Summary

This paper is offered as a thinkpiece which commends and supports the Government’s rightful call for a UK high speed rail network but which argues for a far more cost-efficient, better planned and truly nationwide High Speed Network – termed ‘HSNet’ – than current limited, unaffordable and flawed proposals for the HS2 Line via Birmingham, those which effectively peter out in Leeds and Manchester, runs too often outside of main cities, and fails to advantage huge tracts of the UK. This is the largest public project ever seen and it is vital to get the concept and costings right.
Introduction

In 1922 the Great Western Railway served Birmingham from London Paddington with seven heavily loaded express passenger services a day, and taking as little as 2 hours – by steam train. There are now no direct services a day between these points. Express trains were abandoned between Paddington and Birmingham in the 1970s, as it was considered the electrified route from London Euston to Birmingham along the West Coast Main Line (WCML) was sufficient. Now HS2 is being proposed using the same Great Western corridor in order to provide extra capacity on the WCML. The wheel has indeed turned full circle.

The Author of this paper, David Campbell Bannerman MEP, has extensive knowledge of high speed rail services having worked on the Communications for ‘HS1’ – formerly the Channel Tunnel Rail Link (CTRL) – first on British Rail’s original favoured Bromley route in 1990, which was abandoned in favour of the Eastern Corridor route promoted by the Ove Arup Group. He subsequently worked on the final HS1 route, cooperating closely with engineers and consultation teams on issues such as alignments, tunnelling, earth bunds, route corridors and grade-separated junctions. David also worked as ATOC (Association of Train Operating Companies) Communications Director and was an adviser to the Government on rail transport.

David argues for a similar historic change of route from Bromley to the East of London by abandoning the HS2 route via Birmingham in favour of a HSNet North-South 200mph high speed route via the flatter, faster, far less densely populated and therefore far less costly East Coast Main Line (ECML) route up to Leeds, Newcastle and Edinburgh, providing the extra capacity for the West Coast through linking lines across the centre of the UK such as a new Leeds-Manchester-Liverpool high speed line.
David also argues for a new 200mph high speed route from London Paddington to Wales and the West Country via Bristol; and an upgraded and electrified route up the Didcot-Oxford-Leamington Spa line to both Birmingham via Solihull and via Coventry and Birmingham Airport.

This paper argues that upgrading and electrifying original Great Western rail routes via Oxford, Banbury and Leamington Spa, as well as along the Chiltern Line, would serve Birmingham with fast trains and greater capacity at a fraction of the HS2 cost.

Cutting the speed of the 250mph HS2 route to the more than sufficient 200mph (300kph – Eurostar trains already run at the speed of a Formula 1 car at top speed) allows the route to follow existing transport corridors, as HS1 did so successfully, and avoids higher costs and unnecessary environmental damage from the need for smoother curves and virgin land away from existing transport corridors.

The real advantage of high speed rail is to replace long distance aviation journeys such as London-Edinburgh, Glasgow and Newcastle, as illustrated very successfully by Eurostar trains taking over 70% of the market between London and Paris and Brussels, not shorter distance journeys without aviation routes such as London-Birmingham.

It also argues a true national high speed rail network should include both a North-South high speed rail spine into Scotland and an East-West spine from London to Wales and the West Country, which HSNet provides. He bases his recommendations on earlier more indepth studies released by Virgin Stagecoach Group by the engineering experts Bechtel for the East Coast Main Line franchise bid in 2000, and by First Group’s more sketchy plans for high speed rail services to Wales and the West Country in 2002. Ironically, Virgin Stagecoach, First Group and Eurostar (in joint venture with Keolis) are all currently bidding to operate the current East Coast Main Line rail franchise.

As an East of England MEP, David Campbell Bannerman is particularly concerned with the East of England being bypassed by HS2 – where York and London become East Anglia’s nearest high speed rail stations – with the loss of important rail services via Peterborough and business investment potential in the region. A KPMG Report estimates that Peterborough will lose £66m, whilst Norfolk East and West both come out as losers also from HS2, alongside the West Country and North of Scotland.

An Institute of Directors Report into HS2 (HS2: On the Wrong Track) also found the East of England was second in calling HS2 ‘poor value for money’ after Northern Ireland, whilst this same report found over 60% of IOD members across the UK agreed that ‘the budget earmarked for the construction of HS2 would be better used to improve other parts of the road and rail network’ (40% strongly agreeing).

David makes clear this is a constituency issue not a party political one, and this paper has nothing to do with forthcoming elections as it is politically neutral, but is driven by the topical debate on HS2.

In terms of policy, David commends and supports the Government’s call for a high speed rail network, but argues for a suspension of the HS2 Hybrid Bill for a year to allow a detailed study to be undertaken of alternatives such as HSNet and alternate routes by specialist engineering consultants, whereafter the HS2 route should either be abandoned, as the BR Bromley route was, in favour of a better alternative such as the East Coast Main Line route, or HS2 be restarted if no acceptable alternative, such as HSNet, is agreed.

“Cutting the speed of the 225mph HS2 route to the more than sufficient 186mph (300kph – the speed of a Formula 1 car at top speed) allows the route to follow existing transport corridors”.
Right Idea, Wrong Route:
An Historical Example of how the HS1 Route was changed

In 1990 I was commissioned as a Communications consultant to write British Rail’s booklet laying out its preferred ‘Bromley Route’ for the Channel Tunnel Rail Link (CTRL). After the complete debacle of BR announcing various routes through Kent in 1986 without adequate communication or notice, blighting large swathes of the county, the Bromley option was considered to be at least one settled route option. But it was not popular.

A history of HS1° reported ‘The original proposals for the route from British Rail followed more Southerly routes through Kent and into South London, creating massive opposition from local MPs, councillors and residents. Numerous protest groups were formed including CHARGE (Channel Action Residents Group Executive) and North Downs Rail Concern, which was presided over by the local MP. Indeed, Kent alone had thirteen MPs, all of them Conservative and five of them Ministers. Most of them were highly active in opposing BR’s plans.

“The Conservative Party viewed the political threat as so serious that the chief BR planner was summoned to a meeting with Prime Minister Margaret Thatcher in 1989. Her opening remark was telling: “So you’re the man who’s going to lose us the Kent local elections.”’ This situation is uncannily similar to the situation with predominantly

“\textit{This is an illustration of how poor planning can lead to billions of waste in the implementation}”.
Conservative MPs, and Ministers, suffering from the HS2 route through the Cotswolds to Birmingham in particular, but also beyond.

In May 1990 an MP for the marginal Dulwich constituency in South London initiated a Commons debate: ‘That this House urges British Rail to give full and thorough consideration to proposals for a Channel Tunnel Rail Link based on a junction at Stratford’.

Subsequently I sat at the Conservative Party Conference October 1991 and watched a stunned British Rail team seeing the then Transport Secretary Rt Hon Malcolm Rifkind MP announce a very different route overnight – via Essex and not Bromley to Waterloo – in order to realise important property developments such as the welcome new town just announced by George Osborne for the former clay pits at Ebbsfleet in Kent. I doubt all the BR Team actually had been told of the change of route, but the new route was enthusiastically accepted over time and has proved to be workable and successful.

