
HOUSE OF COMMONS TRANSPORT SELECT COMMITTEE

RESPONSE BY *RAILFUTURE* TO HIGH SPEED RAIL (HSR) INQUIRY (*REVISED VERSION*)

This response is made on behalf of *Railfuture*'s Policy Committee. Railfuture is the campaigning name of the Railway Development Society Ltd., a not for profit company limited by guarantee.

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Summary: Whilst *Railfuture* supports in principal a new high-speed line between London, the Midlands and the North, it remains our view that the primary function must be the provision of new capacity and congestion relief on the three principal main lines to the North, not just the West Coast main line. Since the most effective way to maximise capacity is achieved by diverting long distance services away from existing main lines it makes sense to design new routes for high speed running.

However, we are concerned that designing the new route for operating at up to 400kmh (250mph) is unnecessary and inappropriate for Britain's needs, given our population density and the relatively short distances between major cities. Such a speed would create an inflexible route, which would fail to optimise connectivity and will increase energy consumption, seriously weakening the environmental case for HSR.

We would also express concern about current proposals to operate 400m long trains built to UIC-c loading gauge that could only operate between London and a new station inconveniently sited at Curzon Street in Birmingham, therefore necessitating the construction of second train fleet built to UK loading gauge for operating services beyond the high speed route and into existing city centre stations. It is our belief that the entire train fleet should be capable of being fully integrated with the existing rail network and construction of a standard, go anywhere design, would reduce construction costs.

The business case also appears to be weak on two counts. Firstly, the over emphasis on the value of small time savings, a much criticised aspect of appraisal methodology, and what appears to be over optimistic predictions for passenger demand, most of whom would simply be transferring from existing inter city services. Modal switch from domestic aviation would be modest since rail already dominates this market except for London-Scotland and cross-country routes.

The need to provide a connection to Heathrow airport is contentious. Only five domestic air routes now serve Heathrow with the majority using Luton, Stansted and London City airports. Access to Central London by the shortest route would therefore achieve optimum mode switch from aviation. The proposed interchange station at Old Oak Common could indeed provide connections to Heathrow Express and Crossrail but it would also narrow the route options to that through the Chilterns, which is already generating significant opposition. An alternative route using the M1 corridor would be far less controversial and provide superior connectivity to the east and west midlands and the north. High-speed services to Heathrow could be operated by use of the Dudding Hill loop, which would need to be electrified, and thence to the Great Western main line connection to the airport.

We note that the current upgrade work being carried out on the LU Circle and Hammersmith & City lines will increase capacity by some 65% and Heathrow Express and Crossrail services would be available at Paddington station, only four stops away from Euston Square. We also note that Crossrail 2 (the so called Chelsea-Hackney line) will now have a station at Euston as well as Kings Cross/St Pancras. A link to Euston and St. Pancras by the Docklands Light Railway has also recently been suggested by Transport for London (TfL) and this would make the Euston station complex a major transport interchange.

In our response to the questions below, we have tried to produce an objective view from a national standpoint and without local self interest bias either for or against HS2, with the aim of providing a balanced conclusion.

