

HSUK response to:

**Official Consultation on Phase 1
Proposals for HS2 from London
to the West Midlands**

*(Extracts from **HS2: High Speed Trains, Slow Speed Brains**, available on www.highspeeduk.co.uk)*

Section 7 : HSUK Commentary (2018)

Appendix E : HSUK Response (2011)

7 Commentary on HSUK response to Official Consultation on Phase 1 Proposals for HS2 from London to the West Midlands

Responding Organisation	High Speed North #
Author of Response	Christopher Quayle**
Date	July 2011
For full text of response see	Appendix E

For simplicity of narrative, the abbreviation 'HSUK' is generally used in the following text to describe either the High Speed North proposals as they existed in July 2011, the High Speed UK proposals as they exist today (2018), or High Speed North/High Speed UK in a corporate sense.

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

In 2011, the Government invited public responses to its official consultation on its proposals for Phase 1 of HS2 from London to the West Midlands. The consultation was framed around the following questions:

1. Do you agree that there is a strong case for enhancing the capacity and performance of Britain's inter-city rail network to support economic growth over the coming decades?
2. 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?
3. 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?
4. 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?
5. 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?
6. 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?
7. 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?

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, (Q4)
- its option selection process was fatally flawed (Q4); and
- a far superior route capable of construction with 4 tracks 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 CO₂ emissions and damage to sensitive landscapes, (Q6) and
- would also greatly increase the need for compensation payments. (Q7)

The following sections (7.1 to 7.7) set out the key points of the written response by HSUK. This response included outline mapping (at 1:50,000 scale) of the alternative High Speed North route from London to Birmingham, and the 'Alan Brooke Study', a detailed assessment of the comparative performance of HS2 and High Speed North in delivering transport sector CO₂ emission reductions in line with the 80% reduction target of the 2008 Climate Change Act.

The summarised responses below are referenced to the clause numbering in the HSUK response thus: **(1.1)**.

7.1 The Case for Enhancing the Capacity and Performance of Britain's Intercity Rail Network

The HSUK response set out the following principles by which investment in new high speed lines could be justified:

- Enhancement of the national network to optimise capacity, performance and connectivity is the true priority – high speed is of relatively minor importance **(1.1)**.
- Full integration with existing intercity network is essential to allow all cities currently served by the present intercity network to enjoy high speed services **(1.2)**.
- Access for high speed services to existing city centre hubs is vital to optimise integration **(1.3)**.
- New high speed lines should be employed to address connectivity deficiencies in the existing network **(1.4)**.
- Achieving high speed rail access to Heathrow (and other regional airports) must not be at the expense of high speed rail's basic function as an intercity railway **(1.5)**.
- High speed rail must facilitate road-to-rail modal shift necessary to achieve transport sector CO₂ reductions in line with the 80% reduction target of the 2008 Climate Change Act **(1.6)**.
- This creates a huge requirement for additional capacity, and specifically a need for 4 tracks in any north-south spine route **(1.7)**.

- A new high speed line should follow existing transport corridors such as the M1, where its additional environmental impact will be small, and the major population centres can gain from the improved connectivity **(1.8)**.

7.2 The HS2 'Y' network – the best option for enhancing rail capacity and performance?

The HSUK response explained how:

- The HS2 'Y' is primarily London-centric, lacking the necessary connectivity between regional cities necessary to improve interregional links and thus stimulate regional economies **(2.2)**.
- The HS2 'Y' particularly lacks any transpennine connection necessary to link Northern cities **(2.2)**.
- The poor connectivity offered by the HS2 'Y' leads directly to poor performance in reducing transport CO₂ emissions in line with the 80% reduction target of the 2008 Climate Change Act **(2.2)**.
- Higher costs will also result from the greater requirement for new-build high speed lines, running to east and west of the Pennines **(2.2)**.
- The HS2 'Y' will comprise an inefficient network, with most proposed routes only connecting a single pair of cities; this compromises train loadings and results in poorly-filled trains consuming valuable line capacity **(2.2)**.
- The HS2 'Y' cannot provide efficient direct connections from regional cities to Heathrow; instead it is necessary to route HS2 to allow the proposed shuttle connection at Old Oak Common **(2.2)**.
- This requirement to route HS2 close to Heathrow effectively dictates HS2's destructive route through the Chilterns AONB **(2.2)**.

All these problems can be avoided through HSUK's alternative 'spine and spur' configuration, with a 4-track spine route aligned with the M1 corridor **(2.3)**.

7.3 Phased Roll-out of National High Speed Network and Links to Heathrow & HS1

The HSUK response explained how:

Phased Roll-out

- HS2's route from London to the West Midlands lacks any viable intermediate connection to the existing network, therefore 'phased roll-out' seems impossible **(3.1)**.
- Much greater possibilities for phased roll-out are possible for the HSUK route following the M1 corridor **(3.1)**.

Links to Heathrow

- The HS2 'Y' cannot provide efficient direct connections from Heathrow to regional cities **(3.2)**.
- As a result potential flows are insufficient to justify the major investment in tunnelled infrastructure necessary to bring an HS2 spur or loop to Heathrow **(3.2)**.
- The only viable HS2 link to Heathrow is via a shuttle connection at Old Oak Common **(3.2)**.
- Heathrow exerts a huge 'gravitational pull' on the routing of HS2, drawing it away from its optimum intercity alignment following the M1 corridor and instead dictating both its destructive route through the Chilterns and its entire national configuration as the inefficient 'Y' **(3.4)**.
- The alternative HSUK scheme, for an integrated 'Compass Point' network of routes from Heathrow linking to east, south, west and north, and connecting to an M1-aligned high speed line at Brent Cross, allows much more efficient and comprehensive links from Heathrow to all regional cities **(3.3)**.

The difficulties described above, coupled with a lack of capacity on HS2's 2-track stem for dedicated direct regional services to Heathrow, ultimately led to the cancellation of the proposed HS2 Heathrow spur in March 2015. There is now no prospect of HS2 fulfilling one of its key political promises, to provide direct regional high speed services to Heathrow, This leaves High Speed UK as the only proposal offering comprehensive direct high speed services to Heathrow from most regional cities. This also demonstrates the futility of dedicated uniaxial high speed lines as a means of distributing airline passengers to their regional destinations, as was stated in the HSUK response.

Links to HS1

- The proposed HS2-HS1 link, comprising a 6km long single track tunnel from Old Oak Common to the North London Line in Camden, appeared to be both excessively expensive and operationally fragile **(3.5)**.
- HSUK's alternative route, approaching Euston from the north-west, appeared to offer a more viable and cost-effective connection to HS1 **(3.5)**.

The difficulties described above, coupled with the extreme sensitivity of the urban environment in Camden, ultimately led to the cancellation of the proposed HS2-HS1 link in March 2014. By this time, costs had risen to £700M. As with the abandoned Heathrow spur (see above) there is now no prospect of HS2 fulfilling another of its key political promises, to provide direct services from UK regional cities to Paris, Brussels and other EU cities.

The difficulties of creating a direct link to HS1 have also caused the HSUK scheme to be amended, to fully exploit the advantages offered by HSUK's alternative M1 corridor route, which follows the Midland Main Line as it enters the Greater London conurbation. It is now proposed that HSUK services en route to HS1 will simply continue along the Midland Main Line to St Pancras, and after reversal there continue along HS1 to the Channel

Tunnel. This will require no new construction outside the existing railway boundary, and alterations to existing track, signalling and electrification equipment are estimated to cost no more than £2M.

7.4 HS2 Principles and Specification and Route Selection Process

The HSUK response explained how HS2's overall performance as a UK rail network is compromised by HS2 Ltd's failure to adopt a 'UK-appropriate' model of operation, in particular:

- **HS2's segregated/exclusive operation (4.1.1).**
HS2's segregation from (rather than integration with) the existing rail system can be seen in its separate stations in primary cities (eg Birmingham Curzon Street), its general lack of connection to the existing network, and its bypassing (and blighting) of key second-tier cities centres such as Coventry, Leicester and Stoke.
- **Speed (4.1.2).**
HS2's design for the unprecedented speed of 400km/h will make it the fastest railway in the world. Such extreme speed delivers relatively small reductions in journey time, but it causes much higher engineering costs and requires much greater energy use (rising proportionate to the square of speed). Most significantly, specification for extreme speed makes it impossible for the high speed line to follow existing transport corridors such as the M1 and instead dictates environmentally damaging rural routes on which it is not practicable to optimise integration and connectivity.

The HSUK response raised the following concerns with the HS2 project remit:

- **General remit issues (4.2.1).**
The HS2 project remit failed to specify the desired outcome of an enhanced and optimised national intercity network. Instead, it comprised an unfocussed set of localised requirements, many of which tended to predetermine the HS2 proposals and prevent fair consideration and assessment of alternatives.

The deficiencies of the HS2 project remit – which sets out what is to be built, rather than what the project must achieve – are discussed in greater detail in Appendix A.

- **Onward Development of HS2 beyond West Midlands (4.2.2).**
Item 2 of the HS2 project remit (to consider options to develop HS2 beyond the West Midlands) has effectively dictated that all network configurations given serious consideration by HS2 Ltd should pass through the West Midlands en route to destinations further north. This allowed HS2 Ltd to dismiss the M1-aligned High Speed North with no detailed investigation. This was despite the fact that its alternative 'spine & spur' configuration was far more effective at interlinking the UK's many conurbations than any of the configurations considered by HS2 Ltd.

HS2 Ltd's flawed option selection procedure is discussed in greater detail in Appendix B.

- **Proposed Crossrail/Heathrow/GWML Interchange (4.2.3).**

Item 5 of the HS2 project remit (to consider options for an interchange station “between HS2, the Great Western Main Line and CrossRail, with convenient access to Heathrow Airport”) effectively specifies the proposed HS2 interchange at Old Oak Common. This in turn has the effect of predetermining HS2’s rural route to the West Midlands and the entire ‘Y’ configuration of the HS2 national system.

These concerns lead inevitably towards a strong suspicion that the HS2 ‘solution’ was predetermined from the very start of the HS2 project, when the remit was first formulated. This suspicion is compounded by multiple failures in the HS2 route selection process which are revealed by detailed review of HS2 Ltd’s own reports and documentation:

- The HS2 Phase 1 route was selected with no consideration of how it might perform as part of an optimised national network **(4.2.4)**.
- All options for routes following the M1 corridor were rejected at the first stage of consideration, despite the acknowledged fact that the M1 corridor offered the only route that would avoid passing through the Chilterns AONB **(4.2.4)**.
- All the reasons employed to dismiss an M1-corridor route from consideration are uniformly false, spurious or unreasonable **(4.2.4)**.

The specific rationale employed by HS2 Ltd to dismiss any M1 corridor route is discussed below:

- **Route length (4.2.5):**

HS2 Ltd’s assertion that an M1 corridor route would be excessively long is not reasonable. The High Speed North route from London to Birmingham following the M1 and M6 was only 7km – equivalent to 1.5 minutes at 300km/h – longer than the HS2 route.

With the HSUK route from London to Birmingham now revised to follow the existing main line via Coventry, this discrepancy reduces to 4.3km/52 seconds.

