



**No** business case. **No** environmental case. **No** money to pay for it.

[www.stophs2.org](http://www.stophs2.org)

# Submission to Transport Select Committee Inquiry on High Speed Rail

May 2011

## **Transport Select Committee Submission:**

This submission is on behalf of Stop HS2 Ltd. Although we focus on the proposal by HS2 Ltd, some of the material may be relevant to other possible high speed rail proposals.

### **0. Introduction - What is HS2?**

HS2 is a proposed new high speed rail line, designed for running at speeds of up to 400kph. It is proposed to join Euston and Birmingham in Phase 1 at a capital cost of £17 billion (2009 prices): rolling stock will cost another £3 billion, including some specially designed 'classic compatible' trains. It is also proposed to include a link to HS1, although the designs for this have not been made public.

The government anticipate a second phase of the route, beyond Birmingham. This will have two branches, one on to Manchester and another to Leeds, with stations at East Midlands and South Yorkshire. This phase will include a link to Heathrow. HS2 Ltd anticipate the total cost for both phases to be about £33 billion in 2009 prices.

### **1. What are the main arguments either for or against HSR**

#### **1.1 Arguments Against HS2:**

##### **1.1.1 Unclear policy objectives**

Following the consultation on the Coalition's programme for government, the Department for Transport said:<sup>1</sup>

“Our vision is of a truly national high speed rail network for the whole of Britain. We believe it can play a significant role in promoting a low carbon economy thereby helping to make our country greener and more sustainable. We believe it will be a transformational project that will revolutionise travel between our major cities and will almost eliminate the need for internal domestic flights.”

Since the publication of that statement, the government has suggested a number of other reasons to go ahead with HS2. These range from promoting a low carbon economy (HS2 Ltd's own documentation shows HS2 won't reduce carbon emissions), to healing the north-south divide, to reshaping the economic geography of Britain and to providing extra capacity for commuters.

##### **1.1.2 Opportunity Costs**

Alternative lower risk strategies could deliver benefits earlier.

A FOI request by Speen HS2 action group<sup>2</sup> showed that the government is expected to spend about £1.1 billion on HS2 in the period to 2015. The capital cost of Phase 1 is £17 billion.

Clearly, this level of spending would finance a large number of alternative projects. Spending it all on one project which will not provide any benefits until 2026 is a high risk strategy, and

---

<sup>1</sup> <http://www.dft.gov.uk/consultations/government/pfg/>

<sup>2</sup> <http://www.speenbucks.org.uk/wp-content/uploads/2010/06/FOI10-047.doc>

means that the money cannot be used on smaller incremental projects which will meet policy objectives. Treasury “green book” guidelines recommend incremental improvements and addressing pinch points rather than big transformational projects.

### 1.1.3 Environmental costs

Almost all large scale projects will have environmental consequences. It is therefore important that the projects are designed sensitively, and that the design constraints are chosen so as to balance the needs of the users of the project versus the damage to the environment and the areas through which it will pass.

By choosing a design speed of 400 kph, HS2 Ltd have increased energy consumption and made it harder to avoid environmentally sensitive areas.

### 1.1.4 Cost in the UK

The cost of building HS2 will be higher per kilometre than the cost of building high speed lines anywhere else in the world. A UIC document<sup>3</sup> gives the typical price of constructing a high speed line as €12-30 million per kilometer, far less than the cost of building HS2.

## 1.2 Arguments in favour of building HSR used elsewhere

### 1.2.1 Possibility of modal shift from air, due to time savings

Many high speed projects across the world lead to large time savings compared to using classic rail. It is typical for high speed rail journey times to take less than half of the time of the conventional rail journey: often as little as a third of the conventional rail journey they replace.

In contrast, the HS2 Economic case, published in February 2011, lists a number of UK journeys and their time savings after completion of HS2 phase 1 and 2. Not a single journey they list is reduced to half the time.

