

# HS2 fails the Due Process Challenge

All the 'due process' of remit development, option sifting and public consultation might sometimes seem a little tiresome, but it's all vital for the necessary outcome of an efficient and optimised national infrastructure project which can command public support.

HSUK's analysis on the following pages demonstrates the following critical deficiencies in the process that has underpinned the development of the HS2 project:

- A remit for a high speed line fundamentally misaligned with the HS2 project's aim of "hugely enhanced capacity and connectivity" between the UK's major conurbations (page 2).
- A misconceived predication on design for extreme speed, rather than optimised network performance (page 6).
- A dysfunctional option selection process which failed to give due and proper consideration to an M1 corridor route, the obvious alternative to the favoured route through the Chilterns Area of Outstanding Natural Beauty (page 8).
- False reasoning employed to dismiss any M1 corridor route, that is utterly discredited by the detailed route design and network design undertaken in the development of High Speed UK (page 10).
- No structured and rigorous consideration of the optimum configuration of a UK high speed network, delivering the greatest connectivity and capacity for the least cost and environmental impact (page 12).
- Adverse responses to public consultations ignored, with no attempt made either to rebut or address criticisms expressed (page 14).

It is difficult to avoid the conclusion, that all of the necessary 'due process' underpinning the HS2 project has been subverted to the base purpose of rubber-stamping the fatally flawed concept that HS2's progenitors first thought of.

# HS2 fails the Remit test

HS2 must operate in harmony with existing main lines, to create an integrated national network, if it is to deliver its primary objective, of “hugely enhanced capacity and connectivity” between the UK’s major conurbations.

However, HS2 Ltd’s project remit – see opposite – makes no attempt to specify either the ultimate goal of an improved national network, or to define how “hugely enhanced capacity and connectivity” might be measured. Instead, the remit appears to define:

- HS2’s route – via an interchange at Old Oak Common, the only possible outcome of Item 5, leading inevitably to its damaging route through the Chilterns AONB;
- HS2’s national configuration – i.e. a new high speed line from London to the West Midlands (Item 1), with further northward development from the West Midlands (Item 2) on both sides of the Pennines, to form the ‘Y’.

It is significant to note that the HS2 remit does not specify either the speed for which HS2 should be designed, or whether HS2 should be integrated with, or segregated from the existing rail network.

It is not a logical impossibility, that an optimised national rail network delivering “hugely enhanced capacity and connectivity” between the UK’s major conurbations might develop from the London to West Midlands high speed line specified in the HS2 project remit.

However, this fortuitous outcome has not happened for the HS2 project. This is proved by the conscious design of High Speed UK as a network, and its vastly superior performance in terms of capacity, connectivity and indeed any reasonable comparator.

High Speed UK’s superiority also underlines the huge financial and environmental costs that will accrue from the fundamental mismatch between HS2’s localised remit and its national objective of “hugely enhanced capacity and connectivity”. This mismatch exposes the folly of predicating HS2’s development upon a first phase designed to a narrow, corridor-specific remit, and it represents a monumental technical failure on the part of HS2 Ltd’s leadership.

## HS2 REMIT - KEY POINTS

1. Build a high speed line from London to the West Midlands.
2. Consider development of HS2 further north.
3. Select a London terminal.
4. Consider intermediate parkway between London and the West Midlands.
5. Build an interchange station with GWML/ Heathrow/ Crossrail services.
6. Connect to HS1 and the existing network.

## SUMMARY OF THE REMIT AND OBJECTIVES OF HIGH SPEED TWO

On 15 January 2009 the Secretary of State for Transport announced in 'Britain's Transport Infrastructure: High Speed Two', the setting up of a new company to look at a possible new railway line between London and the West Midlands.

HS2 was set up shortly after as a private company limited by guarantee. It is chaired by Sir David Rowlands, and Alison Munro was seconded from the Department of Transport as Chief Executive. The rest of the HS2 team comprises further secondees from the DfT and from Network Rail.

HS2's remit is to develop proposals for a new railway line from London to the West Midlands taking account of environmental, social and economic assessments. It will also provide advice to Ministers on the potential development of a high speed line beyond the West Midlands on the level of broad corridors, considering in particular the potential to extend to Greater Manchester, West Yorkshire, the North-East and Scotland.

HS2 will make recommendations on options for a terminus station or stations serving London and possible options for an intermediate parkway station between London and the West Midlands. It will also provide a proposal for an interchange station between HS2, the Great Western Main Line and Crossrail with convenient access to Heathrow Airport. HS2 will also provide suggested means of linking to HS1 and the existing rail network.

HS2 will produce a confidential report to Ministers by the end of 2009 that should be sufficiently developed to form the basis for public consultation in 2010 should Ministers decide to take the project forward. The advice will also include financing and construction proposals as well as a proposition for how best to move through the planning process within an indicative outline timetable.

*Extract from July 2009 HS2 Newsletter.  
Colouring by CSE*

# HS2 fails the Remit test (*continued*)

Perhaps the greatest fault of HS2's remit is that it specifies what is to be built i.e. a new high speed line, rather than how it must perform to deliver the project's objective, of "hugely enhanced capacity and connectivity" between the UK's major conurbations.

