High Speed UK

Connecting the Nation

Who are we?

- Colin Elliff BSc CEng MICE

  Civil Engineering Principal, HSUK

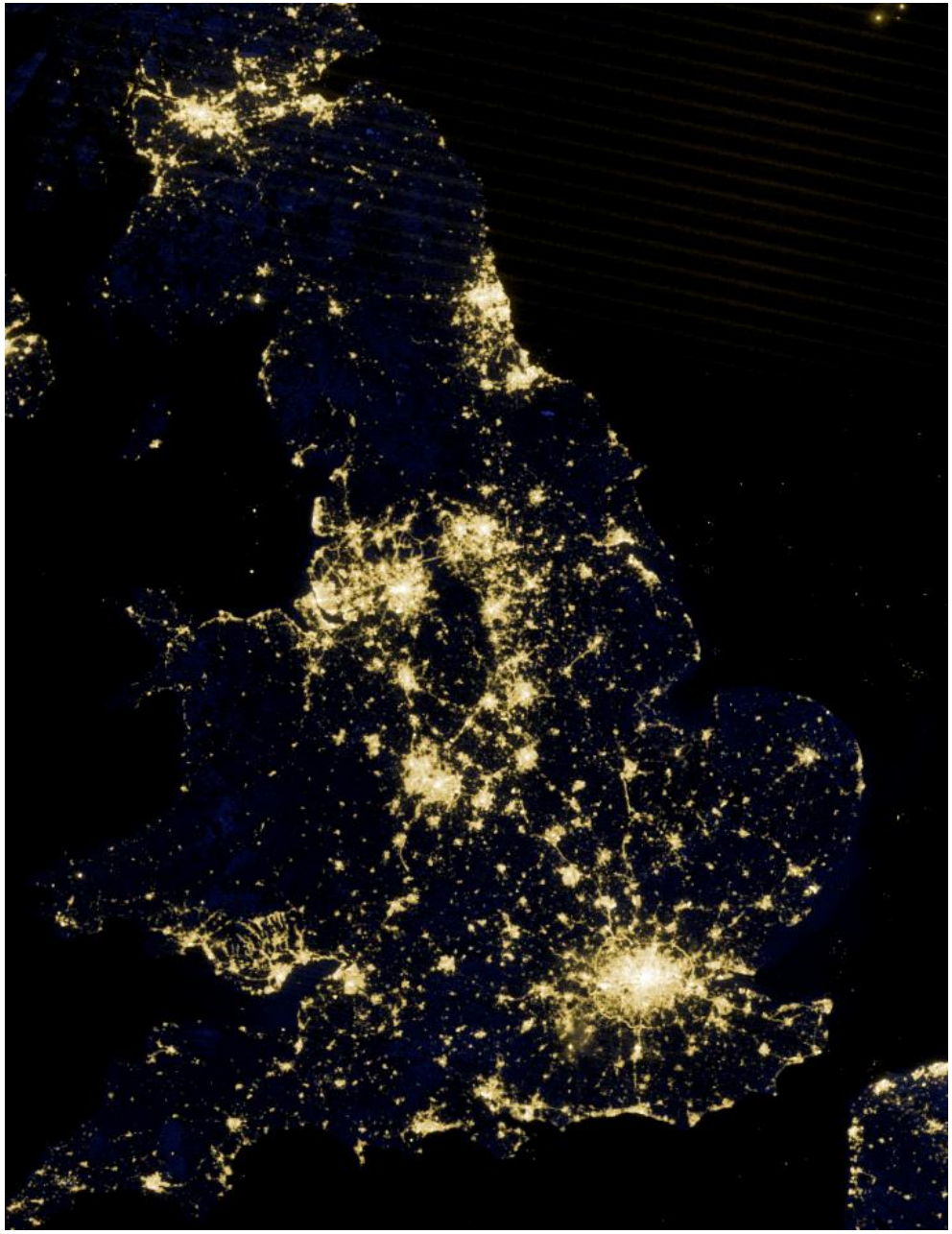
✵ ✵ ✵ ✵

- Quentin Macdonald BSc(Eng) CEng MIET FIRSE

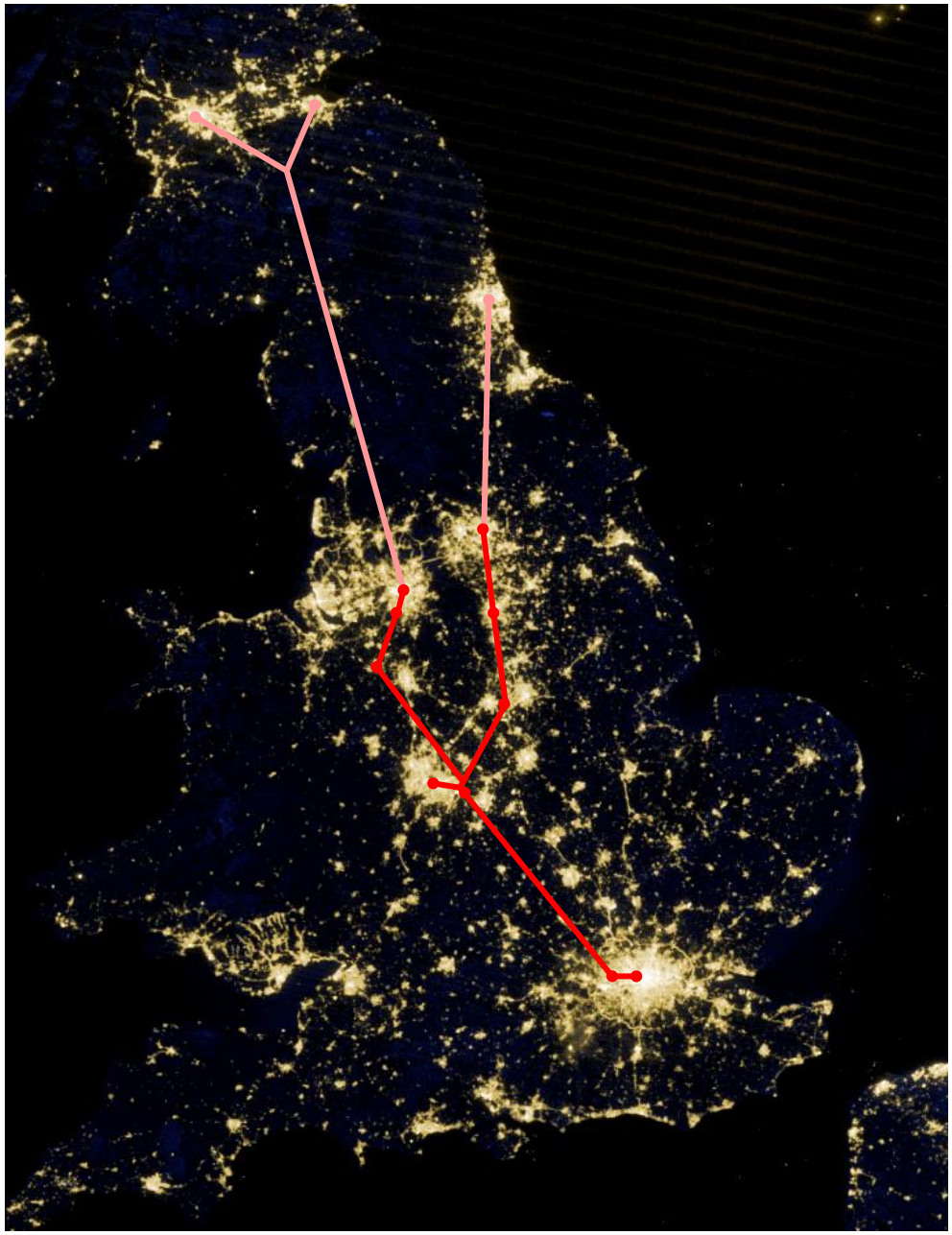
  Systems Engineering Principal, HSUK

What is HSUK?

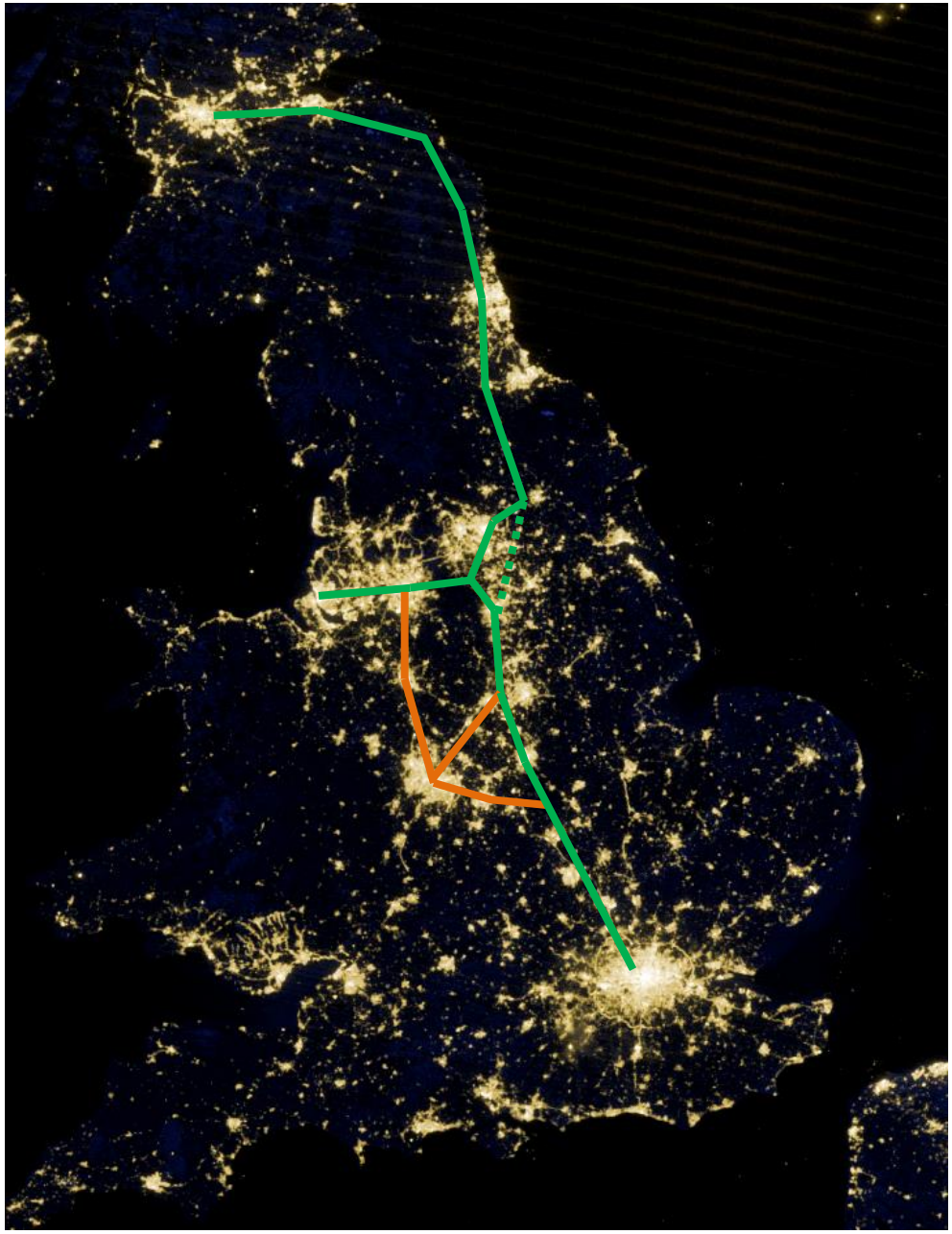
- A complete alternative **design** to HS2
- Designed by Colin because of the obvious deficiencies of the HS2 design as seen through the eyes of professional railway engineers
- Work began 8 years ago and the essence of the design was complete 4 years ago
- Since then he has concentrated on analysing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

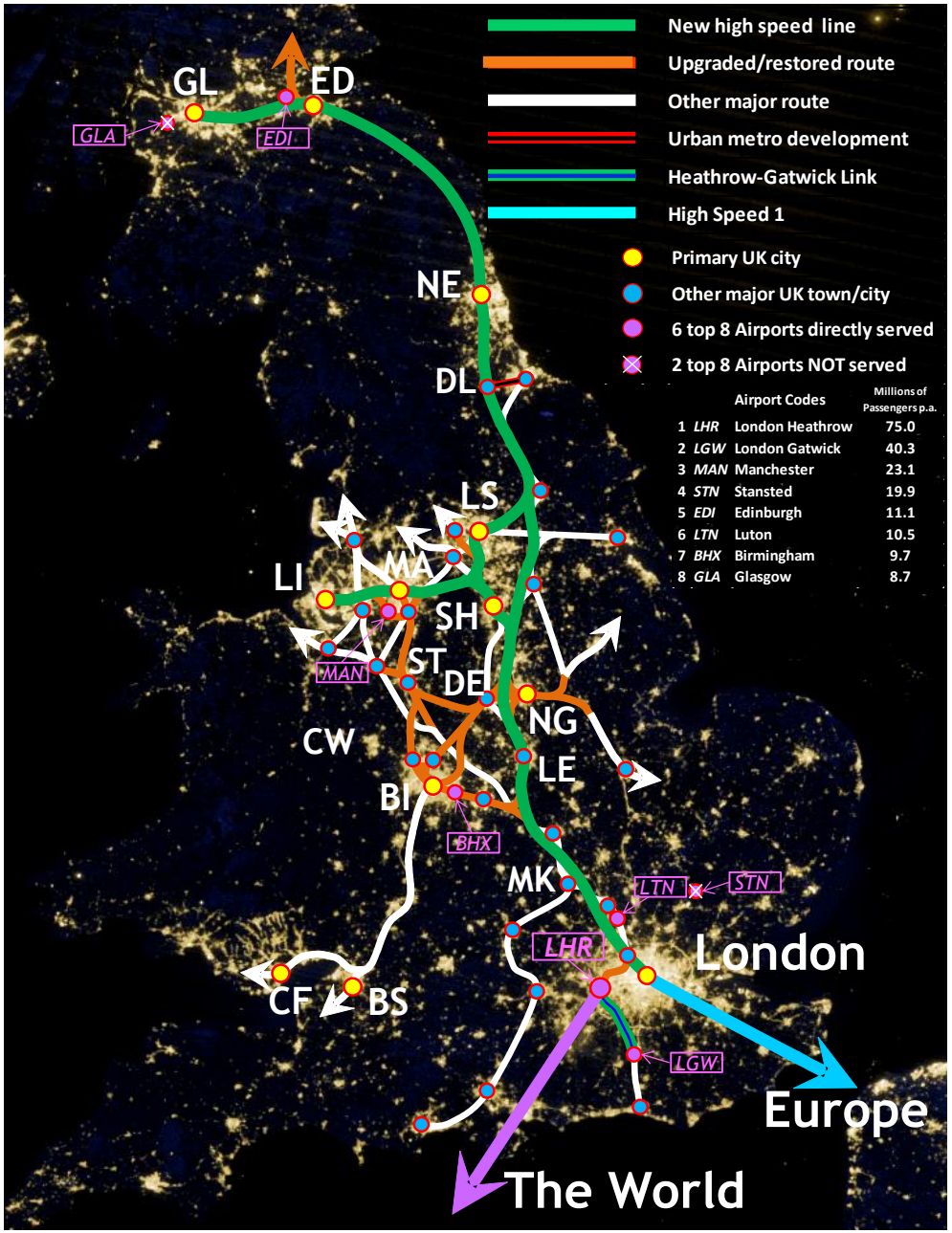


The HS2 response



The HSUK response

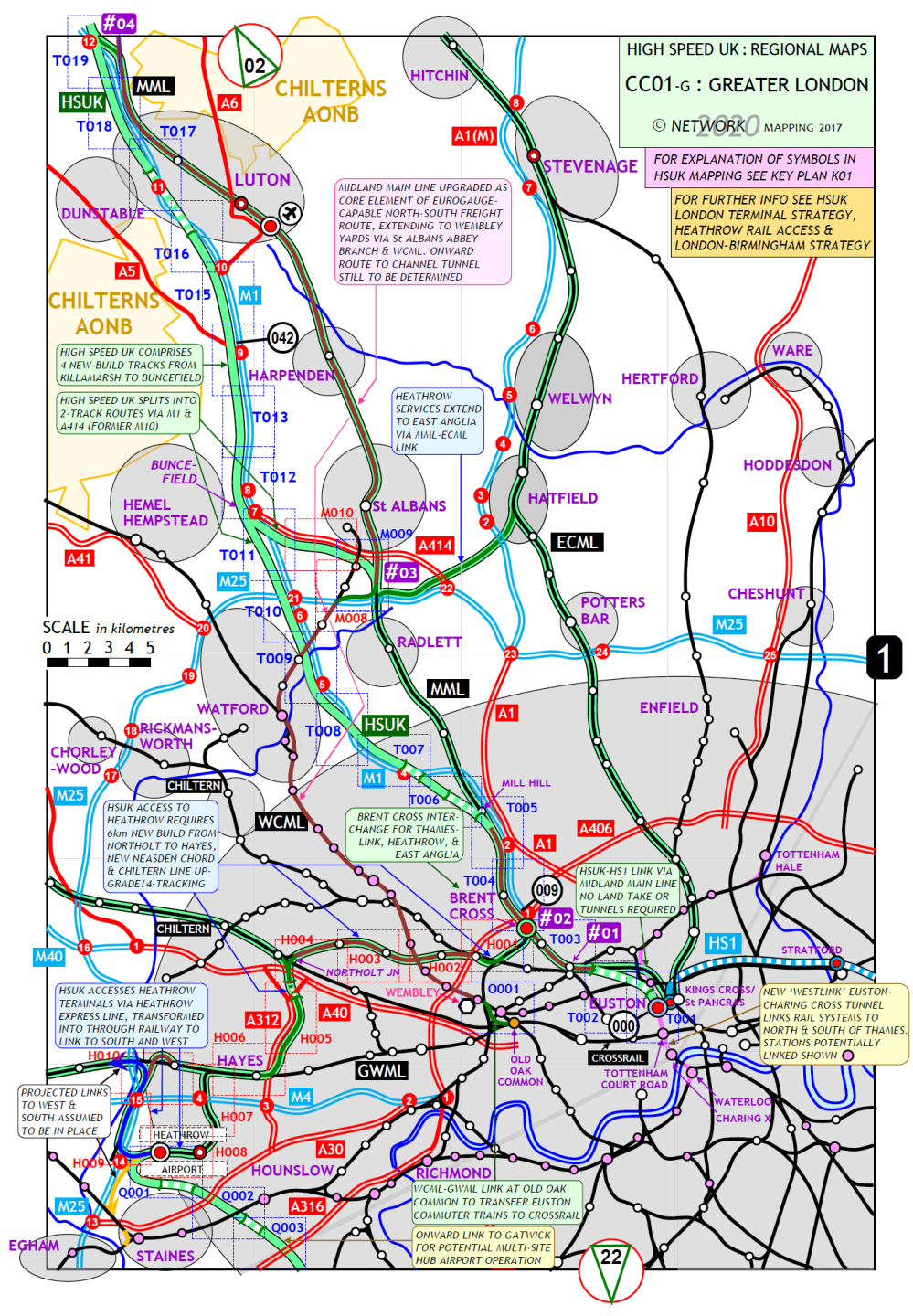
HSUK – High Speed UK – Connecting the Nation