- **Impact on Communities / Requirement for Tunnelling (4.2.6):**

HS2 Ltd’s assertion of a need for excessive lengths of tunnel for a high speed line following the M1 corridor is disproved by the route design undertaken (at 1:50,000 scale) for High Speed North. This shows 10km of tunnel required for an M1 corridor route, compared with 20km for HS2’s Chiltern-aligned route.

HSUK’s more detailed route design (at 1:25,000 scale) now shows 12km of tunnel required for its M1 corridor route to Birmingham. Meanwhile, environmental concerns along HS2’s highly intrusive line of route have caused HS2’s tunnelling requirement to grow to 50km.

- **Capability of M1 Corridor to accommodate high speed alignment (4.2.7):**

HS2 Ltd's assertion that the M1 corridor could not accommodate a high speed line running parallel to the motorway is again disproved by the route design undertaken (at 1:50,000 scale) for High Speed North. This showed that a new railway designed for the maximum speed of 320km/h could follow the M1, with only minor deviation. Any 'islands of blighted land that might be created between motorway and high speed line will have a much lesser impact than that created by the huge earthworks required along HS2's inappropriate and intrusive line of route.

HSUK's more detailed route design (at 1:25,000 scale) now shows that the M1 corridor can accommodate a high speed line designed for 360km/h maximum speed. HSUK's timetabling demonstrates that any small timing penalties sustained by an inability to match HS2's 'future-proofed' top speed of 400km/h are massively outweighed by the full integration that is possible along the M1 corridor, which allows the benefits of HSUK's reduced journey times and greater connectivity to be spread to all intermediate communities eg Luton, Milton Keynes, Northampton, Coventry and Leicester.

HS2 Ltd's false assertions with regard to the capability of the M1 corridor to accommodate a parallel high speed rail alignment are discussed in greater detail in Appendix C.

- **Incompatibility with proposed high speed rail link to Heathrow (4.2.8):**

HS2 Ltd's assertion that an M1 corridor high speed line was too far from Heathrow for any airport link to be "remotely feasible" appears to presuppose that HS2 Ltd's favoured models of airport access are economically viable, or meet the UK regions' need for direct rail access to the national aviation hub. Neither supposition is true. Long tunnelled spurs or loops to an 'on-airport' station will be hugely expensive, yet benefit relatively few – and the proposed 'shuttle' connection at Old Oak Common fails to provide the required direct link. HSUK's 'Compass Point' proposals make use of the existing Heathrow Express infrastructure, require relatively short lengths of new construction, but enable 360-degree connectivity for Heathrow, with high speed and local direct services radiating to most regional cities. This fully accords with regional aspirations for direct high speed links to Heathrow.

All HS2 proposals for direct regional services to Heathrow are now abandoned. HS2's best offer for improved Heathrow access is by means of a change of trains at Old Oak Common, and a highly restrictive range of regional destinations. By contrast, the HSUK timetable shows Heathrow directly connected to most principal regional cities, and average journey times reduced by around 50%, compared with existing journeys, most of which require a highly inconvenient and congested Tube transfer between central London stations.

The HSUK response also raised the following specific issues:

- **National Network Development (4.2.9):**

HS2 Ltd's studies underpinning the selection of its chosen route pay no heed to the true priority, to create an efficient national network capable of better connecting the UK's regional communities. The inappropriate remit effectively predetermines HS2's 'Y' configuration and prevents proper consideration of more efficient configurations such as the M1-aligned HSUK 'spine and spur' which is far more capable of connecting the nation, and thereby delivering much greater economic and environmental benefit.

- **Concerns re High Speed Rail Development to East Midlands (4.2.10)**

HS2's routing strategy, for a direct route from London to the West Midlands, and for the East Midlands only to be served in subsequent phases, raises 2 specific concerns. It places the East Midlands in a clearly subsidiary relationship with the West Midlands, and it also tends to predetermine the HS2 'solution' for the East Midlands ie a parkway station located at Toton, remote from the centres of Derby and Nottingham and completely unable to serve Leicester.

7.5 HS2 – the best route from London to the West Midlands?

The HSUK response explained how:

- The proposed HS2 Phase 1 route was neither the best route from London to the West Midlands, nor the route that would deliver greatest benefit to the national rail system **(5.1)**.
- Whilst HS2 Ltd had correctly chosen Euston Station as its London terminus, its destructive proposals to expand the station were unnecessary. If Euston's commuter flows could be diverted to Crossrail, there would be no need to physically expand the station **(5.2)**.
- The proposed HS2 route from London to the North Scarp of the Chilterns (at Aylesbury) would require a much greater length of tunnel (20km) and cause unnecessary environmental intrusion, compared with an M1-aligned route which would require 10km of tunnel to reach an equivalent position (at Luton) **(5.3)**.

In subsequent design development, the HS2 tunnelled length (along the line of route from Euston to Aylesbury) has risen from 20km to 40km, while the HSUK tunnelled length (along the line of route from Euston to Luton) has risen from 10km to 11km.

- The onward ultra-direct HS2 route to the West Midlands appears to be primarily justified by a desire for future operation of HS2 services at 400km/h and for gaining high speed rail access to Heathrow. In doing so, the opportunity offered by an M1-aligned route for a 4-track route north from London, and for radically improved intercity links to Luton, Milton Keynes, Northampton, Coventry and Leicester, would be lost **(5.4)**.

With cancellation in March 2015 of proposals for an HS2 spur to a dedicated station at Heathrow, most of the primary logic for the proposed HS2 route through the Chilterns AONB has now disappeared. Yet since the cancellation of the Heathrow spur, there has been no review by HS2 Ltd or Government or the Transport Select Committee of the fundamental logic by which the proposed HS2 route was determined. There has also been no consideration of whether alternative proposals such as HSUK might better meet the twin priorities of a high speed rail route from London to the Midlands, the North and Scotland, and regional high speed rail access to Heathrow.

- HS2's proposed terminus station at Birmingham Curzon Street, remote from the West Midlands' primary rail hub at Birmingham New Street, will fail to optimise HS2's connectivity within the West Midlands. It will also destroy the fundamental integrity of the national rail network which relies on a single hub at Birmingham New Street. These connectivity concerns dictate that HS2 is developed in a more integrated manner so that Birmingham New Street remains the primary hub of the regional and the national rail network **(5.5)**.
- HS2's proposed 'Birmingham Interchange' station is disconnected from existing rail services and is effectively a 'parkway' station primarily aimed at promoting out-of-town development. It seems likely only to promote greater car use on the M42 and on the M6 by passengers unable to access HS2 at Curzon Street. It seems likely also to damage intercity rail services to nearby Coventry. Far superior intercity rail access to both Birmingham Airport and the National Exhibition Centre, and also to Coventry and Leicester, could be achieved by 4-tracking the existing Coventry-Birmingham route, with north- and south-bound connections near Rugby to an M1-aligned national spine route **(5.6)**.

The implications of HS2's selection of Birmingham Curzon Street and Birmingham Interchange stations, and their impacts on local initiatives to establish a 'Midlands Engine' to develop the Midlands economy, are set out in greater detail in Sections 4.9 and 4.10 of HS2 – High Speed to Almost Nowhere.

7.6 Appraisal of Sustainability

The HSUK response expressed the following concerns:

- The Appraisal of Sustainability fails to recognise the basic requirement for any major public project such as HS2 to be designed and developed in such a way as to deliver CO₂ emission reductions broadly compatible with the 80% reduction target of the 2008 Climate Change Act **(6.1)**.
- HS2's broadly 'carbon neutral' performance (ie its intervention will not bring about significant CO₂ reductions across the entire transport sector) is fundamentally incompatible with this 80% target **(6.1)**.
- This problem stems from HS2's poor design, with the wrong operational model (segregated rather than integrated), the wrong routing strategy (following intrusive rural routes rather than established transport corridors) and the wrong network configuration (the 'Y' rather than HSUK's 'spine and spur') **(6.1)**.

The HSUK response included the 'Alan Brooke' study, a detailed assessment that compared the potential of HS2 and HSUK to deliver transport sector CO₂ reductions. This study essentially validated HS2's 'carbon neutral' performance, and demonstrated how HSUK's superior network coverage and integration could deliver around 600 million tonnes of CO₂ savings.

- The Appraisal of Sustainability also fails to recognise the fact that the UK's 'unspoilt' rural landscapes represent a finite and irreplaceable resource that must be preserved, unless there is an overwhelming imperative to do otherwise **(6.1)**.
- With the nearby M1 corridor offering a clear alternative to the proposed HS2 rural route through the Chilterns AONB, there can be no justification for HS2's massive environmental intrusion **(6.1)**.

7.7 Compensation Options

The HSUK response stated that:

- HS2's route from London to the West Midlands, running through the Chilterns AONB and other sensitive areas, will cause massive intrusion and thereby require similarly massive compensation payments **(7.1)**.
- Expenditure on compensation would seem likely to be significantly lower for an M1/M6aligned route such as HSUK, given the much lower intrusion and environmental nuisance caused by such a route **(7.2)**.

APPENDIX E

SUBMISSION TO:

**OFFICIAL CONSULTATION ON PHASE 1 PROPOSALS
FOR HS2 FROM LONDON TO THE WEST MIDLANDS**

RESPONDING ORGANISATION:

HIGH SPEED NORTH

AUTHOR OF RESPONSE:

CHRISTOPHER QUAYLE

DATE:

JULY 2011

**Detailed commentary on this submission is given in
Section 7 of this report.**

Note: All references to 'Birmingham Fazeley Street' station replaced with 'Birmingham Curzon Street' in accordance with current parlance.

RESPONSE TO GOVERNMENT'S HS2 PHASE 1 CONSULTATION

Introduction

This response to the Government's Consultation on the HS2 proposals is made by Christopher Quayle.

This response principally references the following documents:

- *High Speed Rail and CO₂*. By Alan Brooke, published May 2011. Paper copy of Executive Summary attached, full report enclosed in CD format.
- Route plans (1:50000 scale) of London to Birmingham and Leicester sections of *High Speed North*, prepared by the High Speed North Consortium. (For reasons of copyright and blight, these plans are not for onward dissemination beyond DfT, and must be treated as confidential.)
- HS2 Ltd July 2009 newsletter.
- HS2 Ltd Report to Government dated March 2010.
- HS2 Government Command Paper High Speed Rail dated March 2010.
- HS2 Consultation document.

The Alan Brooke study, in its consideration of projected CO₂ emissions from the transport sector, takes as 'exemplar schemes' both:

- the HS2 proposals for a Y-shaped system, extrapolated into a national network extending northwards either side of the Pennines, broadly as indicated in the various HS2 documentation.
- the High Speed North proposals for a 'spine and spur', broadly aligned with the national motorway network and interconnecting all principal conurbations of the Midlands, the North and Scotland. These proposals were published in July 2008 by the 2M Group of London and South-East Councils. A pamphlet outlining comparative benefits of High Speed North against the HS2 proposals is also attached.

Although the 'headline' comparisons of the Alan Brooke study address the specific issue of transport CO₂ emissions, development of these statistics is only possible through detailed consideration of more conventional issues of capacity, connectivity, operational efficiency, environmental intrusion and cost. Noting the generic nature of the source data (eg vehicle emission figures), and difficulties in making accurate predictions as to the true gravity of the anticipated environmental crisis, there are clear uncertainties as to the accuracy of the findings, in an absolute sense. However, in a comparative sense, with the same methodologies applied consistently to both proposals, the relative accuracy is far greater.