- 1.1 **The case FOR HSR:** Driven partly by road congestion, growing environmental awareness and rising oil prices, Britain's rail network is now carrying more passengers than at any time since 1928. This has been achieved on a network that is roughly half the route length that it was in 1928 and with a significantly smaller train fleet. As a consequence, overcrowding on many services is now endemic and the system is running out of capacity on many routes.
- 1.2 Demand for rail services is likely to increase still further as the population grows and modal switch to rail from aviation and road transport will continue to be driven by ever higher oil prices and growing environmental concerns and this will be in spite of recent statistical evidence showing that people are now travelling less overall. Mode shift from aviation would be limited mainly to the London-Scotland routes however, since rail already has 79% of the air/rail market between Manchester and London, 70% between Leeds and London and 100% between both Liverpool/Birmingham and London and 60% between Newcastle and London.
- 1.3 In spite of recent upgrade work, the West Coast main line will be full to capacity by 2020 if current growth rates are maintained. In common with our other principal rail routes, the West Coast main line is a mixed traffic railway carrying fast inter-city services as well as slower regional passenger services and freight. It is the mixed nature of this traffic that constrains the capacity of our principal rail routes.
- 1.4 Without significant investment, the East Coast and Midland main lines will soon be full to capacity as well and there is a growing need for new routes. Since the most effective way to maximise capacity on the existing network for essential improvements to regional passenger and freight services is to narrow the speed differential by removing the fast inter city services, it would make sense to build new routes designed for high speed running which would also shorten journey times.
- 1.5 Shorter journey times and the extra capacity released on the classic rail network would enable rail to achieve further modal switch from short haul aviation and roads, providing environmental, economic and social benefits as a result.
- 1.6 Improved transport links provided by HSR help to improve the competitiveness of the areas served and can help boost local economies as a consequence.
- 1.7 The 1998 SACTRA (Standing Advisory Committee on Trunk Road Assessment) report on transport and the economy found that new transport links did not necessarily boost local economies but could also damage them by transferring jobs elsewhere. This is amply demonstrated by the effect of low cost aviation which is now estimated to be responsible for an annual tourism deficit (the difference between what money people take out of the UK compared to what other people bring in) amounting to over £18bn and is also thought to have caused the loss of nearly 1m jobs in the UK tourist industry. Although HSR can help to improve competitiveness, success will ultimately depend on the ability of the areas served to take full advantage of the opportunity to rise to the challenge.
- 1.8 Continued growth in travel demand cannot be taken for granted however. Recent statistical evidence suggests that each one of us is now travelling less each year, both in terms of total distance travelled and the average number of trips made. HS2 Ltd.'s prediction that by 2033, the current 50,000 or so daily long distance passengers using the West Coast main line will more than treble to 165,000 on HS2 could prove to be wildly optimistic. It should be remembered that the number of passengers predicted to use Eurostar services have never been realised, even after 17 years of operations. There is also an overriding necessity to reduce the need to travel.

- 2.1 **HSR objectives:** High-speed rail has the potential ability to enhance inter-urban connectivity but there are major concerns that the planned route for HS2 will fail to optimise connectivity in some areas (see 4.2 below) and it will be essential to get it right first time if HS2 is to achieve its objectives. The wider benefits of rail investment are far reaching, not least in helping to reduce road congestion. Conversely, investment in the road network can actually increase congestion through induced traffic, particularly to the detriment of town and city centres.
- 2.2 It is essential that funding for HS2 be **NOT** abstracted from investment in continued electrification and other enhancements to the existing rail network. Electrification of the Midland main line and the "Manchester Hub" scheme, for example, should be seen as high priority. A rolling programme of electrification will have growing importance as oil prices continue to rise and in view of the growing need for Britain to develop energy independency, particularly from volatile areas in the middle east. A study carried out for Invensys Group in 2007 found that, pound for pound, investment in modern railway signalling and rolling stock procured more capacity than any other transport investment **including motorway widening**. The same study also found that for every 100 direct jobs created by rail investment, further 140 indirect jobs are created compared to only 48 indirect jobs from the same investment in roads.