Full Scope of HSUK

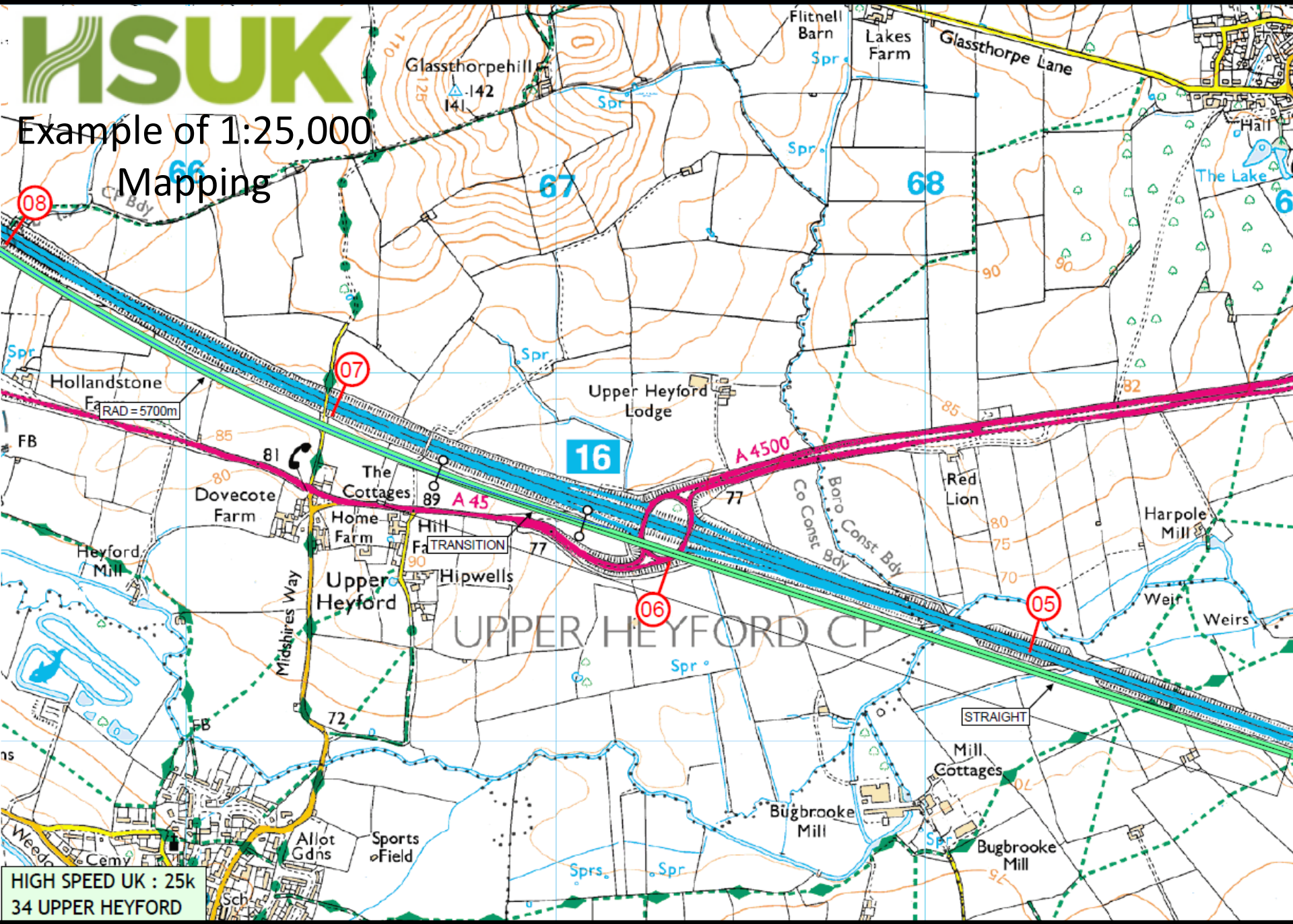
The HSUK Design

- 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


HSUK
Example of 1:25,000 Mapping
08
07
06
05
RAD = 5700m
TRANSITION
STRAIGHT
16
A 45
A 4500
UPPER HEYFORD CP
Glassthorpehill
Flitnell Barn
Lakes Farm
Glassthorpe Lane
Hollandstone
Upper Heyford Lodge
Dovecote Farm
The Cottages
Home Farm
Hill Fa
Hipwells
Upper Heyford
Heyford Mill
Midshires Way
Red Lion
Harpole Mill
Weir
Weirs
Mill Cottages
Bugbrooke Mill
Allot Gdns
Sports Field
Cemy
Sch
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)?

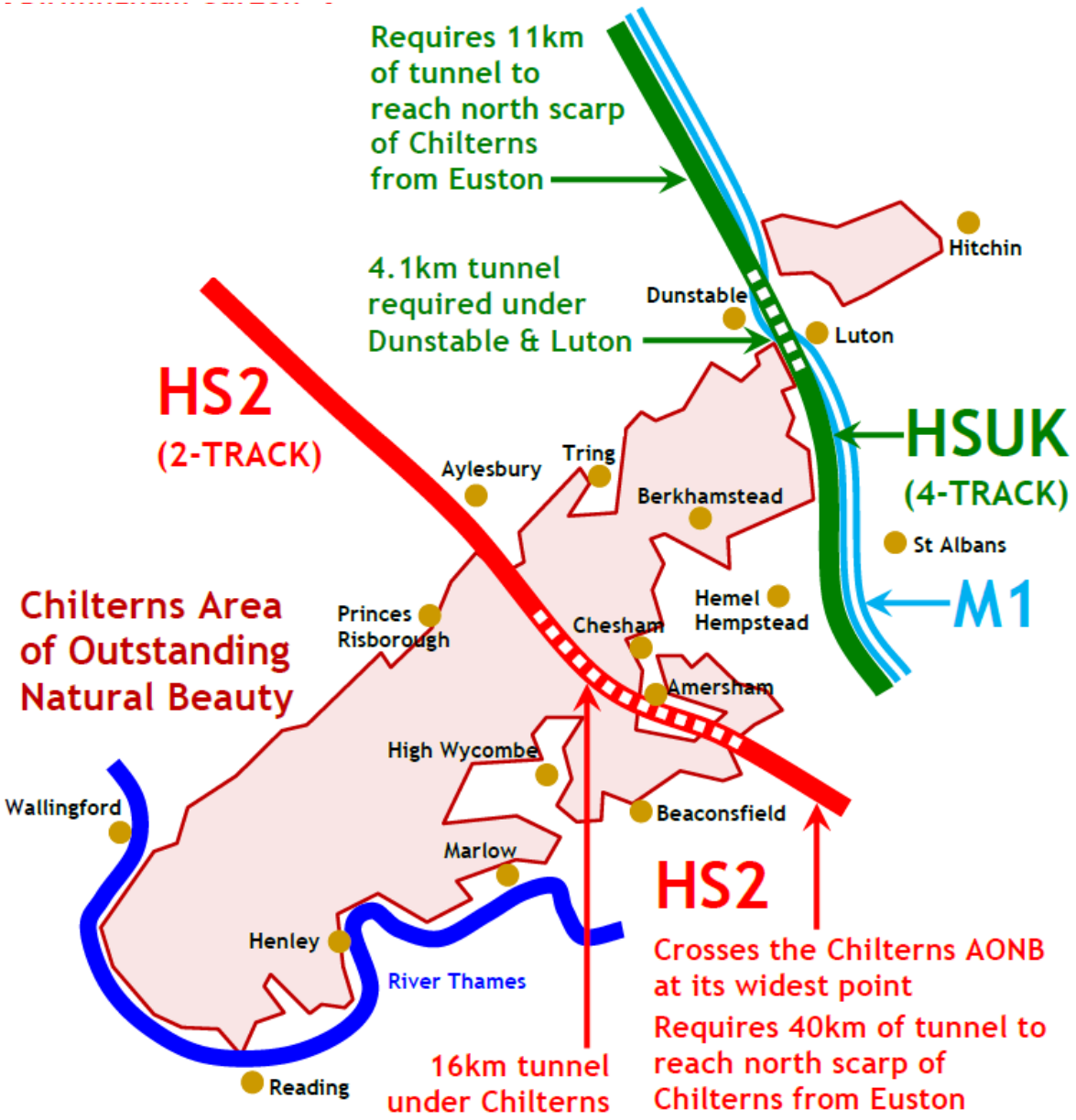
- **NB only applies within the HS2 Zone of Influence**
  London, W. Midlands, E. Midlands, Merseyside, G. Manchester, S. Yorkshire, W. Yorkshire, Humberside, Teesside, Tyneside, Central Belt of Scotland
- Be accessible to the greatest possible proportion of the UK population X
- Deliver hugely enhanced 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 CO_2 required by the 2008 Climate change act X

HSUK – High Speed UK – Connecting the Nation

HS2 Trashes Chilterns AONB



The Chilterns AONB Disaster

- The M1 route has been rejected by DfT and HS2 Ltd because it is “Too Indirect” to Birmingham
- The HSUK route goes via the M1 from London to B’ham and is 4.3km longer than the HS2 route
- At 300km/hr that extra 4.3km adds just 52 seconds to the London to Birmingham time
- To save that 52 seconds costs an extra £7 Billion and trashes a swathe of the Chilterns AONB
- I believe this is a National Disgrace which all political parties should ‘call-in’ for review

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*

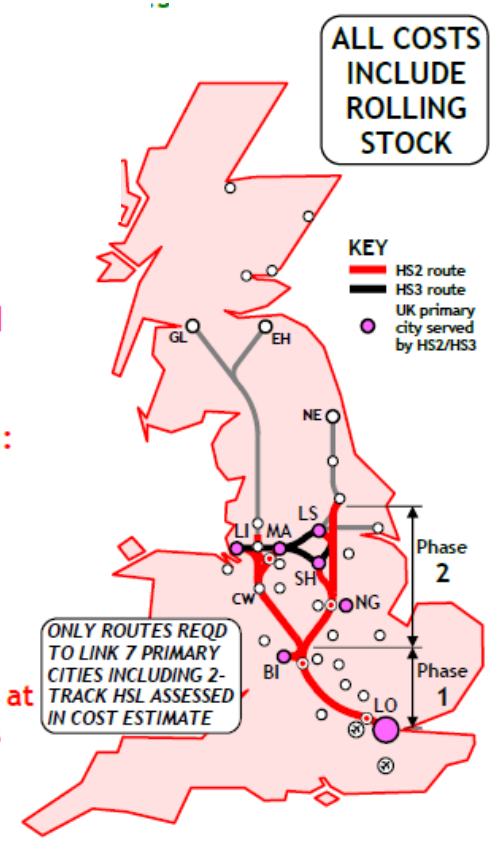
54km upgraded/restored

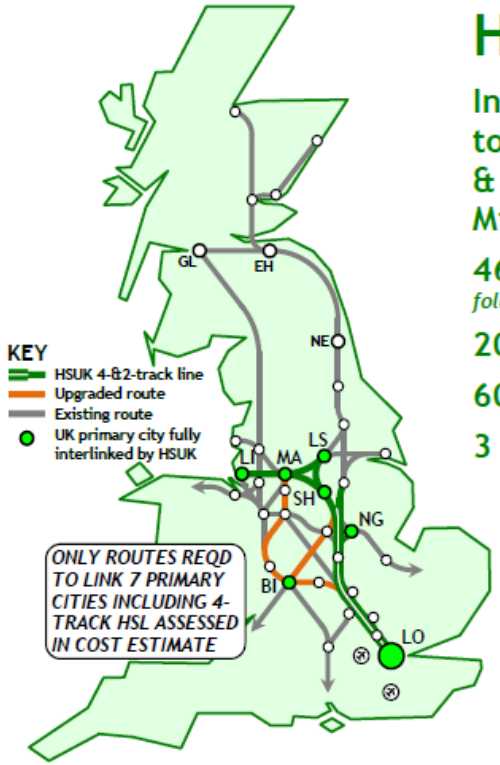
134km tunnel

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

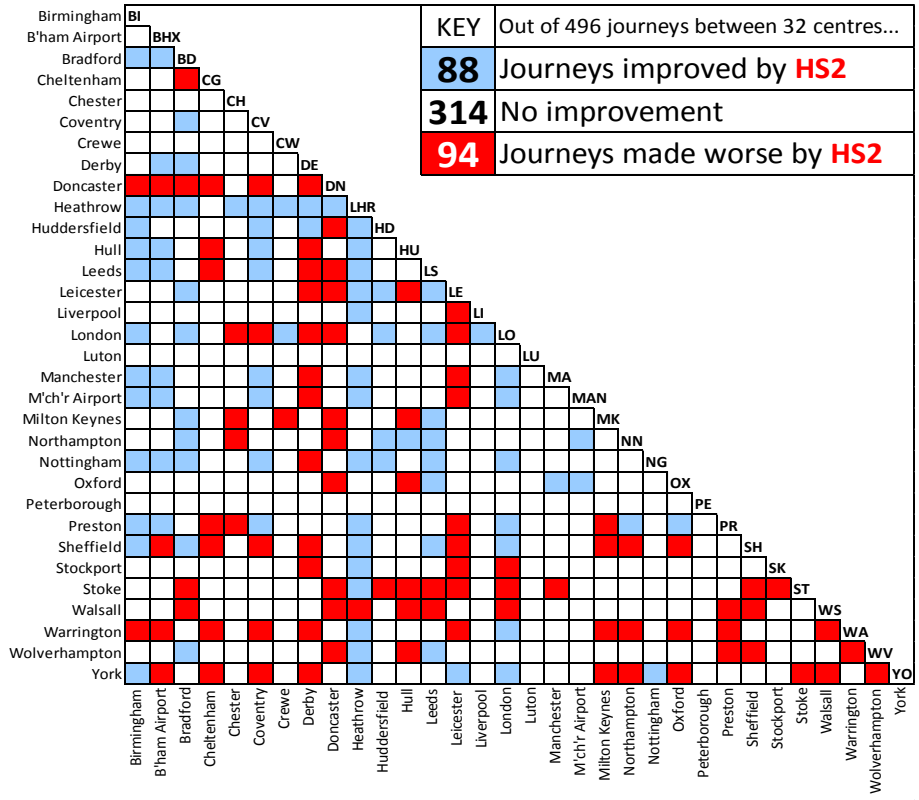
HSUK – High Speed UK – Connecting the Nation

“HS2 & HSUK Journeys Compared”

HIGH SPEED 2

NETWORK PERFORMANCE :

