

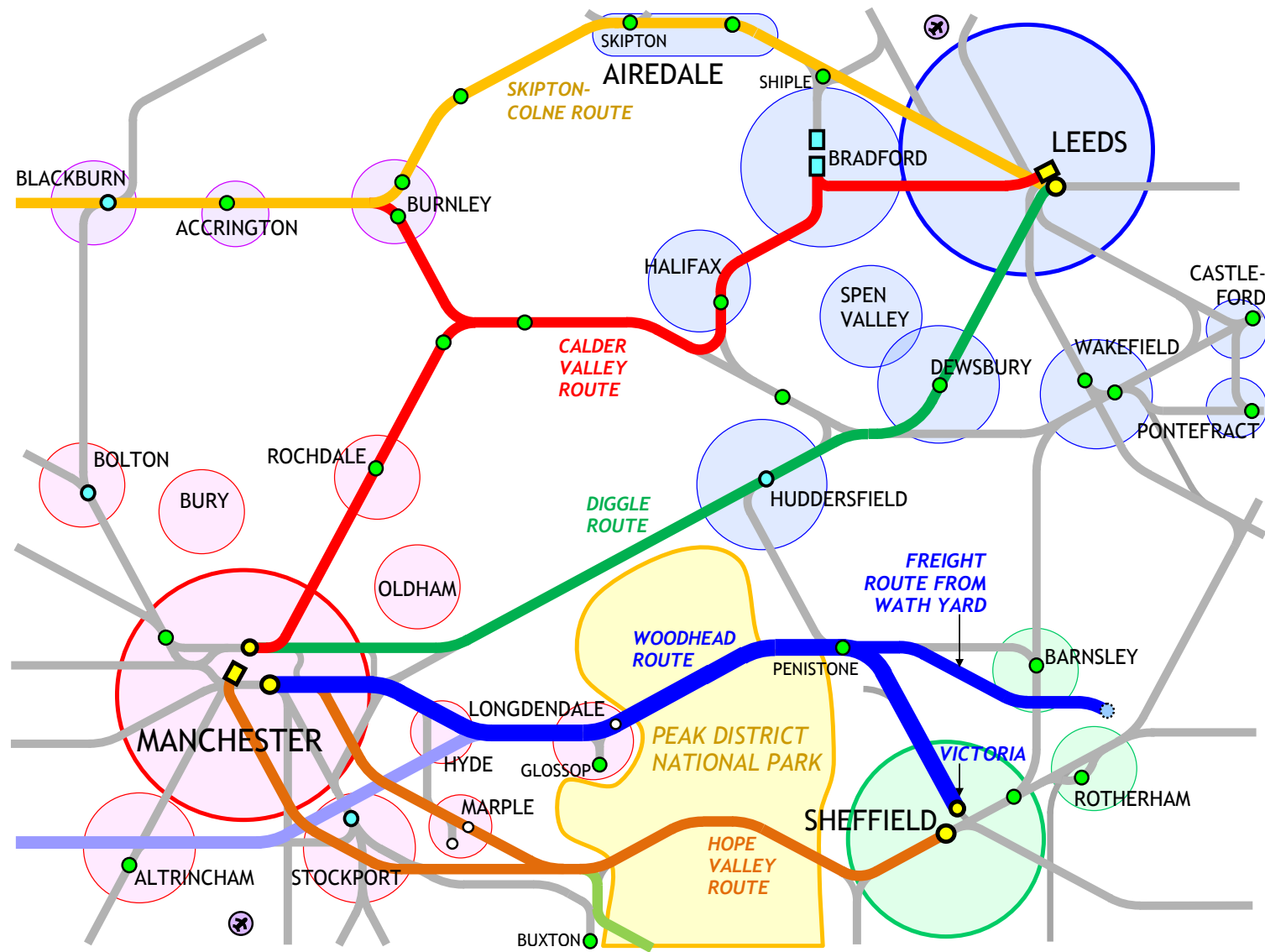


# TRANS-PENNINE HIGH SPEED RAIL

## THE ONLY WAY IS WOODHEAD

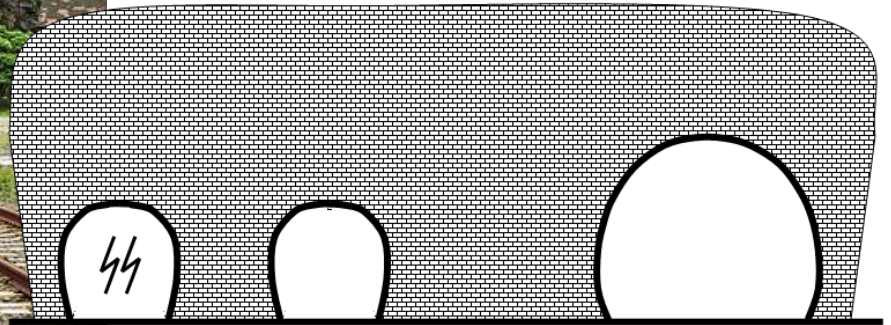
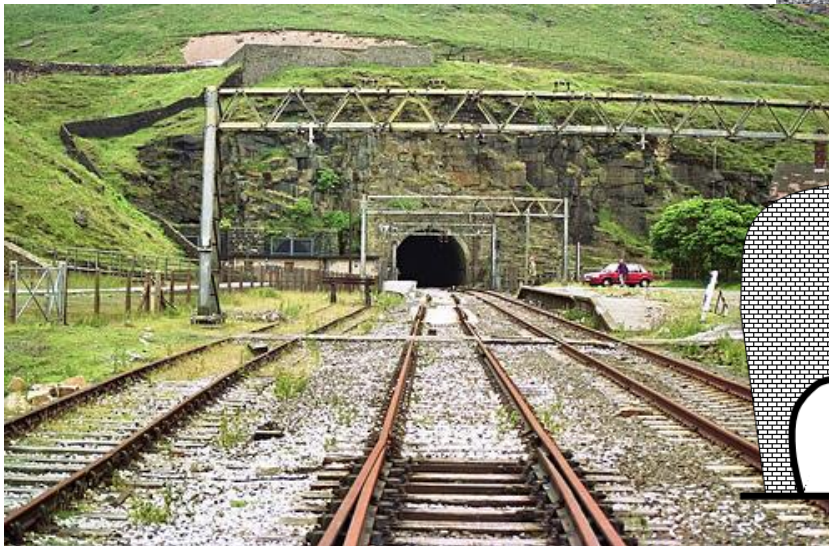
Colin Elliff BSc CEng MICE  
Civil Engineering Principal  
High Speed UK

# Woodhead - the missing link



# The Woodhead Line : decline and fall

- 1970 - closed to passengers
- 1981 - closed to freight
- Woodhead Tunnel R.I.P.??



# The Woodhead Line : reawakenings??

Infrastructure intact:

- Country trail?





# The Woodhead Line : reawakenings??

Infrastructure intact:

- Country trail?
- Reopening ambitions?

Central Railway

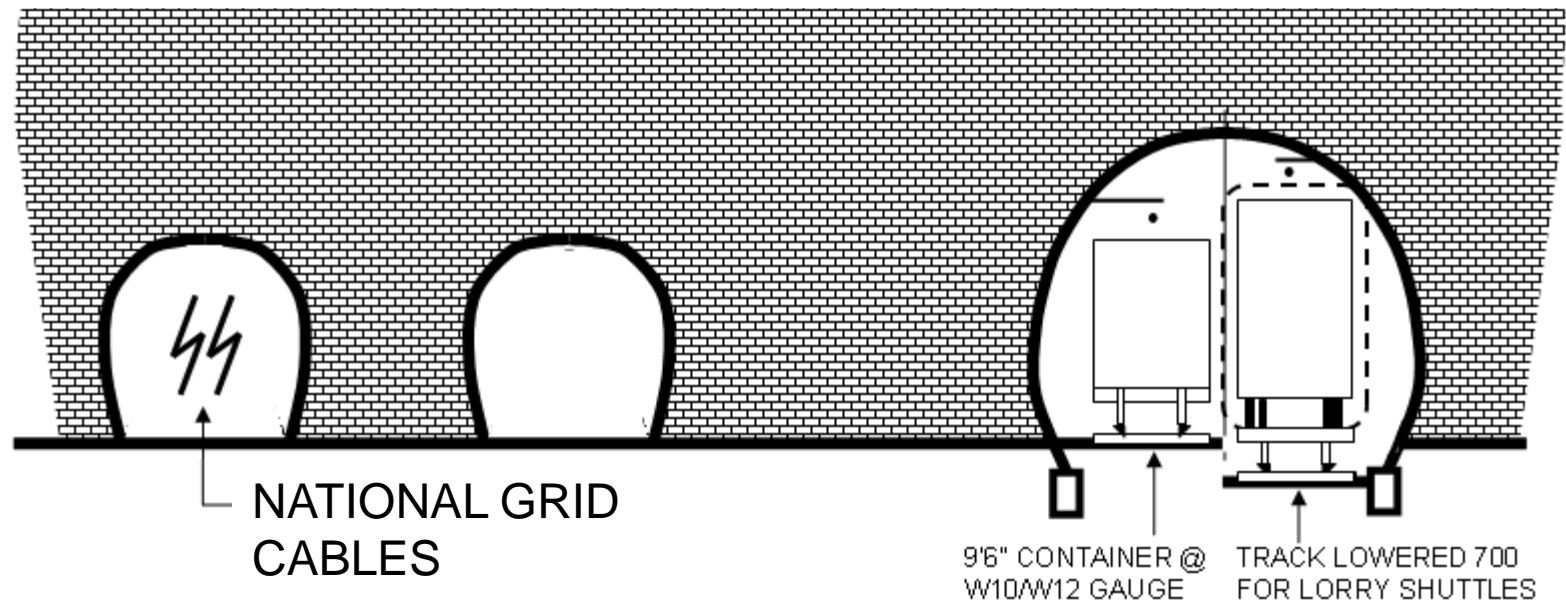
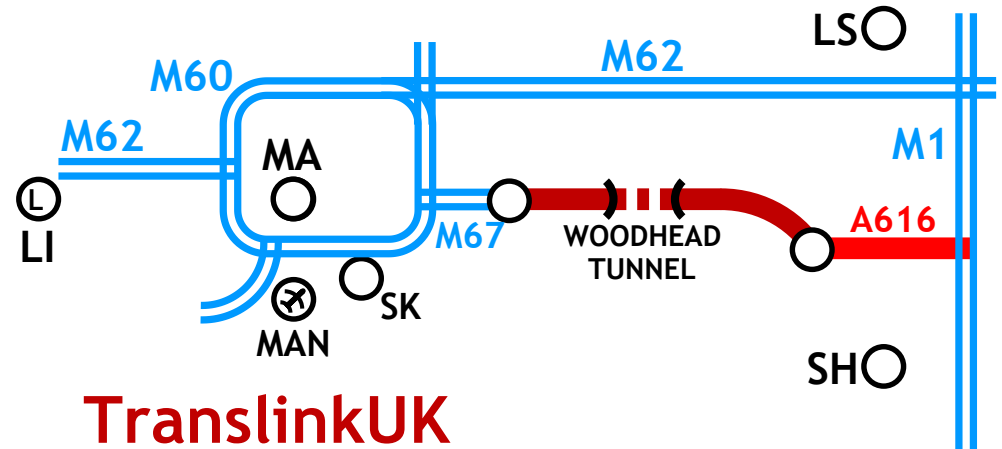


Translink  
lorry  
shuttle



# Lorry Shuttles via Woodhead

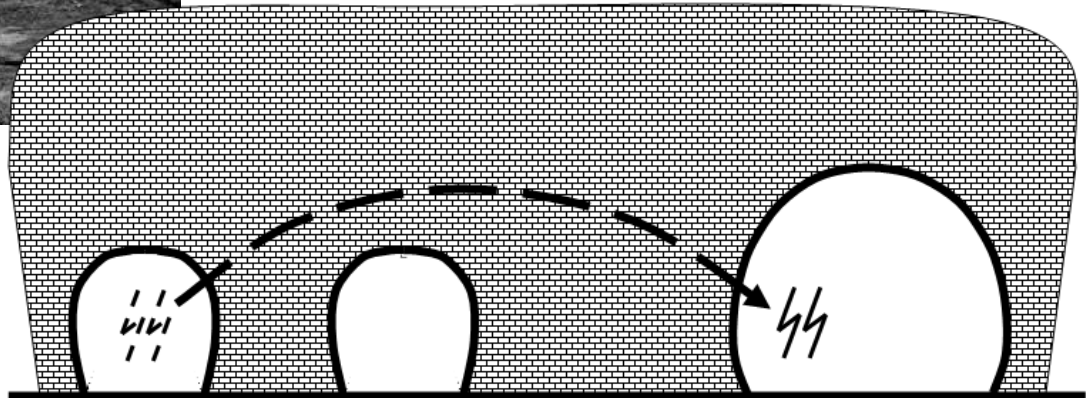
- Req<sup>d</sup> for short-haul Manchester-Sheffield
- TranslinkUK scheme?
- Concerns re viability
- Loading gauge issues!



# The Woodhead Tunnel



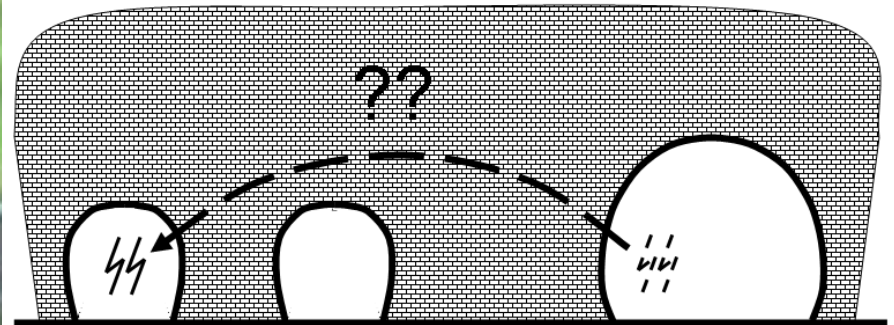
- Not a railway tunnel - but a potential cable conduit!!
- National Grid controversy!!