- 2.3** There is ample evidence that HSR can achieve very high levels of modal switch from aviation and on some routes, for example Paris-Brussels, airlines have ceased operations entirely. However, Britain already enjoys frequent high speed inter city services and, as noted above, rail now dominates the air/rail market and air has the greater share only between London and Scotland and on cross country routes. Nevertheless, HSR would enable rail to achieve journey times of around three and a half hours between London and Edinburgh and Glasgow even without the route going all the way to Scotland and evidence suggests this would be good enough to raise rail's market share on these routes to between 50 & 70%.
- 3.1.0 Business Case:** There is no way to accurately forecast passenger demand, particularly over such a long time scale. For example, the 2003 Aviation White Paper had forecast continued passenger growth until at least 2030, and had assumed that by then some 500m of us would be flying into and out of UK airports each year. In reality, aviation demand peaked in 2007 and has been in decline since 2008 and rising oil prices are likely to constrain growth in the future. The "Predict & Provide" policy adopted for expansion of the motorway network has since been discredited and road traffic actually fell by about 3% last year.
- 3.1.1** On the other hand, recent experience with reopened rail stations and routes such as Cardiff-Ebbw Vale and Stirling-Alloa and many others have seen passenger numbers far exceed predictions. However, HS2 Ltd. have assumed that passenger numbers will be over three times the number currently using long distance services on the West Coast main line, even though important centres of population such as Coventry and Wolverhampton would not be served by HS2. This assumption would therefore seem to be optimistic, particularly since recent evidence suggests people are now travelling less.
- 3.1.2** Most of the passengers using HS2 are likely to be those currently using Inter City services, most of which we assume would be switched to the new route. However, capacity released on the existing network could generate passenger growth on enhanced regional services. Modal switch from domestic aviation is likely to be modest since rail already dominates this market as noted above, but there could be significant mode switch from long distance car journeys, driven largely by rising oil prices. Unless fares are reasonably competitive, it is unlikely there would be significant mode switch from long distance coaches as this market is very price sensitive.
- 3.1.3** Over emphasis on the value of small time savings has been a major source of criticism concerning appraisal methodology and was roundly condemned by many consultants during the recent NATA Refresh consultation.
- 3.2.0** There is limited scope for further capacity enhancements on the West Coast main line but it has been suggested that completion of 4 tracking work in the Trent valley coupled with grade separation at a number of key junctions could raise capacity on the fast lines by another 5 trains per hour (tph) to a maximum of 16. However, the new route would provide at least 16 tph in addition to that already available.
- 3.2.1** However, investment in other existing routes could help relieve pressure on the West Coast main line. For example, the Chiltern route between London and Birmingham could be electrified and upgraded for 200kmh operation and if trains were routed into Paddington station, journey times of a few minutes over 1 hour could be achieved, making this the principal route between London and Birmingham. Other opportunities exist such as provision of 4 tracks on sections of the Midland and East Coast main lines but these routes are likely to soon be full and require new capacity themselves. Loading gauge enhancements, particularly on the Midland main line, could help divert a number of freight services off the West Coast route. Construction of a flyover at Redhill would also enable freight between the West Midlands and the channel tunnel to be diverted away from the West Coast main line and avoid London by using the route via Banbury, Reading, Guildford and the North Downs line instead. Network Rail already have plans for just such a viaduct at Redhill and this should be supported as it could help to develop rail freight through the channel tunnel to the West Midlands, South Wales and the South West.
- 3.2.2** As noted above, capacity on the existing rail network is constrained by the need to accommodate fast inter city services amongst slower regional services and freight. Creating a clear path for the faster trains consumes capacity and it therefore makes sense to construct new routes for high speed operation which also reduces journey times and makes more efficient use of rolling stock by cutting turn back times. However, construction of a new conventional line could enable UIC-c gauge freight rolling stock to access depots in the West Midlands and the North, a point not mentioned in the DfT HS2 consultation.
- 3.3** Suppressed demand for rail travel is already evident, caused by some of the highest fares in Europe and continued application of above inflation fare increases which could soon result in a downturn in passenger numbers. The practice of cramming in more and more seats into a given space, many of which have no

view through a window, also creates an unpleasant travel environment and these factors conceal latent demand. Unless these issues are satisfactorily addressed, modal switch from rail to road could occur, increasing safety risk, energy consumption and environmental damage and reducing the chances of achieving Government carbon reduction targets as a consequence. The railway urgently needs more capacity, not only with new routes, but also with more rolling stock.

3.4 Cost control should be achieved by avoiding untried technology, like Maglev for example, employment of tried and tested construction techniques and the best people to do the job.

4.1.0 The strategic route: There are serious concerns about the proposed HS2 route, not only by those living in the Chilterns AONB, but it is felt by many that this route and the location of stations, particularly the one proposed at Curzon Street/Fazeley Street in Birmingham, fail to provide optimum connectivity with other rail services. The proposed “interchange” station at Birmingham International would also be located to the north side of the National Exhibition Centre, so far away from the existing station and the airport that it would have to be connected to them by means of an extension to the airport people mover system.

4.1.1 Euston station would seem to be the best choice for the London terminus but there are doubts about the proposed station at Old Oak Common, not least because this route would significantly lengthen journey times to Manchester, Yorkshire and the northeast. Whilst the benefit provided by a connection to Crossrail and Heathrow Express is acknowledged, it should be noted that Crossrail 2 (the Chelsea-Hackney line) will be provided with a station at Euston and would provide a direct connection with Crossrail 1. It should also be noted that Heathrow Express services at Paddington will be only four stops away from Euston on the upgraded Circle and Hammersmith & City lines which will see capacity increased by about 65%. The rebuilt Euston station would no doubt be provided with a direct link to Euston Square station.