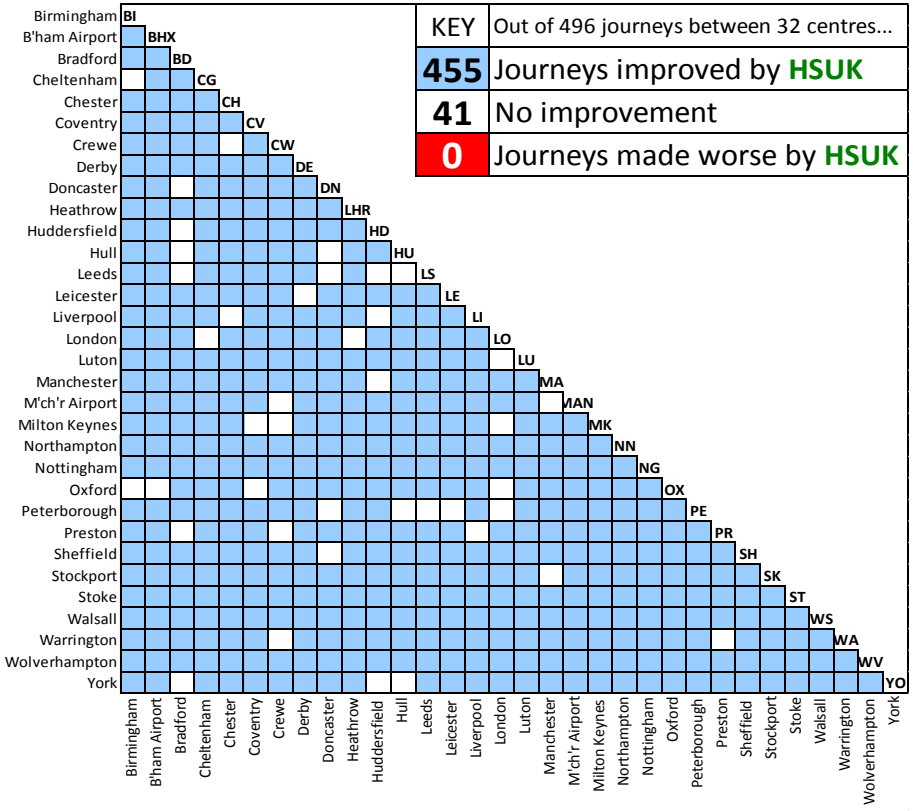
JOURNEYS IMPROVED/MADE WORSE



HIGH SPEED UK

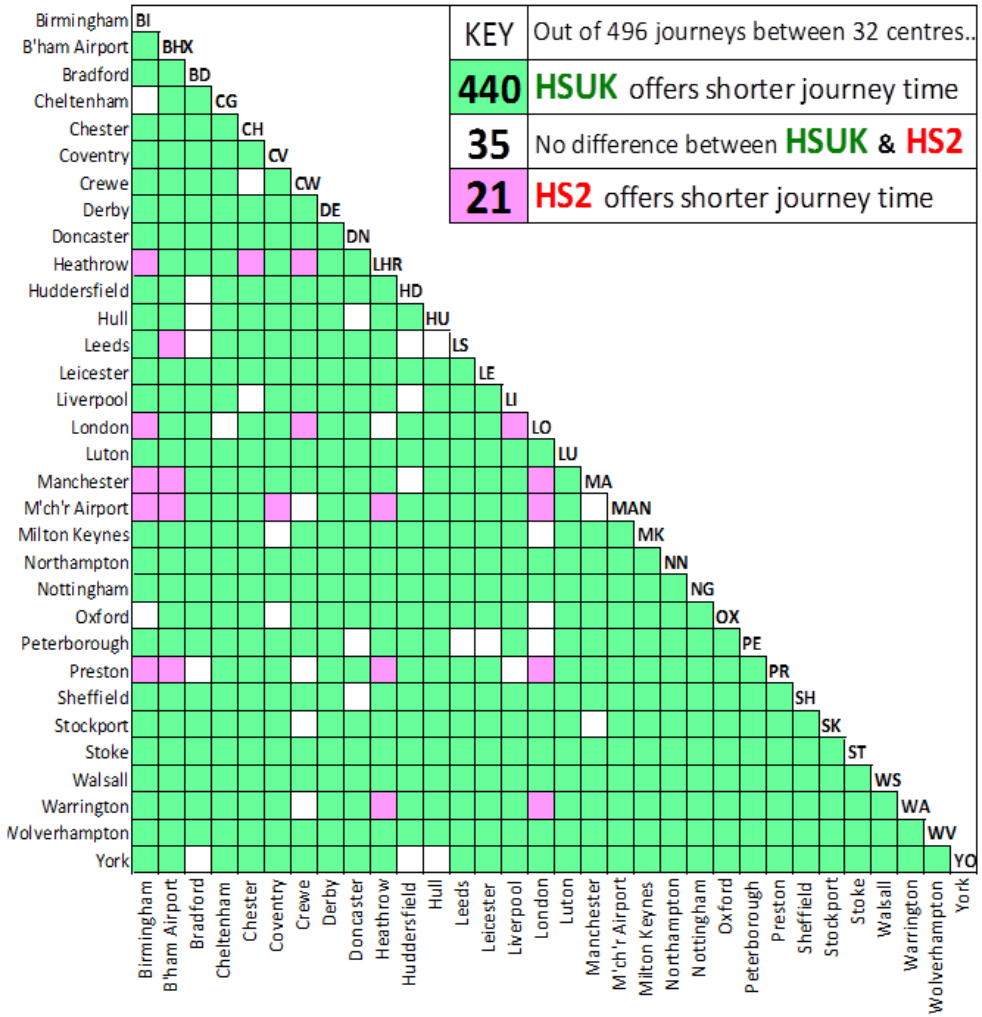
NETWORK PERFORMANCE :

JOURNEYS IMPROVED/MADE WORSE



HIGH SPEED UK & HS2

COMPARATIVE PERFORMANCE IN ACHIEVING JOURNEY TIME REDUCTIONS ACROSS NATIONAL NETWORK



HSUK – High Speed UK
Connecting the Nation

HS2 vs HSUK Fastest Journey Times

HSUK – High Speed UK
Connecting the Nation

HS2 vs HSUK Journey Times Compared

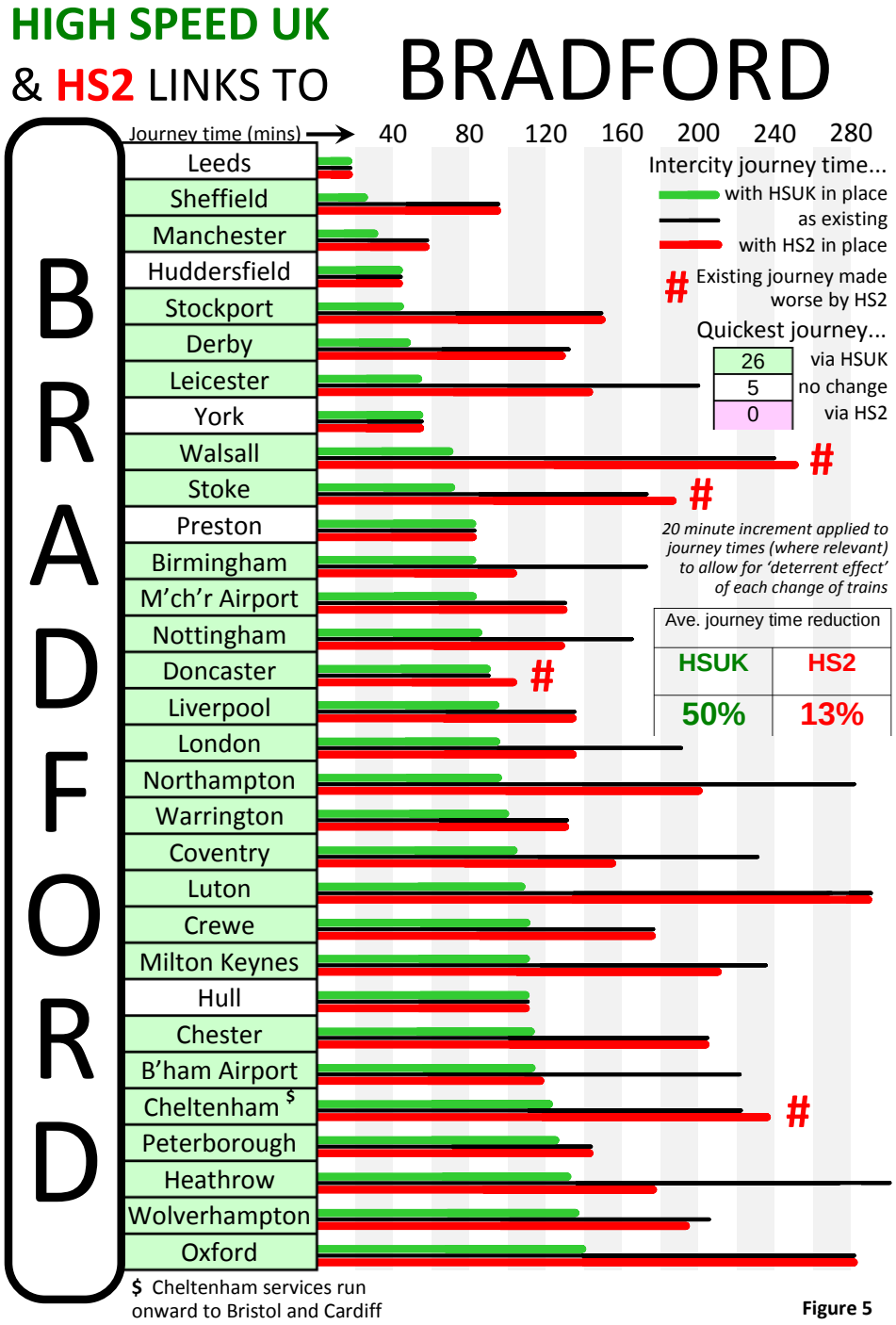


Figure 5

Principal 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

Principal 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
- Now let's have a look at the Sheffield Region and the Northern Powerhouse

High Speed Rail in Sheffield – Key Requirements

Considerable debate about where the HS2 station should be – Meadowhall? Victoria? Existing Midland?

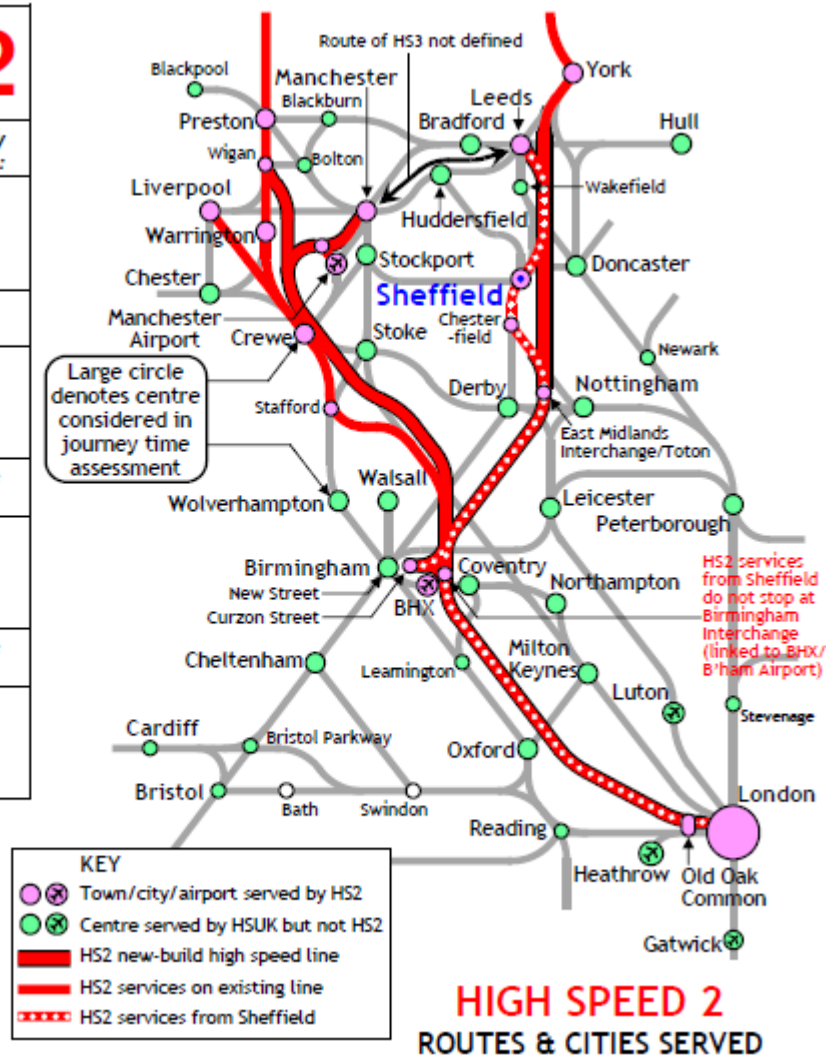
What Sheffield <u>needs</u> is never discussed

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

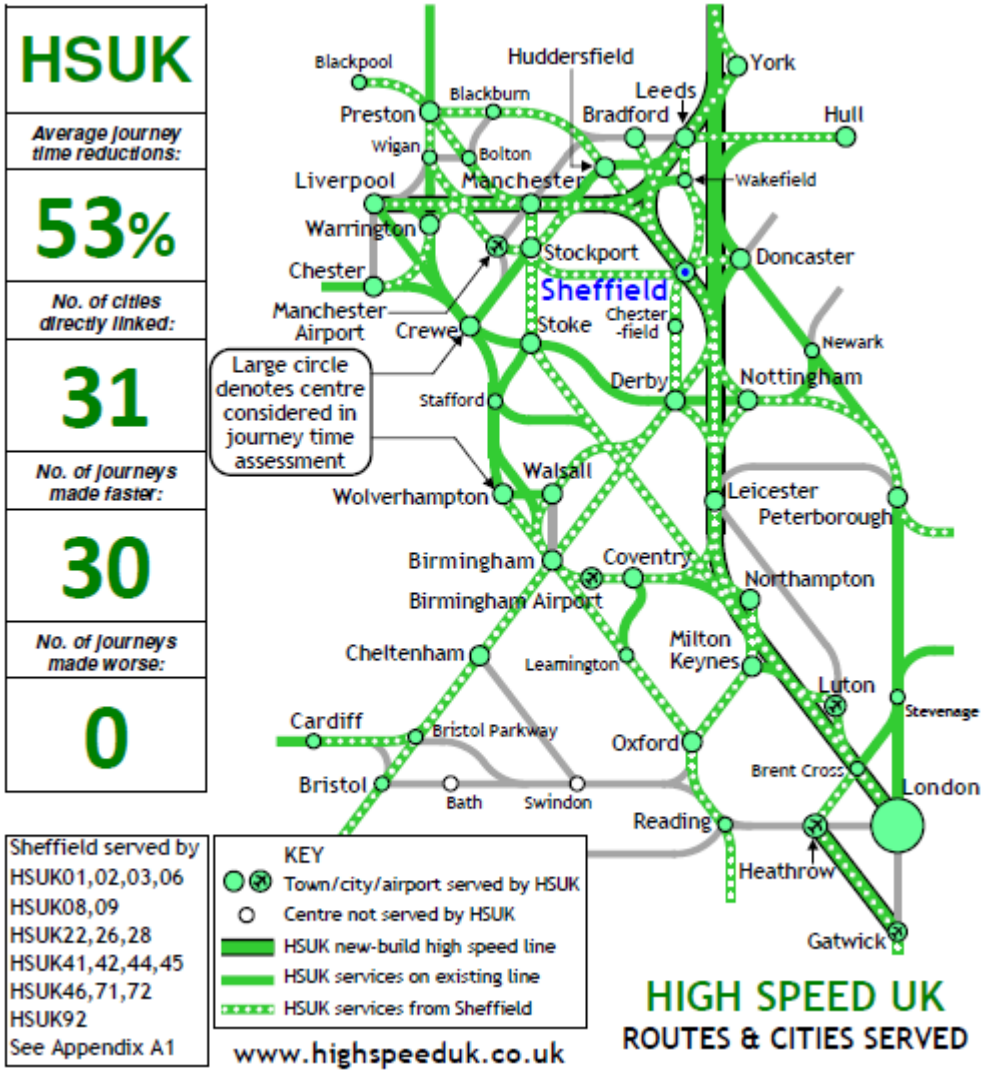
Direct links to all major UK cities via HS2??