As noted previously, there is no fundamental reason why a high speed line built to a localised remit could not deliver that objective. However, a far more certain and reliable way forward is to specify the performance of the new high speed line, together with other associated infrastructure, to comprise the integrated system that will collectively achieve the project's objective.

High Speed UK was developed from its inception in 2008 (as High Speed North) with a controlling specification aimed at optimising its performance as a national network<sup>1</sup>. The latest iteration of this specification, which is set out in the table below, aligns closely with HSUK's 'Six Principles' of network design.

## HIGH SPEED UK REMIT (2016)

Starting with the existing rail network and existing service patterns, use the opportunity offered by the intervention of new-build high speed railway lines, linking London and the primary cities of the East and West Midlands, the North-West, Yorkshire, the North-East and Scotland) to create an enhanced and fully integrated national rail network. This network should be capable of performing as follows:

1. Provide direct services of intercity quality between all principal cities / major conurbations in the regions listed above;
2. Provide enhanced service levels to intermediate secondary cities, with frequent links from high speed lines to the existing network, and upgrades to existing routes, where necessary;
3. Integrate all existing intercity routes extending to other parts of the network with the new high speed (or upgraded) lines;
4. Maintain or enhance existing service levels;

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<sup>1</sup> The original HSUK specification was summarised in Colin Elliff's article *High Speed Rail : Where are the Engineers?* published in the October 2008 edition of the Journal of the Permanent Way Institution.

5. Operate all intercity routes at hourly or better frequency;
6. Optimise network capacity through maximised segregation between high speed intercity services and local/freight services;
7. Achieve major journey time reductions on all routes;
8. Achieve step-change transport CO<sub>2</sub> reductions through road to rail modal shift enabled by enhanced capacity & connectivity;
9. Offer 'easy transfer' between national (high speed) rail and local transport services (train, metro, tram, underground, buses and taxis) at existing city centre hub railway stations;
10. Develop proposals for a London terminus;
11. Optimise connections to London suburban rail services;
12. Offer direct services to Heathrow from all principal regional UK cities, and direct services to all major regional airports from within their own respective regions, with upgrades and/or new local connections to achieve this;
13. Provide a link to HS1 without using the already overcrowded North London Line;
14. Develop supplementary proposals for a dedicated national freight network, linked to the Channel Tunnel, largely independent of major intercity passenger routes and capable of carrying trains of UIC-C loading gauge (in order to carry HGV trailers by rail and to allow larger 'Continental Gauge' wagons to enter the UK);
15. Be a 'Good Neighbour' to local communities by following existing transport corridors i.e. motorways, trunk roads and railways where there is already significant noise pollution and avoiding, as far as possible, all environmentally sensitive areas;
16. Develop a new national intercity 'Demonstrator Timetable' to identify capacity constraints and demonstrate exactly what connectivity benefits the HSUK design can deliver;
17. Design the new high speed line as a series of independent sections, each capable of being built as a separate stage to provide significant benefit to the local and national rail network. This would respond to local economic priorities, and not require high speed line construction to start in London.

# HS2 fails the Speed test

HS2 has been designed to operate at 360km/h (225mph), with allowance for a future maximum speed of 400km/h (250mph). This would make HS2 the fastest railway in the world. Whilst there is much public scepticism as to the true value of extreme speed on a small island, HS2 Ltd continues to insist that design for future 400km/h operation represents necessary future-proofing against anticipated advances in technology.

There appears to be little or no recognition of the many drawbacks of extreme speed, including:

1. Excessive energy use and CO<sub>2</sub> emissions, rising roughly proportional to the square of speed (i.e. energy use at 400km/h is approximately 4 times the energy use at 200km/h);
2. Excessive power demand, rising proportional to the cube of speed;
3. Maintenance costs and technical risk, rising at a similar exponential;
4. Increased vulnerability to ground movement;
5. Increased engineering cost and environmental impact resulting from
  - constructing larger earthworks and longer tunnels and viaducts, necessary to fit the near-straight track alignments (both vertical and horizontal) onto an undulating landscape.
  - forcing the route away from established transport corridors (e.g. that of the M1, which cannot accommodate HS2's large radius curves), and into relatively unspoilt rural landscapes.

The overriding folly of HS2 Ltd's design for 400km/h operation is exposed by the much greater overall journey time reductions achieved by High Speed UK. Design for the lower maximum speed of 360km/h allows HSUK's new lines to follow existing transport corridors, particularly that of the M1 and the West Coast Main Line. This in turn allows the connections to be made to existing main lines necessary for full integration with the existing network.

The benefits of this full integration are proved by the 46% average journey time reductions which HSUK can achieve across the entire intercity network, and which are verified by the HSUK 'Demonstrator Timetable'. This is far in excess of anything that the segregated and disconnected HS2 can achieve.