All of the comparisons thus generated appear fully coherent and consistent with the self-evident proposition, that a railway system a) covering more existing main line axes, b) capable of quicker implementation, c) better integrated with the classic network, and d) more operationally efficient, should show much greater potential to generate modal shift and hence reductions in overall transport CO₂ emissions.

This points to a highly concerning situation, whereby the official HS2 proposals – which are the product of several years of professional development - seem to underperform with respect to an alternative proposal, by an order of magnitude.

Notwithstanding these issues of comparative performance, it must be emphasised that this response to the HS2 consultation should not be taken to imply specific endorsement of the detail of the High Speed North scheme, but rather of the underlying operational principles and network configuration, to which it has been developed. It is also indicative of the fact that the Government's consideration of high speed rail development has not been as comprehensive as might reasonably be expected for an initiative of this magnitude.

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28/7/11

Part 1 of the consultation document

1. This question is about the strategy and wider context (Chapter 1 of the main consultation document): Do you agree that there is a strong case for enhancing the capacity and performance of Britain's inter-city rail network to support economic growth over the coming decades?

1.1 Primary Requirement for Capacity, Connectivity and Efficiency

I support the view that the enhancement of the intercity rail network's capacity, performance **and** connectivity is of great importance to the national economy. In the context of a consultation about high speed rail (HSR), I would comment that compared with capacity, performance and connectivity, speed (especially of the magnitude proposed by HS2) is of relatively minor importance in developing a viable rail network addressing contemporary transport, economic and environmental needs.

I believe strongly that the attainment of an enhanced intercity rail network constitutes the primary goal in the development of a high speed rail network. This enhancement must address in a fully balanced manner sometimes competing requirements for speed, capacity, performance and connectivity.

It is important to note the fact that the physical extent of any new high speed rail system will only reach the primary conurbations (ie Birmingham, Nottingham, Sheffield, Leeds, Manchester, Liverpool, Newcastle, Edinburgh and Glasgow), and that the 'second tier' centres (such as Luton, Milton Keynes, Northampton, Leicester, Coventry and Stoke, within the immediate scope of HS2) will remain reliant on the 'classic' network.

1.2 Imperative for Integration of High Speed and Classic Networks

This creates a clear imperative for full integration between classic and high speed networks, and demands the establishment of a bespoke 'UK-appropriate' model of high speed rail, tailored to suit Britain's unique geography, topography and demography.

I am concerned that the massive multi-billion cost of developing high speed rail will (notwithstanding the statements of various politicians and of prominent supporters of high speed rail) have adverse impacts upon necessary investment in the classic network. In the current straitened financial climate, these conflicts in investment priorities appear inevitable, and (as is often the way with high-profile and prestigious projects such as high speed rail) it seems likely that investment in the classic railway will suffer. Noting the fact that the journeys and ultimate destinations of the vast majority of rail passengers will remain on the classic railway, I would consider this situation to be unacceptable.

Accordingly, I believe that the best means of resolving these conflicts is to ensure optimum integration between high speed and classic railway. In this way, the construction of the new high speed line will bring maximum benefit to the local railway and reduce the pressure for new investment on these lines. If the new line can be located close to the communities to which these local benefits will accrue, this should also have the effect of reducing opposition to construction.

Another means of resolving these conflicts of competing investment priorities is to minimise the cost of high speed rail construction through minimising route length, and to maximise financial returns through optimising operational efficiency and 'network value' of the entire railway system. Again, integration between high speed and classic networks is crucial.

1.3 Requirement for High Speed Access to Existing City Centre Hubs

I consider that the principle of integration between high speed and classic systems can only practicably be achieved by ensuring that high speed rail services access the existing rail hubs of the major conurbations (such as Birmingham New Street, Manchester Piccadilly or Leeds City Stations). The establishment of separate high speed stations (eg Birmingham Curzon Street) or poorly-connected parkway stations (eg Birmingham 'Interchange') is unacceptable.

I would acknowledge that certain circumstances of topography and/or surrounding development might render city centre access impracticable, and instead compel development of a parkway station. This might be considered acceptable in the case of a station such as Sheffield Meadowhall, well connected to the existing local rail / wider public transport network, and centrally located to the wider conurbation that it is intended to serve.

1.4 Opportunities to Enhance Existing Intercity Rail Network

Wherever practicable, high speed rail should be employed as a means of addressing defects in the existing somewhat London-centric rail network, and for developing a more balanced interregional network with a common high standard of connectivity (and speed) between all primary conurbations. This 'equivalence of connectivity' is vital in ensuring that the development of high speed rail delivers the intended economic benefits to the UK regions.

1.5 Conflicts Inherent in Achieving High Speed Access to Heathrow

I also believe that there are major conflicts inherent in the requirement to create an enhanced intercity network, and in the additional requirement to achieve improved links to Heathrow Airport (and other regional airports). In terms of simple passenger flows, the 'intercity' component clearly dominates over the 'airport' component (ref Command Paper Item 7.12, Table 7.1), and this fact must be recognised in the development of high speed rail in the UK.

This is not to deny the need for improved rail access to Heathrow, and other airports; on the contrary, I support the principle of appropriate rail (or other public transport) access to all airports. However, this must be commensurate to the status of the airport (ie local, regional or national 'hub') and must address the 360-degree nature of any airport's surface access. In this context, it is clearly inappropriate to attempt to remedy Heathrow's inadequate surface access with a uniaxial high speed rail line of limited connectivity.

1.6 Alignment of HSR Strategy with Climate Change Objectives

I would also comment that the rationale for development of high speed rail cannot simply be about economic growth. The Government's strategy for high speed rail should be part of a wider strategy to achieve 80% cuts in CO₂ emissions over the next 40 years, in line with the requirements of the 2008 Climate Change Act. HS2's predicted environmental performance (ref HS2 RtG Items 4.2.27-4.2.33), of no meaningful overall reduction in CO₂ emissions over the next 60 years, makes the proposals effectively unfit for purpose. The research embodied in the Alan Brooke study demonstrates that far more is possible, if the correct operational philosophy, routing strategy and network configuration are adopted.

1.7 Associated Requirement for Enhanced Rail Network Capacity

I consider that within the transport sector, the majority of the required cuts in CO₂ emissions will come from modal shift, with high-emitting road and air traffic transferring to lower-emitting rail. Around one-third of existing road passenger-kilometres (and all domestic air journeys within mainland UK) are potentially convertible to intercity rail, and this would have the effect of approximately quadrupling rail traffic.

With the rail network already close to capacity on most main line axes, it is clear that quadrupled rail traffic demands (approximately) quadrupled capacity, and the only practicable means of achieving this step-change modal shift is to construct new railways, along all existing main line axes.

On particularly busy sections of the network (particularly the southern section from London to the Midlands) there appears to be a prima-facie case either for constructing the high speed line with 4 tracks from the outset, or with passive provision for future 4-tracking. The option of constructing a second northward route from London is worthy of consideration, but this strategy appears to add major additional cost, disruption and timescale; the 4-track option along a single core route seems vastly preferable.

1.8 Requirement to Follow Existing Transportation Corridors

I believe that the environmental imperative, to effect step-change modal shift to rail in the shortest practicable timescale, dictates that the selected high speed rail routes must be capable of swift implementation, with the minimum of controversy. This requires that the high speed line's impact upon landscapes, upon property and upon communities is minimised, and that any adverse impacts are balanced by commensurate benefits. This might be characterised as 'addressing the localism agenda'.

The best means of resolving these issues appears to be through following existing transportation corridors, in particular motorways such as the M1 which are generally constructed to a sufficiently straight alignment to permit parallel railway construction. The environmental intrusion of the motorway – noise, atmospheric and visual – is already an established fact, and the marginal intrusion of the new high speed railway will be almost insignificant. Moreover, the presence and nuisance of the motorway for over 50 years has discouraged adjacent residential development, and this creates the required clear corridor for high speed rail construction.

An associated advantage is that motorways generally follow corridors of relatively high population, with major communities that might directly benefit from the improved connectivity offered by the high speed line. I believe that, with the appropriate model of integration between high speed and classic networks, an M1-aligned high speed line could transform rail journey opportunities for the major centres along the M1 corridor ie Luton, Milton Keynes, Northampton, Leicester and Coventry. See Section 5.

By contrast, the communities along the Chiltern corridor chosen for HS2 lack the size and scale to gain any realistic benefit from the new high speed line, and the adverse impacts – upon communities, property and landscapes within 'greenfield' areas, and Areas of Outstanding Natural Beauty – are of an order of magnitude greater.

2. This question is about the case for high speed rail (Chapter 2 of the main consultation document): 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?

2.1 Requirement for National High Speed Rail System

I consider Birmingham, Leeds and Manchester to comprise a reasonable goal, for initial roll-out of high speed rail as part of a phased implementation of a national network. However, as noted previously, I would comment that the purpose of high speed rail should not simply be to link Birmingham, Leeds and Manchester to London; they should all be linked to each other. This principle should apply not just for Birmingham, Leeds and Manchester, but for all other major centres. A national system, linking to, and delivering equivalent connectivity between, the UK's principal conurbations, is considered essential.

2.2 Concerns re the Proposed HS2 'Y' Network

Accordingly, I have major concerns as to the suitability of the proposed 'Y'. It does not appear to comprise the optimum configuration, and generally has much inferior performance to the alternative 'spine and spur' format, for the following reasons:

- The 'Y' is not configured to optimise interregional links, particularly on Transpennine axes but also (through the isolation of the proposed Birmingham Curzon Street terminus from Birmingham New Street) on CrossCountry routes. It is primarily London-centric and hence will tend to deliver greatest economic benefits there.
- Development of a 'Y' (in the manner advocated by HS2) will effectively preclude (or at least greatly delay) development of equivalent Transpennine connectivity. This will have major adverse impacts on the Northern economy.
- The lack of a Transpennine dimension (and absence of coverage on other interregional axes) will greatly limit the ability of the new high speed rail system to drive modal shift, and thus achieve reductions in transport emissions. The Alan Brooke study indicates that failure to implement the necessary step-change increase in capacity on Transpennine axes in a timely manner could cost of the order of 92MT of CO₂ over a 40 year period.
- The 'Y' requires greater route length than 'spine and spur' (1092km vs 935km of new construction) but achieves fewer 'conurbation-pair' connections (19 vs 45). This is true both for the initial London-Birmingham-Manchester-Leeds system, and also for the ultimate system development to all 9 principal conurbations of the Midlands, the North and Scotland.
- The route length comparison – amounting to a 160km discrepancy, valued conservatively at £30M/km – equates to an extra cost of circa £5 billion for the full system of the 'Y'. The 'conurbation-pair' comparison might simplistically be taken to indicate benefit. Hence, with greater cost but less benefit, the benefit-cost ratio (BCR) of any 'Y' system – HS2 or otherwise – would seem not to be optimised.
- The 'Y' is also operationally inefficient. This arises from its multiple-bifurcating tree-like configuration, with most if not all cities located on separate spurs, and no major centres located at intermediate points on the line of route. This effectively renders each provincial conurbation responsible for filling its own London-bound trains.