How had this change of route happened? The official Ove Arup account records that ‘In October 1989 Arup decided on its own initiative and cost to examine alternative routes between the Channel Tunnel and London, due to perceived difficulties in tunnelling under South-East London… There had to be an alternative to BR’s route. Arup’s solution was published in March 1990, and after considerable further lobbying, negotiation, and discussion and commission, Government decided in October 1991 to select the Arup route.’

But British Rail have never been held to account for building an expensive passenger terminal at Waterloo that has been abandoned for many years, a major North Pole depot for Eurostar trains that has been disused until its recent Hitachi trains rescue, night sleeper trains that went straight from the factory to the scrapyard because use of the showers caused the brakes to go on – and there was no market anyway, grossly exaggerated passenger and particularly freight forecasts, nor for its abandoned regional Eurostar plans. This is an illustration of how poor planning can lead to billions of waste in the implementation.

It is not the intention of this paper to reinvent the wheel, excusing the pun. I have drawn upon some existing publicly announced studies and proposals from highly professional top level companies, and have supported or added to these proposals. It is unfortunate that in the early 2000s the Government slapped down such visionary thinking and high speed rail was frowned upon, before the 2006 Eddington Report actively discouraged high speed rail at all. It is entirely right for the Government to pursue a high speed rail network, but as with the abandoned Bromley route, the exact alignment may be open to healthy debate.

“So you’re the man who’s going to lose us the Kent local elections.”
Prime Minister Margaret Thatcher 1989
Right Idea, Wrong Route - Alternative High-Speed Rail Plans Examined

In researching an alternate route to HS2 it became abundantly clear that most qualified engineering consultants and engineering groups skilled in high speed rail planning and construction were already commissioned by HS2 and were not free to profer an alternative route plan - as Ove Arup did of their own initiative so impressively in 1990 for the HS1 route.

It is possible this is deliberate policy. It is proposed here that a proper study of real alternatives must be commissioned using the kind of substantial resources and consultant weight HS2 is able to bring to bear. These HSNet proposals are based on previous high quality studies produced for large and reputable passenger rail companies:

1. THE EAST COAST MAIN LINE ROUTE (VIRGIN STAGECOACH BECHTEL 2000)

In Autumn 1999 the Government announced plans to offer a 20-year franchise for the high profile East Coast Main Line rail franchise to replace the 7-year franchise awarded to GNER Holdings Limited on 28th April 1996. Virgin Rail Group’s 20-year franchise bid, which included a new high speed railway line, a fleet of what they termed ‘Grand Vitesse’ trains running at 205 mph and a doubling of available capacity, went to the then shadow Strategic Rail Authority (SRA) on 21st February 2000. Ironically, in 2014 the East Coast Main Line franchise is again being bid for, and by not only again by Virgin Stagecoach, but also by First Group and by Eurostar (in partnership with Keolis) - all fast train operators.

As part of the earlier process, the SRA Chief Executive Mike Grant announced a further study into a new high speed line linking London and the Home Counties to Scotland was needed. The two shortlisted bidders, GNER and Virgin Rail Group, were requested to produce a revised bid on 8th May 2000, part of which included a request “to formulate their (probably different) thoughts for high speed enhancements to the capacity of the East Coast Main Line beyond 2010.”

Virgin’s proposals would have resulted in substantial and valuable time savings by 2009: for example, cutting London-Edinburgh fastest trains from 4hr 25 minutes fastest in 2000 to just 3hr 11 minutes in 2009, London-Leeds from 2hr 24 minutes to 1hr 32 minutes and London-Newcastle from 2hr 56 minutes to just 1hr 59 minutes. Based on these, the main listed time savings are summarised in the boxes on the HSNet Map on Pages 14 to 15.

These time savings are markedly better for some cities than HS2 could achieve once completed in full: HS2 only offers London to Edinburgh in 3 hours 38 minutes – and London-Newcastle in 2 hours 18 minutes, though London to Leeds at the end of the proposed HS2 route would be faster at 1 hour 22 minutes in 2032-33.

But what is striking is that these substantial time savings could have been achieved at a fraction of the cost of HS2, merely by investing in three high speed sections on the East Coast Main Line, namely:

• A new 106 mile Peterborough to Doncaster two track high speed rail line. This is an area of flat terrain with fairly small population density. The larger conurbations only start in the Sheffield/Doncaster/Leeds area.

• A high speed bypassing rail line around Morpeth at 14 miles long

• A section of 125mph rail track North of Newcastle using the Leamside alignment and improving access to Sunderland.

Other ‘classic’ rail lines were to be upgraded such as duplicating the ECML route by widening the Welwyn viaduct from 2 to 4
tracks, electrification of certain routes such as to Sheffield, Leeds, through Pontefract-Knottingley, and Peterborough to Ely, and the widening to a 6 track railway South of Hitchin, which would improve local commuter and freight services on non high speed tracks on this corridor.

Strikingly, these substantial time savings were deliverable for just £3.5 billion in 2000, which with rail engineering inflation estimated at 4% a year (HS2’s Mark Cowlard, Global Head of Rail at EC Harris) equates to around £6 billion in 2014.

HSNet takes the Virgin Stagecoach Bechtel plan and adds to it in a number of ways:

1. As with HS2, a major new London Euston terminal would be built, hopefully to feature not only the resurrection of the Euston Arch but also the Grand Hall within a new modern structure. The route of HSNet North-South would turn East from the Euston area in tunnelling to reach the East Coast Main Line North East of London, outside the City outskirts, and not West as with HS2 towards North West London and Birmingham. An additional high speed section from Euston all the way to Peterborough would include widened tracks directly alongside the main line and a new architecturally matching viaduct at Welwyn and would bring additional time savings.

2. New Scottish high speed rail sections between the outskirts of Glasgow to Edinburgh Airport to shorten the journey from London to Glasgow and to allow for high speed Edinburgh to Glasgow Scottish services. The second section would be South of Edinburgh to cut London-Edinburgh timings, but allowing for slowing for the world famous cliff views North of Berwick-upon-Tweed and the Royal Border Bridge to be retained as part of the ‘rail experience’.

3. A new 200 mph high speed rail corridor between Leeds and Manchester to serve West Coast destinations and to ease capacity
on the West Coast Main Line as HS2 aims to do, following the M62 Motorway route corridor from Leeds to West of Manchester, where trains would either travel into Manchester city (Victoria) or head South to Manchester Airport (M56 corridor) or branch off to serve Liverpool. This will be served by new well overdue regional TransPennine high speed services as well as London-Leeds-Manchester-Liverpool services. This investment in a core North West - North East corridor will show that HSNet is far more regionally beneficial than the London-centric HS2. Indeed it is proposed that this link is built in an HSNet Phase One, along with the East Coast Main Line upgrades.