4.1.2 A further possibility, proposed by Network Rail amongst others, consists of a connection between the West Coast main line and Crossrail. This would enable outer London commuter services from Milton Keynes for example, to be routed into Crossrail, helping to reduce the need to widen Euston station. Another such enabler would be diversion of Watford DC line services to the North London line.

4.2.0 A major concern about the currently proposed route centres on the lack of connectivity. Clearly, if the primary objective of HSR is to increase capacity on the existing network by transferring inter city services onto the new route, the new HS services will need to mirror the connectivity provided by inter city services as closely as possible. A notable failure of HS2 is its inability to serve Coventry and Wolverhampton and Phase Two would fail to serve Stoke on Trent, Crewe and Stockport as well as Leicester and Nottingham. This being so, some form of high speed inter city service resembling current service would still be needed on the West Coast main line and ultimately, the Midland main line as well, reducing some of the benefits provided by the new capacity.

4.2.1 It will therefore be necessary for the new HS route to be fully integrated with the existing rail network at strategic locations so that HS services can access existing city centre stations and, given the spread of major cities either side of the Pennines, a Y shape network would seem to offer optimum connectivity. Apart from current plans for HSR to reach Birmingham, Manchester and Leeds, HS services should also serve Liverpool, Preston, Carlisle, Darlington, Newcastle, Edinburgh, Glasgow, Dundee and Aberdeen.

4.2.2 However, if connectivity provided by current inter city services is to be closely matched, intermediate cities such as Derby, Durham, Stafford, York and Wakefield will also need to be served by HS services.

4.3 The Government is correct to build HSR in stages to the north of London but each stage should be planned with future extensions in view.

4.4.0 Linking HS1 to HS2 would enable services from the European mainland to reach destinations to the north of London but a market survey should be carried out before money is spent on providing costly new city centre stations equipped to handle rolling stock built to the larger UIC-c loading gauge which would also require new routes to be built into city centres. A more cost effective solution, at least initially, could consist of a below ground level pedestrian travelator linking Euston with St. Pancras/Kings Cross stations. Such a link would be very beneficial with or without HS2. There are concerns that the proposed HS1/HS2 link would create major congestion problems on the North London line which is already very busy with London Overground and numerous freight services, which are likely to increase once the new Thames Haven container port is operational. It should be remembered that Eurostar plans to operate through services from the continent to destinations north of London were cancelled due to lack of demand.

4.4.1 The need to connect HS2 with Heathrow is contentious. Only five domestic mainland air routes serve Heathrow airport with the majority now using Luton, Stansted and London City airports. As noted above,

rail already dominates market share between London and Manchester, Liverpool, Leeds and Newcastle, leaving only Scottish destinations where significant mode shift from aviation could be won by HSR. There are no flights between Birmingham or Liverpool and London. However, the majority of passengers still flying to Heathrow are “inter lining” and they are likely to continue to fly even with a connection to HS2 because airfares are normally inclusive of connecting flights.

4.4.2 By far the biggest market is city centre to city centre and diverting HS services to Heathrow or Old Oak Common instead of central London would generate a significant time penalty for passengers wishing to travel to northern cities with the sole exception of Birmingham. Clearly, designing the shortest route between London and the north should be a primary objective if modal shift from aviation is to be maximised.

4.4.3 It would seem, therefore, that the principal benefit of a link to Heathrow would accrue from provision of HSR links to those cities that have no convenient link to international air services, but it should be noted that Birmingham International airport has been awarded planning approval for a runway extension which will enable it to handle a wider range of international flights.

5.1 Economic rebalancing and equity: As noted at 1.7 above, the SACTRA report found no evidence that HSR would automatically promote economic regeneration and it could even widen the north-south divide unless the communities served take advantage of the opportunity to become more competitive.

5.2 HSR could be used to aid regional regeneration but local issues could work to the disadvantage of strategic objectives and connectivity. This is apparent with the plan to provide a new HSR station in Birmingham that would be divorced from the main city centre station at New Street, thereby failing to achieve essential connectivity with other rail services.

5.3 We have chosen *not* to respond to this question.

5.4.0 With regard to the EU TEN-T Programme; before seeking support from the EU’s TEN-T fund the UK Government should seek a derogation from the rule that HS trains should be 400m in length and built to UIC-c loading gauge as this will preclude their operation into a number of existing city centre stations, notably Birmingham New Street, and from being integrated with the existing rail network.

