



High Speed UK

Connecting the Nation

Who are we?

- Colin Elliff BSc CEng MICE
Civil Engineering Principal, HSUK



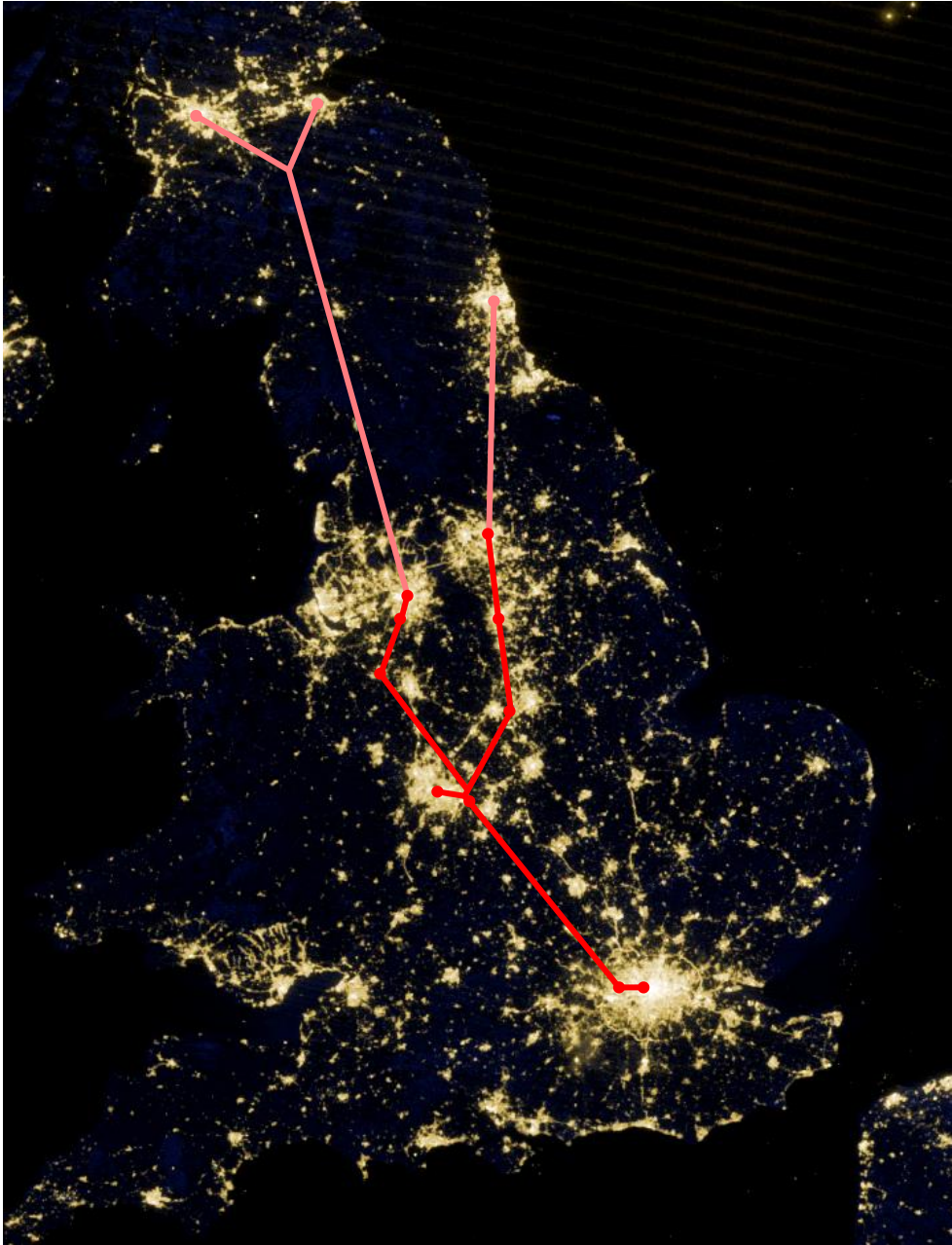
- Quentin Macdonald BSc(Eng)
CEng MIET FIRSE
Systems Engineering Principal, HSUK

What is HSUK?

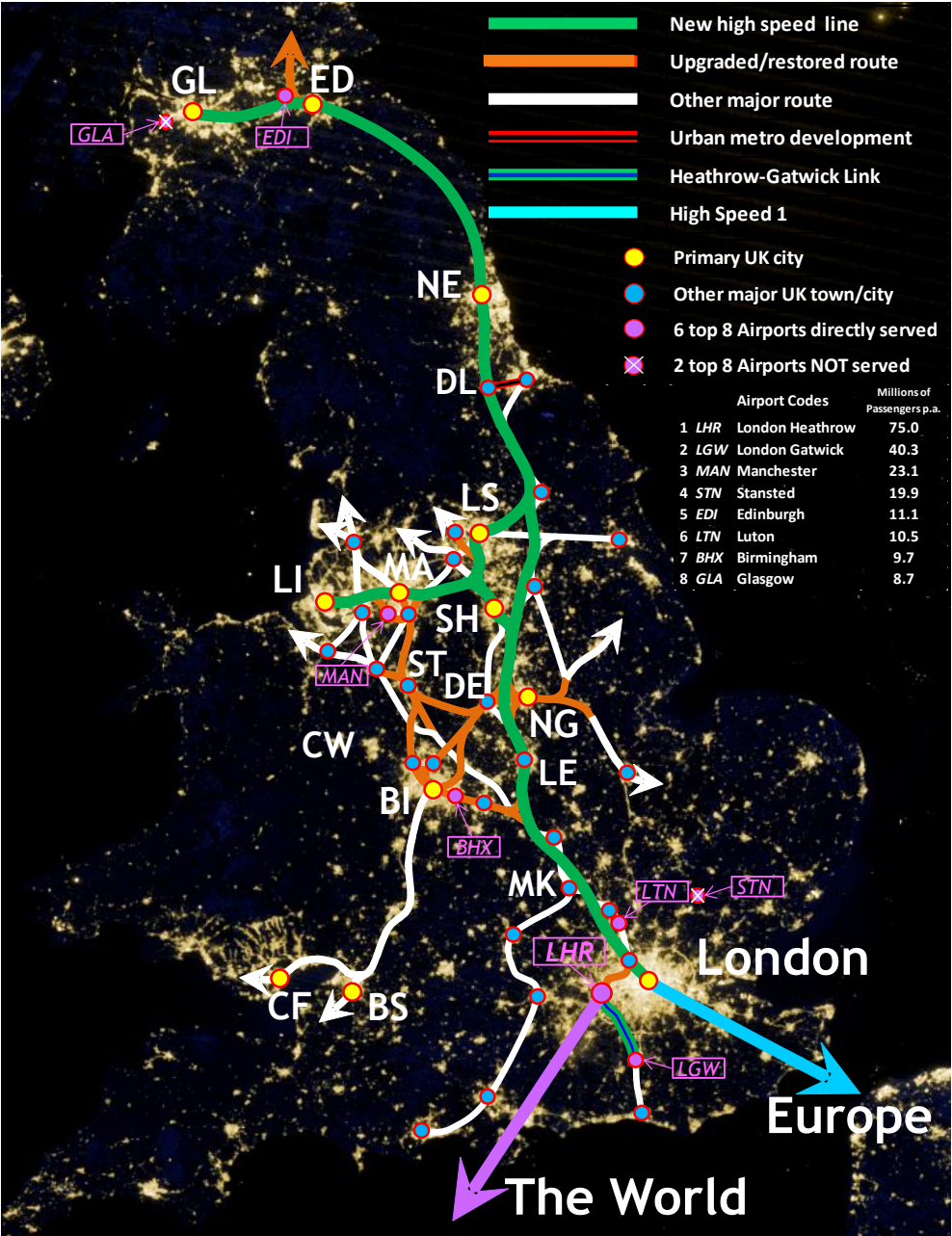
- A complete alternative **design** to HS2
- Designed by Colin because of the obvious deficiencies of the HS2 design as seen through the eyes of professional railway engineers
- Work began 8 years ago and the essence of the design was complete 4 years ago
- Since then he has concentrated on analysing the performance of HS2 as a railway system and the services it can offer the UK



The far from
blank canvas
of the UK waiting
for new railways
to traverse it



The HS2 response



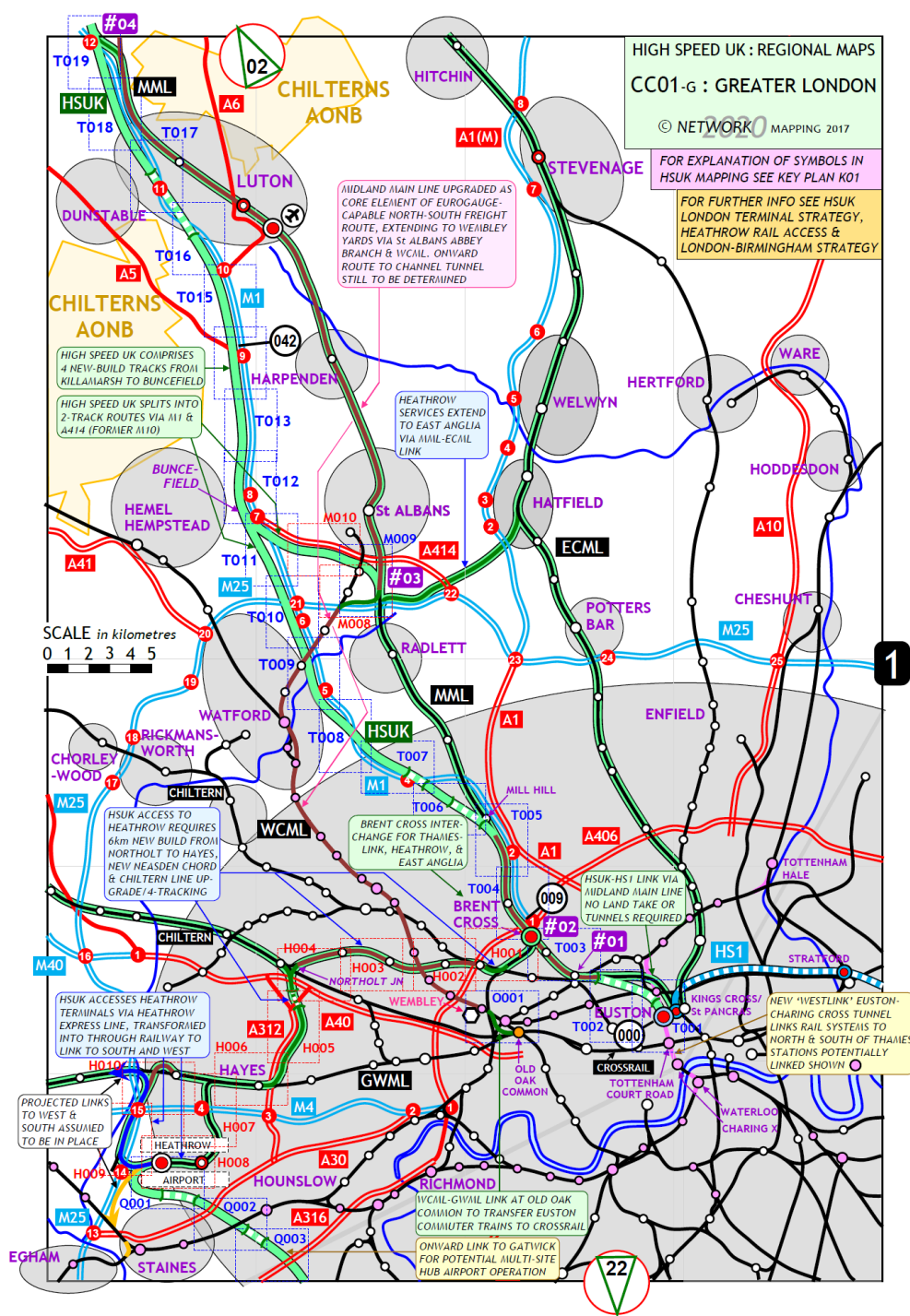
Scope of HSUK

The HSUK Design

- It is a design which consists of a mixture of new high speed line, upgraded existing lines and reopened lines.
- It is fully mapped at a scale of 1:200,000 which displays the scope of the design. 21 sheets cover from London to Glasgow
- It is also fully mapped at 1:25,000 which means that it is ready to be taken to the next stage of design.
- On 400+ sheets of mapping every straight, every transition and every circular curve has been designed