- By contrast, a spine and spur system (such as that advocated in the High Speed North proposals) allows several cities to be placed on a single line of route, and concentrates flows. This achieves higher load factors and requires fewer trains to operate to serve the same overall number of passengers – yet allows more frequent services and also interregional links.
- The Alan Brooke study has determined that HS2 would require to operate around 18 trains per hour to serve all principal Midlands, Northern and Scottish destinations, while High Speed North would only require 14 trains per hour to serve the same destinations.
- The suboptimal load factors implicit in the 'Y' compromise both economic and environmental performance. The Alan Brooke study indicates that the extra emissions implicit in the operation of more trains to serve the same number of passengers could cost of the order of 52MT of CO₂ over a 40 year period.
- The requirement to operate more trains has the effect of compromising line capacity, particularly on critical southern sections of any high speed rail system, between London and the Midlands. Current intercity flows from London to Midlands, Northern and Scottish destinations amount to around 18 trains per hour, and (as noted previously) this would continue with HS2 becoming the principal conduit for northward intercity services. But 18 trains per hour is also the maximum anticipated capacity of a 2-track line (allowing for anticipated development of signalling systems). This indicates that that HS2's proposed 2-track line does not have the capacity to accommodate anticipated increases in intercity rail traffic, with modal shift from higher-emitting air and road transport.
- There is a more immediate requirement for additional services on any northern-oriented high speed line, arising from the remitted 'direct' connection to Heathrow Airport. With HS2 likely to be operating at capacity from the outset with intercity services, it will not have the ability to accommodate additional airport services unless the new line can be routed sufficiently close to Heathrow to make possible either a 'shuttle' connection (via Heathrow Express) or a 'loop' connection (to a Heathrow Hub station on the northern perimeter).
- This requirement for proximity to Heathrow effectively dictates HS2's onward route through the Chilterns. The unavoidable environmental damage and intrusion both in the Chilterns, and in rural areas further north, is certain to cause continuing controversy, and seems likely to result in major delays in realisation of the UK high speed rail project. The Alan Brooke study estimates a circa 10 year delay in achieving modal shift could cost of the order of 110MT of CO₂ over a 40 year period.
- A further consequence of HS2's adoption of the 'Y' configuration is that it compels a southern approach to Manchester, along already congested routes which do not have the capacity to accommodate extra tracks which might accommodate double-decker 'Eurogauge' rolling stock, and future European services. The only option to achieve the required city centre access would seem to be a long tunnel below the South Manchester suburbs.

2.3 Preference for 'Spine & Spur' Network

I believe that for all the foregoing reasons, the proposed 'Y' configuration of HS2 does not comprise the best solution, in either economic or environmental terms, for the new UK high speed rail network. This criticism applies both for the initial goal of connecting London, Birmingham, Leeds and Manchester, and for the further aspiration of a national network linking all principal conurbations. The alternative 'spine and spur' configuration has:

- Shorter route length, hence lesser cost.
- More city pairs connected, hence greater benefit.
- Greater ability to serve Heathrow through parallel development of a local 'Compass Point' network.
- More efficient operation, hence better economic and environmental performance.
- Lesser environmental impact through avoidance of sensitive areas such as the Chilterns.
- Overall vastly superior performance in terms of its ability to facilitate modal shift and hence reductions in CO₂ emissions.

2.4 Emissions Reduction Potential of Different Network Formats

With respect to this final point, the findings of the Alan Brooke study should be noted. It envisages conditions of environmental (and/or fuel supply) crisis entirely consistent with those anticipated by the 2008 Climate Change Act, creating an overriding imperative to achieve a step-change reductions in the UK transport system's consumption of energy and emission of CO₂.

In these conditions of semi-forced modal shift, a Y-shaped system such as HS2, primarily London-centric and lacking the necessary integration with the existing network, might deliver overall CO₂ emissions reductions of around 100MT over 40 years. Whereas a 'spine and spur' system such as High Speed North, configured as a comprehensive interregional network and fully integrated with the existing network, might deliver overall CO₂ emissions reductions of around 600MT .

3. This question is about how to deliver the Government's proposed network (Chapter 3 of the main consultation document): 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?

3.1 Phased Roll-out of National High Speed Rail Network

As has already been observed, the HS2 proposals are primarily London- and Birmingham-centric, and as such do not comprise the balanced and comprehensive network to which the Government should aspire. The much greater intercity connectivity embodied in the 'spine and spur' configuration of High Speed North is indicative of what is achievable if the creation of an enhanced intercity rail network is taken to be the governing priority.

I support the principle of phased roll-out of high speed rail, but would comment that the segregated/exclusive nature of HS2 – with no physical connection to the existing rail network between Old Oak Common and (probably) Water Orton – greatly restricts such opportunities. It will be necessary to construct the full length of the route from London to Birmingham, or to Lichfield (to connect to the West Coast Main Line) before any meaningful benefit can be gained. Much greater opportunities for phased roll-out appear to exist for a line constructed along the M1 corridor. See Item 5.

3.2 Viability of Proposed HS2 High Speed Rail Links to Heathrow

I believe that the HS2 proposals for establishing high speed rail access to Heathrow do not comprise an appropriate model of airport access, failing to address the nationwide requirement for comprehensive access to the national hub airport.

- It is important to restate the fundamental rationale of high speed rail, as a means of efficiently addressing high-volume flows between major population centres. However desirable the prospect of a 'high speed link to Heathrow', the primary purpose of high speed rail cannot be as an airport delivery service, serving relatively small numbers of passengers relative to the much larger intercity/interconurbation flows.
- The relatively low flows of interlining passengers from any particular regional centre to Heathrow (of the order of 1000 per day from major conurbations such as Birmingham or Manchester) appear inadequate to justify dedicated services.
- Currently, Heathrow's rail network comprises only links to central London, making rail journeys to provincial cities difficult, congested and inconvenient. As the UK's national airport, Heathrow requires 360-degree connectivity along all axes, to north, east, south and west, with rail connections facilitated to as many destinations as practicable.
- However pressing the need for radical improvements to Heathrow's rail connectivity, it is clear that a uniaxial high speed railway is inappropriate as a primary means of resolving surface access issues at Heathrow. This will only connect to a limited number of provincial 'high speed' stations, themselves poorly connected to local public transport systems; as such, HS2 would seem to facilitate the journeys of relatively few airline passengers.
- The connection between HS2 and Heathrow services at Old Oak Common – as proposed for the initial phase of development – does not appear to comprise an especially direct or convenient link that will attract many short-haul airline passengers making interlining connections.

- The proposed dedicated HS2 links to Heathrow (ie the tunnelled links to a 'Heathrow Hub' station located on the Great Western Main Line north of the airport, to be constructed in the second phase of development)
- The Government's own figures indicate that only 2000 passengers per day would use the high speed link to Heathrow; yet the proposed links entail an extra 20km of tunnelled railway and perhaps a further 10km of new distributor tunnels within the airport 'campus'.
- This appears to add up to £3 billion to the cost of the HS2 proposals. Under normal principles of marginal cost accounting, the cost of servicing this capital – perhaps £200M per annum – should be spread amongst the 'high speed' passengers requiring to access Heathrow – perhaps 750,000 per annum. This would impose an additional 'infrastructure tax' upon each return journey of £266, and as such would appear to be unsustainable.

3.3 Alternative Strategy for 'Compass Point' Rail Links to Heathrow

I consider that the aspiration for improved rail access to Heathrow would be far better achieved by means of a regional 'Compass Point' network. This would be focussed upon Heathrow, utilising the existing Heathrow Express system of tunnels and underground stations within the airport, and linking south, west, north (and east) to all radial main lines at outer-suburban hubs such as Woking (SWML), Reading (GWML), Watford Junction (WCML), Cricklewood (MML) and Stevenage (ECML).

- Such a strategy would require far less new construction (and hence cost) than any dedicated high speed link, and would benefit a far greater proportion of travellers to the airport.
- Connection to the classic main line network would place most major mainland UK centres no more than a single change of trains from Heathrow. Although this might not deliver the ideal of direct services to Heathrow, it would still represent a massive improvement over the current situation, of cross-London transfers.
- Implementation of high speed rail, configured in the optimum 'spine and spur' format, would allow further improvements. The aggregation of several cities onto a single line of route, that is possible with 'spine and spur' (but not with either the 'Y' of HS2, or with the similarly bifurcating classic main line network) allows the operation of a limited number dedicated high speed services to all 9 principal conurbations of the Midlands, the North and Scotland. These trains - configured as 2x4-car UK-gauge multiple units capable of splitting at regional hubs – could provide commercially viable regional services at hourly frequencies, and effectively supersede all domestic interlining flights from Heathrow to mainland UK airports.
- Collectively, these two models of operation – changing at outer-suburban hub to classic main line service, and direct 'high speed' service to regional hub station – could transform Heathrow's surface connectivity to the UK regions, with rail becoming the primary 'spoke' feeders in the 'hub and spoke' operational model. This would add immense value to the airport operation at Heathrow, and free up runway space to address emerging markets in China, India and Latin America (inter alia).
- This would also bring about a huge improvement in the international connectivity of the UK regions, and would be a powerful boost for attracting inward investment.

There are clear concerns, that the necessary step-change improvements to Heathrow's surface connectivity might lead to greater pressure (at least in the short term, while supplies of aviation kerosene and other hydrocarbon fuels remain plentiful) for a third runway and sixth terminal, to which the Government is rightly opposed. But I believe that the principles of optimised rail-to-airport connectivity embodied in the Compass Point proposals can be extended to improve connectivity between London's airports and (for instance) enable Gatwick or Luton to be operated as Heathrow's third runway, and thus relieve pressure at Heathrow.

3.4 Influence of Heathrow on Routeing and Configuration of High Speed Rail Network

I believe that the HS2 proposals for a 'national high speed rail network' are left fatally flawed by the degree to which the initial sections are predicated upon Heathrow Airport and thus neglect the more fundamental priorities of an optimised intercity railway.

- Heathrow appears to exert a massive 'gravitational pull' on the alignment of HS2, drawing it westwards from its ideal M1 alignment (along which the more efficient 'spine and spur' would naturally develop) and rendering unavoidable the proposed Chiltern alignment.
- With HS2 emerging from the Chilterns at Aylesbury, around 25km to the south-west of the M1 corridor, there appears to be no advantage in following the M1 corridor. Instead, Birmingham and the West Midlands comprise the logical next destination for HS2, before splitting to east and west of the Pennines. This effectively determines the 'Y' format of the HS2 proposals.
- With Heathrow effectively dictating HS2's Chiltern alignment, and the Chiltern routeing in turn dictating the 'Y' configuration of HS2, it can be seen that the inefficiencies and delays associated with the 'Y' (as described in Section 2 of this response) are primarily attributable to the perceived requirement to establish a high speed connection to Heathrow. This appears to introduce extra costs (compared with an M1-aligned 'spine and spur' high speed system) of around £8 billion, and around 300MT of extra CO₂ emissions over a 40 year period.
- The 300MT figure is derived from 92MT from incomplete coverage of the 'Y', 52MT from inefficient operation, 110MT from delayed implementation due to controversy in the Chilterns, and 43MT from failure to deliver improved connectivity to major communities along the M1 corridor.
- It should particularly be noted that a high speed railway that is routed via Heathrow and the Chilterns is not in a position to deliver significant benefits to the major communities along the M1/M6 corridor ie Luton, Milton Keynes, Northampton, Leicester and Coventry. This issue is discussed in greater detail in Section 5.