# Comparison of HS2 and HSUK performance between London and the West Midlands

<i>Comparison</i>		<b>HS2</b>	<b>HSUK</b>
Maximum operational speed		<b>360km/h</b>	<b>360km/h</b>
Design speed		<b>400km/h</b>	<b>360km/h</b>
Track type		<b>Ballasted</b>	<b>Slab</b>
Minimum curve radius		<b>7800m</b>	<b>5700m</b>
Route		<b>Via Chilterns AONB</b>	<b>Via M1 corridor</b>
Intrusion into Chilterns AONB?		<b>Yes</b>	<b>No</b>
No of Ancient Woodlands directly affected (between London & Birmingham)		<b>34</b>	<b>0</b>
No of tracks in London-Midlands spine		<b>2</b>	<b>4 α</b>
Tunnel length from London to Birmingham		<b>50km</b>	<b>12km</b>
Estimated first phase cost		<b>£21.7 billion</b>	<b>£14.2 billion</b>
<i>Intercity Journey times via:</i>	<b>Existing network</b>	<b>HS2</b>	<b>HSUK</b>
London-Birmingham	<b>84 mins #</b>	<b>59 mins ##</b>	<b>56 mins #</b>
London-Coventry	<b>59 mins #</b>	<b>68 mins §</b>	<b>38 mins #</b>
London-Walsall	<b>122 mins §</b>	<b>92 mins *</b>	<b>67 mins #</b>
London-Wolverhampton	<b>114 mins #</b>	<b>86 mins *</b>	<b>74 mins #</b>
Average journey time reductions across national intercity network		<b>9%</b>	<b>46%</b>

Note # = Direct journey, no change of trains

## = 10 minute addition needs to be made to journey times to Curzon Street to account for greater average walking time to central Birmingham locations

§ = Indirect journey, change of trains required

\* = Indirect journey, change of trains required plus 10 minute walking connection between Birmingham Curzon Street and Birmingham New Street

α = HSUK 4-track spine extends from London to South Yorkshire

# HS2 fails the Option Selection test

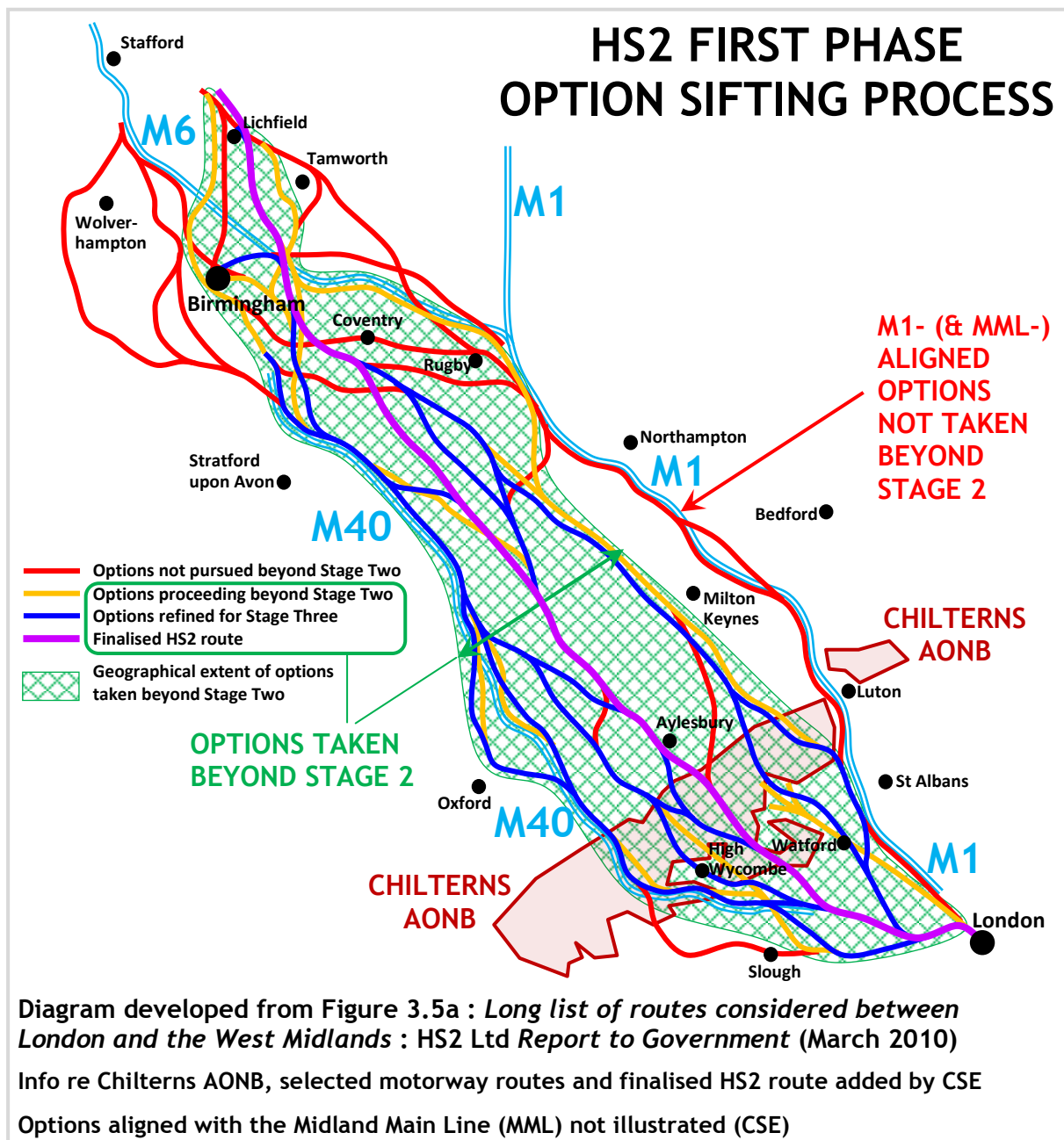
With a multiplicity of possible high speed routes from London to the West Midlands, a process was required to progressively narrow down options to arrive at the chosen HS2 route. HS2 Ltd adopted a sifting process by which a 'long list' of possible options was reduced to a 'short list' through a series of stages, with more detailed study being applied at each successive stage. This process is described in Section 3.5 of HS2 Ltd's *Report to Government* (March 2010).