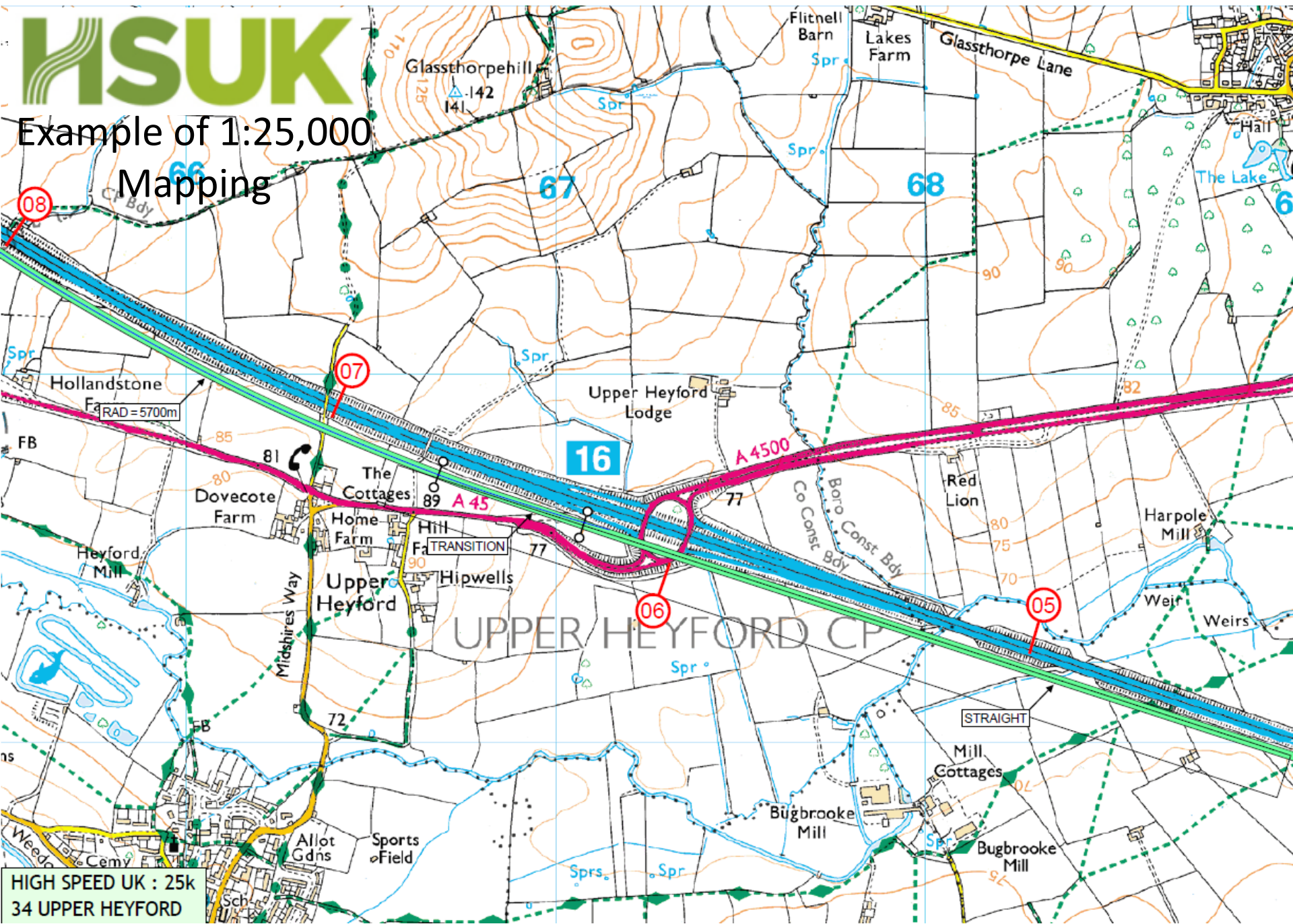
HSUK – High Speed UK –
Connecting the Nation

Example of 1:200,000 scale mapping





Example of 1:25,000 Mapping



HIGH SPEED UK : 25k
34 UPPER HEYFORD

HS2's Mission Statement

- In evidence to the House of Commons HS2 Select Committee on 30th November 2015, Prof. Andrew McNaughton (then Technical Director of HS2 Ltd.) uttered the following 'Hostage to Fortune'
- **"The aim of the HS2 project is to deliver hugely enhanced capacity and connectivity between our major conurbations."**
- Good stuff could anyone disagree with that?
- The question is **DOES HS2 deliver it?**
- **Answering that question is one theme today**
- **Introducing "High Speed to Failure"**

What should HS2 achieve (1)?

- **NB only applies within the HS2 Zone of Influence**
London, W. Midlands, E. Midlands, Merseyside, G. Manchester, S. Yorkshire,
W. Yorkshire, Humberside, Teesside, Tyneside, Central Belt of Scotland
- Be accessible to the greatest possible proportion of the UK population **X**
- Deliver hugely enhanced connectivity and capacity between our major conurbations **X**
- Give the greatest reductions in journey time for the least cost and environmental damage **X**
- Improve links to UK's principal airports not just LHR (75.0) but also LGW (40.3), MAN (23.1), EDI (11.1), LTN (10.5), BHX (9.7 Millions of Passengers p.a.) **X**

What should HS2 achieve (2)?

- Enable the development of 'Powerhouse Economies' in all UK regions **X**
- Through good network design, maximise the opportunity for more freight to be transported on the existing network thereby reducing road congestion and pollution **X**
- Offer a scheme with a Benefit to Cost ratio of at least 4.0 as in the Treasury Green Book **X**
- Conform with all aspects of public policy e.g. the 80% target for reduction of CO₂ required by the 2008 Climate change act **X**

Does HS2 Pass the Tests?

- We set 22 tests and judged HS2 against each one
- HS2 fails every single one of the 22 tests
- It is clear from the tests that HS2 is a very poor scheme which is not value for money
- HSUK on the other hand passes all the tests
- It is a presentation for another day to explain our reasoning
- Instead we are pleased to give you copies of our report “HS2 – High Speed to Failure”

“HS2 – High Speed to Failure”

HS2 and HS3

Infrastructure required to interlink London & 6 primary cities of the Midlands and the North:

699km new railway - mostly clear of existing transport corridors

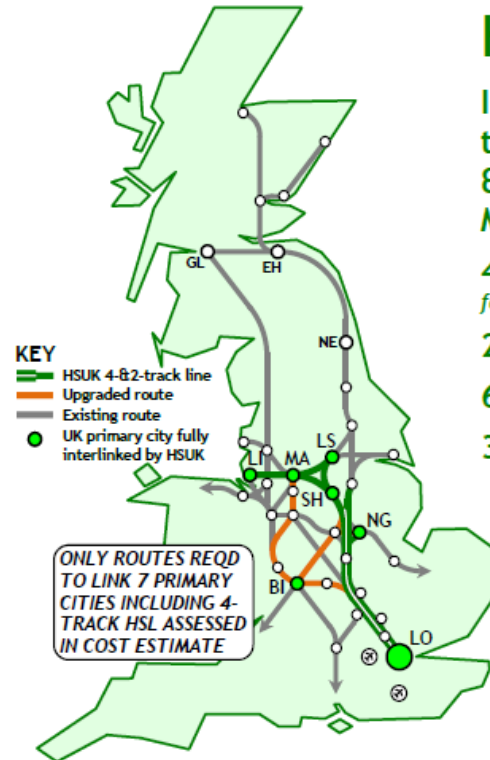
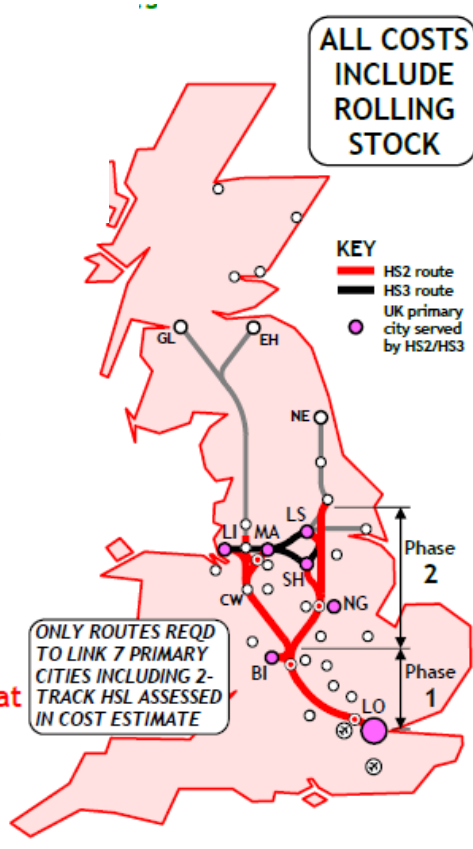
54km upgraded/restored

134km tunnel

8 new HS2 stations

Local integration projects at disconnected HS2 stations

Cost estimate **£73bn**



High Speed UK

Infrastructure required to fully interlink London & 6 primary cities of the Midlands and the North:

462km new railway - mostly following existing transport corridors

202km upgraded/restored

60km tunnel

3 new stations

Cost estimate **£52bn**

ALL COSTS INCLUDE ROLLING STOCK

In other words, HS2 is a complete waste of £21 Billion for the simple reason that it is not a sensible design

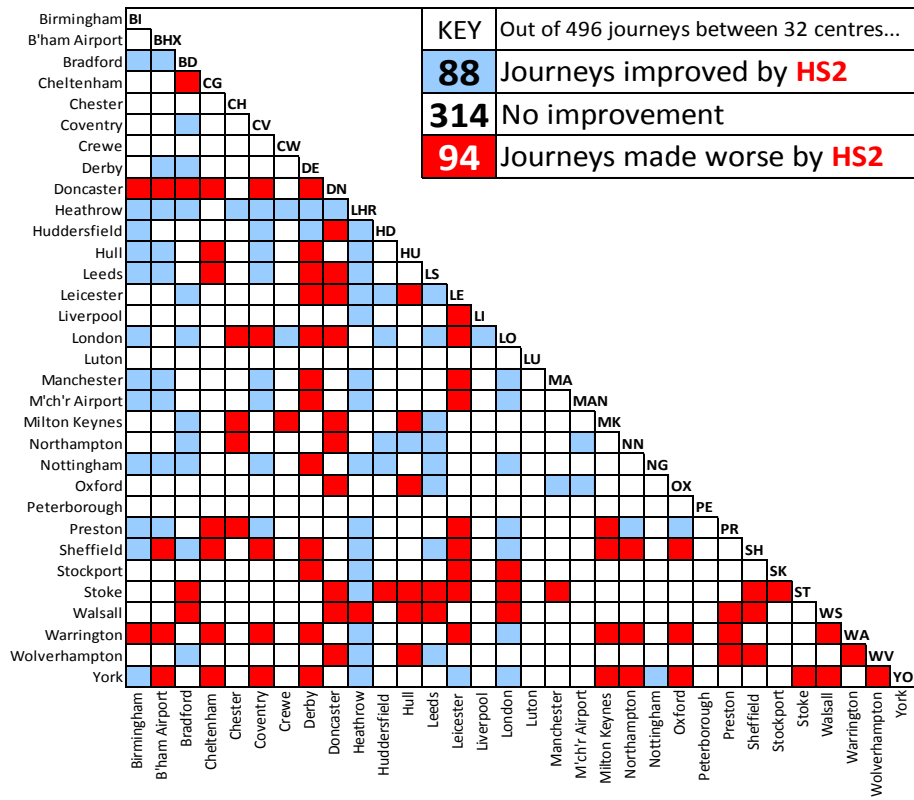
“HS2 High Speed to Almost Nowhere”

