

HS2 - SABOTAGING THE NORTHERN POWERHOUSE

From the launch of the HS2 project in 2009/10, its most glaring deficiency – the inability of the proposed HS2 'Y-network' to offer any improved transpennine link between Northern cities – caused immense concern amongst regional political and business leaders. It was perfectly obvious that a system which only provided high speed links from Northern cities to London, and which failed to interlink Northern cities, could only have the effect of sucking economic activity out of the North, and exacerbating the North-South Divide.

The launch in 2014 of then-Chancellor George Osborne's Northern Powerhouse initiative was intended to address these connectivity concerns. 'HS3' transpennine high speed rail links would interconnect Liverpool, Manchester, Sheffield, Leeds, Hull and Newcastle, and thus complement HS2. A comprehensive and exacting specification was established by the 'One North' group of city councils; this included the key requirements for radically reduced journey times and for a single new east-west transpennine railway, fully integrated with the north-south HS2. And with this transformed connectivity, the promised 'Northern Powerhouse' should come about.

This at least was the theory; the reality has turned out to be somewhat different. Under the leadership of Transport for the North (TfN), 'HS3' has been descoped to a programme of 'Northern Powerhouse Rail' upgrades, with only limited new-build proposed, and every attempt made to utilise sections of HS2 as part of the new intercity routes. Accordingly, the Liverpool-Manchester link will follow HS2's Manchester spur running via Manchester Airport, and the Sheffield-Leeds link will follow part of the HS2 route in Yorkshire.

Regrettably, no-one in authority appears to have recognised the illogicality of basing HS3/Northern Powerhouse Rail – whose core rationale is the improvement of east-west transpennine connectivity – upon sections of HS2, which were designed to exclusively north-south priorities, with no thought for transpennine connectivity.

This contradiction can be seen most clearly by considering Sheffield, Leeds and Manchester, the 3 cities at the core of the Northern Powerhouse.

- The NPR Sheffield-Leeds link will follow the HS2 route in Yorkshire; this route, primarily designed for north-south speed, is located in the more level terrain to the east of Barnsley and Wakefield.
- As a result, it is too far to the east to integrate efficiently with the single east-west transpennine route specified by One North.
- As a result, 2 separate new transpennine routes – one linking Manchester and Leeds, the other linking Manchester and Sheffield – will be required to meet the One North journey time specification.

- This is confirmed in TfN's 2019 *Strategic Transport Plan*. This proposes a new transpennine route linking Leeds and Manchester via Bradford, and a separate route linking Sheffield and Manchester broadly along the Hope Valley corridor.
- Detailed 'reverse engineering' to determine likely direct routes capable of meeting the 30 minute journey time specification (from Manchester to Leeds and Sheffield) indicates that all such routes will require of the order of 30km of new tunnel.
- It is likely that the Leeds-Manchester route will be prioritised as a new-build project, with only an upgrade of the existing 'Hope Valley' Sheffield-Manchester route.

The process by which the Northern Powerhouse Rail routes have developed is set out in Figure 1. This is clearly a sequential process, in which the north-south HS2 routes have been selected first, with no reference to any requirement for improved east-west links; only later has the need for equivalent transpennine links been acknowledged, and this has led to HS3/NPR links being retrofitted onto the established HS2 proposals.

This is plainly a deeply flawed process, lacking in the holistic thinking and rigour necessary to develop efficient and optimised proposals. However, the extent of the failure of process that has so far afflicted the development of Northern Powerhouse Rail can only be truly appreciated by comparing the HS2 and Northern Powerhouse Rail proposals with equivalent elements of the alternative High Speed UK (HSUK) scheme.

HSUK's scheme for interlinking the principal cities of the North is set out in Figure 2:

- The north-south HSUK route between Sheffield and Leeds passes through the hillier terrain to the west of Barnsley and Wakefield.
- This enables efficient connection with a single new transpennine route, following the abandoned Woodhead corridor.
- The Woodhead route will also be reopened for freight trains and lorry shuttles.
- The HSUK proposals meet the One North requirements for reduced journey times and route configuration, and also for a new transpennine freight route.
- HSUK will also cost many billions of pounds less to build.

It must be emphasised that although the HSUK design was established long before any detailed requirements emerged for the Northern Powerhouse, it has required no major modifications to enable it to meet all the key aspects of the One North specification. This can be attributed very simply to HSUK's holistic design as a national network, with equal priority placed on interlinking all principal cities.