3.5 Proposals for HS1/HS2 link

I support the aspiration for a direct connection to be created between HS1 and any northern-oriented high speed line. This is considered essential to facilitate future direct rail services from Continental Europe to the UK provinces. This would be part of a wider initiative to achieve improved connectivity to the outlying European regions through a pan-European surface transport system (high speed or otherwise), lower-CO₂ than the air transport that currently predominates, and without the dependency upon fossil fuels.

However, I am concerned that the HS2 routeing strategy, with a long tunnelled approach to its Euston terminus from the proposed CrossRail / Heathrow interchange at Old Oak Common, makes the achievement of such a link disproportionately difficult. It appears to compel the construction of a tunnel, extending 6km from Old Oak Common to the Kings Cross Railway Lands, which – presumably for budgetary reasons – will only comprise a single track.

I consider this proposal to be excessively expensive, and operationally fragile. It appears to be another consequence of HS2's flawed routeing strategy. A much simpler and shorter link can be created between an M1-oriented high speed line and HS2.

If the high speed line were oriented along the axis of the M1 (as per the High Speed North proposals), its natural approach to London would follow the Midland Main Line, and would require only a short tunnel under the Hampstead Ridge to emerge alongside the WCML at Primrose Hill (see Section 5). From near this point – or from many other possible 'portal positions' along a reengineered Euston Incline – a much shorter, and potentially twin-track tunnel could connect to HS1. A possibly superior option would be to upgrade the section of North London Line from Primrose Hill to Camden Road, with 4-tracking locally implemented through Camden Road Station to isolate existing North London Line passenger services from high speed operations.

Part 2 of the consultation document

4. This question is about the specification for the line between London and the West Midlands (Chapter 4 of the main consultation document): 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?

4.1 HS2 Principles and Specification

I support the general principles of the Technical Specification for Interoperability (TSI), which underpin much of the technical specification proposed for the HS2 project. The TSI stipulates the size and length of trains (ie 400m long and wider-bodied 'Eurogauge' in cross-section) for which the new high speed rail infrastructure is to be built. Issues of train control and signalling are also covered in the TSI.

It is important to note that the TSI is primarily intended to harmonise infrastructure with rolling stock and control systems, to establish a common technical 'platform' from which it will become possible to operate pan-European high speed rail services comprising double-decker trains conforming to the 400m long, Eurogauge standard.

The TSI makes no controlling stipulation for the speed to which any new network (high speed or otherwise) might be designed or operated, or for the type of rolling stock that might operate along a particular line. The TSI also makes no specification of location or spacing of stations. These are considered to be local issues, to be locally determined to suit local conditions.

I believe that the specification (or model) adopted for high speed rail in the UK must conform fully to the principles established in the TSI. With all sections of new railway and new station infrastructure designed to accommodate 400m long trains of Eurogauge cross-section, this will allow full interoperability with European high speed intercity operations, and will open up the possibility of European services extending beyond London to the UK provinces.

But issues of operating speed, design speed, location and spacing of stations, are local issues which must be determined in such a way as to deliver the optimum outcome for the UK railway network. This is the 'bespoke model of UK high speed rail' (referred to earlier) that must address the transportation needs of a densely-populated and relatively small island, in which the major conurbations to be served by the new network can be as little as 50-60km apart.

This appears to be a situation whereby capacity and connectivity are of far greater importance than speed.

I believe that the Government's HS2 proposals represent an idealised model of high speed rail, overly predicated upon minimising journey times between specific points, to the apparent exclusion of wider considerations of capacity and connectivity. This model is not appropriate either to the reality of UK railway operation or to wider transport needs. Concerns centre around the following aspects of the HS2 proposals:

- Segregated/exclusive operation
- Operational and design speed

4.1.1 Segregated/exclusive operation:

I am concerned that the Government has selected a largely segregated/ exclusive model of high speed rail operation, with little connection to the classic network, and a preference wherever possible to operate 400m long Eurogauge rolling stock. This might deliver significant benefits, in terms of optimised passenger/train capacity and timetable reliability, for running trains along the high speed line itself; but these benefits will be rendered largely meaningless if passengers cannot readily access high speed services from the classic local networks.

The disbenefits of segregation are manifest in the HS2 proposals for stations in Birmingham. The proposed 'central' terminal at Curzon Street is remote from New Street Station which is the hub of the local/regional network; any high speed passengers en route to most suburban or wider regional destinations will be faced with a walk of up to 1 kilometre (and up to 20 minutes) to transfer to local services. This loss of connectivity (compared with current West Midlands railway operations focussed upon New Street) would appear to negate any benefits of high speed operation.

Serious connectivity issues also exist with Birmingham's secondary station ie Birmingham 'Interchange', located on the trunk route near Birmingham Airport. Aside from the proposed shuttle link (to the NEC, Birmingham Airport and Birmingham International Station) 'Interchange' has no direct public transport links. Instead, it is primarily reliant on motorway links for its local connectivity. that might be achieved along a 'segregated' system such as HS2 are meaningless without full integration with the existing intercity rail network.

It seems clear that the HS2 proposals (if implemented) will lead to an effectively 'two-tier' railway, in which high speed services remain disconnected from the classic railway. This creates a major risk whereby the advent of high speed rail will actually blight centres which remain on the classic network, with residual intercity services reduced in frequency and speed as trunk services migrate to the high speed line.

This is demonstrated in HS2's own projections for residual WCML services, with both Coventry and Stoke seeing main line frequencies to London reduced to one train per hour. This seems unlikely to promote either modal shift or improved business performance on rail services to these centres, and the loss of connectivity implicit in these reduced frequencies seems certain to blight development prospects; in the case of Coventry, it is easy to foresee the nearby Birmingham Interchange station becoming the focus for new 'greenfield' development within the 'Meriden Gap'.

I consider that an alternative more holistic strategy, of full integration between high speed and classic networks, is essential to optimise both economic and environmental benefits accruing from new railway construction, and to keep associated development pressures concentrated upon city centre locations where public transport connectivity can be maximised.

4.1.2 Speed

I am concerned that a technology-driven desire to run 'the fastest railway in the world' appears to comprise the basic rationale behind HS2's specified 360/400kph operating/design speed. In the context of a small island such as Great Britain, there does not appear to be any transport need to run trains at such extreme speeds. It is particularly significant that the Government has never offered any reasoned justification, either business or environmental, for the 360/400kph speeds proposed for HS2.

Extreme speed (ie 360-400kph) adds significantly to the cost of construction, in demanding straighter alignments and hence heavier engineering. It also imports unnecessary levels of technical risk and energy use (and hence CO₂ emissions), and delivers no meaningful benefit to any journeys below 500-600km.

With energy use (and hence CO₂ emissions) rising with the square of speed, HS2's proposed 360kph entails 44% higher energy use than the more conventional 'high speed' of 300kph; at the aspired 400kph, energy use becomes 78% higher. On a London to Birmingham journey, 360kph might achieve a journey time faster by 5 minutes, and 400kph faster by 10 minutes. These journey time benefits cannot possibly be justified against the far higher energy use, and associated cost and CO₂ emissions.

I consider that a maximum speed of around 300/320kph, using fully proven technology, should apply for high speed rail operations in the UK. At these speeds, it is easily possible to meet the basic business specification for UK high speed rail ie a sub-3-hour timing from London to Glasgow.

Additionally, I would comment that the apparent necessity for 4-track construction on the critical section of route from London to the Midlands allows the application of differing speeds, to optimise environmental and economic benefits.

For instance, trains from London to the Midlands might operate at 240kph, giving London to Birmingham journey times in under 1 hour; trains from London to the North might operate at 280kph, giving London to Leeds and Manchester journey times in under 1½ hours; and for onward sections of route to Scotland, a speed of 320-kph might apply, to give a London to Glasgow (via Edinburgh) journey time of under 3 hours.

Extreme speed also tends to reinforce the exclusive/ segregated nature of high speed rail operation, to the general detriment of connectivity. This lack of connectivity will have the effect of greatly reducing if not eliminating any benefits accruing from increased speed. Extreme speed also prevents consideration of more appropriate corridors for development. It should be noted that inability to accommodate 400kph operation is one of the many spurious reasons offered by the Government, as to the unsuitability of the M1 corridor for high speed operation. See Item 4.2.7.

4.2 Route Selection Process

I am concerned that the route selection process employed by HS2 has failed to give proper consideration to the potential of the M1 corridor as the optimum northward route for a high speed line from London. Furthermore, review of the various official documentation produced either by HS2 Ltd or by the Government indicates clearly an undue early determination upon the chosen Chiltern-aligned route that is proposed for HS2.

These outputs also indicate a similar lack of due process on other issues, such as the development of an optimised terminal strategy for London, consideration of options for access to Heathrow, and for the selection of an optimised configuration for a national network of high speed lines.

4.2.1 Remit Issues

I believe that the core remit for HS2 was fundamentally flawed. This remit was set out in the July 2009 HS2 Newsletter (see attached) and comprises the following 6 essential items:

1. Formulate proposals for HSL from London to West Midlands,
2. Consider onward development of national network beyond the West Midlands,
3. Formulate proposals for London terminal,
4. Consider options for intermediate parkway station between London and West Midlands,
5. Provide proposals for 'an interchange station between HS2, the Great Western Main Line and CrossRail, with convenient access to Heathrow Airport',
6. Provide proposals for links to HS1 and to the existing rail network.

While most of the above items might be in themselves uncontroversial, it is important to note that they do not collectively comprise the balanced specification of requirements from which an optimised national network might emerge.

I have specific concerns with two aspects of the HS2 remit.

4.2.2 Item 2 : Onward Network Development beyond West Midlands

This infers that the national network should comprise an onward development from the initial stage of HS2, from London to the West Midlands. This strongly implies an assumption on the part of the Government, that any national network must comprise a primary stem, from London to the West Midlands, before spreading to further destinations either side of the Pennines.

This would seem to indicate an initial presumption in favour of a 'Y' network configuration, and must cast doubt on whether due consideration could ever be accorded to alternative (and more efficient) formats.

This is confirmed in Items 6.1.11-16 of the HS2 Report to Government, which discuss options for developing a national high speed rail network. The three options¹ depicted in Figures 6.1c, 6.1d and 6.1e (Inverse A, Reverse S and Reverse E) all show an initial stem from London to the West Midlands. Moreover, specific comment is made in respect of the M1-aligned High Speed North proposals:

“With a more central alignment of HS2, the ‘Reverse E’ would become more akin to the proposal put forward by the 2M group of London Councils (known as ‘High Speed North’). As our remit was to consider the development of HS2 beyond the West Midlands, we have not investigated the 2M proposals in detail.”

It should particularly be noted that the High Speed North proposals submitted to the Government indicated clearly that the proposals comprised a comprehensive ‘spine and spur’ network, interlinking all principal conurbations of the Midlands, North and Scotland (as opposed to the primarily London-centric ‘Y’ of HS2) and required fewer route miles of new construction.

It should also be noted that no justification has ever been offered as to why any national high speed rail system must of necessity pass through the West Midlands en route to all communities further north ie the ‘Y’ format. All the available evidence indicates strongly that an M1-aligned route in ‘spine and spur’ format offers a far more efficient and effective solution.