- We decided that “High Speed to Failure” was not enough to convince people that HS2 is bad
- A quantitative study was needed which would enable HS2’s failure to be measured
- 32 centres were chosen. 32 places to start your journey and, for each starting point, 31 places to finish it.
- That is a total of 496 journeys
- The journey time for every one of the 496 has been calculated with HS2 and with HSUK and compared with today
- The results are, we believe, alarming

“HS2 & HSUK Journeys Compared”

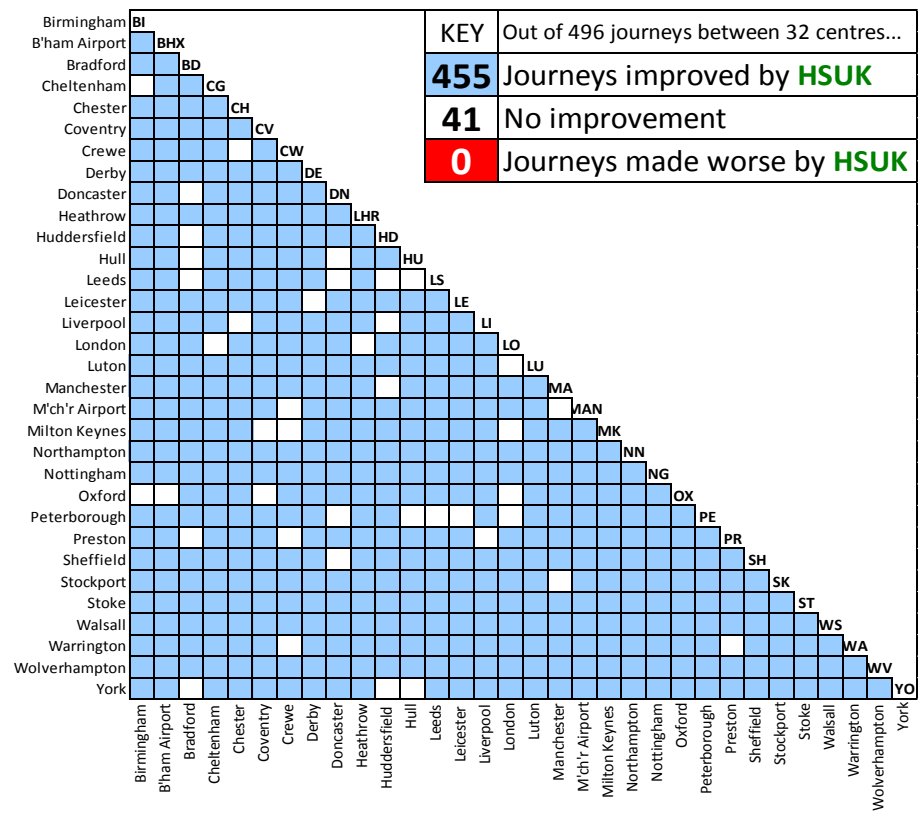
HIGH SPEED 2

NETWORK PERFORMANCE :
JOURNEYS IMPROVED/MADE WORSE



HIGH SPEED UK

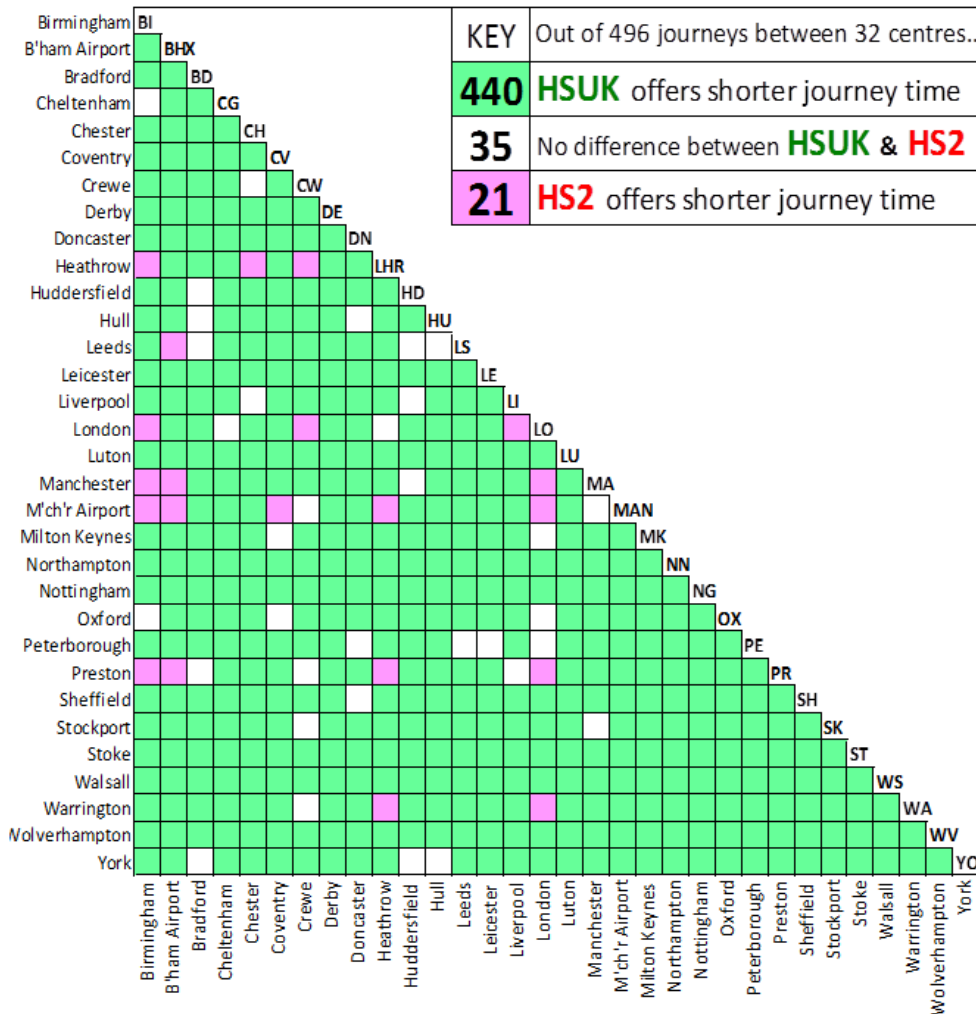
NETWORK PERFORMANCE :
JOURNEYS IMPROVED/MADE WORSE



HIGH SPEED UK & HS2

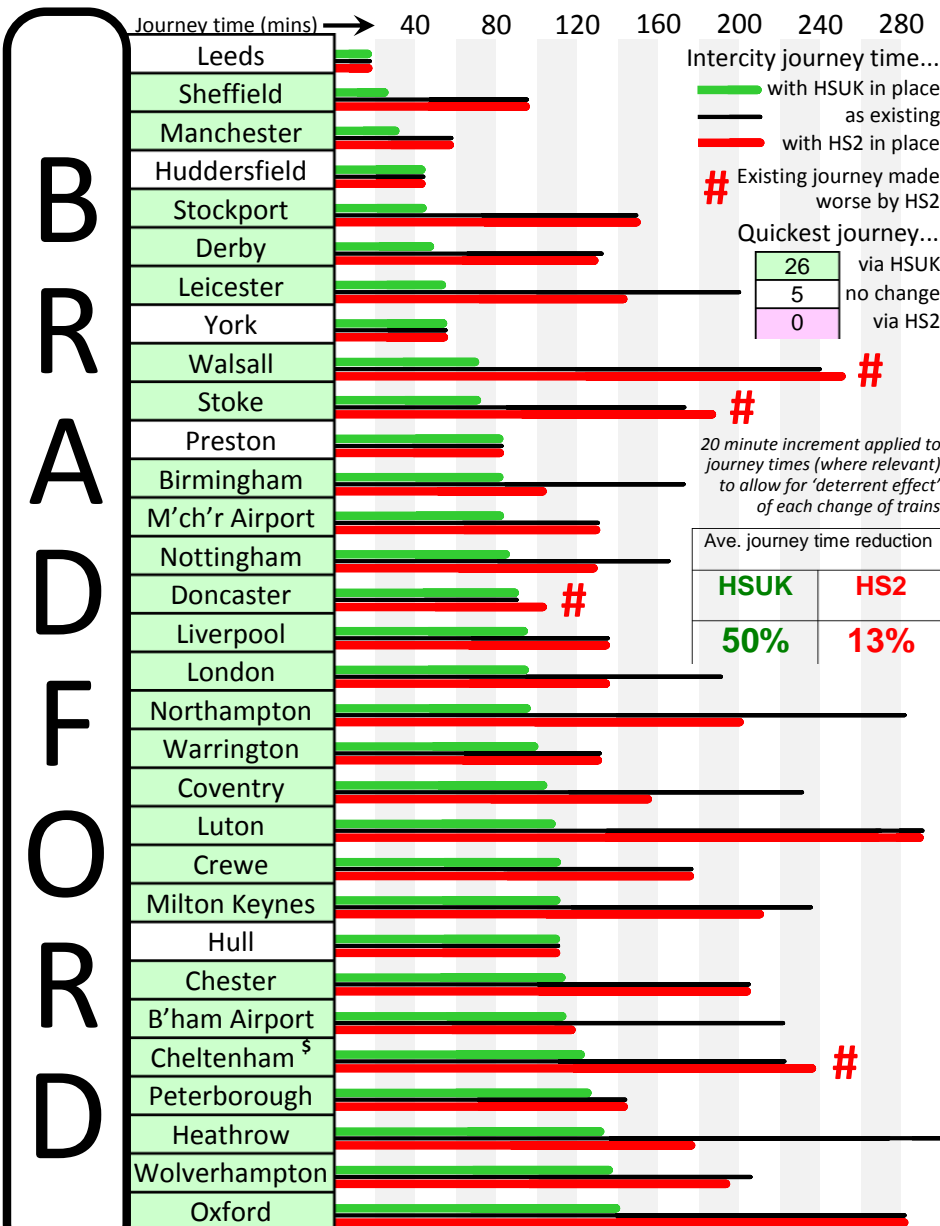
HSUK – High Speed UK
Connecting the Nation

COMPARATIVE PERFORMANCE IN ACHIEVING JOURNEY TIME REDUCTIONS ACROSS NATIONAL NETWORK



HS2 vs HSUK

Fastest Journey Times



^{\$} Cheltenham services run onward to Bristol and Cardiff

Figure 5

HS2 vs HSUK Journey Times Compared

Principle Findings of The Study 1

1. HS2 will only benefit a select group of primary cities
2. HS2 has insufficient capacity to serve other major cities (only 2 tracks)
3. HS2 fails as high speed railway – only 9% average journey time reduction
4. HS2 provides no extra capacity for local services in regional cities
5. HS2 is not future proofed

Principle Findings of the Study 2

6. HS2 has not been designed as a network
7. HS2 will seriously damage the existing national rail network
8. HS2 will be the fastest railway in the world and probably provide the slowest network
9. HS2 will reinforce the north south divide
10. HS2 has never been technically optimised as a railway system

“HS2 – High Speed to Almost Nowhere”