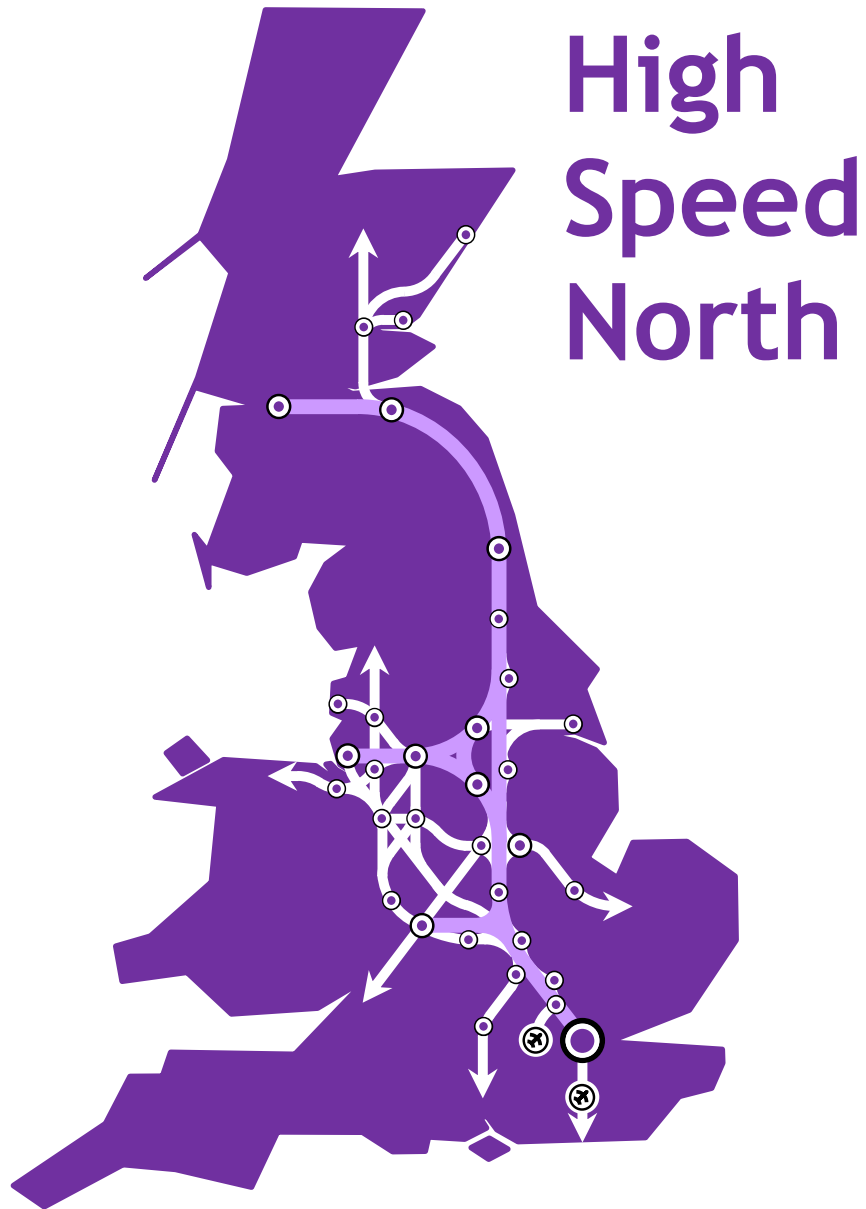




# The Woodhead Tunnel

- January 2008
- ‘Save The Woodhead Tunnel’ campaign
- Questions asked in Parliament





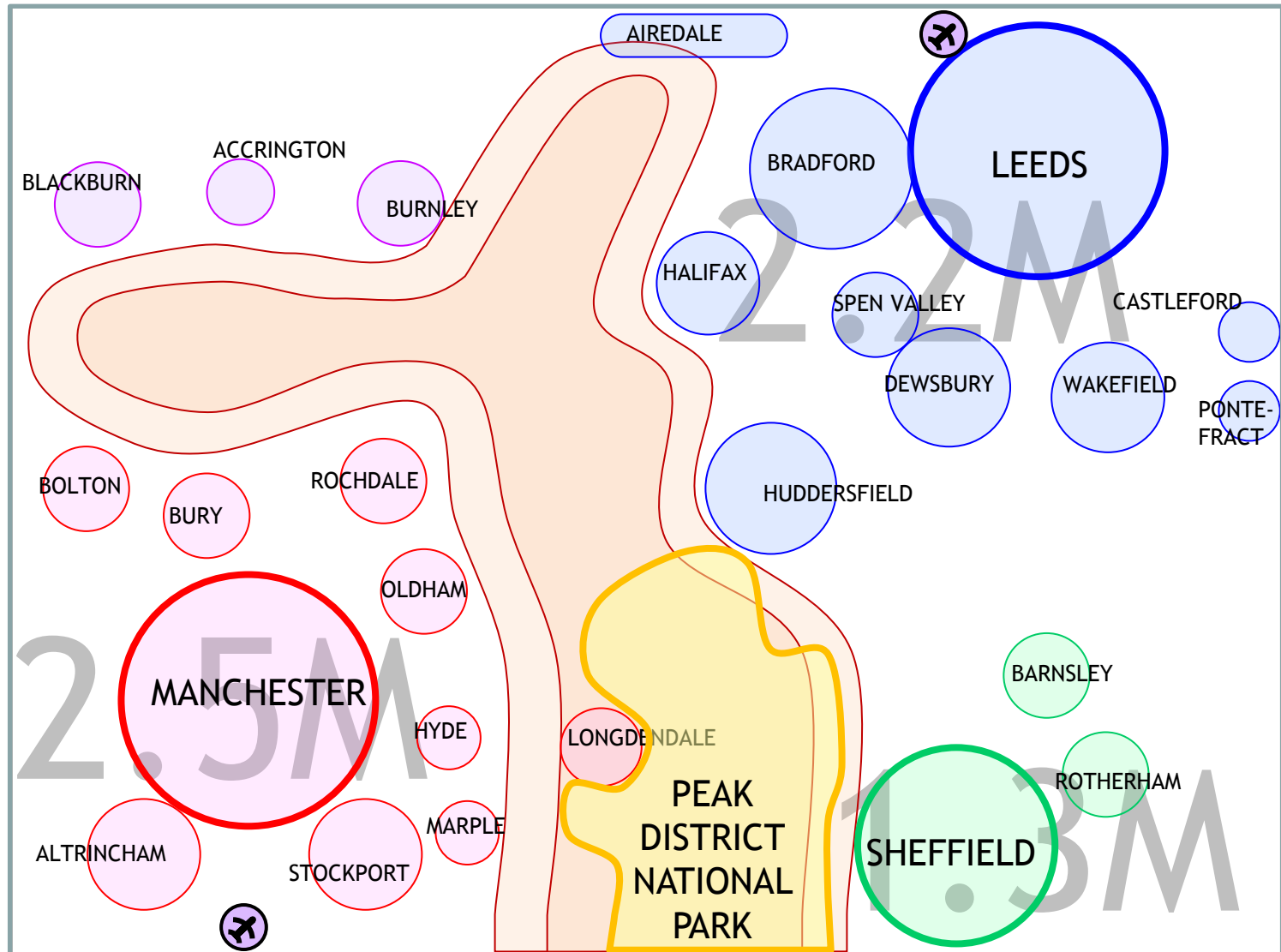
- Single east-sided spine
- Trans-Pennine spur to Manchester & Liverpool
- All primary centres directly interlinked
- Direct link to LHR

# HS2

No trans-  
Pennine link!!



# Trans-Pennine Communities



# Trans-Pennine Beneficiaries

• West Yorkshire	2.2M
• South Yorkshire	1.3M
• Greater Manchester	2.5M
• Merseyside	1.4M
• Hull/York	0.5M
• Teesside	0.5M
• Tyneside/Wearside	1.1M
• Nottingham/Derby	1.5M
	<hr/>
	10.8M

March 2010

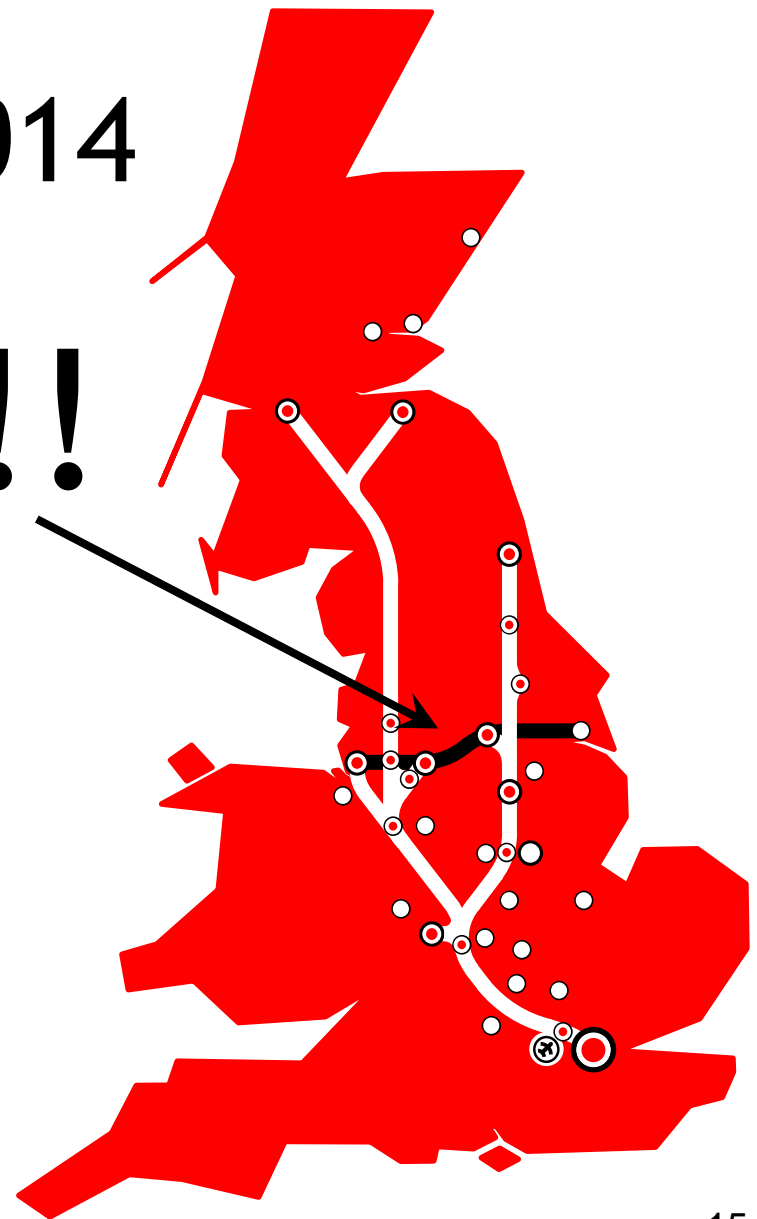
HS2 'Y'



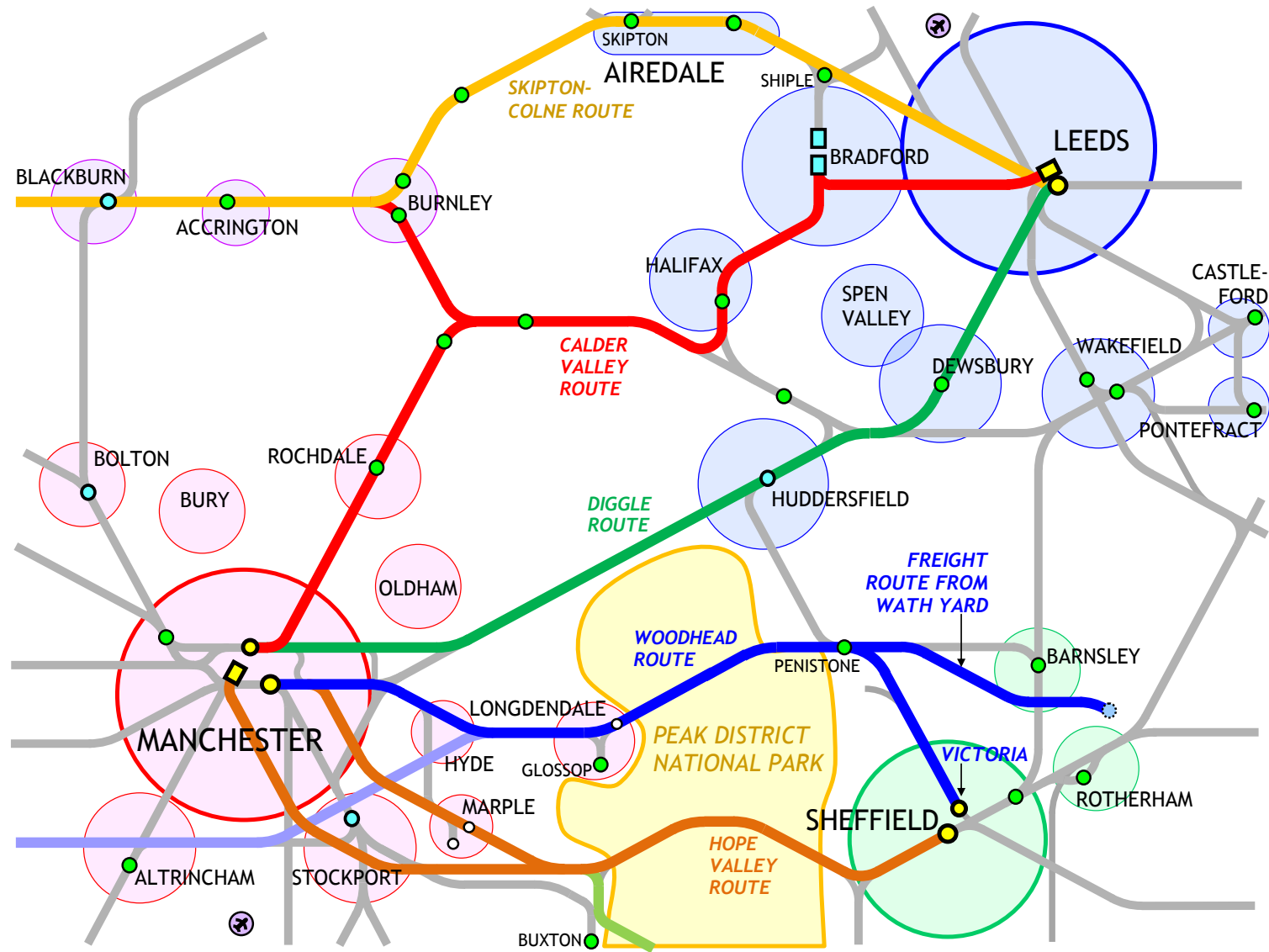


June 2014

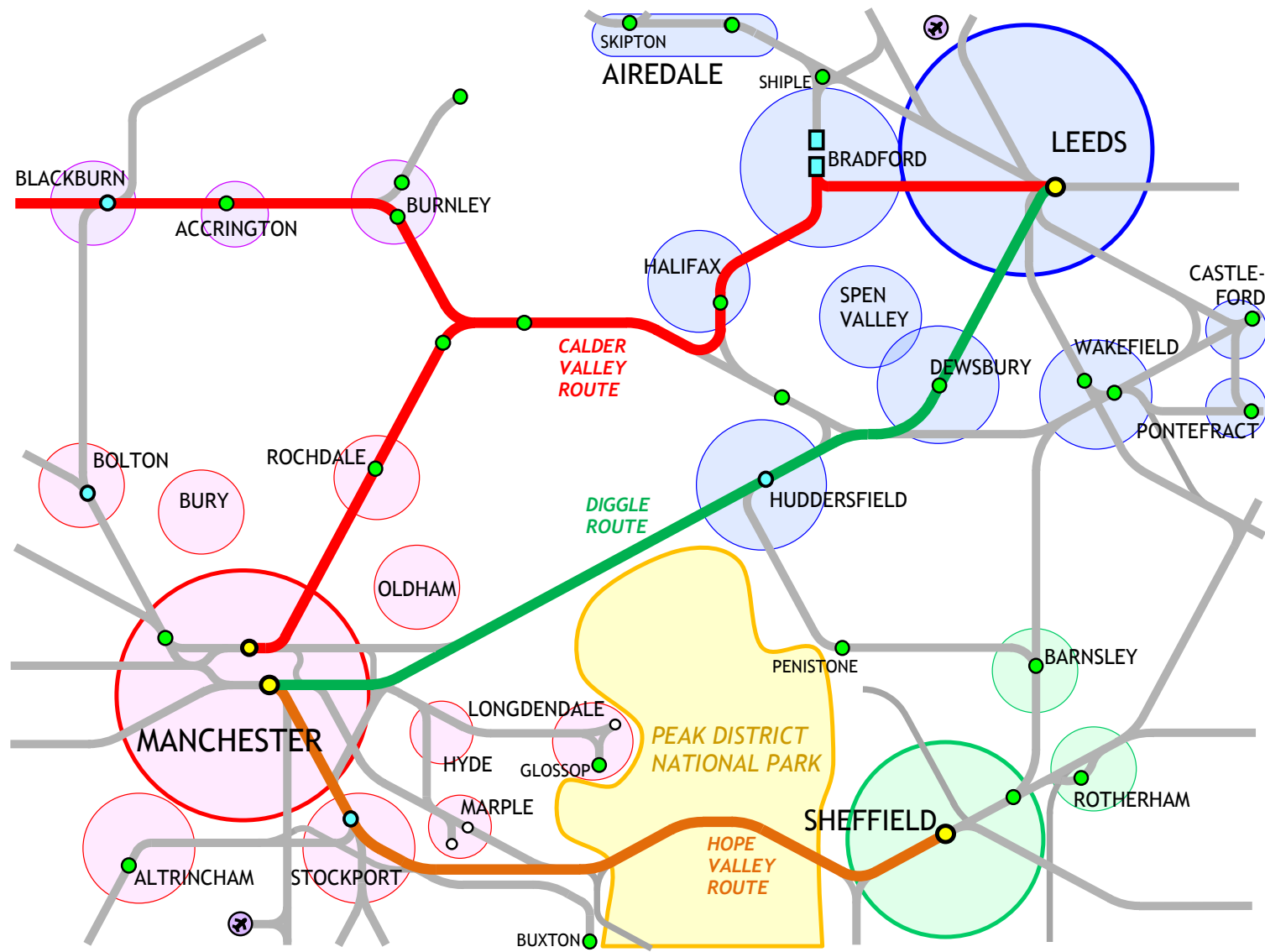
HS3!!



