

Mr Boris Johnson MP  
Prime Minister  
10 Downing Street  
London



Dear Prime Minister,

## **HS2 and the UK High Speed Rail Project - the Design Disaster fully Documented**

This communiqué is intended to provide further technical information to amplify the critical concerns that I have summarised in my letter to you dated 8<sup>th</sup> September 2021.

### **HS2 and the UK High Speed Rail Project - the True Objective**

Many rationales for the HS2 project have been advanced in terms of the economic and societal benefits that it is intended to bring about. But in a technical sense, the best definition of HS2's fundamental purpose has been provided by former HS2 Ltd Technical Director Andrew McNaughton. In evidence to the HS2 Select Committee on 30<sup>th</sup> November 2015, he stated<sup>1</sup>:

*“The aim of the HS2 project is to deliver hugely enhanced capacity and connectivity between our major conurbations.”*

McNaughton's statement would seem incontrovertible. It defines - or it should define - the objective of a national network in which all major communities should be fully interconnected with high-quality, high-frequency and high-speed direct intercity services - a far cry from the performance of the existing network, as illustrated in Figure A1, Appendix A.

Such a transformed network is plainly vital to realising many core policy goals of your Government's programme including:

- Levelling-up/rebalancing of the UK economy;
- Achieving 'Net Zero' transport sector CO<sub>2</sub> emissions;
- Strengthening transport links between the UK nations;
- 'Building back better' after the Covid-19 pandemic.

All are key questions of national interest, and optimal development of the national rail network is crucial to realising these goals.

### **HS2 Ltd's Failure to Meet Objective for 'Hugely Enhanced Capacity & Connectivity'**

Regrettably, despite McNaughton's statement to the HS2 Select Committee, there is no indication in any of HS2 Ltd's outputs, of any coherent attempt to design HS2 to bring about an optimised national network:

- There is no specification for how the national rail network should perform, with HS2 in place;
- There is not even the most basic assessment of HS2's ability to interconnect the UK's major cities;
- There is no recognition that predication upon HS2 will hugely compromise performance of the wider national network. This can be seen most clearly in the failure of Northern Powerhouse Rail (NPR) to meet its own specification<sup>2</sup> for journey time and service frequency - primarily because its designers saw conformance with the established HS2 as a greater priority than optimal network performance.

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<sup>1</sup> HS2's objective of 'hugely enhanced capacity and connectivity' was first stated in *High Speed Rail: Investing in Britain's Future – Decisions and Next Steps*, January 2012, DfT.

<sup>2</sup> The NPR specification for journey time and service frequency between the primary cities of the Northern Powerhouse is set out in *The Northern Transport Strategy: Spring 2016 Report*, published March 2016 by Transport for the North. NPR's and HSUK's performances in meeting this specification are assessed in Appendix C.

Without the necessary focus upon design for optimised network performance, the emphasis instead has been upon developing HS2 as a segregated, stand-alone high speed line that will be the fastest railway in the world<sup>3</sup>. It would appear to have been assumed that the act of building HS2 will somehow bring about a fully integrated national network that will then deliver the desired outcome of ‘hugely enhanced capacity and connectivity’.

The extreme folly of this baseless assumption can be seen in the simplified assessments of network performance set out in Figures A1, A2 and A3.

**Figure A1** charts the highly London-centric connectivity performance of the existing network, by which London enjoys by far the best intercity links of any UK conurbation. This is both a symptom and a cause of the North-South Divide that has long afflicted the UK economy, and it would seem plain that a more symmetrically connected network, with greatly improved links between regional cities, is essential if ‘levelling up’ is ever to happen.

**Figure A2** charts the connectivity offered by HS2, Northern Powerhouse Rail (NPR) and Midlands Rail Hub (MRH), assuming that all schemes are implemented to their full planned extent. It demonstrates that HS2 will create no new intercity links, its principal achievement being to make already-fast links to London even faster, while the schemes subsequently introduced to remedy HS2’s connectivity deficiencies (i.e. NPR and MRH) will do relatively little to improve interregional links.

**Figure A3** additionally highlights the existing intercity/interconurbation links that are projected<sup>4</sup> to be degraded through the implementation of HS2. This would seem to indicate that HS2 could have the effect of making the national network even more London-centric, and therefore working against your Government’s levelling-up agenda.

Clearly, none of the outcomes set out in Figures A2 or A3 can be represented as ‘hugely enhanced capacity and connectivity’.

### **The High Speed UK Exemplar Alternative**

The true scale of the HS2 project’s inadequacies can only be appreciated through comparison with a better-performing alternative, and I would commend to your attention the High Speed UK (HSUK) scheme for a national high speed network<sup>5</sup>. As illustrated in **Figure A4**, HSUK demonstrates that it is possible for a railway system, designed from the outset as a national network, to offer almost complete direct interconnectivity between the UK’s major cities.

