HIGH SPEED UK

..connecting the nation

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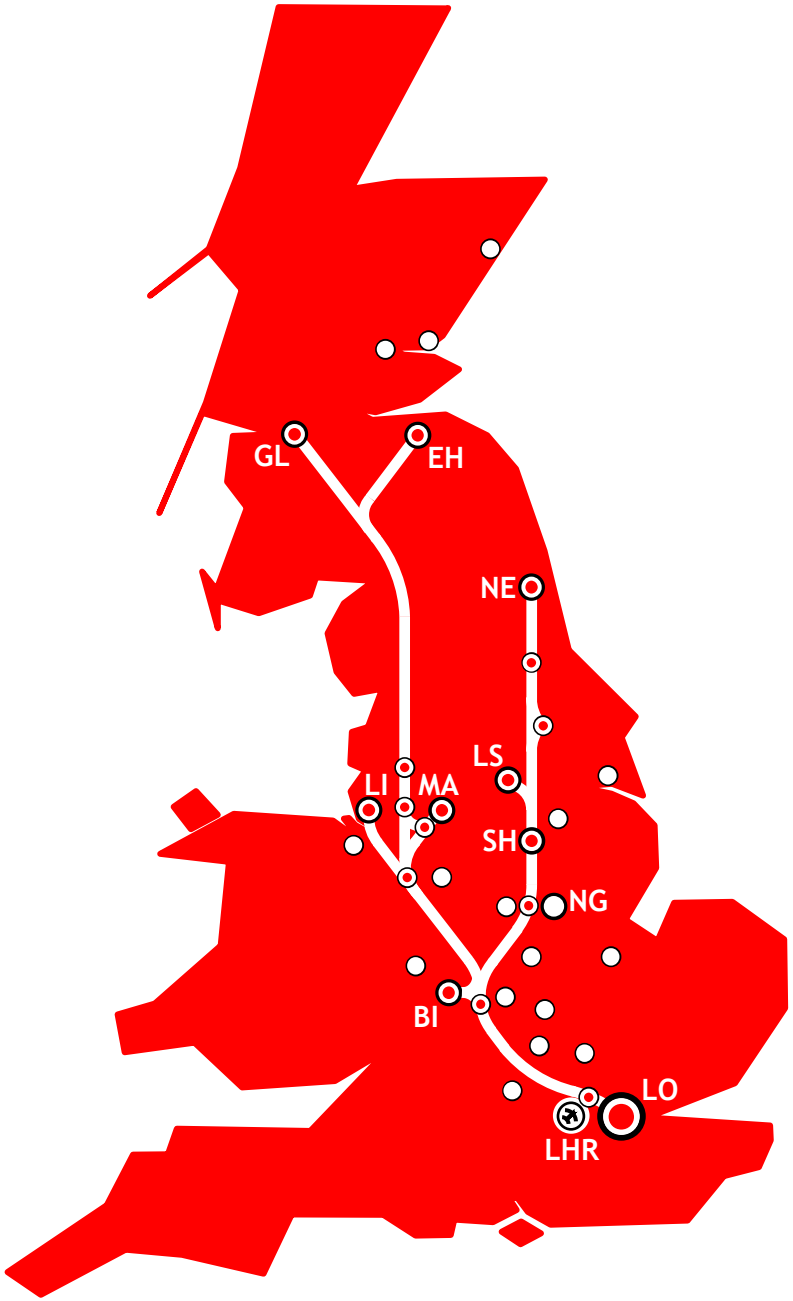
Civil Engineering Principal

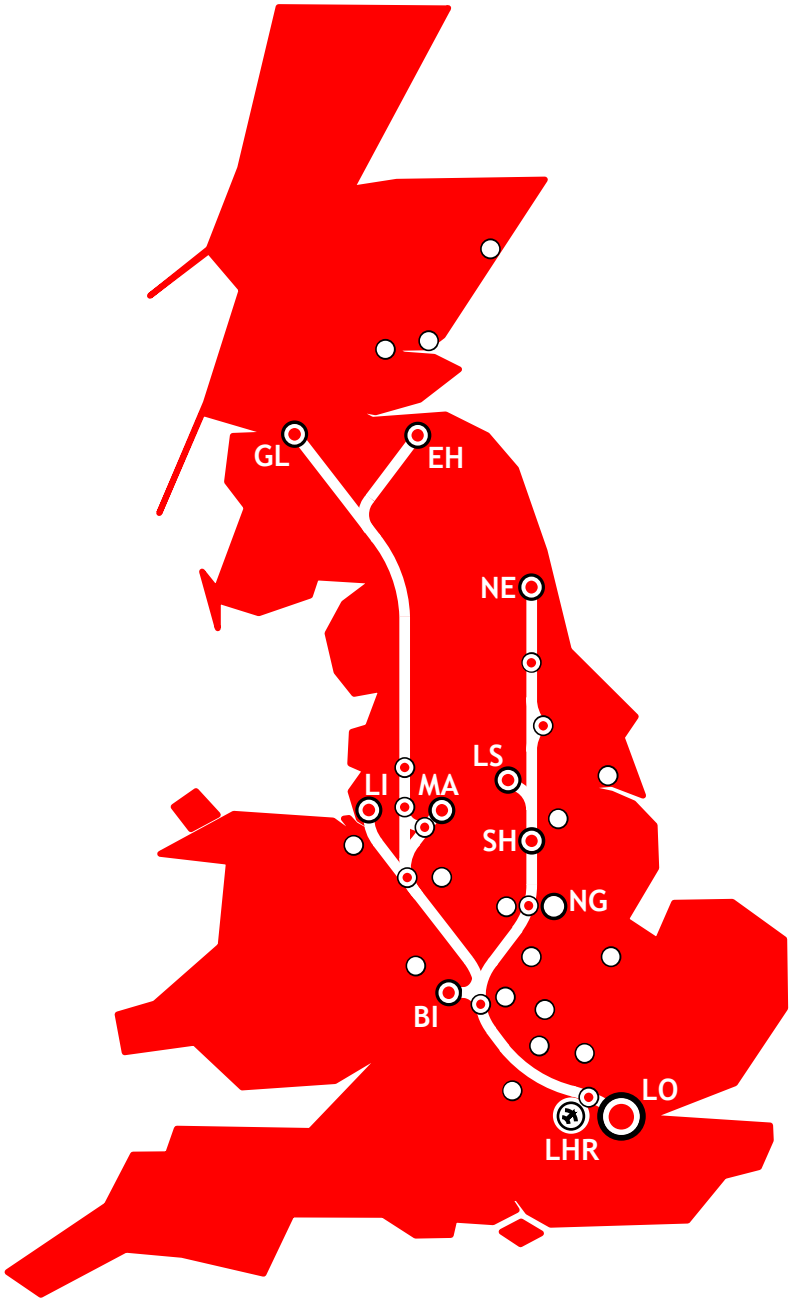


HSUK

£50 billion

That's what the Government is planning to spend on HS2.

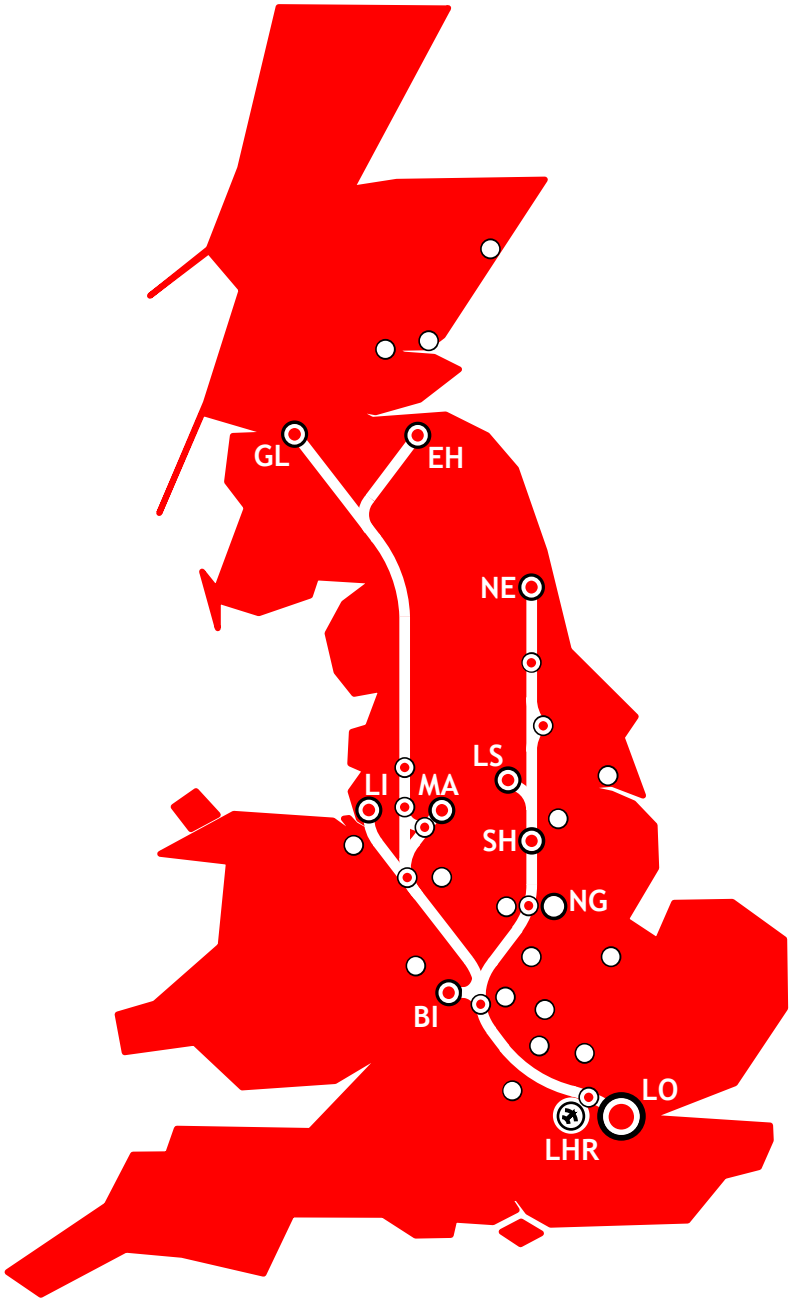
HS3 excluded!!



HSUK

3 key questions:

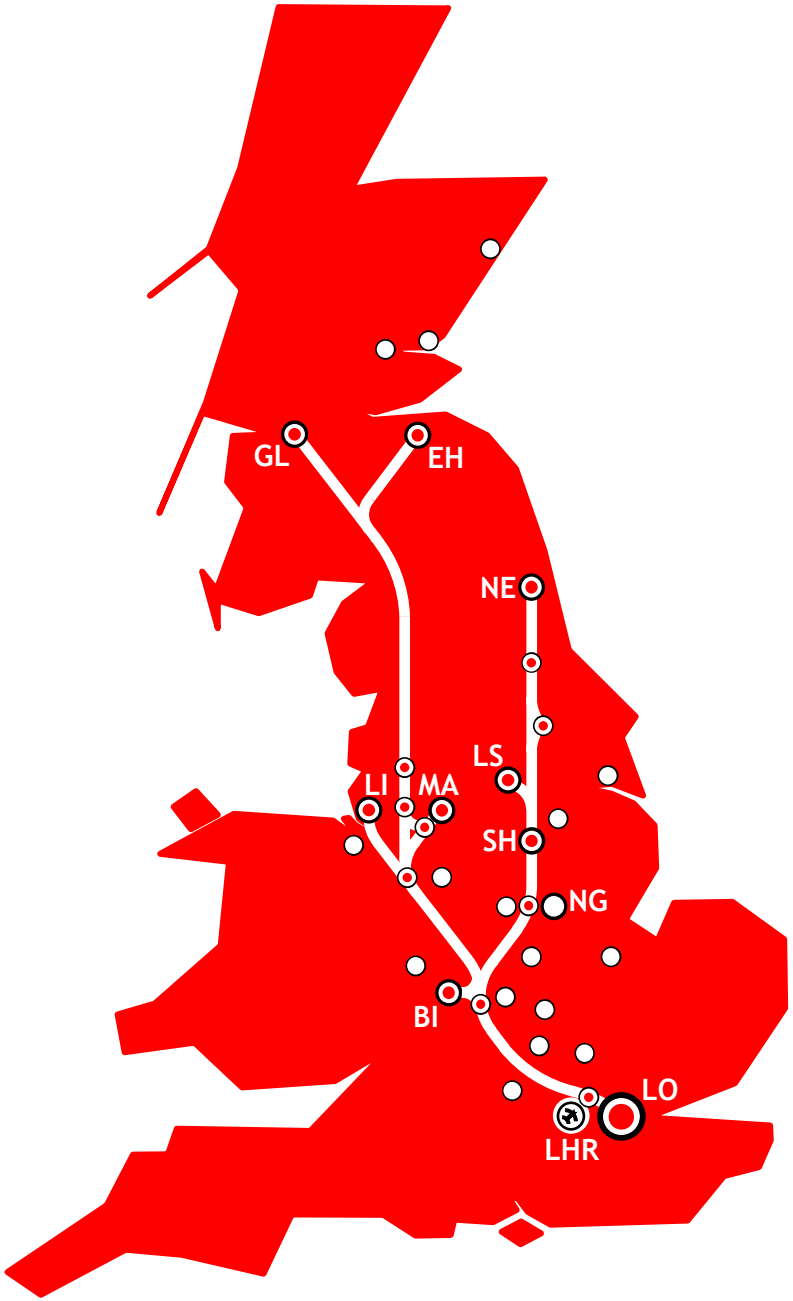
- Does the UK need high speed rail?
- Does HS2 accord with public policy?
- Is HS2 the best possible solution for UK intercity transport?



HSUK

Issues to determine:

- Best **value for money**?
- Best for **capacity**?
- Best for **speed**?
- Best to **interlink UK cities**?
- **Trans-Pennine** link?
- Best links to **aviation**?
- Best for **regional growth**?
- Best for **freight**?
- Best for the **environment**?
- Best for **CO_2 reductions**?
- Best for **UK integrated transport**?



HSUK

With no resolution, no guarantee that HS2 is best solution, what next?

- Rigorous & wide-ranging technical debate?
- Public protest?
- Court action?
- Civil disobedience?
- Technical challenge to expose HS2's deficiencies?

Introducing... HSUK

HIGH SPEED UK

DIFFERENT, BETTER, CHEAPER

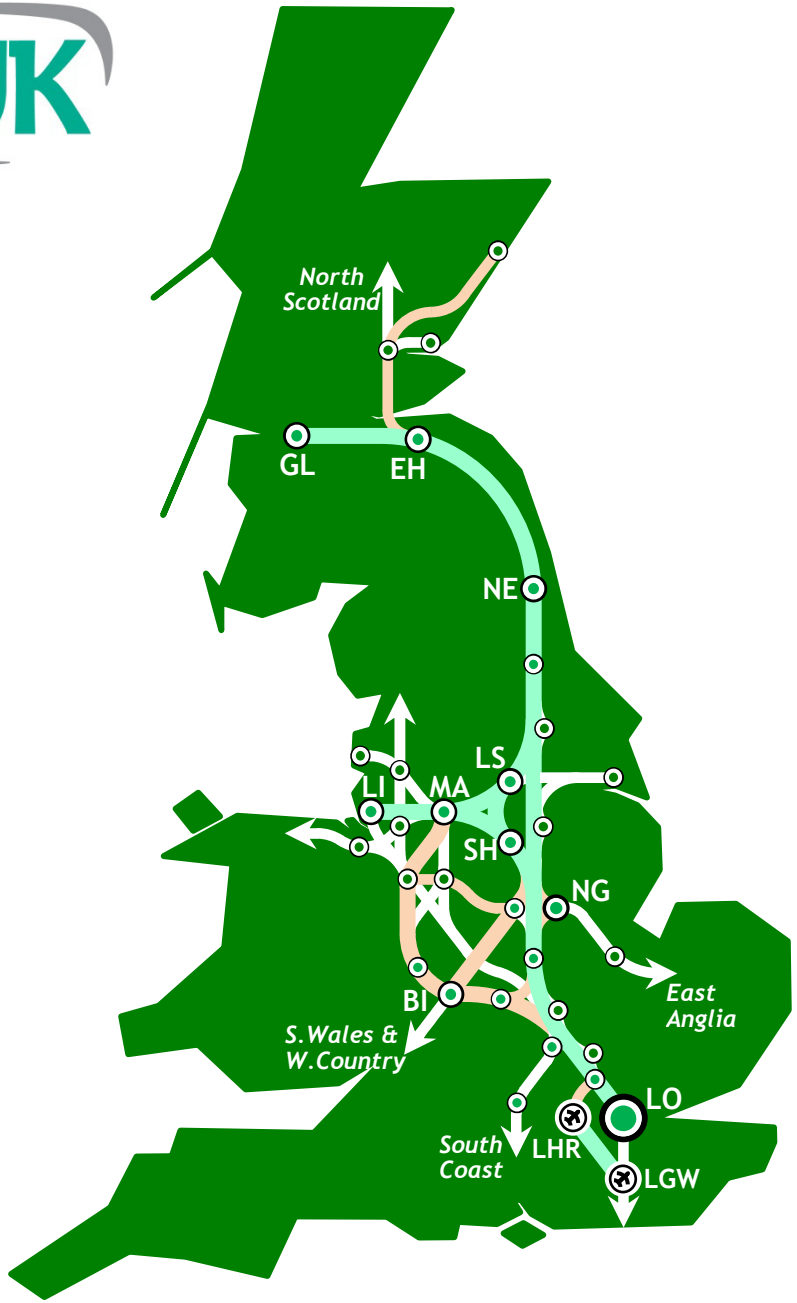
HIGH SPEED SERVICES *DIRECTLY LINKING ALL PRIMARY REGIONAL CITIES*

INTERCITY JOURNEY TIMES REDUCED BY **40%**

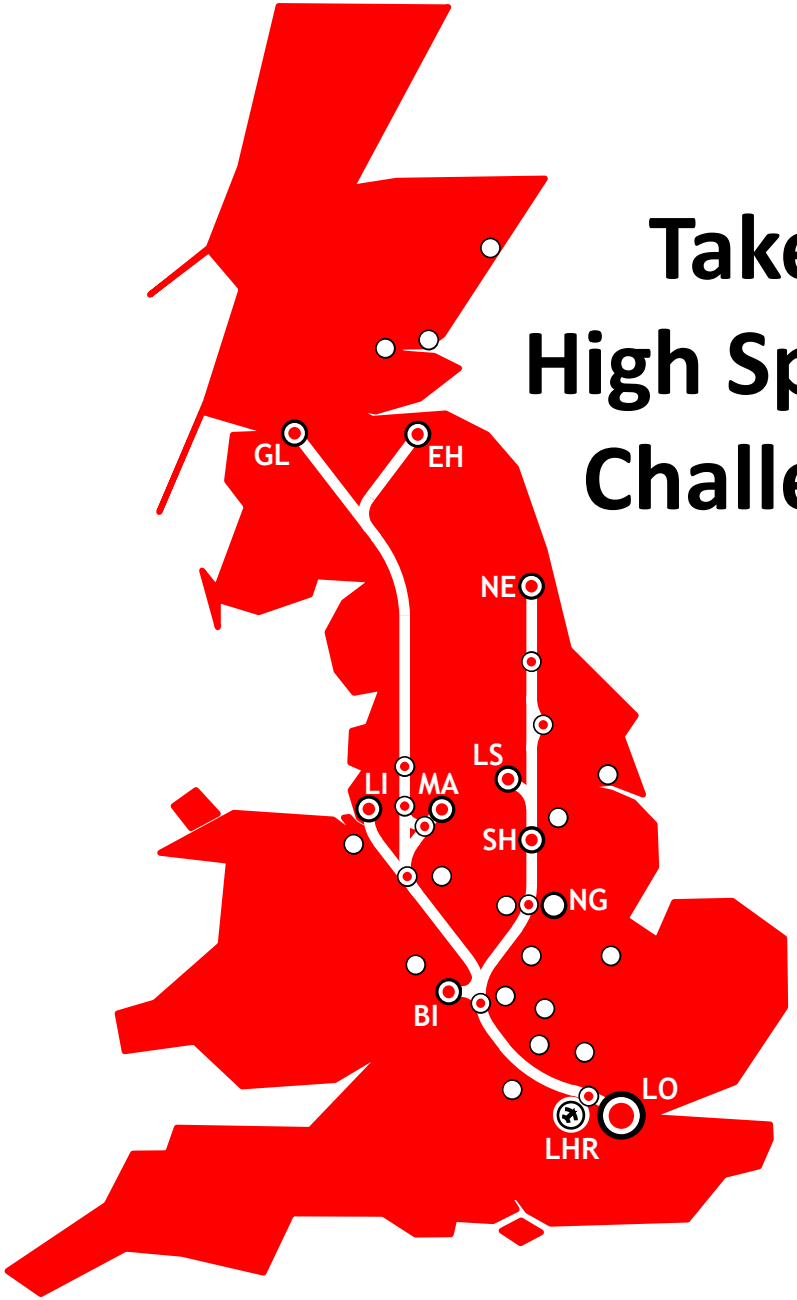
600 *MILLION TONNES CO_2 SAVINGS*

HSUK CHEAPER TO BUILD BY **25%**

HIGH SPEED UK : LESS IS MORE

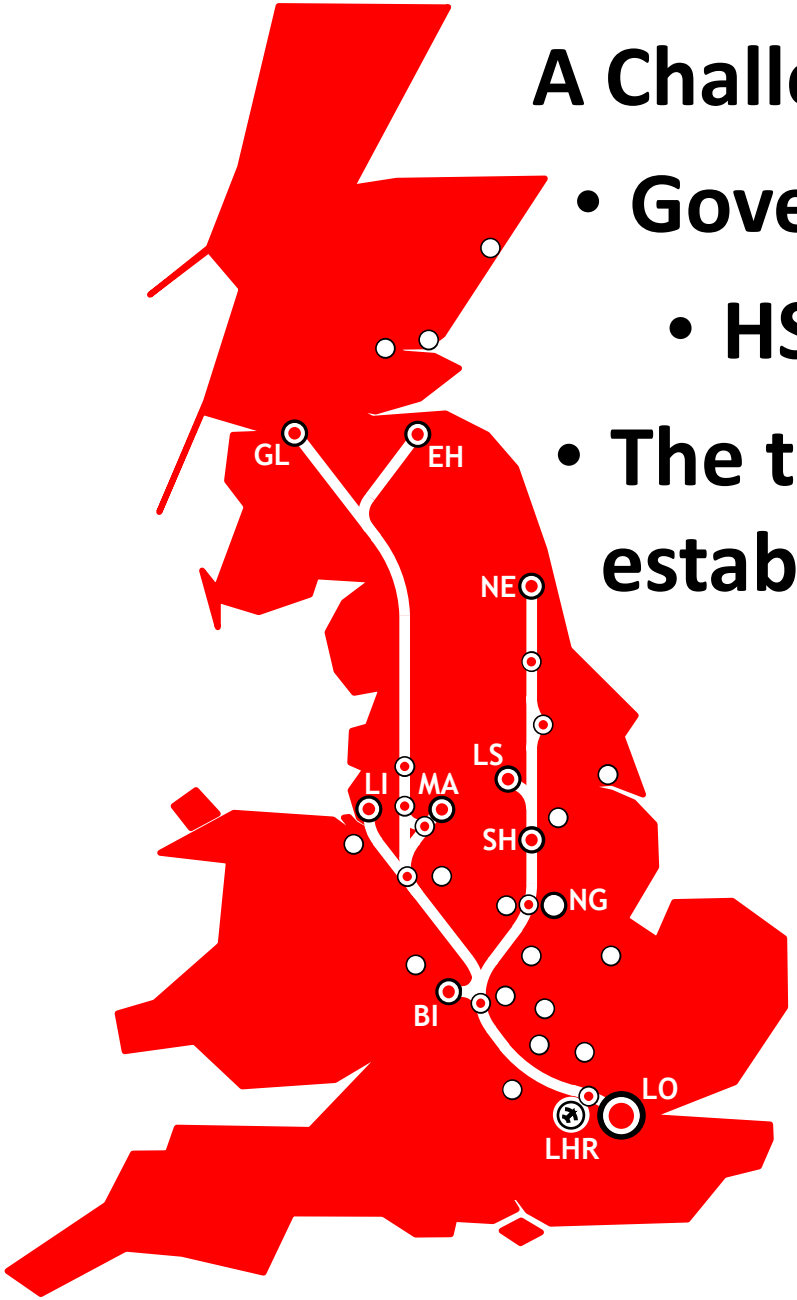


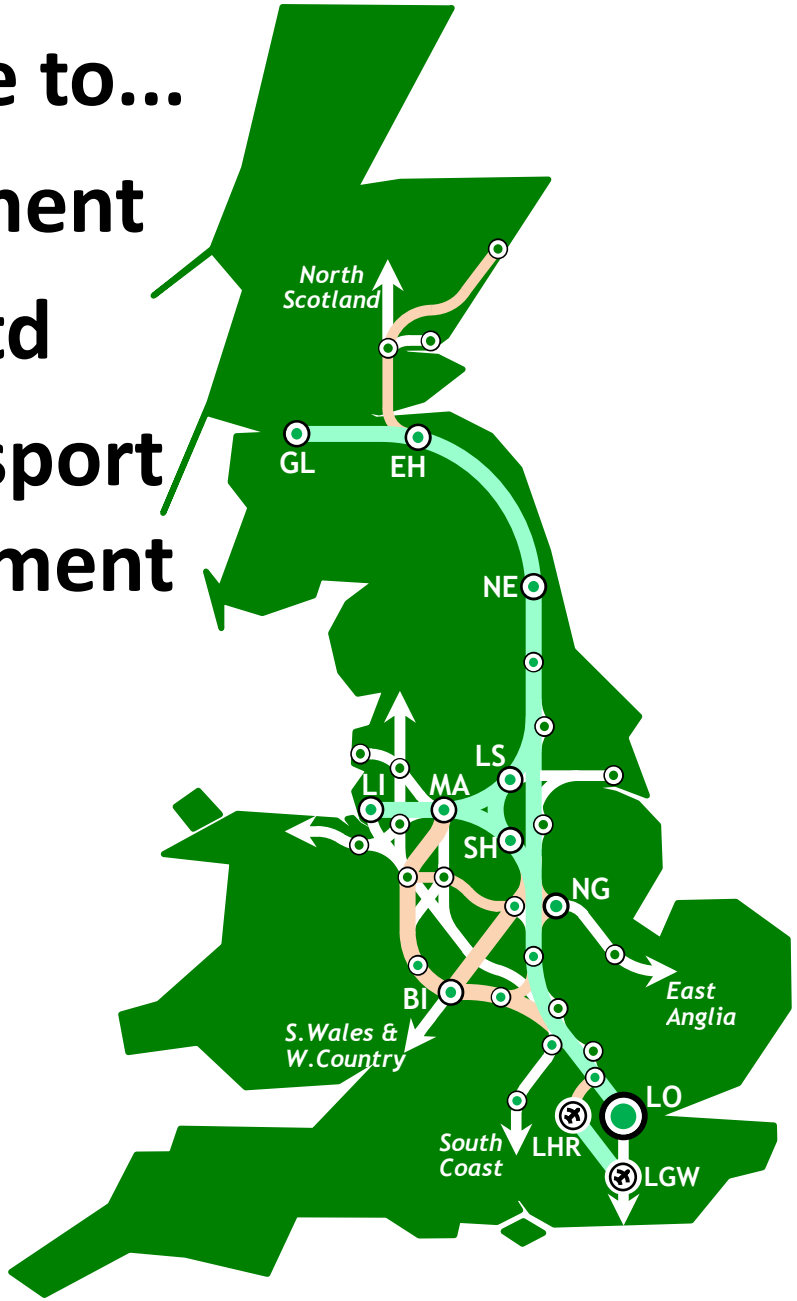
Take the High Speed UK Challenge...