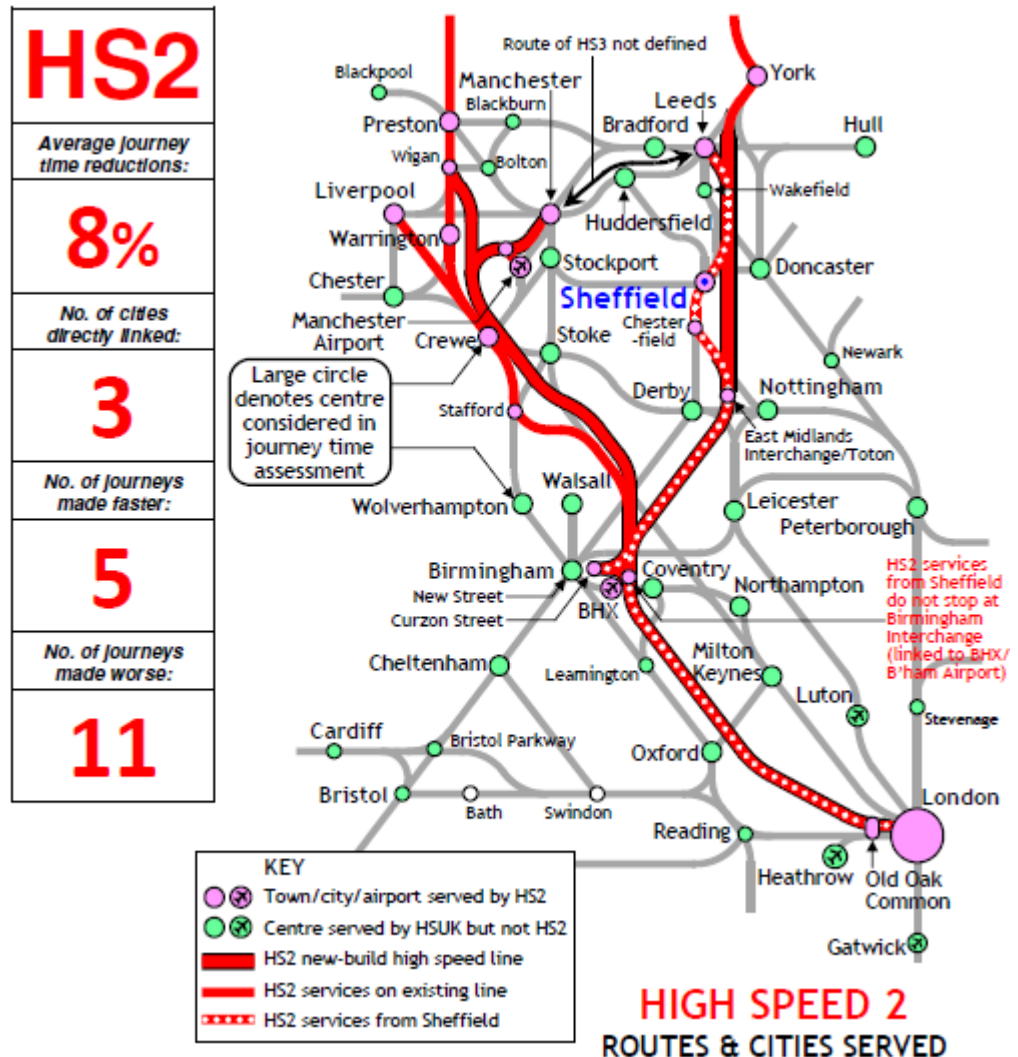
- This document is a report on the findings of the study of 496 journeys
- It is on our web site in draft form at the moment
- It will be finalised soon and published
- In the meantime here is a copy of the Executive Summary also in Draft form
- Over to Colin to tell you about the Sheffield Region

High Speed Rail in Sheffield – Key Requirements

1. Direct links to all major UK cities.
2. Direct links to the other cities of the Northern Powerhouse.
3. Local capacity/connectivity gains.
4. Full integration between local and national networks.
5. Coordination with city/region development plans.

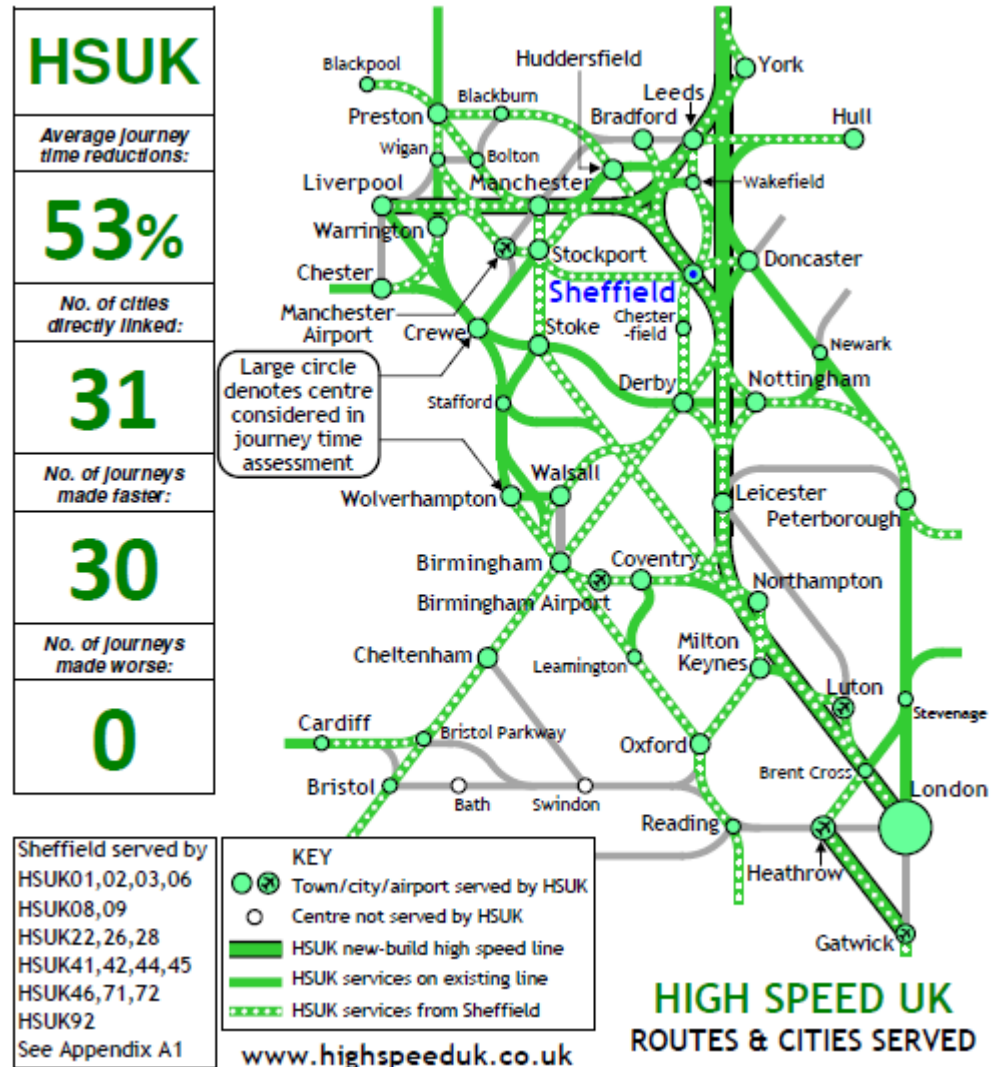
High Speed Rail in Sheffield

Direct links
to all major
UK cities
via HS2??



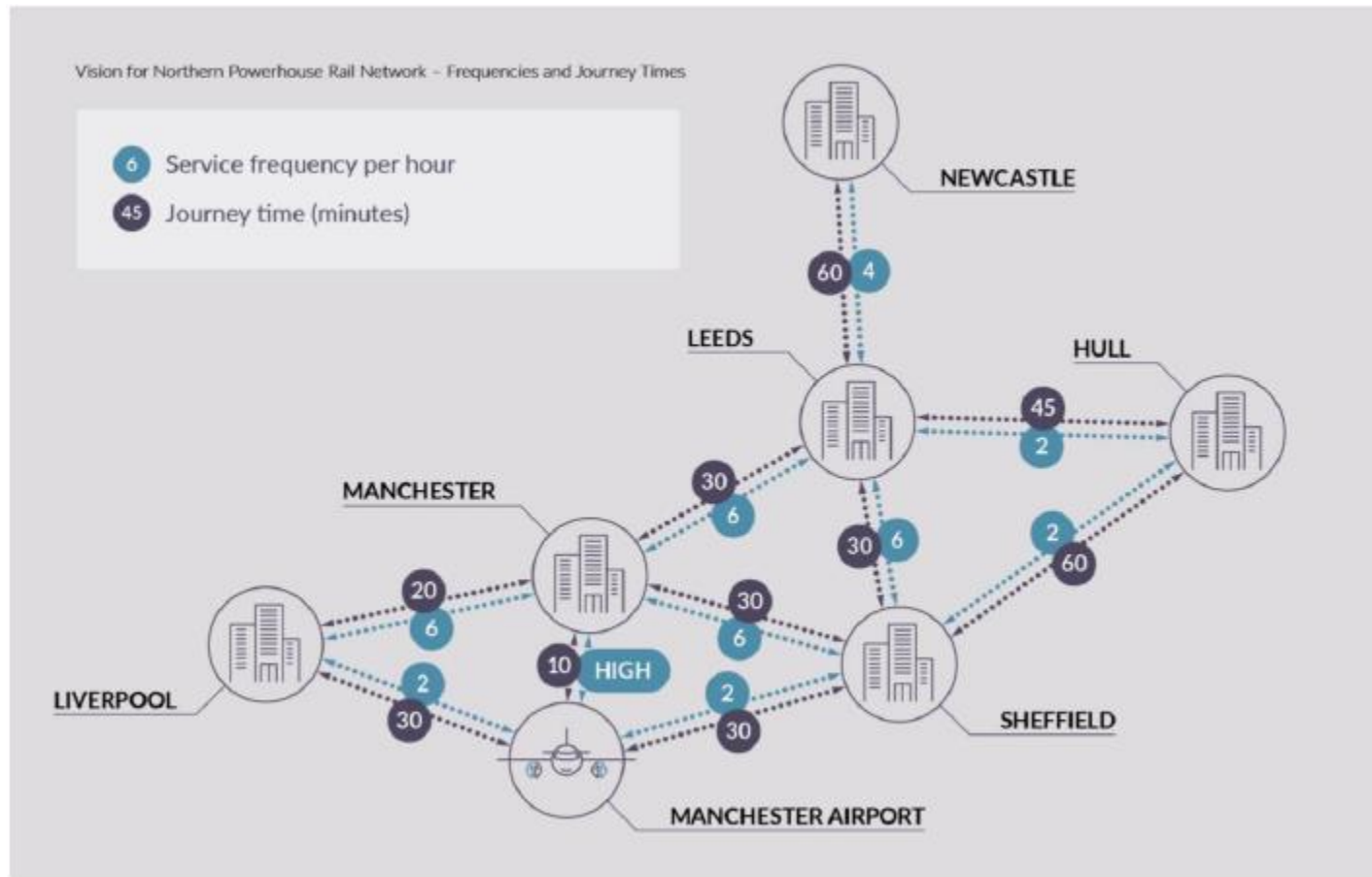
High Speed Rail in Sheffield

Direct links
to all major
UK cities
via HSUK??