Whilst it can be confidently stated that no-one at HS2 Ltd ever had the intention of developing a design for HS2 that would effectively sabotage the Northern Powerhouse, it can be stated with equal confidence that – through HS2 Ltd's failure to develop the national rail network in the necessary holistic manner, and through TfN's failure to recognise the problem – this is exactly what has happened. For a more comprehensive account of both HS2 Ltd's and Transport for the North's failures, please refer to *The Northern Poorhouse – How the Transport Establishment Failed the People of the North*.

The Northern Powerhouse - 3 Steps to Failure

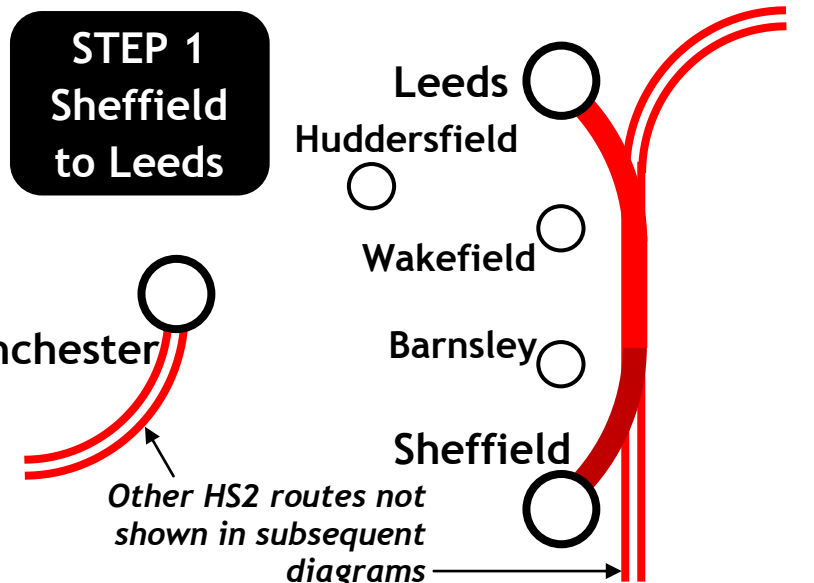
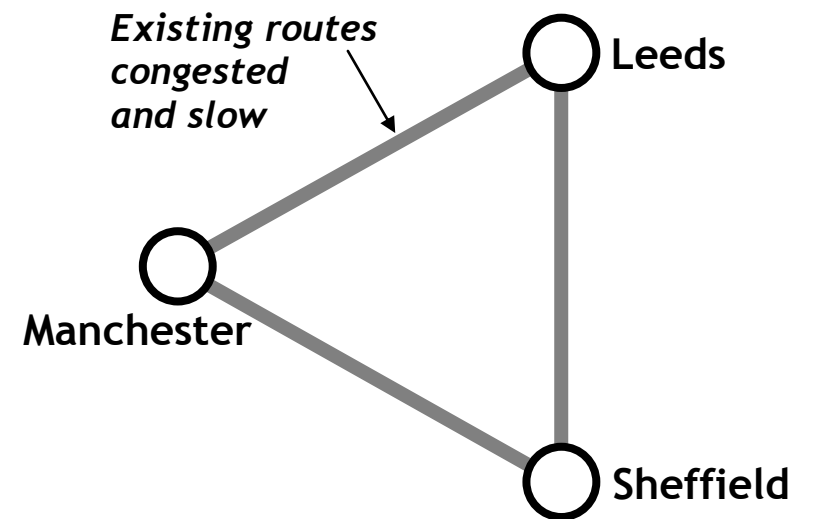
The Northern Powerhouse will fail if Sheffield, Leeds and Manchester - the 3 cities at its core - are not efficiently linked.

These 'HS3' links must:

- connect the 3 cities with cost-effective, low-impact and congestion-free routes.
- meet the One North/HS3 specification for journey times.
- serve city centre stations well integrated with local networks.