A Challenge to…

- Government
- HS2 Ltd
- The transport establishment



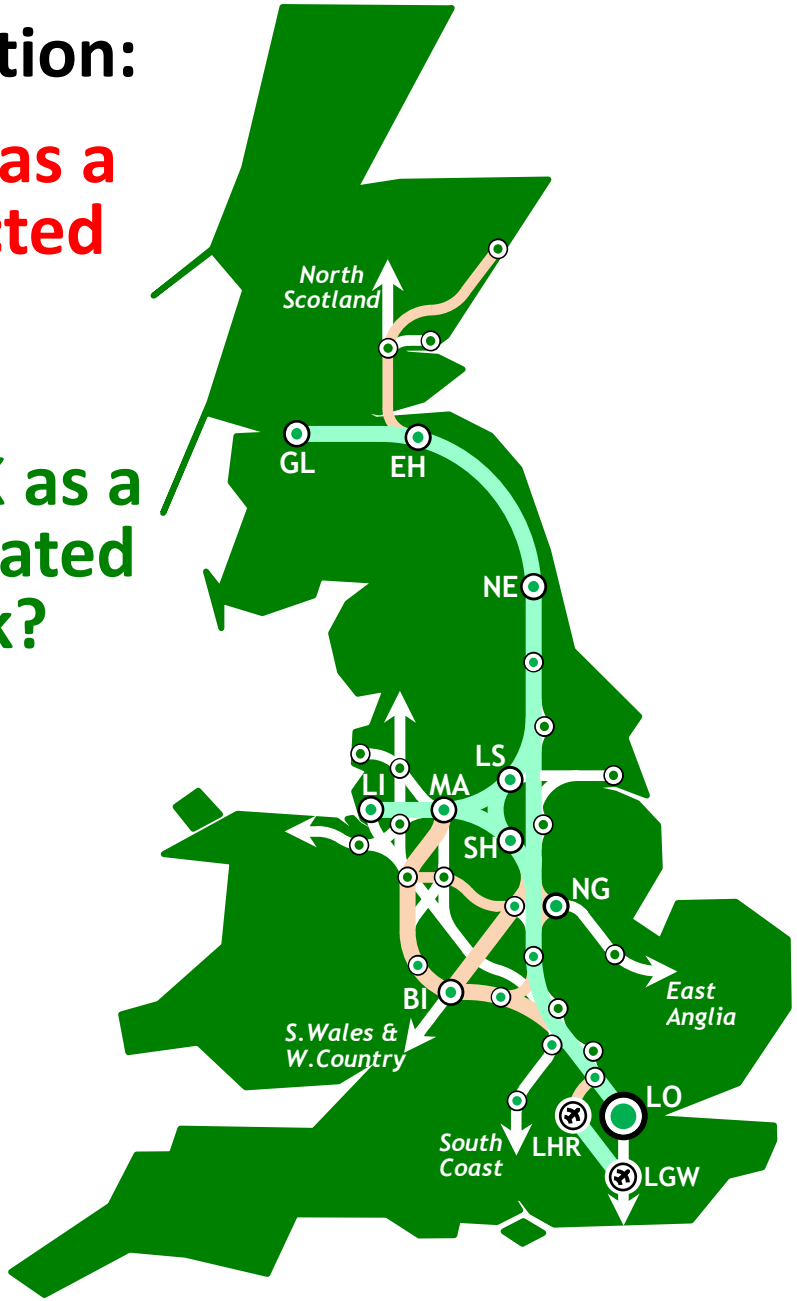


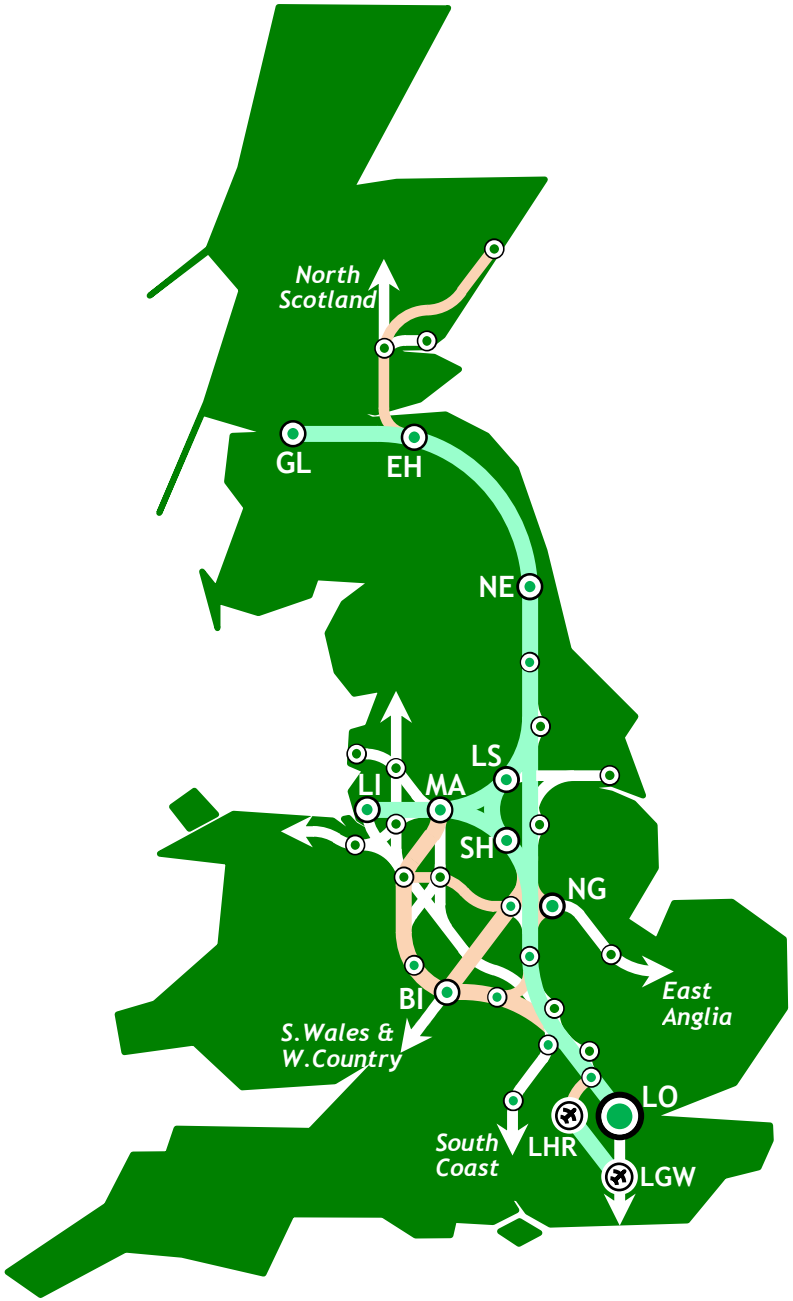
Crucial Question:

- **Build HS2 as a disconnected line?**

or

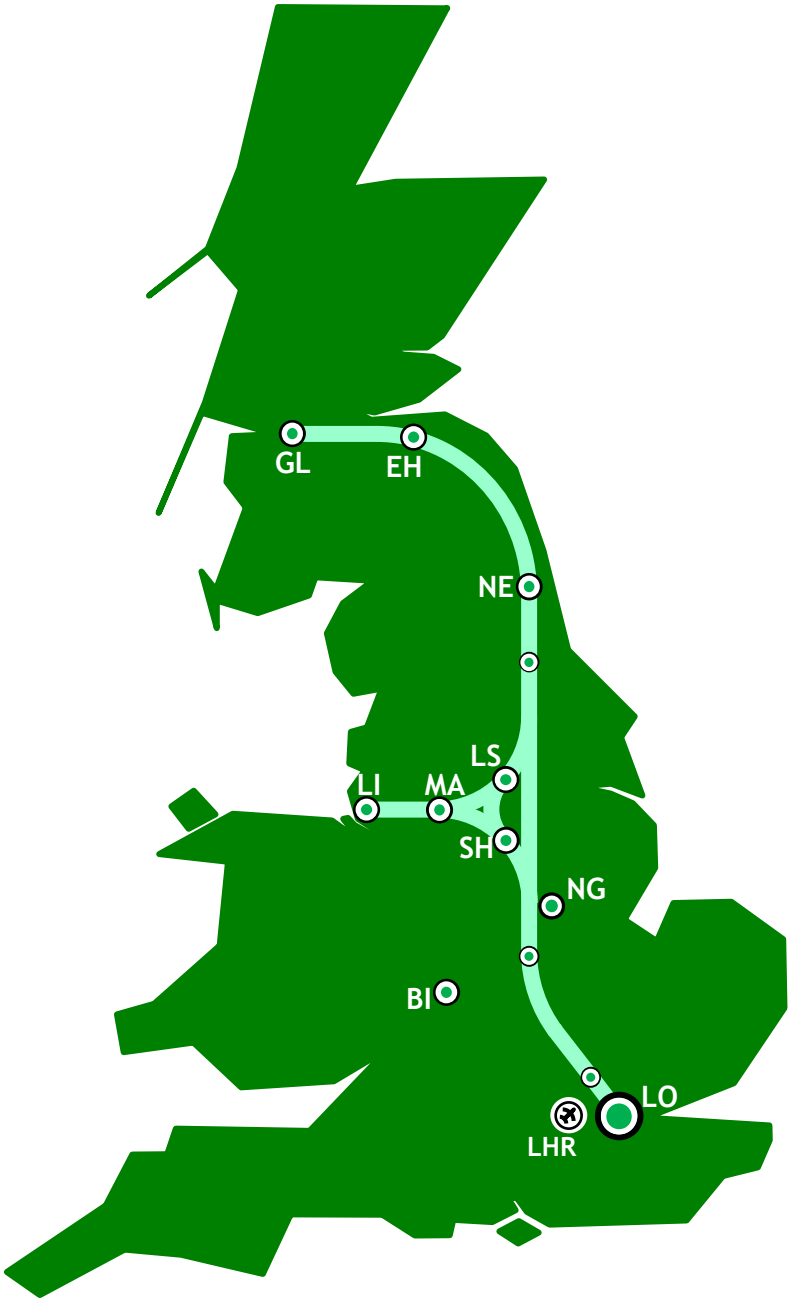
- **Build HSUK as a fully integrated network?**





High Speed UK: 6 steps to building a network:

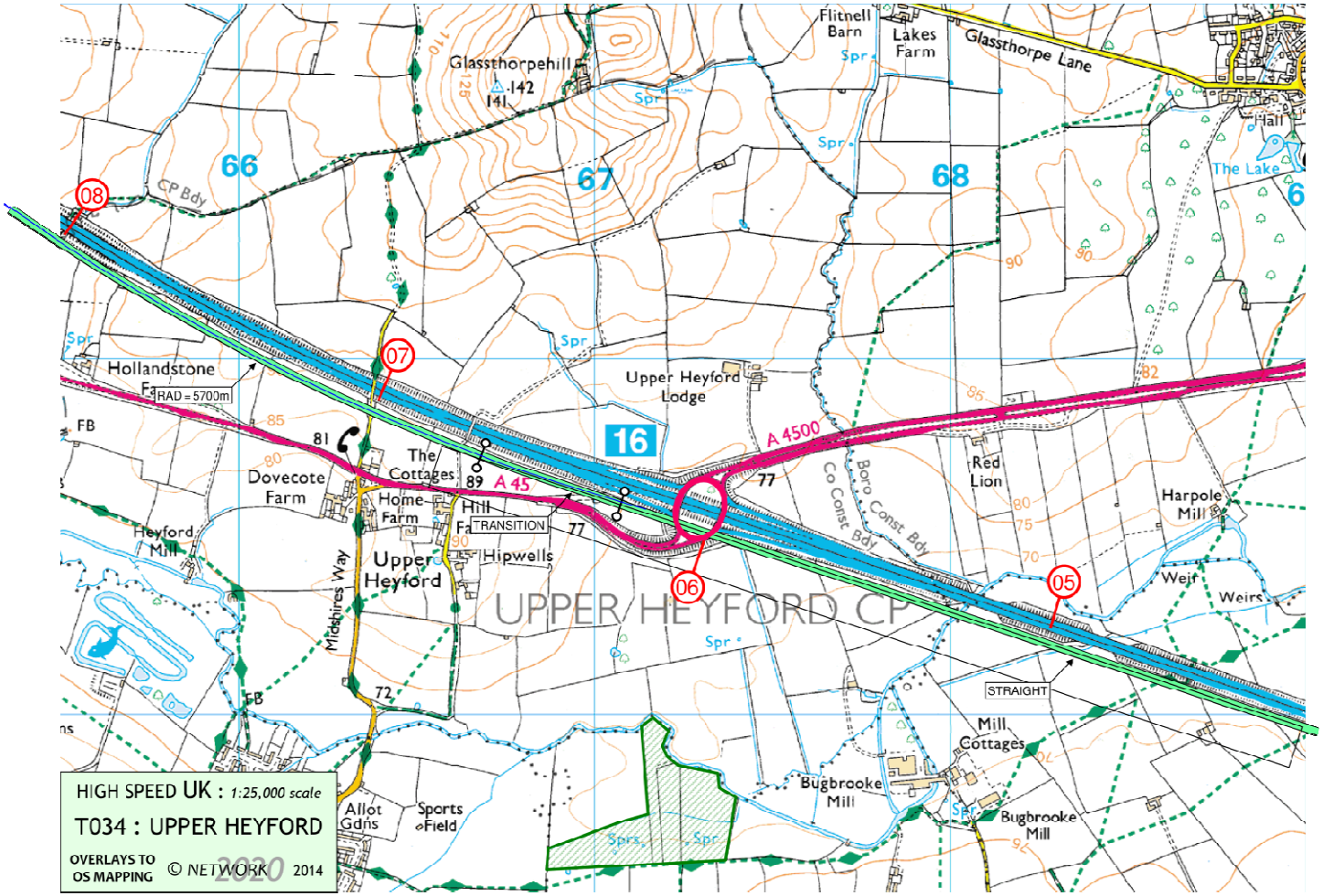
1. Design full length to all key destinations
2. Fully integrate between HSUK & existing network
3. Develop a timetable
4. Follow existing corridors
5. Provide sufficient network capacity
6. Make sure it works as an intercity railway

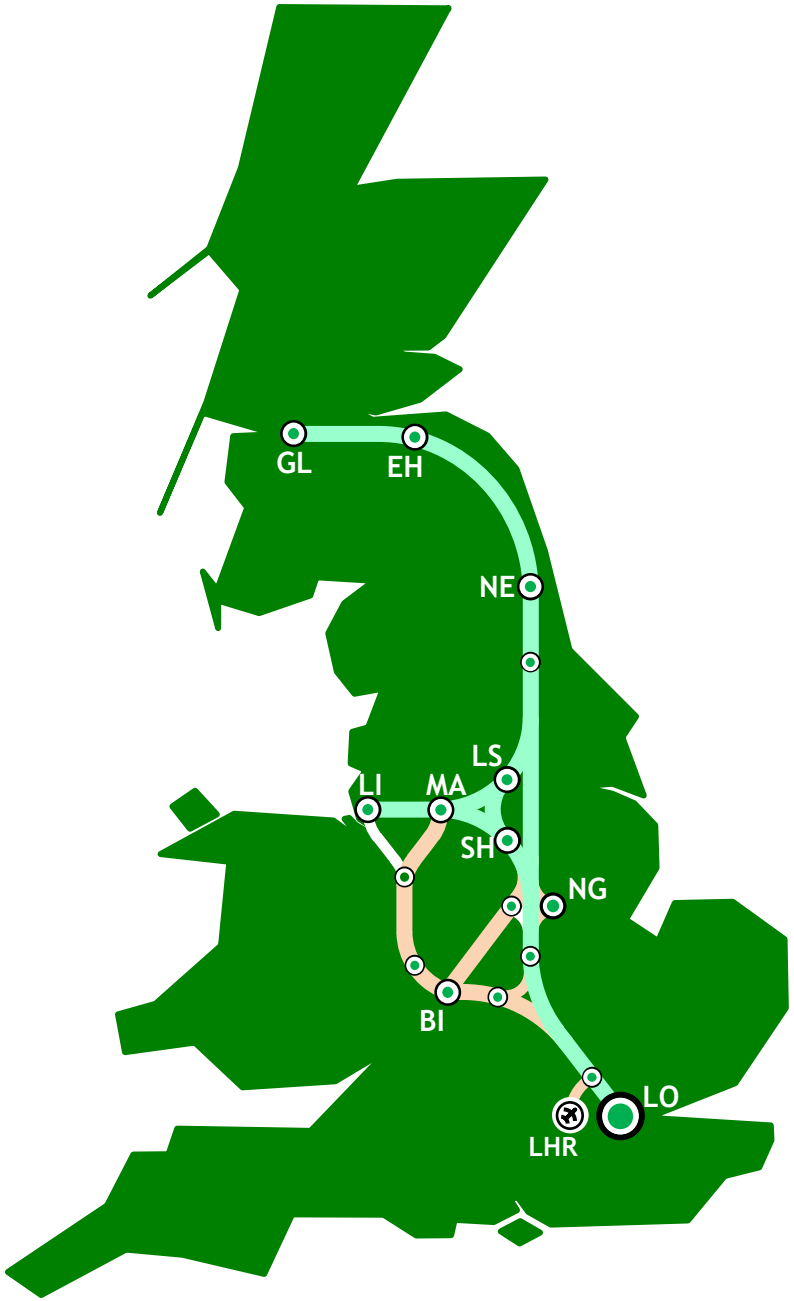


New Build

- Identify all lengths of new-build route
- Confirm feasibility with site visits along full line of route
- Design track alignments to 1:25,000 scale

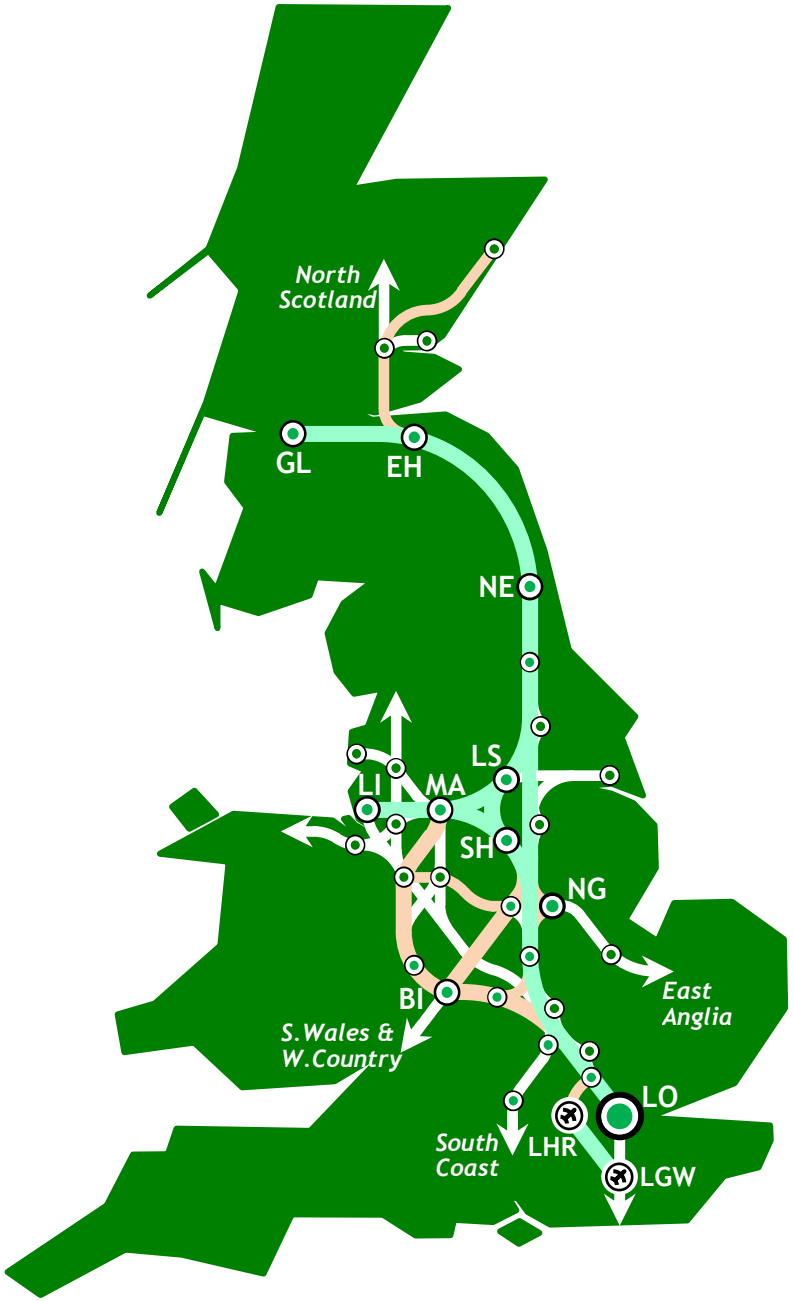
HSUK sample route mapping





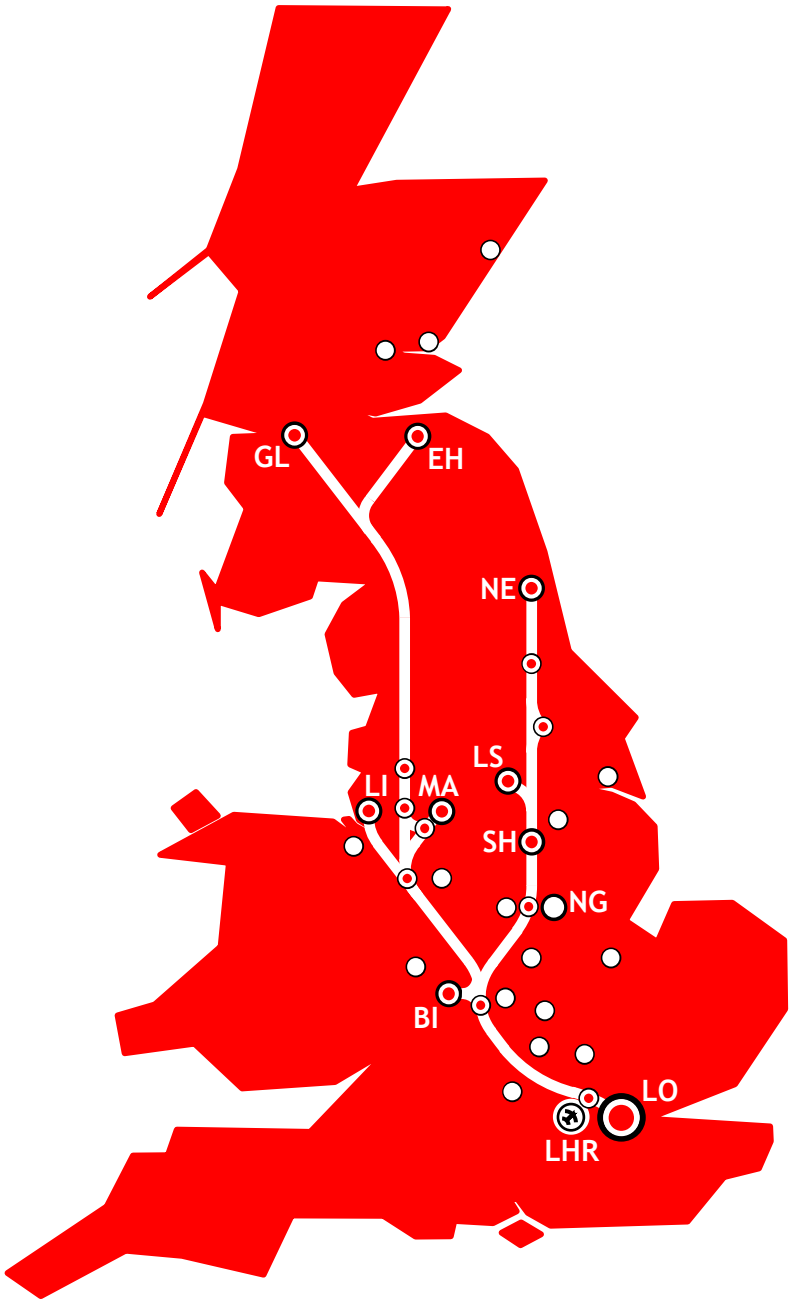
Upgrade & Enhance

- Identify all lengths of upgrade/restoration necessary to complete core network
- Develop strategies to upgrade existing hubs for full HSUK integration with local networks
- Develop independent strategy for enhanced rail access to Heathrow