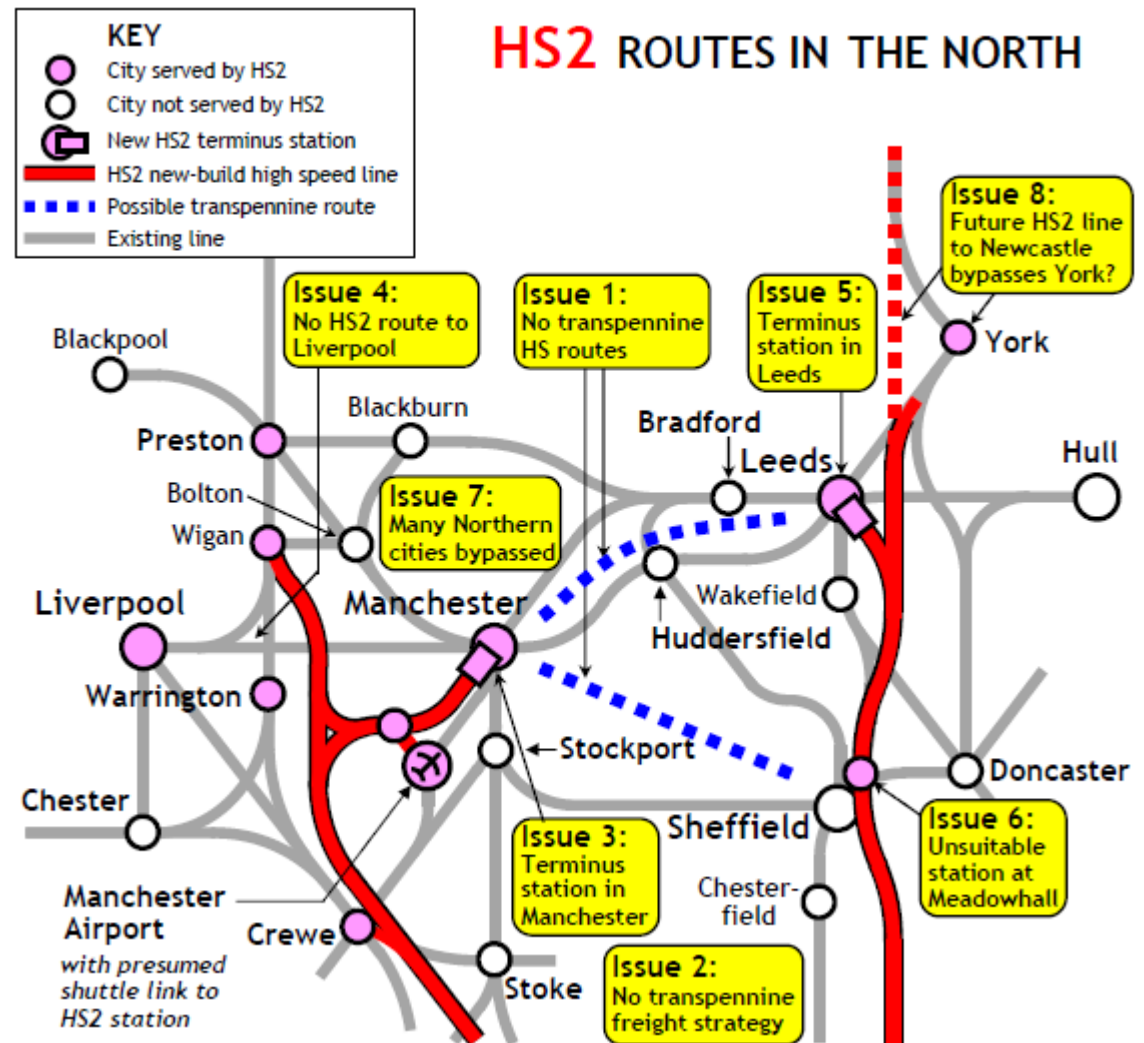
High Speed Rail in Sheffield

Northern Powerhouse/HS3 Specification



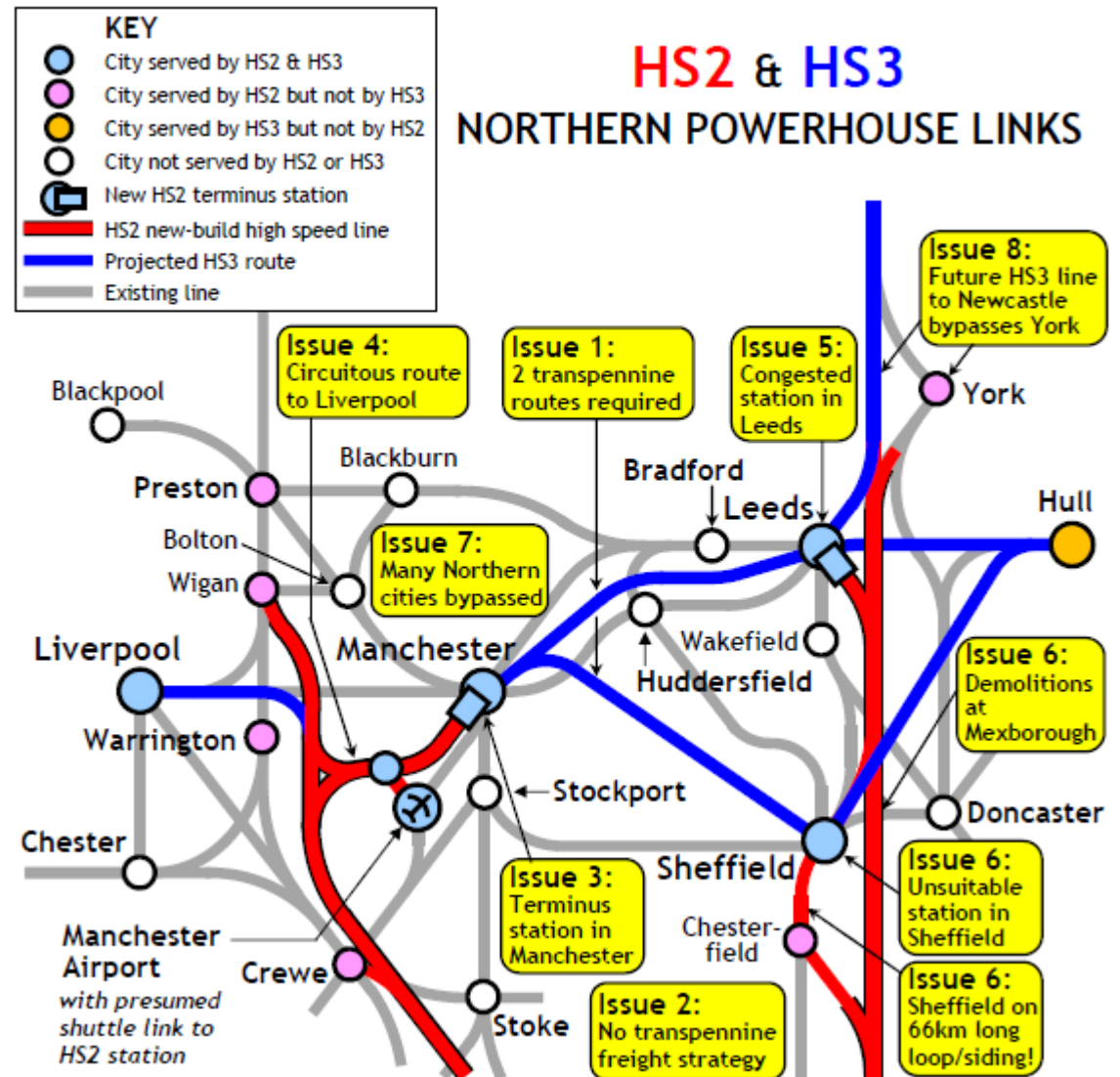
High Speed Rail in Sheffield

Direct links
to all cities
of the
Northern
Powerhouse
via HS2??



High Speed Rail in Sheffield

Direct links
to all cities
of the
Northern
Powerhouse
via HS3??

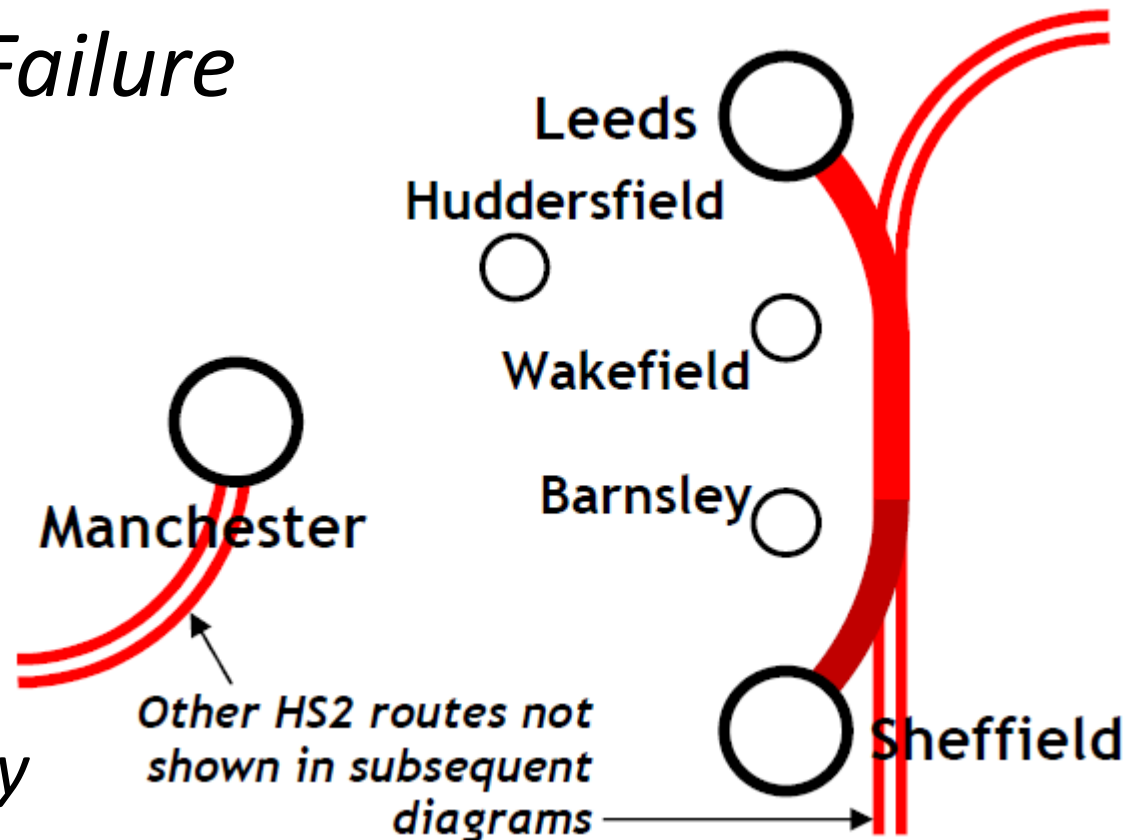


High Speed Rail in Sheffield

The Northern Powerhouse – *3 Steps to Failure*

STEP 1 Sheffield to Leeds

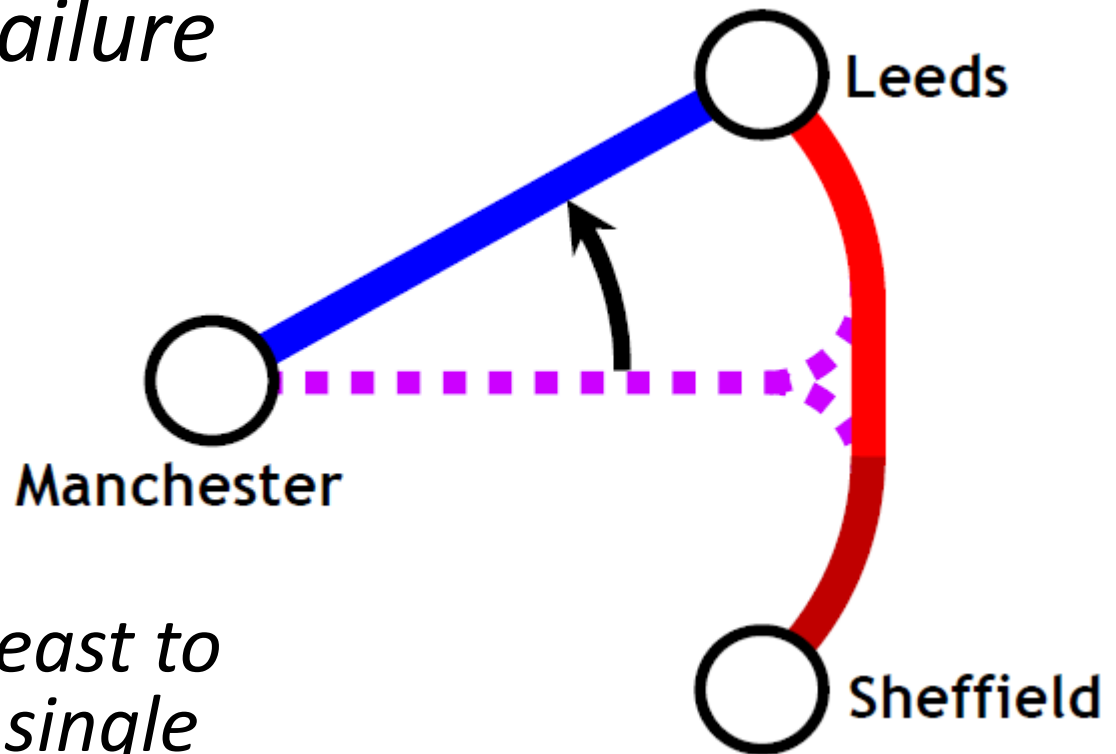
*HS2 passes to
east of Barnsley
& Wakefield*