4 Upgrading and electrification of linking ‘classic’ existing lines to serve Midlands, Eastern and West Coast Main Line destinations. These include:

- (Peterborough)-Ely-Norwich for faster connections to Norwich and competition with Greater Anglia Norwich and Ely services (Peterborough to Ely is already in the VSB 2000 plans)
- Grantham-Nottingham-Derby to provide high speed competition for Midland Main Line services
- Doncaster-Sheffield to cut times to Sheffield markedly and provide competition to Midland Main Line services (already included in VSB 2000 proposals)
- Doncaster-Hull to improve times and provide direct electric East Coast services to Hull (electrification announced 2014)
- Lincoln-Newark to improve times and provide electric East Coast services to Lincoln and potentially beyond.
- Newcastle-Carlisle-Lancaster to provide alternate high speed services to Glasgow and West Coast Main Line destinations.

In this way HSNet will ensure the ‘winners’ from HS2: Greater Manchester, South and West Yorkshire, Nottingham, West Midlands and Greater London will all still ‘win’ and derive great benefit from HSNet.

5 A new high speed rail line to Wales and the West Country set out below.

2. THE GREAT WESTERN MAIN LINE ROUTE (GWML) (FIRST GROUP 2002 HIGH SPEED RAIL STUDY PLANS)

In 2002 as part of its thinking before applying for the Great Western rail franchise, First Group, a major rail and bus operator, initiated a 6-month study into a high speed rail network for Wales and the West Country. It is understood that the dead hand of the then Department of Transport promptly killed off the study and to its shame threatened First Group to drop such visionary thinking. It proposed:

- The development of a brand new 200 mph route that would ‘broadly follow existing transport corridors’ and have some ‘parkway’ style interchange stations
- A major project that would be looking to serve Bristol and South West England, delivered in phases
- Would achieve substantial journey time savings to bring Swindon to just 35 minutes from London, Bristol Parkway to 49 minutes from London, Cardiff to 1 hour 10 minutes, Swansea to 2 hours and Plymouth to a remarkable 2 hours 20 minutes
- That in heavily populated areas such as the approach to London Paddington it would use existing tracks or run in tunnels.
## FASTEST TRAIN TIMES FROM LONDON

<table>
<thead>
<tr>
<th>Destination</th>
<th>Current</th>
<th>HS2</th>
<th>HSNet (VSV2000 /First Group 2002)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edinburgh</td>
<td>4hrs/25mins</td>
<td>3hrs/38mins</td>
<td>2hr/45mins</td>
</tr>
<tr>
<td>Glasgow</td>
<td>4hrs/8mins</td>
<td>3hrs/38mins</td>
<td>3hr/15 mins</td>
</tr>
<tr>
<td>Newcastle</td>
<td>2hrs/49mins</td>
<td>2hrs/18mins</td>
<td>1hr/45mins</td>
</tr>
<tr>
<td>Darlington</td>
<td>2hrs/21mins</td>
<td>n/a</td>
<td>1hr/30 mins</td>
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<td>Carlisle</td>
<td>4hrs/17mins</td>
<td>n/a</td>
<td>3hrs</td>
</tr>
<tr>
<td>York</td>
<td>1hr/52mins</td>
<td>1hr/23mins</td>
<td>1hr/15 mins</td>
</tr>
<tr>
<td>Bradford</td>
<td>2hrs/34mins</td>
<td>n/a</td>
<td>1hr/30 mins</td>
</tr>
<tr>
<td>Liverpool</td>
<td>2hrs/14mins</td>
<td>1hr/36mins</td>
<td>2h/15 mins</td>
</tr>
<tr>
<td>Manchester</td>
<td>2hrs/7mins</td>
<td>1hr/8mins (Piccadilly)</td>
<td>1h/45 mins</td>
</tr>
<tr>
<td>Leeds</td>
<td>2hrs/24mins</td>
<td>1hr/22mins</td>
<td>1hr/10mins</td>
</tr>
<tr>
<td>Doncaster</td>
<td>1hr/46mins</td>
<td>n/a</td>
<td>55 mins</td>
</tr>
<tr>
<td>Grantham</td>
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<td>n/a</td>
<td>51 mins</td>
</tr>
<tr>
<td>Nottingham</td>
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<td>1hr/8mins</td>
<td>1h/15 mins</td>
</tr>
<tr>
<td>Derby</td>
<td>1hr/25mins</td>
<td>1hr/11mins</td>
<td>1h/30 mins</td>
</tr>
<tr>
<td>Sheffield</td>
<td>2hr/1min</td>
<td>1hr/19mins</td>
<td>1hr/20 mins</td>
</tr>
<tr>
<td>Birmingham</td>
<td>1hr/22mins</td>
<td>49mins</td>
<td>1hr/20 mins</td>
</tr>
<tr>
<td>Coventry</td>
<td>59mins</td>
<td>n/a</td>
<td>1hr/8 mins</td>
</tr>
<tr>
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<td>1hr</td>
</tr>
<tr>
<td>Peterborough</td>
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</tr>
<tr>
<td>Reading</td>
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<td>18 mins</td>
</tr>
<tr>
<td>Didcot Parkway</td>
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<td>30 mins</td>
</tr>
<tr>
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<td>35 mins</td>
</tr>
<tr>
<td>Bath</td>
<td>1hr/23mins</td>
<td>n/a</td>
<td>55 mins</td>
</tr>
<tr>
<td>Oxford</td>
<td>55mins</td>
<td>n/a</td>
<td>40 mins</td>
</tr>
<tr>
<td>Bristol Parkway</td>
<td>1h/21 mins</td>
<td>n/a</td>
<td>49 mins</td>
</tr>
<tr>
<td>Cardiff</td>
<td>2hrs/1mins</td>
<td>n/a</td>
<td>1hr/20 mins</td>
</tr>
<tr>
<td>Swansea</td>
<td>2hrs/58mins</td>
<td>n/a</td>
<td>2hrs</td>
</tr>
<tr>
<td>Taunton</td>
<td>1hr/41mins</td>
<td>n/a</td>
<td>1hr/15 mins</td>
</tr>
<tr>
<td>Exeter</td>
<td>2hrs/15mins</td>
<td>n/a</td>
<td>1hr/30 mins</td>
</tr>
<tr>
<td>Plymouth</td>
<td>3hrs/20mins</td>
<td>n/a</td>
<td>2hrs/20 mins</td>
</tr>
<tr>
<td>Penzance</td>
<td>5hrs/5 mins</td>
<td>n/a</td>
<td>4 hrs</td>
</tr>
</tbody>
</table>

**Note:** Best time for each destination has been taken rather than an average.13
HSNet Described

1. EAST COAST MAIN LINE (ECML) ROUTE – HSNet North-South

HSNet starts at a revamped London Euston station, as HS2 does, with a resurrected Euston Arch and possible rebuilt grand hall within a modern design. However, with half of its trains leaving from Kings Cross, the works at Euston can be reduced in scope to reduce disruption to West Coast Main Line (WCML) services, and accordant additional tube connections also be reduced. Crossrail 2 proposals already cover both Kings Cross St Pancras and Euston stations as one stop.

Entering deep bored tunnel North of Euston, the HSNet North-South line would run in tunnel under North London with minimal impact. The line would emerge into the East Coast Main Line (ECML) rail corridor just North of London’s boundary to join the existing East Coast Main Line from London Kings Cross.