# Trans-Pennine rail links c.1963



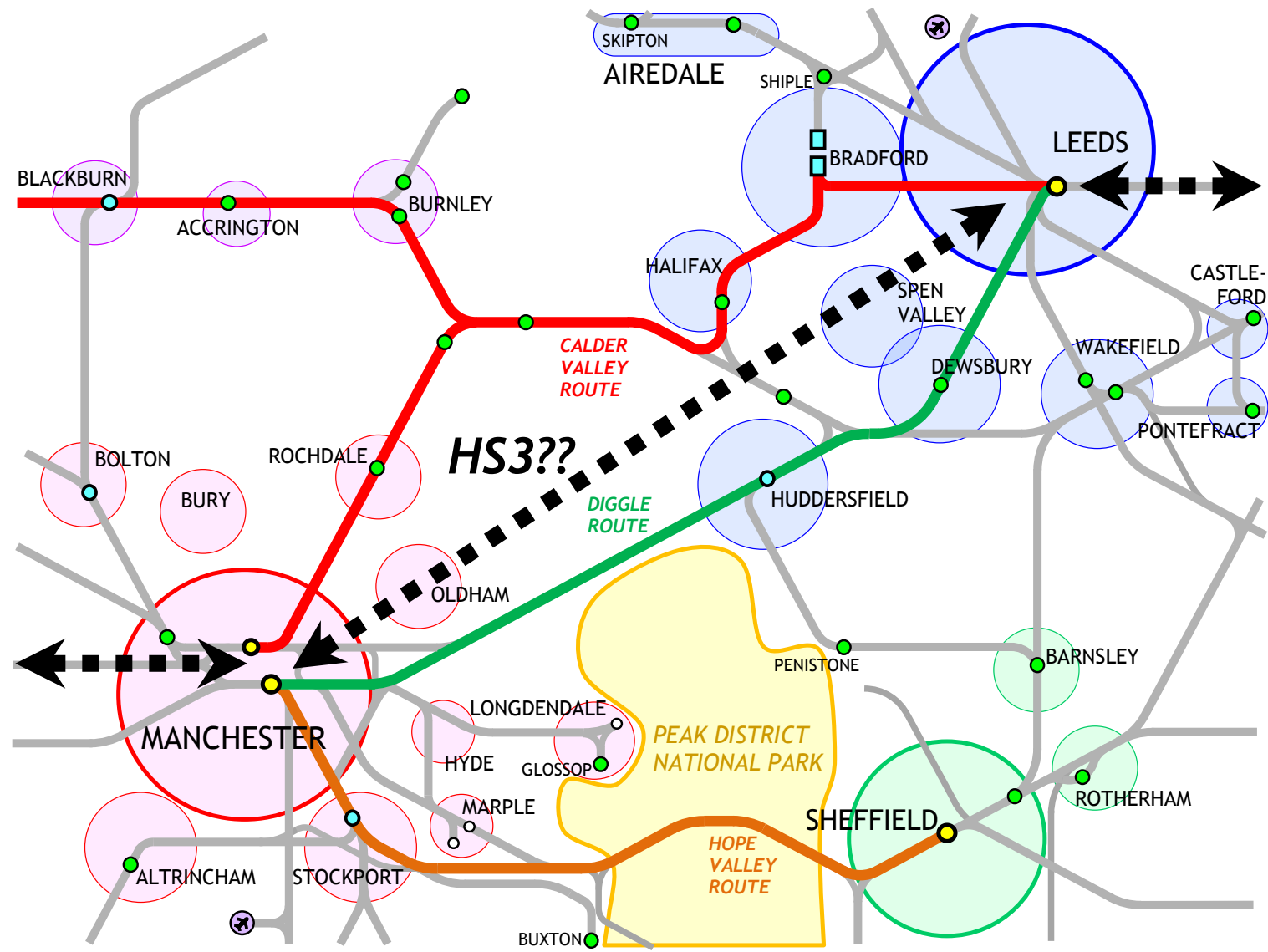
# Trans-Pennine rail links - today



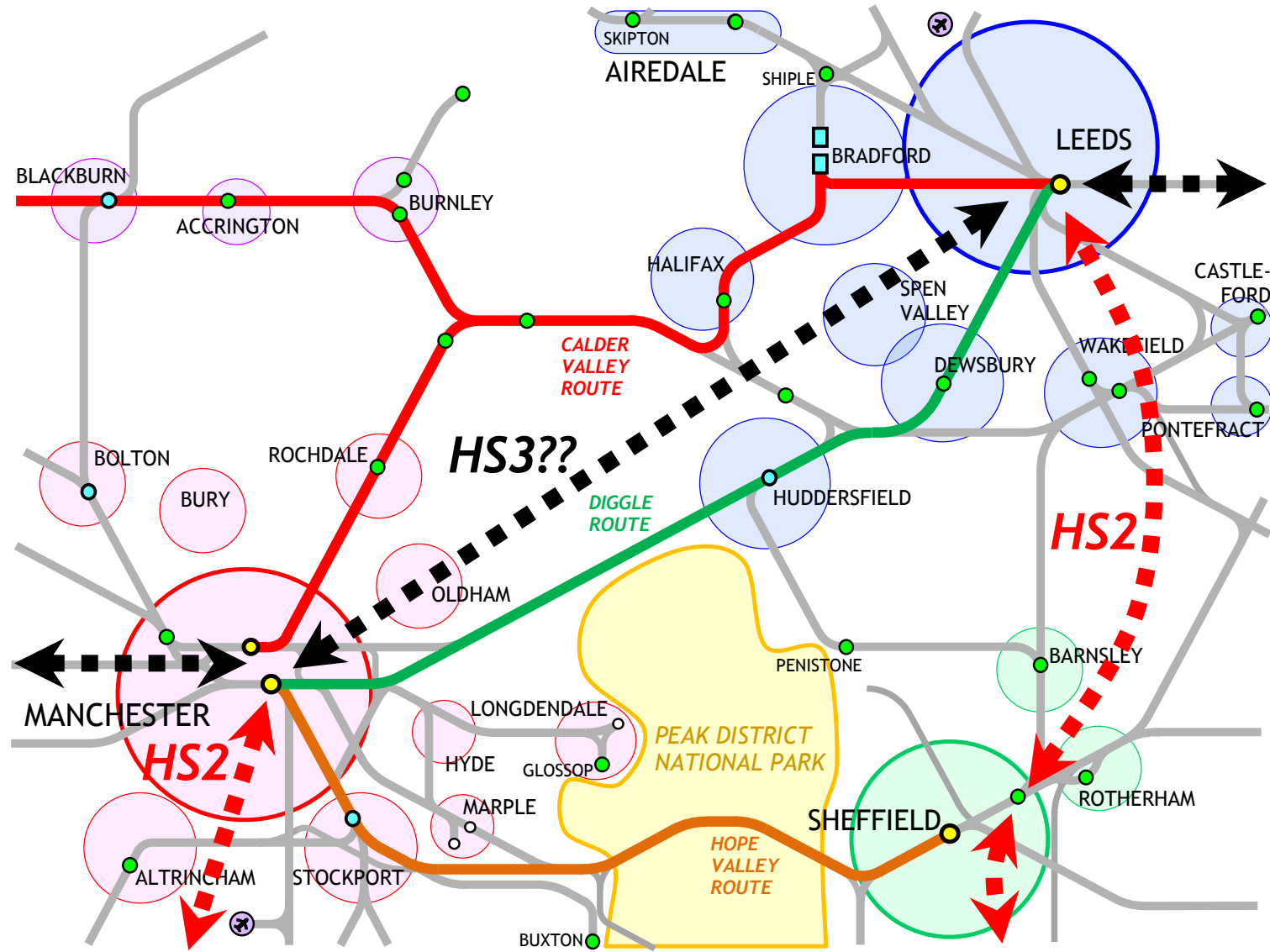
# Trans-Pennine Rail Issues

- Journey times
- Capacity
- Passenger overcrowding
- Restrictive gauge for freight
- Resilience
- Accessibility
- Inclusivity