### **Ongoing Government Initiatives aimed at remedying HS2 Connectivity Deficiencies**

There are signs that officialdom is belatedly waking up to the dangers posed by HS2’s failure to integrate with other railway schemes (in particular Northern Powerhouse Rail and Midlands Rail Hub), and by the highly deficient total connectivity offer of the UK high speed rail project, as represented in Figures A2 and A3. Several new initiatives are now in development:

- In February 2020, the Oakervee Review<sup>6</sup> recommended the development of an ‘Integrated Rail Plan for the Whole GB Network’ to draw together disparate initiatives such as HS2, Northern Powerhouse Rail (NPR) and Midlands Rail Hub (MRH).
- In October 2020, the Government launched the ‘Union Connectivity Review’<sup>7</sup> with the aim of strengthening transport links between England, Scotland, Wales and Northern Ireland.
- In May 2021, the Government announced its intention to establish ‘Great British Railways’ with its core ambition for ‘one connected network’<sup>8</sup>.

<sup>3</sup> HS2’s civil engineering infrastructure has been designed for a potential future operating speed of 400km/h. This is faster than any other high speed rail project anywhere in the world.

<sup>4</sup> Table 23, pp91-92, HS2 Regional Economic Impacts, HS2 Ltd, September 2013

<sup>5</sup> For further details of the High Speed UK proposals see [www.highspeeduk.co.uk](http://www.highspeeduk.co.uk)

<sup>6</sup> <https://www.gov.uk/government/publications/oakervee-review-of-hs2>

<sup>7</sup> <https://www.gov.uk/government/speeches/union-connectivity-review>

- In July 2021, the Government made a specific commitment<sup>9</sup> to developing a ‘Net Zero’ national railway network based upon HS2 and the Integrated Rail Plan.

### **An Integrated Rail Plan for the Whole GB Network**

As noted previously, the 2019/20 Oakervee Review of the HS2 project made the key recommendation for the development of an ‘Integrated Rail Plan for the Whole GB Rail Network’. Your Government accepted this recommendation as ‘Notice to Proceed’ was given for HS2 in April 2020, and work on the Integrated Rail Plan commenced in accordance with published terms of reference<sup>10</sup>.

Despite a specific requirement to publish the Integrated Rail Plan by December 2020, your Government has still not published in August 2021. However, it is plain from various items of correspondence that the Integrated Rail Plan is seen within Government circles as key to realising most if not all of the policy aims set out on Page 1 of this communiqué.

The terms of reference also make it clear that the Integrated Rail Plan is to be based upon HS2 Phases 1 and 2a, and upon established proposals for Northern Powerhouse Rail and Midlands Rail Hub; only HS2 Phase 2b is to be considered as any sort of variable.

Regrettably, the ideal of comprehensive intercity connectivity is not recognised either in your Government’s terms of reference for the Integrated Rail Plan, or in the extensive work undertaken by the National Infrastructure Commission<sup>11</sup> in the development of options for your Government’s consideration. Indeed, neither document lays down any definitive criteria for how the enhanced national or local network resulting from the Integrated Rail Plan should perform.

However, with the key elements of the Integrated Rail Plan - the HS2 ‘Y-network’, Northern Powerhouse Rail (NPR) and Midlands Rail Hub (MRH) - already well defined, and with no further major interventions proposed, its maximum possible performance in interlinking the UK’s major cities can be confidently predicted.

As shown in Figures A1, A2 and A3, the performance of an HS2-based Integrated Rail Plan will be extremely poor; HS2 will create no new intercity links, while NPR and MRH will do little to improve interregional links. And if the rumours of HS2 Phase 2b’s cancellation or deferment prove to be correct, then this performance will decay even further.

In the absence of any official criteria for how the Integrated Rail Plan should perform, HSUK has established 7 criteria by which schemes should be assessed:

1. Full compliance with any core specification for journey time and service frequency.
2. Direct links between all principal population centres.
3. Delivery of maximised journey time reductions.
4. Full integration with local networks at city centre stations.
5. Delivery of step-change capacity gains for local services.
6. Provision of radically enhanced capacity for railfreight.
7. Optimisation of direct links & reductions in journey time to principal population centres across national network.

On any of the above criteria, the official proposals, either HS2, Northern Powerhouse Rail or Midlands Rail Hub, perform very poorly. By contrast, HSUK’s vastly superior performance both

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<sup>8</sup> P33, *Great British Railways : The Williams-Shapps Plan for Rail*, DfT, May 2021

<sup>9</sup> P9 & P79, *Decarbonising Transport: A Better, Greener Britain*, DfT, July 2021

<sup>10</sup> Terms of reference for the Integrated Rail Plan can be found on:

<https://www.gov.uk/government/publications/high-speed-north-an-integrated-rail-plan-for-the-north-and-midlands-terms-of-reference/terms-of-reference-for-an-integrated-rail-plan-for-the-north-and-midlands>

<sup>11</sup> *Rail Needs Assessment for the Midlands and the North: Final Report*, National Infrastructure Commission, 2020

as a national network (see Figure A4) and as a regional network (see Appendices B and C) shows that it should meet any logical requirement of a properly remitted Integrated Rail Plan.

### **The Union Connectivity Review, and Implications for the Union**

Your Government's commissioning of the Union Connectivity Review represents a clear acknowledgement that the HS2 project has so far failed to address the major inadequacies in transport links between the UK nations<sup>12</sup>. These inadequacies collectively comprise an existential threat to the integrity of the United Kingdom, that can only be countered through transformational improvements in cross-border links.