5.4.1 The rolling stock issue related to conditions for EU funding would also require Britain to procure two incompatible train fleets, one built to UIC-c loading gauge and a length of 400 metres that would be confined to operating only between the rebuilt London Euston and the new Curzon Street station in Birmingham, and the other built to UK loading gauge for operating into city centre stations over the existing rail network. A single train fleet built to the latter category would cut unit train costs and it should be noted that the original TGV fleet is not built to UIC-c gauge anyway.

5.4.2 Another proposal would require trains to be built to a length of 200metres, coupled together to make a full-length train, which could then be split so that each half could serve different destinations. Whilst there may be some locations where this could work, it would require stations with platforms long enough to facilitate the joining and splitting operation. However, most of the cities likely to be served by HSR are already served by 9 car inter city trains that are longer than 200metres and are about to be lengthened to overcome overcrowding. It would seem therefore, that a fleet of trains up to 12 cars or 300metres in length would be more appropriate. Given the foregoing, unless the UK Government is able to obtain a derogation from the EU TEN-T conditions, it may be more cost effective to forgo EU funding contributions and design the route and train fleet to best suit our unique requirements.

6.1.0 Environmental Impact: Given the current power generation mix, there is considerable concern that current plans for HS2 to be designed for operation at speeds up to 400kmh would seriously weaken the environmental case for HSR. Since wind resistance increases with the square of the speed, it would require twice as much energy to propel a train at 400kmh as at 300kmh. It follows, therefore, that carbon emissions would also double at this speed. Taking into account the buried cost of carbon (that which is emitted during the construction process), it is doubtful if HS2 could provide any environmental benefits as it is currently proposed.

6.1.1 At 400kmh, the minimum radius curve would be 7,200m (approximately 5 miles) and this results in higher construction costs and a very inflexible route, which would inevitably compromise the ability of the route to achieve optimum connectivity with the existing rail network.

6.1.2 Given Britain’s population density and the comparatively short distances between major conurbations, designing the route for operation at 400kmh is both unnecessary and inappropriate. Capacity and

connectivity should therefore be accorded the highest priority. It is notable that even China is reported to be reducing its HSR speeds to around 300kmh.

6.1.3 Noise levels would also be greater at 360/400kmh than at the normal HSR speed of 300 to 320kmh.

6.2 Given the foregoing, we do not believe the environmental costs have been adequately accounted for in the business case.

6.3 The capacity released by diverting inter city services from the existing network onto HSR would enable significant increases for freight and regional services to be catered for. Modal switch of road freight to rail would generate strong environmental and congestion benefits and this factor must feature in the business case.

6.4 Given that HS2 is only at the consultation stage at the present time, disruption to existing services will depend largely on the eventual route agreed upon but the rebuilding of Euston station would be a major factor.

KEY POINTS:

- The primary objective for new HSR routes must be the provision of extra capacity achieved by diverting high-speed inter-city services away from the existing rail network.
- To achieve this, it will be necessary for HSR services to match as closely as possible the connectivity provided by those inter-city services.
- Current HS2 plans would benefit Birmingham but to the disadvantage of Coventry and Wolverhampton and other cities to the North East and the East Midlands (Leicester & Nottingham could not be connected to HS2 under current plans).
- Plans to operate trains at up to 400kmh are unnecessary and inappropriate for Britain's needs.
- Designing the route for 300/320kmh operation would produce a more flexible route better able to optimise connectivity and reduce the need for expensive tunnelling and noise mitigation.
- Connecting London to an inconvenient new station in Birmingham in 49 minutes would be largely pointless if passengers are to be faced with a 10-minute walk to make onward connections at New Street station or to reach the city centre.
- The need to serve Heathrow airport is tenuous and the proposed station at Old Oak Common would determine that the route would have to be through the Chilterns AONB, precluding other options. Should a route using the M1 corridor be adopted, high-speed services to Heathrow could be provided by upgrading and electrifying the Dudding Hill Loop in North West London and, thence to the airport via a connection from the Great Western main line.
- A more flexible route would open up a wider choice of route options, notably the M1 corridor which, being more central, could provide a shorter route to Yorkshire and the north east and facilitate a connection into the existing route to Coventry and Birmingham New Street station.

We would earnestly advise the Transport Select Committee to recommend the UK Government to appoint an independent study, employing rail industry experts, to examine alternative route options for HSR including the above criteria in its Terms of Reference.

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