Integrate

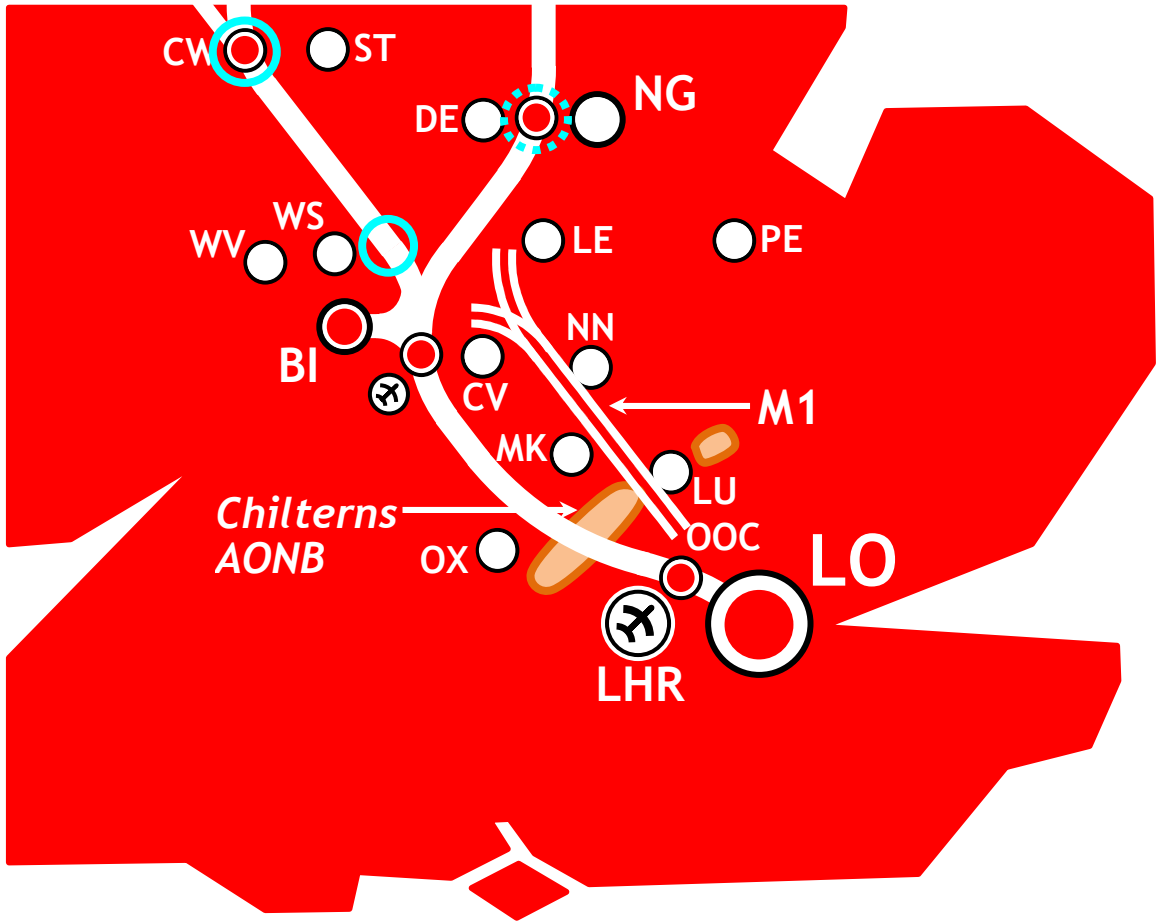
- Extend high speed services onto existing network to access all major communities
- Develop timetable to demonstrate
  a) feasibility of full integration and
  b) journey time and connectivity benefits
- Operate UK-sized trains



HS2 Strategy??

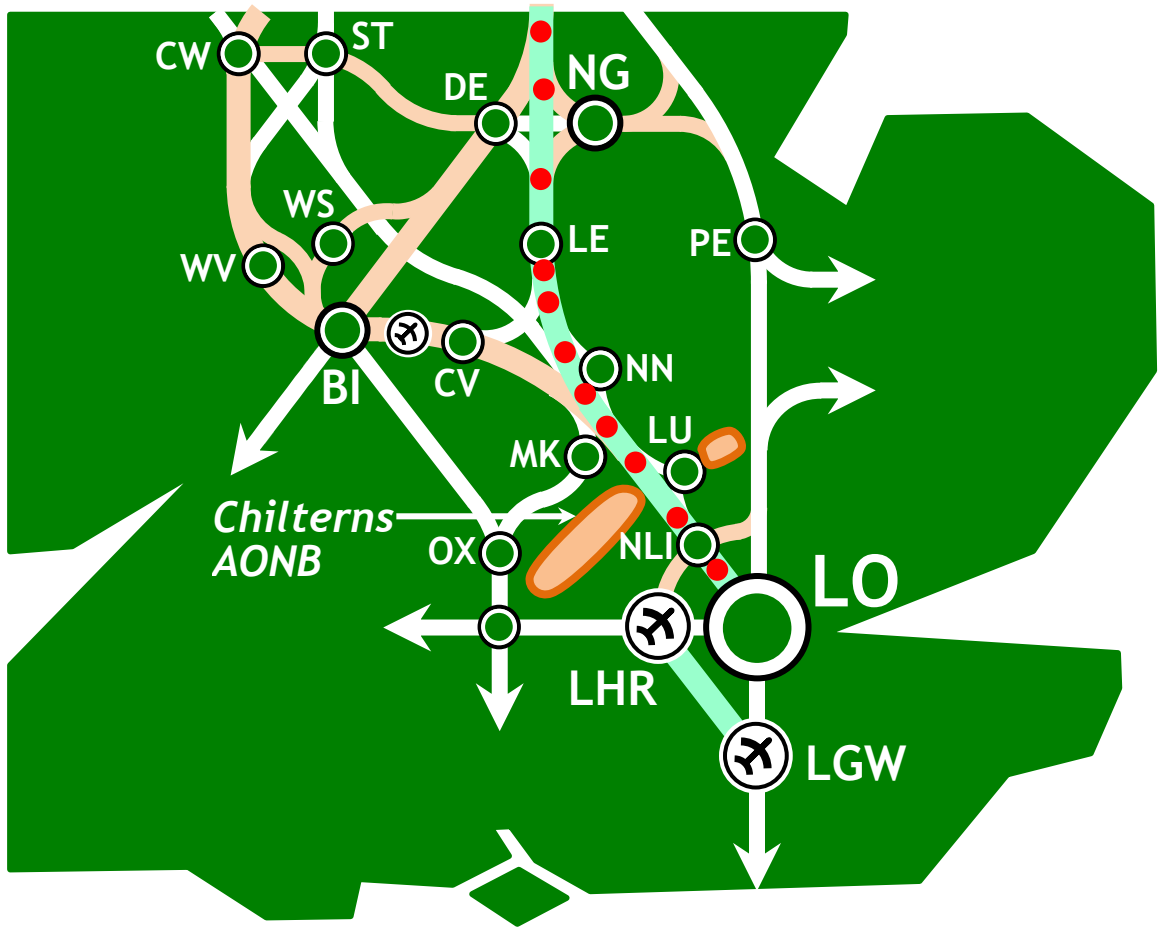
- No detailed knowledge of route north of Manchester & Leeds
- Rely on others to integrate with HS2 at disconnected hubs
- No timetable
- Assumption of:
  - exclusive operation,
  - 400km/h design speed,
  - supersized trains &
  - route via Old Oak Common

HS2:



- Routed via Old Oak Common
- Passes through Chilterns AONB
- Opposed by local communities along route
- Bypasses all intermediate cities
- Stand-alone rural route
- 3 connections to existing network
- Eurogauge trains assumed
- Separate stations in B'ham & N'ham
- Only 2 tracks

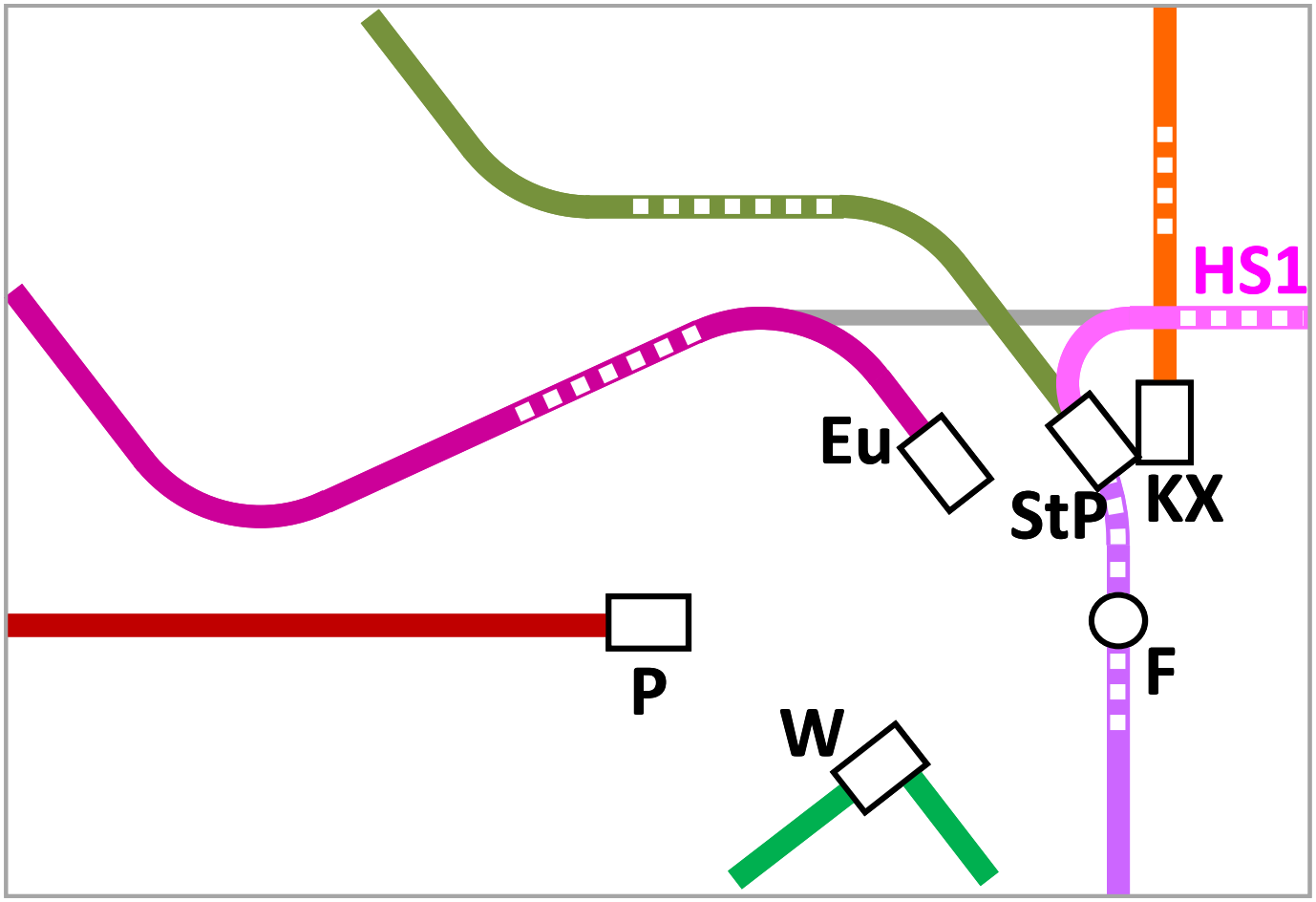
HSUK:



- Routed via M1 Corridor
- Avoids Chilterns AONB
- Fully integrated with MML / WCML
- 12 connections to existing network ●
- Connects to all intermediate cities
- Local impact minimised, major connectivity gains
- UK gauge operation assumed
- All existing hubs accessed by HSUK
- 4 tracks

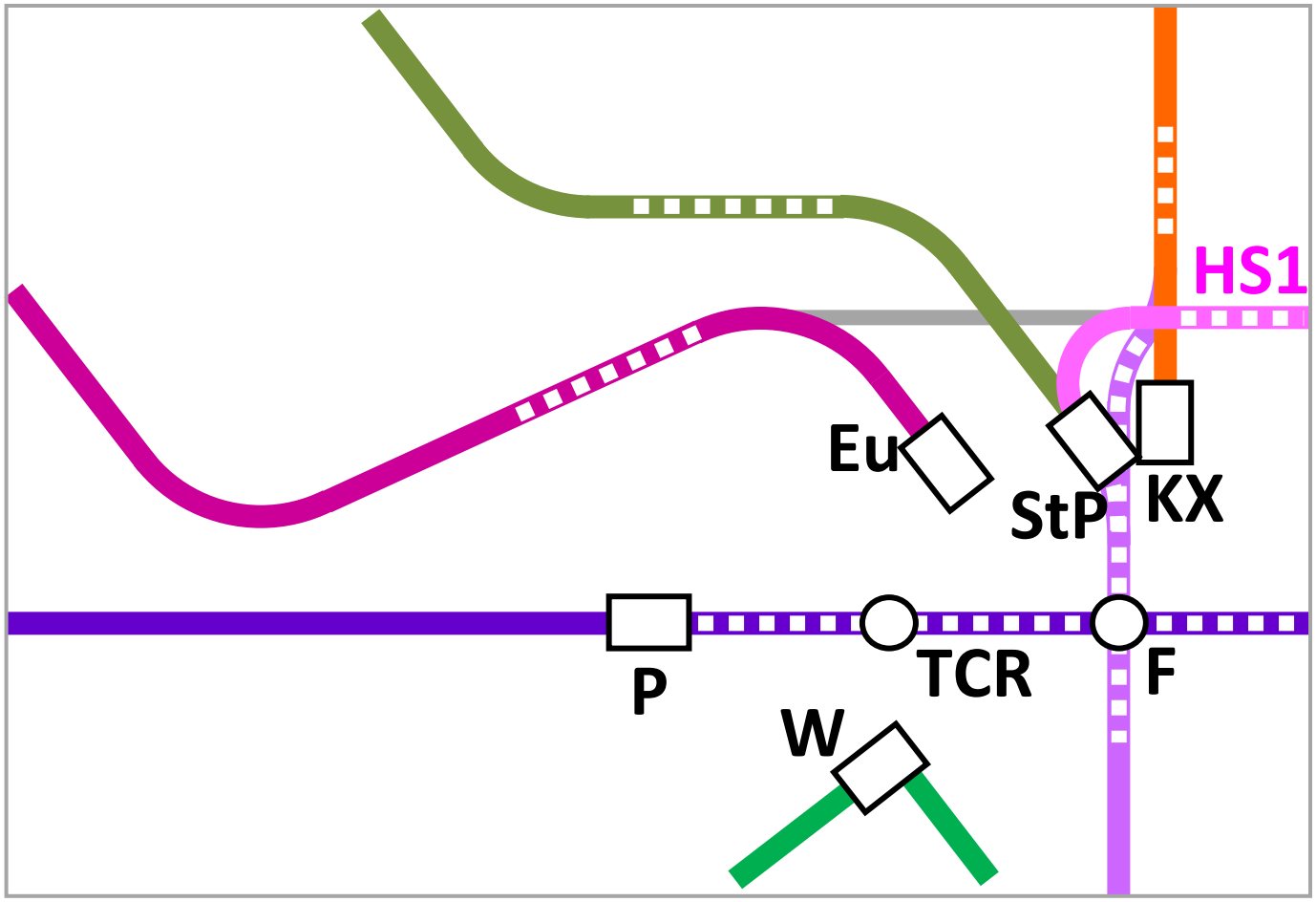
Old Oak Common & HS2-HS1 Link

Current primary London network



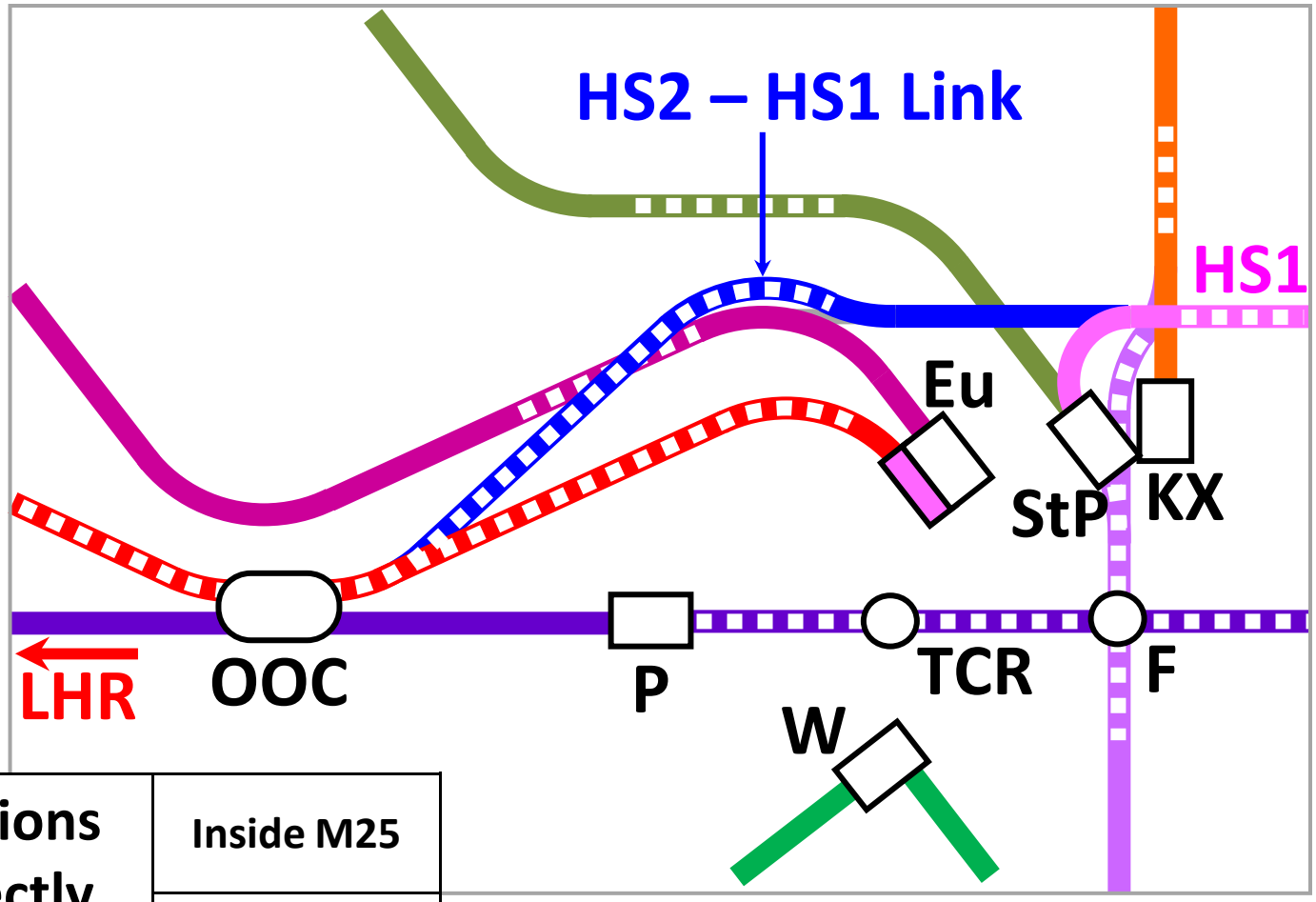
Old Oak Common & HS2-HS1 Link

Existing primary London network with **CrossRail**



Old Oak Common & HS2-HS1 Link

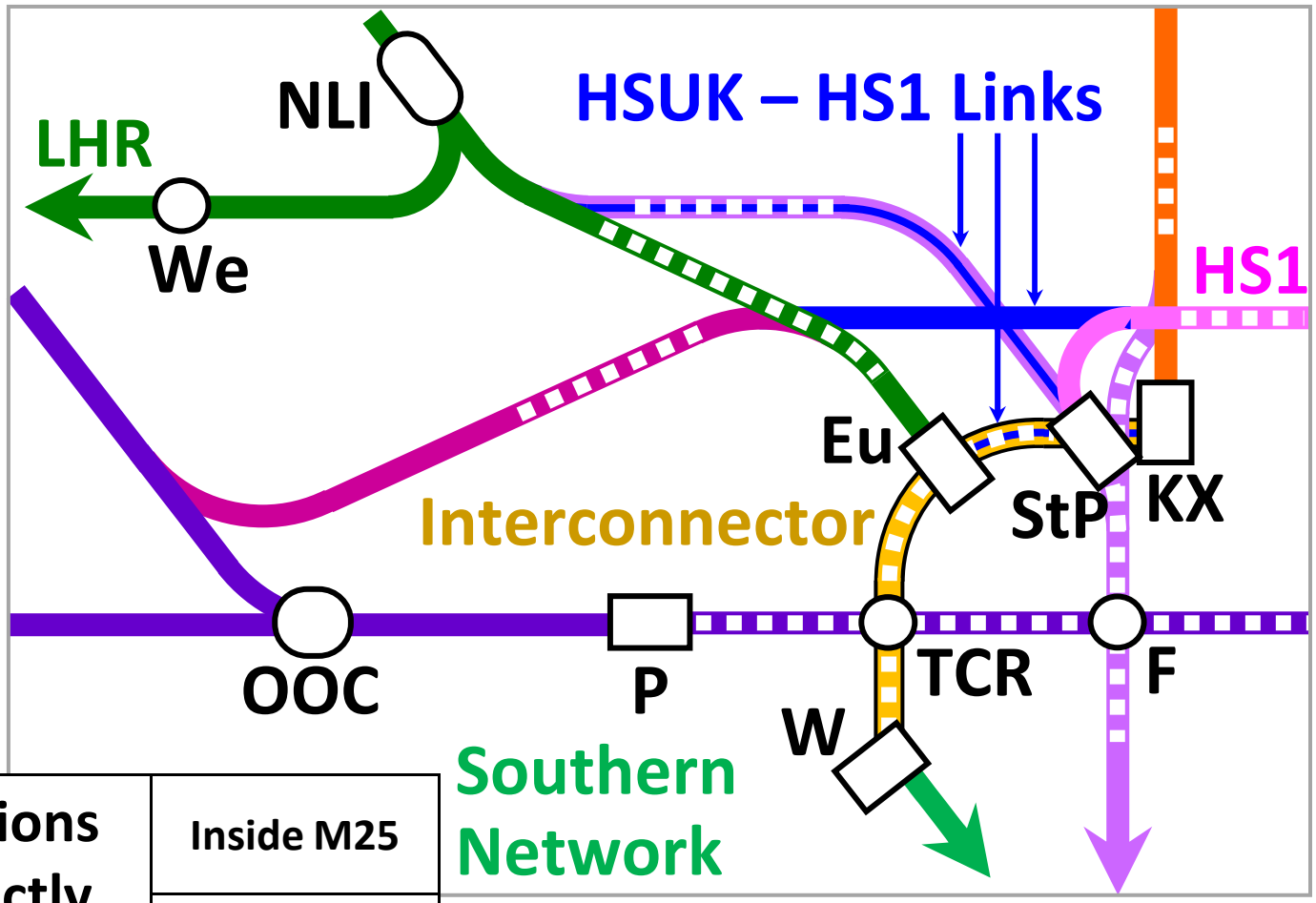
Proposed primary London network with **HS2**



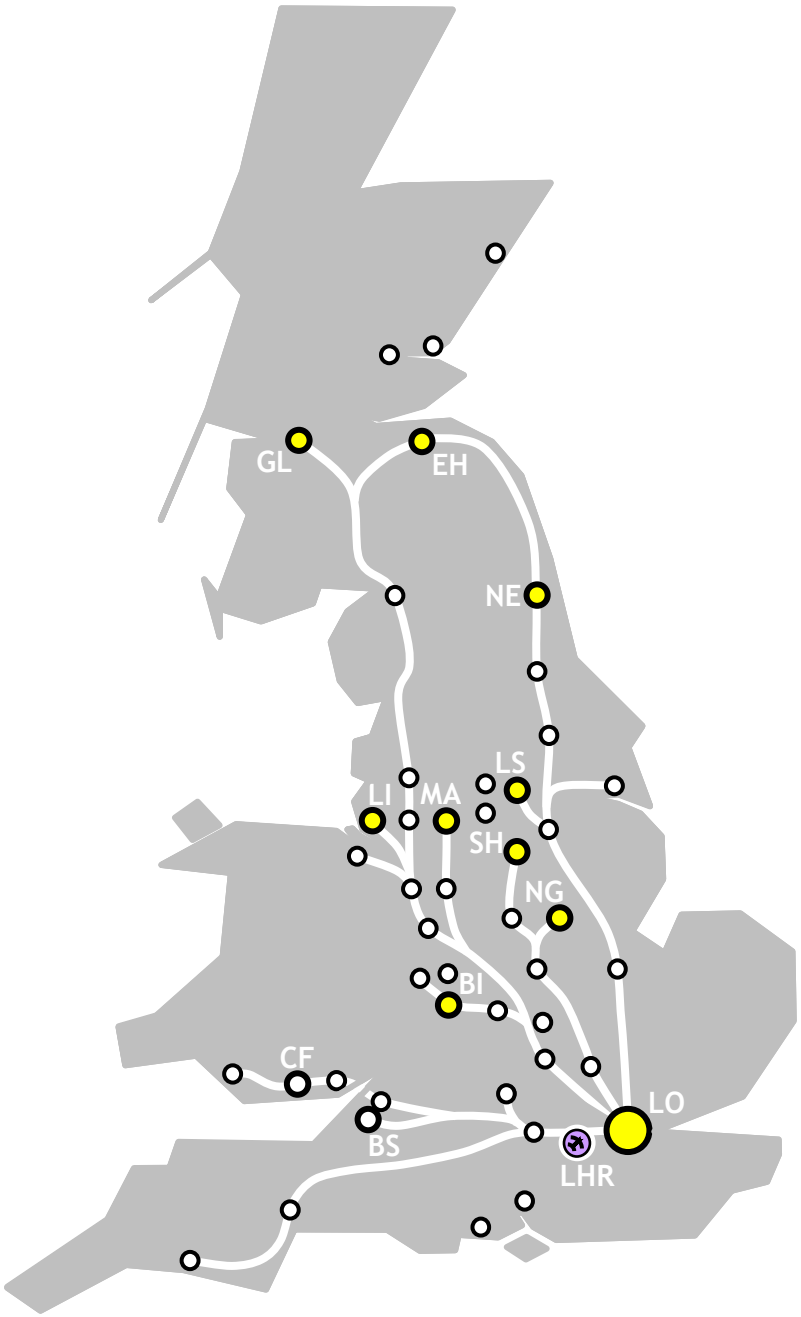
175	Stations directly connected	Inside M25
188		Outside M25