HSNet high speed trains would run from Euston to serve existing West Coast Main Line destinations, increasing capacity on that route, and to the East, North East and Scotland as now but at higher speeds. Also joining the East Coast Main Line rail route would be a short link line in tunnel with the existing High Speed 1 route to the Channel Tunnel. This link line would feed trains from a proposed new London Thames Hub Airport to destinations North of London which would be sited close to the existing Eurostar route corridor to Paris and Brussels from London St Pancras.

HSNet North-South would run on a high speed 200mph alignment from North of London over Welwyn Viaduct, which would be doubled in an architecturally matching style, up the East Coast Main Line rail route corridor to South of Doncaster. This route section is fast, flat and mainly rural, with every little housing or building alongside the main line as this is an area of low population density until the Sheffield/Doncaster/Leeds conurbation is reached. At Peterborough there would be a grade separated junction for stopping trains at Peterborough and a flyunder or flyover for non-stopping trains in the manner of Ashford station on the HS1 route. Extra capacity would be created at Peterborough for commuter trains and through (reversing) trains to Norwich via Ely along conventional but electrified lines.

The HSNet, as a 200mph and not a 225mph railway, will be able to parallel the East Coast Main Line for most of this route and needs minimal tunnelling. Local residents along the route will benefit from the eradication of delays at level crossings with new bridges provided for both HSNet and ECML trains.

At Grantham, trains for Nottingham through to Derby would leave the ECML, and the 20 mile route to Nottingham would be upgraded and electrified. North of Newark, trains for Lincoln would diverge along an upgraded and electrified route to Lincoln to provide fast direct services. At Doncaster, trains for Sheffield will leave the ECML rail route and travel over conventional, but electrified and upgraded, lines to Meadowhall and Sheffield (serving destinations HS2 would serve).

At Leeds, the HSNet would diverge from the ECML rail route alignment and run on new track, often in tunnelling, in the M62 motorway road corridor to the west of Manchester, where trains would run either into Manchester City Centre and Manchester Victoria station or westwards to Liverpool appropriately along the first passenger railway route in the world, via Rainhill, upgraded and electrified, as currently planned, or southwards to Manchester Airport station to serve Cheshire and encourage flight substitution. HS2 serves both Leeds and Manchester but is London-centric and Birmingham-centric, whereas HSNet would transform TransPennine travel, which suffers from the major barrier of the Pennines, thereby boosting economic prosperity in the North West, Yorkshire and North East. It is recommended this would be built as part of Phase One of HSNet North-South.
On the main East Coast Main Line rail route corridor to Scotland, York would be served by HSNet trains to Newcastle and Scotland, and by high speed Transpennine services. Trains would run on existing fast (140mph maximum) tracks up to Northallerton for trains to Middlesbrough. As proposed in the Virgin Stagecoach Bechtel 2000 plans, the Leamside route would be upgraded and electrified to 125 mph speeds, and some non stopping trains would bypass Durham. A new station might be built at Washington Parkway to serve Sunderland.

At Newcastle, some high speed services may serve Carlisle on the West Coast Main Line to Glasgow, along an upgraded and electrified Newcastle to Carlisle railway line. Also, as proposed in the VSB 2000 plans, there would be a new 200 mph high speed rail section bypassing Morpeth for approximately 14 miles from Killingworth to Chevington.

These proposals additionally add two new high speed sections in Scotland, whereas HS2 has no Scottish high speed rail proposals at all. It is proposed to build a 30 mile 200 mph high speed rail section North of Berwick-on-Tweed (a town that is forecast to lose services under HS2) running broadly parallel to existing ECML tracks. This allows for the world renowned views of the North Sea along the existing ECML alignment and the spectacular entrance to Berwick across the Royal Border Bridge to be retained. High speed lines abroad use classic routes such as the line along the South of France to Nice after the high speed line route to Bordeaux, and much of the mountainous approach to Strasbourg is on ‘classic’ lines after the high speed route section to Paris - overall timings matter most.

North west of Edinburgh, some HSNet trains would travel North to Aberdeen and Inverness. But the main HSNet route will run to Glasgow via Edinburgh Airport. There would be a high speed 200 mph section for 35 miles from Edinburgh Airport – which could lead to substantial domestic air journeys to rail substitution to London – and along the M8 Motorway corridor to Glasgow, where high speed trains will run along conventional lines into Glasgow City Centre and Glasgow Central station. The resultant time savings to Glasgow will make rail substantially more competitive than its current quarter share of the market, resulting in domestic air to rail substitution, as well as transforming rail links between Glasgow and Edinburgh in Scotland’s Central Belt.
2. GREAT WESTERN MAIN LINE (GWML) ROUTE – HSNet East-West

HSNet’s East-West route would follow the Great Western Main Line corridor starting primarily from London Paddington station (though with some upgraded and electrified Birmingham Chiltern services starting at London Marylebone).

Depending on capacity and cost decisions, HSNet East-West would run along existing lines or in tunnel to Heathrow, where a high speed station is proposed. HSNet allows for the main London Airport to be located at either a new Thames Hub Airport under the Lord Foster Plans off the HST/Channel Tunnel Rail Link, which is preferred, or an expanded Airport at Heathrow, directly served by HSNet trains to Birmingham, Wales and the West Country and not the rather absurd Heathrow spur proposed by HS2 from Old Oak Common. It is assumed that if Heathrow ceases to be the main London airport the station here will still serve as a parkway station for a business airport and/or for major new housing developments.

From Heathrow, HSNet East-West would run along existing rail and road corridors paralleling the Great Western Main Line and the M4 motorway, as HS1 so successfully follows the M20 and M2 motorways, and the LTS rail and Ashford-Folkestone rail corridors. Reading would have a high speed 200 mph rail bypassing line in the manner of the one at Lille for non stopping Paris – London Eurostar trains.

From Reading certain high speed services via Westbury to Taunton will branch off the Paddington-Bristol high speed line here and run over upgraded and electrified tracks at conventional speeds through Westbury, and on to Taunton to rejoin high speed tracks South to Exeter. Network Rail are already evaluating electrifying this route along conventional lines.

At Didcot, the HSNet East-West lines would diverge: one to Birmingham, the other to Wales, Bristol, Bath and the South West. The Birmingham HSNet line would run from Didcot over conventional but upgraded and electrified tracks to Oxford, Banbury and Leamington Spa at speeds of no more than 125mph maximum. This route is already designated part of the ‘Electric Spine’ under Network Rail plans to connect Nuneaton on the West Coast Main Line with Coventry and Leamington Spa via Oxford and Reading to Basingstoke and Southampton, primarily for electric rail freight use.

At Aynho Junction South of Banbury, the electrified Chiltern Line from London Marylebone would join the Birmingham HSNet line.

At Leamington Spa, on the abandoned Great Western express passenger route to Birmingham, HSNet trains from Paddington would diverge: approximately half would run via a reopened Kenilworth station (for Warwick University) up to Coventry and on to Birmingham International Airport and Birmingham. The other half would run direct via Warwick and Solihull into Birmingham Snow Hill via Moor Street. It is envisaged the major and sadly destroyed Great Western Birmingham Snow Hill, now a bare concrete block shelter, would be reborn with a major commercial and hotel development around the site (this instead of the HS2’s Birmingham Curzon Street developments) through Network Rail, HSNet and commercial partners). An HSNet operator may also choose to restore the lost grandeur of the famous Birmingham to Paddington ‘Blue Pullmans’ of the 1960s.