HS2
Average journey time reductions:
8%
No. of cities directly linked:
3
No. of journeys made faster:
5
No. of journeys made worse:
11



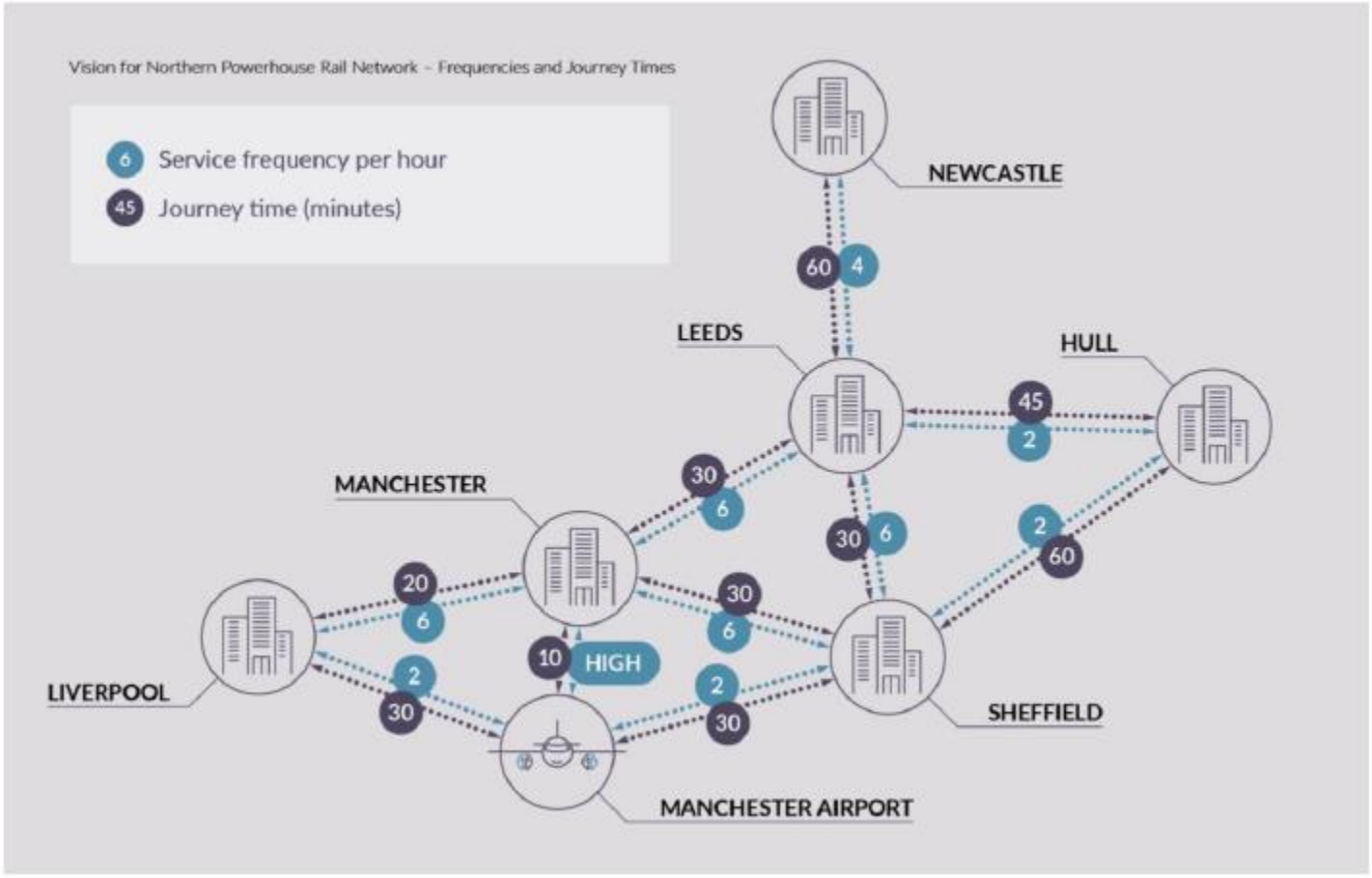
High Speed Rail in Sheffield

Direct links to all major UK cities via HSUK??



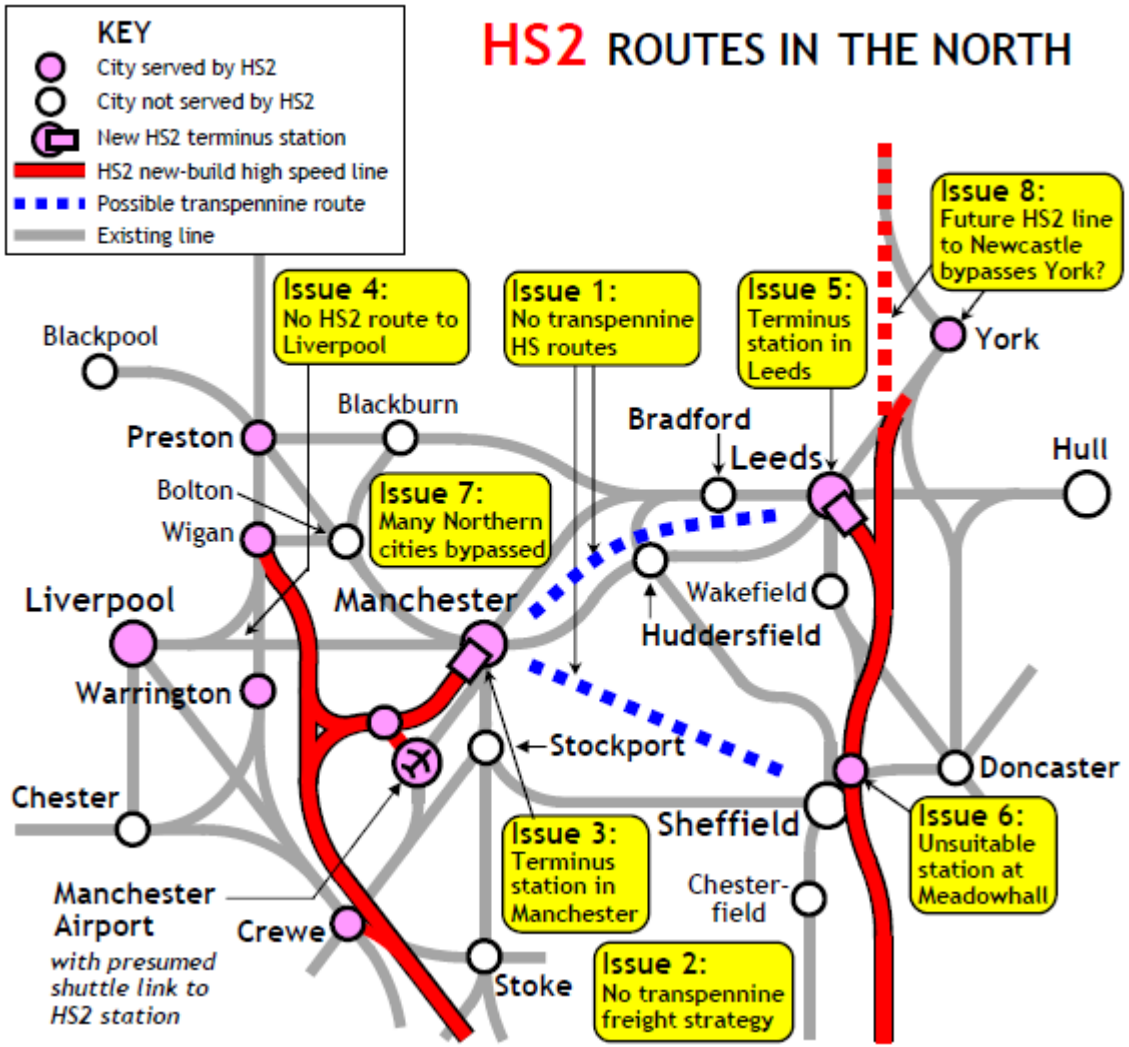
High Speed Rail in Sheffield

Northern Powerhouse/HS3 Specification



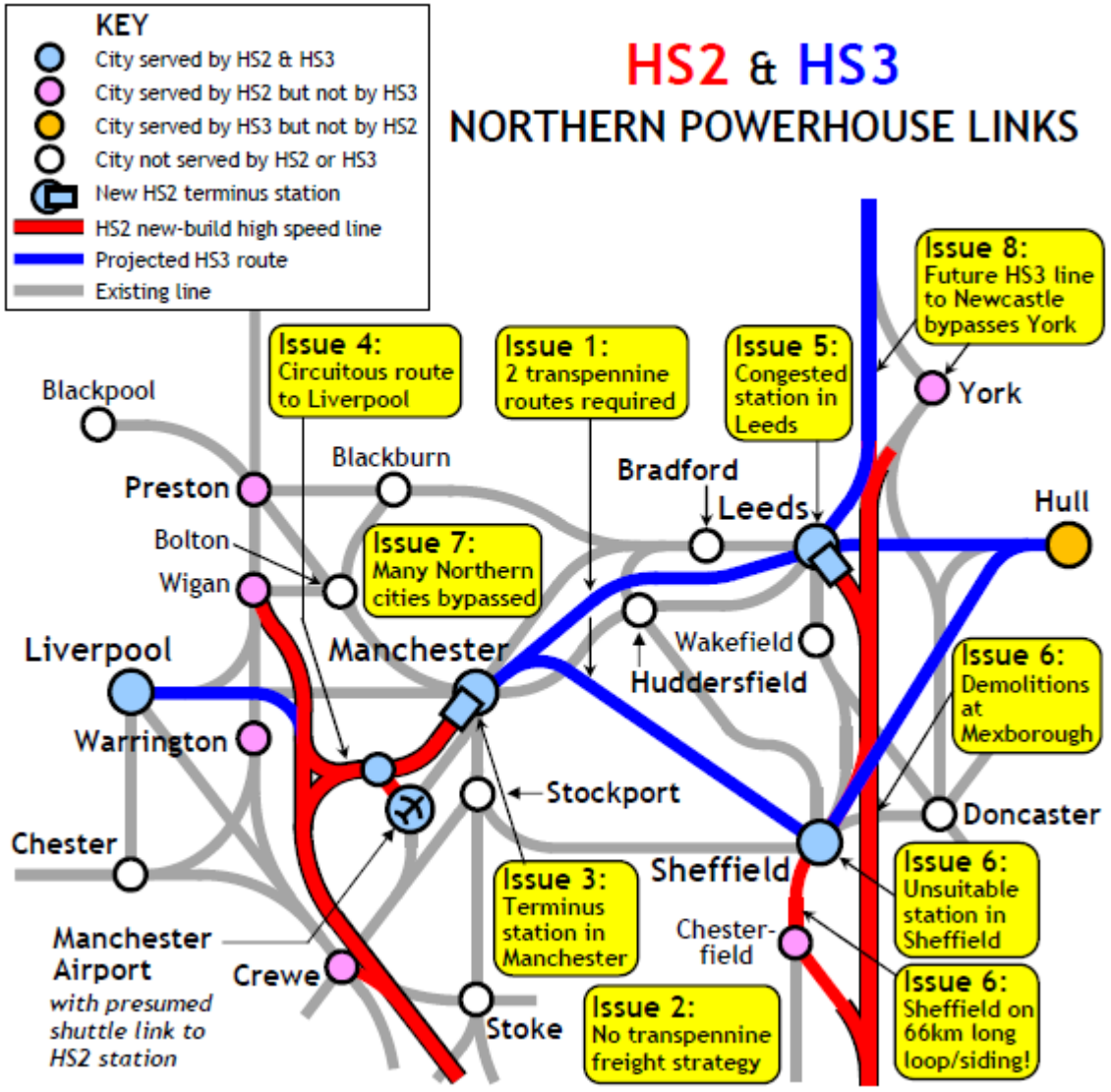
High Speed Rail in Sheffield

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



High Speed Rail in Sheffield

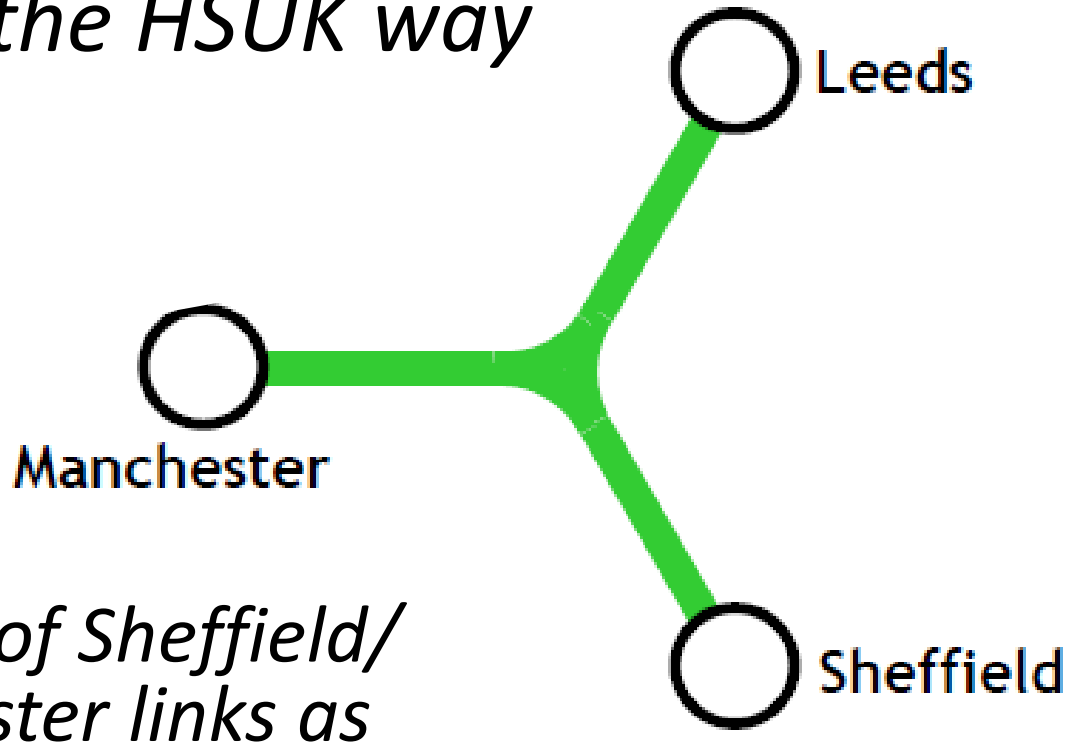
Direct links to all cities of the Northern Powerhouse via HS3??