Old Oak Common & HS2-HS1 Link

Proposed primary London network with **High Speed UK**

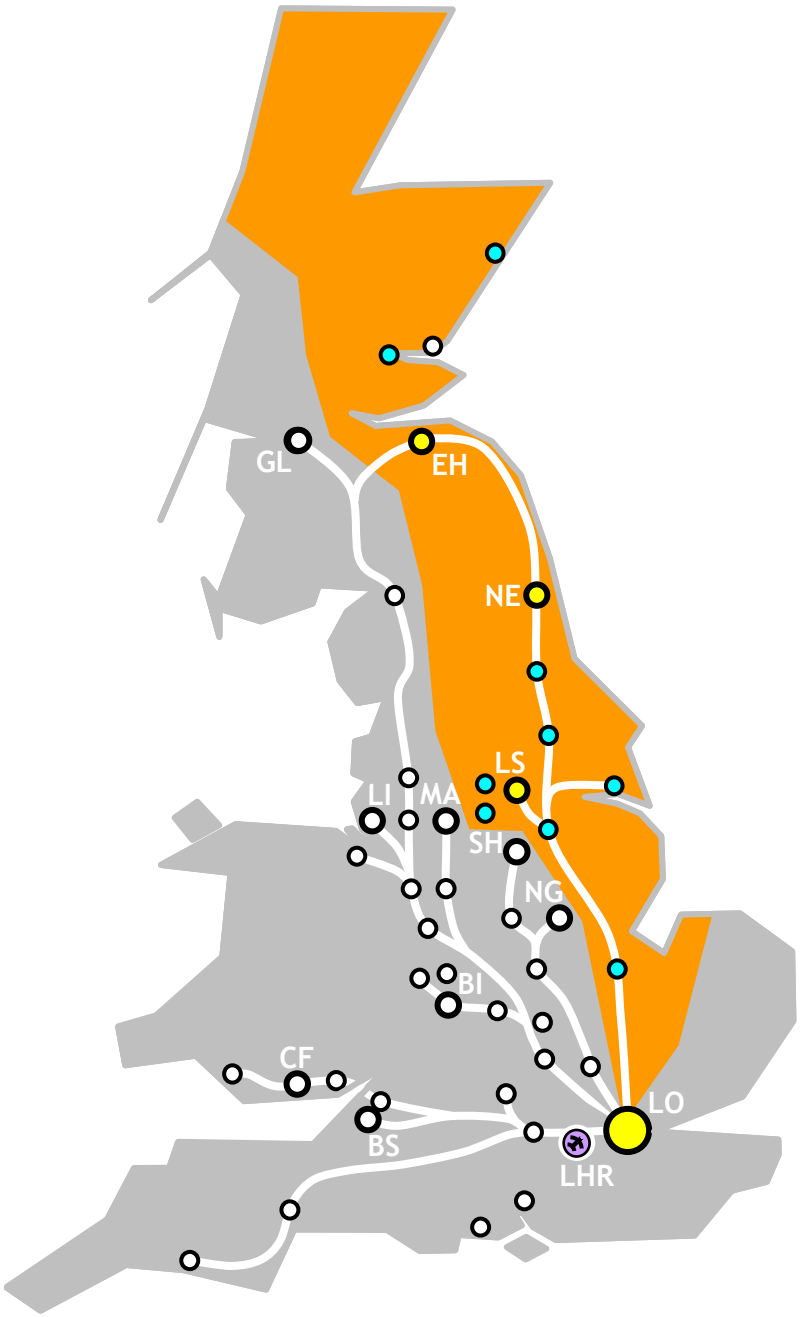


395	Stations directly connected	Inside M25
594		Outside M25



Network Capacity??

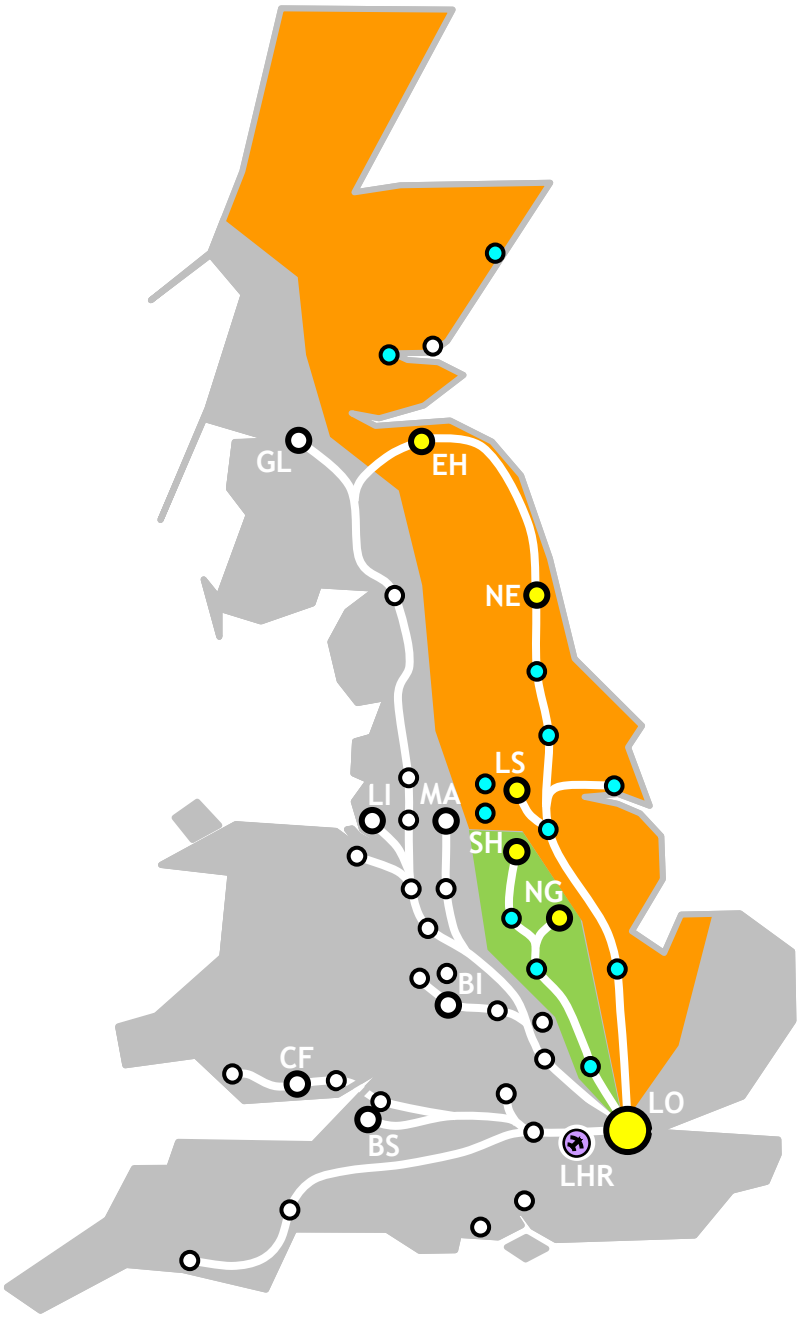
- Existing network principally focussed upon **London**
- Each primary city on separate spur off radial main line
- **Birmingham**, **Nottingham**
- **Sheffield**, **Manchester**, **Liverpool**, **Leeds**
- **Newcastle**, **Edinburgh**, **Glasgow**
- **Heathrow** not connected



HSUK

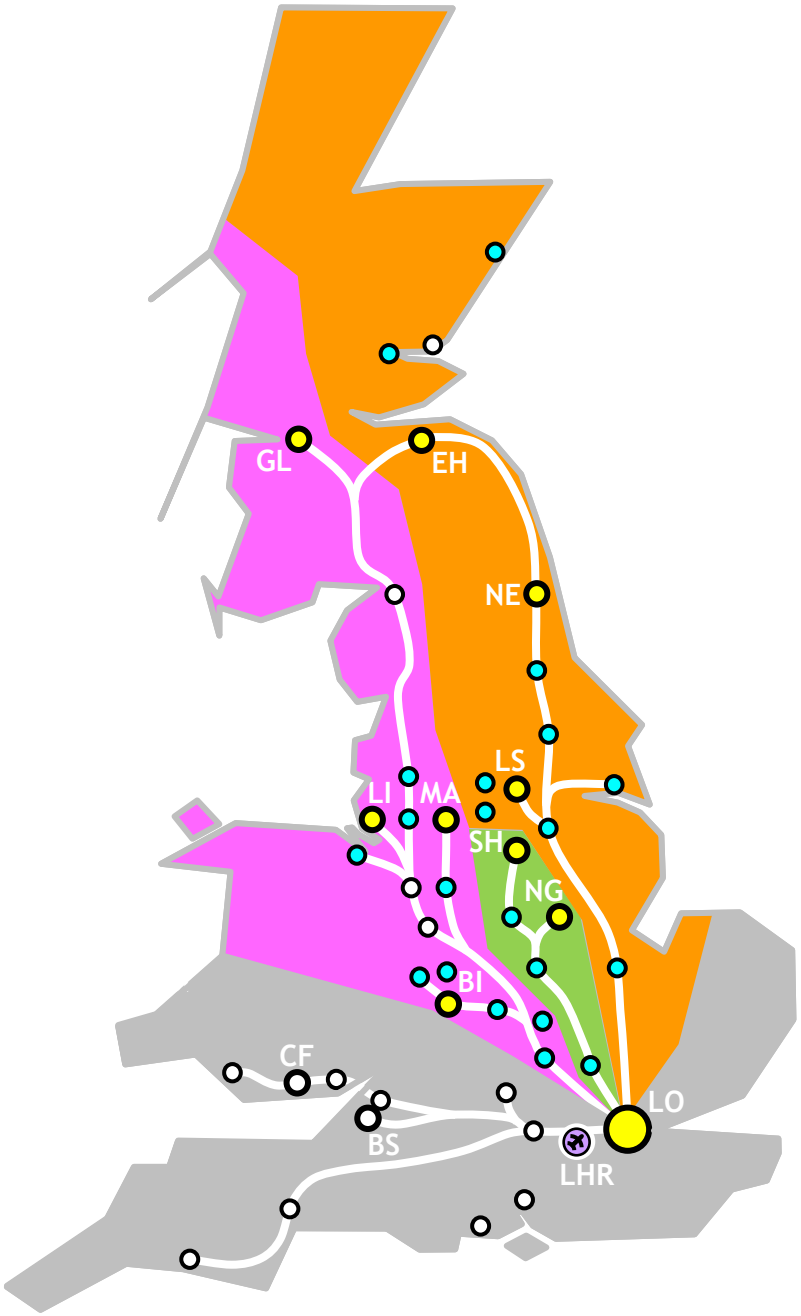
East Coast Main Line

- Primary Cities: **Leeds, Newcastle, Edinburgh**
- Secondary Cities: **Peterborough, Doncaster, Hull, Huddersfield, Bradford, York, Darlington, Perth, Aberdeen**
- **6** intercity trains per hour
- **2/4** track main line



Midland Main Line

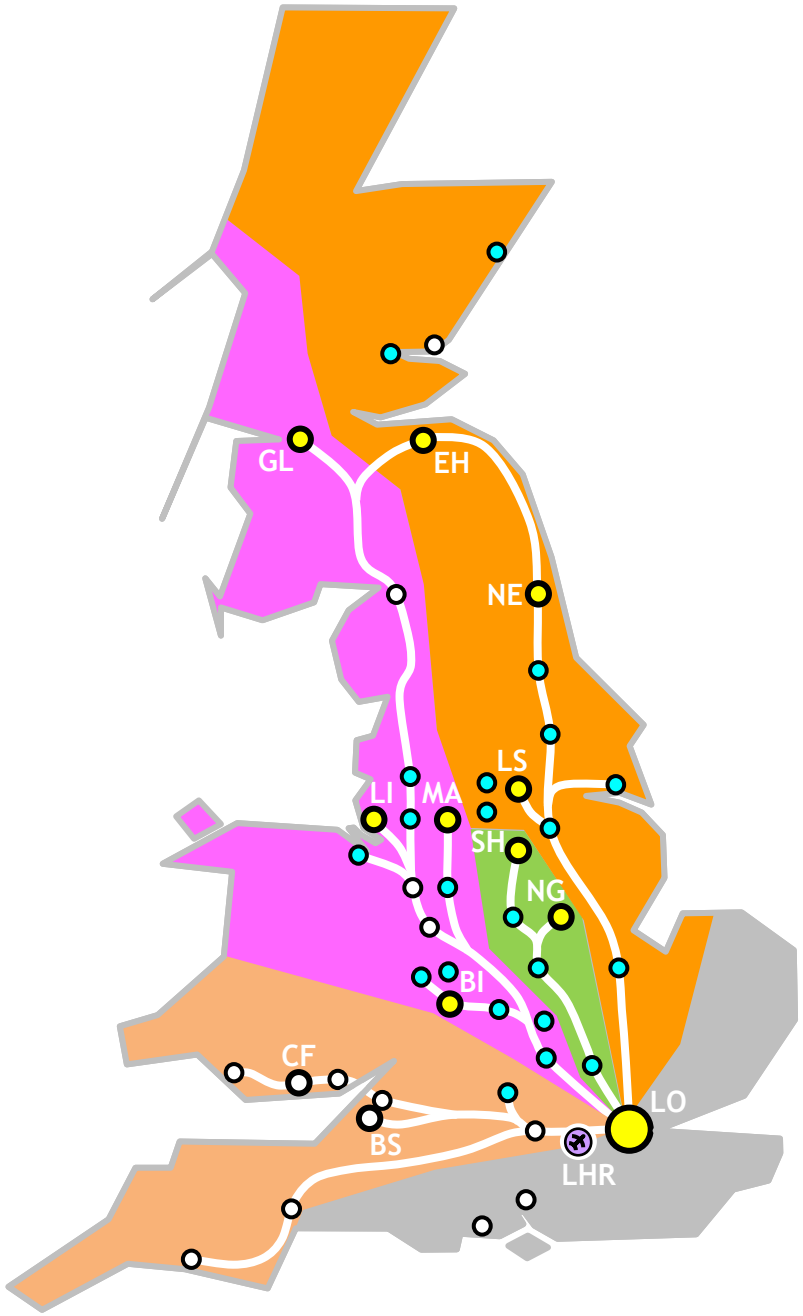
- Primary Cities:
  Sheffield, Nottingham
- Secondary Cities:
  Luton, Leicester, Derby
- **4** intercity trains per hour
- **2/4** track main line



HSUK

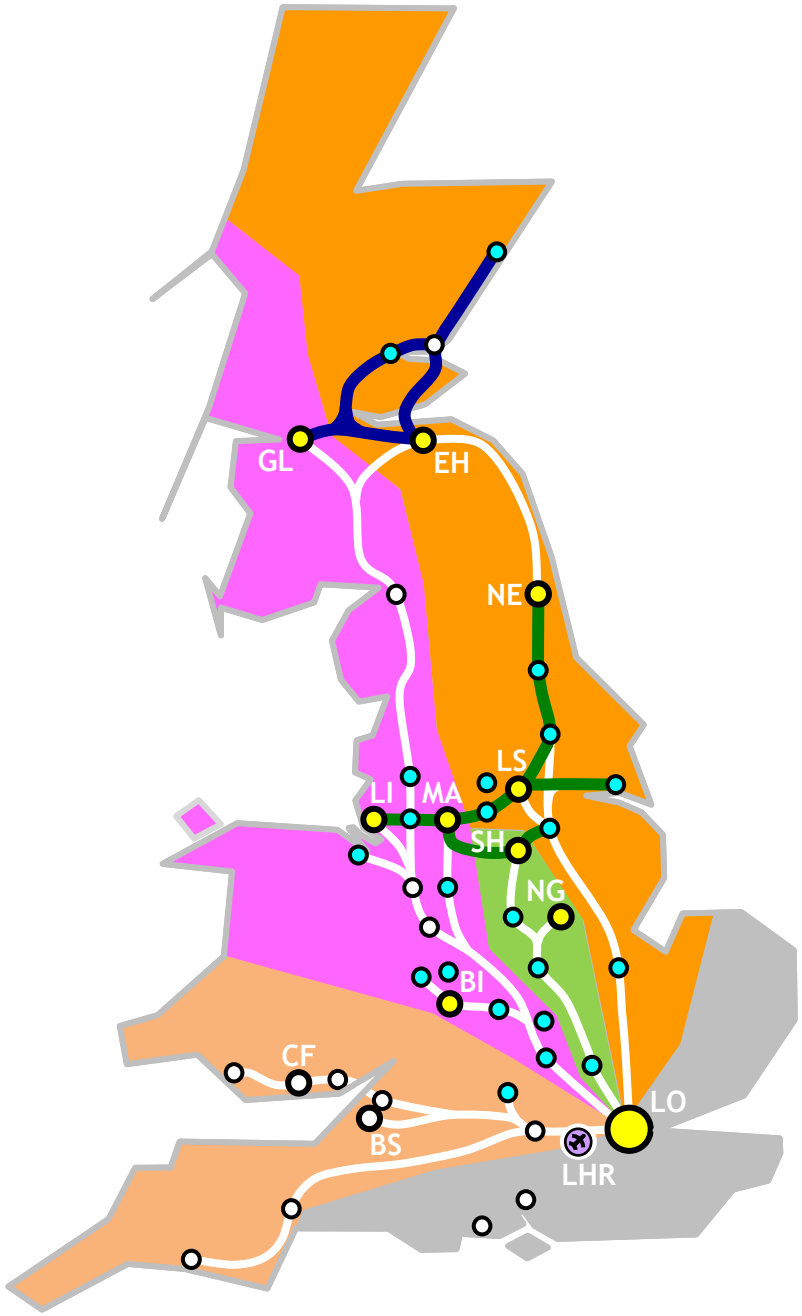
West Coast Main Line

- Primary Cities: **Birmingham, Liverpool, Manchester, Glasgow**
- Secondary Cities: **Milton Keynes, Northampton, Coventry, Walsall, Wolverhampton, Stoke, Chester, Warrington, Preston**
- **9** intercity trains per hour
- **4** track main line



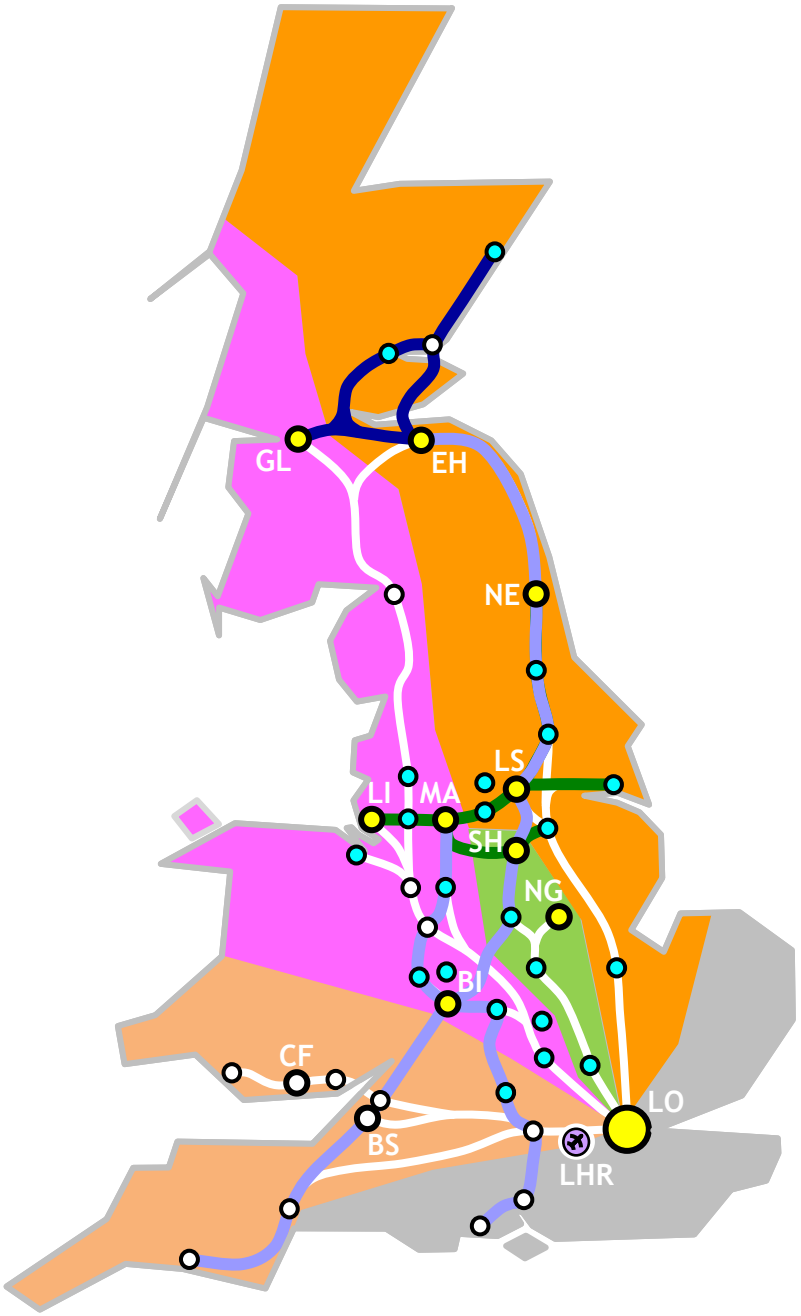
Great Western Main Line

- Primary Cities:
  Bristol, Cardiff
- Secondary Cities:
  Reading, **Oxford,**
  Swindon, Newport,
  Swansea, Exeter,
  Plymouth
- **7** intercity trains per hour
- **2/4** track main line



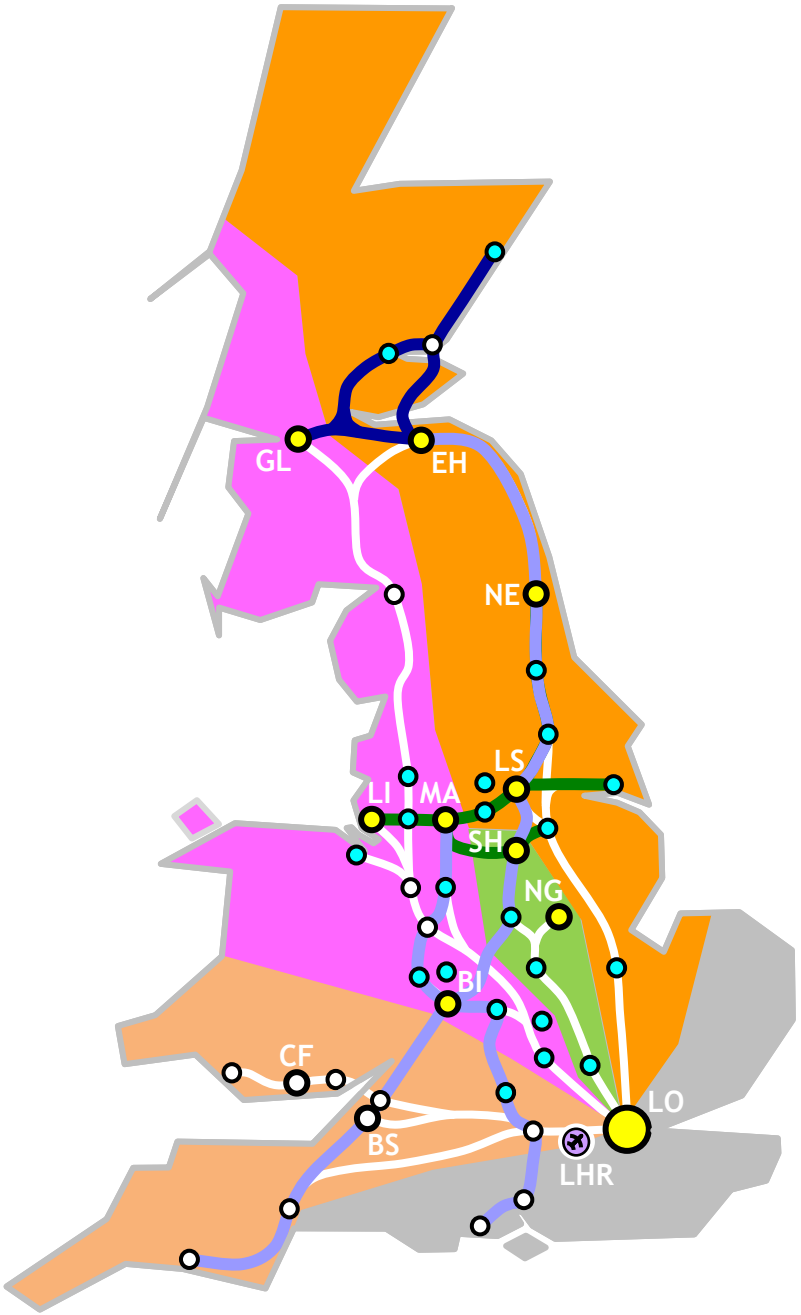
National Network??

