HH) said that it would be a missed opportunity if a direct high speed rail link to Heathrow was not provided. While this would be costly, the risk of not providing a link was that if this was wanted later it would cost a lot more.

Lord Mawhinney referred to the evidence from BAA that over the last two decades the number of UK airports with flights to Heathrow had fallen from 23 to 6, and asked about the future prospects. SR said that the cap on Air Traffic Movements of 480,000 per year would put pressure on airlines to give up their least economic services. HH said that, if there was a high speed rail station at Heathrow, flights from Manchester would probably not be sustainable, but flights from Edinburgh and Glasgow would continue for much longer.

Lord Mawhinney asked what would be the increase in traffic from the UK regions connecting via continental hubs between now and the opening date for a high speed rail line. SR said that BA would model this and provide an estimate.

Lord Mawhinney asked at what stage in the construction of a high speed rail network a link to Heathrow should be built. SR said it should be in the first stage. Between now and then, the rail links to Heathrow should progressively be improved, including first Airtrack and Crossrail, then a link to the Great Western Main Line, and then possibly extend that to the Chiltern Line.

Lord Mawhinney asked whether the airlines would be willing to make a financial contribution to rail links. SR said that the airlines had already contributed to rail links such as Heathrow Express and the rail extensions to Terminal 5, and would be willing to provide contributions in the future, proportionate to the benefits they would receive (which would not be in the billions since the option of providing an air service would still be there).

Lord Mawhinney asked whether trains could replace short haul air services in the future. Roger Wiltshire said that they could, and would free up slots which could then be used for long haul services. SR said that over the last 10 years the growth of long haul services at Heathrow had squeezed out short haul services, but as a hub airport Heathrow needed short haul frequency to feed passengers onto long haul services.

### **Meeting with the Mayor of London and Transport for London (TfL) on 3 June 2010**

The Mayor of London was supportive of a high speed line connecting London to Birmingham, the North of England and Scotland.

TfL commented that the number of passengers arriving on a high speed line into Euston would be significant and that a station at Old Oak Common, with its interchange with Crossrail services, was an important contributor to accommodating additional passenger numbers into the central London transport network.

TfL commented that the number of passengers on the high speed line wishing to travel to Heathrow Airport is expected to be relatively low and it was expected that Crossrail services to Heathrow would provide sufficient capacity to accommodate these passengers.

TfL commented that Heathrow Airport does not have a single terminal and that a station at Heathrow Airport would still require at least some passengers to change to reach their airport terminal.

Lord Mawhinney asked how Crossrail services, with their stopping pattern, could be considered to provide a high speed link to Heathrow Airport for those passengers travelling to Old Oak Common on the high speed line. TfL commented that Heathrow Express services provide a non-stop service into Heathrow Airport and that it may be possible to devise a stopping pattern for Crossrail services that reduces the number of intermediate stops to Heathrow Airport. TfL would submit further evidence on the possibility of such a stopping pattern.

Lord Mawhinney asked for the views of the Mayor and TfL about a high speed link to Heathrow Airport, given that the airport's main competitors on the continent all linked to a high speed rail line. The Mayor commented that with a two runway airport there would need to be creative ways to maintain the competitiveness of airports within the country. The Mayor said that he was not against the idea of a high speed station at Heathrow Airport but that it should not be as a substitute for a station at Old Oak Common. TfL commented that they had assumed that there could only be one station at either Old Oak Common or at Heathrow Airport, but that a station at Heathrow Airport could complement one at Old Oak Common.

The Mayor commented that he could see high speed line as a strategic network that connected Scotland and the North of England with Heathrow and London and into Europe through a connection with High Speed 1.

Lord Mawhinney asked whether the Mayor or TfL were aware of studies into how well the existing transport infrastructure is linked into Heathrow Airport and whether they had a view. TfL commented that they only consider airport surface access when looking at proposals that affect airports. The Mayor commented that he would welcome a study into whether the existing transport infrastructure could be more effectively linked to the airport.

# Appendix 2 – Information Commissioned

In the course of the review I commissioned specific pieces of work. These included modelling and forecasts of passenger numbers and benefits of linking HS2 to Heathrow. The outputs of these pieces of work are published alongside this report on the Department for Transport website.

# Appendix 3 – Written Evidence

In the course of the review I received written evidence from a number of organisations. These organisations are listed below and the written evidence, from those organisations that provided permission, is published alongside this report in the Department for Transport website. For those organisations indicated with an asterisk, the copyrights to the evidence are held by the organisation concerned, and to reproduce the material you will need to obtain permission from them.