High Speed Rail in Sheffield

The Northern Powerhouse
– *Succeeding the HSUK way*

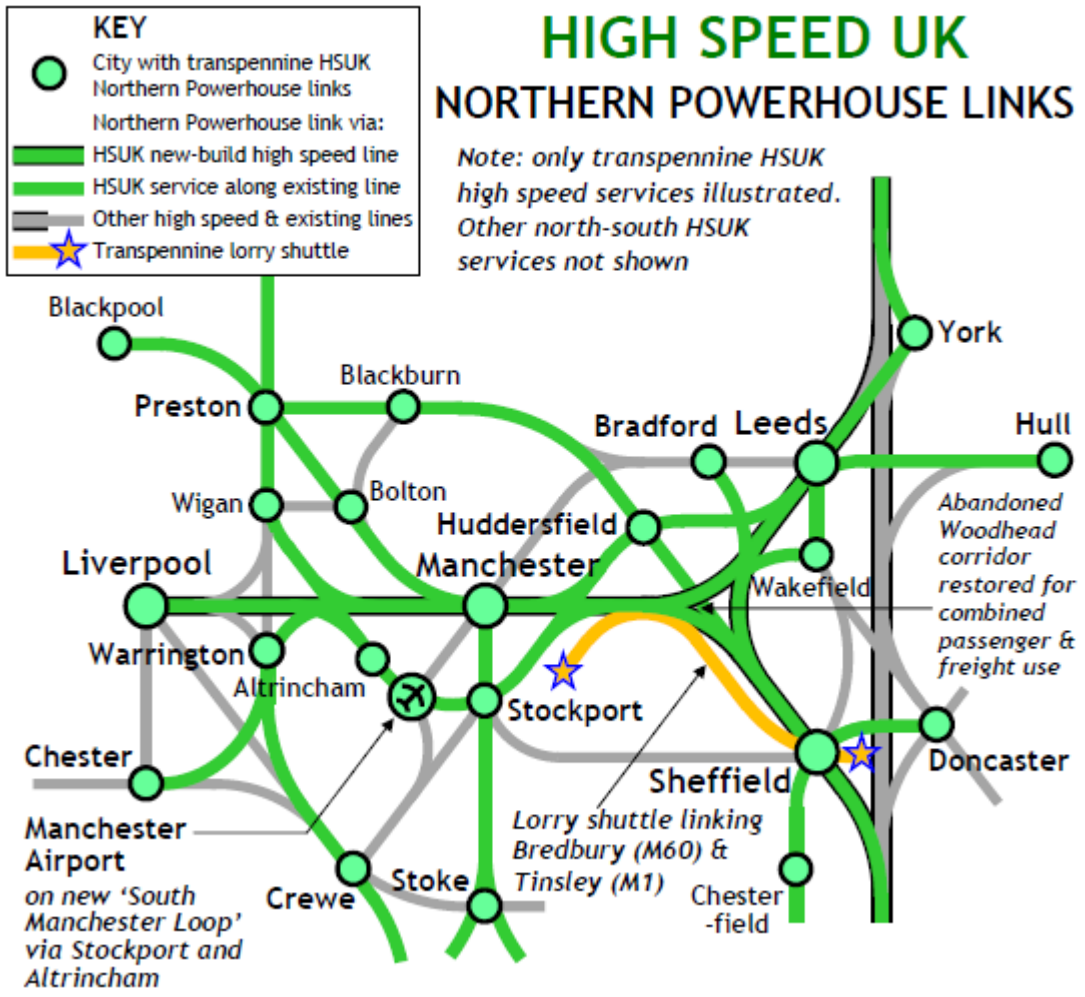
Sheffield Manchester & Leeds



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

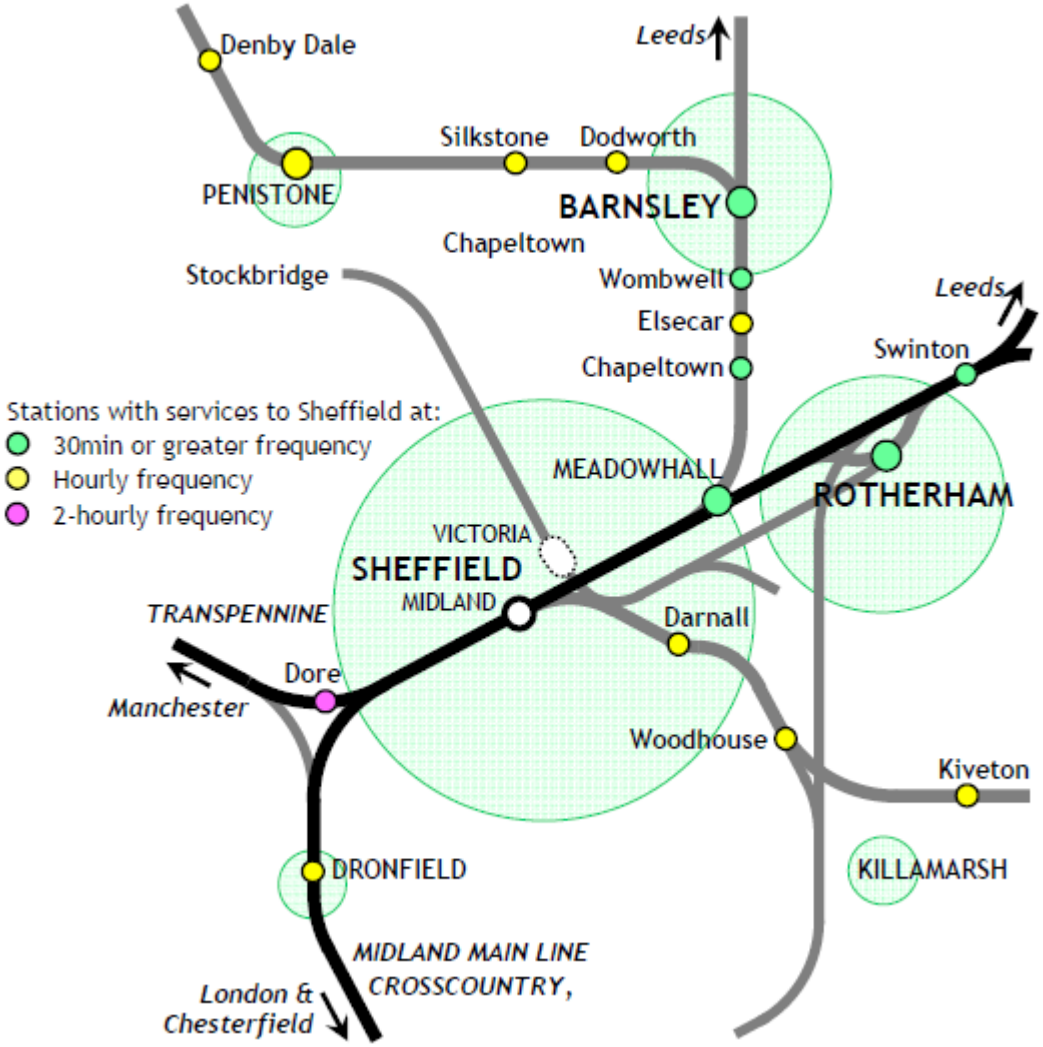
The Northern Powerhouse – *Comparing Performance of HS2/HS3 and HSUK*

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??

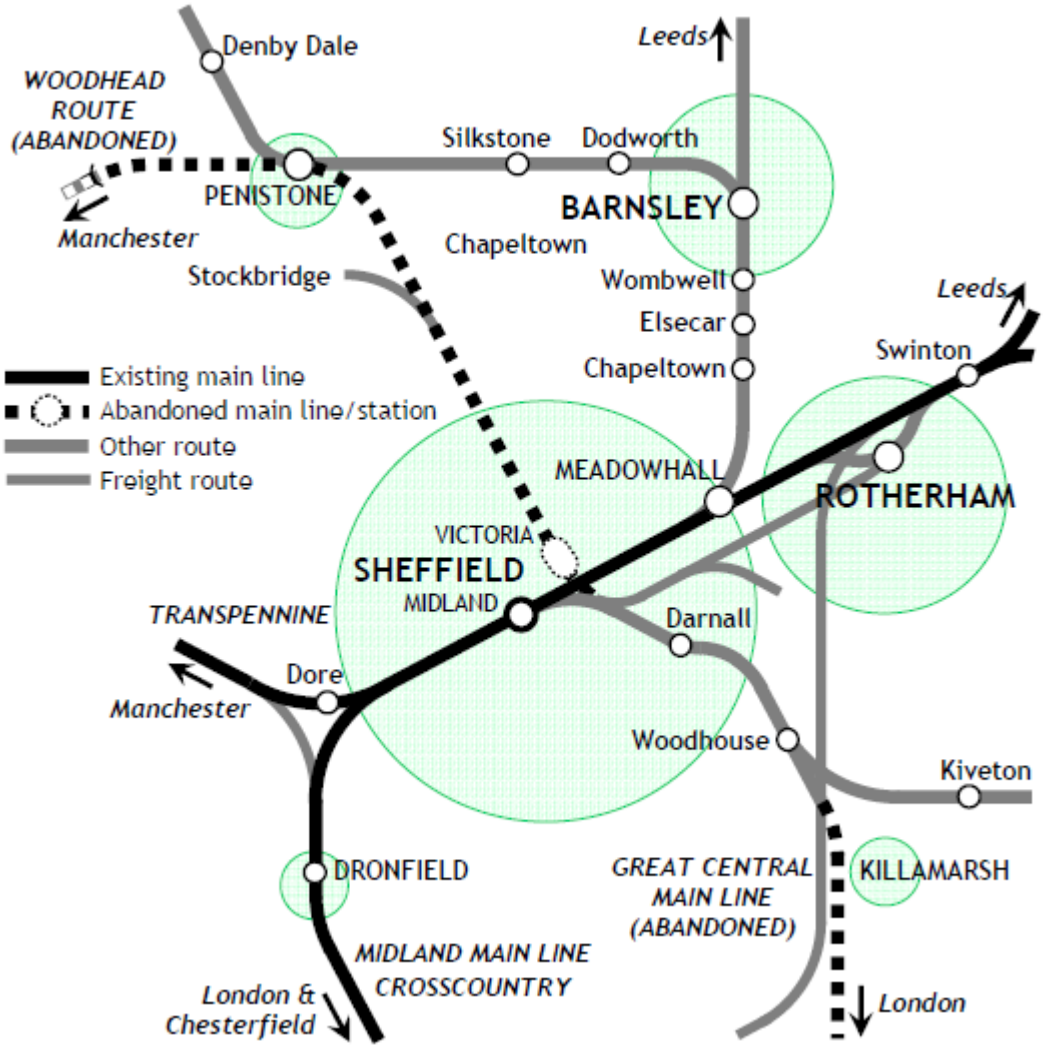
Existing Service Frequencies



High Speed Rail in Sheffield

Enhancing Local Network??

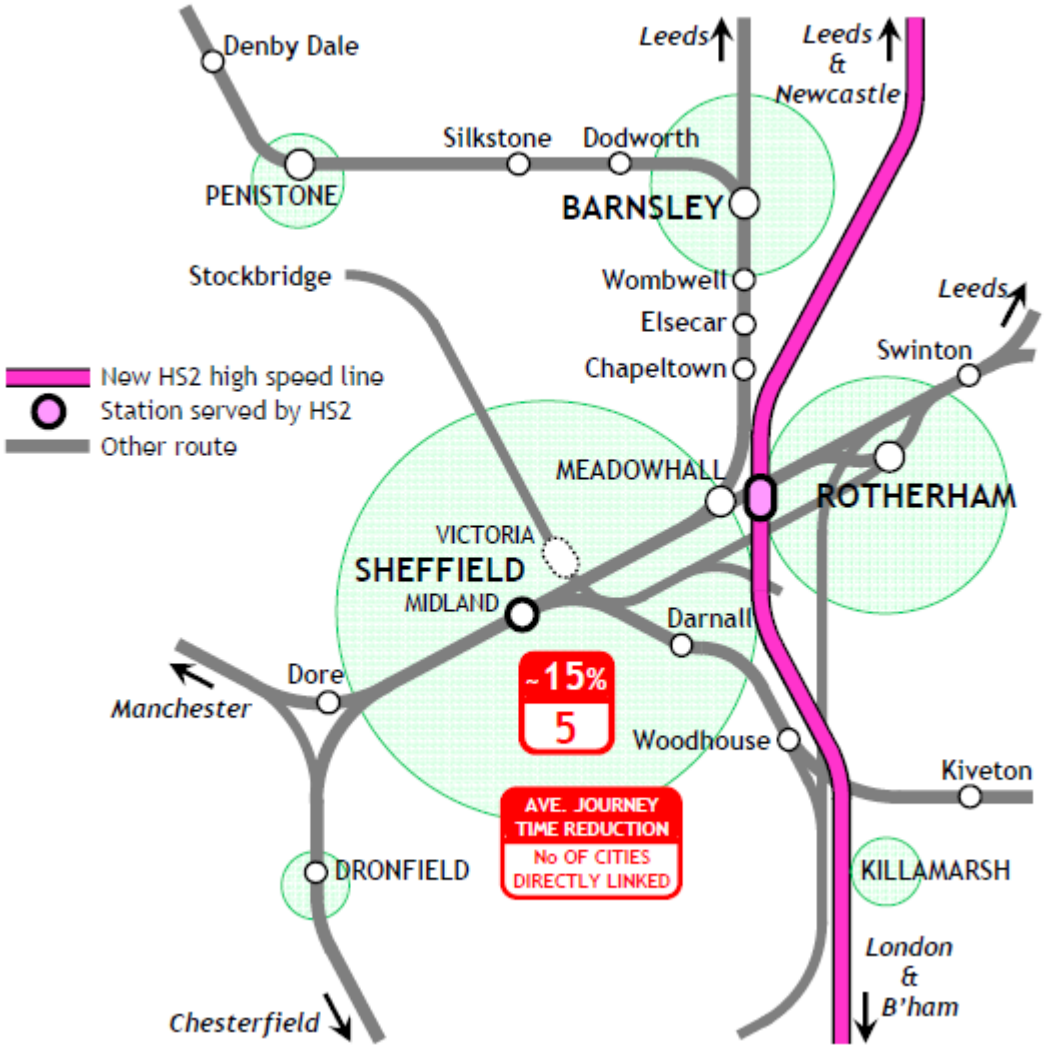
Existing Situation



High Speed Rail in Sheffield

Enhancing Local Network??

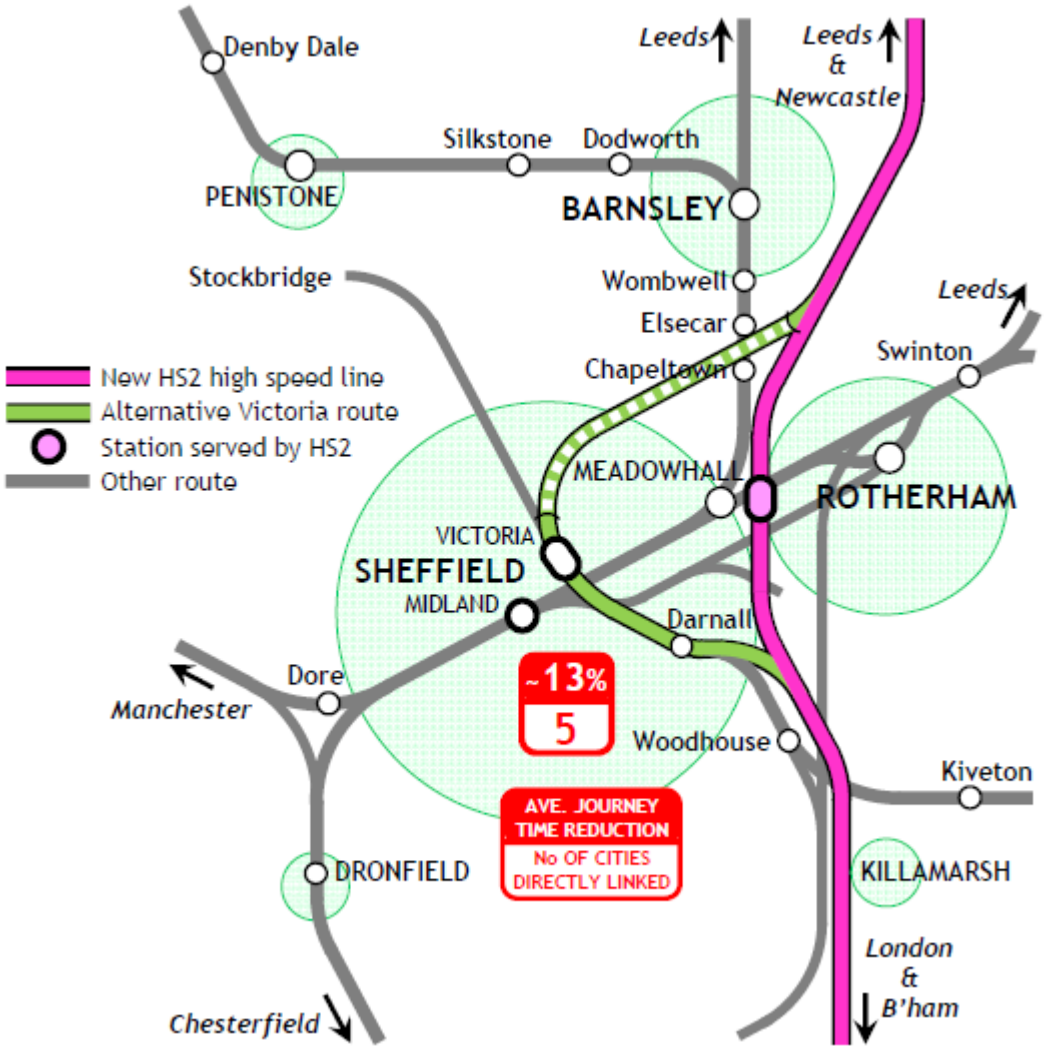
Original Meadowhall Proposal (2011)



High Speed Rail in Sheffield

Enhancing Local Network??

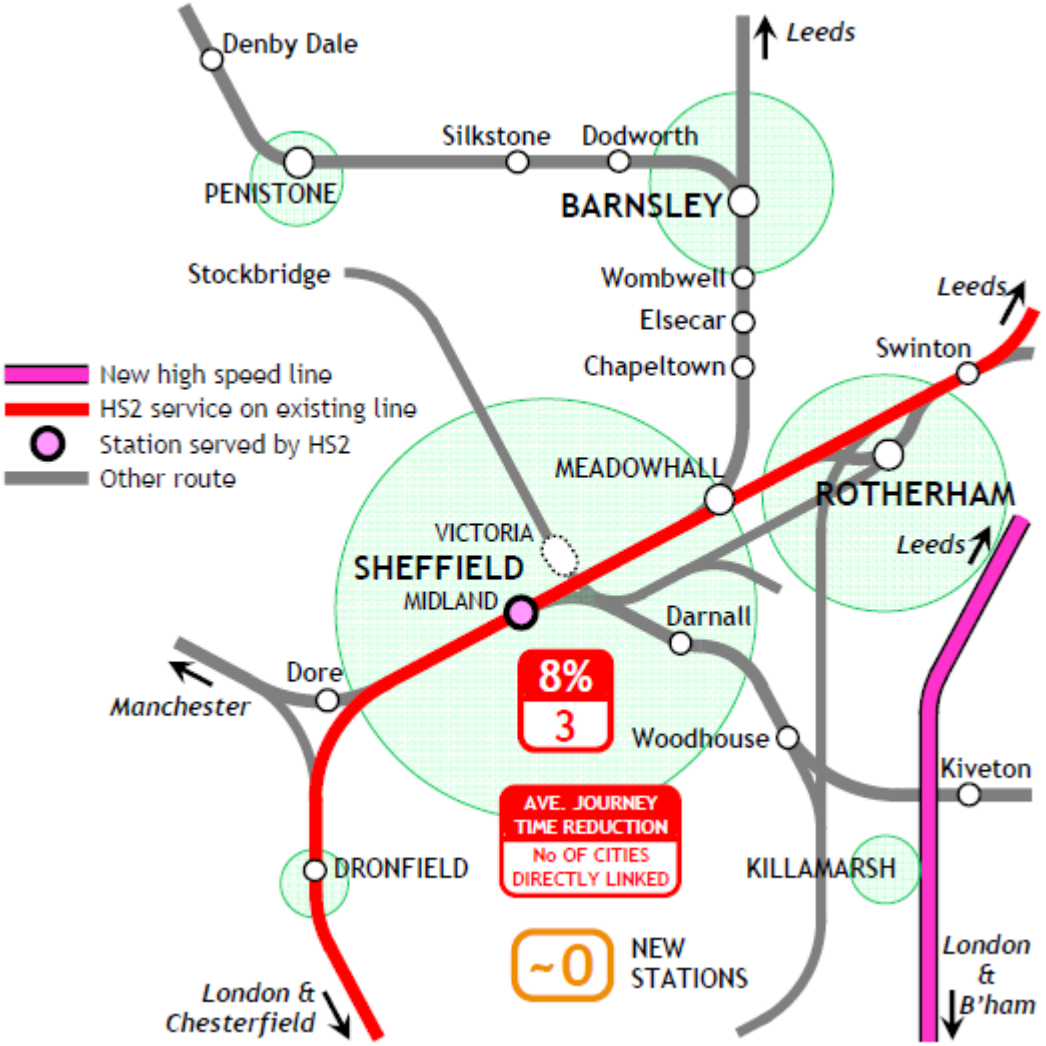
Victoria Alternative (2013)



High Speed Rail in Sheffield

Enhancing Local Network??