In minutes, the reductions in UK journey times are very small compared to other countries. For example the HS2 Consultation document (p38) says the Tokyo-Osaka journey reduced from 7 hours to 2 hours 25 minutes, a time saving of 4.5 hours. In contrast the largest time saving in the HS2 Economic case (p10) is one hour, with one example journey (Newcastle to London) being only 15 minutes faster. All of this at a far higher cost per kilometer to the UK than other countries spend.

It is agreed that these large time savings elsewhere prompt the large scale modal switch from air to high speed rail. However, in the UK, domestic air passenger numbers are already falling. For example, air's share of passengers between Manchester and London has been decreasing by approximately 5% a year from 2003, compared with rail.

Because HS2 only links London and a limited number of cities, there is a limit to how much effect it would have on cross country flights.

---

<sup>3</sup> High Speed rail: fast track to sustainable mobility, Nov 2010.

### 1.2.2 Filling in missing links in the network

Countries like the Netherlands have built high speed rail lines to fill in gaps in the European network.

Although a direct link to HS1 will extend the network, HS2 trains will not be able to run at full speed in Kent, because the design speed of HS1 is lower. It should be noted that HS1 was originally expected to link to the West Coast Main Line.

### 1.2.3 Other countries' experience

In recent months, other countries are having second thoughts about their high speed ambitions. These include China, Portugal, the US, Brazil and the Netherlands. Rather than being left behind in a high speed rail race, it looks like Britain will be seen to have had a lucky escape from a financial fiasco.

## **2.0 How does HSR fit with the Government's transport policy objectives**

The HS2 proposal appears at odds with other transport strategies.

### 2.0.1 Carbon reductions:

High Speed rail was included in the Coalition's Programme for Government as a means of reducing carbon emissions. However the HS2 Ltd main report published in March 2010 says

"Perhaps the most important point to note is that this is equivalent to a range of -0.3% to +0.3% of UK transport emissions. So HS2 would not be a major factor in managing carbon in the transport sector. " p180

On February 9th 2011, Philip Hammond sent a letter<sup>4</sup> to MP's in which he said "our proposed London-West Midlands line is expected to be broadly carbon neutral".

### 2.0.2 Reducing Demand for Travel - the Government's non-travel remit

In a speech on sustainable travel which Philip Hammond gave last year he said<sup>5</sup>:

"Promoting alternatives to travel is a key part of the sustainability agenda. And although it has not traditionally been thought of as a transport responsibility, I have decided that we should integrate it into our transport agenda. "

Far from discouraging travel, the HS2 proposal assumes that travel will continue to grow unabated. Further, they say the new rail route will encourage travel to the extent that 22% of travellers on the route are only traveling because the rail link has been built.

Alternative ways of spending money, such as ultra-fast broadband would fit better with this part of the DfT's strategy, and potentially benefit everyone in the country.

---

<sup>4</sup> [http://stophs2.org/wp-content/uploads/2011/02/DfT\\_Hammond\\_letter\\_to\\_MPs\\_re\\_StopHS2.pdf](http://stophs2.org/wp-content/uploads/2011/02/DfT_Hammond_letter_to_MPs_re_StopHS2.pdf)

<sup>5</sup> <http://www.dft.gov.uk/press/speechesstatements/speeches/hammond20100910>

***2.1. HSR is designed to improve inter-urban connectivity. How does that objective compare in importance to other transport policy objectives and spending programmes, including those for the strategic road network?***

HS2 does nothing to improve inter-urban connectivity. HS2 as proposed links cities which have already got good rail links. Travellers between Birmingham and London can already choose between the WCML and the Chilterns Line. Similarly there are existing rail routes between all the cities which will be connected in phase 2 of the plans.

There is no evidence that HS2 Ltd considered links with other proposed rail projects, such as the East-West line which will join Oxford, Milton Keynes, Bedford and Cambridge.

***2.2. Focusing on rail, what would be the implications of expenditure on HSR on funding for the 'classic' network, for example in relation to investment to increase track and rolling stock capacity in and around major cities?***

Many supporters of HS2 refer to an improved rail system which would be possible if HS2 and other improvements are made. This is a commitment over and above the possible spending on HS2. A typical example is<sup>6</sup>

"HS2 will require a package of supporting measures on the existing rail network to maximise benefits" p3

These other improvements will cost money, which is not included in the HS2 business case. In many cases, these improvements can go ahead, even if HS2 is not built.