High Speed Rail in Sheffield

The Northern Powerhouse
– *3 Steps to Failure*

STEP 2
Leeds to
Manchester

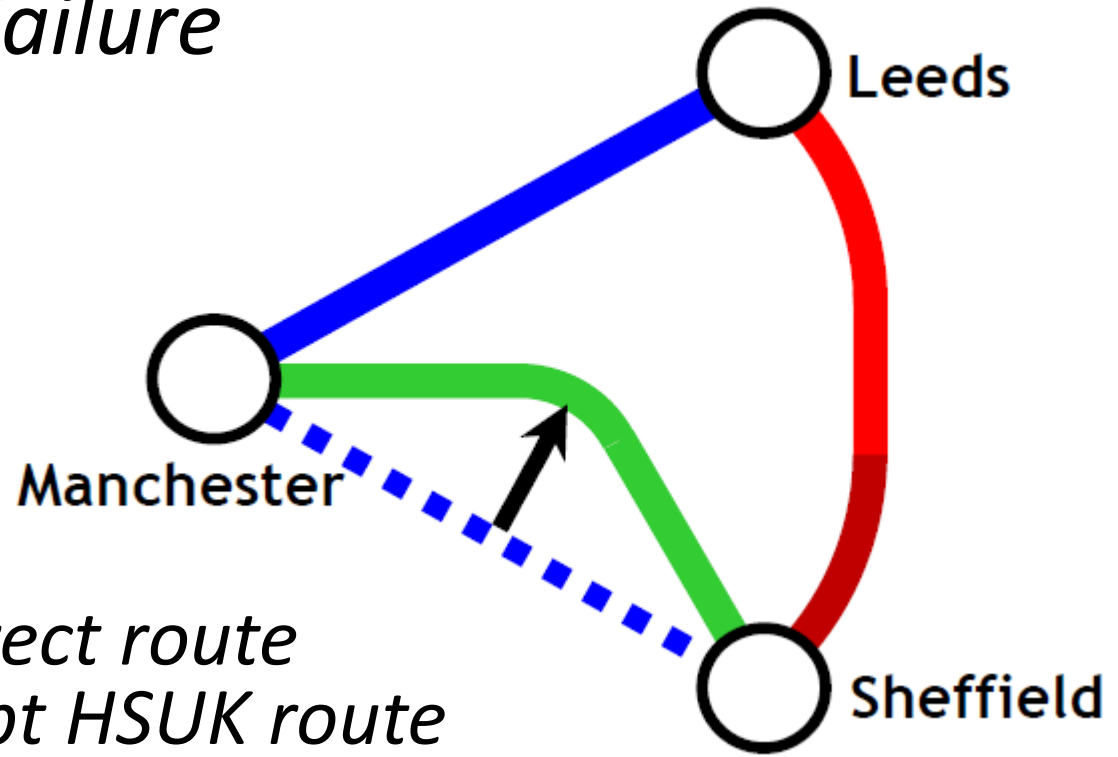


*HS2 too far to east to
integrate with single
transpennine 'HS3' route*

High Speed Rail in Sheffield

The Northern Powerhouse
– *3 Steps to Failure*

STEP 3
Manchester
to Sheffield

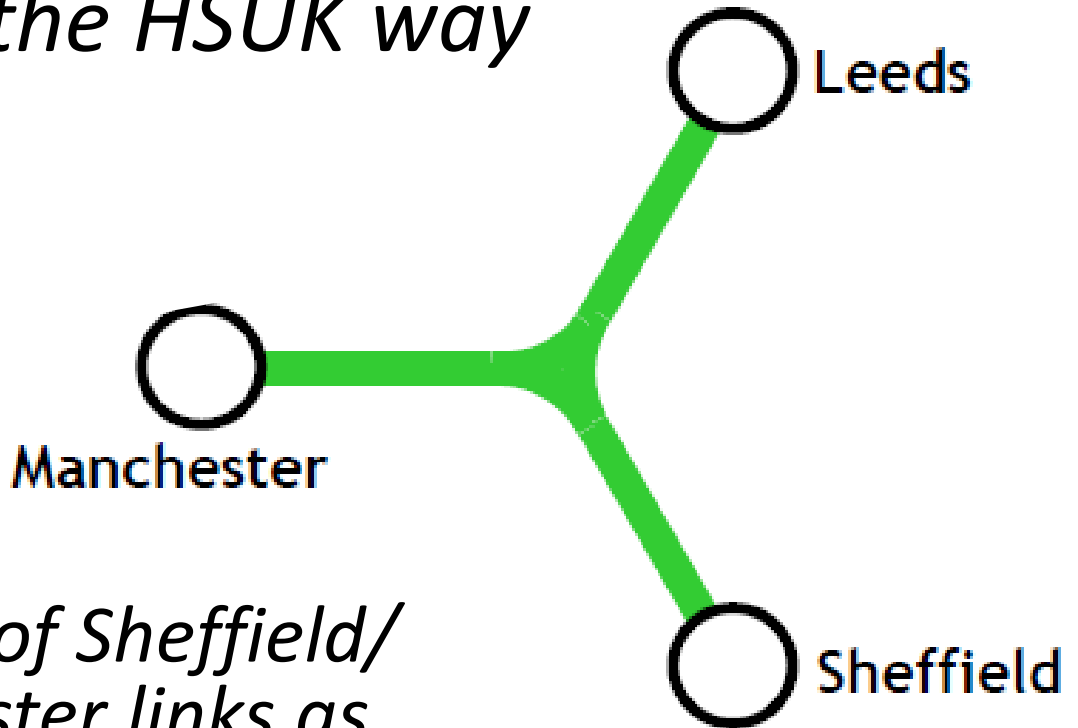


*No feasible direct route
therefore adopt HSUK route
via Woodhead*

High Speed Rail in Sheffield

The Northern Powerhouse
– *Succeeding the HSUK way*

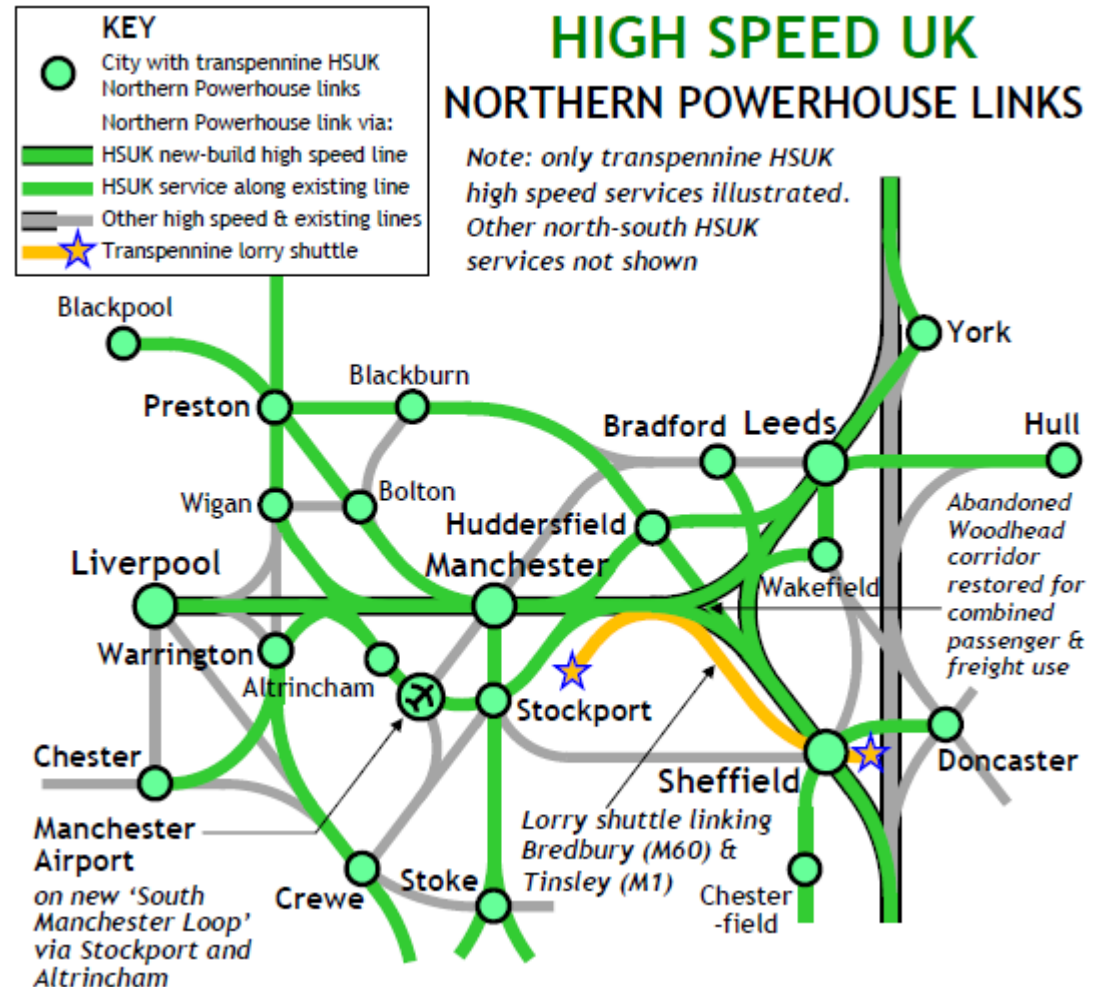
**Sheffield
Manchester
& Leeds**



*Holistic design of Sheffield/
Leeds/Manchester links as
part of national network*

High Speed Rail in Sheffield

Direct links
to all cities
of the
Northern
Powerhouse
achieved by
HSUK



High Speed Rail in Sheffield

The Northern Powerhouse –

Comparing Costs of HS2 and 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 with HSUK relate only to HSUK routes linking Sheffield, Leeds & Manchester