Meanwhile, the HSNet Bristol to Exeter line would run from Didcot to Bristol Parkway, with an alternative route along the soon to be electrified line through Bath at conventional speeds. At Bristol Parkway, the high speed line to Wales would end, with trains to Newport, Cardiff and Swansea proceeding over electrified conventional lines through the
HSNet Described

Bristol Tunnel. The close nature of the stations on this section of line, and the urbanisation around the railway suggest that a high speed section through South Wales is not appropriate, but this could be reviewed.

HSNet trains to Taunton, Exeter and the South West would run along conventional electrified tracks through Bristol Temple Meads. South of Bristol, a new 200mph high speed line would follow the M5 Motorway route corridor down to Taunton. At Taunton, high speed trains running to Reading and then over conventional upgraded and electrified lines at slower speeds through Newbury would join the Bristol-Exeter high speed corridor.

The high speed line would run then on to Exeter, with some high speed trains serving Tiverton Parkway. Junctions with conventional lines would be provided en route for services stopping at, for example, Frome or Weston-Super-Mare.

At Exeter, easier connections would be provided with local Devon and Cornish rail services, and better parking provided. High speed hybrid electric/diesel trains would run West from Exeter using diesel power to serve destinations such as Torquay and Newton Abbot. The use of hybrid units would save the World Heritage route via Dawlish being despoiled with electric overhead gantries, which are also vulnerable to storm and water damage, and to maintain an excellent ‘rail experience’.

But a new alternative alignment to Plymouth would be provided along the former ‘Southern Railway’ express route. This line would be upgraded, rebuilt where necessary, and electrified, and would run at conventional 100mph speeds from Exeter to Plymouth via Okehampton and Tavistock. The importance of such a diversionary route around the storm tossed sea wall at Dawlish was dramatically illustrated when major storm damage closed the entire Great Western line through Dawlish for several months in 2014. It is envisaged that some through express Cornish high speed passenger services would use this diversionary route non stop from Exeter to Plymouth, which borders Cornwall, to improve direct services and boost the Cornish economy.
### HSNet Described

<table>
<thead>
<tr>
<th>Location</th>
<th>Current Times</th>
<th>HS2 Times</th>
<th>HSNet Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>BATH</td>
<td>1hr/23mins</td>
<td>1hr/11mins</td>
<td>1hr/30mins</td>
</tr>
<tr>
<td>BIRMINGHAM</td>
<td>1hr/22mins</td>
<td>1hr/11mins</td>
<td>1hr/30mins</td>
</tr>
<tr>
<td></td>
<td>1hr/44mins via Chiltern</td>
<td>49mins</td>
<td>30mins</td>
</tr>
<tr>
<td>BRADFORD</td>
<td>2hrs/34mins</td>
<td>1hr/15mins</td>
<td>1hr/30mins</td>
</tr>
<tr>
<td>BRISTOL P/WAY</td>
<td>1hr/21mins</td>
<td>1hr/15mins</td>
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</tr>
<tr>
<td></td>
<td>49 mins</td>
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<td>CARDIFF</td>
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<td></td>
<td>3hrs</td>
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<td></td>
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<td></td>
<td>1hr/6mins</td>
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<td></td>
</tr>
<tr>
<td>LEAMINGTON SPA</td>
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<td>1hr</td>
<td></td>
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<tr>
<td></td>
<td>1hr/6mins</td>
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</tr>
<tr>
<td></td>
<td>1hr</td>
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**COLOUR KEY:**
- **Current times**
- **HS2 times (where applicable)**
- **HSNet times**
- **HIGH SPEED SECTIONS**
I attended a mobile exhibition centre regarding HS2, the sort I helped to run for HS1, and submitted a consultation response. I was struck immediately at the exhibition centre at two criteria that were seemingly set from ‘on high’ and were not up for discussion: 1) that the HS2 route must go via Birmingham and 2) that it must run at extremely high speed – 250mph (225mph initially) and not the 186mph successfully used for Eurostars on the HS1 (Channel Tunnel Rail Link) route, and which allowed that route to be designed neatly to follow existing rail and road corridors.

My knowledge of planning high speed rail sitting side by side with engineers, suggests that these criteria serve only one objective: the EU-dictated goal of binding European nations together more closely so that the UK’s second largest City, Birmingham, could be realistically connected to Paris and Brussels within the 3.5 hour window necessary for trains to attract and retain the business traveller (see Figure 8), and without which the economics fall apart.

These two criteria have produced a deeply flawed proposal in HS2. It is clear too that HS2 is not primarily about creating a genuine British high speed rail network, as claimed by the company, or to play to a key strength of high speed rail of transferring journeys from air to rail, but seems to be more of an EU network branch line within the EU politics of greater integration and bonding, as HS1 was to quite some extent. The previous Secretary of State for Transport in October 2010 announced on HS2 that “passengers could clear passport control at Birmingham Airport and depart for Europe”. But with the 3.5 hour business traffic rule, this is only feasible if trains run at unnecessarily high speeds.

Whilst it is true that at this point HS2 is not part of the EU’s transnational TEN-T Programme and that the link with HS1 has been removed at this point, the EU Commission has confirmed that HS2 will be added to TEN-T if approved and that HS2 will be eligible for TEN-T funding.
Collectively these aims are distorting the good planning of a high speed rail network in a number of ways:

1. **HS2 IS POORLY CONCEIVED AND DESIGNED:**

1.1 HS2 claims to be a ‘national rail network’ but fails to serve a great deal of the UK including bypassing whole regions such as the South West, Wales, the East of England, The North East, North West and Scotland, and important cities such as Bristol, Cardiff, Exeter, Oxford, York, Newcastle, Norwich, Lincoln, Edinburgh and Glasgow.

Nor does HS2 work well enough with existing ‘classic’ rail routes and stations; its design bypasses or duplicates existing services rather than being integrated into them, and offers no high speed rail above the middle belt of England, and none at all in Scotland. One principle of HS1 was that there should be a ‘degree of return’ for those affected by the new alignment – meaning that local communities should benefit from enhanced services, not be bypassed.

HSNet presented here, in contrast, offers not only a North-South route but an East-West route, and far greater interaction with classic rail routes, all at a much lower cost than HS2.

1.2 A key aim of a high speed rail network should be to compete with and replace air journeys, freeing up highly prized and costly airport landing slots used for domestic routes for international air routes. This can assist airports to manage capacity – (see table below) but HS2 does not even reach to cities with regular London flights such as Newcastle, Glasgow and Edinburgh, so HS2 fails in this important objective.

No-one flies from London to Birmingham, HS2’s main focus. Virgin Trains on the West Coast dominates the London-Manchester journey market through high frequency and fast trains. Network Rail’s own report concludes that ‘In general, contemporary data indicate that high speed railways customarily take at least 70% of the rail-air share on journeys below 3 hours.’