The opportunity costs of HS2 matter, because the more money allocated to HS2 and the associated improvements the less money available for other projects. These include the electrification of the rail line between Cardiff and Swansea.

***2.3. What are the implications for domestic aviation?***

According to a BATA briefing paper<sup>7</sup>, 85% of domestic routes are over water or involve locations that cannot be served by high speed rail.

---

<sup>6</sup> How HS2 Will Transform the West Midlands

[http://www.highspeed2westmidlands.co.uk/Images/Centro%20Study%20on%20Economic%20benefits%20of%20released%20capacity\\_tcm37-33083.pdf](http://www.highspeed2westmidlands.co.uk/Images/Centro%20Study%20on%20Economic%20benefits%20of%20released%20capacity_tcm37-33083.pdf)

<sup>7</sup> Air and High Speed Rail Briefing Paper – The Realities of Rail, March 2010, BATA,

<http://www.bata.uk.com/Web/Documents/data/policybriefingnotes/BATA%20Air%20and%20High%20Speed%20Rail%20Briefing%20Paper%20March%202010.pdf>

### **3. Business case**

***3.1. How robust are the assumptions and methodology – for example, on passenger forecasts, modal shifts, fare levels, scheme costs, economic assumptions (eg about the value of time) and the impact of lost revenue on the ‘classic’ network?***

#### **3.1.1 Passenger Forecasts:**

It is Stop HS2's view that the passenger forecasts for HS2 are unsound.

HS2 Ltd were widely criticised for the passenger growth figures in their original proposal. Their February 2011 proposal has decreased their forecast growth rate. However, they have also extended the cutoff date for the forecasts.

In March 2010, they used a cutoff date of 2033 for passenger forecasts, justified as it took the forecast period beyond the opening date of HS2. However, the February 2011 proposal now uses the cutoff date of 2043 - ten years later than in the March 2010 document.

HS2 Ltd's reason for this is <sup>8</sup>

"...For our earlier work we capped growth of rail demand in 2033, at a level of demand in the WCML corridor that is slightly more than double current levels. With the lower current GDP forecasts, this cap would now be hit later, in 2043. This level of demand is consistent with households becoming wealthier as GDP per head grows and adopting lifestyles with more frequent long distance travel as demonstrated by those in higher income bands today. We have also capped our forecasts for growth of demand for other transport modes at 2043."

This is the wrong way round. One should choose a suitable cutoff date first, and then see what the demand level is at that date. Instead HS2 have picked the level of demand that suits their business case and then chosen the date that fits.

In addition, demand estimates for high speed rail are frequently wrong: Fitch ratings<sup>9</sup> say that 9 out of 10 rail projects are overestimated. This can be seen with HS1: in 2009 the total passengers was 9.2 million whereas the original forecast said there would be 25 million in 2006.

HS1 ignored possible competition from ferries, and the case for HS2 ignores competition from other rail franchises.

Another competitor for HS2 is the increasing use of videoconferencing. If saving half an hour on a train journey is sufficiently important to make a difference, how much better would it be to not have to make a journey at all? Just like HS1 faced unexpected competition from low-cost airlines offering cheap flights to alternative destinations, so HS2 faces competition from videoconferencing.

And there are as yet unknown competitors. Speculatively, as the first generation of teenagers to grow up with easy access to the internet reaches working age, what will that do to working practises...?

---

<sup>8</sup> Economic Case p 15 3.2.9

<sup>9</sup>

[http://www.fitchratings.com/web\\_content/presentations/2010/gig/fitch\\_high\\_speed\\_rail\\_projects\\_apr2010.pdf](http://www.fitchratings.com/web_content/presentations/2010/gig/fitch_high_speed_rail_projects_apr2010.pdf)

### 3.1.2 Modal Shift

High speed rail is often cited as causing in modal shift from air. However, with HS2 65% of passengers are expected to have transferred from classic rail: only 6% from air and 7% from car. At the moment there are no scheduled flights between London and Birmingham. Rail's share of the London Manchester market is increasing by about 5% a year. There is limited scope for further modal shift: in 2009, 74% of passengers on domestic flights between Heathrow and Manchester were transferring onto a connecting flight.<sup>10</sup>

### 3.1.3 Fares

HS2's demand figures are based on HS2 fares being similar to existing fares. Other high speed lines use premium fares.