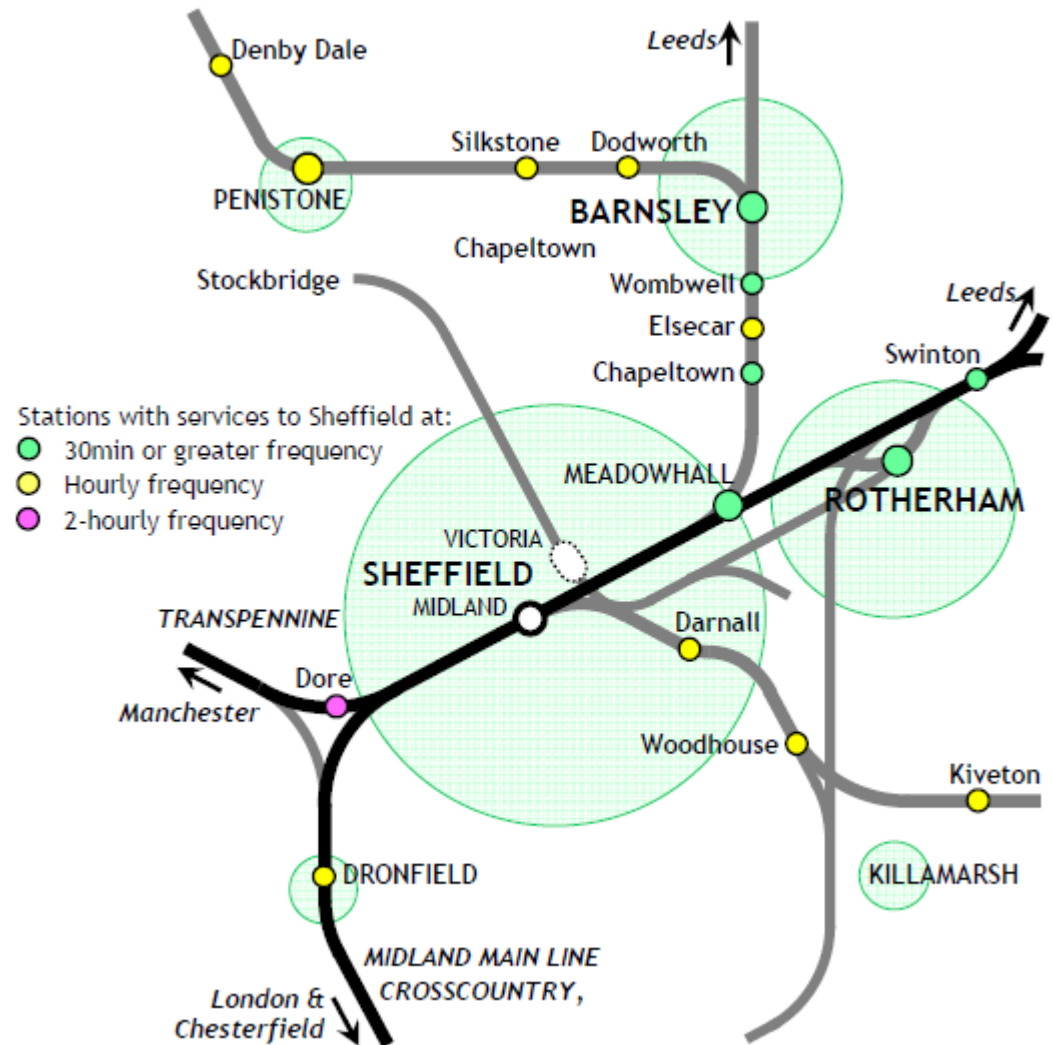
High Speed Rail in Sheffield

The Northern Powerhouse – *Comparing Performance of HS2/HS3 and HSUK*

Journey between Northern Powerhouse cities	Existing journey time (mins)	Specified journey time (mins)	HSUK journey time (mins)	HS2/HS3 journey time (mins)
Sheffield-Leeds	40	30	19	30
Liverpool-Manchester	32	20	19	26
Manchester-Sheffield	48	30	23	??
Manchester-Leeds	49	30	26	30
Leeds-Manchester Airport	62	40	37	??
Sheffield-Manchester Airport	73	30	34	??
Liverpool-Manchester Airport	65	30	26	??
Leeds-Newcastle	87	60	51	??
Leeds-Hull	55	45	35	??
Sheffield-Hull	86	60	56	??

High Speed Rail in Sheffield

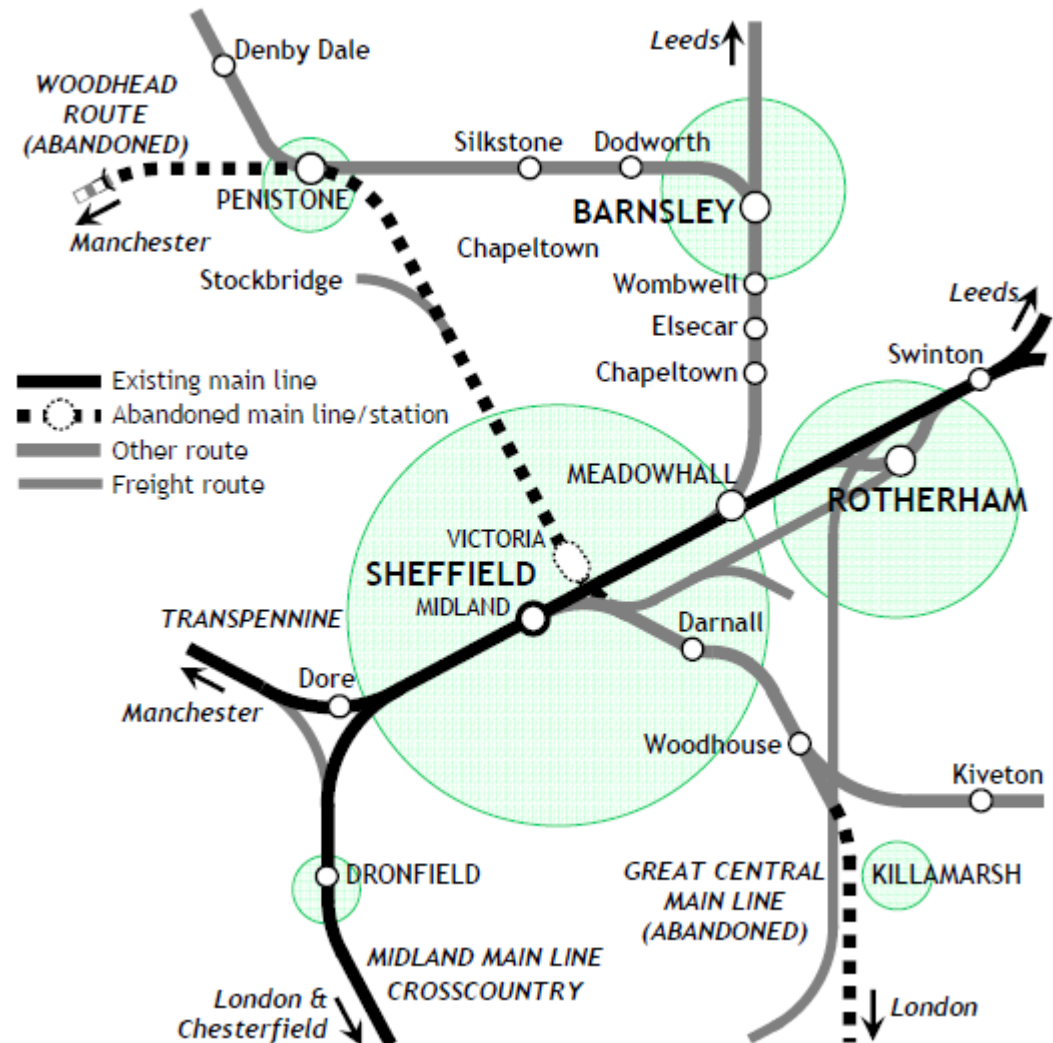
Enhancing
Local
Network??
*Existing
Service
Frequencies*



High Speed Rail in Sheffield

Enhancing
Local
Network??

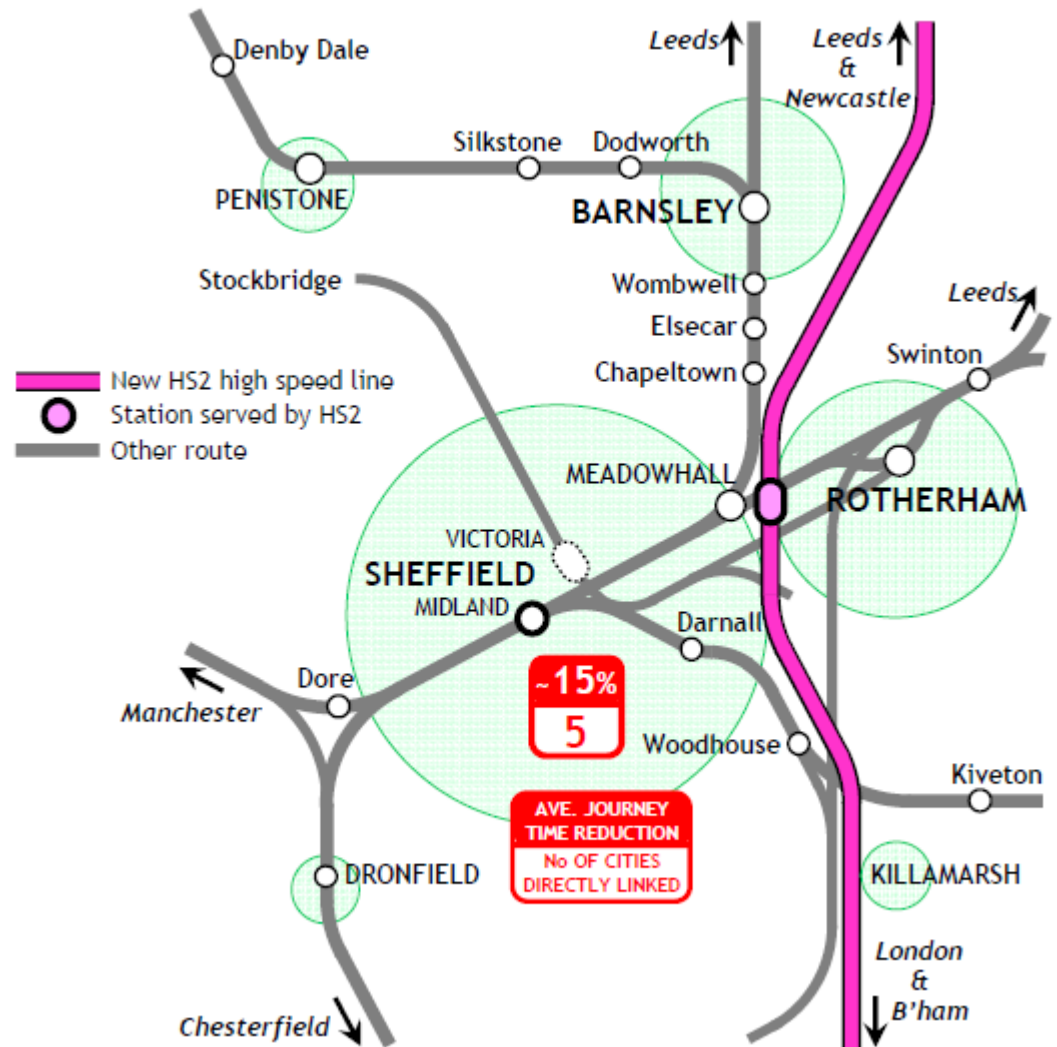
*Existing
Situation*



High Speed Rail in Sheffield

Enhancing
Local
Network??

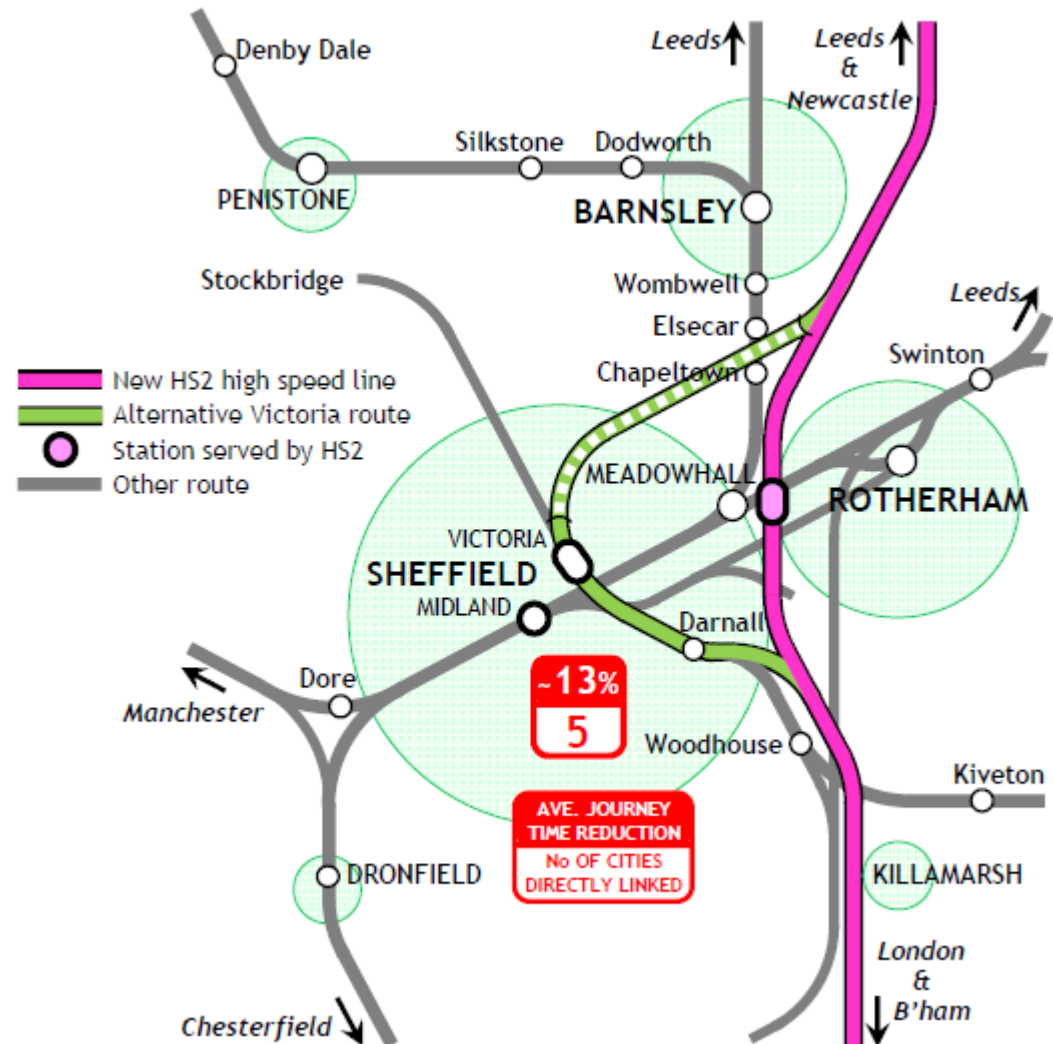
*Original
Meadowhall
Proposal
(2011)*



High Speed Rail in Sheffield

Enhancing
Local
Network??