Yet the modal share for rail versus air for Edinburgh is only 24%, with Glasgow also only 24%, whilst Newcastle is better for rail at 66% and air 34%, yet HS2 does not ensure competitiveness for rail on these routes. Glasgow to London is a 1 hour 20 minute flight, but takes 4 hours 8 minutes fastest by train, Edinburgh also 1 hour 20 minutes but 4 hours 25 minutes by train, and Newcastle a 1 hour 10 minute flight and 2 hours 49 minutes by train fastest.

### Flights from London Airports Table

<table>
<thead>
<tr>
<th>Destination</th>
<th>Flights a day (Ave.wkday)</th>
<th>Flight Times (LHR)</th>
<th>Notes (Frequency varies per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edinburgh</td>
<td>Up to 38 flights a day</td>
<td>80mins</td>
<td>Flights operated by BA, Virgin (op. Aer Lingus), Easyjet from LHR, Gatwick, Stansted and London City Airport</td>
</tr>
<tr>
<td>Aberdeen</td>
<td>Up to 16 flights a day</td>
<td>90mins</td>
<td>Flights operated by BA, Virgin (op. Aer Lingus) &amp; Easyjet from LHR, Glasgow, London City</td>
</tr>
<tr>
<td>Newcastle</td>
<td>Up to 8 flights a day</td>
<td>70mins</td>
<td>BA from LHR/Easyjet from Gatwick</td>
</tr>
<tr>
<td>Manchester</td>
<td>Up to 13 flights a day</td>
<td>55mins</td>
<td>BA, Virgin (operated by Aer Lingus) from LHR</td>
</tr>
<tr>
<td>Glasgow</td>
<td>Up to 18 flights a day</td>
<td>80mins</td>
<td>Easyjet and BA from Stansted, London City Airport and LHR</td>
</tr>
<tr>
<td>Leeds/Bradford</td>
<td>Up to 3 flights a day</td>
<td>60mins</td>
<td>BA from LHR</td>
</tr>
</tbody>
</table>

Source: Airline websites.
Virgin Rail have stated that time and frequency improvements in 7 years have seen their share of the rail/air market (to Scotland) increase from 16% to 24%. A spokesman stated that “If we can crack the 4 hours barrier, we believe a 50% share is realistic.” Whilst East Coast’s Head of Revenue has acknowledged that “there may be a mind-set that three hours is the maximum time corporate travellers want to spend on a train…”

International comparisons show how rail’s share of London to Paris and Brussels has now risen to 71% for Eurostar on the London-Paris route and 64% of the London-Brussels market. An EU Commission report in 2006 found that journey times were by far the most important factor determining rail/air market share, and an MIT report based on data from 35 airports that the improvement of rail travel times to be the significant factor in reducing short-haul air traffic in Europe.

Paris to Lyon journeys went from 40% before the TGV was built in 1984 to 72% after, with air’s share falling from 31% to just 7%. Madrid-Seville traffic shares went from rail at only 16% before 1991 to 51% after 1994, and air fell from 40% to just 13%. Competing for journeys with air in the 3 hour – 3 ½ window is clearly a very promising area for high speed rail, but HS2 fails to do this, has odd plans to split Scottish HS2 trains at Carstairs Junction, and doesn’t even do this anytime in the next 20 years.

1.3 The current HS2 route, particularly London to Birmingham, is poorly designed and conceived – better routes must be evaluated such as HSNet via the East Coast Main Line which is far straighter, flatter and far less densely populated.

A major problem with HS2 is that it goes from one major extended conurbation – London – to another – Birmingham and does so via a very sensitive and beautiful part of the UK, the Chilterns, and so requires extensive and very costly tunnelling and mitigation measures. As a result, over half the HS2 route will be in tunnels or cuttings – some 56.5 miles of 140 miles, with more likely from consultation – and this has led directly to an increase in cost for Phase 1 of just under £6 billion, taking it from £16 billion to £21.4 billion.

The Transport Committee reported in December 2013: “the cost increases to date have been largely due to the decision to undertake more tunnelling and to mitigate the impact of the project on people living near the route.” Meanwhile the IEA concluded in August 2013 that changes to the HS2 route “to keep voters on side and to “buy off opposition” were likely to add another £30 billion to the current estimated cost of £42.6 billion.

This extraordinary level of cost and (understandable) mitigation protection strongly suggests it is a bad and ill conceived route choice, and that the requirements to run via Birmingham and at such speeds should be dropped.

In August 2012, the Daily Telegraph reported that Mark Bostock, a leading rail engineer who helped initiate the change of route for HS1 during his time at Arup, said that “officials in charge of HS2 have ignored the way Britain’s first high speed line was laid in parallel with the M20 Motorway in order to minimise disruption, land purchases and disruptive noise.”

Similarly, LSE Professor Henry Overman of the HS2 Analytical Challenge Partnership suggested currently the HS2 scheme is “not particularly good value for money” compared to other rail enhancement projects and “may well even be poor value for money compared to other alternatives that address exactly the same set of problems... the case for improvements on
the existing lines is actually pretty good in terms of the benefit-cost ratio.” This is effectively what HSNet argues for. HS2’s benefit to cost ratio has fallen substantially to a ‘dangerous’ 1.2 to 1, and possibly lower according to an FT blog. HSNet could provide far better BCRs.

The official summary of consultation responses on HS2 show most people object on the basis of: 1) the existing rail network should be improved instead 2) the business case is questionable 3) the cost is too expensive. As the Head of the CBI John Cridland warned: “the case for this has to be value for money. At what point does it cease to be value for money?”

The HSNet alternative is to upgrade, speed up and electrify existing railway corridors at

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**Fig 5.** The HS1 Channel Tunnel Rail Link Route was carefully designed to follow existing road-rail corridors.

**Fig 6.** HS2 and HSNet routes compared for population density. ECML Route requires far less tunnelling.
much reduced cost. Tunnelling on average, if bored particularly (as opposed to cut and cover) is much more expensive than flat level running above ground, and along existing railway corridors.

1.4 Cutting the proposed top speed from 250 mph (400 kph) to 200 mph (360 kph), is still faster than successful Eurostar trains now, and the same as for the new Siemens 200 mph Eurostar trains, but allows the route to be designed to follow route corridors as HS1 did so well.

Rail expert Mark Bostock rightly concludes that “a straight line railway is hugely destructive. We want to minimise impact and integrate with existing services. HS2 is relying on a false priority of speed and ignores the excellent principles of HS1.”

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Fig 7. Example of how HS1 was designed to run on existing corridors; in this case the 186 mph railway was fitted in between the M20 motorway and A20 road.

Fig 8. Respective times of travel illustrating the 3.5 hour window required to attract the Business Traveller.

- Edinburgh 4hrs 25m
- Glasgow 4hrs 8m
- Newcastle 2hrs 49m
- Manchester 2hrs 7m
- London 4hrs 38mins
- Brussels 2hrs
- Amsterdam 4hrs 11m
- Cologne 4hrs 11m
- Paris 2hrs 15m
1.5 Birmingham can be served just as well in other ways and with other routes to add capacity – it does not justify an HS2 link.