- Only becomes a **network** with addition of **Scottish** & **Trans-Pennine**



National Network??

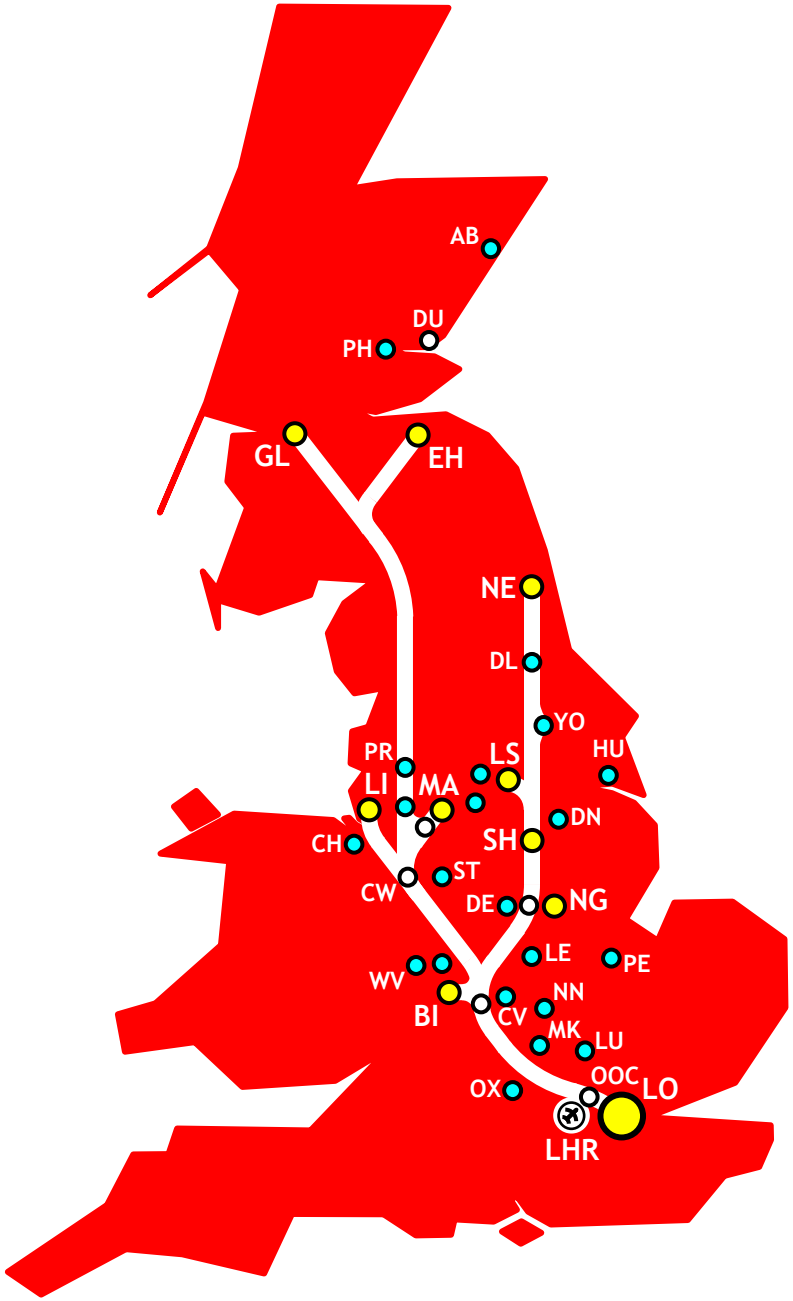
- Only becomes a **network** with addition of **Scottish** & **Trans-Pennine** & **CrossCountry**



HSUK

National Network coverage *(along ECML, MML & WCML axes)*:

- **8/12** tracks
- **19** intercity trains per hour north of London, covering:
- **10** primary cities
- **22** secondary cities
- **1** hub airport



HSUK

HS2 coverage:

- **2** tracks
- **18** trains per hour, covering:
- **10** primary cities
- **4** secondary cities
- **18** secondary cities bypassed
- **1** hub airport??

HSUK coverage:

- **4** tracks on London/ Midlands stem
- **24** trains per hour covering all ‘stakeholder’ cities:
- **10** primary cities
- **22** secondary cities
- **1** hub airport

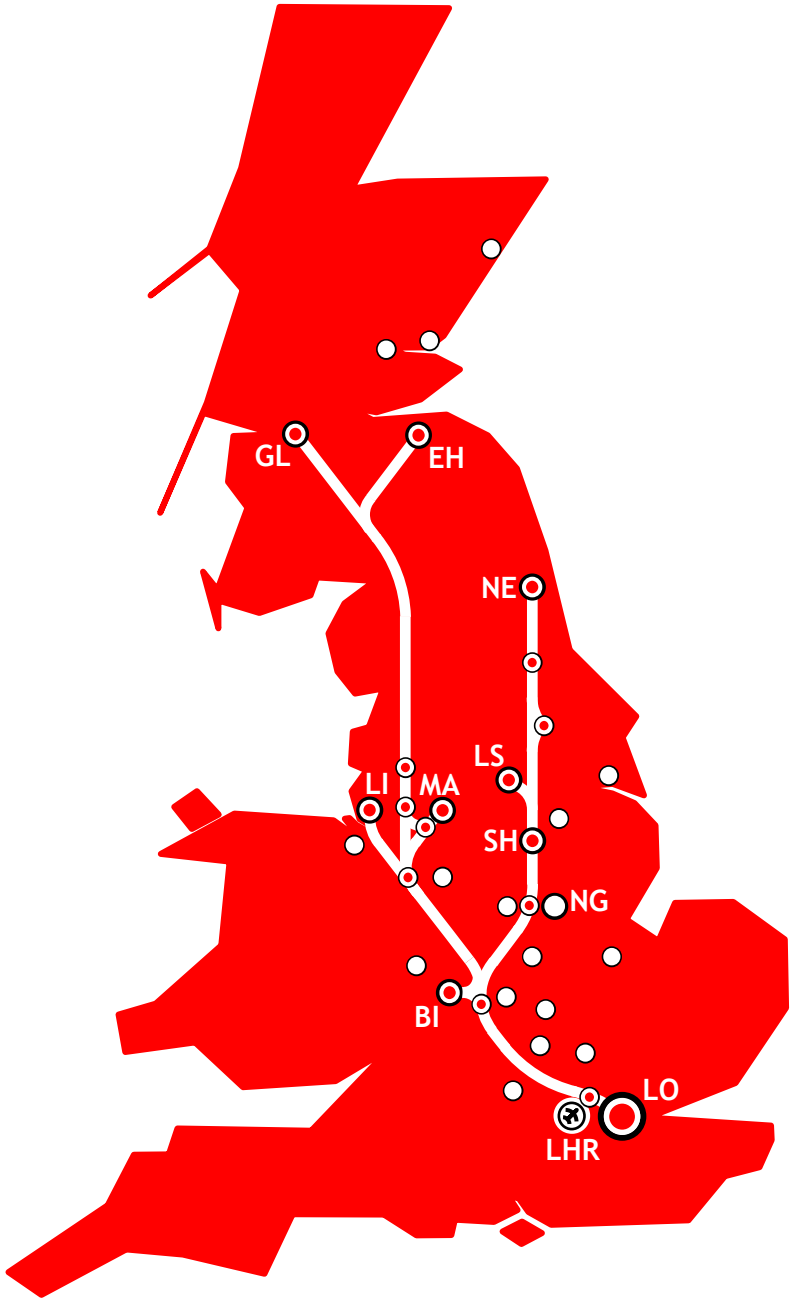
- HS2 lacks the **capacity**, **integration** and **routeing strategy** necessary to serve all stakeholder communities of the UK intercity network
- HS2 is **unfit for purpose** as a UK intercity railway system

Network Connectivity??

THOUGHT FOR THE DAY…

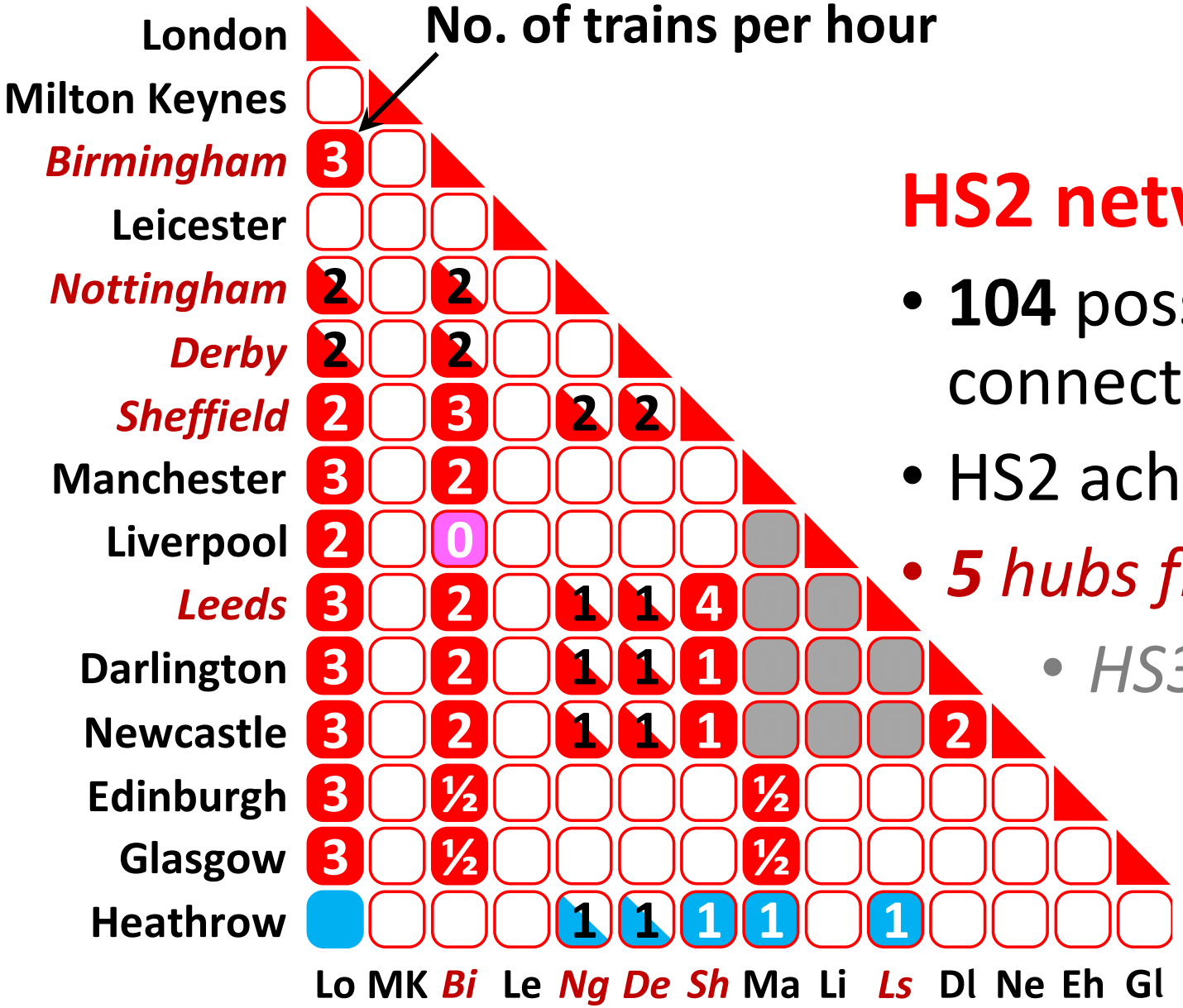
An intercity rail network should interconnect all major cities with fast and frequent services linking city centre hubs

- Not possible on the existing network
- Can it be achieved with high speed rail?
- Let's consider: **London, MK, B'ham, Leicester, N'ham, Derby, Sheffield, Manchester, Liverpool, Leeds, Darlington, Newcastle, Edinburgh** & **Glasgow** plus **Heathrow Airport**



HS2 network:

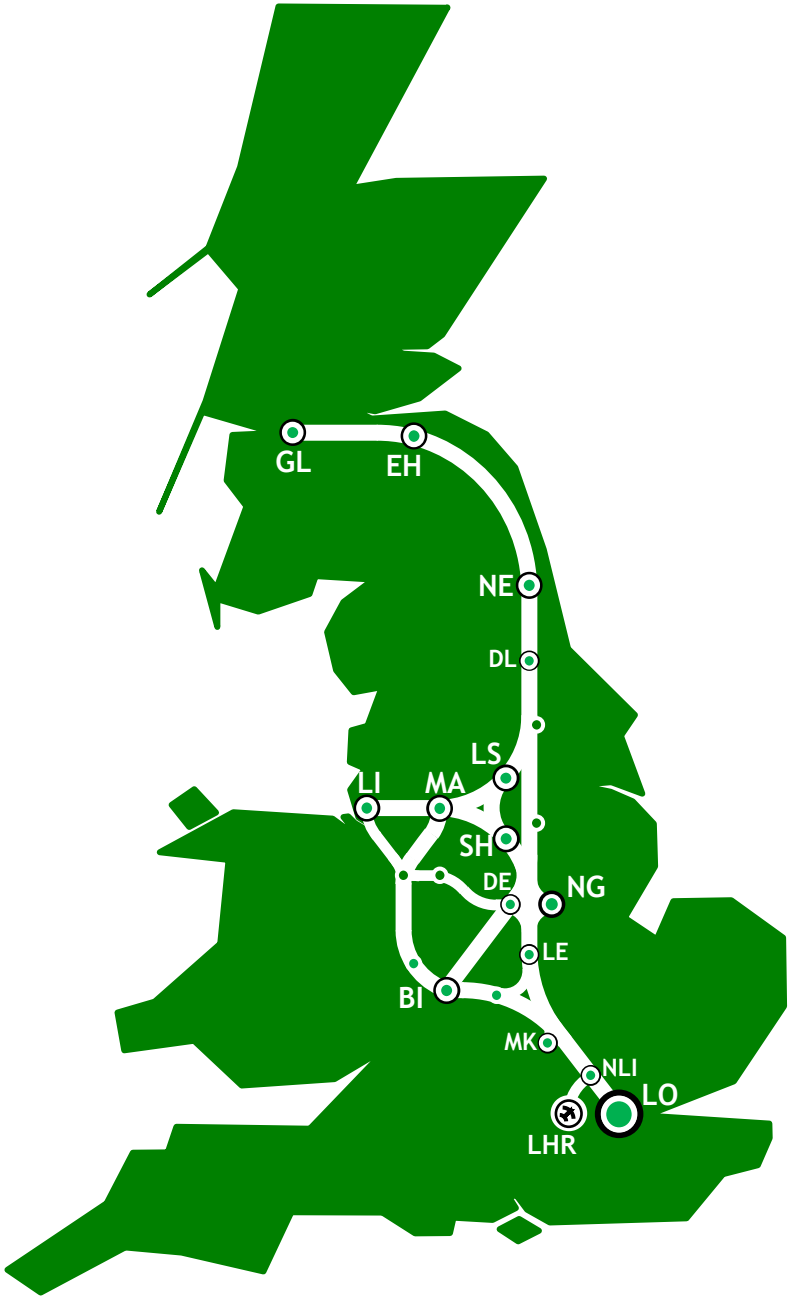
- Focussed upon London
- Inefficient configuration
- All primary cities on spurs
- Termini at Birmingham, Leeds & Manchester
- HS3 trans-Pennine link??
- All East Midlands centres bypassed
- Links to Heathrow not defined



HSUK

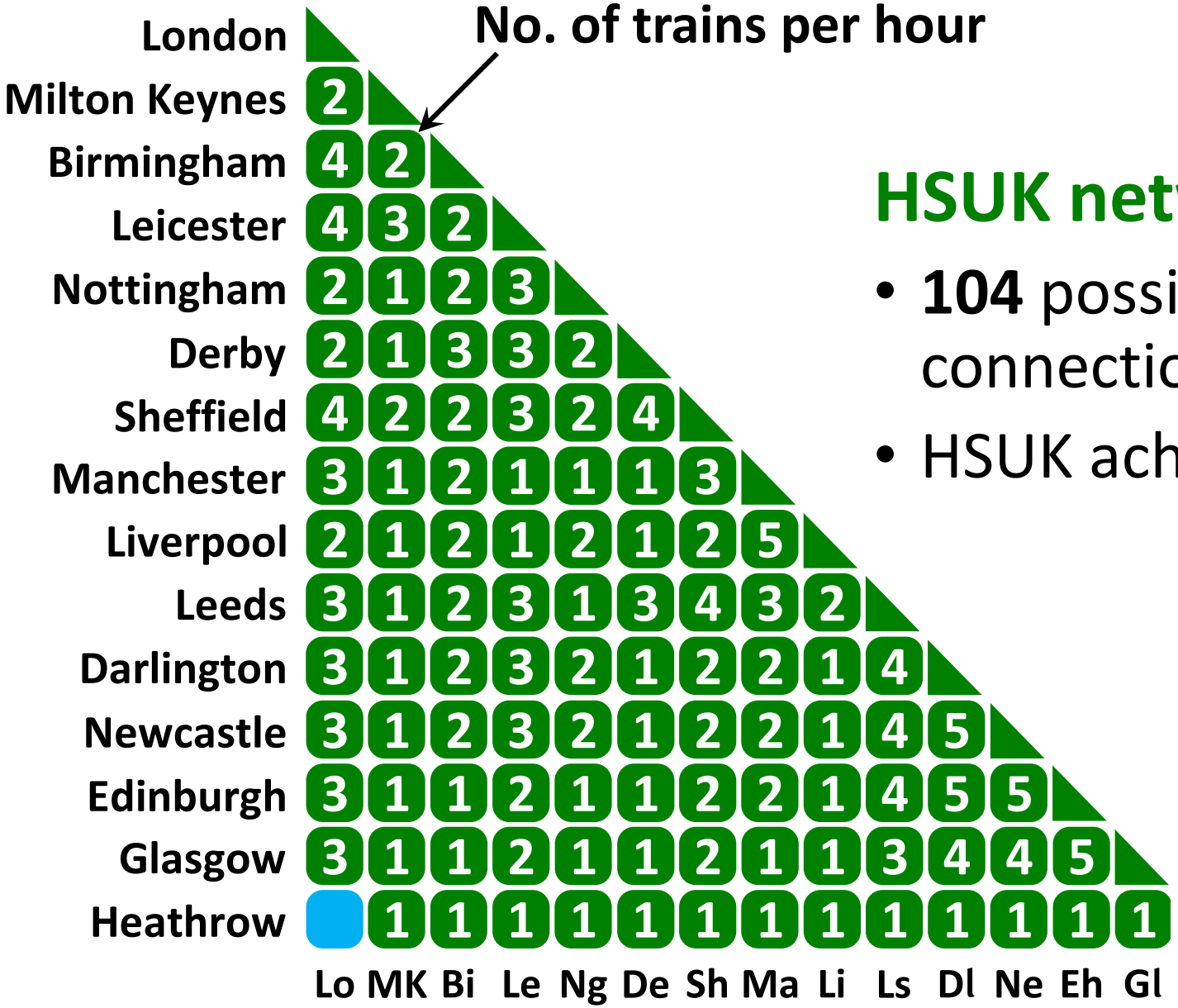
HS2 network:

- **104** possible connections
- HS2 achieves **27**
- *5 hubs fragmented*
  - *HS3 effect +9*



HSUK network:

- Full interregional links
- Efficient spine & spur configuration
- Several cities on single line of route
- Enhanced city centre stations at Birmingham, Leeds & Manchester
- Integral trans-Pennine link
- Access to Heathrow via Compass Point network



HSUK network:

- **104** possible connections
- HSUK achieves **104**

Conclusion:

Integrated Network

works better than

Disconnected Line

HS2 Regional Economic Impacts

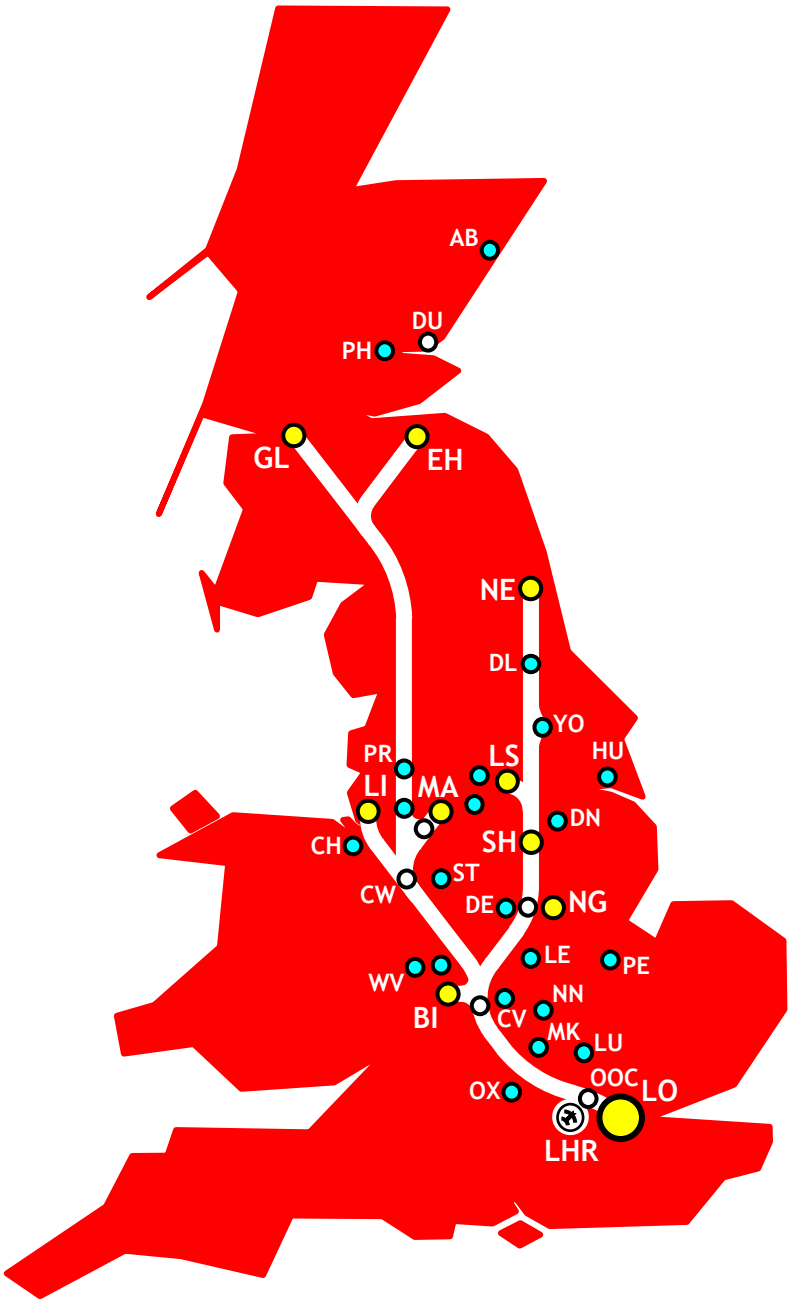
HS2 predicted economic gains??

- Only possible with improved connectivity
- Refer to Table 23 of KPMG report
- Connectivity not improved!