Rail fares in the UK are currently heavily subsidised. If the demand figures are wrong, then it will be necessary for the government to subsidise HS2 heavily meaning less money available to subsidise passengers on the classic lines.

One report about fares on HS2 often cited by people who support HS2 is by Greengauge 21<sup>11</sup>: However, the analysis in this report is less than robust, consisting of the following circular argument:

- Because many travelers currently use discounts at the moment, train fares are affordable by all segments of the population.
- The HS2 business case is based on HS fares being similar to 'classic' train fares.
- Therefore high speed train fares will be affordable by all segments of the population.

The report has no explanation of why fares will be the same other than that is what the HS2 business case says.

### 3.1.4 Value of time

Most of the so called "economic benefits" of HS2 come from the notional value of time savings. These are separated into business user savings and commuter and leisure user savings. Over half the monetarised benefits come from business user savings, so it is vital that these are robust.

Recent academic work shows that the amount of time spent working by business travelers on the train has been increasing over the last decade. A 2008 paper says that<sup>12</sup>

"In the UK a trend over time is discernible by comparison with the activities reported in the Autumn 2004 National Passenger Survey. A like-for-like comparison gave the proportion of business travellers who spend some time working/studying as 52% in Autumn 2004, 79% in Spring 2008. Whilst a like-for-like comparison of the percentage of time they spend working/studying has not yet been undertaken, the two surveys yield estimates of 43% in 2004 (for 1h-3h journeys), and 57% in 2008, again suggestive of a strong upward trend." p8

---

<sup>10</sup> Air and High Speed Rail Briefing Paper – The Realities of Rail. March 2010  
<http://www.bata.uk.com/Web/Documents/data/policybriefingnotes/BATA%20Air%20and%20High%20Speed%20Rail%20Briefing%20Paper%20March%202010.pdf>

<sup>11</sup> <http://www.greengauge21.net/wp-content/uploads/HSR-AffordableToAll.pdf> high-speed-rail-fair-and-affordable/ "High-Speed Rail: fair and affordable".

<sup>12</sup> The Productive Use of Rail Travel Time and Value of Travel Time Saving for Travellers in the course of Work, 2008 The Mott MacDonald IWT Consortium



The paper says the time spent working on trains is nearly as productive as work in the office - respondents reported on train productivity levels of between 96-98% compared to being in the office (p9). The study also looked at the effects of crowding on trains and concluded <sup>13</sup>

"Table 5 sets this out split by crowding bands, and indicates that increasing crowding does have an impact on productivity – but that productivity remains high, even in the worst crowding conditions."

These results show that currently used assumptions about the value of time for business travelers on trains are out of date and should be revised. This is especially important for a project which will not start operating for 15 years.

### 3.1.5 Costs to business affected by construction and running HS2

The economic case makes no mention of the costs to businesses caused by the construction and operation of HS2. Anecdotal evidence show that building the new rail link will directly affect many businesses of a range of sizes.

### ***3.2. What would be the pros and cons of resolving capacity issues in other ways, for example by upgrading the West Coast Main Line or building a new conventional line?***

HS2 will have limited effects on the rail network outside the London to the North corridor. It will do nothing to relieve capacity issues on trains to Wales, the West Country, the South coast or East Anglia.

The cost of HS2 is being treated as if it was a stand alone project. However organisations which support HS2, including Centro, Virgin trains, Greengauge 21 and Birmingham Airport. say that it is also necessary to undertake other improvements to the transport system so as to benefit from HS2. These include improvements to the West Coast Main Line.