# HS3 initiative - 2014

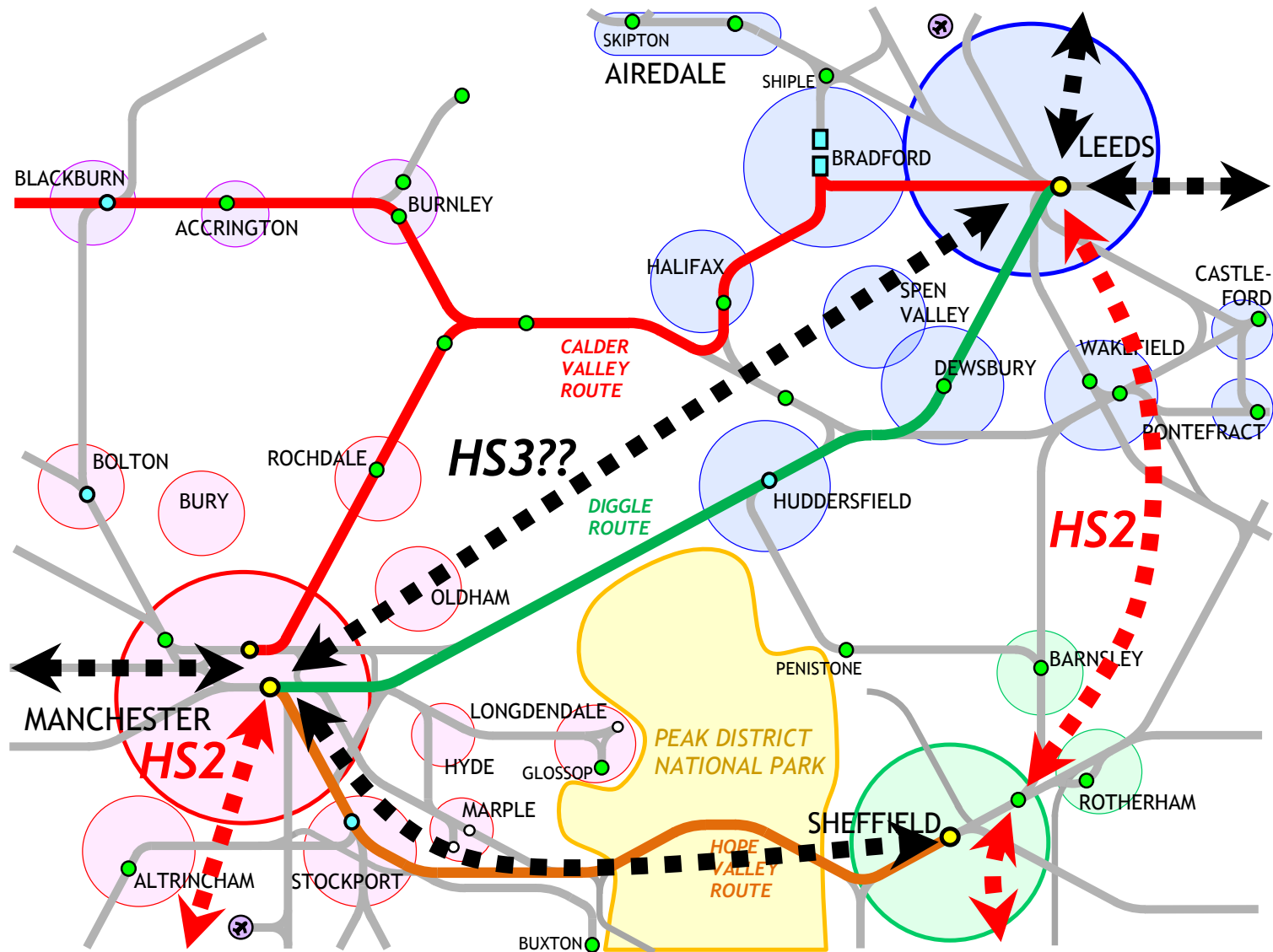


# HS3 initiative - plus HS2

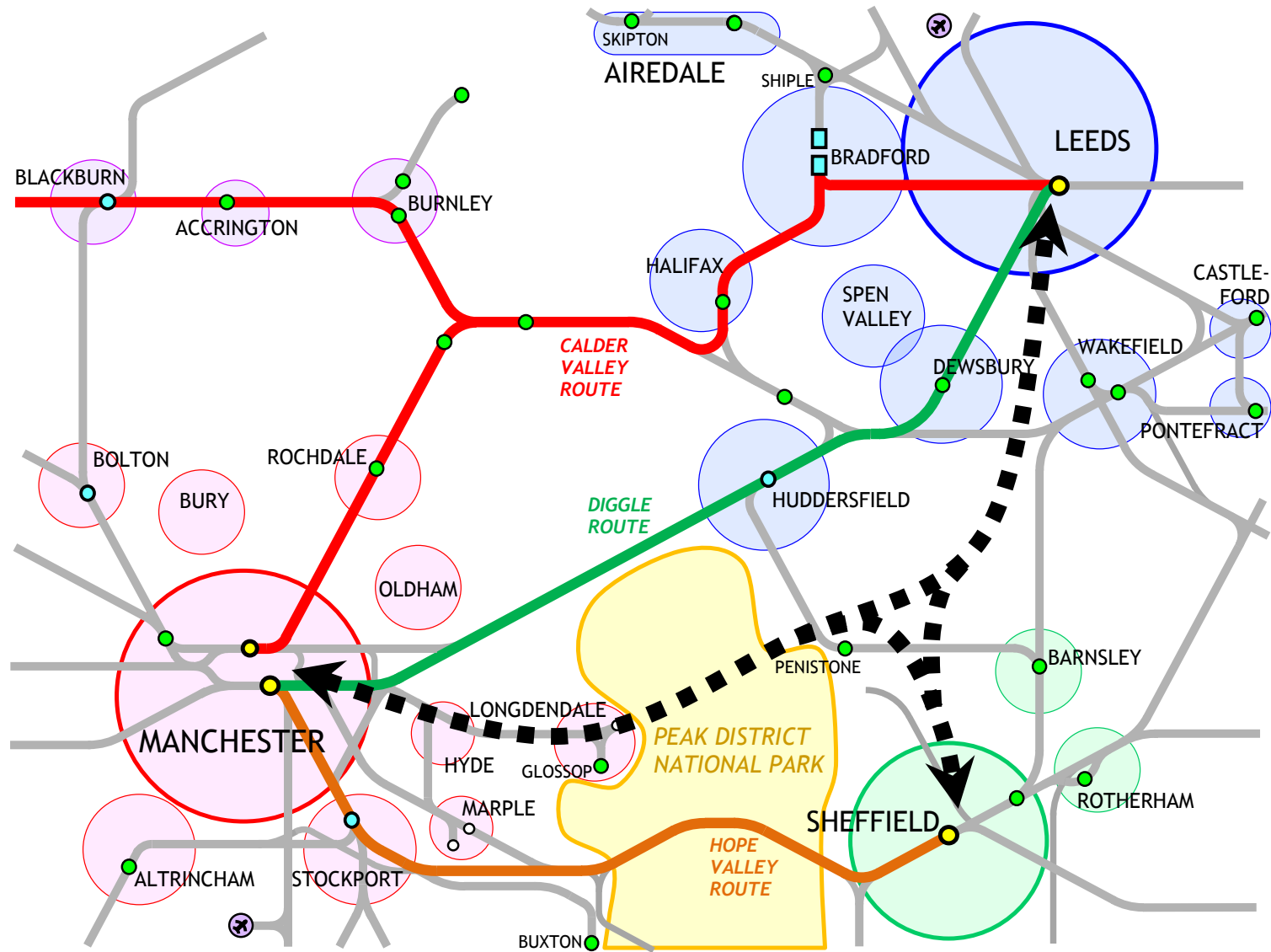




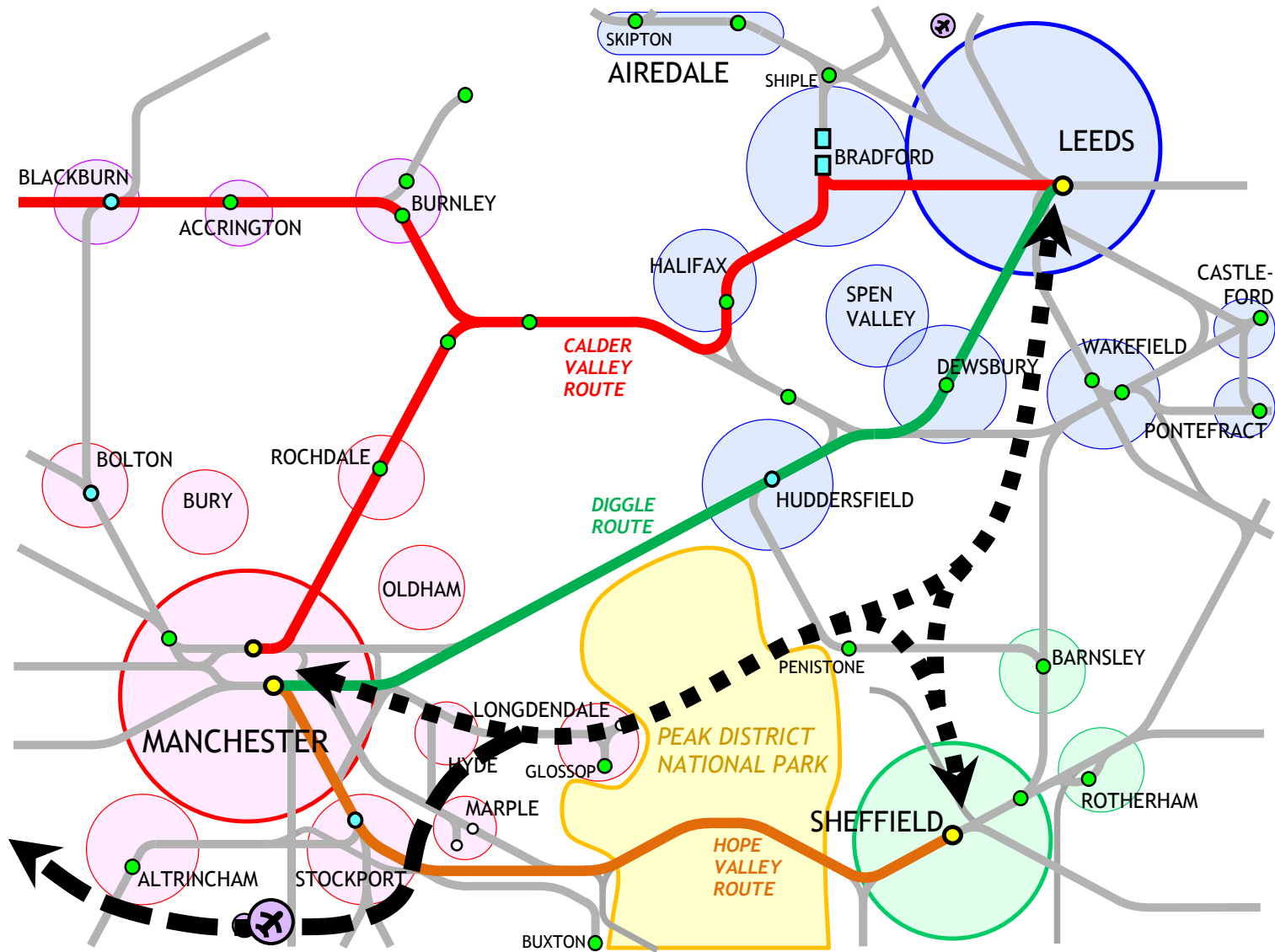
# Northern Powerhouse 2015



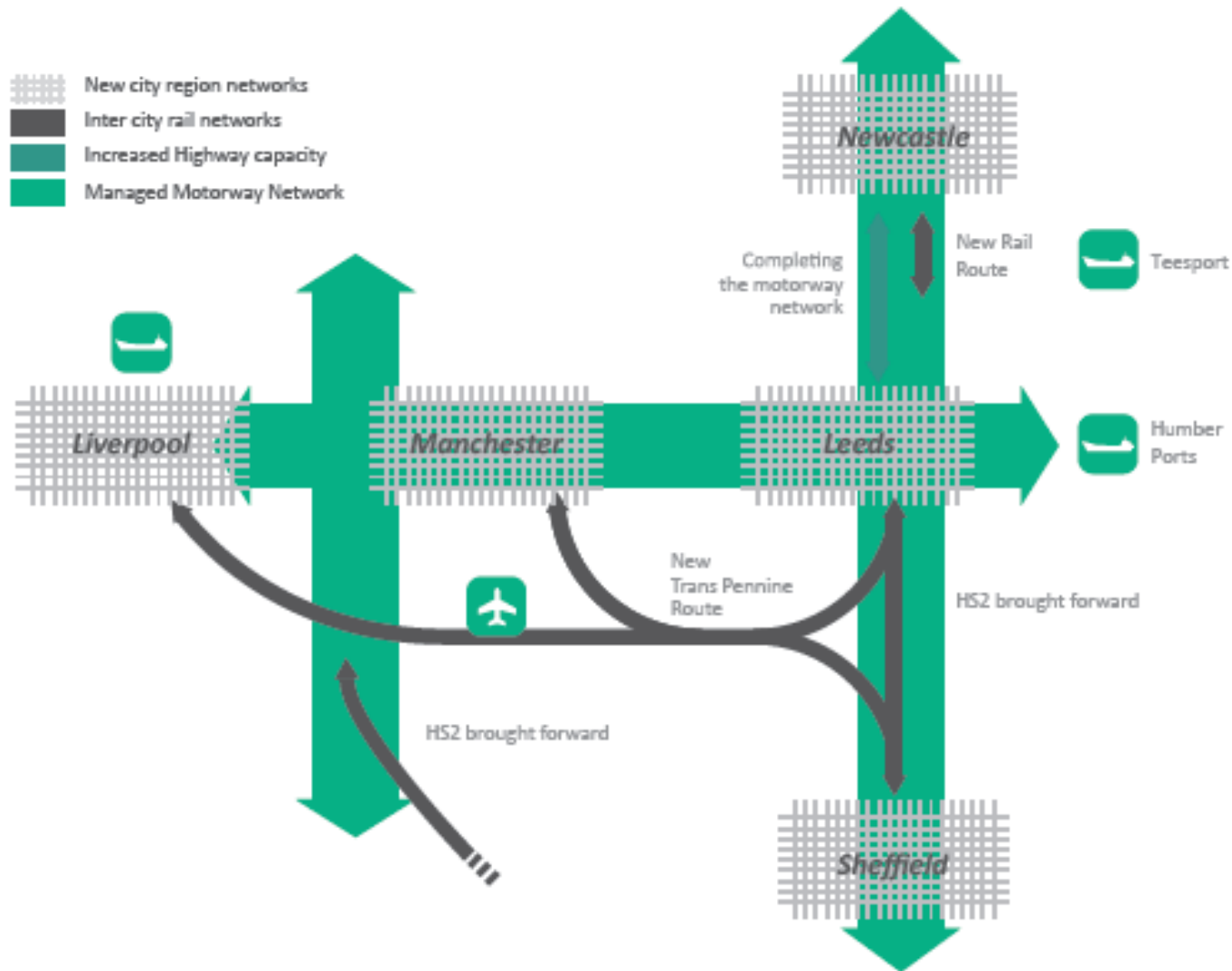
# The 'One North' View??