- Advantage West Midlands\*
- Air Transport Users Council\*
- Airline Operators Committee
- ARUP\*
- British Airways\*
- BAA Airports Ltd\*
- British Midland Airways Ltd\*
- Buckinghamshire County Council\*
- Campaign for Better Transport
- Chelsfield\*
- Civil Aviation Authority
- Greengauge 21
- Hillingdon Council
- London Borough of Hounslow
- The Manchester Airport Group Plc
- Manchester City Council
- Network Rail
- Moving Forward: The Northern Way\*
- Leader of Liberal Democrats on Richmond Council

- SEEDA
- Slough Borough Council
- South Bucks District Council
- Star Alliance
- Mayor of London / Transport for London
- Transport Scotland\*
- Wandsworth Council

# Appendix 4 – Site Visits

In the course of the review I visited sites for high speed rail stations at Heathrow, Iver and Old Oak Common. I also visited Amsterdam Schiphol, Frankfurt and Paris Charles de Gaulle airports and discussed with them their experience of high speed rail operations to those airports.

Concise notes of these visits are included in this appendix.

## **Note of visits to Old Oak Common, Heathrow and Iver, on 12 April 2010**

On 12 April 2010 Lord Mawhinney, with Mike Fawcett and Vinal Karania, visited the sites proposed for a high speed rail station at Old Oak Common, Heathrow and Iver.

### *Old Oak Common:*

At Old Oak Common Lord Mawhinney was accompanied by a representative from HS2 Ltd, who explained the proposal which had been put forward by HS2 Ltd for a high speed rail station at Old Oak Common which would provide a connection with Crossrail and Great Western Main Line services.

The main additional topics of discussion were on the opportunities for redevelopment of adjacent land, the scope for connections with the West London Line railway, and the possibility of providing airport check-in facilities at Old Oak Common.

Lord Mawhinney asked HS2 to provide concise notes on:

- (a) their work on station options at Heathrow; and
- (b) their consideration of Paddington as an option for an interchange station.

The notes which were provided by HS2 Ltd can be found in Appendix 2 of this report, which is published alongside the full report on the Department for Transport website.

### *Heathrow:*

At Heathrow Lord Mawhinney was accompanied by representatives from BAA, who explained the work they had done and were doing on options for the location of a high speed station. The main options were:

- below the Central Terminal Area;
- west of Terminal 5, on a broadly north-south alignment;
- north of the existing airport boundary

Whichever option was chosen, it would be desirable to provide rapid connections by a tracked transit system to all the terminals. It might be possible to rationalise and simplify the network of tunnels under the Central Terminal Area, in order to provide two main “front doors” to the airport for passengers arriving by public transport – at the Central Terminal Area and at Terminal 5.

Lord Mawhinney also asked BAA about the Heathrow Hub at Iver proposed by Arup. BAA said that from their point of view this would be a significantly better option than Old Oak Common, as it would be possible to provide an airport style passenger experience at Iver, with baggage trolleys, and a tracked transit to the terminals; the connection to GWML was also an advantage. Such a Hub could potentially include remote check-in and bag-drop facilities, but not a full terminal – and baggage facilities would also need to be retained at the terminals, in order to facilitate speedy connections between flights.

### *Iver:*

At Iver, Lord Mawhinney was accompanied by representatives from Arup, who explained their proposal for the Heathrow Hub, which was substantially different from the option at Iver considered by HS2 Ltd. The Arup option would include a tracked transit to all the airport terminals, via Terminal 5. All the main landowners supported the Arup proposal in principle. The first stage of the Arup proposal was to provide a link to Heathrow for GWML trains, as rail connectivity between Heathrow and the West is currently poor.

### **Note of visits to Paris Charles de Gaulle, Amsterdam Schiphol and Frankfurt airports on 14 and 28 May 2010**

Lord Mawhinney, with Mike Fawcett, made visits under the auspices of the Department for Transport to Paris Charles de Gaulle and Amsterdam Schiphol airports on 14 May, and to Frankfurt airport on 28 May, and in all three cases had discussions about high speed rail links with representatives of the airport management.

*Paris Charles de Gaulle (CDG):*

The CDG representatives said that the TGV station at the airport had been built in 1994. The costs of the facilities had been shared by the Ile de France Regional Council, the French Government, Aeroports de Paris and SNCF. In 2008 3.4 million passengers had used the station (2.5 million connecting with air services), compared to 0.9 million in 1999. There were now 65 towns and cities connected by rail to CDG, and for 35 of these the rail journey was under three hours. Their experience was that 90% of passengers would use high speed rail where the rail journey was under two hours, and nearly 70% would where the rail journey was under three hours.

The TGV station had been built at Terminal 2, used by Air France, rather than Terminal 1, because Terminal 2 was used by more passengers and was experiencing more rapid growth. Integrated rail/air tickets were available, but few passengers used this. The average connecting time for passengers transferring between rail and air was four hours.