The alternative to HS2 in the economic case is a 'do-nothing' scenario. This is clearly untenable, as according to Theresa Villiers, at the Parliamentary Lobby Day organised by Stop HS2 in October 2010, the West Coast Main Line will run out of capacity before HS2 will open.

Rail Package 2 has also been put forward as an alternative to HS2, but has attracted criticism recently. It is important for any business case that it is compared to a well developed and credible alternative. Unless this done, how can HS2 be seen as the best option?

It should be noted that the Department for Transport is arguing against West Coast Main Line improvements: for instance in their FAQ about HS2, written for a general audience, they say<sup>14</sup>

**"Wouldn't it be better just to upgrade the existing lines? I've heard people say that 'Rail Package 2' offers an alternative to high speed rail.**

The 1998 - 2009 upgrade of the West Coast Main Line demonstrated the difficulties of upgrading a busy 'live' rail line. The upgrade took over a decade, cost £9bn and caused huge disruptions for the passengers that use the line.

Another upgrade, such as Rail Package 2, would provide nowhere near the new capacity of

---

<sup>13</sup> ibid

<sup>14</sup> <http://www.dft.gov.uk/pgr/rail/pi/highspeedrail/faq>



a high speed line or its speed and connectivity benefits while again causing massive disruption for passengers."

In addition, because HS2 ltd say it will offer a more attractive service between London and the North, consideration should be given to the effects on other long distance journeys (eg Leeds to Oxford), which involve cross country routes and changes at places like Birmingham New Street. If using the high speed service makes it more convenient to travel via London, this will have an effect on the demand for other routes from London.

### ***3.3. What would be the pros and cons of alternative means of managing demand for rail travel, for example by price?***

A report in November 2010 by the Public Accounts Committee criticised the rail industry for its attitudes to solving problems. It said (our bold)<sup>15</sup>

"The unique and complex structure of the rail industry makes it inherently cumbersome and expensive, and **provides little external challenge to its vested interest in its own growth**. The Department should conduct a fundamental review of the rail industry's structure, to ensure better accountability and value for money, with the aim of reducing conflicts of interest, aligning efforts on maximising efficiency, and **restraining the tendency to seek solutions through growth**."

The report suggested a number of alternatives, such as smart cards and changes to the way season tickets work. Schemes like this can be rolled out across the entire country, benefiting commuters on overcrowded trains everywhere.

### ***3.4. What lessons should the Government learn from other major transport projects to ensure that any new high speed lines are built on time and to budget?***

The biggest problem facing HS2 is that not enough detail has been made available before the public consultation. Many questions raised during the consultation period have no clear answer. There are numerous questions about the strategic business case as well as the environmental case. Technical challenge is taking place behind closed doors. Information is being released in an ad hoc way, without publicity.

These would be best dealt with in a public inquiry, as has occurred with transport projects like Heathrow Terminal 5 and the East-West line.

In addition there is no clear plan for the scope of the work. The original proposal had no link to Heathrow and no link to HS1. These have been added in later, although the total cost of the proposal has not changed.

## **4. The strategic route**

The first issue when considering high speed rail is what it would add to the nation's infrastructure. According to international experts conventional railway lines are faster than ultra high speed lines for distances of up to about 150km - 200 km. London to Birmingham and Birmingham to Manchester are only just in this range. The stations on the branch to Leeds are far closer than this.

---

<sup>15</sup> <http://www.publications.parliament.uk/pa/cm201011/cmselect/cmpubacc/471/471.pdf>

According to European definitions, the WCML, the ECML and the Great Western Line are all "high speed lines", and their top speeds are similar to other new high speed projects across Europe.

***1. The proposed route to the West Midlands has stations at Euston, Old Oak Common, Birmingham International and Birmingham Curzon Street. Are these the best possible locations? What criteria should be used to assess the case for more (or fewer) intermediate stations?***

***2. Which cities should be served by an eventual high speed network? Is the proposed Y configuration the right choice?***

***3. Is the Government correct to build the network in stages, moving from London northwards?***

***4. The Government proposes a link to HS1 as part of Phase 1 but a direct link to Heathrow only as part of Phase 2. Are those the right decisions?***

The government seems to have no clear high speed strategy. This piecemeal approach puts up costs and risks choosing less than optimal solutions

For instance, early documents regarding the building of the Channel Tunnel Rail Link refer to the building of a connection to the West Coast Main Line: one document suggested a possible travel time between Milton Keynes and Paris of 2 hours 50 minutes<sup>16</sup>.