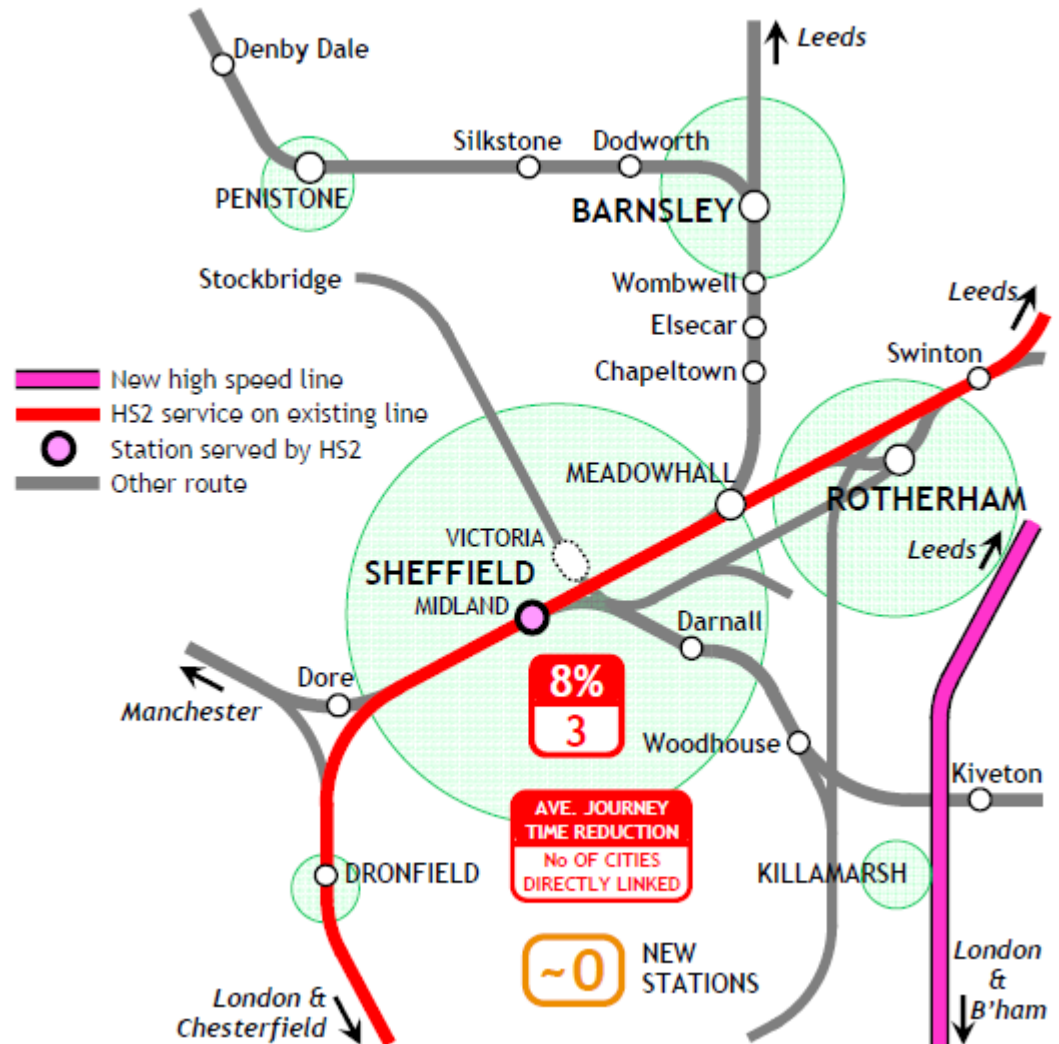
*Victoria
Alternative
(2013)*



High Speed Rail in Sheffield

Enhancing
Local
Network??

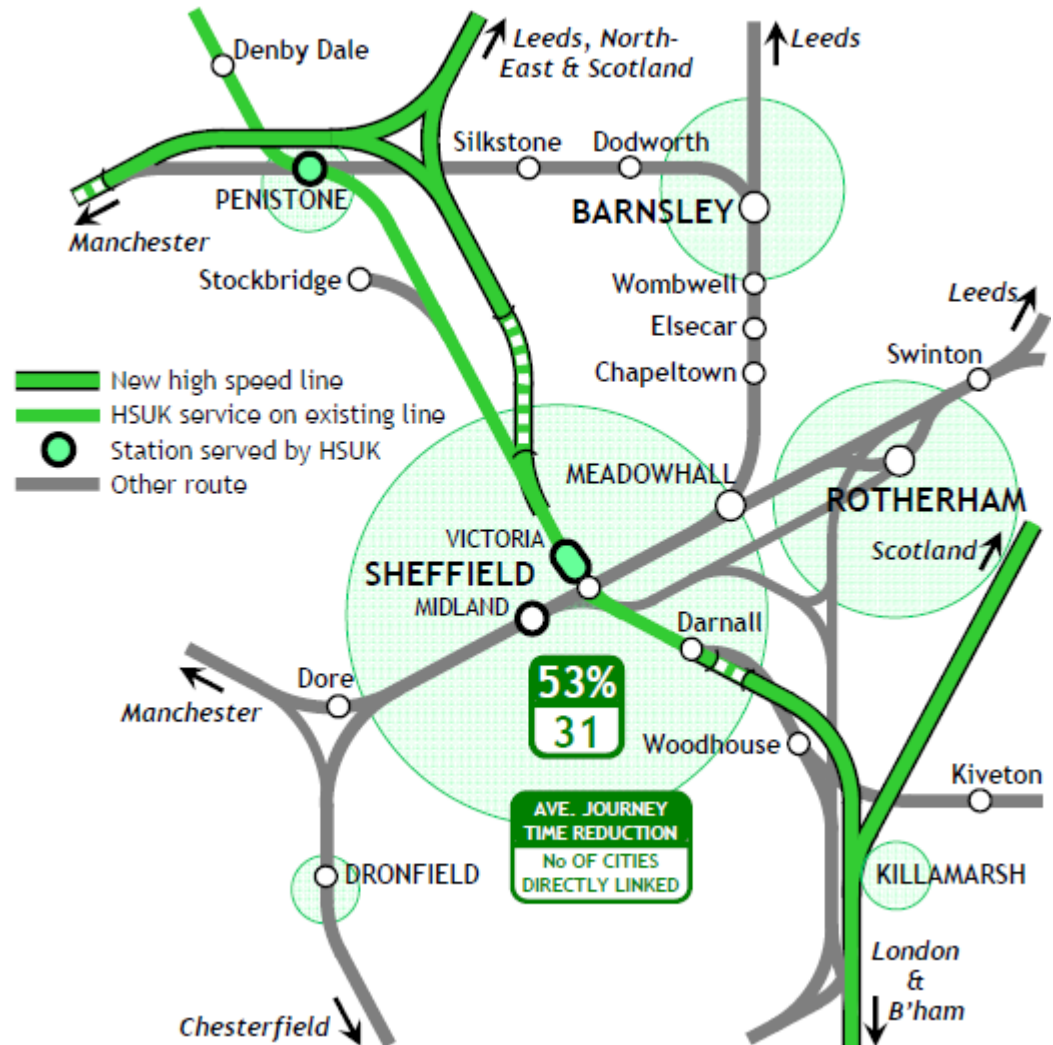
*HS2 Revised
M18 Route
(2016)*



High Speed Rail in Sheffield

Enhancing
Local
Network??

*HSUK
Principal
Intercity
Routes*



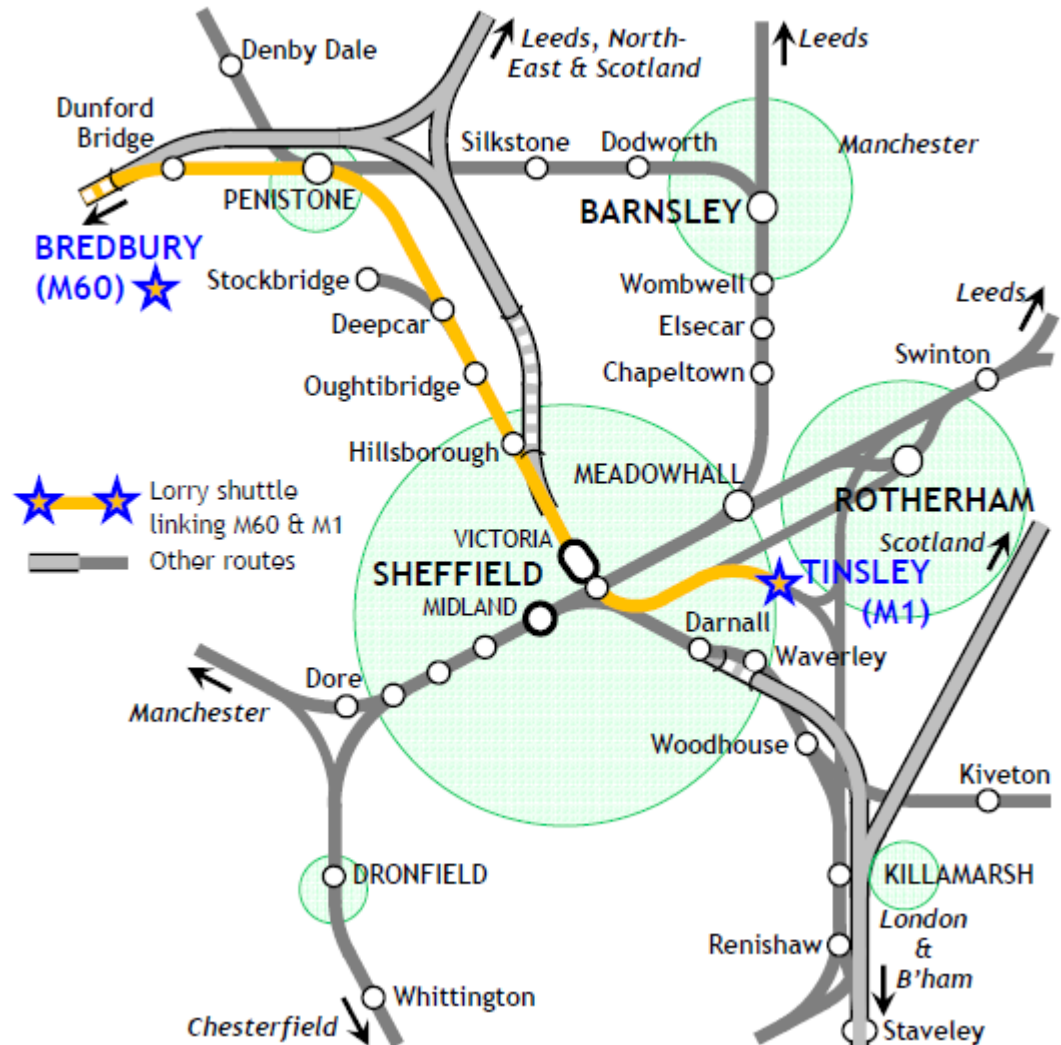
High Speed Rail in Sheffield

Enhancing
Local
Network??
*New Station
Opportunities
Offered by
HSUK*



High Speed Rail in Sheffield

Enhancing
Local
Network??
HSUK
Woodhead
Lorry Shuttle



High Speed Rail in Sheffield

HSUK Scheme for Restored Victoria Station

