HS2 fails the Cost Challenge

The cost of constructing the HS2 'Y', extending as far north as Leeds and Manchester, is currently estimated at around £56 billion. With Northern Powerhouse Rail (NPR) and the putative Scottish extension taken into account, the cost of the entire national high speed rail project seems likely to rise to around £100 billion.

The HS2 proposals have come under sustained criticism for their excessive costs – much higher per mile than comparable projects in France. So far it has proved impossible to determine whether these costs stem from natural differences between France and the UK, or from fundamental inefficiencies in the HS2 design.

The emergence of High Speed UK now allows this issue to be resolved. HSUK's detailed route design – with horizontal and vertical alignments defined for over 1,000km of new railway – enables the size of structures and earthworks to be determined, and this allows detailed cost comparisons to be drawn with HS2.

The calculated comparative costs indicate that HSUK's baseline cost is around **£21 billion** (or 30%) less than the equivalent cost of the HS2 'Y' and NPR combined. This huge cost difference can be simply explained through the following 5 key comparisons:

- HSUK requires 227km less new railway than HS2 and NPR combined;
- HSUK requires 74km less tunnel than HS2 and NPR combined;
- HSUK requires 6 fewer new stations than HS2;
- HSUK is generally built in more accessible, less sensitive and easier terrain, with less costly earthworks and structures;
- HSUK needs no further development to achieve full integration with local networks.

HSUK is of course not just cheaper to construct than HS2; it also delivers significantly greater benefit, which might conservatively be estimated to be 50% more. Together, these two gains will transform HS2's very questionable Benefit to Cost Ratio (BCR) of 2.2 into a much more bankable figure of 4.6.

High Speed UK

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

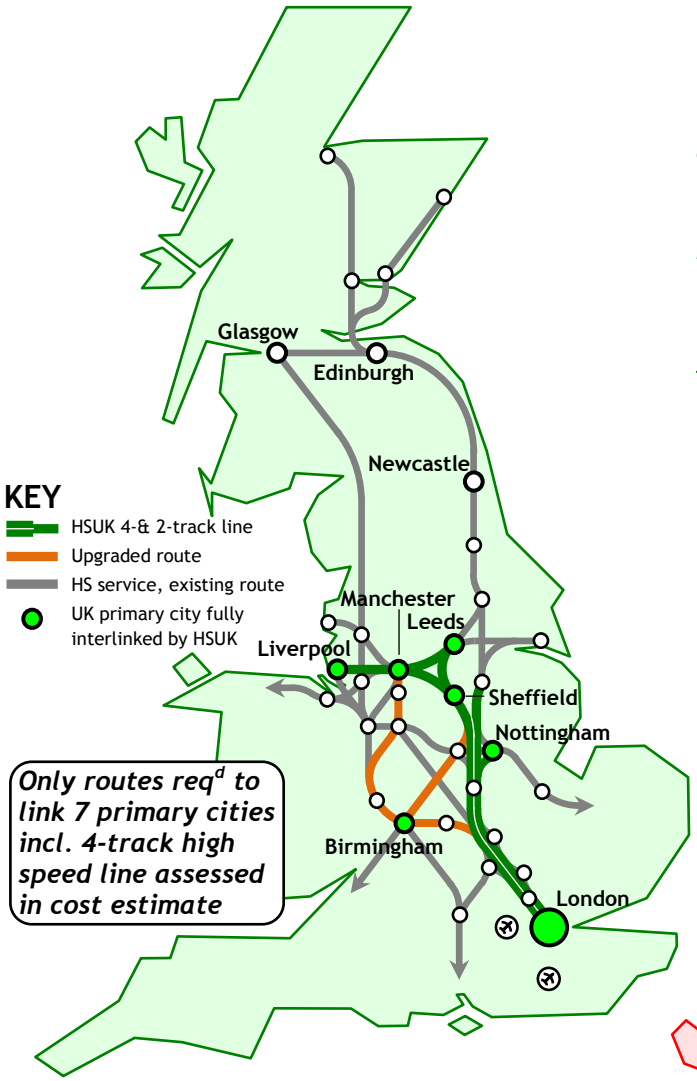
462km new railway - *mostly following existing transport corridors*