This link was not constructed, and according to Frank Dobson, in a Westminster Hall debate on March 31st 2011, the route that was seen as unsuitable for HS1 is now being considered to link HS2 and HS1.

A newspaper report of a meeting held with Theresa Villiers in Newcastle says that delegates at the meeting were told<sup>17</sup> "trying to get a bill through Parliament for just the London to Birmingham extension was difficult enough, without adding to that the greater problems of a nationwide line."

## **5. Economic rebalancing and equity**

***5.1. What evidence is there that HSR will promote economic regeneration and help bridge the north-south economic divide?***

HS2 was not proposed as a way of providing economic regeneration or bridging the north-south divide. Therefore it has not been compared to other schemes set up for that purpose.

Evidence from France (Lille) is often quoted, but in reality HSR was only part of a larger package of regeneration measures.

We have no way of knowing what the opportunity cost of going ahead with HS2 is, compared to other schemes targeted on the north, such as the Northern Hub project.

---

<sup>16</sup> Channel Tunnel Rail Link Project Brief, Union Railways, October 2010

<sup>17</sup> <http://www.journallive.co.uk/north-east-news/todays-news/2011/03/25/mp-challenged-over-east-coast-main-line-high-speed-rail-service-61634-28400838/2/>

About 70% of the permanent jobs created will be in London.

Further, MPs in Birmingham have criticised<sup>18</sup> the choice of Washwood Heath for the HS2 maintenance depot, saying that alternative schemes could provide more, higher-skilled jobs, (3500 v 300) and sooner than HS2 would.

There is another potential problem with the regeneration effects of HS2. Rather than creating new jobs, there is a serious risk that jobs are instead moved from other areas, such as Coventry.

### ***5.2. To what extent should the shape of the network be influenced by the desirability of supporting local and regional regeneration?***

We believe that a high speed rail network alone is an inefficient mechanism to create regeneration.

### ***5.3. Which locations and socio-economic groups will benefit from HSR? Or lose out.***

According to the HS2 documentation, some areas will suffer worse train services after HS2 is built. This has been analysed by the Taxpayers Alliance.<sup>19</sup>

The majority of the national benefits come from monetarised time savings to business travellers. However it is the top 20% by income who undertake the most long distance journeys. Therefore most of the benefits of reduced travel times will be going to high earners or their employers.

HS2 Ltd state the other monetarised benefits go to commuters and leisure users. If HS2 encourages an increase in commuting to London from a specific area, this comes at a cost to the 'home' area. The commuter will spend some of their salary on their season ticket, and some of it on goods and services in London. House prices in areas convenient for access to the high speed station will rise, making them less affordable to people working in their home area.

The leisure opportunities created seemed to be based around regional users being able to get to London more easily. Money will be taken from the regions and spent in the shops and venues of London. For example, Philip Hammond told the Yorkshire Press<sup>20</sup>

"What we expect train operators to do is seek to fill their trains by attracting marginal passengers who currently wouldn't be travelling by rail with very attractive fares in the off-peak," said Mr Hammond.

"For the person who's able to travel in the mid- to late morning or the afternoon or later in the evening when there isn't so much demand I would expect they will be able to get some fantastically good deals on High Speed Two."