Until the early 1970s, Birmingham was well served by express passenger trains including the ‘Blue Pullman’ diesel rail sets on the Great Western route out of London Paddington - but no regular direct trains run at all now. Indeed, HS2 intends to make use of the Great Western’s near abandoned 1910 express alignment for Birmingham expresses out of Old Oak Common in West London. Chiltern Railways from Marylebone already provides a good service taking around 1 hour 39 minutes fastest along an ex-GWR route but runs often at around 2 hours. Electrification and upgrading of track could well cut journey times on these ‘classic’ routes to 1hr 20 minutes, around the same time as electric trains from Euston now.

HSNet also allows for connections along upgraded routes North of Birmingham via Sheffield and Derby onto the 200 mph high speed East Coast Main Line, but with savings in the order of billions.

1.6 HS2 fails to integrate well into existing rail stations and services (unlike HSNet) – it generates many ‘parkway’ stations often well outside city centres, rather than serve existing centrally placed stations – such as East Midlands Hub parkway and Sheffield Meadowhall – and needs massive new station works alongside existing stations such as at Manchester Piccadilly.

As Louise Ellman, Labour’s Chair of the Transport Select Committee, summarised: “we (on the committee) are particularly concerned that HS2’s line is being developed in isolation from the rest of the rail network, and that will make it harder for regions to enjoy the economic benefits.”

1.7 HS2 fails to assist aviation policy adequately. It does not directly serve Heathrow Airport, without the need for inconvenient passenger changes at Old Oak Common, and would be located the wrong side of London if a new London airport is built to the East of London. HSNet proposals anticipate the Lord Foster Thames Hub airport plans being built on the Isle of Grain with a connecting line to the new high speed lines up the existing HS1 high speed line with a short link through to the East Coast Main Line.

As Geoffrey Clifton Brown MP remarked to the Bow Group: “deciding the HS2 route without first deciding our air strategy was crazy.” He is concerned that without properly integrating high speed lines with airports, the UK will lose companies to Europe.
# HS2 and HSNet Cities and Costs Compared

## CITIES SERVED – HSNET AND HSNET COMPARED (2011 CENSUS DATA)

<table>
<thead>
<tr>
<th>CITY</th>
<th>SERVED BY:</th>
<th>HS2?</th>
<th>HSNET?</th>
</tr>
</thead>
<tbody>
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HS2 and HSNet Cities and Costs Compared (cont)

HSN AND HSNET COMPARED - COSTS

HS2

Phase One (London-Birmingham) £21.4bn
Phase Two (Birmingham-Leeds/Manchester) £21.2bn
Total Overall Cost: £42.6bn
Total Estimated Construction Cost: £28.2bn
(Contingency Cost [Phase One £5.7bn, Phase Two: £8.7bn]: £14.4bn)
Rolling Stock Cost: £5.8bn
Rolling Stock Contingency Cost: £1.7bn
Total Overall Cost with Rolling Stock: £50.1bn
Estimated HS2 Final Cost – Mayor Of London £70.0bn
Estimated HS2 Final Cost – Institute Of Economic Affairs (IEA) £80.0bn

HSNet

London-Edinburgh With High Speed Rail Ugrades

Virgin Stagecoach Bechtel Estimate in 2000: £3.5bn
(reported by New Civil Engineer in March 2000)
Plus 4% pa. for 14 years of Rail Engineering Inflation = £1.9bn
Current Cost For 2014 – Allow say £6bn
Additional High Speed Rail Sections

- London Euston-East Coast Main Line Tunnel
  Assumes 15 Miles @ £60m Per Mile = £900m, say £1bn
- East Coast Main Line High Speed To Peterborough
  Assumes 61 Miles @ £30m Per Mile Above Ground = £1.84bn, say £2bn
- Leeds-Manchester/Manchester Airport High Speed Line
  Say 70 Miles Following M62 Half In Tunnel = 35 Miles @£60m Per Mile and
  35 Miles @£30m Per Mile = £2.1bn plus £1.5bn = £3.15bn say £3.5bn
- Berwick To South Edinburgh
  Assumes 30 Miles @ £30m Per Mile Above Ground = £900m, say £1.1bn
- Glasgow Suburbs To Edinburgh Airport
  Assumes 35 Miles @ £30m Per Mile Above Ground = £1.05m, say £1.2bn

Additional Electrification and Upgrades on ‘classic’ lines**:

- Carlisle To Newcastle
  Assumes 60 Miles @ £5m per mile (Network Rail Average) £0.3bn
- Sheffield To Doncaster
  Assumes 20 Miles @ £5m per mile
  This cost is included already under VSB2000 Plan
- Grantham-Nottingham (Derby is already being electrified under Network Rail Plans)
  Assumes 20 Miles @ £5m per mile
  This cost is included already under VSB2000 Plan
- Lincoln-East Coast Main Line/Newark
  Assumes 25 Miles @ £5m a mile
  This cost is included already under VSB2000 Plan
- (Peterborough)-Ely-Norwich
  Assumes 70 Miles @ £5m per mile
  This cost of Peterborough Ely works is included already under VSB2000 Plan
  Allow for some parkway or enhanced stations £0.5bn
  Allow for some property purchases £1.0bn

TOTAL EAST COAST MAIN LINE UPGRADE £17.1bn (£17.121bn)

Note: The calculations here are based on a variety of engineering estimates quoted by rail engineers in public form. It is difficult to give a meaningful average cost per mile as the costs where there are major infrastructure works, such as tunnelling, viaducts or grade separated junctions, differ greatly from track laid alongside existing rail or road corridors above ground with few major works needed.

For these purposes, the figures are mainly based on figures quoted by Iain Croucher, Deputy Chief Executive of Network Rail, in 2006 to the Institution of Civil Engineers, in which it was stated that the likely cost of constructing a high speed line was in region of £15 million to £19 million per kilometre, equalling £24 million (£24.2) to £31 million (£30.6) a mile. Whilst Ernest Godward of consultants Scott Wilson estimated the average cost of lines built outside the UK was between £30 million and £32 million per kilometre, equating to between £48 million (£48.3) and £52 million (£51.5). Using these figures and others quoted, these costings use a cost of £30 million a mile average for above ground double track and £60 million a mile for tunnelled track.

**This final cost allows for related transport projects such as Crossrail 2 in order to handle passenger numbers brought in by HS2. HSNet alternatively uses 2 main London termini not just Euston and therefore spreads the load.

**Note: the costs here are based on Network Rail figures for similar electrification. The £5m a mile figure is based on a Ove Arup report for the Department of Transport which put the cost of electrifying Newport to Preedy as £2.3 million a mile (£1.427k/m), Bedwyn to Westbury at £2.8 million a mile (£1.76k/m) and Westbury to Bathampton at £2.98 million a mile (£1.85k/m). £5 million allows for some upgrading works.
2. GREAT WESTERN MAIN LINE – BASED ON FIRST GROUP PROPOSALS IN 2002

HSNet

London Paddington-Bristol Parkway High Speed Rail Line
Assumes 115 miles with 25 miles tunnelling mostly around London @ £60m a mile = £1.5bn and 90 miles above ground @ £30m a mile = £2.7bn = £4.2bn say £4.5bn

Bristol-Exeter Via Taunton High Speed Line (M5 Corridor)
Assumes 5 miles of tunnelling @ £60m a mile = £300m and 70 miles above ground @ £30m a mile = £2.1bn = total of £2.4bn say £2.75bn

TOTAL LONDON PADDINGTON-EXETER VIA BRISTOL £7.25bn

Additional Electrification and Upgrades on ‘Classic’ Lines:

NB Many Great Western Lines, such as route from London-Reading, Bristol Parkway/Cardiff-Line are already being upgraded and electrified as part of the current electrification London to South Wales, though with minimal time savings.