Such a process should be aimed at developing the option that represents the best balance of capacity and connectivity benefits against financial costs and environmental impacts. Whilst there is no reason why HS2's highly damaging ultra-direct Chiltern route should not be developed for further consideration, it is equally important that other options are also examined in detail. This is necessary not only to ensure that the best route is selected, but also to maintain public confidence that the correct decision has been taken.

In the case of a high speed line between London and the West Midlands, HS2's controversial route through the Chilterns AONB can only be justified if the apparently less damaging alternative of the M1 corridor is not feasible. Since Roman times this corridor has been the primary route from London to the Midlands and the North, for Telford's Turnpike (the A5), the Grand Union Canal, the London & Birmingham Railway and the M1, and it would be reasonable to expect HS2 Ltd to have given detailed consideration to such a route. However, all options for a route following the M1 were dismissed very early in the process, despite the acknowledged fact that this was the only option that could avoid damaging the Chilterns AONB.

With no detailed technical analysis applied, the option of an M1 corridor route was instead rejected through a series of baseless assertions made in various HS2 Ltd reports. One glaring example was the statement that an M1-aligned route to Birmingham would be "insufficiently direct"; in fact, it is 4.3km longer, equivalent to 52 seconds at 300km/h. All of HS2 Ltd's assertions are shown to be either false or spurious (pages 10 & 11) by HSUK's detailed design work undertaken in support of its own M1-aligned proposals.





HS2 Ltd's dismissal of M1 corridor routes also seems highly suspect, in view of the much greater consideration given to a multiplicity of far less feasible routes generally following the M40 corridor.

Accordingly, it is fair to conclude that HS2 Ltd's option selection process has failed in its basic purpose. It has not developed the best possible option, best serving the national interest by delivering the required step-change improvements in connectivity and capacity for the least cost and the least environmental damage. This failure is proved by HSUK's comprehensively superior performance. Instead, the HS2 option selection process appears to have been subverted to the baser purpose, of justifying the flawed idea that the 'experts' at HS2 Ltd first thought of.

# HS2 fails the Impartial Assessment test

Although it is clearly unacceptable for a route with the self-evident advantages of the M1 corridor to have been dismissed so early in HS2 Ltd's option sifting process, it is still instructive to examine the various reasons put forward to justify this rejection. HS2 Ltd's rationale is set out in the following 3 reports:

- HS2 Ltd *Report to Government* (March 2010) (RTG);
- DfT Command Paper *High Speed Rail* (March 2010) (CMD);
- HS2 Ltd *Review of Route & Speed Selection* (January 2012) (RRSS).

Every justification offered by HS2 Ltd to dismiss the M1 corridor is shown to be either false or spurious by the detailed design work undertaken in the development of High Speed UK. HS2 Ltd's rationale and HSUK's rebuttals are summarised in the table below.

Reasons offered by HS2 Ltd to dismiss high speed route via M1 corridor, <i>with HSUK rebuttals in italics</i>		Reference to HS2 report
1	The M1 corridor offers an insufficiently direct route from London to Birmingham. <i>The HSUK route from London to Birmingham via the M1 corridor and Coventry is 4.3km longer than the HS2 route, equivalent to 52 seconds extra at 300km/h.</i>	RTG Item 3.5.6, CMD Item 6.33, RRSS Items 3.1.16 & 3.1.22
2	A high speed line closely aligned with the M1 cannot sustain the desired 400km/h design speed specified for HS2. <i>The HSUK high speed line is designed for a maximum speed of 360km/h to enable it to closely follow the M1 and thus avoid the Chilterns AONB and other unspoilt areas.</i>	CMD Item 6.33
3	London-Birmingham journey times via M1 corridor compare poorly with the 49 mins timing via the preferred Chilterns route. <i>HSUK's journey time to Birmingham New St is 56 mins, but this gives access to entire West Mids conurbation - effectively faster than HS2's 49 mins to isolated Curzon St.</i>	RTG Item 3.5.6, CMD Item 6.33, RRSS Items 3.1.16 & 3.1.22
4	Any deviation from the alignment of the M1 would create unacceptable 'islands' of blighted land. <i>HSUK's route following the M1 will cause far less environmental damage than the HS2 route via the Chilterns AONB.</i>	CMD Item 6.33
5	Excessive lengths of tunnel are needed to avoid unacceptable demolition of property (if new line located on the surface). <i>HSUK's route to Birmingham following the M1 and the existing Rugby-Birmingham line requires 12km of tunnel. HS2's route via the Chilterns to Birmingham requires 50km.</i>	RTG Item 3.5.6, CMD Item 6.33, RRSS Item 3.1.16
6	An M1-aligned route would be too far from Heathrow to allow any regional high speed connection to the airport. <i>HSUK has the 4-track capacity to offer direct high speed services to Heathrow from all regional cities. HS2 lacks this capacity and its Heathrow spur is now cancelled.</i>	RTG Item 3.5.24, CMD Item 6.33, RRSS Item 3.1.15
7	Motorway junctions will block the route of an M1-aligned high speed line, with modifications too expensive and disruptive. <i>HSUK has undertaken a detailed study of all affected junctions. This demonstrates that all technical issues are relatively minor, and manageable at reasonable cost.</i>	RRSS Items 3.1.22 & 3.2.5