---

<sup>18</sup> <http://www.birminghampost.net/news/2011/03/04/birmingham-mps-oppose-plans-for-high-speed-rail-depot-at-alstom-site-65233-28276475/>

<sup>19</sup> Research Note 86, 30 March 2011 HS2 Capacity Analysis, Chris Stokes  
<http://www.taxpayersalliance.com/hs2capacity.pdf>

<sup>20</sup> High speed rail network 'could slash prices for train tickets', Monday 21 March 2011  
[http://www.yorkshirepost.co.uk/news/at-a-glance/main-section/high\\_speed\\_rail\\_network\\_could\\_slash\\_prices\\_for\\_train\\_tickets\\_1\\_320215](http://www.yorkshirepost.co.uk/news/at-a-glance/main-section/high_speed_rail_network_could_slash_prices_for_train_tickets_1_320215)

***4. How should the Government ensure that all major beneficiaries of HSR (including local authorities and business interests) make an appropriate financial contribution and bear risks appropriately? Should the Government seek support from the EU's TEN-T programme?***

It is clear that some cities, such as Birmingham, see themselves as huge beneficiaries. Other areas, such as Buckinghamshire have been warned that they will get no advantages from HS2, in spite of the environmental damage they will suffer. Therefore the government should expect Birmingham City Council and Birmingham businesses to put significant financial resources into the building of HS2, and it is equitable that the government should compensate areas like Buckinghamshire for the environmental damage they endure.

**6. Impact**

***6.1. What will be the overall impact of HSR on UK carbon emissions? How much modal shift from aviation and roads would be needed for HSR to reduce carbon?***

The Coalition Program for Government said:

“Our vision is of a truly national high speed rail network for the whole of Britain. We believe it can play a significant role in promoting a low carbon economy thereby helping to make our country greener and more sustainable. We believe it will be a transformational project that will revolutionise travel between our major cities and will almost eliminate the need for internal domestic flights.”

However the HS2 proposal does not promote low carbon transport, but relies on decarbonising the electricity sector.

Because HSR uses more energy than classic rail, this means that more electricity will need to be generated. By increasing the country's total electricity demand, we will need to use more of the ungreen forms of electricity.

The March 2010 Main report published by HS2 Ltd said

“Perhaps the most important point to note is that this is equivalent to a range of -0.3% to +0.3% of UK transport emissions. So HS2 would not be a major factor in managing carbon in the transport sector.” p180

Moving 65% of passengers from a lower-energy form of train to a higher energy form does not make up for the 6% who have transferred from air.

There is the issue of carbon emissions during construction, which HS2 Ltd has ignored.

Further, the HS2 proposal does not take into account efforts by both the aviation sector and the automotive sector to make vehicles which use less carbon intensive forms of power.

***6.2. Are environmental costs and benefits (including in relation to noise) correctly accounted for in the business case?***

The environmental costs of HS2 have not been considered adequately as there is no Environmental Impact Assessment yet.

Any new high speed railway will have environmental costs, whichever route it chooses. However by setting a design speed of 400kph, the design of HS2 is constrained and cannot avoid sensitive

sites in the way a slower design speed would be able to. This speed seems unnecessarily fast, because the advantage of this speed compared to a lower speed are negligible for the distances concerned. Further, with three stations on the Leeds branch, the trains are unlikely even to run at full speed: the UIC says that it takes 10-20km for high speed trains to reach their maximum. The design speed seems to have been chosen to make a marginal business case possible.

HS1 was built with 85% of it in tunnels or next to railways, major roads and motorways. Of the remaining 15%, about half of it was through industrial areas.

In contrast HS2 will be going across significant amount of open countryside. Although it will travel alongside existing roads in places, they tend to be minor roads like the A413 'transport corridor' which is a single carriageway country road between market towns.

There are also concerns about damage to the Chilterns aquifer, and aquifers in Warwickshire, which supply water to London and other parts of the south east and Midlands.

Stop HS2 is aware of the Voxopp submission and endorses their report about noise impacts. It is of note that noise is more intrusive where the background level is low.

### ***6.3. What would be the impact on freight services on the 'classic' network?***

This question is outwith Stop HS2's remit.

### ***6.4. How much disruption will be there to services on the 'classic' network during construction, particularly during the rebuilding of Euston?***

Building work at Euston station will take 7-8 years, according to HS2 Ltd's documents. There will also need to be changes to the underground to allow for increased numbers of on-ward passengers. There will also need to be work on the WCML where the HS2 route joins it.

In summary West Coast Main Line passengers can expect significant disruption.