The recently published interim report<sup>13</sup> of the Union Connectivity Review should set out a strategy by which the primary cities of Scotland, Wales and Northern Ireland (i.e. Edinburgh, Glasgow, Cardiff and Belfast) could be tied into a transformed national network, and thus remedy the historic disconnect between the UK nations. But the report sets out no such strategy, still less does it establish any core specification to define how the overall UK network should perform, or display any understanding of how this network might be optimised. Instead it merely sets out a predictable list of minor incremental schemes that will do virtually nothing to promote the unity of the United Kingdom and counter the drift toward separatism.

This is not in any way to question the legitimacy of the Nationalist movements in Scotland, Wales and Northern Ireland; the principle of national self-determination, or 'nationalism by choice', has rightly been at the heart of every international treaty since Versailles. However, the continuing failure, of official Government initiatives to deliver the necessary transformation in transport links to the outlying UK nations, effectively constitutes an unwitting but still unforgiveable 'nationalism by neglect'.

Again, the HSUK 'Exemplar Alternative' demonstrates the vast improvements in cross-border links that are achievable with the correct network-based approach. These improvements - and the huge deficiencies of existing strategies - are described in HSUK's submission to the Union Connectivity Review, see Appendix D.

### **The Great British Railways Initiative<sup>14</sup>**

It has long been apparent that the existing organisational structure of the UK railway system, with Network Rail controlling the infrastructure and a variety of franchisees operating the trains, is no longer fit for purpose. Your Government has belatedly accepted that change is necessary, and in May of this year it launched a new initiative to create 'Great British Railways' as a single integrated organisation to run the railway system on the island of Great Britain.

Most importantly, Great British Railways sets out the ambition for 'one connected network'. This will comprise the existing network, appropriately enhanced, and the new works schemes of the UK high speed rail project i.e. HS2, Northern Powerhouse Rail and Midlands Rail Hub. The Integrated Rail Plan and the outputs of the Union Connectivity Review are also cited as key to the Great British Railways vision.

It must however be stressed that no detail is offered as to how these disparate and disjointed initiatives will be integrated to comprise 'one connected network'.

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<sup>12</sup> It is particularly pertinent to note that despite many hopeful cross-border lines that were sketched onto maps in the early stages of the HS2 project, no definitive proposals have ever emerged for new HS2 routes north of Wigan or York; and in the absence of any viable cross-border proposals, the capacity-constrained West and East Coast Main Lines will be left to take the strain.

<sup>13</sup> <https://www.gov.uk/government/publications/union-connectivity-review-interim-report>

<sup>14</sup> Refer to *Great British Railways : The Williams-Shapps Plan for Rail*, DfT, May 2021.

## The Ambition for a ‘Net Zero’ National Railway Network<sup>15</sup>

The growing climate crisis has now led to an imperative to achieve ‘Net Zero’ CO<sub>2</sub> emissions across all sectors of the UK economy. With transport contributing well over a quarter of national CO<sub>2</sub> emissions, this ambition has translated to the transport sector, and specifically to the development of a ‘Net Zero’ national rail network.

With the vast majority of transport emissions attributable to high-emitting road vehicles, your Government rightly sees step-change road-to-rail modal shift, for both passenger and freight traffic, as an essential part its CO<sub>2</sub> strategy. This modal shift can of course only happen with transformational enhancement of both the connectivity and the capacity of the existing network, and both HS2 and the Integrated Rail Plan are specifically cited as key elements in your Government’s strategy.

However, with both HS2 and the wider Integrated Rail Plan failing to offer either the improved connectivity or the integration necessary to bring about the necessary transformation, your Government’s strategy for a Net Zero transport system seems doomed to fail; only the comprehensively connected and fully integrated HSUK can possibly deliver.

This highly embarrassing fact is nothing new. As long ago as 2011, High Speed UK<sup>16</sup> provided a response<sup>17</sup> to the HS2 Phase 1 Consultation which identified HS2’s self-declared failure to achieve significant CO<sub>2</sub> reductions as one of HS2’s primary inadequacies (and probably illegal in terms of the requirements of the 2008 Climate Change Act). Regrettably, however, HS2 Ltd entirely disregarded HSUK’s input. Only now, 10 years later, are the chickens coming home to roost.

## Overall Failure of Government Policy

Great British Railways will only comprise ‘one connected network’ with ‘Net Zero’ CO<sub>2</sub> emissions, seamlessly extending to all 3 nations (i.e. England, Scotland and Wales) on the island of Great Britain, if the Integrated Rail Plan (IRP) succeeds in bringing about this connected, comprehensive and fully integrated network.

This is a highly unlikely prospect for 4 reasons:

- the IRP is predicated upon HS2 Phases 1 and 2a, which were designed with no thought for integration or optimised network performance.
- the IRP has failed to consider alternative schemes (such as HSUK) that might better deliver the required integrated network performance.
- the IRP has been developed with no specification for its technical performance.
- All the policy ambitions represented by the *Union Connectivity Review*, *Decarbonising Transport* and *Great British Railways* are entirely dependent upon an Integrated Rail Plan which on all available evidence will fail to offer the necessary efficiency, optimisation or integration.