# 'One North' Airport Link



# The 'One North' View??

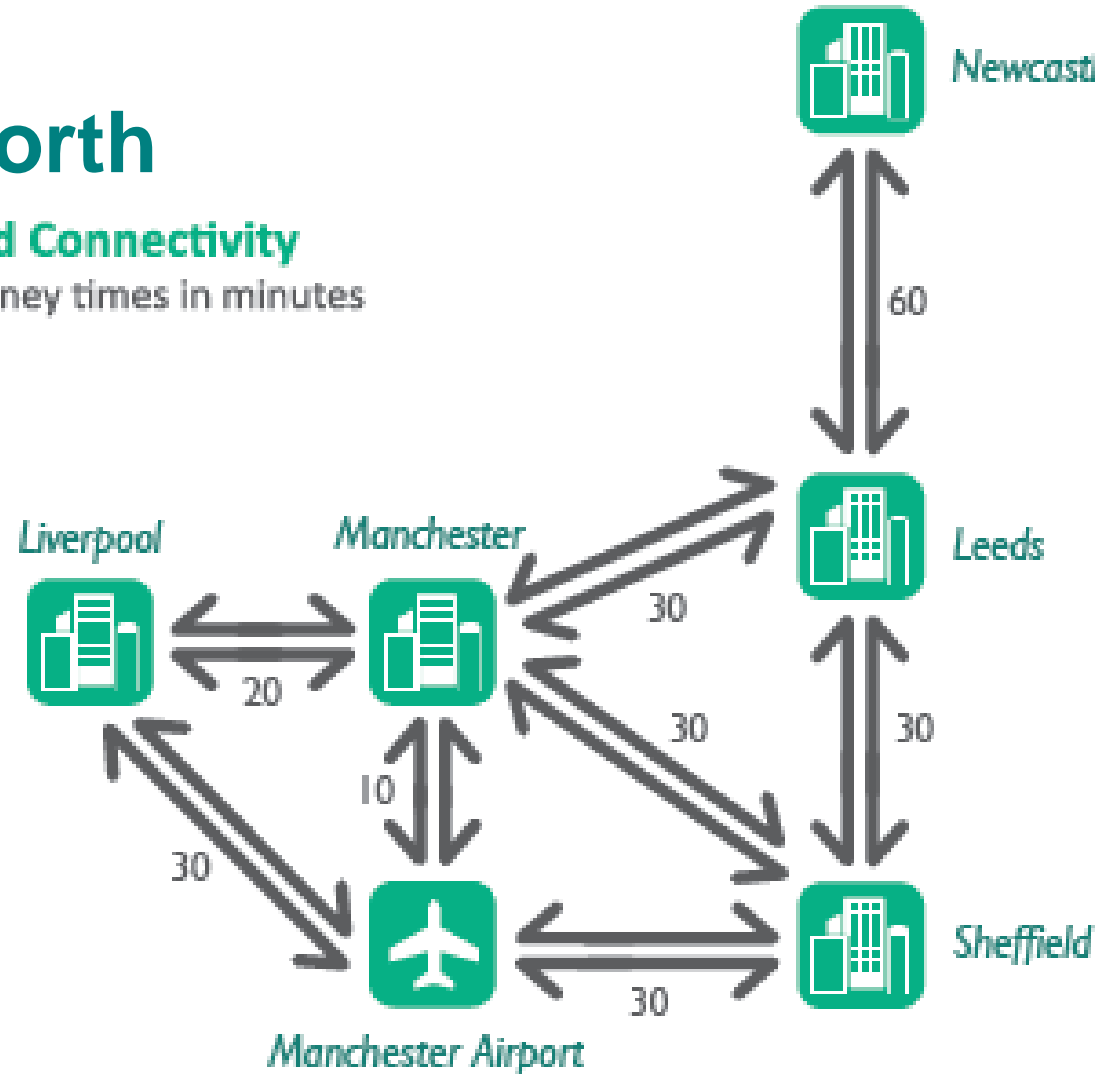


# Journey Time Specification (1)

## One North

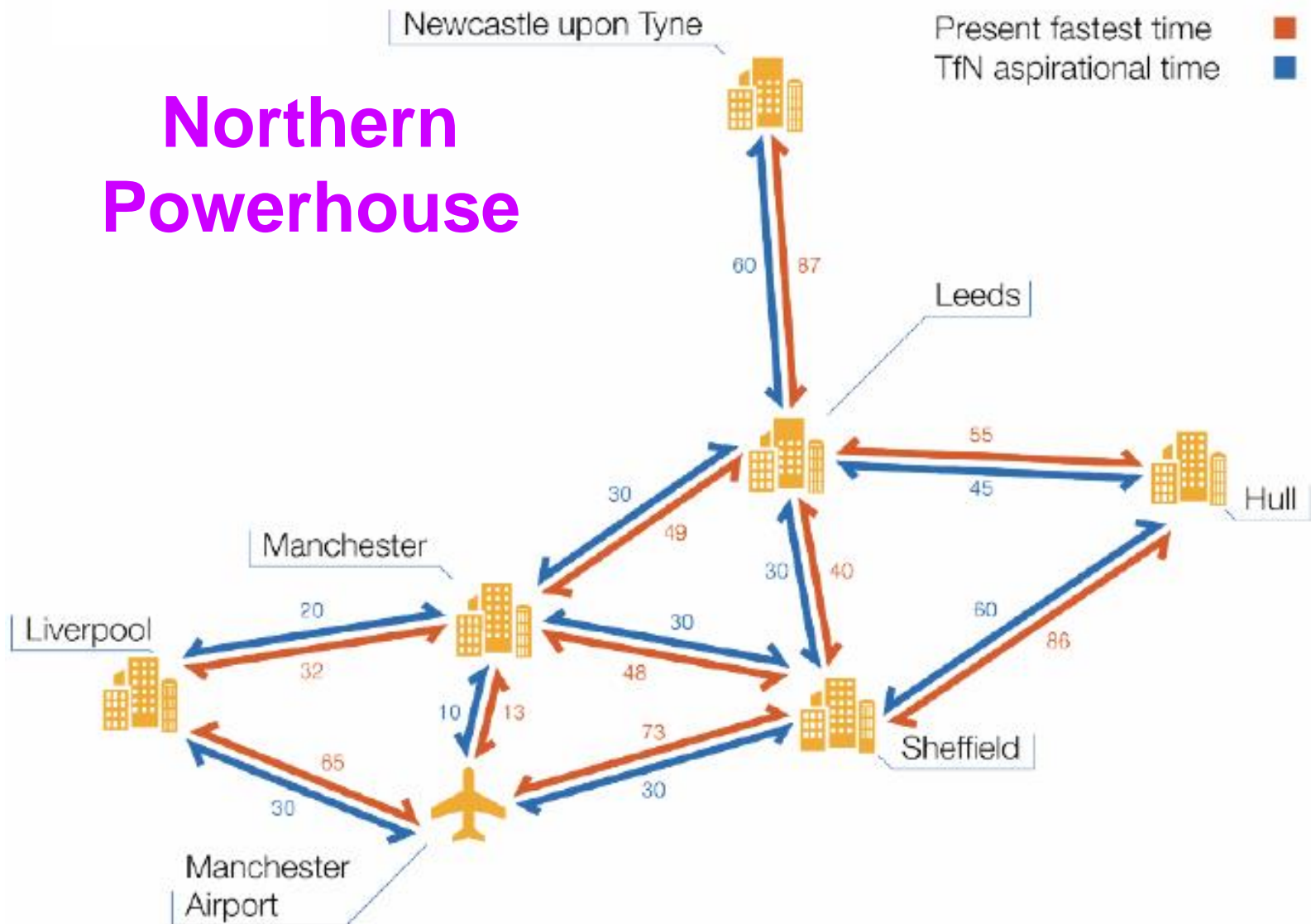
### Transformed Connectivity

Target rail journey times in minutes



# Journey Time Specification (2)

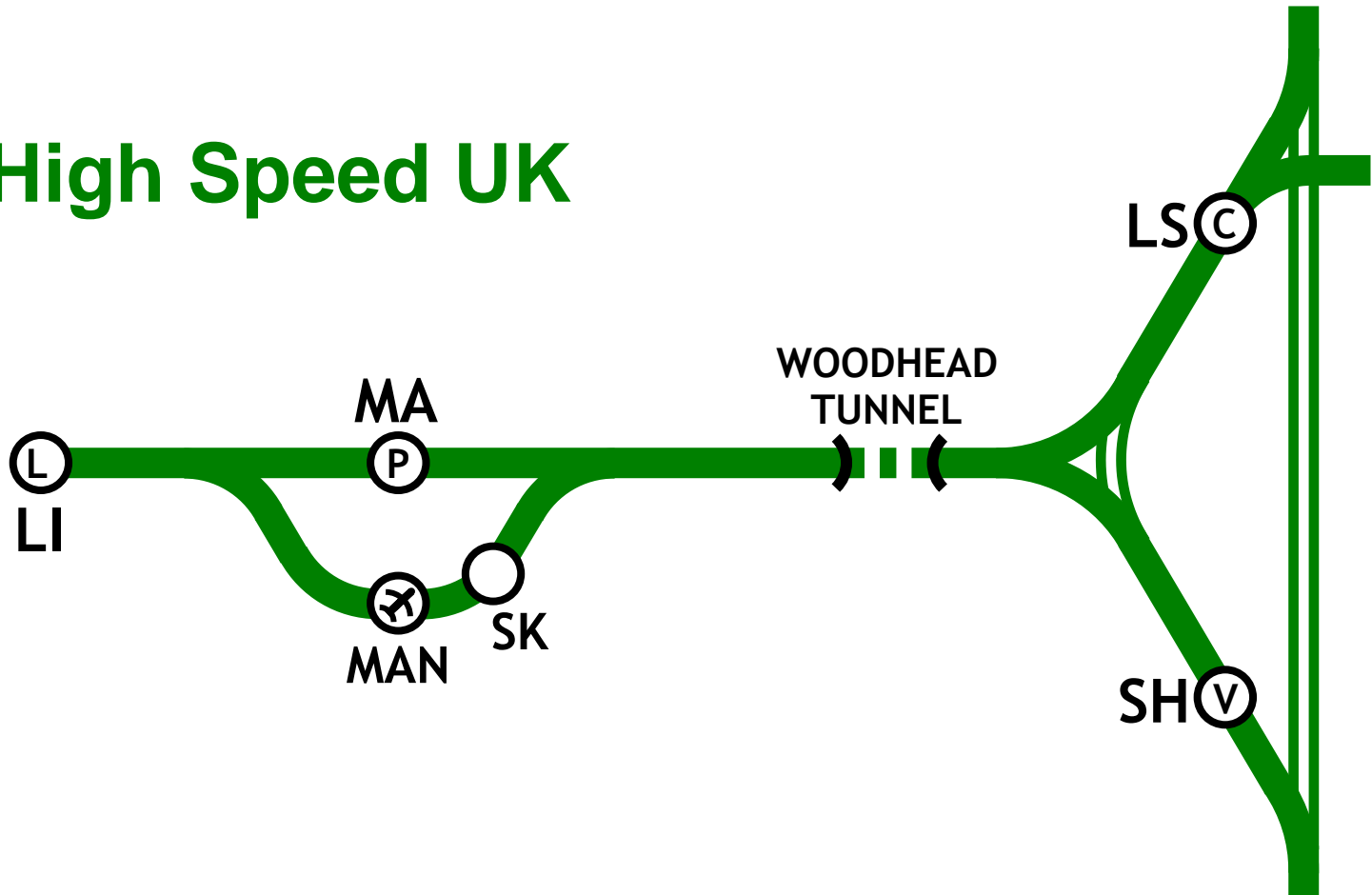
## Northern Powerhouse





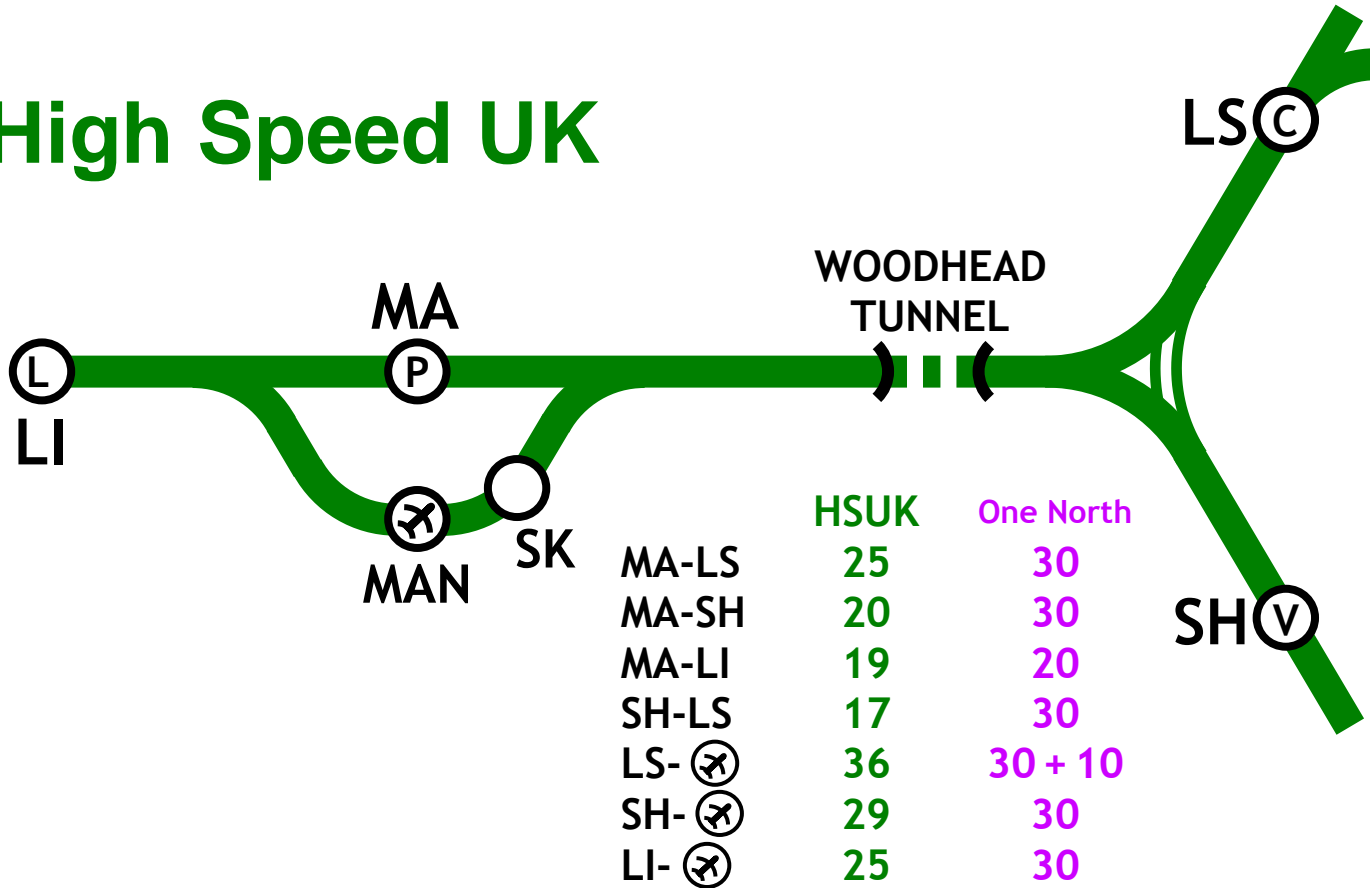