HS2 Regional Economic Impacts: Table 23

Table 23: HS2 services pattern and re-deployment of classic network capacity assumed in the August 2012 economic case

HS2 Captive Services	HS2 Classic-Compatible Services	Classic Network
3tph Euston-Manchester, calling at Old Oak Common and 1tph at Birmingham Interchange.	1tph Euston-Liverpool calling at Old Oak Common and Runcorn, one of which splits/joins a Euston-Birmingham service at Birmingham Interchange, also calling at Stafford. Second also calls at Crewe.	LM WCML services south of Birmingham - net 59 more per day, inc. 26 more Wolverhampton-Euston stopping services (via Birmingham, Coventry, Milton Keynes and other stations), between Milton Keynes/Rugby and Euston and within West Midlands (New Street to Coventry and New Street to Birmingham International).
3tph Euston-Birmingham, calling at Old Oak Common and 1tph at Birmingham Interchange.	1tph Euston-Edinburgh/Glasgow, calling at Old Oak Common and splitting/joining at Carstairs. 1tph calls additionally at Birmingham Interchange and Preston.	ICWC services/LM north of Birmingham - net 87 fewer per day, including merging ICWC Liverpool and Wolverhampton services by diverting Liverpool trains via West Midlands and adding station calls, 19 new Crewe-Euston trains and reduction from 50 to 11 ICWC Manchester-Euston services, excl. three peak services and eight extended
PROPOSED HS2 SERVICES ON NEW HIGH SPEED LINE	**HS2 SERVICES EXTENDING ONTO EXISTING NETWORK**	**ASSUMED REDUCED SERVICES ON EXISTING NETWORK**



Assessment of Connectivity:

- **10** primary cities
- **22** secondary cities
- **1** hub airport
- **33** centres
- **528** possible journeys
- How many **improved?**
- How many **unchanged?**
- How many **made worse?**

Assessment of Connectivity:

- **10** primary cities
- **22** secondary cities
- **1** hub airport
- **33** centres
- **528** possible journeys
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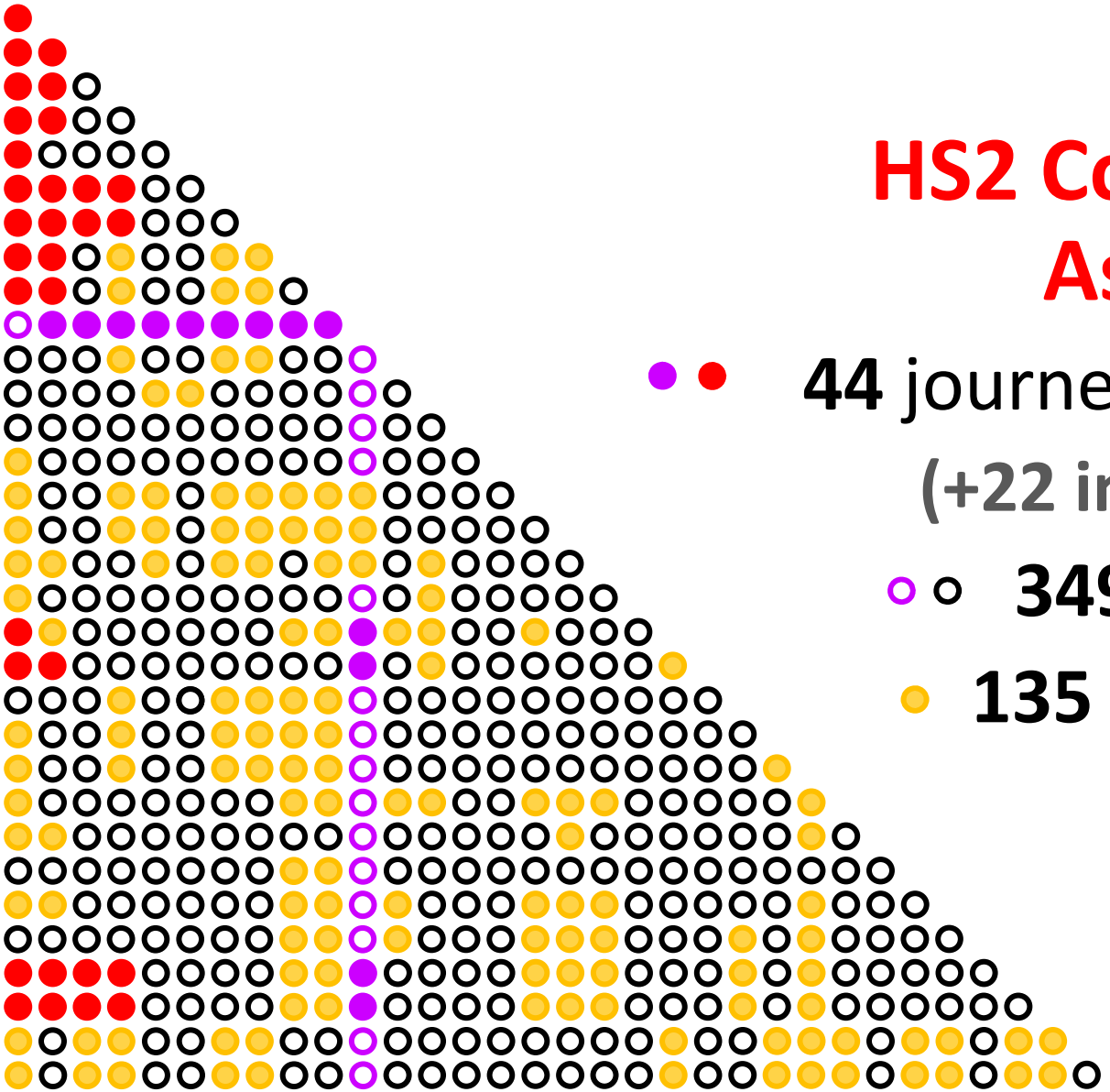


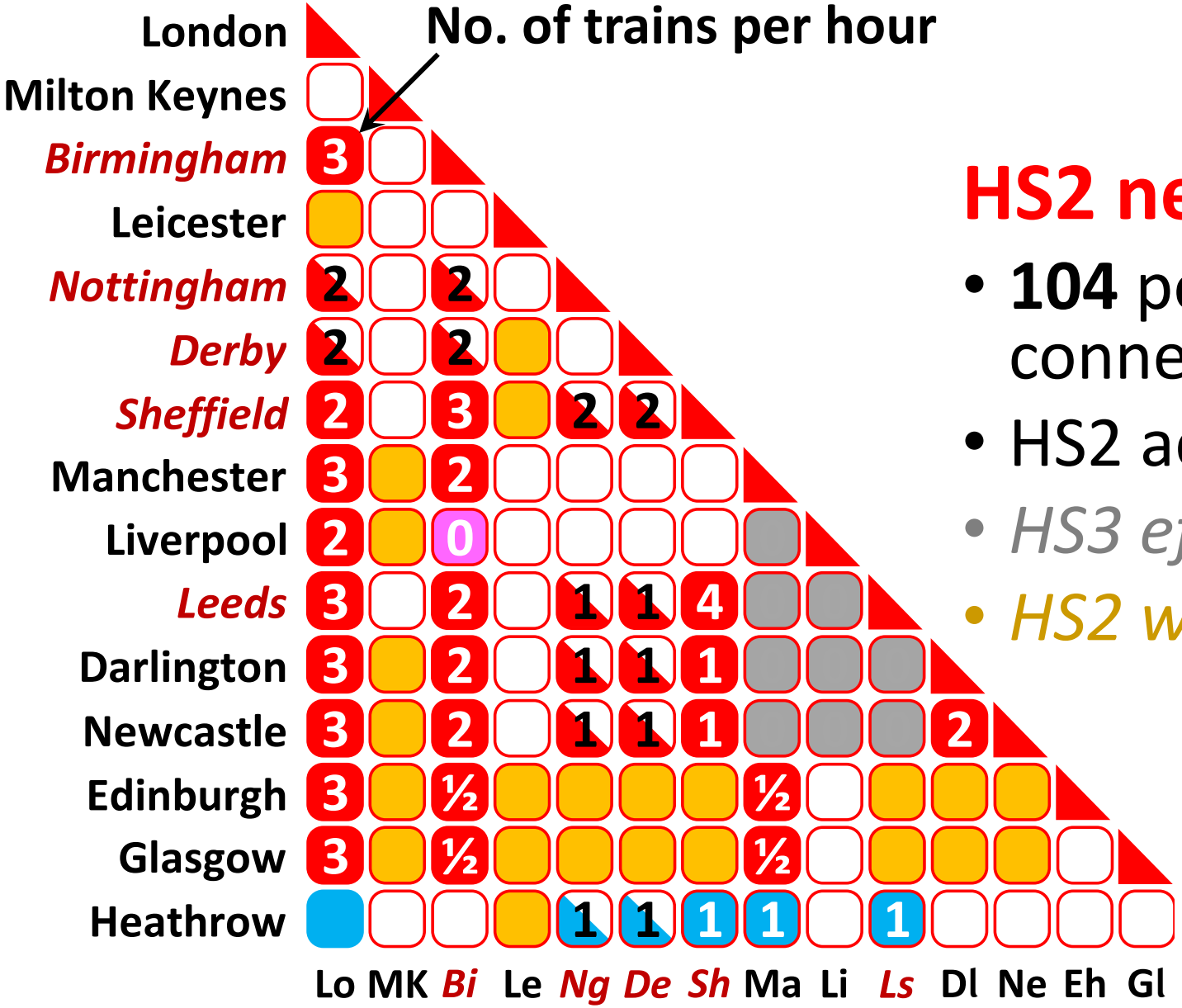
HS2 Connectivity Assessment:

44 journeys **improved**

(+22 including HS3)

349 unchanged

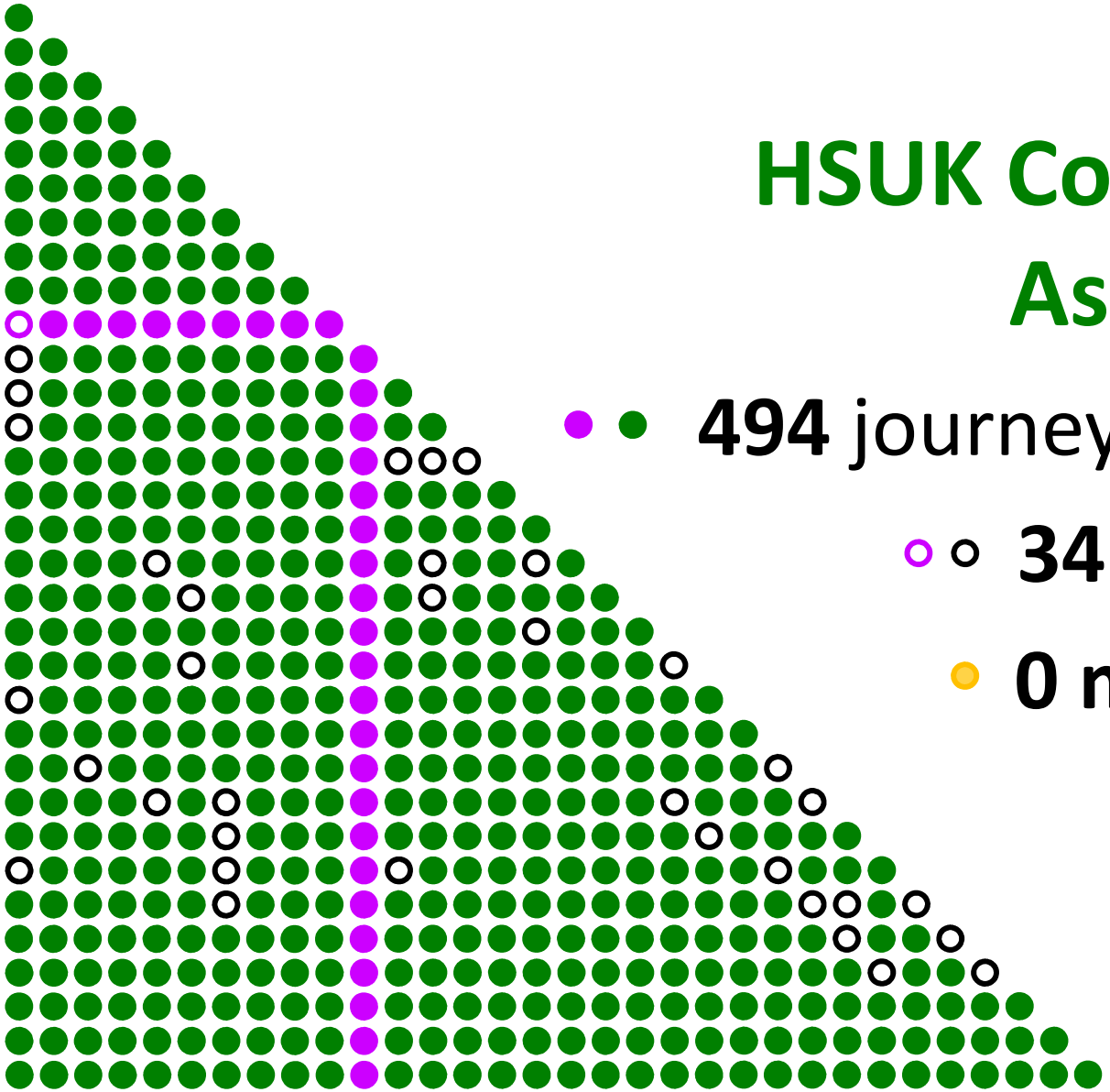
135 made worse



HSUK

HS2 network:

- **104** possible connections
- HS2 achieves **27**
- *HS3 effect **+9***
- *HS2 worsens **24***



HSUK Connectivity Assessment:

- **494** journeys **improved**
- **34 unchanged**
- **0 made worse**

HS2 vs HSUK

Connectivity Comparison:

	Journeys improved	Journeys unchanged	Journeys made worse
HS2	44 (+22)	349	135
HSUK			
Betterment			

HS2 vs HSUK

Connectivity Comparison:

	Journeys improved	Journeys unchanged	Journeys made worse
HS2	44 (+22)	349	135
HSUK	494	34	0
Betterment			

HS2 vs HSUK

Connectivity Comparison:

	Journeys improved	Journeys unchanged	Journeys made worse
HS2	44 (+22)	349	135
HSUK	494	34	0
Betterment	11.2 (7.5)		

(HS2) (HS2 + HS3)

HS2 vs HSUK

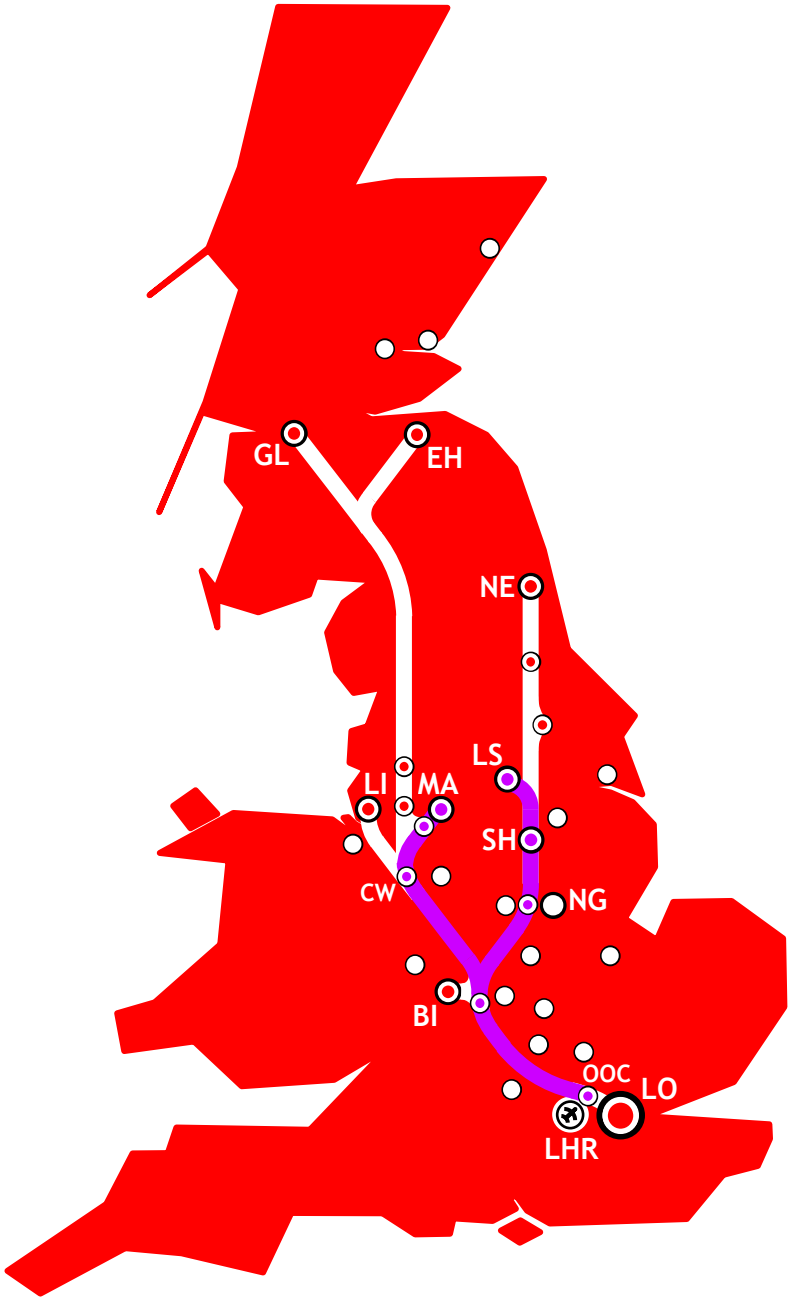
Connectivity Comparison:

	Journeys improved	Journeys unchanged	Journeys made worse
HS2	44 (+22)	349	135
HSUK	494	34	0
Betterment	11.2 (7.5)	10.3	

HS2 vs HSUK

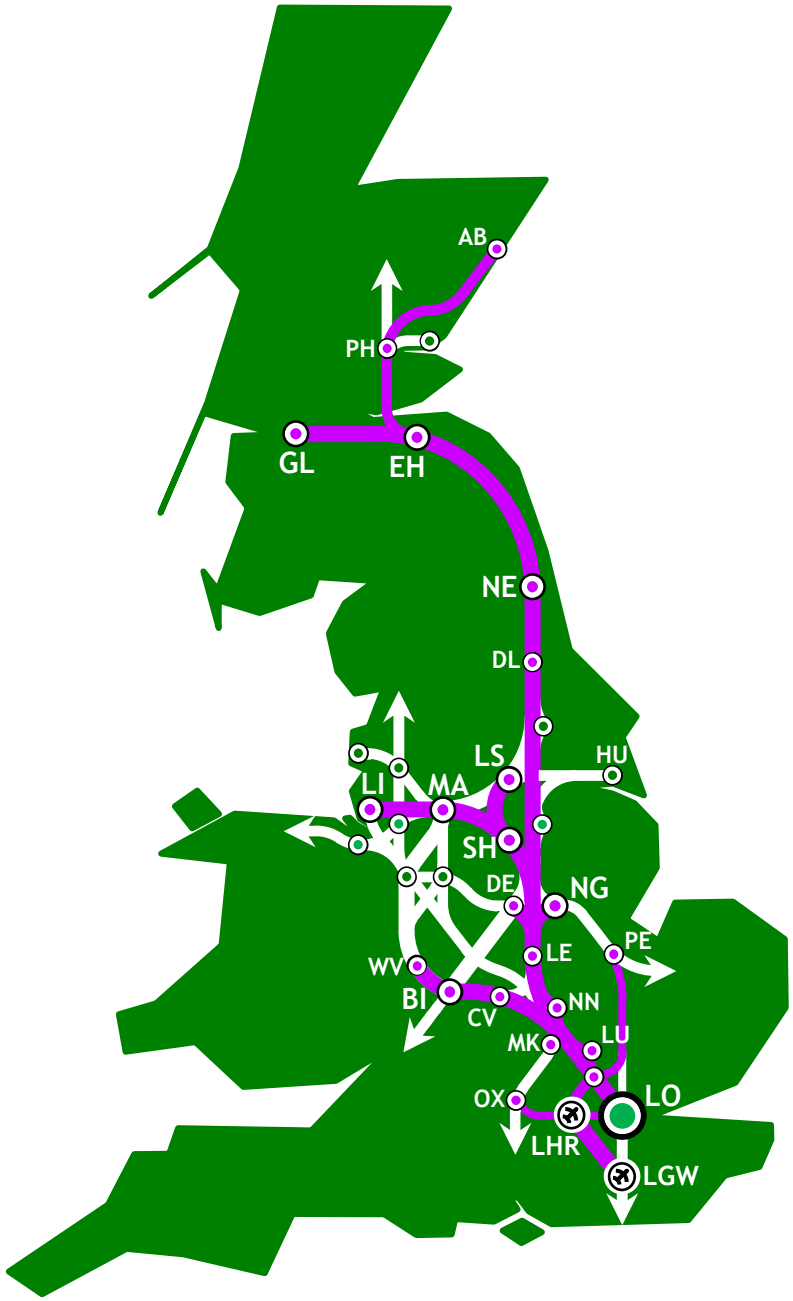
Connectivity Comparison:

	Journeys improved	Journeys unchanged	Journeys made worse
HS2	44 (+22)	349	135
HSUK	494	34	0
Betterment	11.2 (7.5)	10.3	∞



HS2 Links to Heathrow:

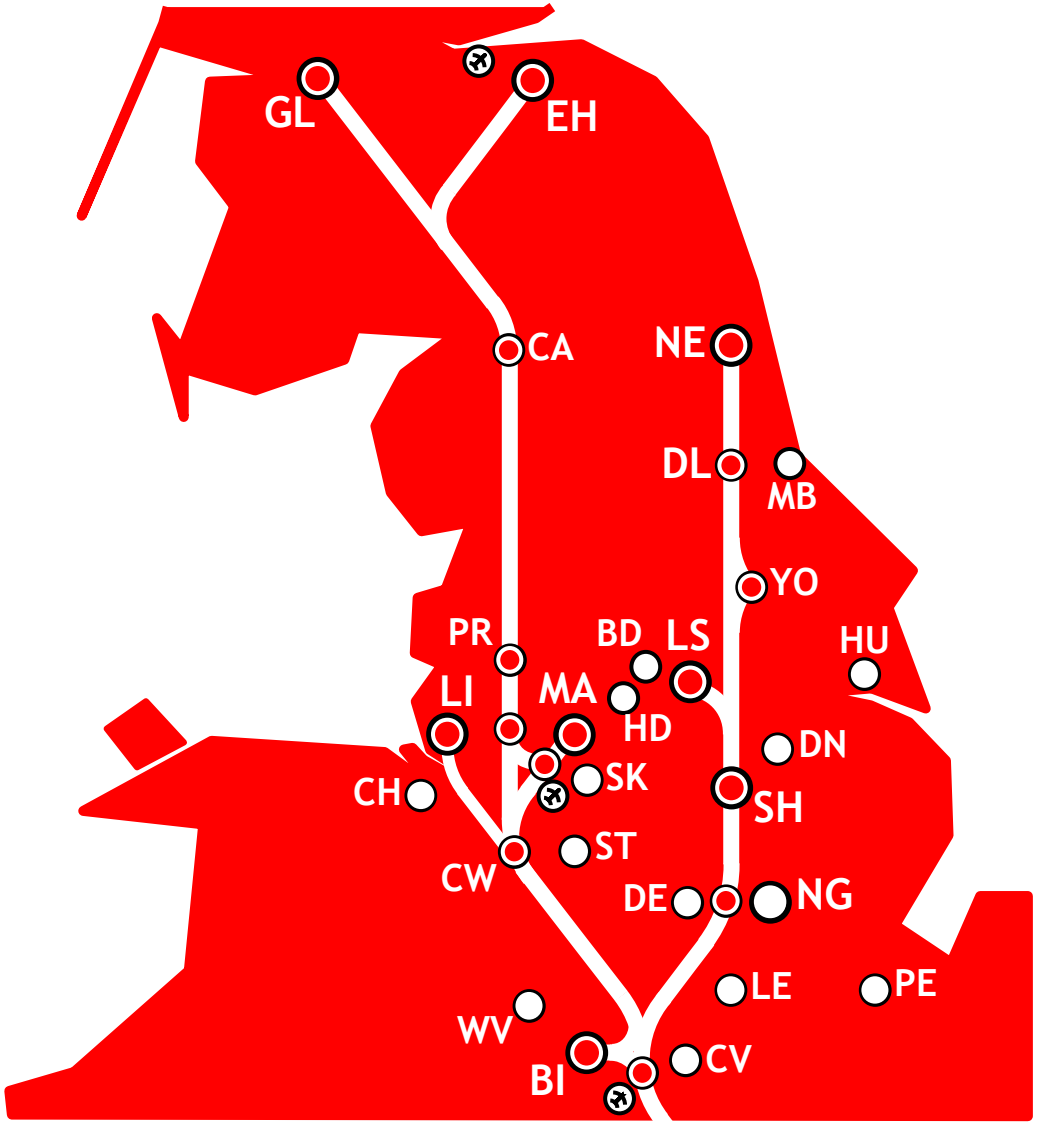
- Reliant upon change at Old Oak Common
- Proposals for future dedicated link not defined
- High cost for low benefit
- Insufficient capacity/ inefficient configuration for direct links to regions
- Most regional centres remain disconnected
- Risk of aviation hub transfer to Boris Island



HSUK

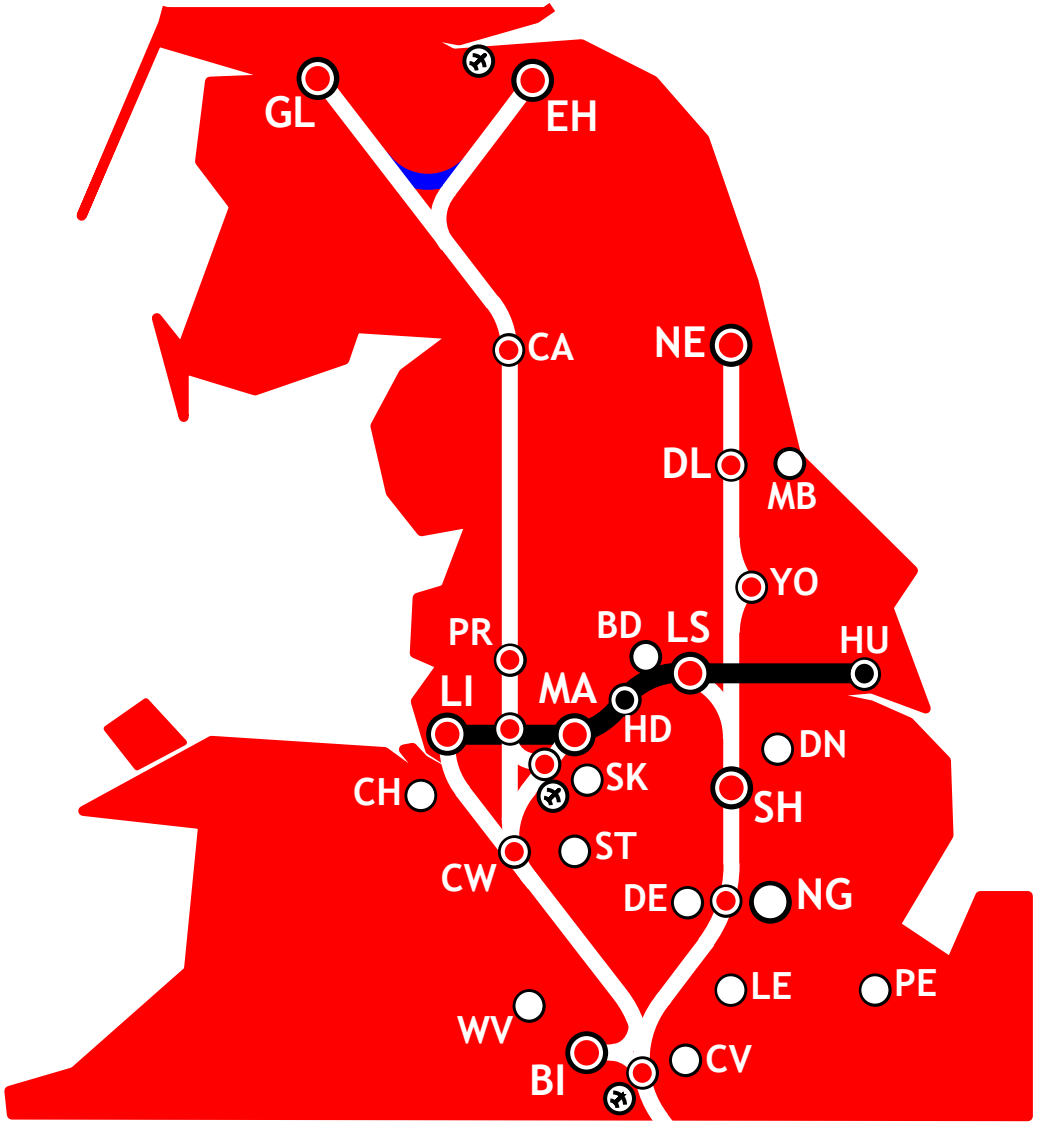
HSUK Links to Heathrow:

- Heathrow Express developed into ‘Compass Point’ network linking to main line hubs
- Comprehensive regional links to Home Counties & Midlands
- HSUK trains to all regional cities
- Only possible with 4-track HSUK spine and efficient network configuration
- Rail spokes to aviation hub
- Onward link to Gatwick for multi-site hub operation
- Boris-proof



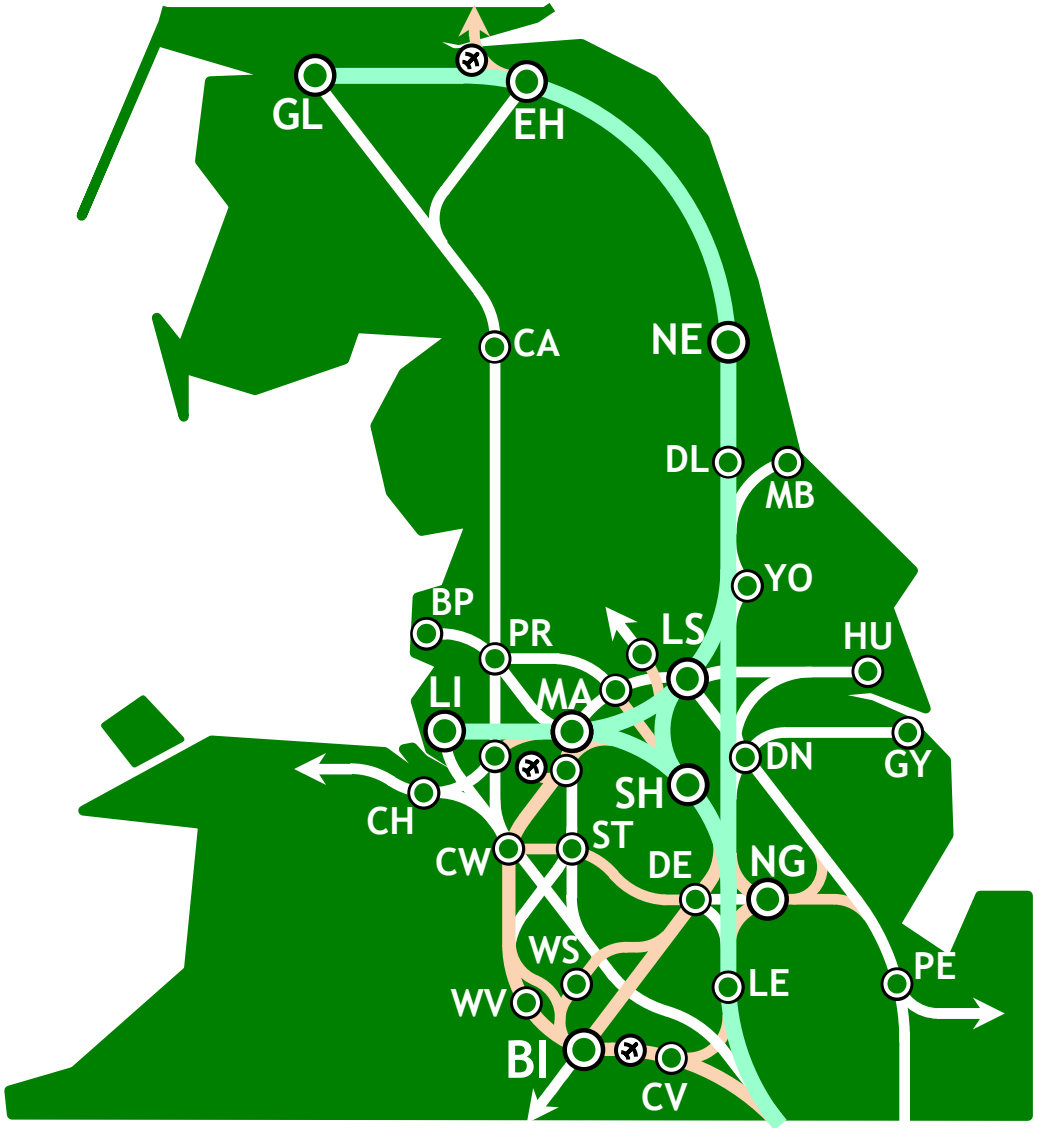
HS2 : Trans-Pennine Issues

- No HS2 trans-Pennine link
- Rejected by Government in favour of Northern Hub
- Northern Hub wrong solution to link Northern cities
- Poor links to Pennine cities
- No proposals to improve trans-Pennine freight links
- Heavily London-centric
- Concerns with Crewe Hub



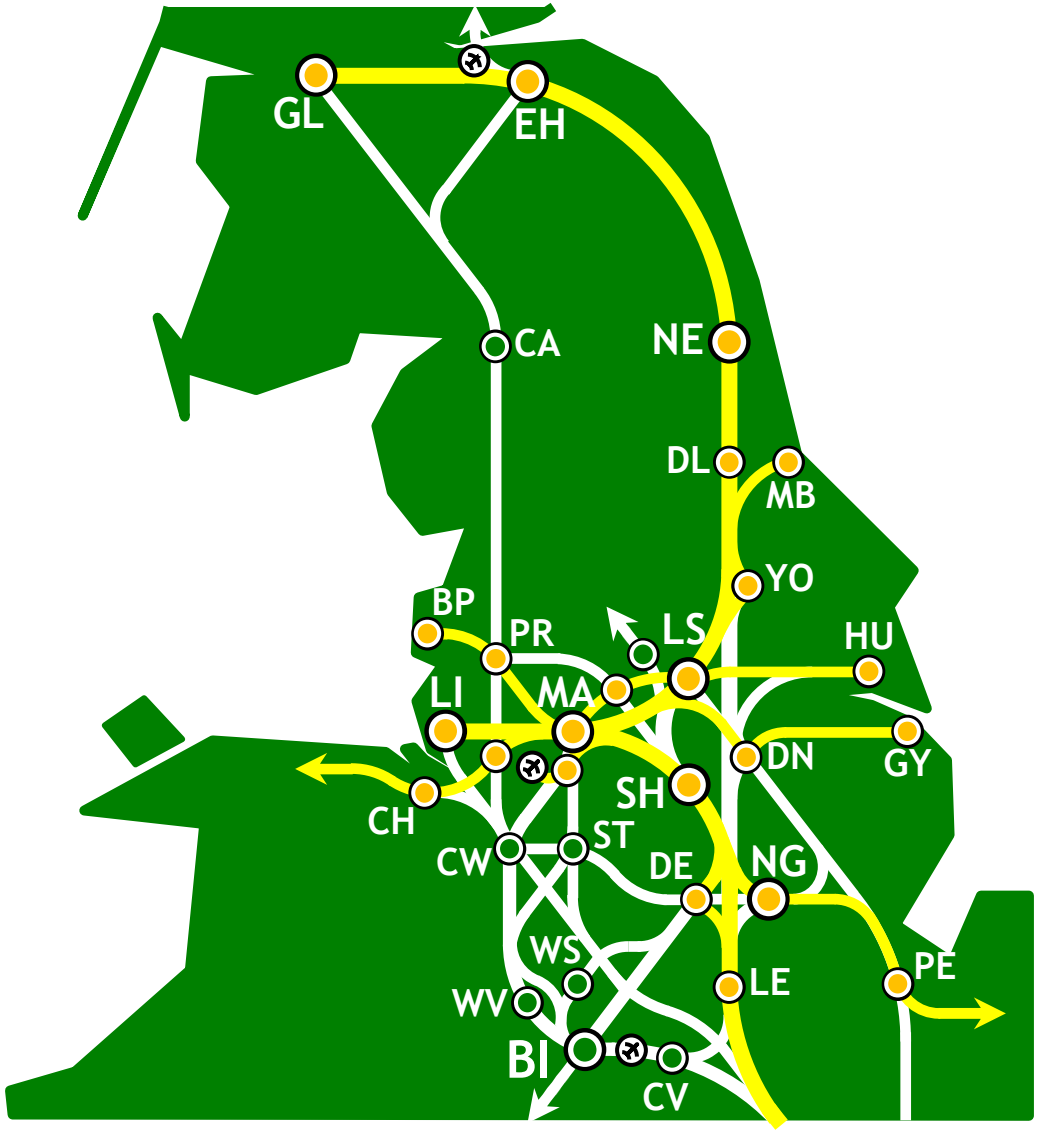
HS3 : Trans-Pennine Connectivity?

- New high speed line?
- Or upgraded route?
- Only links Liverpool-Manchester-Leeds-Hull
- What about Manchester-Sheffield?
- HS2 terminus stations at Leeds & Manchester unfit for purpose
- London-OOC-Crewe Hub-Manchester-Leeds??



HSUK : Trans-Pennine Link

- Integral trans-Pennine link based on abandoned Woodhead corridor
- Enables direct HS services from North-West to East Midlands, Yorkshire, North-East & Scotland
- New cross-Manchester tunnel & station
- Fully integrated with Pennine communities
- Link to Manchester Airport



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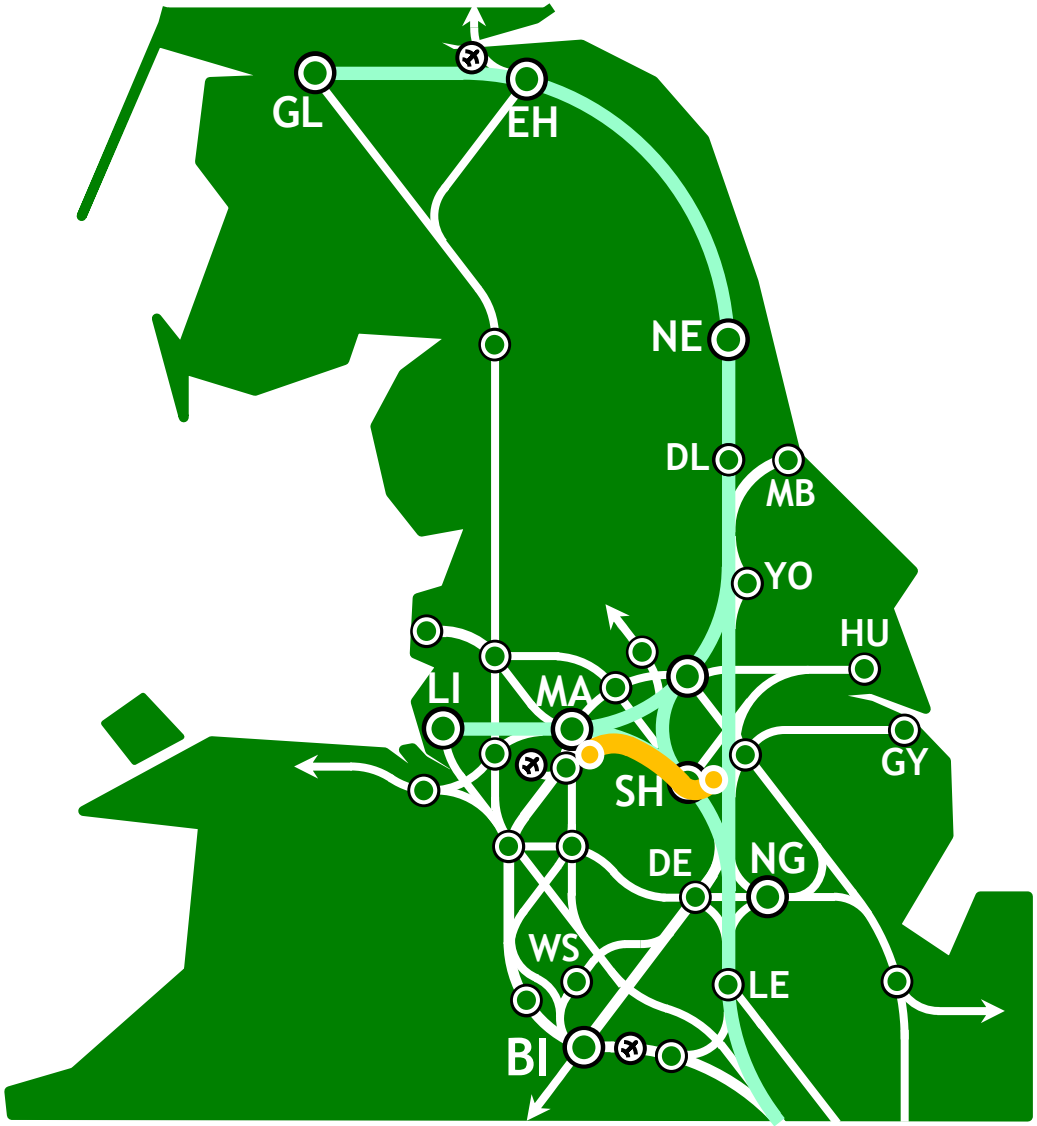
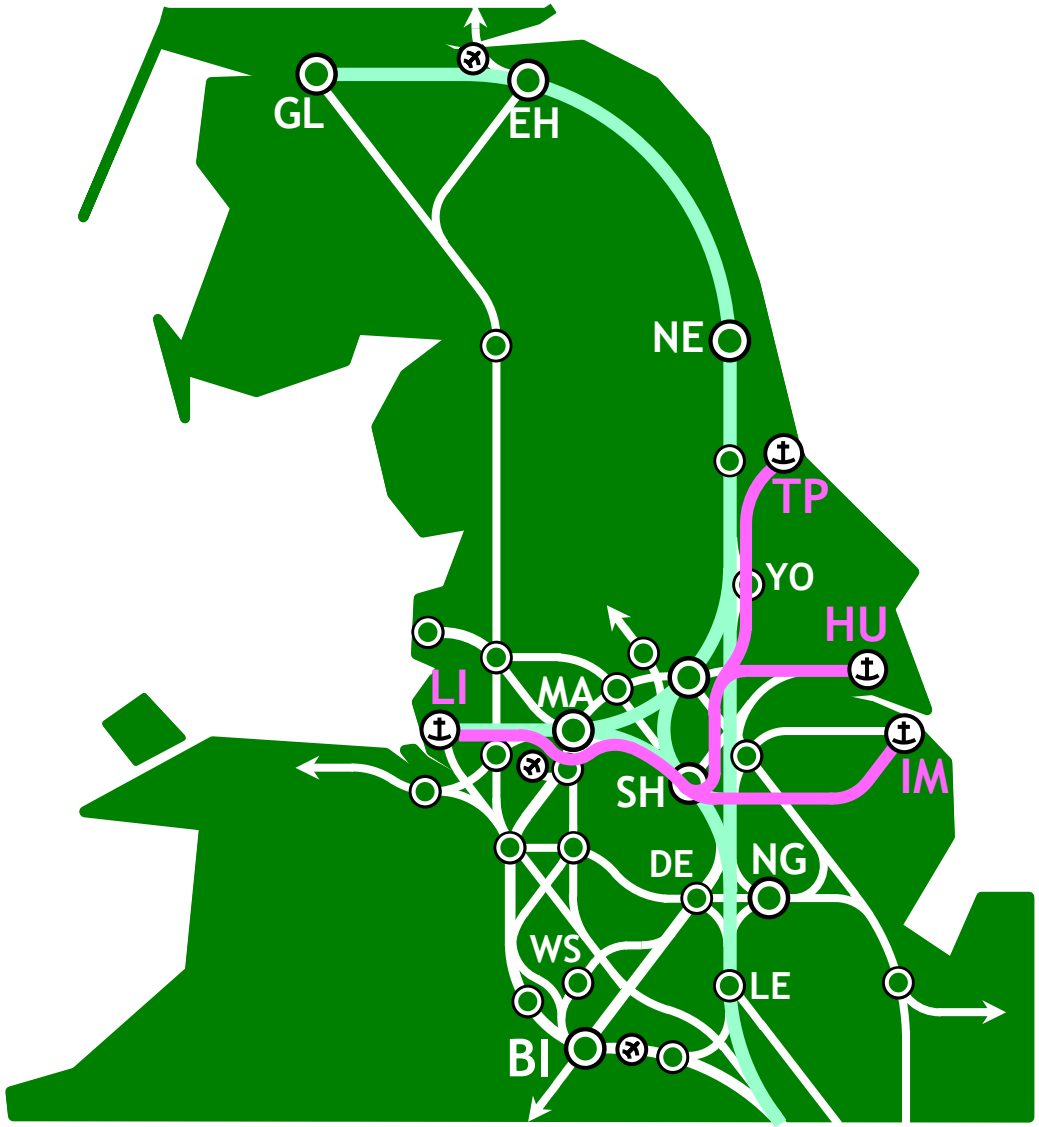
HSUK : Transforming Northern Connectivity

NUMBER OF CITIES LINKED TO LIVERPOOL BY HSUK	NUMBER OF CITIES LINKED TO LIVERPOOL BY HS2	NUMBER OF CITIES LINKED TO MANCHESTER BY HSUK	NUMBER OF CITIES LINKED TO MANCHESTER BY HS2
26	1	28	2
	+7 (HS3)		+7 (HS3)



HSUK : Trans-Pennine Freight

- Lorry shuttle proposed to link M60 at Bredbury with M1 at Tinsley
- Trunk lorry bans on all trans-Peak roads
- Possible car shuttle also?
- Local services restored
- HSUK routed via Peak District National Park
- Local mitigations essential to address A628 road congestion

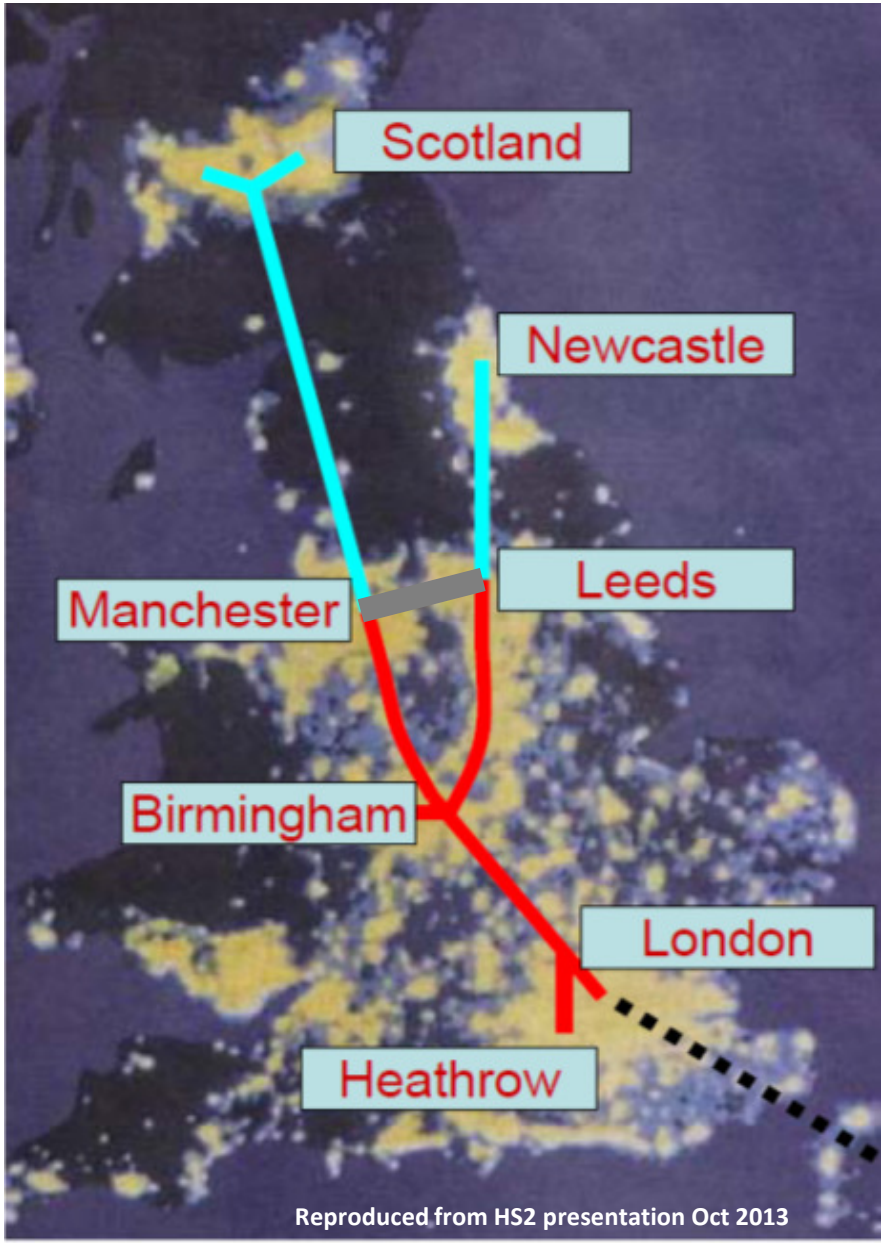


HSUK : Trans-Pennine Freight

- Container traffic from Northern ports limited by capacity & clearance issues on trans-Pennine & cross-Manchester routes
- No gauge restrictions on restored Woodhead route
- Manchester rail bypass proposed via Tiviotdale
- Reduced HGV traffic on M62 & A628
- Coast-to-coast flows?
- UIC-C Eurogauge possible

HS2 or HSUK

Best for Regional Growth??

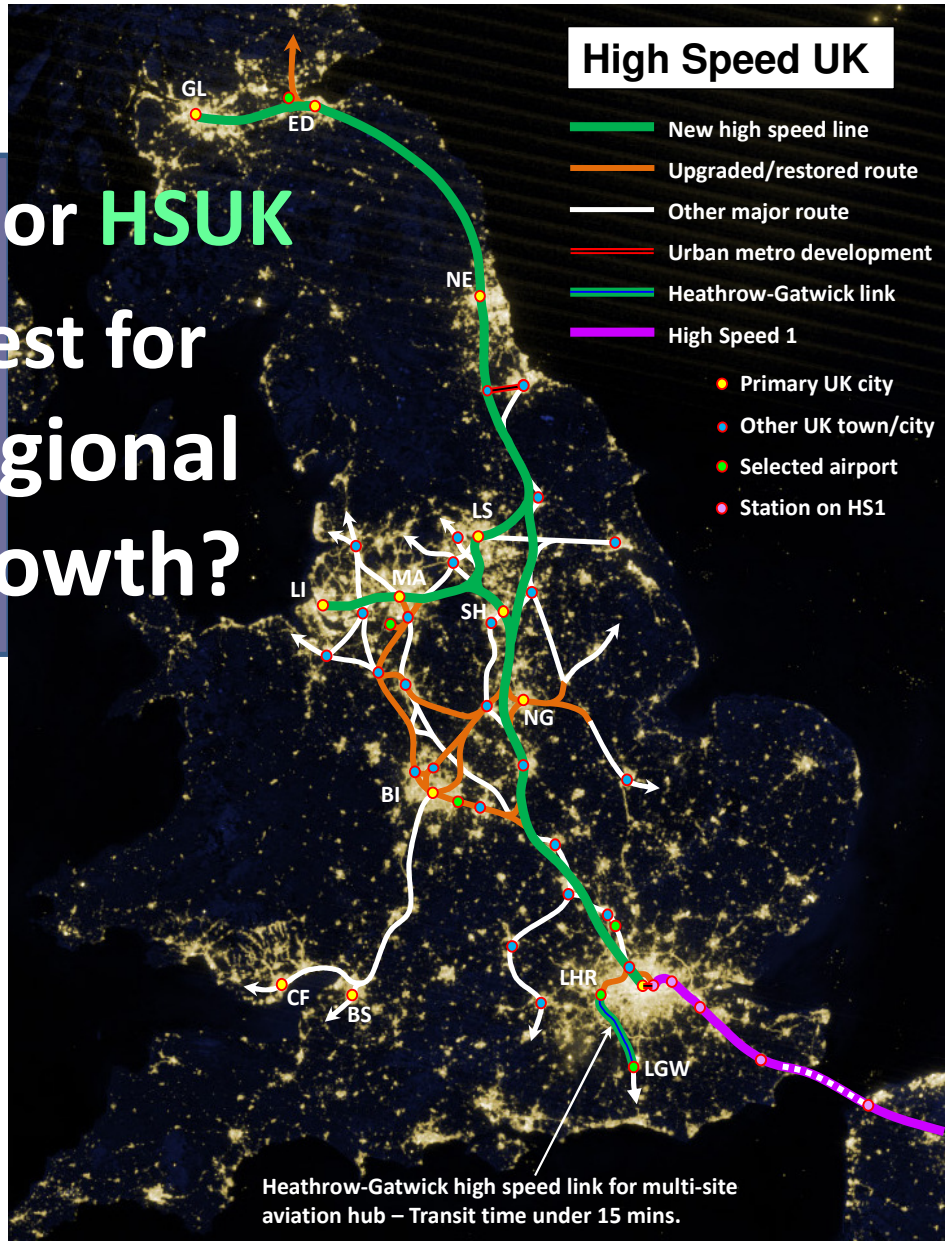


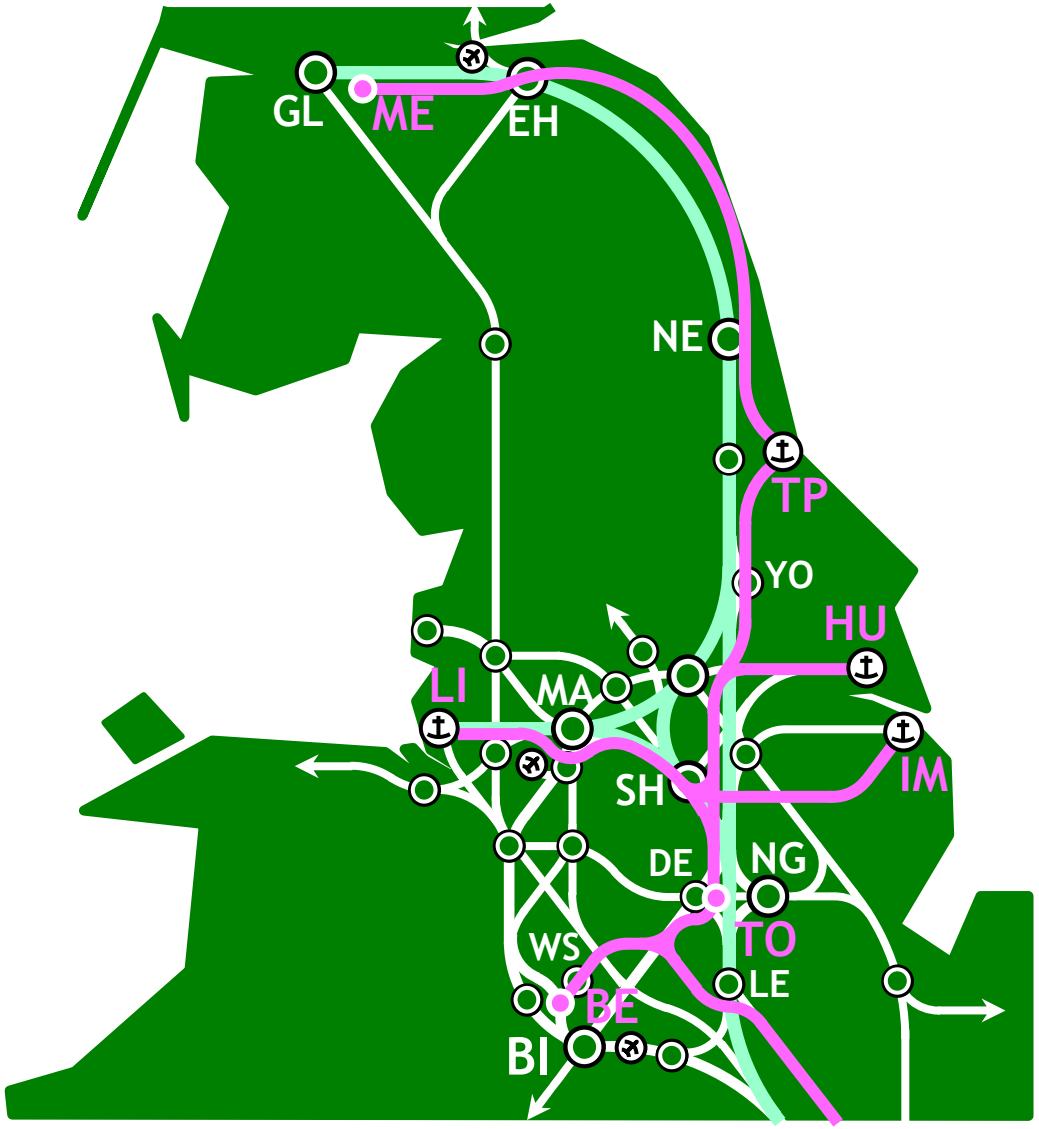
HS2 or HSUK

Best for Regional Growth?