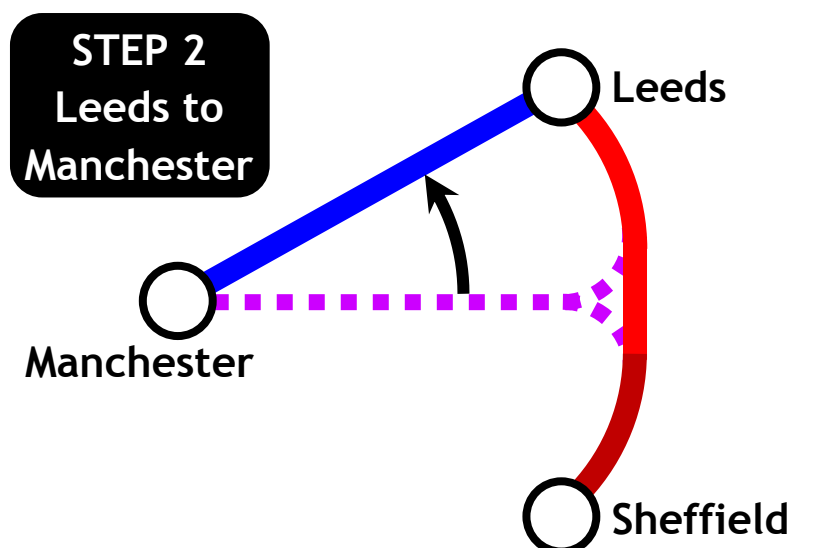
STEP 1 - decision already taken

- Adopt established HS2 as Sheffield-Leeds link for Northern Powerhouse Rail (NPR). █
- This includes 4-tracking 22km of existing route northwards from Sheffield. █
- Note no serious consideration of HS2 routes west of Barnsley and Wakefield.
- Note that HS2 was designed with no thought for transpennine connectivity.



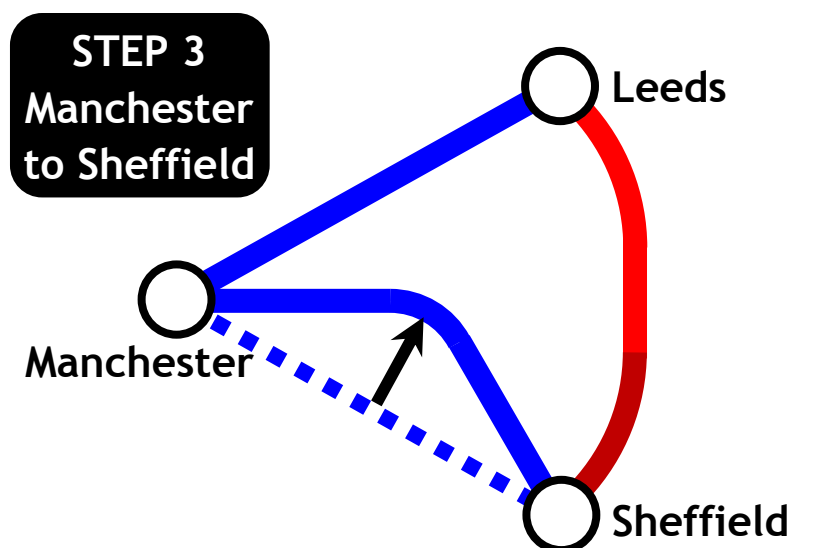
STEP 2 - options currently under review

- Discover that the Sheffield-Leeds route is too far to the east to integrate with the single new-build transpennine 'HS3' route originally specified by One North. █
- Instead examine options for upgrading the existing transpennine route via Huddersfield, or for a new route via Bradford. █
- HSUK analysis indicates these routes will require over 30km of new tunnel to achieve specified 30 minute journey time.



STEP 3 - not yet considered??

- Discover that existing Manchester-Sheffield route cannot practicably be upgraded to achieve 30 minute journey time. █
- HSUK analysis indicates that the only possible upgrade option involves a new transpennine tunnel over 30km long.
- Instead adopt more circuitous Woodhead route, as per HSUK scheme. █



HS2 & HS3/Northern Powerhouse Rail - hugely outperformed by HSUK

	Total length of route	Total length of tunnel	Transpennine crossings	Major gains in local capacity?	Estimated cost
HSUK	120km	36km	1	Yes	£10.4bn
HS2/HS3	199km	59km	2	No	£15.9bn

Comparisons relate only to HS2/NPR and HSUK routes linking Sheffield, Leeds & Manchester - see overleaf