# The High Speed UK Solution

## High Speed UK

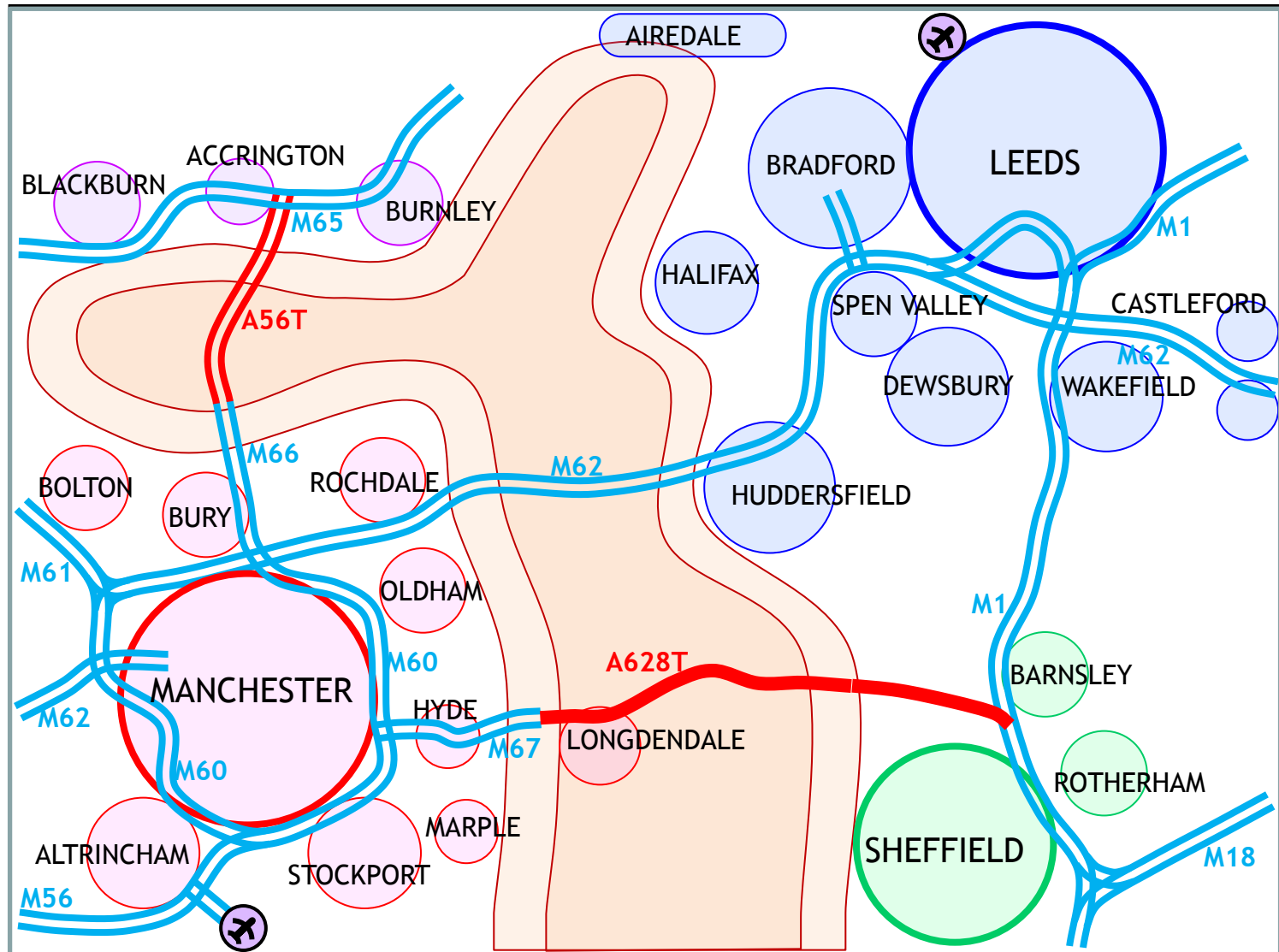


# HSUK Journey Times

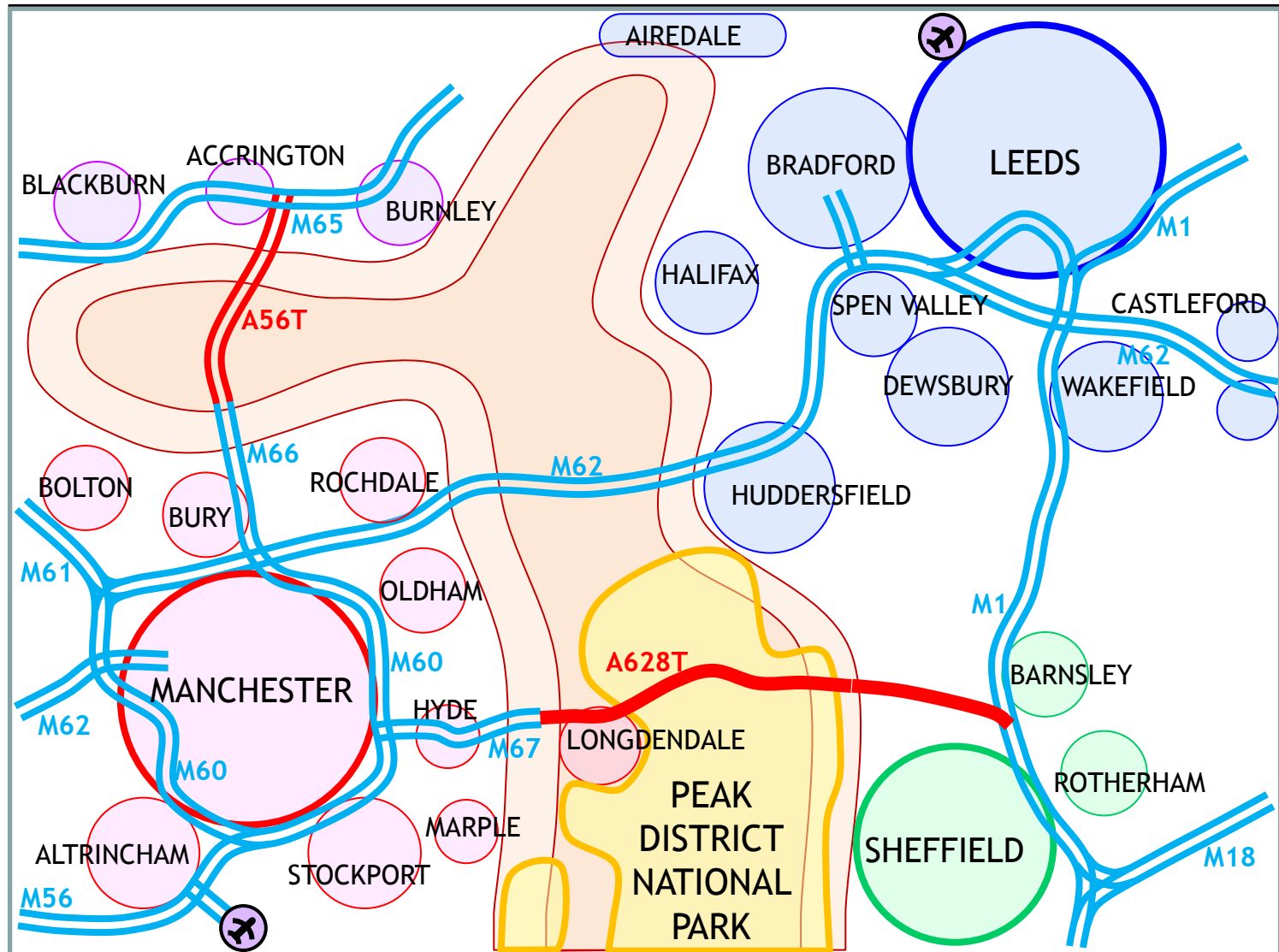
## High Speed UK



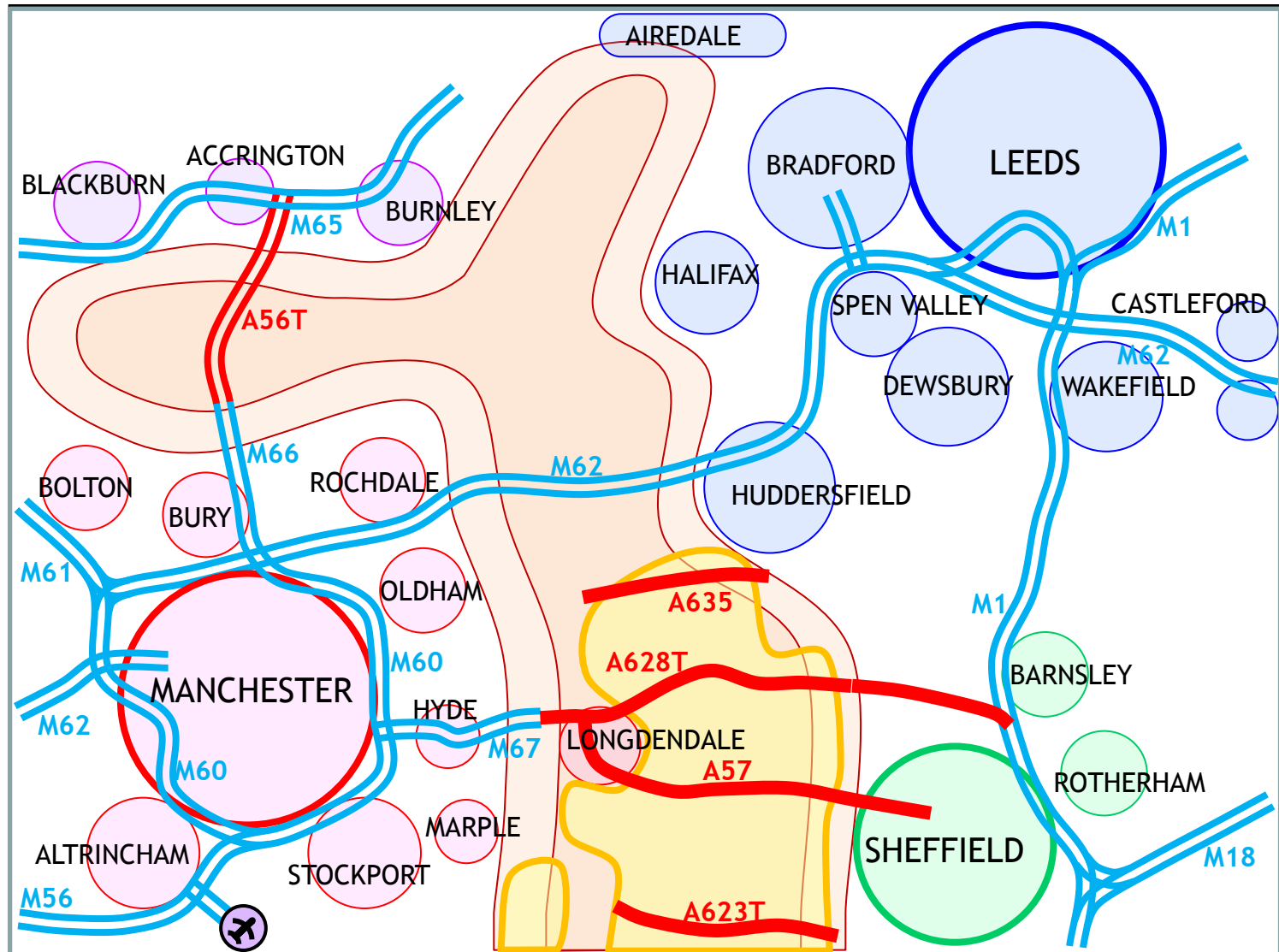
# Trans-Pennine Road Connectivity



# Peak District Issues



# Trans-Peak Roads



# Congestion on Woodhead Road

- The problem:
  - > 15000 vehicles per day
  - > 5M vehicles per year
  - ~ 1.4M HGVs per year