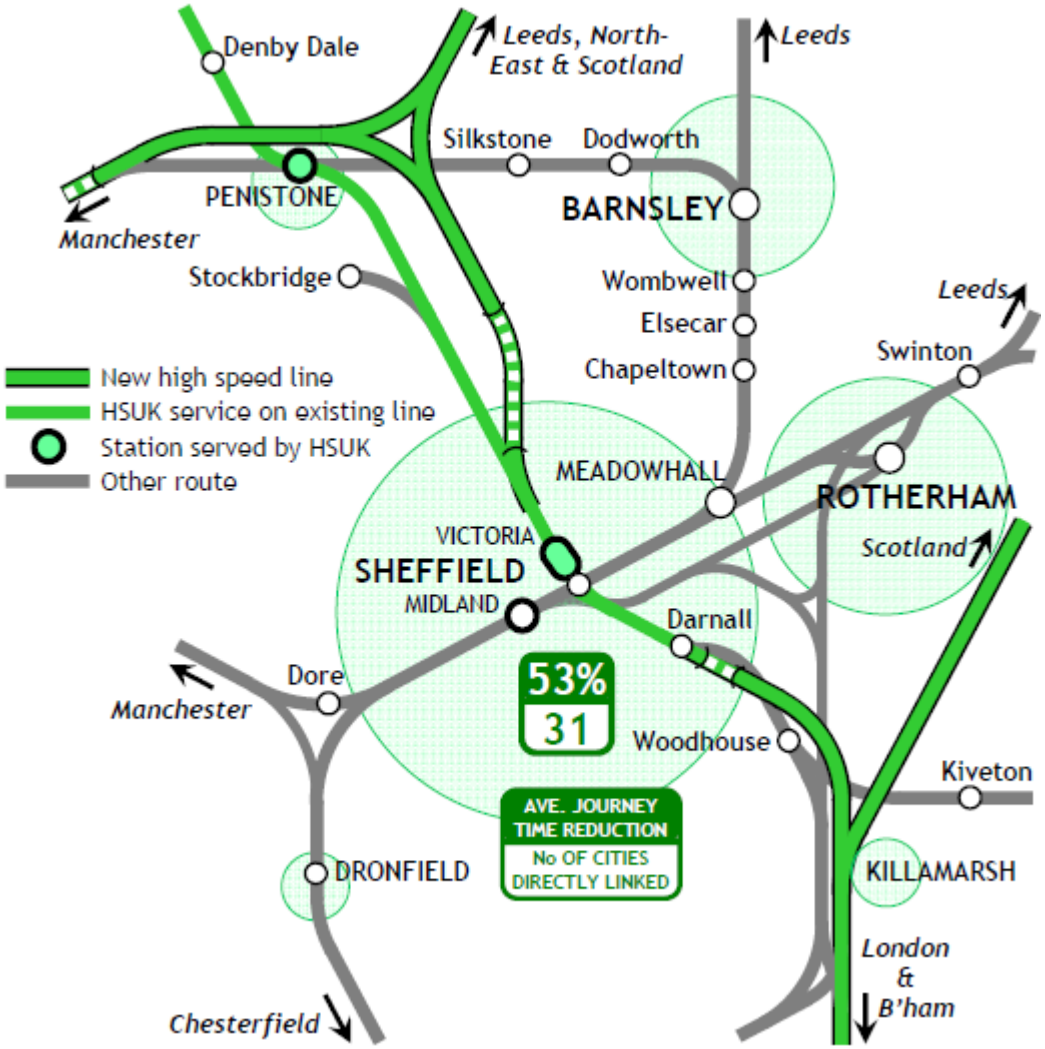
HS2 Revised M18 Route (2016)



High Speed Rail in Sheffield

Enhancing Local Network??

HSUK Principal Intercity Routes



High Speed Rail in Sheffield

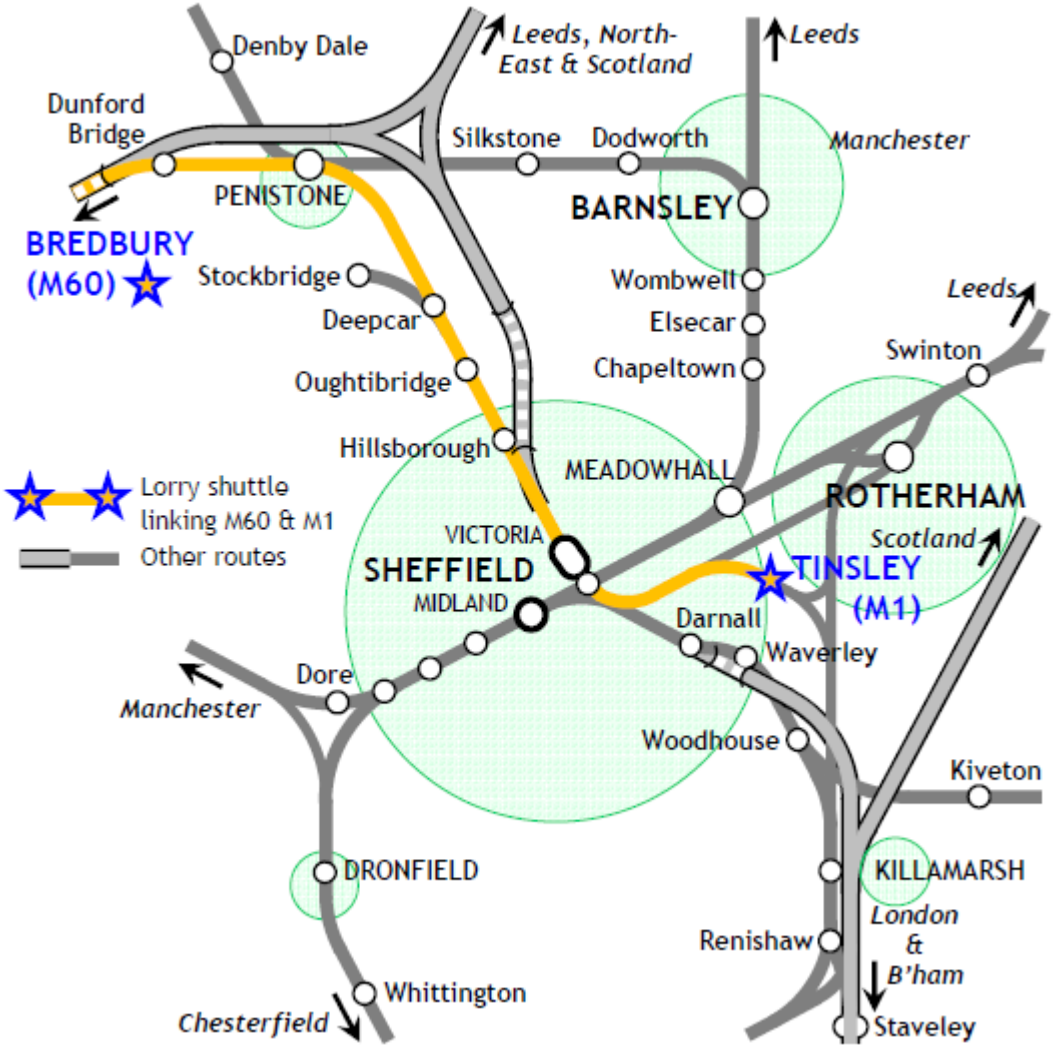
Enhancing Local Network??

New Station Opportunities Offered by HSUK

High Speed Rail in Sheffield

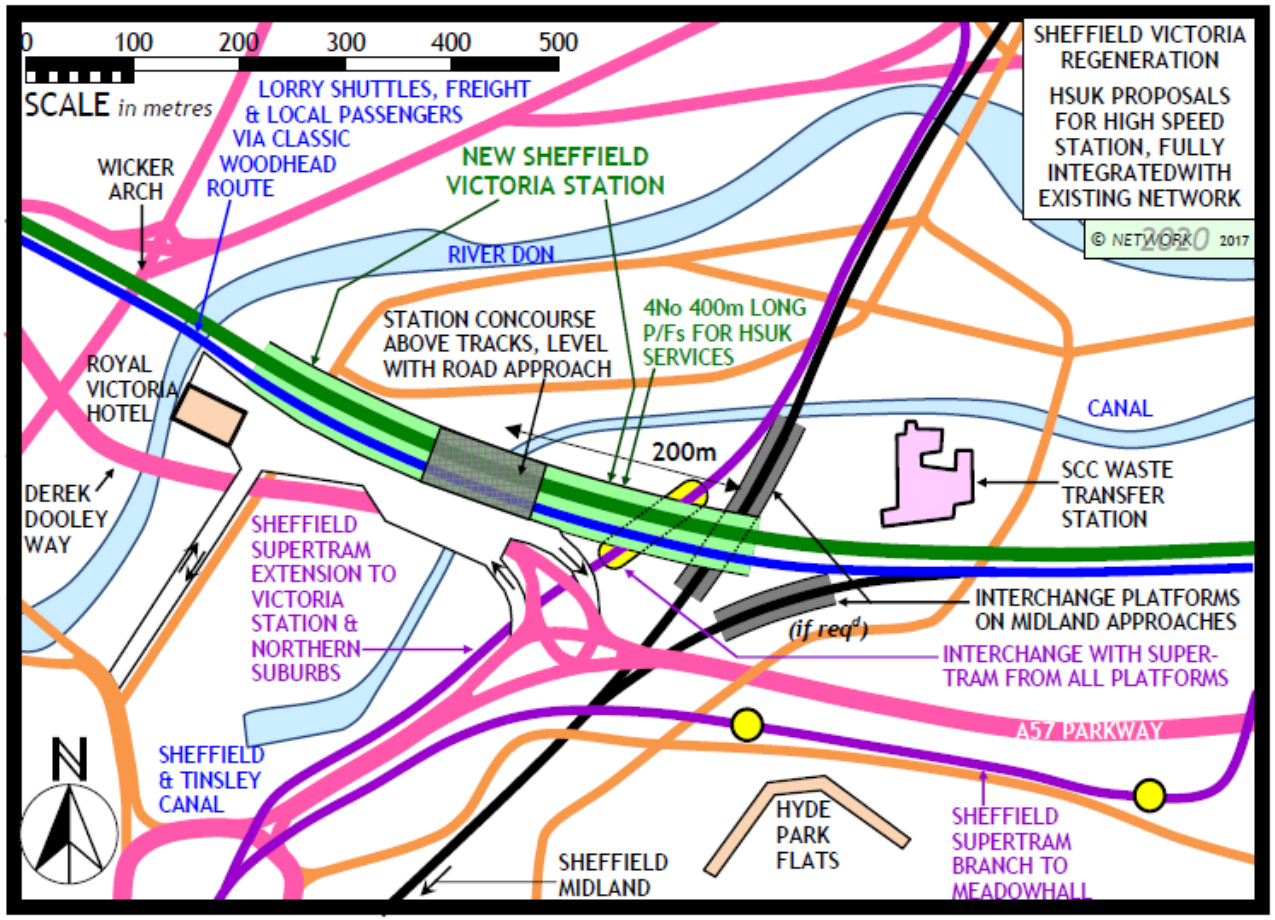
Enhancing Local Network??