Table 20.1 : HS2 Ltd rationale to dismiss M1 corridor and HSUK rebuttals

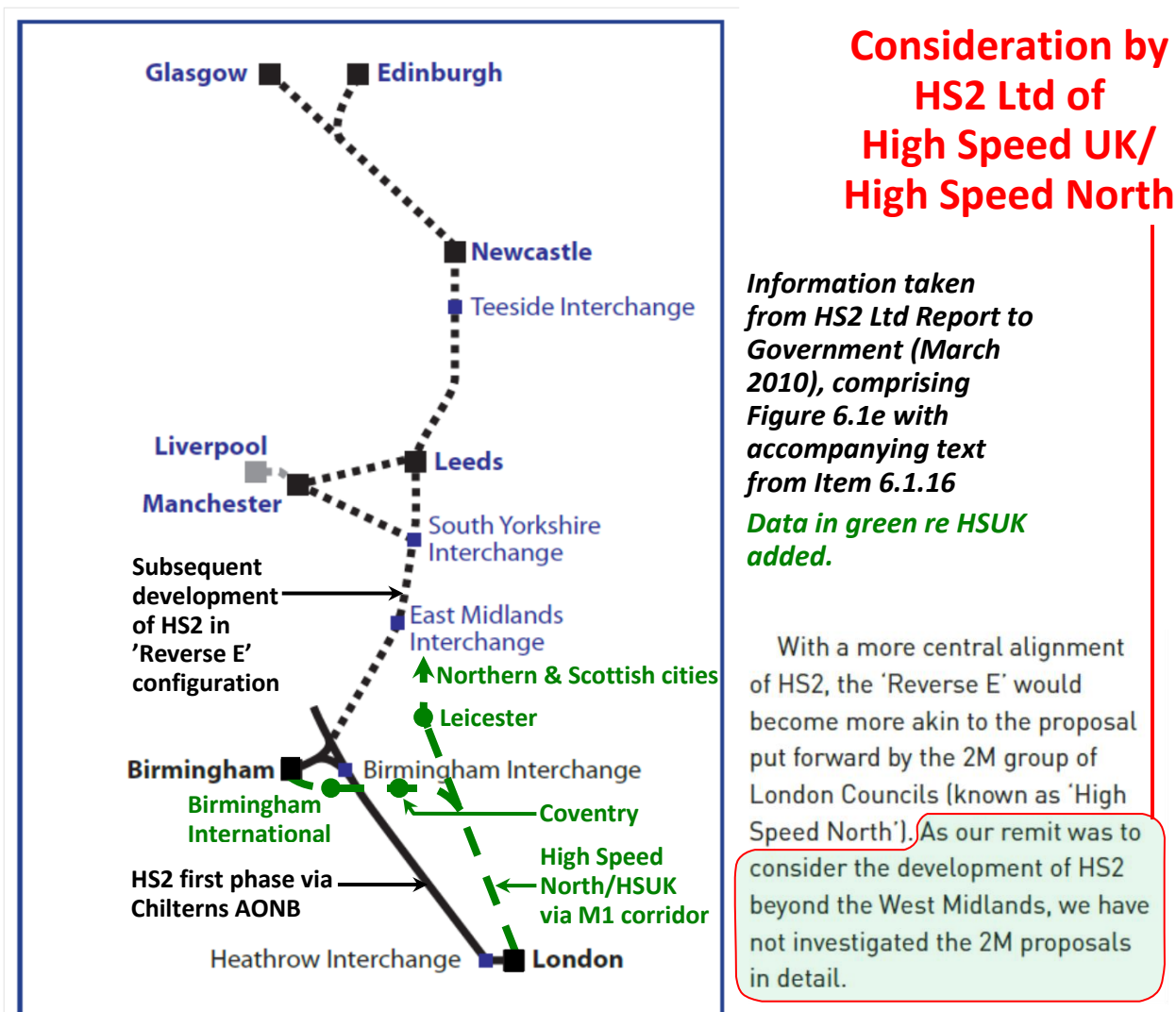


Figure 20.2 : Reference to High Speed North in HS2 Ltd *Report to Government* (March 2010)

HS2 Ltd's dismissal of High Speed UK (in its previous guise of High Speed North) raises particular concerns. Figure 20.2 shows the specific text from HS2 Ltd's *Report to Government* which details how HSUK was rejected on account of its 'failure' to pass through the West Midlands en route to conurbations further north. This was despite HSUK being personally presented in May 2009 to senior figures at HS2 Ltd, and its benefits as an intercity network, far outperforming HS2 (in whatever variant), being fully explained.