The critical deficiencies listed above represent a catastrophic failure of Government policy. If the Integrated Rail Plan does not deliver the necessary step-change enhancement of the national rail network, then none of your Government’s key pledges can be delivered. Instead, the following undesirable outcomes seem likely:

- A hard-wired North-South divide in the UK economy;
- No worthwhile reductions in transport CO<sub>2</sub> emissions;
- Continuing poor transport links between the UK nations;
- Little or no recovery after the Covid-19 pandemic.

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<sup>15</sup> Refer to *Decarbonising Transport: A Better, Greener Britain*, DfT, July 2021

<sup>16</sup> In 2011, High Speed UK was operating under the title ‘High Speed North’.

<sup>17</sup> All High Speed UK/High Speed North responses to official consultations are compiled in the document *High Speed Trains, Slow Speed Brains*, available as Document A12 on [www.highspeeduk.co.uk](http://www.highspeeduk.co.uk).

It is significant to note that 8 months after its due publication date, the Integrated Rail Plan remains unpublished. This gives rise to the strong suspicion that the unfortunate functionary who has been tasked with formulating this plan has realised that it is simply not possible to retrofit integration onto disjointed, fragmented schemes which have been designed with no thought for integration.

Similar problems may be afflicting the development of definitive policies to support your Government's 'levelling up agenda'. The House of Commons Business, Energy and Industrial Strategy Committee has recently published a report<sup>18</sup> strongly criticising the apparent absence of any substantive policies that will deliver a 'levelled up' United Kingdom, or even define what this levelled-up UK will look like.

Whilst the report makes no specific reference to HS2, it does list<sup>19</sup> 'the North and the Midlands Integrated Rail Plan' as a 'Levelling-up commitment' given in the 2021 Queen's Speech. But with all evidence showing that an Integrated Rail Plan based upon HS2 cannot possibly deliver the required optimal network performance, there is plainly an 'inconvenient truth' that must be confronted.

### **Technical Failures of the UK's Transport Establishment**

All this begs the very obvious question of how the UK's transport establishment has failed so spectacularly to develop efficient national and local railway networks that will achieve the aims of either the Integrated Rail Plan or the Union Connectivity Review, and thus deliver the Net Zero 'one connected network' now demanded by current Government policy.

The design of a railway network is plainly not 'rocket science'; but it demands the same fundamental technical disciplines of establishing a specification, designing to the specified criteria, and rigorous optimisation against these criteria.

However, any such structured process is conspicuously absent from the outputs of either HS2 Ltd, the National Infrastructure Commission, or the organisations (respectively Transport for the North and Midlands Connect) that have developed Northern Powerhouse Rail and Midlands Rail Hub around the established HS2 proposals. There has been:

- No attempt to assess the performance of the national rail network, with HS2 in place;
- No definition of measurable capacity or connectivity goals to enable this assessment;
- No ambition for the attainment of comprehensive direct intercity services linking all of Great Britain's major conurbations (*surely this would be hugely enhanced connectivity?*)
- No ambition for the integrated development of local and high speed networks in major cities to transform local services (*surely this would be hugely enhanced capacity?*).

### **High Speed Line - Slow Speed Network (The HS2 Speed Syllogism)**

The extent of the professional and intellectual failure of those leading the HS2 project can be encapsulated in one extraordinary misconception. The decision to design HS2's civil engineering infrastructure for potential 400km/h operation has always been represented as some sort of 'future proofing' against possible advances in high speed rail technology. Yet this decision has also dictated HS2's ultra-straight, environmentally destructive and exorbitantly expensive rural alignments. This has in turn made it effectively impossible to follow existing transport corridors, such as that of the West Coast Main Line, and therefore impossible also to integrate with the existing railway system and thus form an enhanced network.

This folly is exposed by the vastly superior performance of the HSUK Exemplar Alternative, designed to radically different principles as a fully integrated network. With its southern section closely aligned with the M1 motorway, designed for a maximum speed of 360km/h and

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<sup>18</sup> *Post-pandemic economic growth: Levelling up* House of Commons Business, Energy and Industrial Strategy Committee, HMG, July 2021

<sup>19</sup> Box 1, P8, *Post-pandemic economic growth: Levelling up*, HMG, July 2021

connected at close-spaced intervals to both West Coast and Midland Main Lines, it can offer network-wide journey time savings that vastly exceed<sup>20</sup> anything HS2 can offer.

### **Neglect the Network, Neglect the Nation??**

The simple truth of the matter is that none of the component elements of the Integrated Rail Plan have been designed with any consideration of an integrated national network; journey time savings along the precise line of route have been the only 'currency' that ever mattered.

With no prior consideration of integration, it is now effectively impossible now for any 'Integrated Rail Plan' to bring about an optimised integrated national network and thereby deliver your policy goals of a levelled-up, greener and more united nation.