HSUK Woodhead Lorry Shuttle

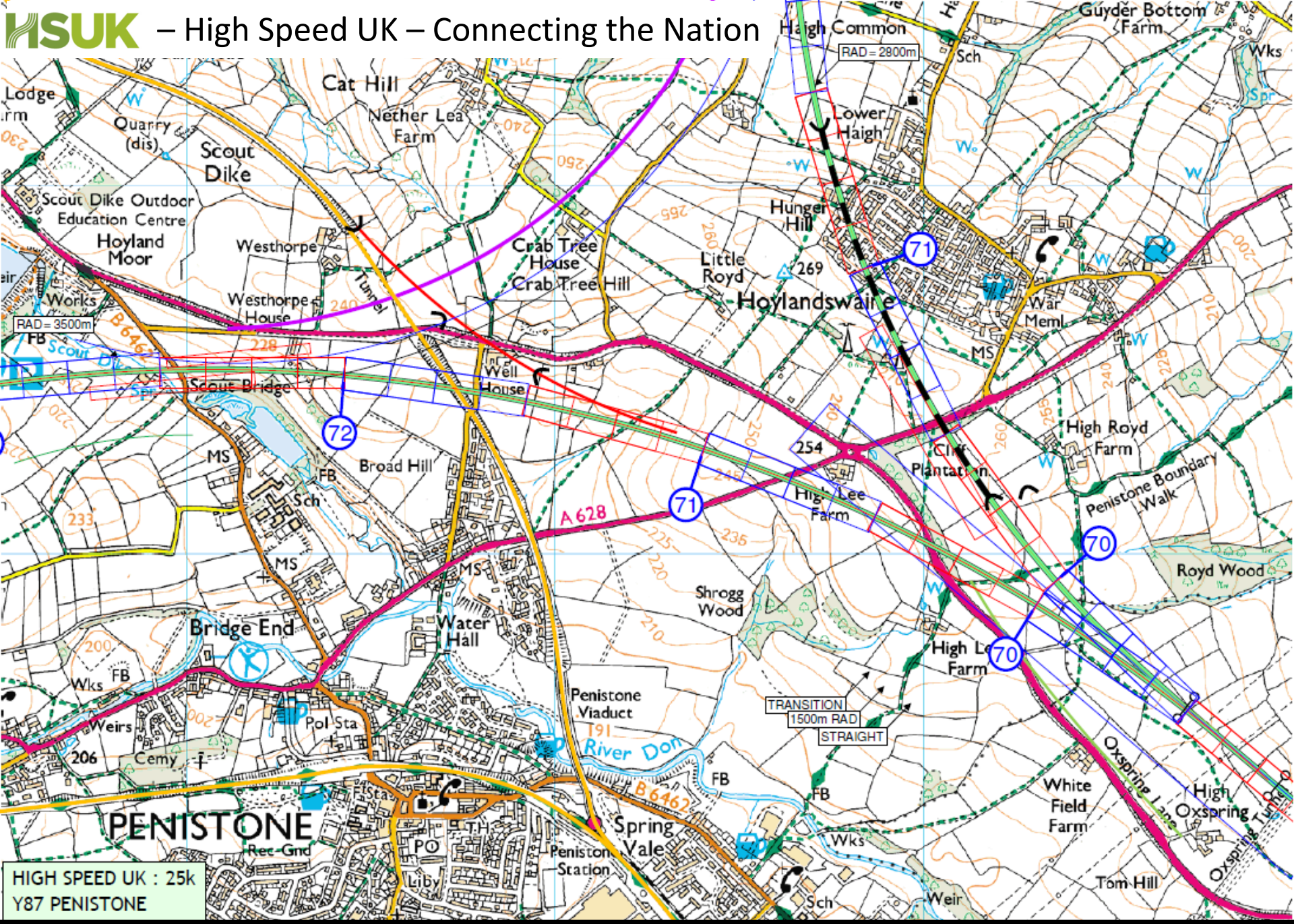


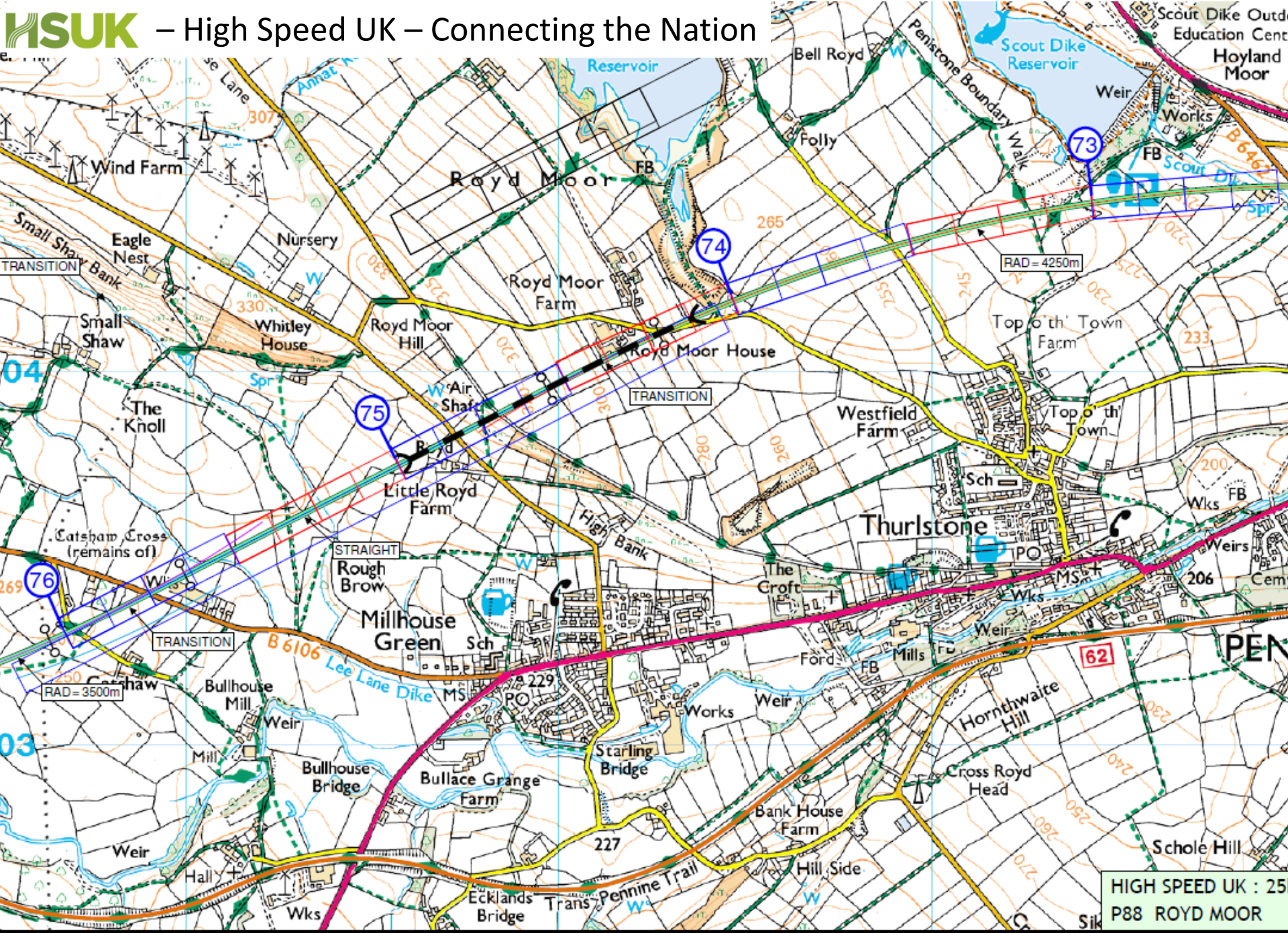
High Speed Rail in Sheffield

HSUK Scheme for Restored Victoria Station

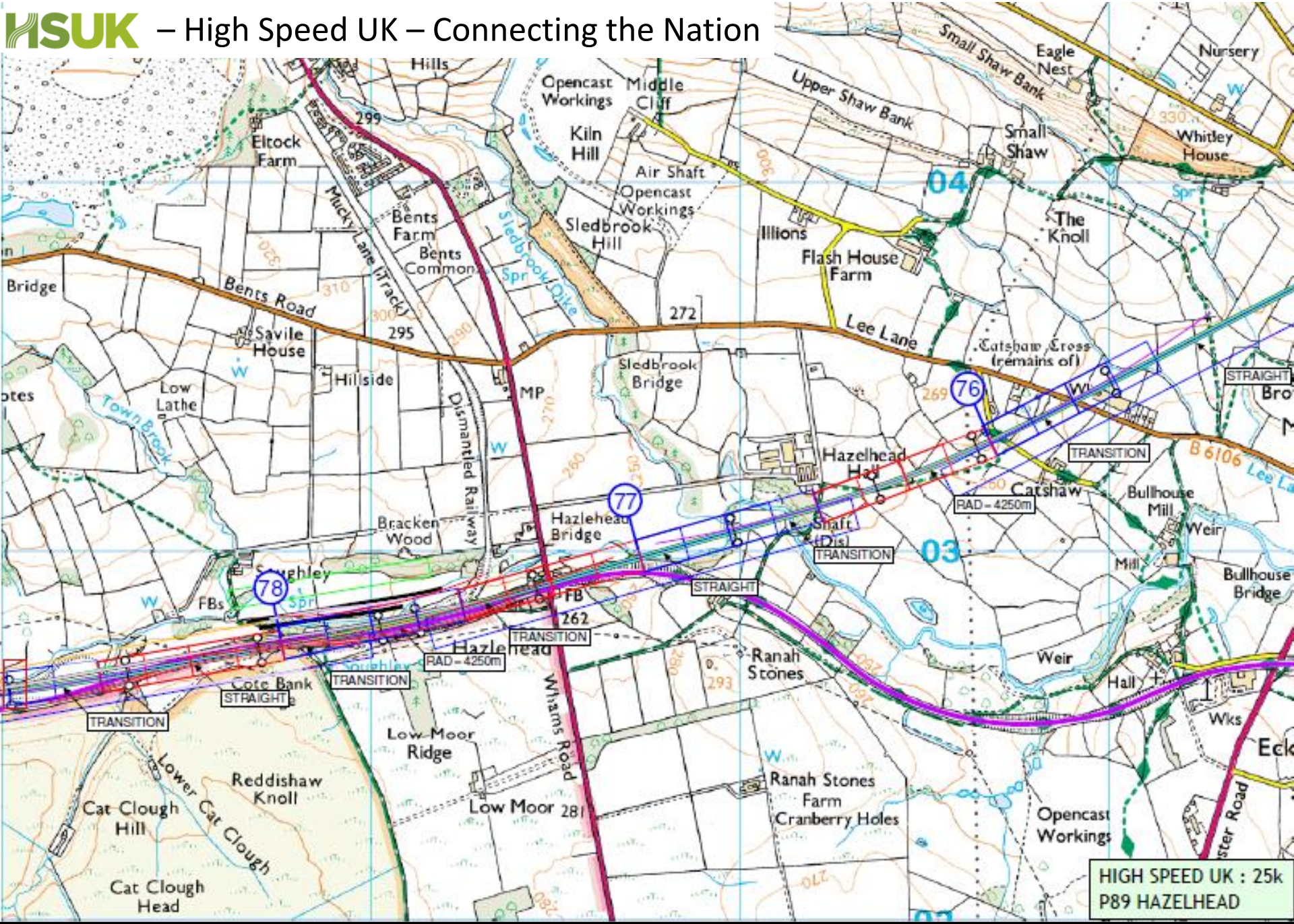


HSUK – High Speed UK – Connecting the Nation

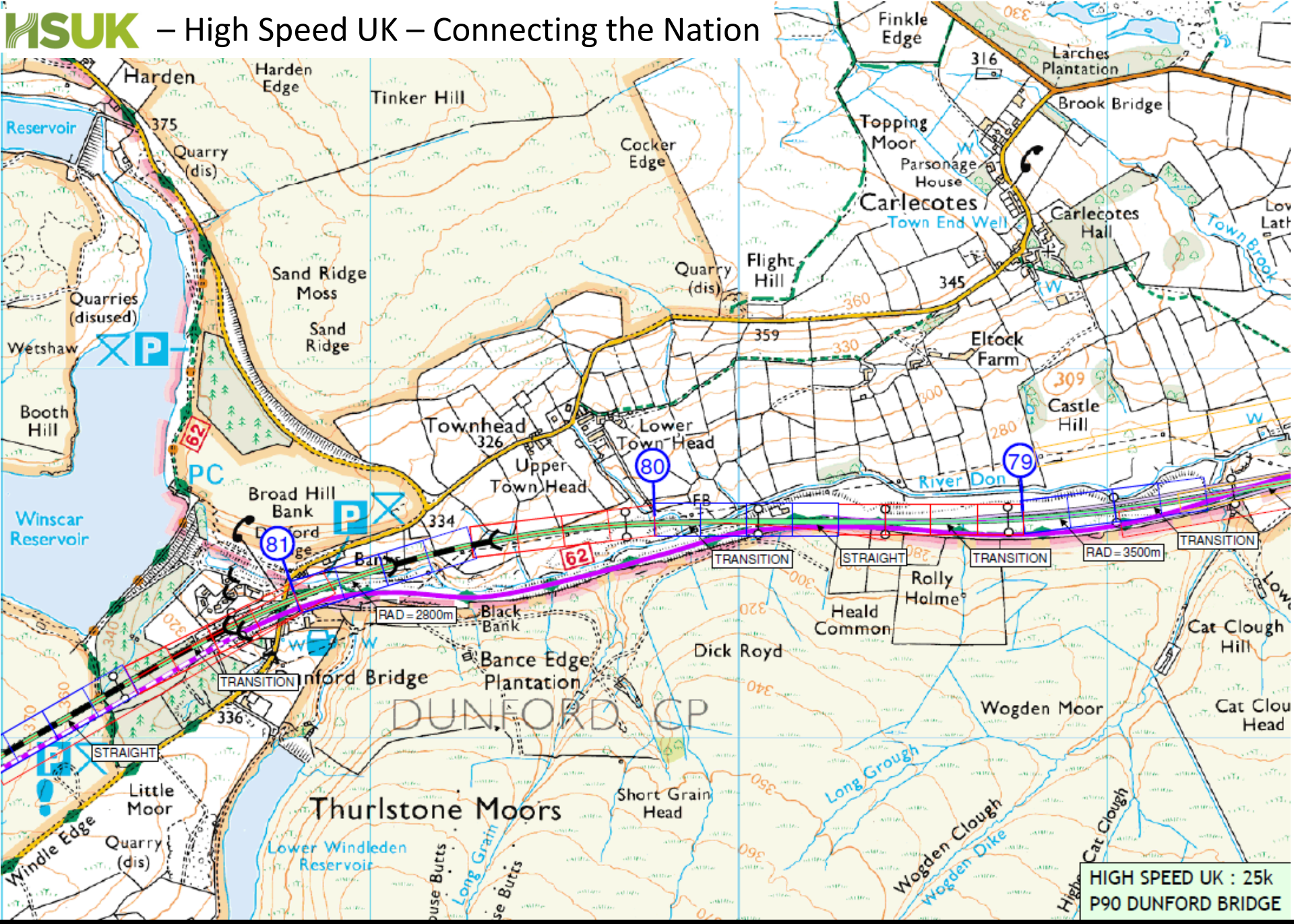



Reservoir
Bell Royd
Scout Dike Reservoir
Scout Dike Outdo
Education Cent
Hoyland Moor
Penistone Boundary Walk
Weir
Works
Folly
73
FB
Scout
B 6462
Wind Farm
Royd Moor
FB
265
74
RAD = 4250m
Small Shaw Bank
TRANSITION
Eagle Nest
Nursery
Small Shaw
Whitley House
Royd Moor Farm
Royd Moor Hill
Royd Moor House
Top o' th' Town Farm
Air Shaft
75
The Knoll
Royd
Little Royd Farm
TRANSITION
Westfield Farm
Top o' th' Town
Sch
Thurlstone
PO
Wks
FB
Weirs
206
Cem
STRAIGHT
Rough Brow
High Bank
Catsham Cross (remains of)
76
The Croft
MS
Millhouse Green
Sch
TRANSITION
B 6106 Lee Lane Dike
Ford
Mills
Weir
62
RAD = 3500m
Catshaw
Bullhouse Mill
MS
PO
229
Works
Weir
Hornthwaite Hill
Starling Bridge
Bullhouse Bridge
Bullace Grange Farm
Cross Royd Head
Bank House Farm
227
Schole Hill
Hill Side
Weir
Hall
Wks
Ecklands Bridge
Trans Pennine Trail
HIGH SPEED UK : 25
P88 ROYD MOOR

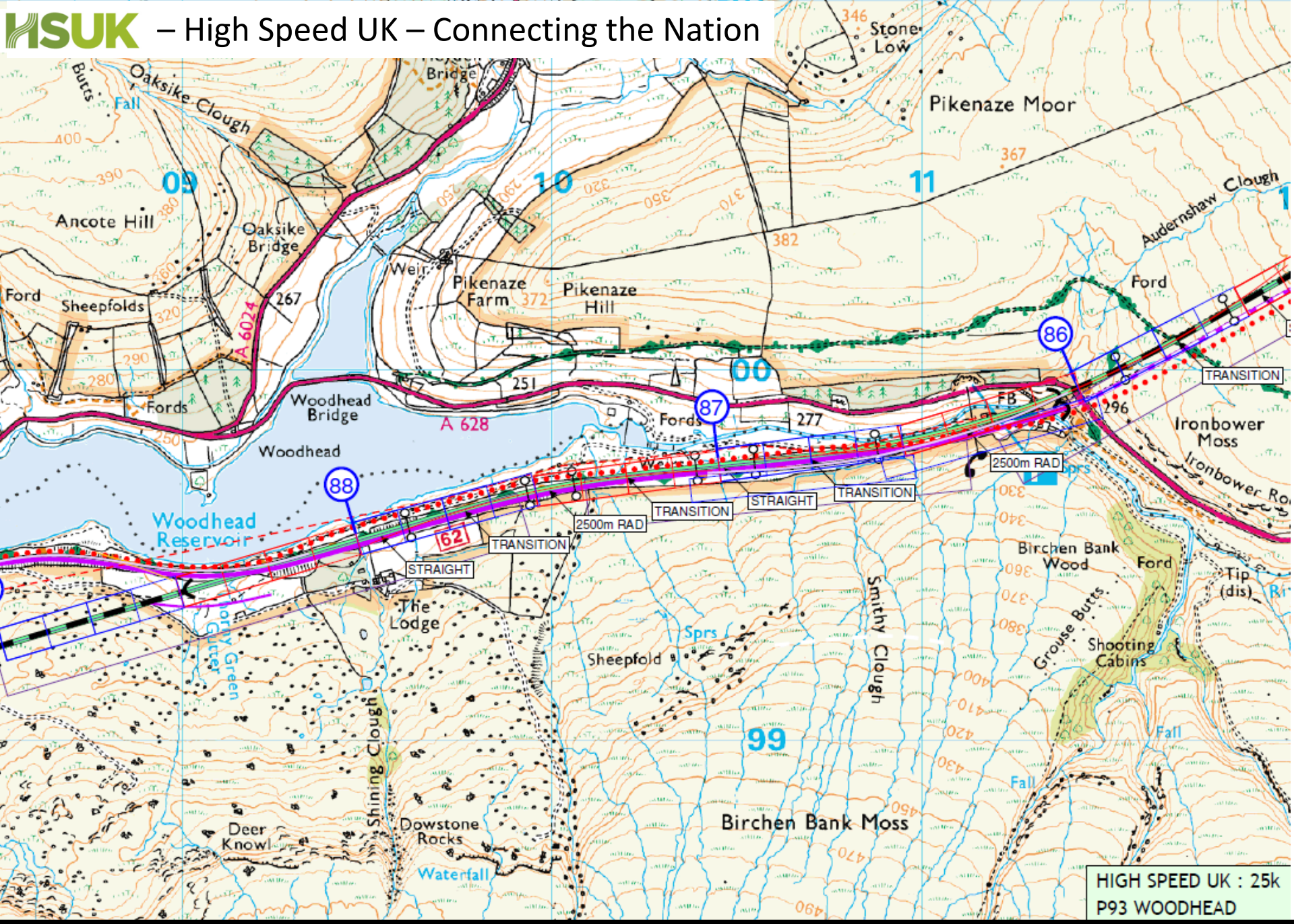
HSUK – High Speed UK – Connecting the Nation



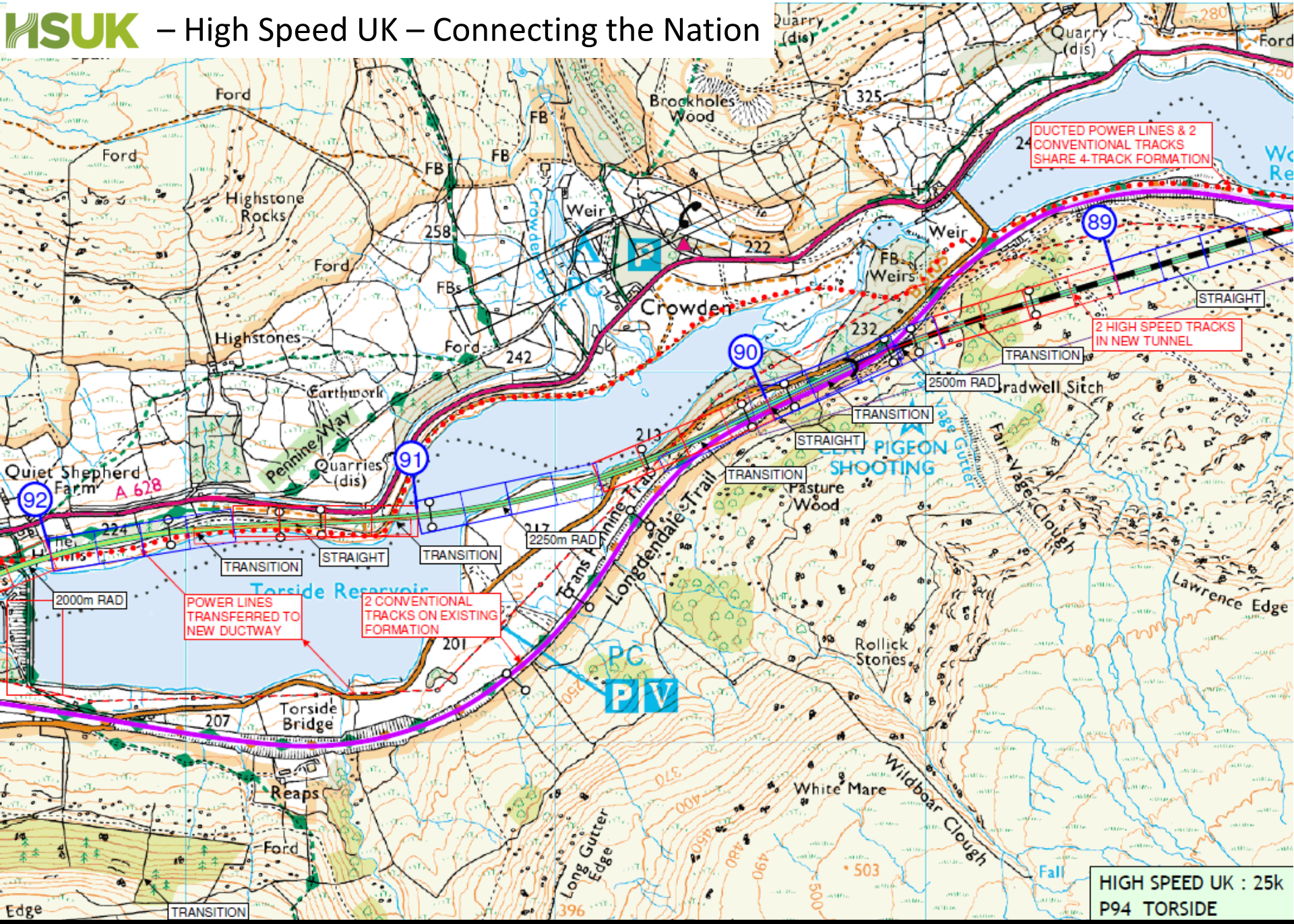
HSUK – High Speed UK – Connecting the Nation