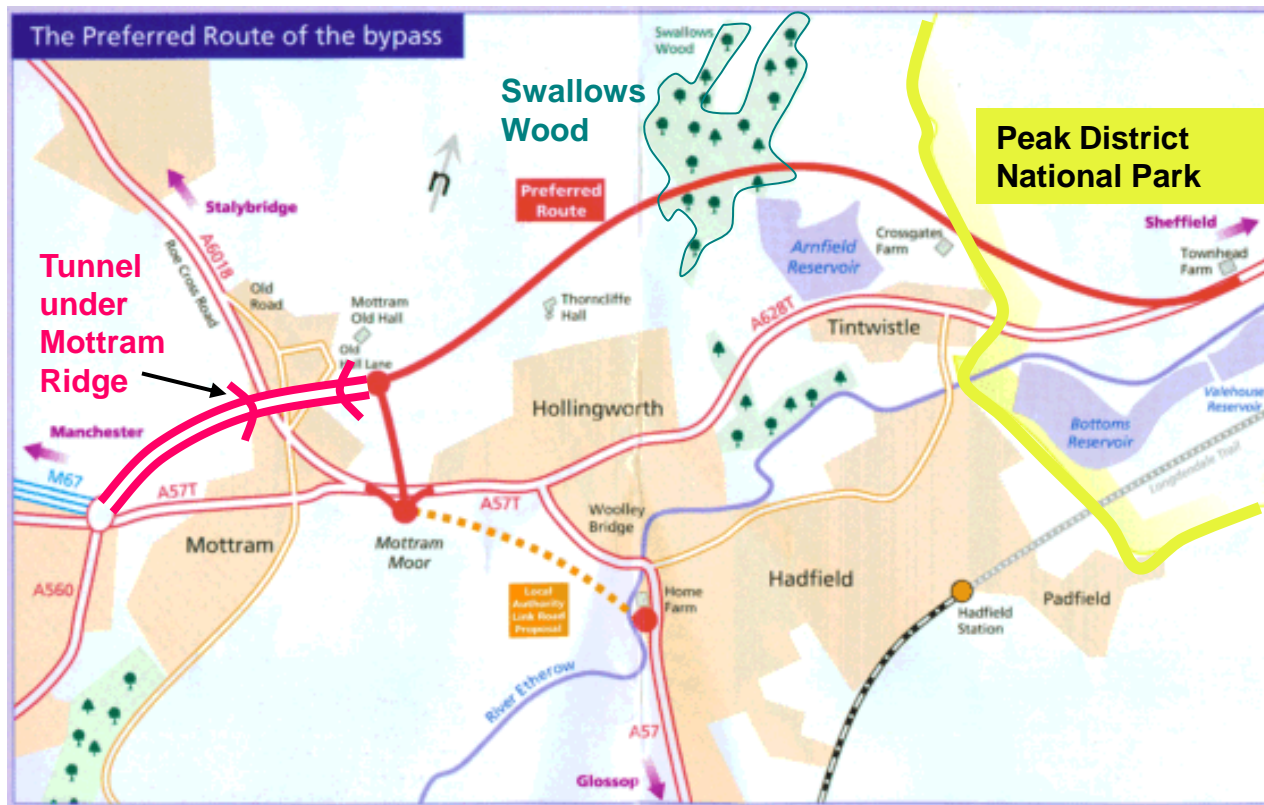


- HGVs 26% total by number
- HGVs 58% total by length



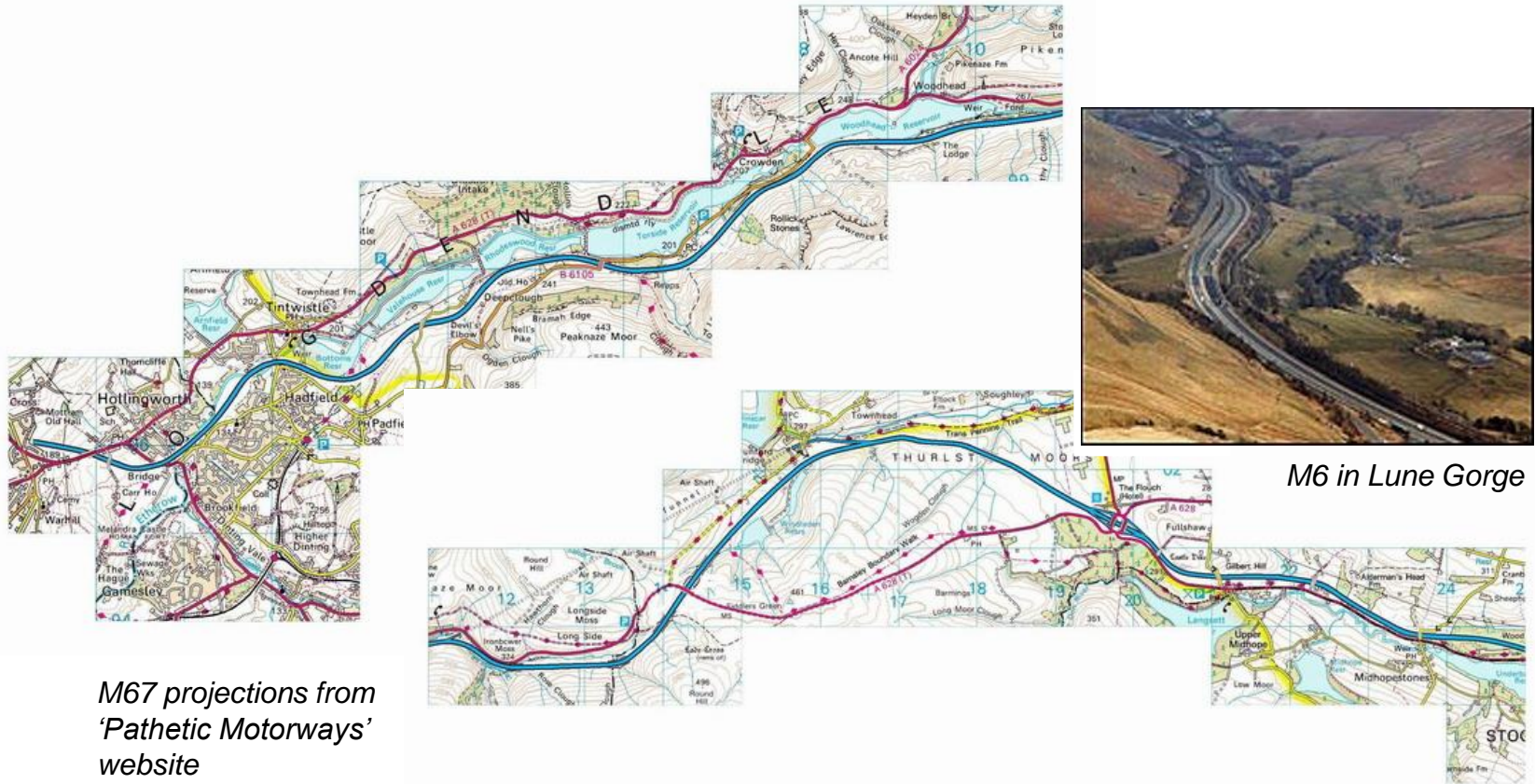
# Mottram - Tintwistle Bypass

- The road solution?? > £300M

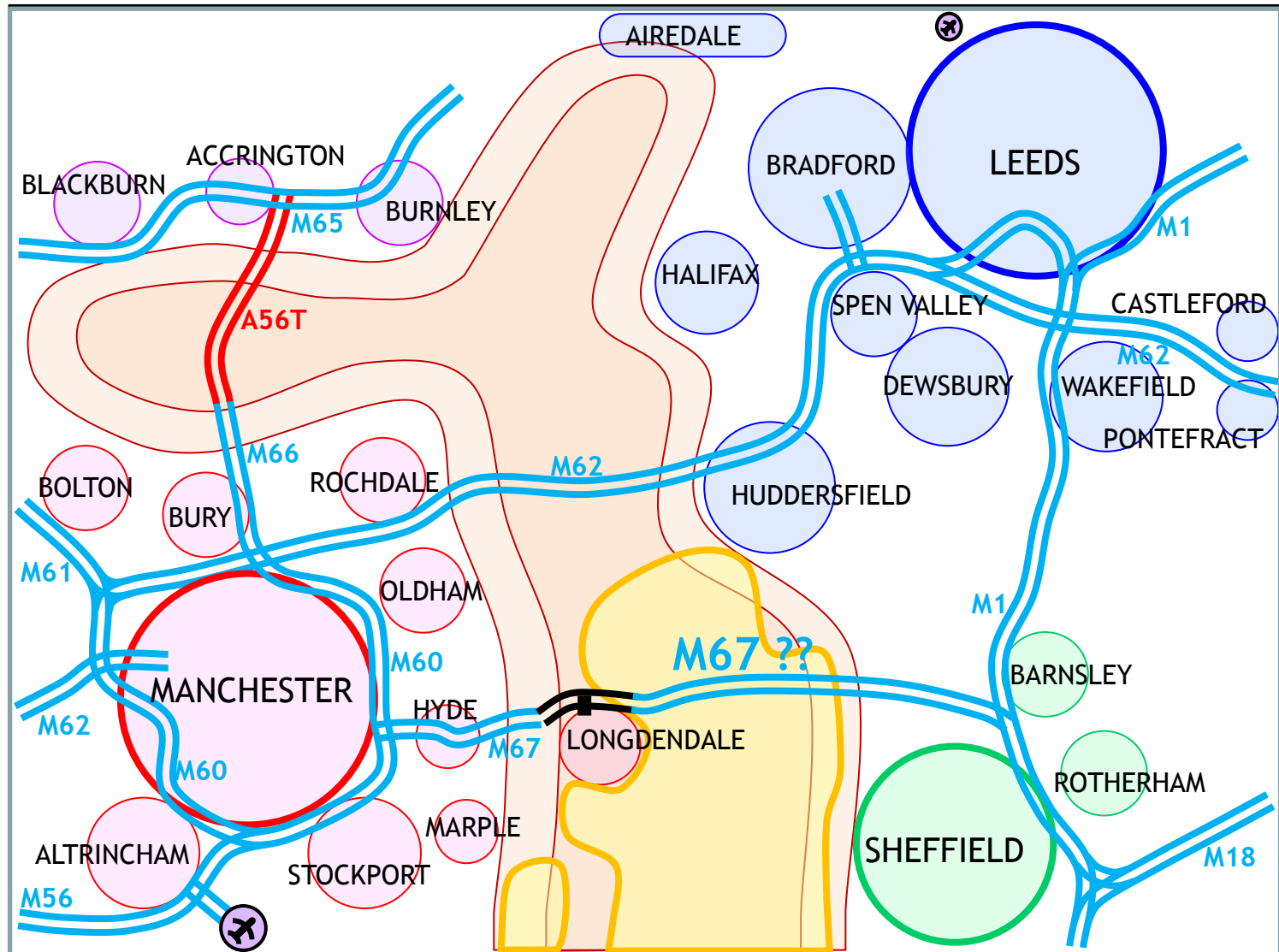


# Mottram - Tintwistle Bypass

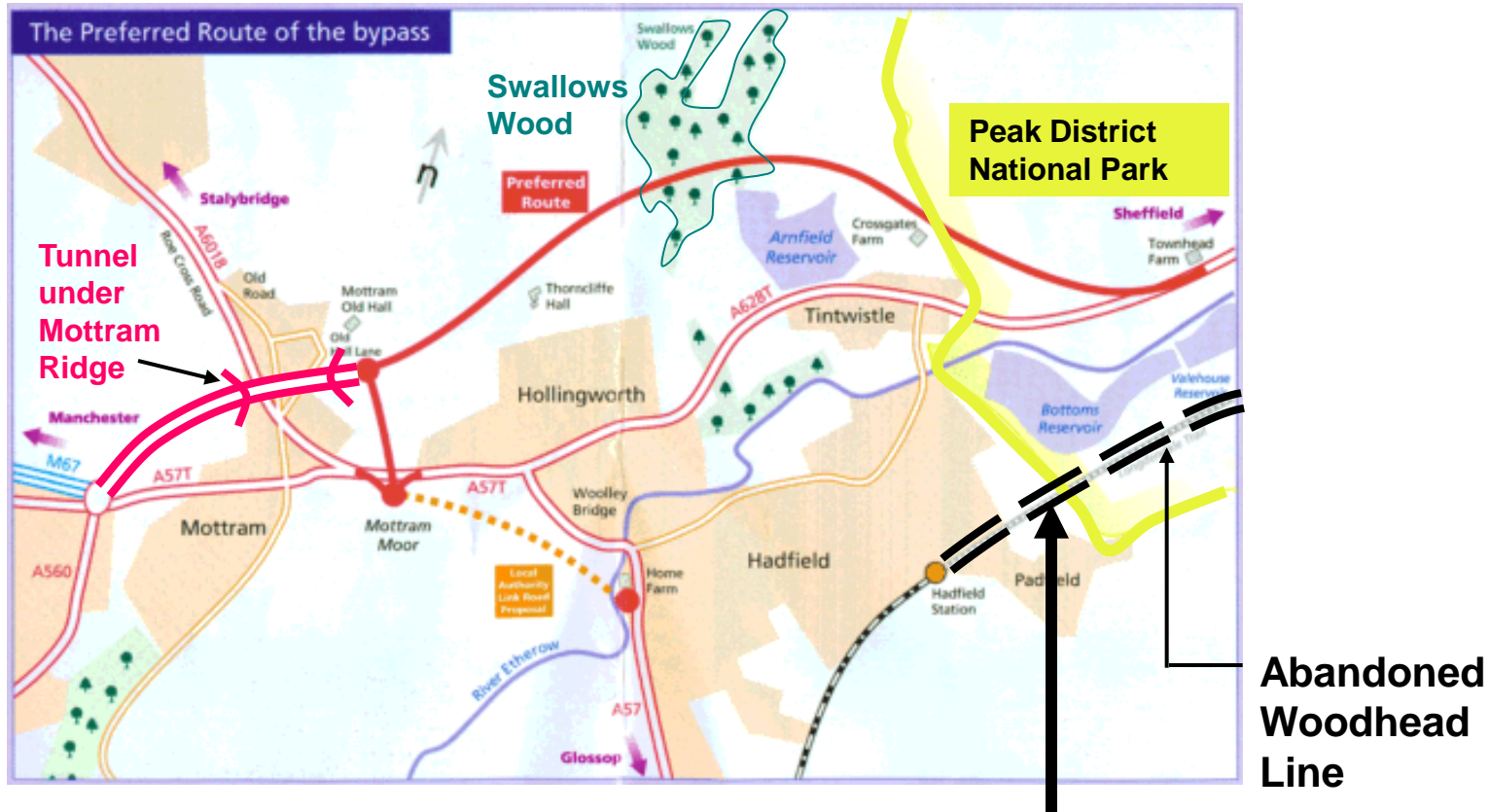
- Where next?? Trans-Peak Motorway??



# Trans-Peak Motorway??



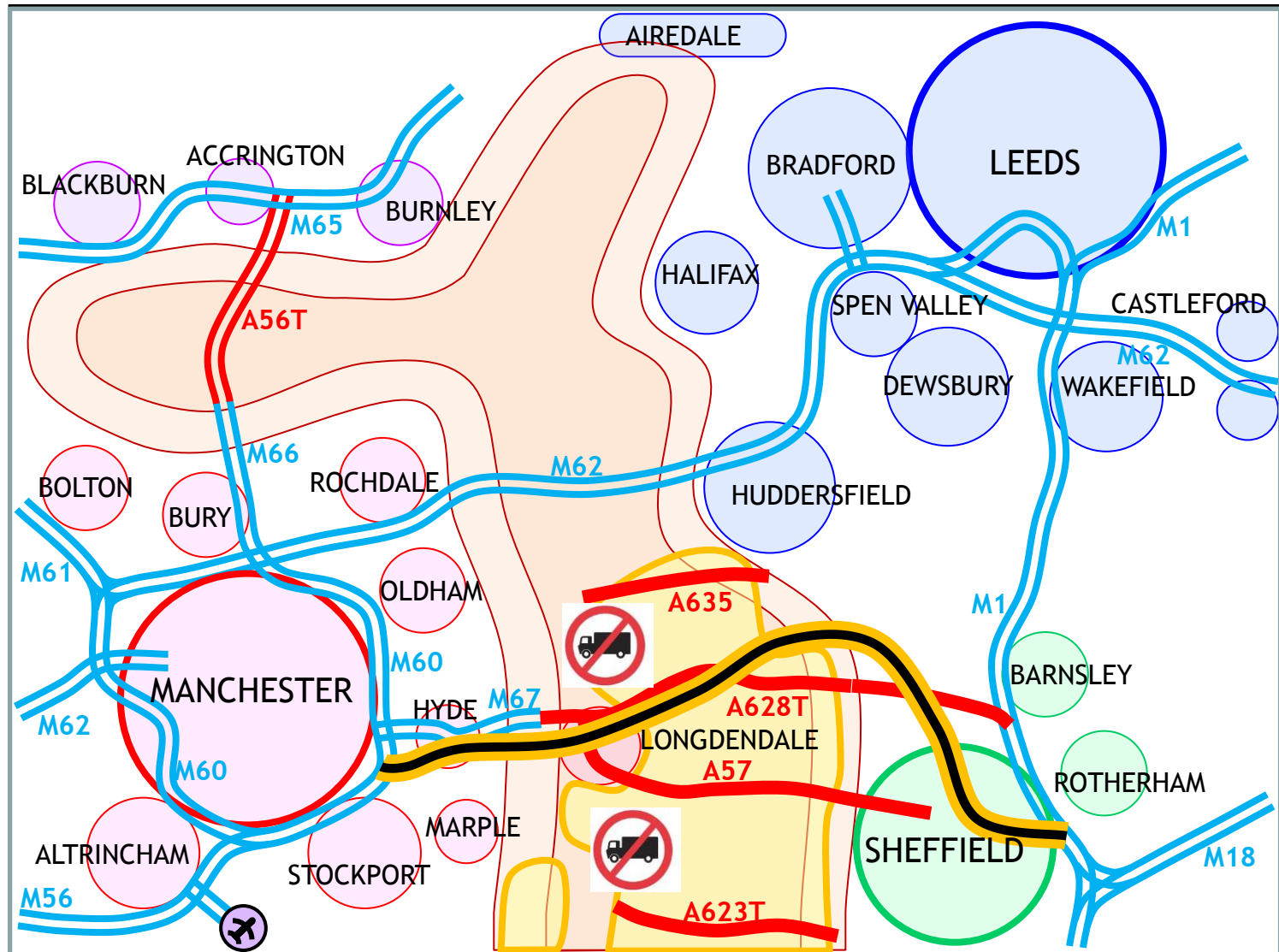
# Mottram - Tintwistle Bypass



- The railway alternative??



# HGV Bans & Lorry Shuttles

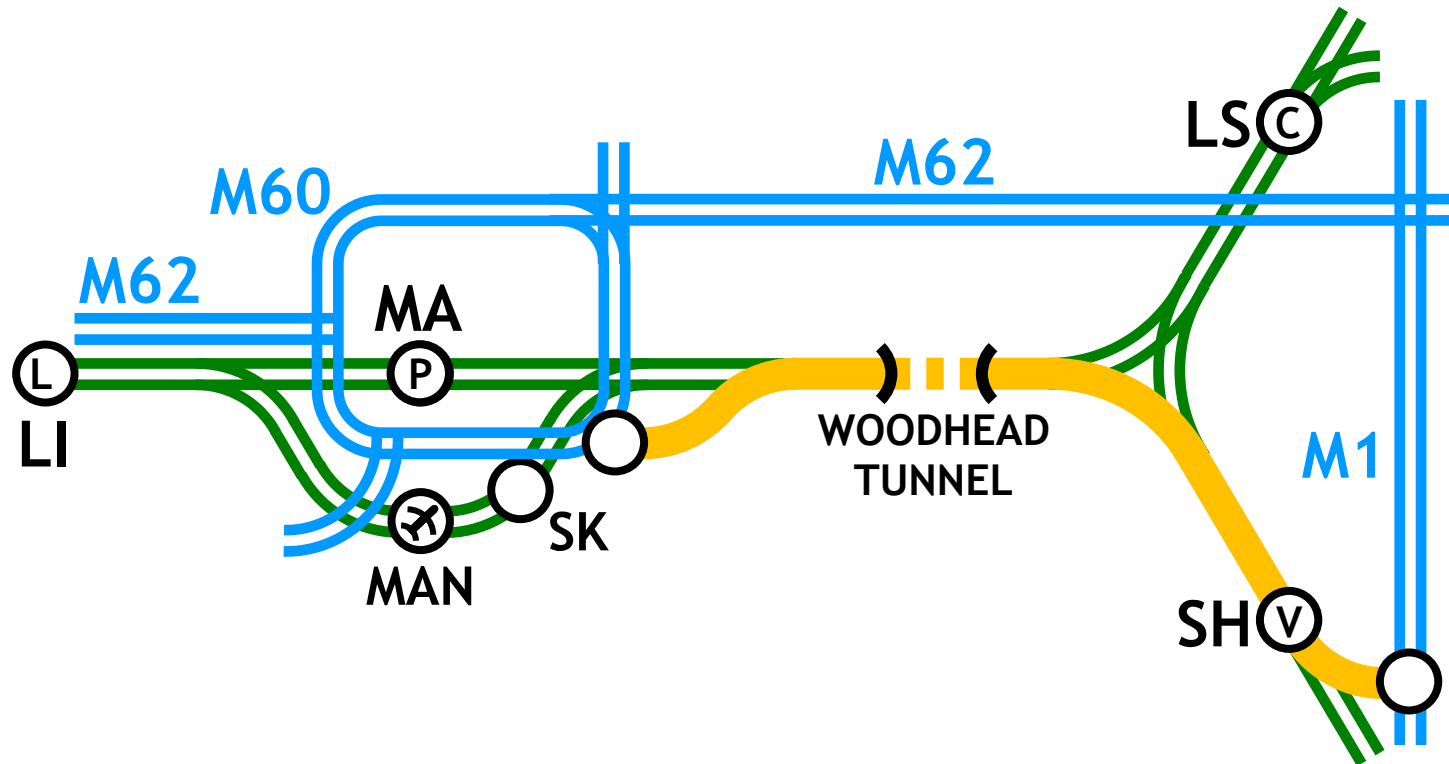


# Woodhead Reopening

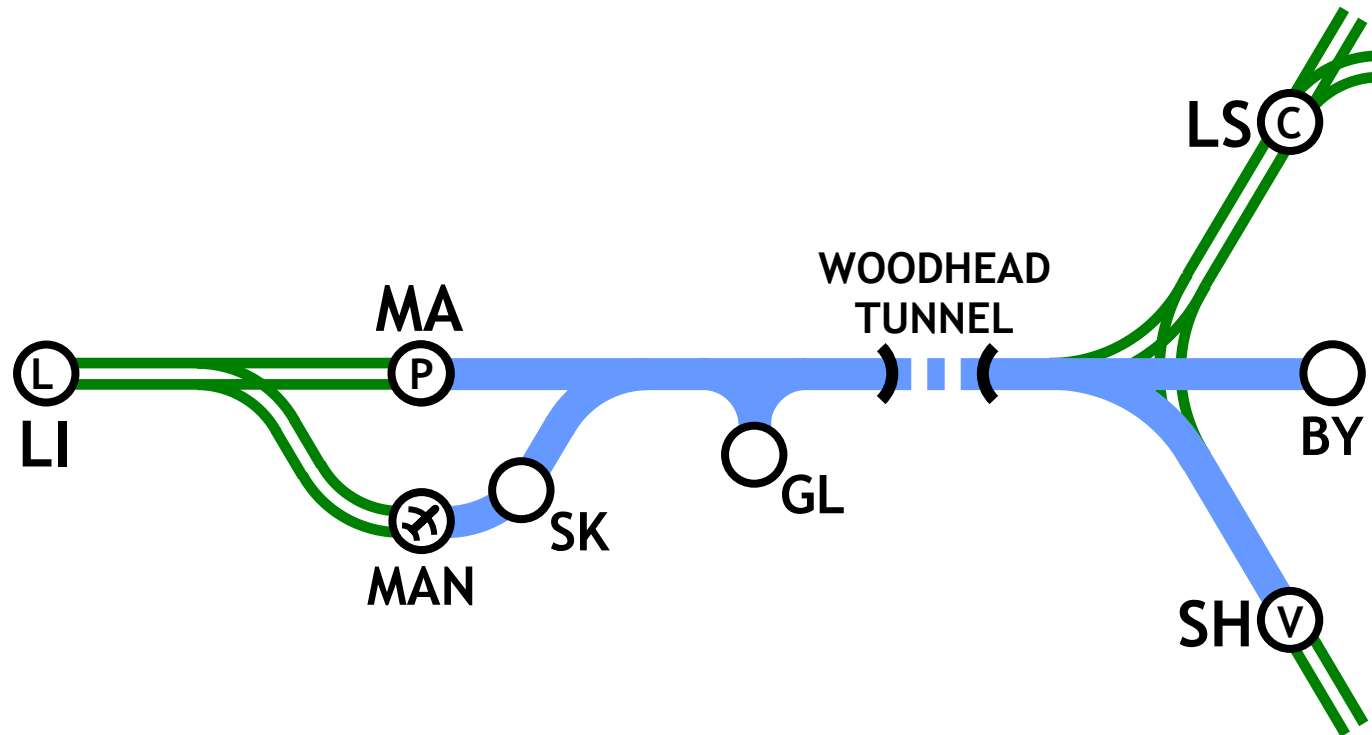
## Traffic type??