Whatever competence your advisors might possess in their particular fields of expertise, they would appear to have no competence whatsoever in the design and development of a national railway network. They have further failed to recognise that the UK rail network is a design entity that is capable of optimisation, to provide the best possible service and value to the people of the United Kingdom. As a consequence, nobody has been remitted to design a network, nobody has had the competence even to recognise the problem - and ultimately, nobody has bothered.

Instead, it has been erroneously and negligently assumed that the act of building new lines such as HS2 will automatically result in a superior and an optimised national network. Indeed, the reverse appears to be true - HSUK's research, as set out in Appendices B and C, shows clearly that predication upon the London-centric HS2 is actually counterproductive to the development of efficient regional networks in the Midlands and the North.

In the absence of the necessary competence in railway network design, the great and the good of the UK transport establishment have developed a series of disjointed railway proposals that are incapable of either rebalancing the economy or connecting the nation.

This neglect of the network effectively constitutes neglect of the nation.

### **A Challenge to the UK Transport Establishment**

If you have any lingering faith in the competence of the UK transport establishment to develop the national railway network, I would recommend that you ask 7 simple questions:

1. How have you assessed and measured HS2's success in delivering 'hugely enhanced capacity and connectivity'<sup>21</sup> between the UK's major conurbations?
2. How have you determined that HS2 is the best means of achieving this objective?
3. How have you designed HS2, Northern Powerhouse Rail (NPR) and Midlands Rail Hub (MRH) to integrate with the UK rail network, and thus achieve the best possible links between all of the UK's major cities?
4. How have you developed the Integrated Rail Plan to remedy the disconnection between HS2, NPR, MRH and the existing railway system, and thus achieve the best possible network interlinking all UK communities?
5. How have you determined that a national railway network based upon HS2, NPR and MRH will bring about the greatest possible road-to-rail modal shift, and thereby make the greatest possible contribution to reducing CO<sub>2</sub> and other greenhouse gas emissions?
6. Where is your network connectivity analysis, to match that undertaken by HSUK<sup>22</sup>?
7. Please explain why the official proposals, variously HS2, NPR, MRH etc, perform so poorly on every conceivable criterion against the HSUK Exemplar Alternative.

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<sup>20</sup> Figure 5.66, P141, *High Speed to Nowhere*, Colin Elliff, available as document A03 on [www.highspeeduk.co.uk](http://www.highspeeduk.co.uk)

<sup>21</sup> HS2's objective of 'hugely enhanced capacity and connectivity' was stated in *High Speed Rail: Investing in Britain's Future – Decisions and Next Steps*, published January 2012 by DfT, and repeated in evidence given to the HS2 Select Committee by HS2 Ltd Technical Director Andrew McNaughton on 30th November 2015.

<sup>22</sup> See Appendices B and C. Much further detail can be found on [www.highspeeduk.co.uk](http://www.highspeeduk.co.uk).

These are all perfectly reasonable questions to ask of your advisors, the leaders of the multi-billion UK high speed rail project. However, I would predict with complete confidence that none of these advisors will be able to give you an adequate answer to any of these questions.

### **HS2's Cost and Environmental Destruction - just symptoms of a deeper problem**

I could have devoted the pages of this communiqué to the exorbitant costs of the HS2 project, running into literally hundreds of billions in wasted capital expenditure and lost economic opportunities. Equally, I could have told you what you must already know about HS2's wanton destruction of natural environments, not to mention homes and livelihoods.

But appalling as these consequences are, they are still only symptoms of HS2's more fundamental flaws - its disastrous performance as a public infrastructure project, its legacy of inefficiency and dysfunctionality inflicted upon future generations, and the unprecedented professional failure of its technical leadership.

### **HS2 and Great British Railways - two fundamentally incompatible projects**

You must surely appreciate that HS2 cannot be an end in itself. It only has any value if it actually brings about the transformed national network that the nation needs - and every piece of substantive technical evidence demonstrates unequivocally that HS2 - and any project based upon HS2 - will fail to deliver on any logical requirement of a national railway network.

HS2 is based upon a dysfunctional and now-discredited 'franchising' model which has concentrated upon only the most lucrative, mostly London-centric flows from principal regional cities. In the process it has neglected every other less lucrative intercity or interregional flow that makes up the national network. This completely contradicts the holistic aim of your Government's Great British Railways initiative for 'one connected network'.

This contradiction will be further exposed by the forthcoming publication of the Integrated Rail Plan. This will place you and your Government in an unsustainable and highly embarrassing position:

- You cannot possibly continue to support a flawed Integrated Rail Plan that is so plainly inefficient, suboptimal and lacking in integration, and so contrary to your own policy priorities and the wider national interest, when a vastly and demonstrably superior alternative exists.
- Pressing on with the highly damaging HS2 proposals can only bring about a permanently dysfunctional 'Great British Railways' network, which will become your legacy.

### **The Imperative for Prime Ministerial Action**

From your perspective as the UK's political leader, I believe that the issue reduces to 2 very simple, if provocative questions:

- Do we want a rebalanced economy, or not?
- Do we want a United Kingdom, or not?

There is of course only one answer, a strong affirmative, that you or any UK Prime Minister could give to either question. But a levelled-up and unified nation will only come about with a radically upgraded national railway network - and for this you are completely reliant upon the technical competence within the UK transport establishment.