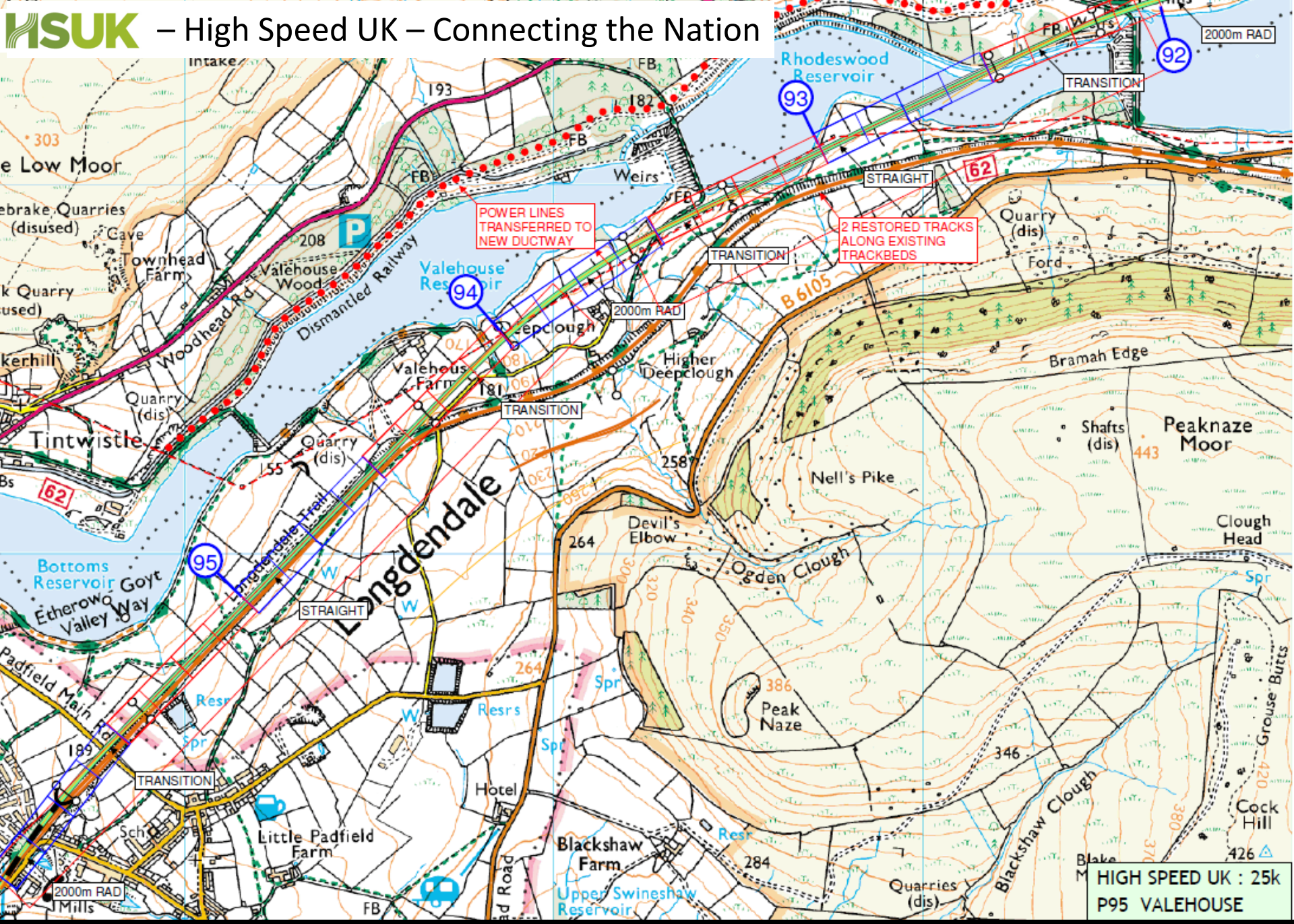
HSUK – High Speed UK – Connecting the Nation



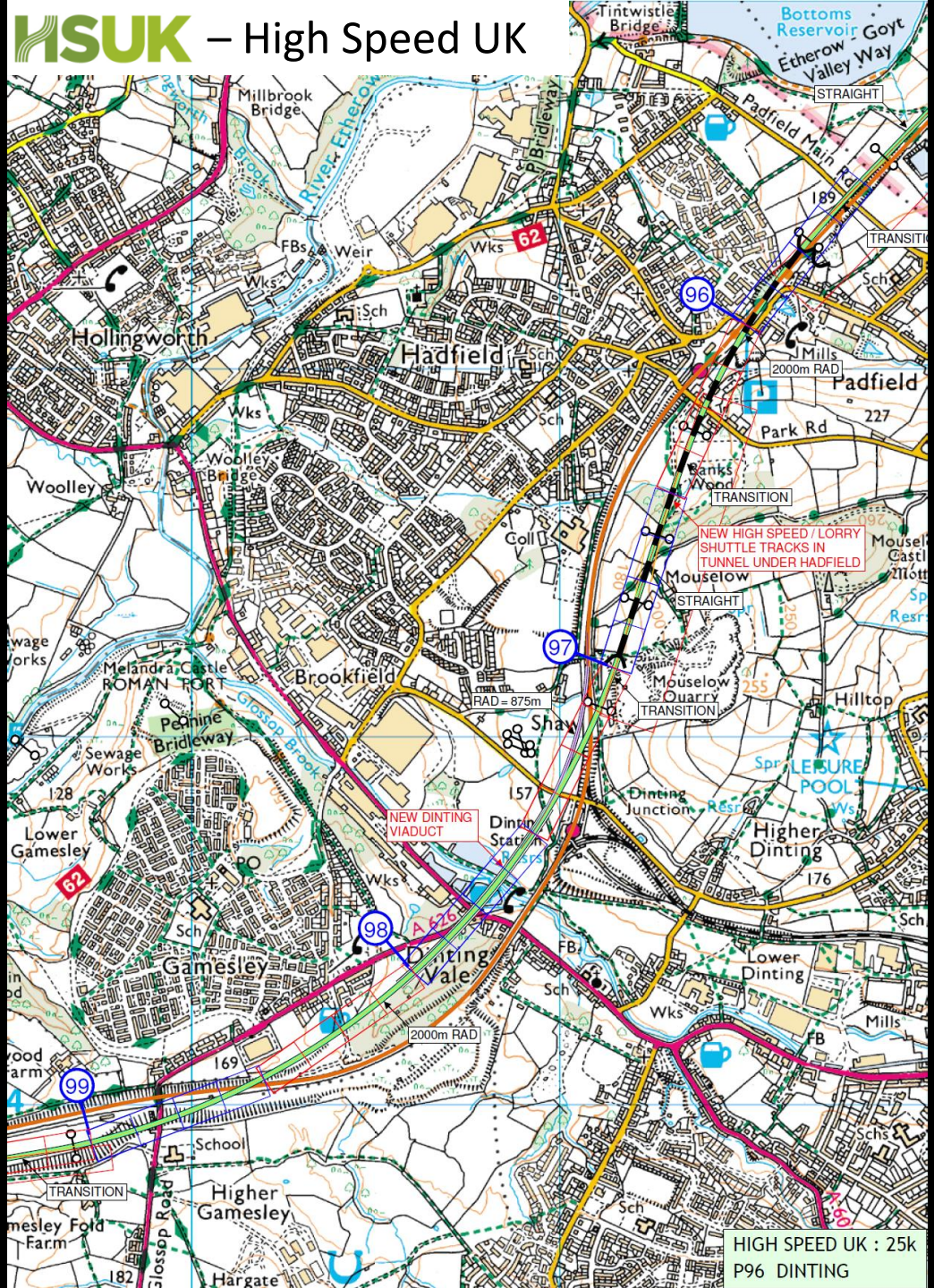
HSUK – High Speed UK – Connecting the Nation



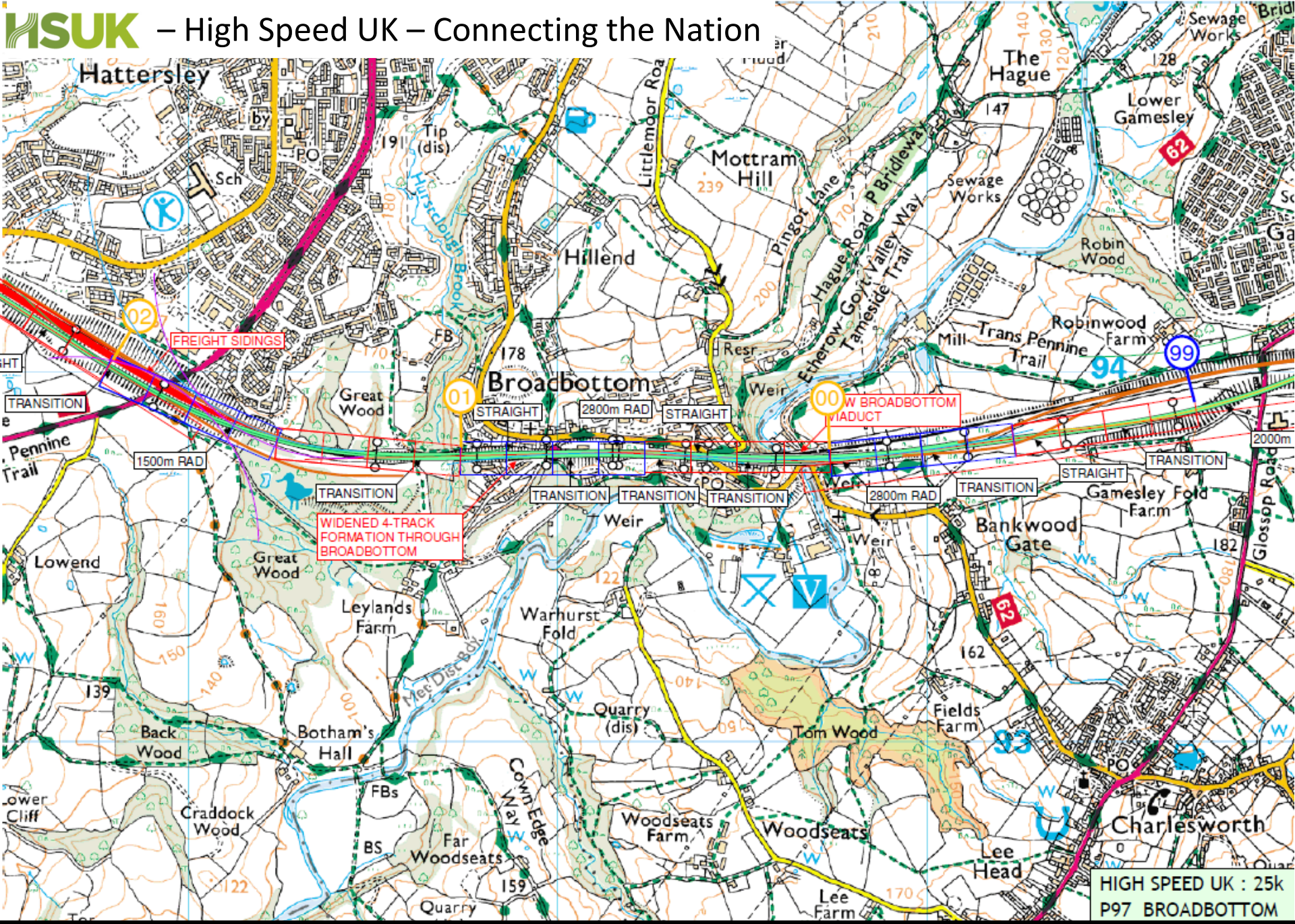
HSUK – High Speed UK – Connecting the Nation



HSUK – High Speed UK



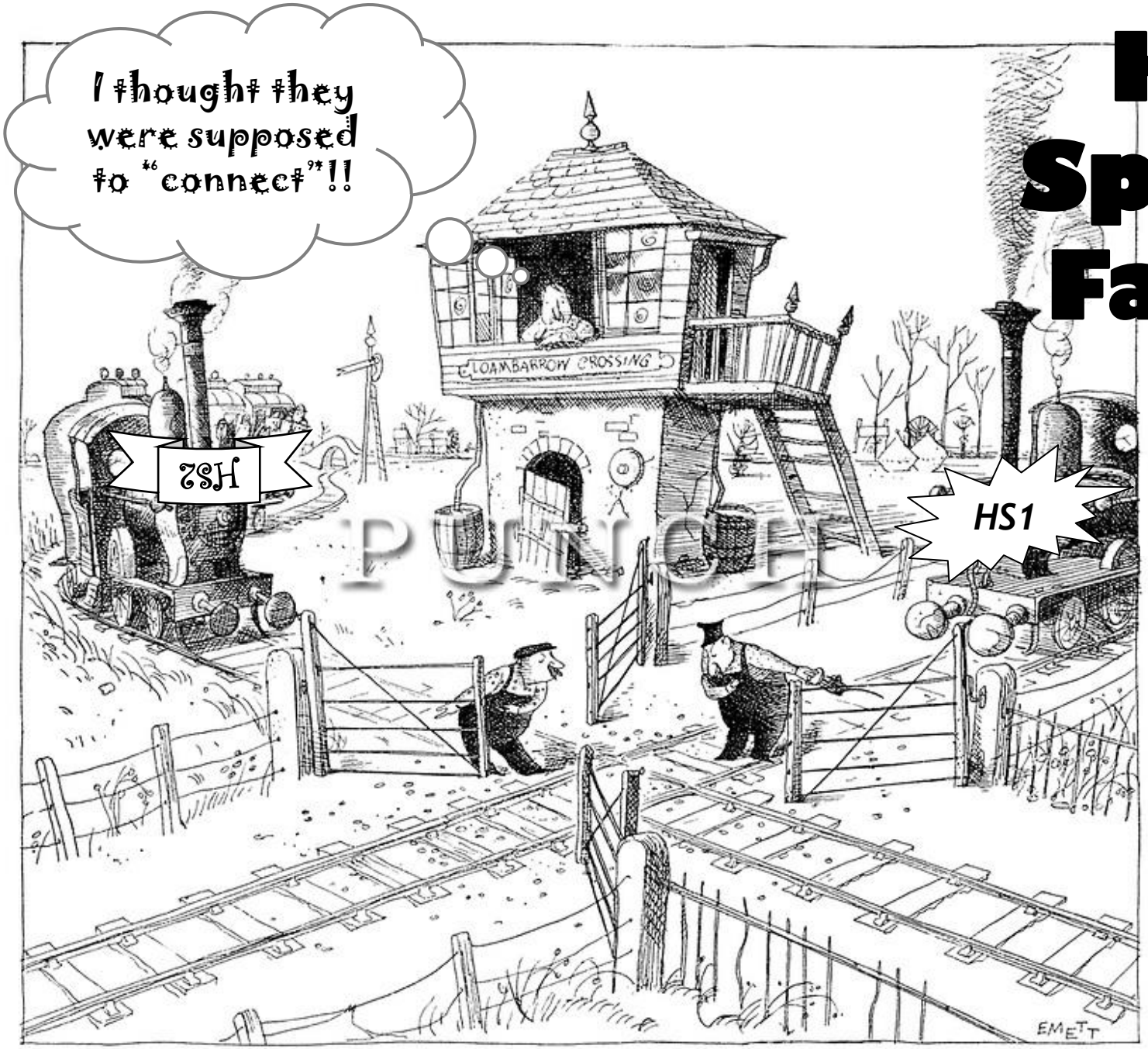
HSUK – High Speed UK – Connecting the Nation



Discussion

- Thanks for listening
- Do we have synergy?
- How can we help you?
- How can you help us?

High Speed 2 Failure



HSUK

Does to HS2 what George did to the dragon!!