It seems extraordinary to me, that the Government has failed even to investigate the High Speed North proposals, and the advantages that they purported to offer, apparently on the grounds that they failed to meet an arbitrary and never-justified requirement of a flawed development brief. This omission clearly indicates that the Government’s consideration of options for development has been insufficiently broad in its scope, and as such would appear to invalidate the entire HS2 process.

4.2.3 Item 5 : Proposed CrossRail/Heathrow/GWML Interchange

This relates to the proposed interchange station ‘between HS2, the Great Western Main Line and CrossRail, with convenient access to Heathrow Airport’. While I accept the requirement for a connection from the high speed line to Heathrow, and also for onward connectivity to London’s local rail network, it is plainly inappropriate to specify that these multi-purpose connections should be achieved a) at a single interchange station, or b) with CrossRail in particular, rather than any other element(s) of the suburban network. Taking all these requirements together, it is clear that Old Oak Common comprises the only feasible location at which the specification for the remitted ‘interchange station’ could be met.

With HS2 drawn westwards to Old Oak Common to achieve the remitted interchange, there was then no realistic alternative exit route from the Greater London area except for the proposed HS2 route following the Central Line corridor as far as Ruislip. And with a northward route deviated as far west as Ruislip, there was then no alternative to a route through the Chilterns. As noted previously (see Section 2), the route through the Chilterns logically continues to Birmingham, and only then can any split to east and

¹ The options considered by HS2 Ltd are illustrated in Figure xx in Appendix xx, and assessed against the HSUK alternative for their ability to interlink the UK’s primary conurbations.

west of the Pennines be contemplated. This effectively determines the 'Y' configuration of HS2.

Thus it can be seen that an early determination upon an interchange station less than 10km from the proposed originating point at Euston Station has the effect of determining the configuration of the entire national high speed rail network.

It is significant to note that nowhere in the official HS2 outputs are any justifications offered as to why the Old Oak Common proposal is the optimum means of interchange either with Heathrow Airport or with London's local rail network – or why a hybrid 2-terminal solution is more appropriate than the single terminal solution that has traditionally applied for any other intercity railway, high speed or classic.

I believe that these very different requirements (for airport interchange and suburban distribution) should have been considered separately, and in doing so generate far superior solutions in both respects (see Sections 3 and 5). Moreover, these essentially local issues should never have been allowed to exert such a dominant influence over national network development.

Taken collectively, the concerns outlined with respect to network development (Item 2) and interchange station (Item 5) lead inevitably to a conclusion that the Government had effectively determined the solution for UK high speed rail development, even before it began the due process.

4.2.4 Short-Listing of Route Options

It is instructive to review the route planning process set out in Section 3.5 of the HS2 Report to Government. The various routes are depicted in Figure 3.5a; Items 3.5.2 to 3.5.6 describe how the 'long list' of route options was reduced to a short list, and the criteria by which particular routes were progressively rejected. The criteria are set out as follows:

- Engineering and construction feasibility.
- Cost
- Environmental, social and spatial considerations
- Demand assessment, mainly focussed on journey time benefits

The accentuation upon journey time (ie speed) should be noted. It is also concerning that nowhere in this list of criteria is any mention made of the following aspects, which I would consider to be essential aspects of any balanced and integrated railway proposal:

- Capability to deliver local connectivity benefits to intermediate communities along London – West Midlands axis,
- Opportunities for integration with other railway development proposals,
- Alignment with development of an optimised national high speed rail network.

It should be emphasised that the M1 corridor has historically comprised the primary transport corridor from London to the Midlands, the North and Scotland, and it seems reasonable to infer that the same logic might apply for high speed rail (ie a London to Birmingham route deviating from an M1-aligned Anglo-Scottish spine in the Rugby area).

The major communities aligned with the M1 corridor (ie Luton, Milton Keynes, Northampton, Leicester and Coventry) are all of a size to benefit significantly from appropriate integrated development of high speed rail, and could (with associated development along the 'East-West' corridor) become major hubs in an expanded rail network compatible with wider climate change concerns.

These local and national benefits are confirmed by the findings of the Alan Brooke study.

It is regrettable that the studies underpinning the HS2 proposals were not remitted to examine anything other than a 'high speed line from London to the West Midlands', effectively segregated from the existing network. Under this highly corridor-specific remit, no attention was paid to the possibility that an M1-aligned integrated high speed route might allow development of a more comprehensive and efficient national network, and also deliver major local benefit.

Instead, an M1-aligned route was rejected at the first stage of consideration, for the following reasons in detailed in Item 3.5.6 of the HS2 Report to Government:

- Greater route length.
- Greater impact on communities and/or requirement for tunnelling.

The fact that the M1 route (along with a route aligned with the Midland Main Line) was the only route to avoid the Chilterns Area of Outstanding Natural Beauty is acknowledged, but the benefits accruing would appear not to have been considered sufficient to outweigh the penalties associated with the extra route length and requirement for tunnelling.

Further reasons to reject an M1-aligned high speed route are offered in the Government Command Paper. These are listed as follows:

- Inability of motorway alignment to accommodate parallel high speed rail alignment, with 'islands of blighted land' created between tight curves of motorway (designed for 70MPH operation) and slacker curves of high speed railway.
- Incompatibility with any proposal to create a high speed rail link to Heathrow.

I have had the opportunity to review detailed route alignment diagrams prepared for the High Speed North proposals (see attached), and in the light of this review I would consider all of the reasons to reject an M1/M6 high speed route from London to the West Midlands to be uniformly spurious.

4.2.5 Route Length

An M1/M6 high speed route from London to the West Midlands is approximately 7km longer than the HS2 route. This excess exists in the 'rural' sections of route between M25 and M42, and, at a running speed of 300kph, might cost 1.5 minutes in journey time relative to HS2.

It is also conceded that the exit route from London following the M1 is significantly more tortuous than that along the Central Line corridor. This might require speed restrictions of circa 200kph as far as the M25. This might cost another 2 minutes in journey time relative to HS2. However, in a comparative assessment, the additional journey time accruing from stopping at the Old Oak Common interchange must also be taken into account. This will add around 5 minutes to all HS2 journey times. On this basis, a London to Birmingham journey via the 'less direct' M1/M6 route would be faster than via HS2.

It should also be noted that an M1-aligned high speed line is just one element of a wider 'spine and spur' network that is in overall length around 160km shorter than the alternative Y-shaped system preferred by the Government.

4.2.6 Impact on Communities / Requirement for Tunnelling

My review of an M1/M6 route from London to Birmingham (and Leicester) indicates a generally clear corridor for construction alongside the motorway, with little if any impact on residential property. The presence of the Luton/Dunstable conurbation is noted, but this would only require a tunnel of the order of 4km long to pass well beneath urban settlement.

In other areas, around 3km of tunnelling would be required at Mill Hill, and 2km to pass under the Hampstead Ridge, between West Hampstead and Kilburn. This establishes a total tunnelled length of around 10km as against HS2's overall requirement for 20km between London and Birmingham.

The Government's rejection of an M1-aligned route on grounds of excessive tunnelling appears to stem from a belief (as indicated in certain commentary in the HS2 documentation) that such a route requires to be tunnelled for the full length from its London terminal (ie Euston) to north of the M25.

I find this belief puzzling, given the potential for a reserved, largely surface alignment along the M1 and Midland Main Line corridor, that has been identified in the development of the High Speed North proposals. There appears to be no logical explanation for HS2 Ltd to have dismissed the obvious potential of this surface corridor, and to have presumed instead that the full length of HS2's route within the urban area must be tunnelled, except for the potential time savings that might accrue with a route designed for optimum speed.

However, such time savings would be small, no greater than 5 minutes – and no greater than 2 minutes, if the route selected for HS2 is taken as a comparator. In either case these would not appear to be robust reasons, from either an economic, engineering or transportation standpoint, to determine a requirement for tunnelling, and thus dismiss consideration of the only feasible London to West Midlands high speed rail alignment that would avoid the Chilterns Area of Outstanding Natural Beauty.

4.2.7 Capability of M1 Corridor to Accommodate High Speed Alignment

The alignments prepared for the High Speed North scheme indicate clearly that a high speed line, designed for any realistic speed aspiration, can be established along the M1

corridor to a 'virtual hard shoulder' alignment, without major deviation. It should be noted that for most of its length between London and Rugby, the M1 conforms to a broadly straight alignment, with only one significant curve (near Watford Gap) that would cause significant deviation outside the immediate motorway corridor, and none that would cause unacceptable impact on residential property.

This is true even for a 400kph design speed, but I would in any case reject this speed for its unacceptable energy use, and general irrelevance (compared with parallel consideration of capacity and connectivity) to UK transport needs. At my preferred design speed of 320kph, the required deviations from the motorway alignment would be greatly reduced.

I am puzzled at the Government's stated concerns with respect to 'islands of blighted land' between motorway and high speed line. In the few instances where such islands (of significant size) would exist, this land is already effectively blighted, through its current proximity to the motorway, and would appear to offer considerable potential for compensatory development as nature reserves.

I also consider the Government's stated concern to reflect a high degree of double standards, given the landscape impacts that HS2 is certain to have in the Chilterns, and in the rural areas further north. It should be noted that the railway alignments (designed for 400kph) in these areas will require embankments and cuttings up to 22m high/deep, which – at an assumed gradient of 1:2.5 – will occupy a ground footprint around 120m wide. This would appear to be a far greater concern, than minor deviations between a railway and a motorway alignment along an already blighted corridor, that would probably have considerable value as linear nature reserves.

4.2.8 Incompatibility with proposal for high speed rail link to Heathrow

It is an undisputable fact, that an M1-aligned high speed rail route would not be compatible with any link to Heathrow configured in the format envisaged by the Government. However, I would make the point that even for a 'Chiltern' route such as HS2, the proposed models of airport access (ie in the initial phase, a 'shuttle' link from the Old Oak Common interchange, and in the second phase, a 'loop' connection to a 'Heathrow Hub' on the north side of the airport):

- do not offer a viable or cost-effective means of connecting the UK's national intercity network to the national hub airport.
- do not address Heathrow's wider needs for surface access.

I am concerned that the Government has fundamentally misunderstood Heathrow's requirements for surface access, in advancing a uniquely 'high speed' solution. As has already been clarified in Section 3, Heathrow's true need is for 360-degree, short and long distance connectivity to its entire UK hinterland, and high speed rail on its own is a clearly inappropriate solution. Although there is undoubted value in achieving high speed rail access to Heathrow, I would not consider such a solution, that ignored the needs of the vast majority of travellers to Heathrow, to be acceptable.

I believe that the Government has considered far too narrow a range of rail access models for Heathrow, and in doing so, has not developed an adequate solution. The

'shuttle' model implicit in the Old Oak Common connection requires an inconvenient change of trains, that may well not be an acceptable alternative for interlining air travellers; and the 'loop' model implicit in the second phase 'Heathrow Hub' proposals can only be achieved at disproportionate expense – and still requires a change of trains, to access the airport terminals.

The Compass Point model, of limited network development to achieve interchange with the radial main line network at outer-suburban hubs, would have offered the required 360-degree connectivity; but it appears that (despite its self-evident advantages for wider regional connectivity) this was never considered.