The text of Section 6.1 of HS2 Ltd's *Report to Government* (2010) makes it clear that HS2 Ltd never analysed HSUK in any detail. Instead, it was dismissed by a crude and inappropriate analogy with an entirely different proposal for a 'Reverse E' configuration. All of the configurations examined by HS2 Ltd (i.e. 'Inverse A', 'Reverse S' or 'Reverse E') were built upon HS2's London-West Midlands first phase – but none came close to HSUK in its ability to provide comprehensive interconnection between regional UK conurbations.

# HS2 fails the Network Design test

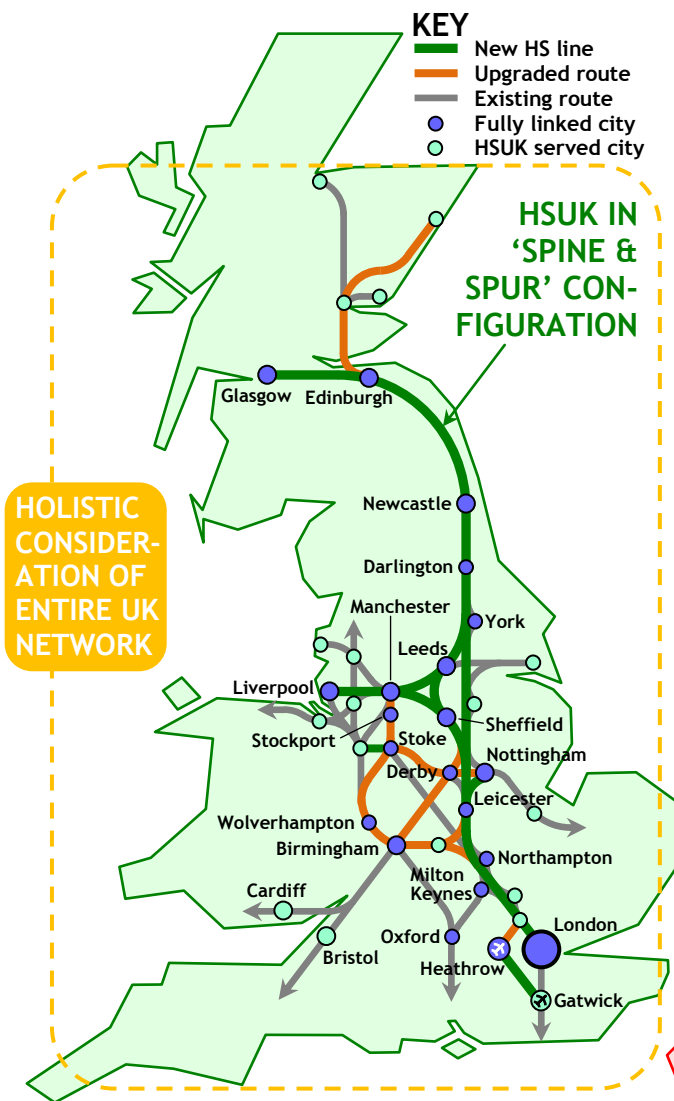
HS2 Ltd's proposals for new high speed lines from London to Birmingham, Manchester and Leeds are frequently described as the 'Y network'. But nowhere in HS2 Ltd's many reports can any structured consideration be found, of how such a 'network' might be developed to deliver the "hugely enhanced capacity and connectivity" between the UK's major conurbations, which of course is the fundamental self-imposed aim of the HS2 project. Instead, HS2's routes have been set with no apparent concept of how they fit into, or might enhance, the overall national network.

HS2 Ltd's own reports confirm that the HS2 route from London to the West Midlands was determined ***with no consideration of how it might develop into an optimised national network*** – yet this first phase would become the stem of all options subsequently considered by HS2 Ltd as candidate schemes for a national network of high speed lines. The unstructured process by which the HS2 'Y' developed is summarised on the diagram opposite, and contrasted with the more holistic approach adopted by High Speed UK.

It would seem self-evident that a scheme (such as HSUK) which fully interconnects all major conurbations with high speed services operating at hourly or better frequencies is better than one that does not; yet this most basic analysis – or even ambition – is conspicuous by its absence. Instead, any option (such as HSUK) that failed to comply with HS2's London-West Midlands first phase route was excluded from consideration.

All this represents a massive technical and intellectual failure on the part of those leading the HS2 project, with no recognition that:

- The true objective of the UK high speed rail project must be an optimised national network that delivers the greatest possible enhancement in capacity and connectivity to the greatest possible proportion of the population;
- A railway network is just another design output that is capable of optimisation by those with the necessary competence who should, at the very least, be able to distinguish an efficient network from an inefficient network.