202km upgraded/restored

60km tunnel

3 new stations

Cost estimate £52bn



ALL COSTS INCLUDE ROLLING STOCK

HS2 and NPR

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

699km new railway - *mostly clear of existing transport corridors*

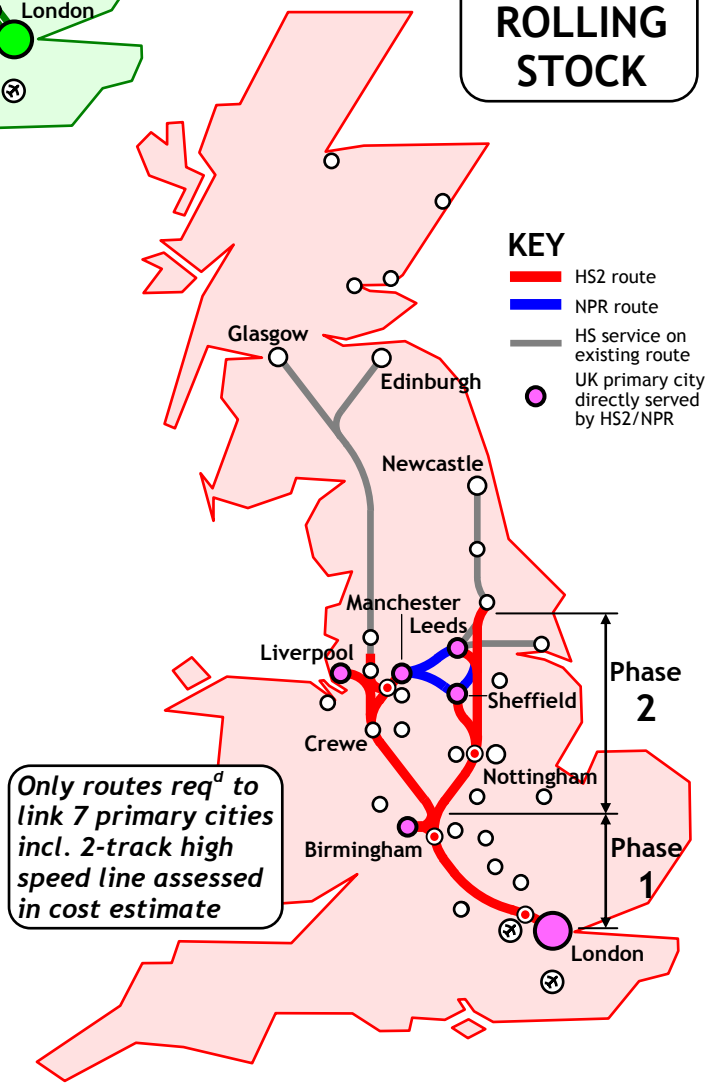
54km upgraded/restored

134km tunnel

9 new HS2 stations

Local integration projects at disconnected HS2 stations

Cost estimate £73bn



HSUK
PROJECTED COSTS

HS2/NPR
PROJECTED COSTS

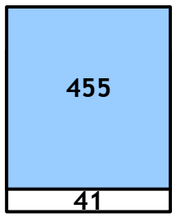
HSUK's timetable, based on 496 possible journeys between 32 principal stations, shows:

455 improved by HSUK

41 unimproved

0 made worse

46% average journey time reduction



See pp 11-12

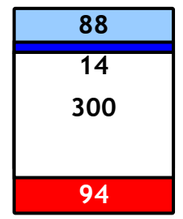
Assessment of HS2, based on 496 possible journeys between 32 principal stations, shows:

88 improved by HS2

14 improved by NPR

300 unimproved

94 made worse



See pp 11-12

pp = Page reference from *HS2 – High Speed to Failure*

Further infrastructure enhancements essential for HSUK's timetabled network & 46% average journey time reductions