Figure 1 – Development of HS2 and Northern Powerhouse Rail

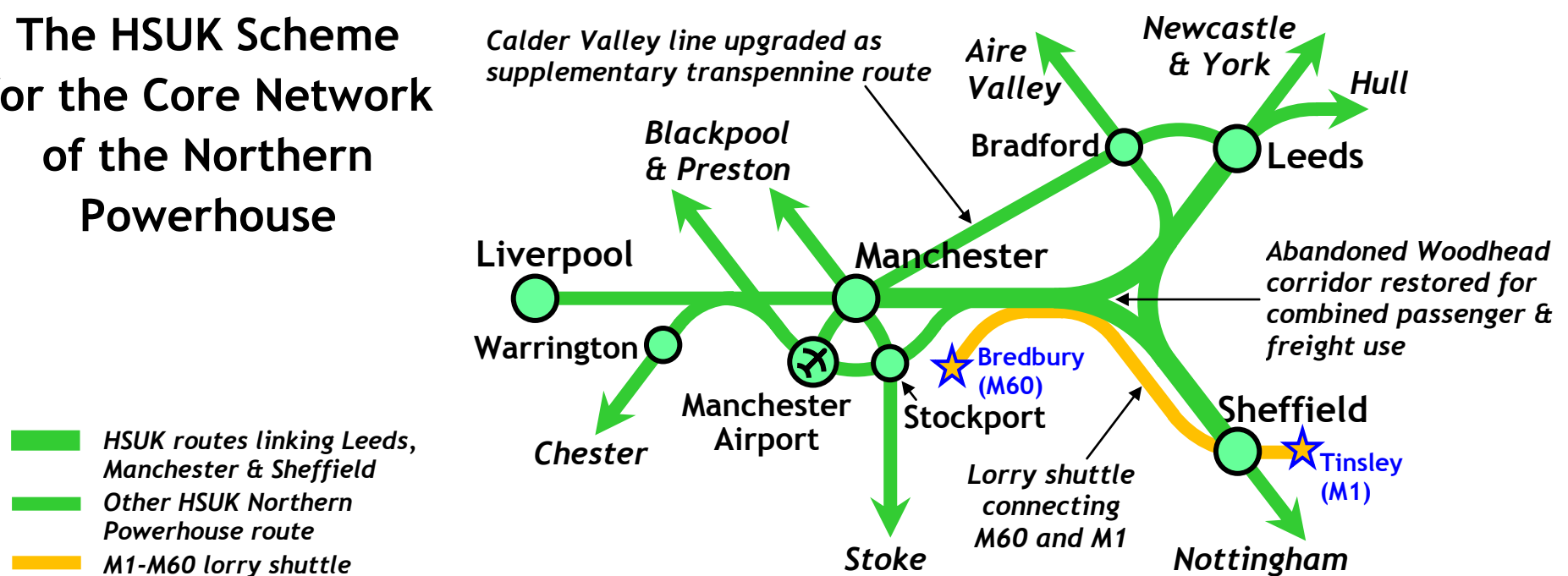
Delivering the Northern Powerhouse - *the HSUK way*

The High Speed UK Philosophy

www.highspeeduk.co.uk

1. Start with the aim of developing a national rail network capable of interlinking all principal UK cities with direct high speed services.
2. Base this national network around a revitalised Woodhead transpennine crossing, to link Liverpool, Manchester, Sheffield, Leeds, Hull and Newcastle.
3. Include Manchester Airport in this Northern intercity network.
4. Meet the One North/HS3 specification for improved Northern Powerhouse journey times.
5. Expand the One North/HS3 specification to cover Bradford.
6. Hugely enhance capacity for local services with fully integrated 'through' stations in Leeds, Manchester, Sheffield and Bradford (*new terminus stations are not fit for purpose*).
7. Ensure all other major communities eg Doncaster, Wakefield, Barnsley, Huddersfield, Stockport, Warrington, are fully integrated with the HSUK Northern Powerhouse network.
8. Tackle transpennine HGV congestion with lorry shuttle linking M60 and M1.

The HSUK Scheme for the Core Network of the Northern Powerhouse



Meeting the One North/ 'HS3' Specification for Improved Journey Times between the cities of the Northern Powerhouse

- ## = Specification proposed by HSUK
- ** = Change of trains required
- \$\$ = 8 minutes added for transfer from remote HS2 station
- ?? = No detailed proposals yet developed for routes to Hull

Journey times – in minutes	Existing journey time	Specified journey time	HSUK journey time	HS2/NPR journey time
Sheffield - Leeds	40	30	19	28
Liverpool - Manchester	32	20	19	28
Manchester - Sheffield	48	30	23	40
Manchester - Leeds	49	30	26	26
Leeds - Manchester Apt	62	40	37	47 ^{\$\$}
Sheffield - Manchester Apt	73	30	34	60 ^{**}
Liverpool – Manchester Apt	65	30	26	28 ^{\$\$}
Leeds - Bradford	20	15 ^{##}	15	9
Bradford - Manchester	61	30 ^{##}	30	19
Sheffield - Bradford	82 ^{**}	30 ^{##}	27	60 ^{**}

The High Speed UK Challenge to the Transport Establishment

Please demonstrate that your flagship schemes - both HS2 and Northern Powerhouse Rail - will serve the people of the North as well as High Speed UK.

If you cannot, you have a public duty to abandon HS2, abandon HS3/Northern Powerhouse Rail, and come on board with High Speed UK. Our mission is to connect the North as part of our wider mission to connect the Nation. We assume that you also share these basic aims.

Figure 2 – Development of High Speed UK in Northern Powerhouse region