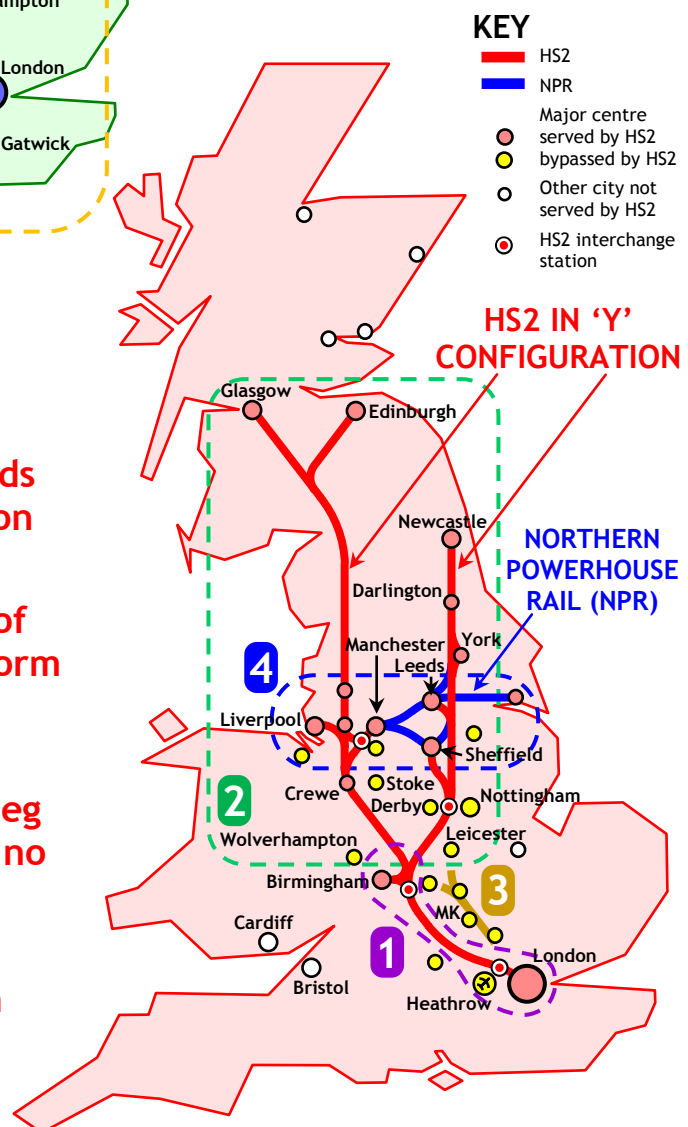


## HSUK Network Design Process

1. Start with aim of using high speed rail to create enhanced national network directly inter-linking 10 primary cities plus Heathrow Airport.
2. Develop national timetable of high speed services fully integrated with existing network.
3. Succeed by achieving full interconnectivity for 20 cities plus Heathrow.

## HS2 (& NPR) Network Design 'Process'

1. Design London-West Midlands HS line with no consideration of national network. 1
2. Predicate all development of further route sections (to form 'Y') on HS2 London-West Midlands first phase. 2
3. Reject alternative options (eg HSUK) via M1 corridor with no detailed study. 3
4. Partly remedy lack of connectivity of the 'Y' with transpennine NPR. 4
5. Call it all a network!!



# HS2 fails the Democracy test

The development of HS2 at all stages has been accompanied by extensive official consultations, in which members of the public have been invited to comment upon HS2 Ltd's proposals.

These consultations are an essential democratic process, intended to ensure that a public project remains true to its fundamental goal of serving the public interest – and intended also to guard against the risk (for example) of a technocratic elite subverting a transport project's proper objective of "hugely enhanced capacity and connectivity" into an extremely questionable mission, to build the fastest railway in the world.

High Speed UK has fully engaged with the HS2 consultations, with detailed responses explaining how HS2 Ltd's 'need for speed' and flawed routeing strategy will have a huge negative effect on every aspect of HS2's performance, and on the performance of the wider UK rail network and transport system. HSUK's responses – see Table 22.3 – are published in *HS2 : High Speed Trains, Slow Speed Brains*.

HSUK's response to the questions of the 2011 HS2 consultation – see opposite – provides an excellent example of the input that HS2 Ltd and the Government have received and, apparently, completely ignored. In summary, the HSUK response explained that:

- although new high speed lines were essential for improved capacity and connectivity between the UK's major conurbations, (Q1)
- the HS2 'Y' was not the right way to deliver this improvement, because it lacked any transpennine connection, (Q2)
- the proposed HS2 links to Heathrow and HS1 were not viable, (Q3)
- HS2 Ltd's design principles – in particular stand-alone operation and design for the extreme speed of 400km/h – would fail to deliver the desired improvements in capacity and connectivity; its option selection process was fatally flawed (Q4); and
- a far superior route via the M1 corridor was available. (Q5)
- HS2's deficiencies as a network and its flawed routeing would hugely increase its environmental impact, in terms of both CO<sub>2</sub> emissions and damage to sensitive landscapes, (Q6) and also greatly increase the need for compensation payments. (Q7)