£24 bn difference

£95.7 bn

See pp 31-32

Separate HS Routes to Scotland and to North-East

£72.0 bn

See pp 31-32

HS Route to North-East & Scotland

£12 bn difference

£65.2 bn

NPR Infra-structure

See pp 29-30

£52.9 bn

Full Network

£50.7 bn

Local Connectivity

£48.0 bn

Direct Connectivity

£46.7 bn

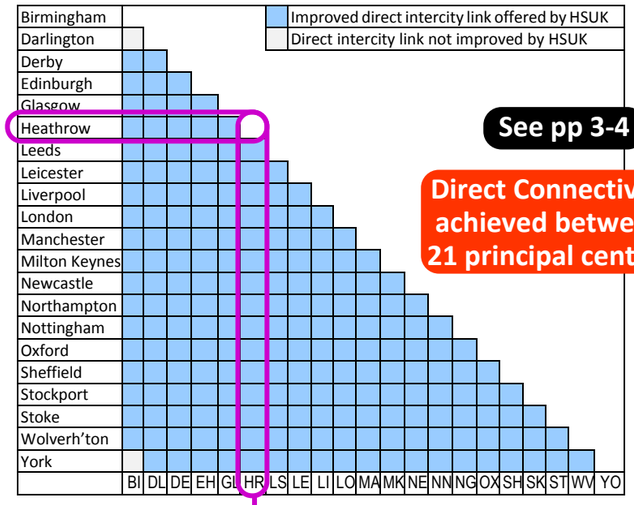
£43.6 bn

4-track spine

£38.7 bn

£21 bn difference

See pp 33-34



See pp 3-4

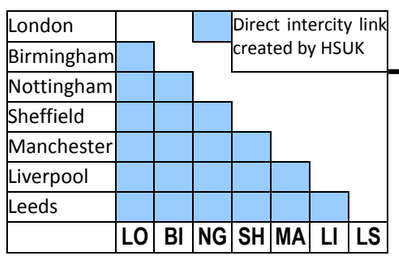
Direct Connectivity achieved between 21 principal centres

HSUK provides direct links to Heathrow from most principal UK cities

See pp 13-16

4-track spine gives capacity for enhanced national HSUK network

See pp 5-6



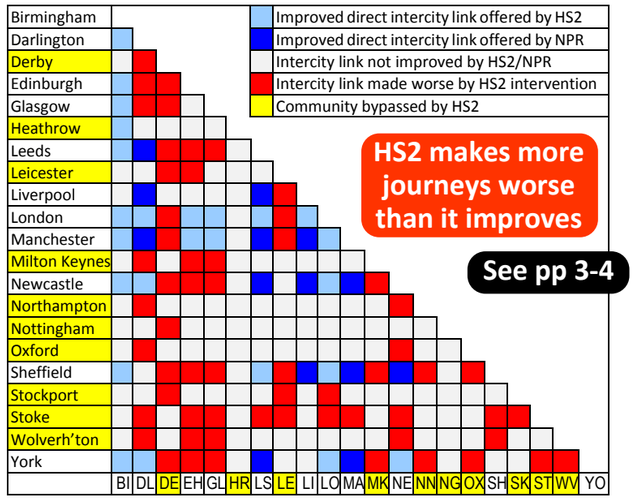
HSUK Phase 1/2 Infrastructure to match geographic extent of HS2 'Y'

Phase 1/2 Infra-structure c/w 2-track spine

Rolling stock costs excluded from comparisons

£0 bn

Phase 1/2 Infra-structure ie HS2 'Y' c/w 2-track stem



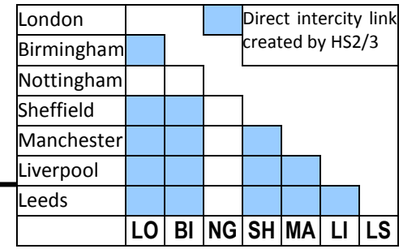
HS2 makes more journeys worse than it improves

See pp 3-4

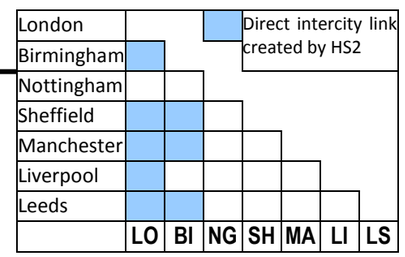
£4bn budget to address local connectivity deficiencies

See pp 33-34

NPR required to address connectivity deficiencies of 'Y'



HS2 'Y' system extending to 7 UK primary cities of Midlands & North



High Speed UK : Low Cost & High Connectivity

HS2 & NPR : High Cost & Low Connectivity