In terms of high speed rail, a Compass Point model essentially comprises a spur, and if direct (high speed) trains to provincial destinations are specified, then this has the effect of contributing additional airport trains to an already overcrowded trunk route. This has proved to be an insuperable problem for the Government's HS2 proposals, which comprise the operationally inefficient 'Y' (along a Chiltern route that can only practicably ever comprise 2 tracks), and this has led to a requirement to orient the high speed line close to Heathrow. This will facilitate either a 'shuttle' or 'loop' connection, neither of which add to already-critical train flows.

However, for an M1-aligned high speed route configured in 'spine and spur' format, greater operational efficiency (ie fewer trains to serve the same number of passengers) is made possible through the capability to aggregate several provincial centres on a single line of route. This creates sufficient capacity to accommodate intercity *and* airport services to all principal regional destinations, and thus renders a spur solution viable.

It is conceded that there would be some journey time penalties inherent in the circumferential route from Cricklewood (the intersection point between the M1-aligned high speed route and the Compass Point network) to Heathrow. But this would be balanced by the time savings inherent in the direct access that would be achieved to the Heathrow Express platforms in the heart of the airport.

It is also worth noting that for most passengers en route to Heathrow, it is not journey time that matters, but connectivity. The current effective disconnection between Heathrow and the national rail network causes huge inconvenience and disruption, with major adverse impacts upon transport CO₂ emissions and national economic performance.

I would therefore conclude that the Government's rationale, for rejecting an M1-aligned high speed route on account of its incompatibility with its proposals for a high speed link to Heathrow, is entirely misplaced. I would further comment that this rejection seems indicative of a wider misunderstanding of both the surface access requirements of a national hub airport, and also of fundamental considerations of operational efficiency in the high speed rail network that it is attempting to develop.

4.2.9 Further Concerns re Development of National High Speed Network

I am concerned that the Government has essentially done no more than undertake a corridor-specific transport study, and has given insufficient consideration to the

development of an optimised and comprehensive national high speed network. This concern exists on several levels:

1. A false assumption that the proposed route from London to the West Midlands must comprise the core element of any further network development, effectively predetermining the 'Y'.
2. Consequent rejection of any proposal that does not conform to this model.
3. Undue concentration upon London-centric axes, to the detriment of interregional links.
4. Illogical and ill-informed proposed network configuration.

Concerns re points 1 & 2 are already documented in Item 4.2.2 of this response, and do not require further discussion.

However, it is appropriate to note that the 'Y' is essentially London-centric in nature, and is not configured to address interregional axes, in particular Transpennine or CrossCountry. This is implicitly acknowledged, even in the HS2 documentation; Item 4.31 of the Government's Command Paper dismisses any possibility of a Transpennine high speed route, and instead states that the needs for connectivity between Manchester and Leeds can be addressed through Network Rail's Northern Hub proposals.

I consider this rationale to be unacceptable, for the following reasons:

- It strongly implies a segregated two-tier transport system, whereby London-centric axes enjoy the step-change improvement of a greatly accelerated new high speed, high capacity railway, while interregional axes remain reliant on the classic system with only minor incremental enhancements.
- This will have the effect of further concentrating national rail connectivity (and hence economic activity) upon London, to the general detriment of the Northern regional economy.
- The Transpennine axis comprises more cities than just Manchester and Leeds. Liverpool, Sheffield, Nottingham and Newcastle are all valid stakeholders, as well as Edinburgh and Glasgow (which are currently very poorly connected to Manchester and Liverpool); together, these major conurbations comprise the necessary critical mass to justify high quality interregional high speed services of equivalent quality to those proposed along London-centric axes.
- This comprises the model of equivalent intercity connectivity that I believe to be vital for UK regional development.

Similar considerations apply along the CrossCountry axis, extending from the South Coast, Wales and the West Country to the North-West, Yorkshire, the North-East and Scotland. The major regional centres encompassed along this broad axis also indicate viable interregional services of 'high speed' quality, and it is concerning that the Government has paid no heed to the needs of this vital transport corridor, which is focussed upon Birmingham New Street. Instead, the Government proposes a segregated 2-terminal solution for Birmingham (ie New Street and Curzon Street) which seems likely to greatly damage CrossCountry connectivity.

I am also concerned that the Government's assessment of various options for development of a national high speed rail network (Items 6.1.11-16 of the HS2 Report

to Government) appears to be completely predicated upon the 'Y' and does not accord alternative configurations (such as 'spine and spur') equal consideration. This seems to be based upon a presumption that only the 'Y' can possibly deliver what appears to be the Government's overriding requirement – high speed rail access to Heathrow, prioritised over the need for interregional connectivity.

I consider this presumption to be entirely unfounded, and utterly discredited by the findings of the Alan Brooke study, which has conclusively established the massively superior efficiency and performance of the spine and spur configuration compared with the 'Y'. These comparisons can be seen at their starkest in the comparison between CO₂ emissions reduction potential over 40 years – 100MT for HS2 as against 600MT for High Speed North.

I am additionally disappointed at the apparent trivialisation in the network comparisons, with models that are based upon entirely unfeasible alignments. This is seen most obviously in the representation of east sided routes to Scotland; this rejects the obvious quasi-coastal route from Newcastle via Edinburgh to Glasgow and instead opts for a route which passes well south of Edinburgh before splitting in Upper Clydesdale for Glasgow and (with an acute-angled double-back) for Edinburgh.

Such a model would involve a completely impracticable high speed alignment along Upper Tweeddale, and as such, would seem to rob the entire comparison exercise of any credibility. It would appear that the rationale for this geographic illogicality was a stated preference from Transport Scotland, that the alignment of any Anglo-Scottish high speed route should not unduly favour Edinburgh over Glasgow. This is an understandable aspiration on the part of a regional agency, but it should have been treated as no more than that; it should certainly never have been accorded the status of a guiding principle of network design.

I am deeply concerned that so little professional attention appears to have been accorded to the vital issue of optimising the future national high speed rail system in the most economically and environmentally efficient manner.

4.2.10 Concerns re HSR Development to East Midlands

It is also reasonable to assert that in HS2's concentration upon the West Midlands (ie Item 1 of HS2 remit), the solution for the East Midlands (ie a parkway station well clear of both Leicester and Nottingham) is effectively predetermined. It also places the East Midlands in a subsidiary position with respect to the West Midlands, with high speed links only achieved in a second phase of development.

This situation would be avoided with an M1-aligned route, which would naturally split in the Rugby area for Birmingham, and for Leicester. Onward links along the West Coast and Midland Main Lines would ensure a much wider spread of benefits arising from the initial phase of development.

5. This question is about the route for the line between London and the West Midlands (Chapter 5 and Annex B of the main consultation document): 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?

5.1 Review of HS2 Route Proposals

I do not believe that the Government has selected a high speed route from London to the West Midlands that is either the best solution along that specific corridor, or one that optimises the national intercity railway system. I have the following specific concerns with respect to the proposed HS2 route from London to the West Midlands:

5.2 London Terminal Solution

I consider that Euston Station comprises the only practicable location for the central London terminal of any northern oriented high speed line. It possesses most of the necessary attributes ie:

- Sufficient ground plan (ie length and width) to accommodate multiple platforms 400m long,
- Viable 'exit route' to northward high speed corridors without major requirement for tunnelling,
- Central location with good road access, and capable of accommodating appropriate high quality architectural solution,
- Proximity to HS1, facilitating future HS2/HS1 link.

Euston's major drawback is its mediocre connectivity to the London Tube and local rail network, with only Northern (City), Northern (Charing Cross) and Victoria lines directly serving the station. This connectivity is not adequate for Euston's future role as London's 'Gateway to the North', and is greatly compromised by the peak hour congestion arising from the large number of commuter services that currently terminate at Euston.

I am concerned that the Government has chosen not to follow normal railway practice, of improving connectivity at existing main line terminals, and of developing strategies to divert terminating commuter flows (for which Kings Cross / St Pancras might be taken as the prime exemplar, with commuter services diverted to Thameslink and Moorgate). Instead, the Government has chosen to make no improvements to Euston's local connectivity (from which point the destructive proposals to expand the station on the west side become necessary), but instead to focus all improvements upon the proposed interchange station at Old Oak Common.

In its asymmetric, non-central location, Old Oak Common will be primarily reliant upon CrossRail for its local connectivity, and is in a largely rail-locked site to which it will be difficult (and therefore expensive) to provide the necessary road links. Together with Euston, it will give a hybrid London terminal solution in which every high speed rail journey will be lengthened by 5 minutes to accommodate the extra stop.

Although my generally belief is that connectivity should be prioritised over speed, with interchanges created wherever practicable, the Old Oak Common proposal does not

appear to comprise a good exemplar of this principle. The hybrid nature of the Old Oak Common / Euston solution accesses only 4 local railways – CrossRail at OOC, and 3 Tube lines at Euston – and as such comprises a fragmented and ‘fragile’ solution, vulnerable to disruption.

I would favour an alternative London terminal strategy concentrated upon a single terminal at Euston, in which speed, connectivity and capacity can be optimised to provide more robust performance. The key elements of this strategy are as follows:

- Develop ‘Compass Point’ surface access solution for Heathrow, to divert all airport components of high speed rail flows away from central London.
- Divert Euston’s existing commuter flows to CrossRail, by means of a new connection from Willesden Junction to Old Oak Common; this will greatly reduce pressure on Euston’s Tube connections and remove any need to physically extend the station footprint. It will also offer vastly improved commuter journeys from the entire West Coast Main Line corridor, and will balance the currently highly asymmetric CrossRail proposals.
- Develop Euston as a primarily high speed / intercity station, with some regional flows to Milton Keynes and Northampton possibly retained. With buffer stops advanced circa 120m towards Euston Road, it is possible to accommodate all necessary 400m long ‘high speed’ platforms within existing station footprint.
- Augment Euston’s existing Tube links by means of new high capacity Light Rapid Transport system, extending in tunnel to Kings Cross / St Pancras (for Piccadilly, Circle/Metropolitan and Thameslink) and to Tottenham Court Road (for Central and CrossRail). The LRT link at Euston could be located approximately at mid-platform position, and would effect quick links to 7 out of 10 central London Tube lines, and both cross-London heavy rail links.

On a simple comparison of connectivity, the above proposals would enable effective direct access to 9 Tube/Metro lines (as against 4 for the HS2 proposals) with onward direct connections to 250 stations within the M25 ring (as against 81 for HS2).

Although the proposed developments at Euston would require extra tunnelled construction, this would be a small impact compared with the much greater HS2 requirement for tunnelling (to facilitate the Government’s proposed Chiltern route), for the vast construction implicit in the Old Oak Common proposals (similar to the Stratford ‘box’) and for the highly intrusive land take proposed at Euston.

5.3 Exit Route from Greater London, to North Scarp of Chilterns

Again, I believe that the Government has selected the wrong route in this area. As discussed in Section 5, the Government’s proposals involve around 20km of tunnel, and major environmental impacts within the Chilterns Area of Outstanding Beauty, whereas the M1-aligned route put forward in the High Speed North proposals requires only 10km, with any associated environmental damage largely mitigated by its close parallel alignment to the motorway.

As noted previously, the HS2 route appears to be falsely predicated upon Heathrow, and certain to attract major controversy and delay through the justified objections of local residents and environmentalists.