2011 HS2 PHASE 1 CONSULTATION		
GUIDELINE QUESTIONS FOR PUBLIC RESPONSE		HIGH SPEED UK RESPONSE
Q1	Do you agree that there is a strong case for enhancing the capacity & performance of Britain's inter-city rail network to support economic growth over the coming decades?	New high speed lines, fully integrated with the existing network, are essential for improved capacity and connectivity between the UK's major regional conurbations.
Q2	Do you agree that a national high speed rail network from London to Birmingham, Leeds and Manchester (the Y network) would provide the best value for money solution (best balance of costs and benefits) for enhancing rail capacity and performance?	The HS2 'Y' is not the right way to deliver this improvement. It lacks any transpennine connection and more generally it performs poorly in interlinking the UK's many conurbations. In both respects HSUK's spine & spur configuration far outperforms the HS2 'Y'.
Q3	Do you agree with the Government's proposals for the phased roll-out of a national high speed rail network, and for links to Heathrow Airport and the High Speed 1 line to the Channel Tunnel?	HS2's isolated route gives no opportunity for phased roll-out; whereas HSUK's M1-corridor route can be built in much smaller stages. Proposed HS2 links to Heathrow and HS1 are not viable.
Q4	Do you agree with the principles and specification used by HS2 Ltd to underpin its proposals for new high speed rail lines and the route selection process HS2 Ltd undertook?	HS2 Ltd's design principles, in particular stand-alone operation and design for the extreme speed of 400km/h, will fail to deliver the desired gains in capacity and connectivity, and its route selection process is fatally flawed.
Q5	Do you agree that the Government's proposed route, including the approach proposed for mitigating its impacts, is the best option for a new high speed rail line between London and the West Midlands?	HSUK's route via the M1 corridor offers a far superior route, requiring far less tunnel than HS2, causing much reduced environmental damage and costing much less to construct.
Q6	Do you wish to comment on the Appraisal of Sustainability of the Government's proposed route between London and the West Midlands that has been published to inform this consultation?	HS2's network deficiencies and its flawed routeing will hugely increase its environmental damage, in terms of both impact on the landscape and failure to reduce transport CO <sub>2</sub> emissions.
Q7	Do you agree with the options set out to assist those whose properties lose a significant amount of value as a result of any new high speed line?	Whilst compensation packages are essential, HS2's inappropriate route will greatly increase the sums to be paid in compensation.

Table 22.1 : Guideline questions for public response to July 2011 official consultation on HS2 Phase 1 proposals, with summarised responses taken from Christopher Quayle's submission on behalf of High Speed North (predecessor proposal to High Speed UK). For the full text of this response, see *HS2 : High Speed Trains, Slow Speed Brains*.

<b>Issue raised in</b>  <b><i>HS2 :</i></b>  <b><i>High Speed to Failure</i></b>		<b>Official HS2 Consultation</b>		
		<b>HS2 Phase 1</b>	<b>Draft Env Statement</b>	<b>HS2 Phase 2</b>
		July 2011	July 2013	Jan 2014
		<b>Page/clause reference in HSUK response</b>		
<b>1</b>	Intercity Connectivity	p7/2.2	p4/10.2	p11/A.1-A.3
<b>2</b>	High Speed Line Capacity	p5/1.7	p2/3.1	throughout
<b>3</b>	Primary City Station Proposals	p4/1.3	N/A	p4/5.1-5.5
<b>4</b>	Network Performance	p9/2.3 p25/4.2.9	p3/6.2	p4/5.1 p6/5.5
<b>5</b>	Quantified Journey Time Reductions	N/A	p2/3.2	p11/A.1-A.3
<b>6</b>	London Airport Development	p11/3.3	N/A	N/A
<b>7</b>	Regional HS links to Heathrow	p10/3.2	p6/12.7	p10/9.3
<b>8</b>	HS2-HS1 Link	p13/3.5	N/A	N/A
<b>9</b>	Strategy for National Freight Network	N/A	N/A	N/A
<b>10</b>	Environmental Impact in Chilterns etc	p30/5.3-5.4	P6/12.6	p8/7.2
<b>11</b>	Euston Terminal Proposals	p28/5.2	p6/12.8	N/A
<b>12</b>	Midlands Connectivity	p15/4.1.1 p27/4.2.10	N/A	p6/5.5
<b>13</b>	Transpennine Connectivity	p7/2.2 p25/4.2.9	p4/10.2	p2/2.1-2.2 p4/5.1-5.2
<b>14</b>	High speed links to Scotland	p25/4.2.9	p4/11.1	N/A
<b>15</b>	HSUK & HS2/NPR Construction Cost	throughout	p2/3.3	p12/Q.3
<b>16</b>	CO <sub>2</sub> reductions/Climate Change Act	p9/2.4 p35/6.1	p3/5.1 p3/5.2	p8/7.4
<b>17</b>	HS2 Remit	p17/4.2.1	p1/1.1	N/A
<b>18</b>	Adoption of 400km/h Design Speed	p16/4.1.2	p5/12.2	p12/Q.1
<b>19</b>	HS2 Ltd Option Sifting Process	p20/4.2.4	p5/11.3	N/A
<b>20</b>	HS2 Ltd reasons for dismissing HSUK	p18/4.2.2	p5/11.2	N/A
<b>21</b>	National high speed network design	p7/2.2	p4/10.2	p4/5.1 p6/5.5
<b>22</b>	Official HS2 Consultations 2011-2014	N/A	N/A	p8/7.6

Table 22.2 : Issues raised in *HS2 : High Speed to Failure* cross-referenced against High Speed North/HSUK responses to HS2 consultations. See *HS2 – High Speed Trains, Slow Speed Brains*.

<i>Consultation</i>	<i>Date</i>	<i>Respondent</i>	<i>Author(s) of response</i>
HS2 Phase 1	2011	High Speed North	Christopher Quayle
Draft Environmental Statement	2013	High Speed North	Christopher Quayle & Quentin Macdonald
HS2 Phase 2	2014	High Speed UK	Colin Elliff & Quentin Macdonald

Table 22.3 : HSUK Responses to official HS2 Public Consultations.

*Note that 'Christopher Quayle' was a pseudonym adopted by Colin Elliff to avoid accusations of conflict of interest from his then railway industry employers.*