In this letter I have set out a compelling *prima facie* case to demonstrate the alarming competence deficit that has pervaded all aspects of the UK high speed rail project. This poses a critical threat to the prosperity, and to the very integrity of the nation, and it is vital that those responsible within the UK transport establishment are held to account. They must either demonstrate that my concerns are baseless by providing satisfactory answers to all the 7 key questions that I have posed, and by publishing an Integrated Rail Plan that addresses all my concerns; or they must acknowledge their failures, and stand aside. As professionals whose core obligation is to serve the public interest, they have no alternative.



It is plain that that the failures of the UK high speed rail project are of such gravity that they cannot be allowed to continue. To do so in the face of the overwhelming evidence now available would be not merely unprofessional on the part of those leading the project, but negligent and ultimately criminal, given the critical issues of national interest at stake.

You have pledged to 'follow the data' in your response to the Covid-19 pandemic; and as the UK recovers from Covid-19 and looks to 'build back better', you must do exactly the same with the UK high speed rail project. The priority for best practice, for professional railway network solutions that actually work (and can be shown to do so), has never been greater; second-rate and second-best are simply not good enough.

I would urge you to swiftly investigate the many concerns I have raised, and I would urge you to engage with High Speed UK, the one available technical solution that will bring about the 'one connected network' necessary to deliver your core aims of a rebalanced, greener economy and a better-connected nation.

If you require any further information please do not hesitate to contact me on 07591 959134.

Yours sincerely,

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Enclosures:

Appendix A: Connectivity charts showing performance of existing, HS2 & HSUK networks.

Appendix B: HSUK assessment of Integrated Rail Plan performance in Midlands.

Appendix C: HSUK assessment of Integrated Rail Plan performance in Northern Powerhouse.

Appendix D: HSUK submission to Union Connectivity Review.

# APPENDIX A

## Connectivity Charts showing direct intercity links offered by:

- Existing intercity network (Figure A1);
- HS2, Northern Powerhouse Rail (NPR) & Midlands Rail Hub (MRH) superimposed onto existing intercity network (Figure A2);
- HS2, NPR, MRH & existing network, allowing for likely reductions in existing intercity services (Figure A3);
- HSUK superseding existing intercity network (Figure A4).

The following 18 principal cities are considered, each representing *major UK conurbations*:

London	<i>Greater London</i>	Liverpool	<i>Merseyside</i>
Milton Keynes	<i>M1 Corridor</i>	Leeds	<i>West Yorkshire</i>
Birmingham	<i>West Midlands</i>	Darlington	<i>Teesside</i>
Leicester	<i>East Midlands</i>	Newcastle	<i>Tyne &amp; Wear</i>
Nottingham	<i>East Midlands</i>	Edinburgh	<i>Lothian</i>
Derby	<i>East Midlands</i>	Glasgow	<i>Strathclyde</i>
Stoke	<i>Potteries</i>	Cardiff	<i>South Wales</i>
Sheffield	<i>South Yorkshire</i>	Bristol	<i>Avon</i>
Manchester	<i>Gr. Manchester</i>	Cardiff	<i>South Wales</i>

Analysis is based upon:

- Existing intercity timetable, see [www.nationalrail.co.uk](http://www.nationalrail.co.uk)
- Predicted HS2 intercity services, see Annex B : Modelled train service spec, *High Speed Two Phase 2b, Strategic Outline Business Case* (2016)
- Potential intercity service reductions with HS2 in place, see Table 23, pp91-92, *HS2 Regional Economic Impacts* (2013)
- Demonstrator timetable developed for HSUK national network, see [www.highspeeduk.co.uk](http://www.highspeeduk.co.uk)

Each chart shows the available direct links between 18 principal cities which represent the major conurbations of the UK; it also ranks each link by the quality of the train and by the frequency, with all sub-hourly services specifically identified.

Note that ‘out of town’ parkway stations such as the proposed HS2 East Midlands Interchange at Toton are not accepted as providing direct intercity services to either Nottingham, Derby or Leicester.