HS2 or HSUK

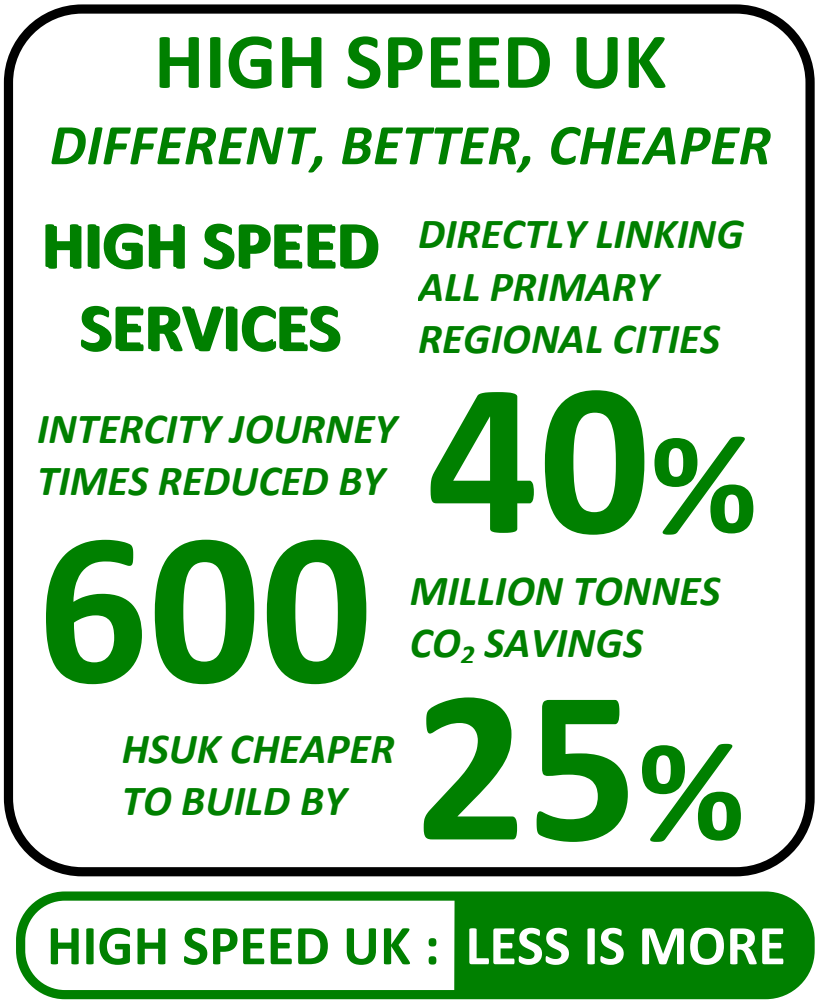
Best for Regional Growth?





HSUK : Parallel Freight Network

- Capacity gains maximised with segregation of freight traffic from fast passenger traffic
- Freight ‘prime user’
- UIC-C ‘Eurogauge’ desirable
- Permits ‘piggyback’ truck trailers on rail wagons
- Also allows through flows to Europe via Channel Tunnel



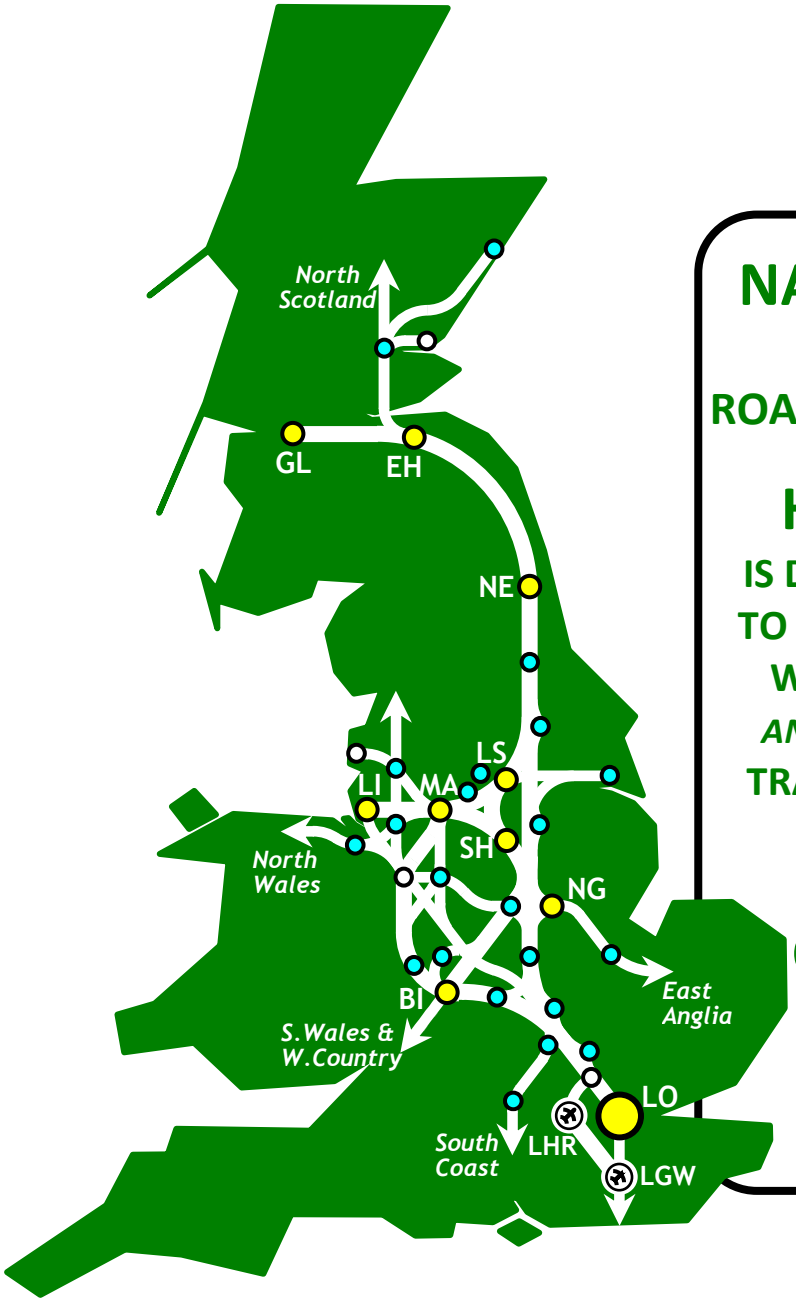
HSUK : Our Claims

- Direct high speed services between all primary centres
- Reduced journey times across UK intercity network
- CO_2 reductions in line with 2008 Climate Change Act
- HSUK 25% cheaper than HS2 to build

HSUK journey time reductions:

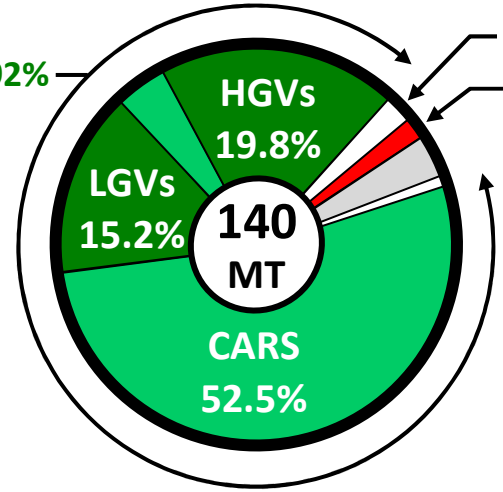
HS2 TRAIN SPEED	HSUK TRAIN SPEED
360km/h	300km/h
HS2 AVERAGE JOURNEY TIME REDUCTION ACROSS NETWORK	HIGH SPEED UK AVERAGE JOURNEY TIME REDUCTION ACROSS NETWORK
<5%	40%

HS2 : MORE HASTE, LESS SPEED



HSUK

NATIONAL TRANSPORT CO_2 EMISSIONS

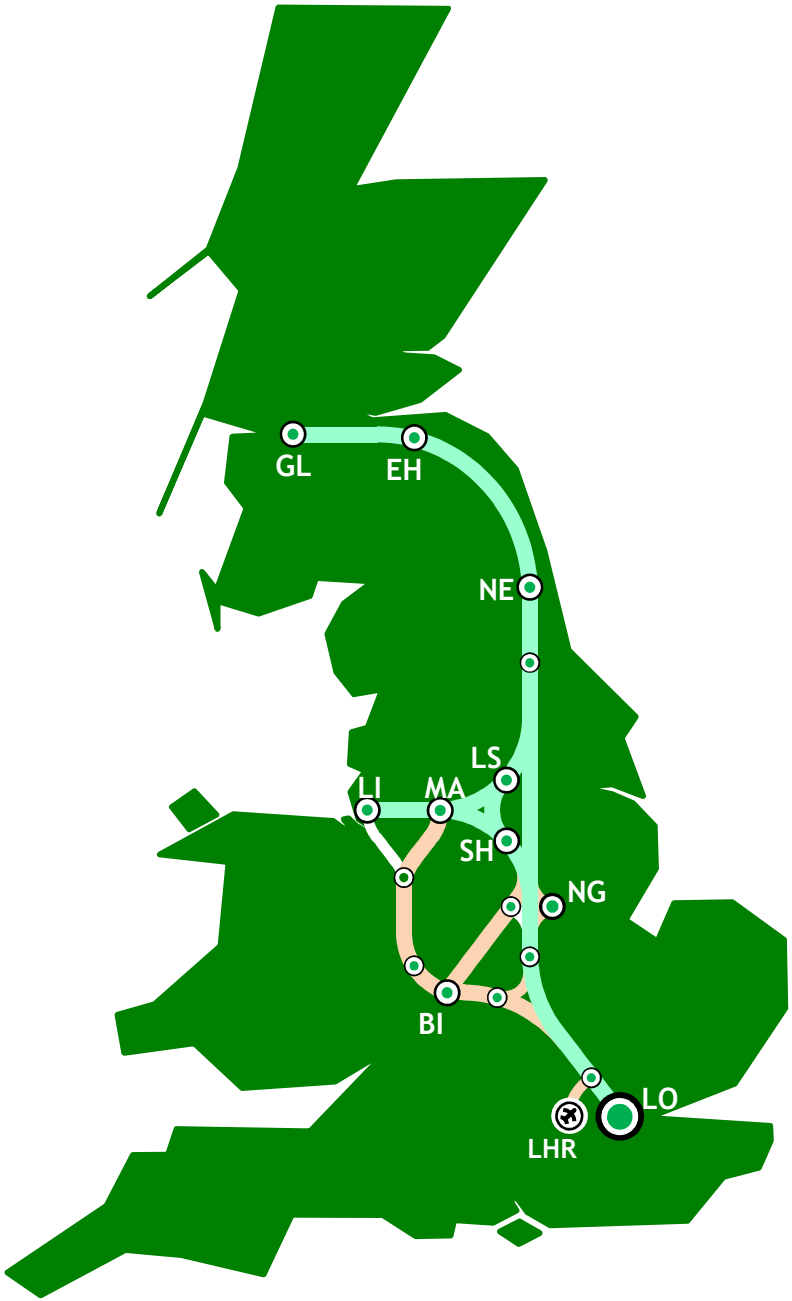


HSUK
IS DESIGNED TO COMPETE WITH AIR *AND* ROAD TRANSPORT

HS2
IS DESIGNED TO COMPETE WITH INTERNAL AIRLINES

THIS IS WHY 600 MILLION TONNES OF CO_2 SAVINGS ARE PREDICTED FOR HSUK...

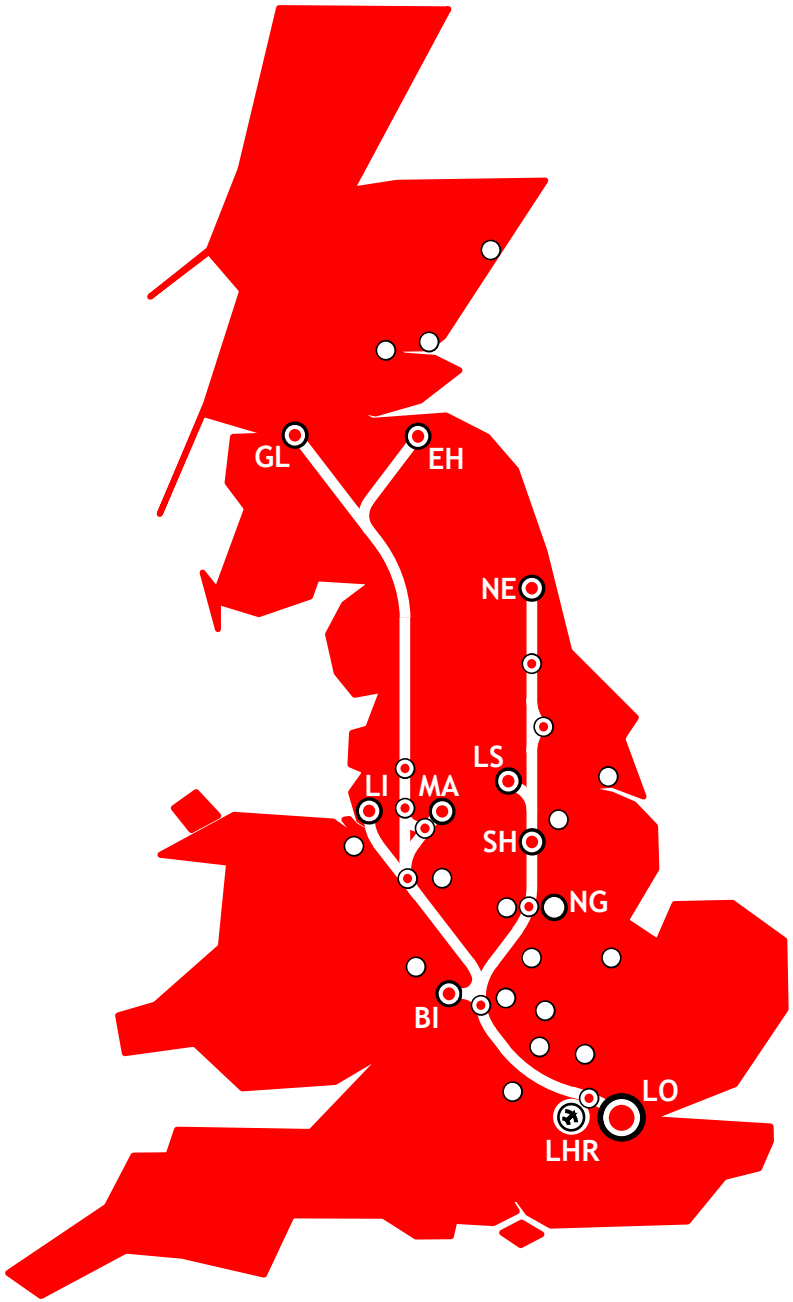
...AND WHY ALMOST NOTHING IS PREDICTED FOR HS2



HSUK

HSUK vs HS2 : Costs

- 20% less new build (883km vs 1080km)
- 50% less tunnel (100km vs 200km)
- Easier construction along existing east-side corridors
- **HSUK 25% cheaper than HS2**
- **HSUK 40% cheaper than HS2 & HS3**



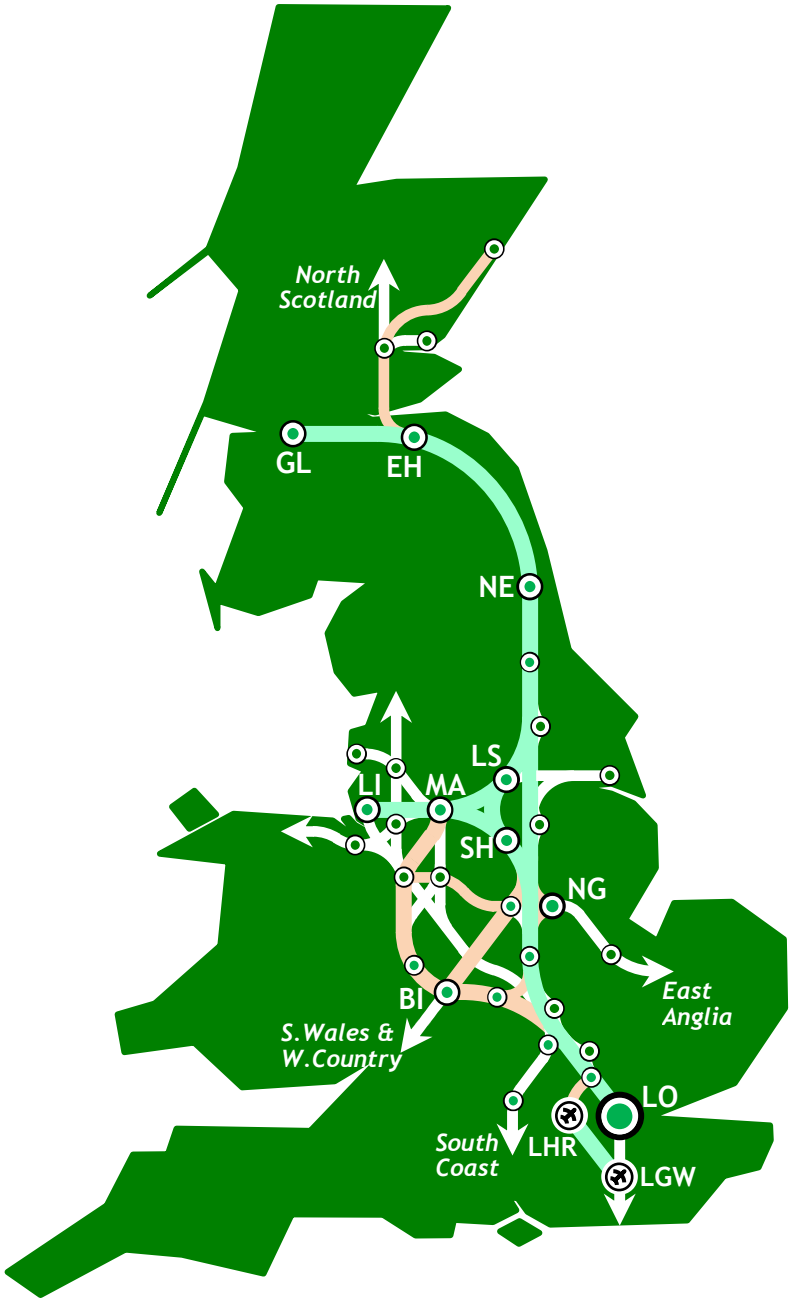
Public Policy Issues

- Promote regional growth
- Meet targets of 2008 Climate Change Act
- Protect sensitive environments
- Protect rural communities (Localism?)
- Promote integrated transport
- Concentrate new development on existing urban centres
- Inclusivity

HSUK

Concerns with HS2 Ltd:

- No understanding of challenge or opportunity presented by UK high speed rail initiative
- Failure to follow simple technical procedure
- Unreasonable rejection of superior alternatives

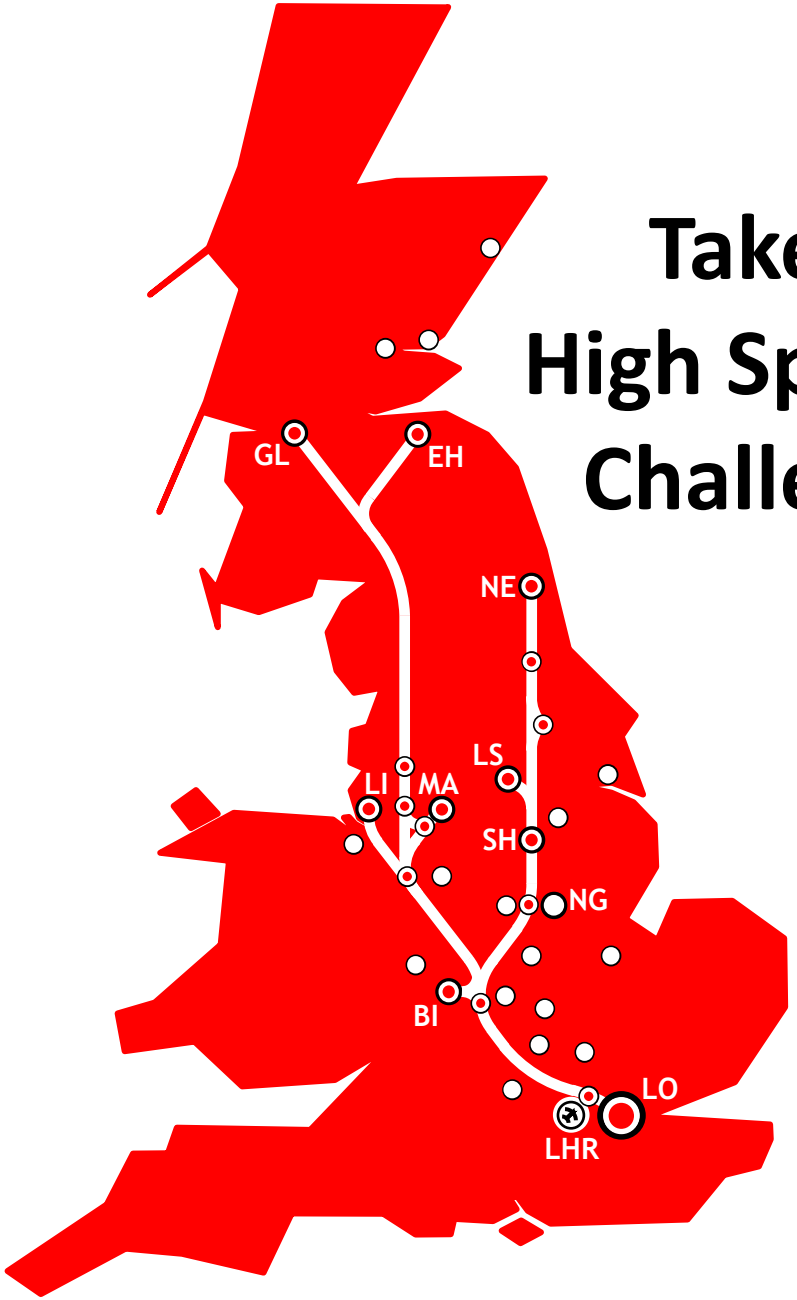


HSUK

High Speed UK:

- Best **value for money**
- Best for **capacity**
- Best for **speed**
- Best to **interlink UK cities**
- Best for **Trans-Pennine** link
- Best links to **aviation**
- Best for **regional growth**
- Best for **freight**
- Best for the **environment**
- Best for **CO_2 reductions**
- Best for **UK integrated transport**

Take the High Speed UK Challenge...



Thank you...

Please visit us on

www.highspeed uk.co.uk