5.4 Onward Route to West Midlands

I can see no justification for the Government's proposed direct route to the West Midlands, through the rural landscapes of Buckinghamshire, Northamptonshire and Warwickshire. Although I believe this route's capability for future 400kph operation to be unnecessary and destructive, such capability could be replicated along the M1 corridor, if required; and it is highly significant to note that any small time penalties associated with the slightly longer and more circuitous route are more than outweighed by the time advantage in eliminating the unnecessary stop at Old Oak Common.

Whatever speed specification is adopted, the fact remains that a route oriented along the M1 corridor is capable of implementation at much lower engineering cost and attendant controversy. The easier terrain along the M1 corridor requires less heavy engineering, a much lower requirement for landtake (noting the possibility of shared earthworks between motorway and high speed line) and generally only marginal additional intrusion beyond that already created by the motorway.

Possibly the greatest issue is that HS2's false predication upon Heathrow sets the route upon a course through sensitive environments with no major communities of a size and scale that might benefit from the introduction of the new line. As such, the high speed line can only represent a major intrusion upon landscape and communities alike, with no compensating benefits. Essentially, HS2 fails to address the 'localism' agenda.

I believe that an M1-aligned high speed route can deliver far greater local benefits to the much larger 'South-East Midlands' communities along this corridor. Luton, Milton Keynes, Northampton, Leicester and Coventry all comprise major cities between 200,000 and 400,000 in population, but (with the exception of Leicester) have poor rail connectivity on any axis except radial towards London. Moreover, despite being on a single motorway corridor, they are split between existing main line corridors (Midland and West Coast) and are thus internally disconnected.

An M1-aligned high speed line, constructed for 4 tracks to address likely overcapacity issues on a 2-track route, allows the possibility of a unified rail corridor to match the motorway, with spurs from the high speed line to create new links created between Luton and Milton Keynes, and between Northampton/Rugby/Coventry and Leicester. These links would be focussed upon the existing main line hubs (on either MML or WCML), with only Leicester comprising a unified high speed/classic hub, to secure northward connectivity for all South-East Midlands centres.

This improved connectivity should deliver major economic and environmental advantages, which should easily outweigh any small additional intrusion through new construction along the motorway corridor. This will also counter the blight issues likely to afflict cities such as Coventry which under HS2 proposals will see intercity service frequencies cut, and journey times increased.

5.5 Birmingham Curzon Street Issues

I am concerned that the Government's HS2 proposals for Birmingham, focussed upon the proposed Curzon Street terminus remote from the existing primary hub at New Street, neither offer the necessary integration with the existing local and regional railway

network, nor make the necessary recognition of Birmingham's key position at the heart of the UK intercity network.

The connectivity issues at Curzon Street can be appreciated from a simple consideration of the local rail networks radiating from New Street and Moor Street stations (the latter of which would be effectively contiguous with the Curzon Street). The New Street network (comprising the historic Midland and London North-Western systems concentrated at a single station) gives direct access to 40 stations within the M42/M6 (Toll) ring, and to the wider regional network extending to the Potteries, the Welsh Marches and the Trent and Severn Valleys. The Moor Street network (comprising the historic Great Western network, much reduced by the Beeching cuts) gives direct access to only 16 stations within the M42/M6 (Toll) ring, with no significant regional network.

As such, it seems reasonable to query whether the HS2 proposals actually meet the Government's brief, for a high speed line from London to the *West Midlands*. From the perspective of achieving the ultimate goal of an enhanced and better-connected nationwide intercity railway, there are also major concerns. This aim becomes impracticable with two unintegrated stations ie New Street and the proposed Curzon Street in Birmingham, at the hub of the existing rail network. It is vital that this functionality is maintained in the new intercity network that will arise with the advent of high speed rail.

This leaves little alternative but to maintain Birmingham New Street's status as the primary intercity, regional and local hub of the West Midlands. There are clear issues with Birmingham New Street, in its short (ie less than 400m) and congested platforms; all clearly unsuitable for operation of 400m long Eurogauge rolling stock. The current Birmingham Gateway project will address the passenger congestion, and there are also major opportunities to rationalise train service patterns and occupancy of platforms. However, fundamental issues of platform length or train cross-section cannot practicably be resolved.

This compels the use of shorter 'classic-compatible' rolling stock on high speed services (which are in any case proposed for use on proposed HS2 services extending beyond the dedicated high speed network), and illustrates the point made earlier in this submission, that there can be conflicts in optimising speed, train performance, capacity and connectivity. In the case of Birmingham New Street, connectivity seems the overriding consideration, and issues of capacity and train performance can be addressed by a variety of strategies:

- Splitting of 400m long 'classic compatible' trains into portions serving both central Birmingham and outlying centres (eg Walsall/ Wolverhampton, or Trent Valley stations). The act of splitting a train will undoubtedly compromise journey times, but can greatly improve total network connectivity in the greater number of destinations made accessible.
- Elimination of train operating patterns involving termination, reversal or 'standing' at New Street, to optimise platform occupancy.
- Resolution of capacity and train performance issues on routes approaching New Street, through segregating local and intercity traffic. This might be accomplished by 4-tracking on the Coventry-Birmingham corridor, and by the construction of a new connection from Soho Junction to Tame Bridge Parkway to

effectively bypass the congested Stour Valley lines and thus create a much faster north-westwards exit route for intercity traffic from Birmingham New Street.

Taken together, a coordinated programme of initiatives in the Birmingham area seems capable of resolving all issues of capacity, connectivity and train performance, thus rendering Birmingham New Street (or Gateway) as a fit for purpose terminal capable of handling high speed/intercity traffic on all axes (ie CrossCountry and London-West Midlands-North West) plus regional and local traffic.

It is acknowledged that even with Birmingham New Street fully optimised as an intercity / high speed terminal, a residual requirement will remain for a limited terminating facility at Curzon Street, perhaps comprising 2 or 3 platforms, and capable of accommodating the 400m long Eurogauge rolling stock that cannot feasibly be handled at New Street. This will address the future possibility of through services from Europe to the West Midlands, and any issues of TSI compliance.

I therefore consider the HS2 proposals relating to central Birmingham to be inadequate, in their failure to meet the essential brief for a high speed rail line from London to the West Midlands (rather than just Birmingham), and effectively unfit for purpose as a component of the wider UK intercity rail network.

5.6 Birmingham 'Interchange' Issues

It is necessary to give separate consideration to the proposed Birmingham 'Interchange' Station. This is intended to provide wider connectivity across the West Midlands area to HS2 than might be achieved at a central Birmingham terminal (especially one as poorly connected as the proposed Curzon Street) and also to enhance national connectivity to the National Exhibition Centre and to Birmingham Airport.

I am supportive of these aims, but believe that disproportionate emphasis is being placed upon achieving a high speed rail connection to what is essentially an 'out-of-town' development hotspot, coupled with a regional airport and leisure facility. This cannot be a primary justification for HS2's routing strategy (as certain publicity material tends to indicate), since a trunk high speed line that is routed as proposed cannot practicably serve either Coventry or Leicester – both of which would appear to comprise far more important destinations for high speed rail.

There is also a clear danger the hub location of Birmingham 'Interchange' will fuel further development pressure in this area (ie the Green Belt of the Meriden Gap) and consequently blight development prospects in nearby Coventry (whose intercity links will be greatly reduced under the HS2 proposals).

I am concerned that with no worthwhile public transport links to Birmingham 'Interchange', most travellers accessing the high speed rail network at this point will be using the private car to do so. Thus it seems reasonable to conclude that Birmingham 'Interchange' is essentially a poorly connected parkway station, which goes against contemporary principles of planning policy in promoting, rather than deterring car use.

I believe that if parkway stations are to be provided, they should be well connected to the public transport network. This does not appear to be achievable at the proposed

Birmingham 'Interchange', but an alternative site at Water Orton, close to the M42 and at junction of the Birmingham-Nuneaton and Birmingham-Tamworth lines, and also of the Sutton Park line (giving access to both Walsall and Wolverhampton, and potentially Dudley) appears to offer far greater potential. A restored route from Coleshill to Hampton-in-Arden (the original Midland Railway) might also provide access to Birmingham International Airport and to the National Exhibition Centre.

Notwithstanding this possibility, I consider that a more appropriate means of improving rail access to Birmingham International Airport and to the National Exhibition Centre is to enhance the classic Coventry-Birmingham corridor, with 4-tracking where practicable, and to provide southward and northward connections to an M1-aligned high speed trunk route in the Rugby area.

This would also deliver major enhancements to the national rail connectivity of both Rugby and Coventry, and would overall comprise a more proportionate and balanced solution than high speed rail focussed exclusively upon Birmingham Airport and the NEC.

6. This question is about the Appraisal of Sustainability (Chapter 5 of the main consultation document): 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?

6.1 Concerns re Sustainability Issues

Although I have no specific comment about the detail of the Appraisal of Sustainability, I am concerned that it, and the wider consultation document, do not properly address the following fundamental issues:

- The UK has committed itself, through the passing of the 2008 Climate Change Act, to cutting CO₂ emissions to 20% of current levels by 2050. Cuts of such magnitude can only be achieved through a programme of major Government-led interventions to achieve the necessary structural changes. As such, the HS2 prediction to be no better than 'carbon neutral' over a 60 year period is not sustainable.
- I believe that with a more appropriate operational model, routing strategy and network configuration, much greater environmental benefits, broadly compatible with the requirements of the Climate Change Act, are possible. See Alan Brooke study.
- Britain has a limited supply of 'unspoilt' rural landscapes, and these should be preserved unless there is an overwhelming imperative to do otherwise. For major transport proposals such as HS2, this demands that wherever practicable these should be aligned with existing transportation corridors (such as the M1) where the high speed line will only create marginal additional intrusion, there is generally a clear corridor alongside and public opposition will be minimised.
- Although I support the preservation of rural landscapes for its own sake, it is important to note that such landscapes comprise poor locations for the construction of new trunk railway routes, on account of the generally heavier engineering required (which will increase cost, construction nuisance and visual intrusion) and the increased opposition from both local residents and environmentalists. From this, major increases in costs, and delays in implementation, can be anticipated.

7. This question is about blight and compensation (Annex A of the main consultation document): 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?

7.1 Concerns re Blight and Compensation

I have no specific comment about the detail of any proposed compensation scheme for property owners/users affected by high speed rail, but would note that such compensation is likely to be a major contributor to overall construction costs along the corridor chosen for HS2.

It is appropriate to emphasise the point that a sensible policy of alignment with existing transportation corridors (in particular motorways where long-standing noise, atmospheric and visual intrusion has deterred adjacent development of residential housing) generally minimises both the number and the value of the affected properties. This then minimises the arising compensation costs, and allows more generous payouts to in the few cases where major compensation will be required.

Given the likelihood that many of the property acquisitions necessary for the proposed HS2 route through the Chilterns, and through the rural areas to the north, will be vigorously contested, it seems certain that blight and compensation will figure heavily in the Government's expenditure upon HS2.

I would anticipate that the compensation costs for an M1/M6-aligned high speed rail route from London to Birmingham should be an order of magnitude lower than what will apply for the proposed HS2 route.

Have you attached additional evidence to this response form? (Please select one answer only)

Yes.

Thank you for completing the response form. Please send it to:

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High Speed Rail Consultation
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SE21 9AX

The consultation closes on Friday 29 July 2011.