• Exeter – Plymouth Via South Western Route Via Okehampton
  Assumes 50 miles @ £10m a mile to recondition and double existing tracks, rebuild any missing sections and electrify the route for conventional 100mph running and use as diversionary route for Dawlish in stormy weather. Network Rail’s quick 2014 study estimated cost at £500-£700m but this seems to be an overestimate given large sections of the line (Exeter-Okehampton; Plymouth-Bere Alston) are operational and viaducts still exist, but say £0.5bn

• London Paddington via Old Oak Common cut through and London Marylebone upgrade and electrification of Chiltern Services via High Wycombe and Banbury to join upgraded Oxford-Banbury-Birmingham route. This is additional investment instead of HS2 high speed rail along this same corridor but HS2 is at a far greater expense.
  Assumes 55 miles to Aynho Junction near Banbury on Oxford line @ £5m a mile = £275m, and Old Oak Common to South Ruislip to join electrified Chiltern line from Marylebone via Greenford 20 miles @ £5m a mile = £100m = £375m, say £0.4bn

• Didcot To Birmingham via Banbury and Leamington Spa
  Assumes 66 miles of upgraded, electrified and speeded up running times off the new high speed Great Western route, coming off the line at Didcot and running at speeds of up to 125 mph on appropriate sections to Birmingham. Services for London Paddington could either serve Birmingham via Birmingham International Airport, Coventry and Kenilworth (for Warwick University) via Leamington or run to Birmingham Snow Hill via Warwick and Solihull.
Network Rail is already planning to electrify the current line via Oxford to Leamington as part of its ‘Electric Spine’ proposals for freight use primarily, and the line from Leamington Spa via Kenilworth to Coventry (and Nuneaton), so all these costs may not be required but are allowed for as part of the Electric Spine proposal. HSNet would assist and uprate this investment for higher speeds. Leamington – Kenilworth – Coventry would not require high speed sections. 66 miles @ £5m upgrade = £0.33bn, say £0.4bn

• Reading-Westbury-Taunton upgrading and electrification

Assumes 130 miles @ £5m to speed up conventional classic lines for running via Westbury to connect with a high speed line at Taunton, and to remove some level crossings. A Department of Transport/Arup study estimates this cost at around £3m a mile for electrification, £5m is allowed for here. Say £0.75bn

• Allow for new parkway or enhanced stations say £0.5bn

• Allow for property purchases say £0.5bn

TOTAL GREAT WESTERN HSNET ROUTE £10.3bn

OVERALL TOTAL FOR HSNET £27.4bn
(£27.421bn)

OVERALL TOTAL (FORMAL) FIGURE FOR HS2 £42.6bn

OVERALL SAVING ADOPTING HSNET OVER HS2 £15.2bn

OVERALL SAVING ADOPTING HSNET OVER HS2 IF £70bn £42.6bn

OVERALL SAVING ADOPTING HSNET OVER HS2 IF £80bn £52.6bn

(Contingencies for HSNet are already allowed for in the estimates)

CONCLUSION

HSNet therefore offers a true national high-speed rail network – 611 miles of 200 mph railway in contrast to HS2’s claimed 330 miles of 250mph high speed railway - at a two-thirds of the cost (£28bn of £42.6bn). It is suggested that some savings made on HS2 are committed instead to a 5G national broadband network.

NOTES:

No estimate is made here for high speed trains, which HS2 estimate as £7.5bn. This is because this should be determined by private sector operators and their estimates of demand and service pattern in cooperation with the Department of Transport. It is also as Lord Heseltine said about HS2: “the private sector can pay for the trains”.

CO N C L U S I O N
Policy Recommendations

This thinkpiece is aimed at inspiring far greater and in depth research into alternative rail proposals to HS2 using a new route, whilst fully supporting the Government and its support for the concept of a high speed rail network.

It is recommended that:

1. The Hybrid HS2 Bill through Parliament and its relevant Parliamentary committee stages are suspended for one year until after the General Election of May 2015 and that public consultation is suspended but that purchased land and properties are retained for the present.

2. In this year of HS2 suspension, that a major study is commissioned of a highly qualified rail engineering consultancy to evaluate HSNet and other alternatives to HS2 in an open, honest and unfettered manner, drawing on the historical analogy of the change of route for HS1 from the Bromley to the East of London route, and that an outline study is produced and then debated in this timeframe. Discussions should take place with bidders for the East Coast Main Line and Great Western Main Line franchises and other relevant franchises over future high speed plans.

3. That the final full rail study is presented to the new Government shortly after the General Election with the aim of making a decision whether to abandon the HS2 route, and its related design and consultation programme – as was done with BR’s Bromley route in favour of a successful Easterly route – and then to work up alternate designs and consultation programmes such as the HSNet proposal or suitable other alternatives – or to resume the HS2 programme and legislation.

The Author – David Campbell Bannerman MEP

Mr Campbell Bannerman MEP has extensive knowledge and understanding of rail transport and of high speed rail projects. His CV includes:

- Communications Manager of the Channel Tunnel Rail Link (HS1) working closely with engineering and consultation teams at Union Railways, including producing audiovisual content describing the intended route of the railway and brochures on specialist issues such as tunnels and noise protection.
- Communications Director at the Association of Train Operating Companies (ATOC) 1997-1999 working with passenger and freight companies.
- Government Adviser on rail transport issues 1990s. Persuaded Transport Minister to extend the Chiltern Railway from Banbury to Birmingham to create/restore competition on the London-Birmingham railway corridor.
- Author of Bow Group paper ‘Levelling The Tracks: Using Rail Privatisation To Right An Historic Imbalance’ (1993) arguing for greater and fairer investment in rail, a high speed rail network, franchising and competition between rail operators, and greater environmental concerns over road and rail building. Made compulsory reading by Department of Transport/British Rail.
- Drove a TGV on the Paris-Lyon route, observed the construction of Lille and Lyon Airport TGV stations, and regular user of Eurostar and TGV services to Brussels/Strasbourg.
- Conservative Westminster Candidate for Warwick & Leamington in 2001, an area HS2 is due to go through.
References


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11. The Eddington Transport Study: The case for action: Sir Rod Eddington’s advice to Government – December 2006 report


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25. The New Economics Foundation report entitled ‘HS2: The best we can do? Creating More Value from £33 Billion’ of June 2013) estimates the cost of electrification between Leeds and Plymouth is £1.3 billion. The Plymouth University site puts the distance at 519km between Leeds and Plymouth [https://www.plymouth.ac.uk/pages/view.asp?page=23364]. From these figures, this comes to £4.6 million cost per mile which is rounded up to £5m.