Greater London	London	LO																	3	T	High quality 2-hourly link			
M1 Corridor	Milton Keynes		MK																	6		High quality	Direct hourly intercity link - half score for 2-hourly link	
West Midlands	Birmingham			BI																4		Medium quality		
East Midlands	Leicester				LE															2		Low quality		
East Midlands	Nottingham					NG														0		No direct intercity link		
East Midlands	Derby						DE													<b>No of direct intercity links</b>		<b>93</b>		
Potteries	Stoke							ST												<b>Total connectivity score</b>		<b>390</b>		
South Yorkshire	Sheffield								SH															
Gr. Manchester	Manchester									MA														
Merseyside	Liverpool										LI													
West Yorkshire	Leeds											LS												
Humberside	Hull	T											HU											
Teesside	Darlington													DL										
Tyne & Wear	Newcastle														NE									
Lothian	Edinburgh		T													EH								
Strathclyde	Glasgow	T	T					T		T	T						GL							
South Wales	Cardiff																	CF						
Avon	Bristol																			BS				
<b>Conurbation</b>	<b>City</b>	<b>LO</b>	<b>MK</b>	<b>BI</b>	<b>LE</b>	<b>NG</b>	<b>DE</b>	<b>ST</b>	<b>SH</b>	<b>MA</b>	<b>LI</b>	<b>LS</b>	<b>HU</b>	<b>DL</b>	<b>NE</b>	<b>EH</b>	<b>GL</b>	<b>CF</b>	<b>BS</b>					
		<b>No of Direct Links</b>		<b>17</b>	<b>6</b>	<b>16</b>	<b>5</b>	<b>9</b>	<b>13</b>	<b>6</b>	<b>14</b>	<b>15</b>	<b>8</b>	<b>13</b>	<b>4</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>10</b>	<b>6</b>	<b>11</b>			
		<b>Connectivity Score</b>		<b>96</b>	<b>30</b>	<b>68</b>	<b>28</b>	<b>32</b>	<b>54</b>	<b>28</b>	<b>54</b>	<b>60</b>	<b>30</b>	<b>50</b>	<b>13</b>	<b>48</b>	<b>48</b>	<b>47</b>	<b>26</b>	<b>24</b>	<b>44</b>			

Figure A1 : Direct Intercity Connectivity offered by Existing Intercity Network

London	LO																	1-3	T	Existing 2-hourly link				
Milton Keynes		MK																2-6		Existing hourly link				
Birmingham			BI															0		No direct intercity link				
Leicester				LE														6		MRH direct intercity link				
Nottingham					NG													6		HS2 direct intercity link				
Derby						DE												6		NPR direct intercity link				
Stoke							ST											<b>No of direct intercity links</b>		<b>94</b>				
Sheffield								SH										<b>Total connectivity score</b>		<b>453</b>				
Manchester									MA															
Liverpool										LI														
Leeds											LS													
Hull	T											HU												
Darlington													DL											
Newcastle														NE										
Edinburgh		T	T												EH									
Glasgow		T	T					T	T							GL								
Cardiff																	CF							
Bristol																			BS					
		<b>LO</b>	<b>MK</b>	<b>BI</b>	<b>LE</b>	<b>NG</b>	<b>DE</b>	<b>ST</b>	<b>SH</b>	<b>MA</b>	<b>LI</b>	<b>LS</b>	<b>HU</b>	<b>DL</b>	<b>NE</b>	<b>EH</b>	<b>GL</b>	<b>CF</b>	<b>BS</b>					
		<b>No of Direct Links</b>		<b>17</b>	<b>6</b>	<b>16</b>	<b>5</b>	<b>9</b>	<b>13</b>	<b>6</b>	<b>14</b>	<b>15</b>	<b>9</b>	<b>13</b>	<b>5</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>10</b>	<b>6</b>	<b>11</b>			
		<b>Connectivity Score</b>		<b>99</b>	<b>30</b>	<b>82</b>	<b>30</b>	<b>36</b>	<b>58</b>	<b>28</b>	<b>72</b>	<b>74</b>	<b>48</b>	<b>64</b>	<b>27</b>	<b>58</b>	<b>58</b>	<b>46</b>	<b>28</b>	<b>24</b>	<b>44</b>			

Figure A2 : Direct Intercity Connectivity offered by HS2 (full 'Y-network'), Northern Powerhouse Rail (NPR) and Midlands Rail Hub (MRH), superimposed onto connectivity of Existing Intercity Network

London	LO																	
Milton Keynes	MK																	
Birmingham	BI																	
Leicester	LE																	
Nottingham	NG																	
Derby	DE																	
Stoke	ST																	
Sheffield	SH																	
Manchester	MA																	
Liverpool	LI																	
Leeds	LS																	
Hull	HU																	
Darlington	DL																	
Newcastle	NE																	
Edinburgh	EH																	
Glasgow	GL																	
Cardiff	CF																	
Bristol	BS																	
	LO	MK	BI	LE	NG	DE	ST	SH	MA	LI	LS	HU	DL	NE	EH	GL	CF	BS
No of Direct Links	17	6	16	5	9	13	6	14	15	9	13	5	11	11	11	10	6	11
Connectivity Score	75	12	82	12	36	22	22	50	74	48	50	27	42	42	15	15	24	24

  

1-6	Existing intercity link
0	No direct intercity link
0	Existing link made worse
6	MRH direct intercity link
6	HS2 direct intercity link
6	NPR direct intercity link
<b>No of direct intercity links 94</b>	
<b>Total connectivity score 333</b>	

Figure A3 : Direct Intercity Connectivity offered by HS2 (full ‘Y-network’), NPR, MRH and Existing Intercity Network, with due allowance for predicted service reductions on existing network

London	LO																	
Milton Keynes	MK																	
Birmingham	BI																	
Leicester	LE																	
Nottingham	NG																	
Derby	DE																	
Stoke	ST																	
Sheffield	SH																	
Manchester	MA																	
Liverpool	LI																	
Leeds	LS																	
Hull	HU																	
Darlington	DL																	
Newcastle	NE																	
Edinburgh	EH																	
Glasgow	GL																	
Cardiff	CF																	
Bristol	BS																	
	LO	MK	BI	LE	NG	DE	ST	SH	MA	LI	LS	HU	DL	NE	EH	GL	CF	BS
No of Direct Links	17	14	17	15	16	16	16	17	17	17	17	9	17	17	16	16	14	14
Connectivity Score	102	84	102	90	96	96	96	102	102	102	102	54	102	102	96	96	84	84