Some 70% of surface access journeys to/from CDG were by road, including bus, and 30% by RER. They were planning an express rail link to/from Paris. The airport had 27,000 car parking spaces, some under the terminals and others more distant, connected by an automatic people mover system (10 minutes journey).

*Amsterdam Schiphol:*

Schiphol explained that the airport worked closely with the railway infrastructure company and the train operating company. All were owned wholly or largely by the Dutch Government, who would resolve any disagreements.

Schiphol had included a rail station from the outset (1968), and the station was expanded from four to six tracks, at the same time as a new airport pier was built above it.

There are virtually no domestic flights within the Netherlands – only to/from Maastricht. About 40% of Schiphol air passengers whose journey originated in the Netherlands arrive at the airport by train; and a high portion of arriving air passengers whose destination is in Amsterdam also use the train from the airport.

International high speed rail traffic in 2009 was 6 million passengers, of which 20% were travelling between France and the Netherlands. Most of these 1.2 million passengers were switching from road to rail, and 10% of the 1.2 million travelled between Schiphol and France.

In the future, the airport wished to continue growing, but it had environmental capacity limits, so it would be necessary to phase out short haul flights, so as to allow growth in long haul flights. KLM wanted to replace flights under 500kms with rail services. However, modal shift to date was limited; a few years ago, they had expected five million passengers a year to shift from air to rail, but half this number now appeared more realistic.

At present, integrated rail–air ticketing is not provided. There had been several ideas for this, but the air and rail operators were very different organisations, and there were particular problems relating to liability for connections missed as a result of delays or cancellations. However, it would be reasonable to expect these difficulties to be overcome within the next five years, and also for a baggage transfer service to be provided (for a charge).

The main car parking is within walking distance of the terminal, and there are bus transfers from the long-term car parks. Schiphol was studying the possibility of an automated people mover system, both to provide greater capacity and for environmental reasons. They were also considering more remote car parks, especially for staff, in order to reduce car traffic in the vicinity of Schiphol; but this was at a rudimentary stage.

### *Frankfurt:*

The Fraport representatives described the history, vision and business activities of the company. The airport currently had three runways, with a total capacity of 82 slots per hour, and a fourth runway, which would increase this to 120 slots per hour, was currently under construction, to open in 2011.

Their objectives for intermodality were the interconnection of surface transport modes and air along the whole travel chain. It embraced products, services and infrastructure. And the objectives were seamless service quality and minimising connecting times.

High speed rail connections could expand the airport catchment area, lead to modal shift from car and air to train, and free up airport slot capacity (through services being switched from air to rail). If all airports were likely in the long term to face constraints on runway capacity, high speed rail connections would allow some runway slots to be switched from short-haul to long-haul flights, which would improve the airport's profitability.

Fraport had opened a regional rail station, located under Terminal 1, in 1972, which was served by intercity trains from 1985. The high speed train station, located adjacent to Terminal 1, was opened in 1999, and the high speed line to Cologne was opened in 2003. In 2010 there are 174 high speed trains a day serving the airport station, which in 2008 handled 6.9 million passengers, of whom 5.2 million were connecting to/from air services.

Deutsche Bahn had special ticketing arrangements for train journeys to all German airports and Schiphol. There were code-share arrangements with some airlines, and flight check in facilities at some rail stations. The remote check-in of baggage at the originating rail station had been withdrawn in November 2007, because this had proved too costly.

The rail journey from Frankfurt Airport to Cologne now takes 57 minutes, and there is a better than hourly service. As from November 2007, Lufthansa had withdrawn

all flights between Cologne and Frankfurt (previously six per day in each direction). The rail journey time to Stuttgart was 71 minutes, but the service is less frequent than to Cologne, and on this route Lufthansa continues to operate six flights per day in each direction.

High speed long distance trains now carried 19% of originating air passengers at the airport, compared to 8% in 2000, and it was planned to increase this further to 30% by 2015.

The experience of other German airports had been very different. A loop of high speed railway had been built to serve Cologne/Bonn Airport, but this had added 15 minutes to the rail journey time, and as a result the loop was little used. Dusseldorf Airport is 2 kilometres from a high speed railway, and a station had been built, connected to the airport by a people mover system. This station was at one stage served by around 100 long distance trains per day, but in 2005/06 Deutsche Bahn announced that the demand did not justify this level of service and reduced the number of trains stopping by 75%.

Lord Mawhinney and the Fraport representatives discussed runway slot allocation. Fraport said that the European Commission had recently announced that they were intending to bring forward next year a package of proposals covering runway slots and ground handling at airports





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