  

3	T	High quality 2-hourly link
6		High quality
4		Medium quality
2		Low quality
0		No direct intercity link
<b>No of direct intercity links 141</b>		Direct hourly intercity link - halve score for 2-hourly link
<b>Total connectivity score 846</b>		

Figure A4 : Direct Intercity Connectivity offered by HSUK Network

# APPENDIX B

## HSUK assessment of Integrated Rail Plan performance in Midlands

With no definitive design criteria for the Integrated Rail Plan established by the Government, HSUK has set 7 criteria by which schemes should be assessed:

1. Full compliance with any core specification (*note that no specification for journey time, service frequency etc between Midlands cities has been established by any official body*).
2. Direct links between all principal (Midlands) population centres
3. Delivery of maximised journey time reductions.
4. Full integration with local networks at city centre stations.
5. Delivery of step-change capacity gains for local services.
6. Provision of radically enhanced capacity for railfreight.
7. Optimisation of direct links & reductions in journey time to principal population centres across national network.

The following assessment shows HSUK's comprehensive superiority over any local network based upon the official HS2 'Y-network' and Midlands Rail Hub proposals. The assumption is made that the Integrated Rail Plan will stipulate that these proposals are implemented in full; any scope reductions in either scheme (for instance likely curtailment of the HS2 Phase 2b 'Eastern Arm') will further exacerbate the inadequate performance of the official proposals.

It should particularly be noted that HS2 as currently schemed provides no direct links whatsoever between Midlands cities. Note that 'out of town' parkway stations such as the proposed HS2 East Midlands Interchange at Toton are not accepted as providing direct intercity services to either Nottingham, Derby or Leicester.

Further information on the performances of HS2 and HSUK as national propositions is given in Appendix D, see Figures 4.1, 4.2, 4.3, 7.1 and 7.2.

# APPENDIX C

## HSUK assessment of Integrated Rail Plan performance in Northern Powerhouse

With no definitive design criteria for the Integrated Rail Plan established by the Government, HSUK has set 7 criteria by which schemes should be assessed:

1. Full compliance with any core specification (*note the NPR specification for journey time and service frequency between primary Northern Powerhouse cities set out in The Northern Transport Strategy: Spring 2016 Report, published March 2016 by Transport for the North*).
2. Direct links between all principal (Northern) population centres.
3. Delivery of maximised journey time reductions.
4. Full integration with local networks at city centre stations.
5. Delivery of step-change capacity gains for local services.
6. Provision of radically enhanced capacity for railfreight (*note the TfN ambition for a 'freight superhighway connecting Liverpool and the Humber' set out in Draft Strategic Transport Plan, published January 2018 by Transport for the North*).
7. Optimisation of direct links & reductions in journey time to principal population centres across national network.

The following assessment shows HSUK's comprehensive superiority over any local network based upon the official HS2 and Northern Powerhouse Rail proposals. The assumption is made that the Integrated Rail Plan will stipulate that these proposals are implemented in full; any scope reductions in either scheme (for instance possible curtailment of the HS2 Phase 2b 'Eastern Arm') will further exacerbate the inadequate performance of the official proposals.

It should particularly be noted that predication upon the established HS2 proposals in both Greater Manchester and Yorkshire has prevented Northern Powerhouse Rail from meeting its own specification for journey time and service frequencies.

Further information on the performances of HS2 and HSUK as national propositions is given in Appendix D, see Figures 4.1, 4.2, 4.3, 7.1 and 7.2.

# APPENDIX D

## HSUK input to Union Connectivity Review dated August 2021

The recently published (March 2021) preliminary report of the Union Connectivity Review should set out a strategy by which the primary cities of Scotland, Wales and Northern Ireland (i.e. Edinburgh, Glasgow, Cardiff and Belfast) could be tied into a transformed national network, and thus remedy the historic disconnect between the UK nations.

However, the report sets out no such strategy, still less does it establish any core specification to define how the overall UK network should perform, or display any understanding of how this network might be optimised. Instead it merely sets out a predictable list of minor incremental schemes that will do virtually nothing to promote the unity of the United Kingdom or counter the drift toward separatism.

HSUK's input to the Union Connectivity Review:

- Establishes ideals for cross-border, and general inter-regional connectivity on the island of Great Britain i.e. all principal cities interlinked with direct and frequent services of 'intercity' quality. (See Section 2).
- Assesses likely performance of official schemes (i.e. HS2, Northern Powerhouse Rail and Midlands Rail Hub) and High Speed UK against these ideals. (See Sections 4 and 7).
- Reviews connectivity and practicality of potential Fixed Link to Northern Ireland. (See Section 9).
- Sets out an alternative air/rail solution based upon air routes from Northern Ireland to principal GB airports, and onward direct rail links via HSUK to most major English, Scottish and Welsh cities. (See Sections 9 and 10).