- Lorry shuttles
- Local passengers
- Freight
- High speed rail

# Woodhead Lorry Shuttles

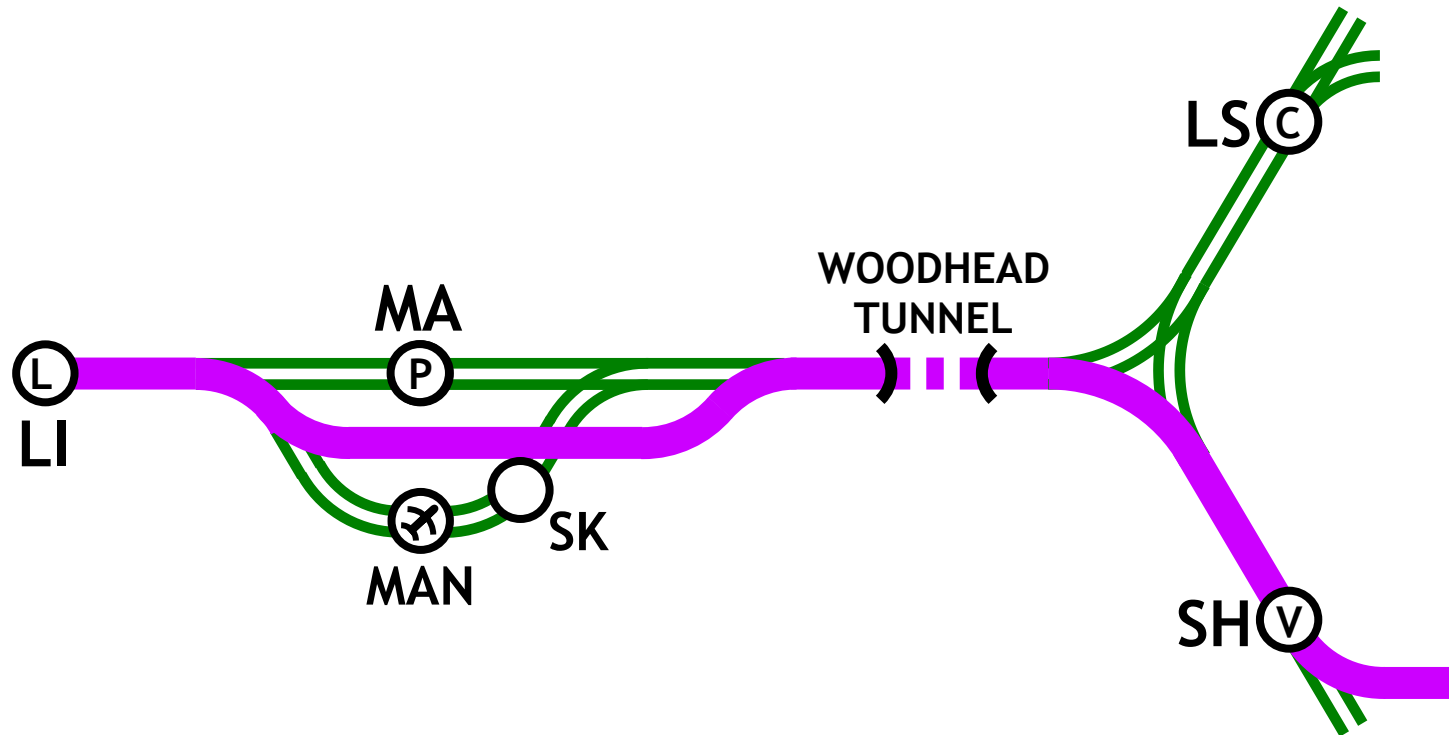


# Woodhead Local Services

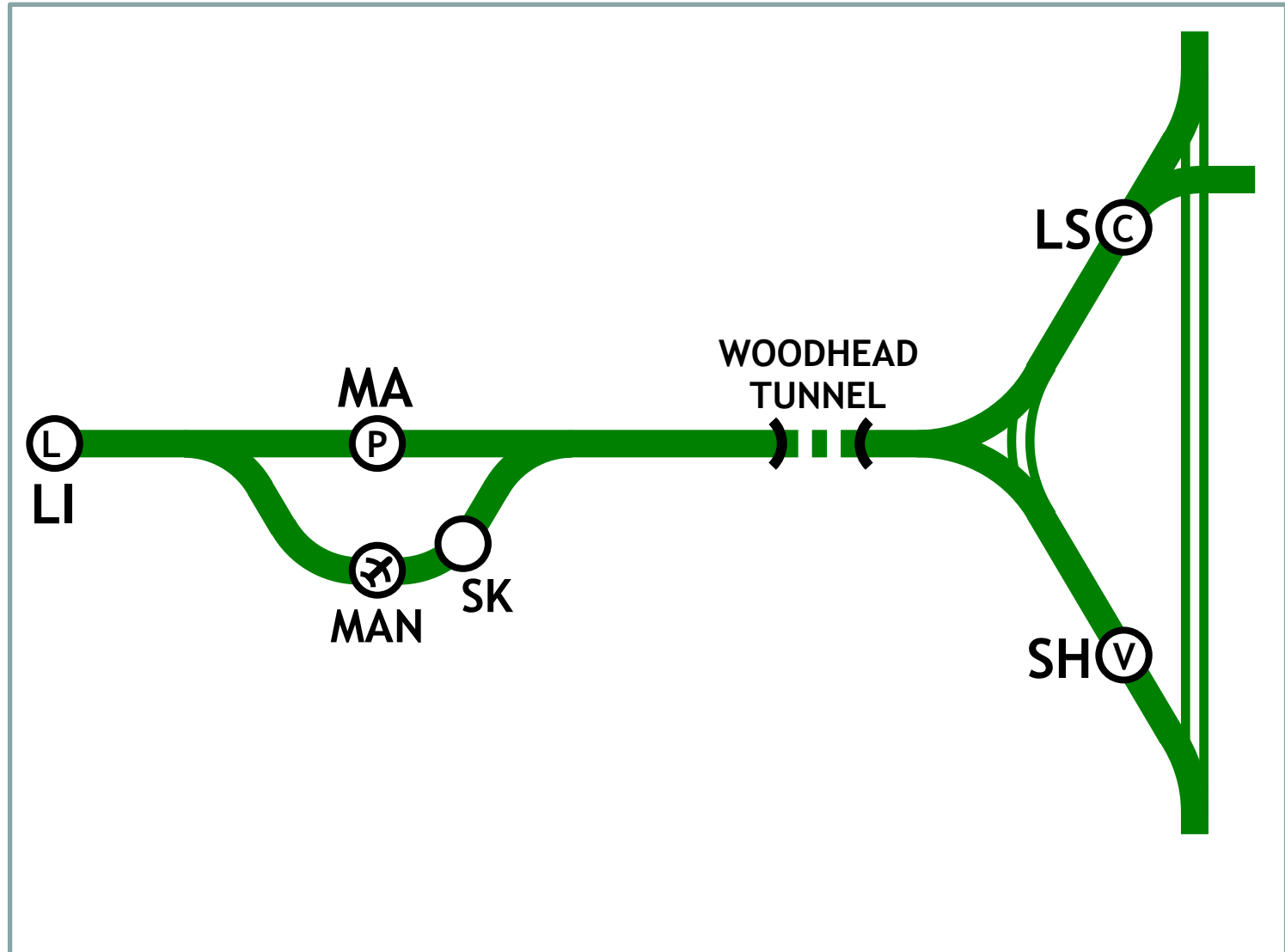




# Trans-Pennine Railfreight



# High Speed UK



# Woodhead Reopening

## Traffic type??

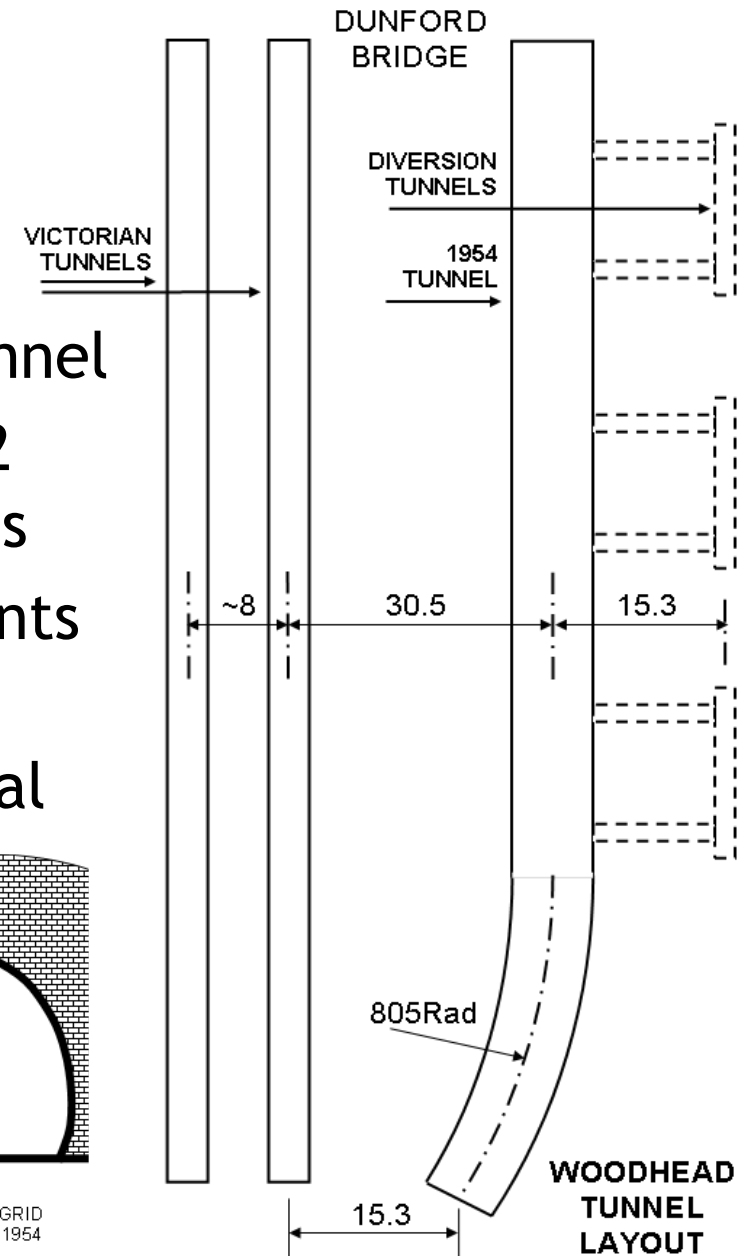
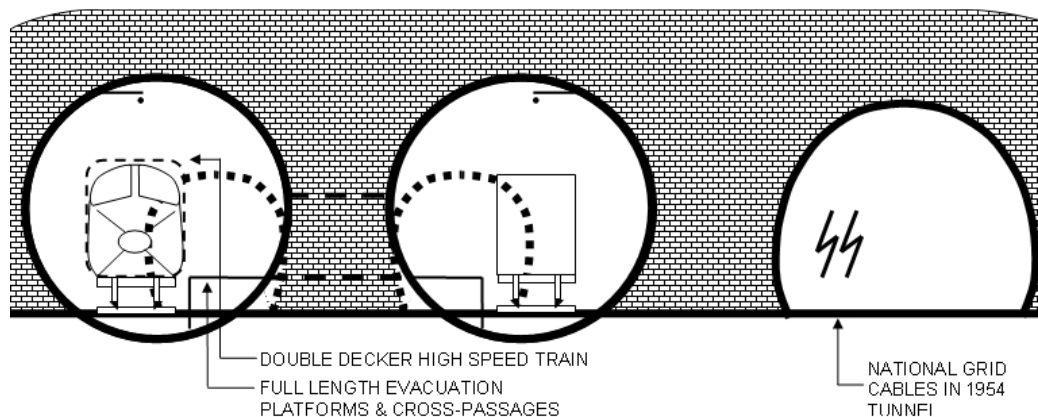
- Lorry shuttles
- Local passengers
- Freight
- High speed rail

## Infrastructure issues??

- Tunnel
- Abandoned approaches
- Existing railway - operational interface

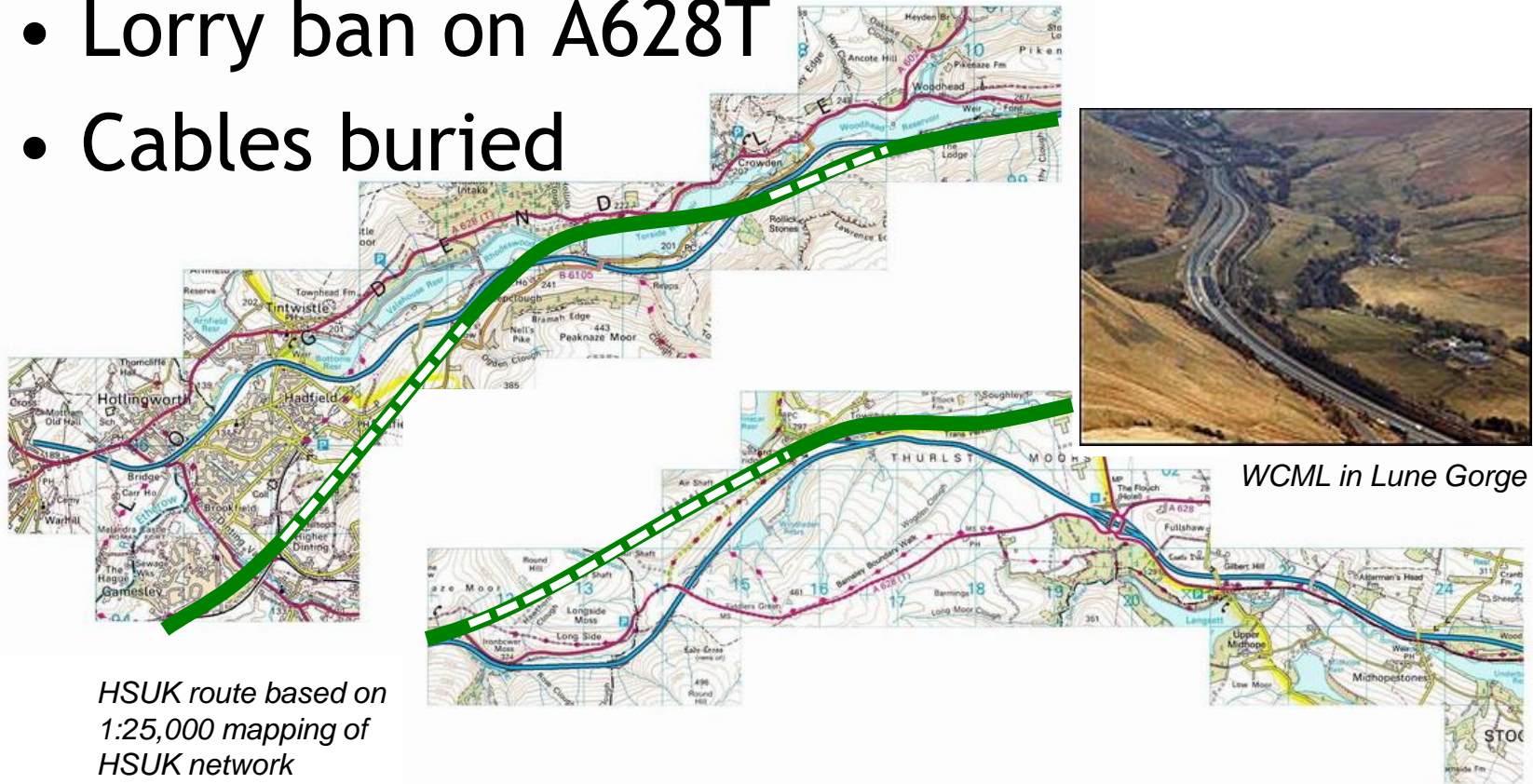
# High Speed in Woodhead Tunnel??

- Speed: 125kph max in 1954 tunnel
- Space: passing clearance for 2 wide-bodied double deck trains
- Safety: evacuation requirements for 'new railway'!!
- New / rebored tunnels essential

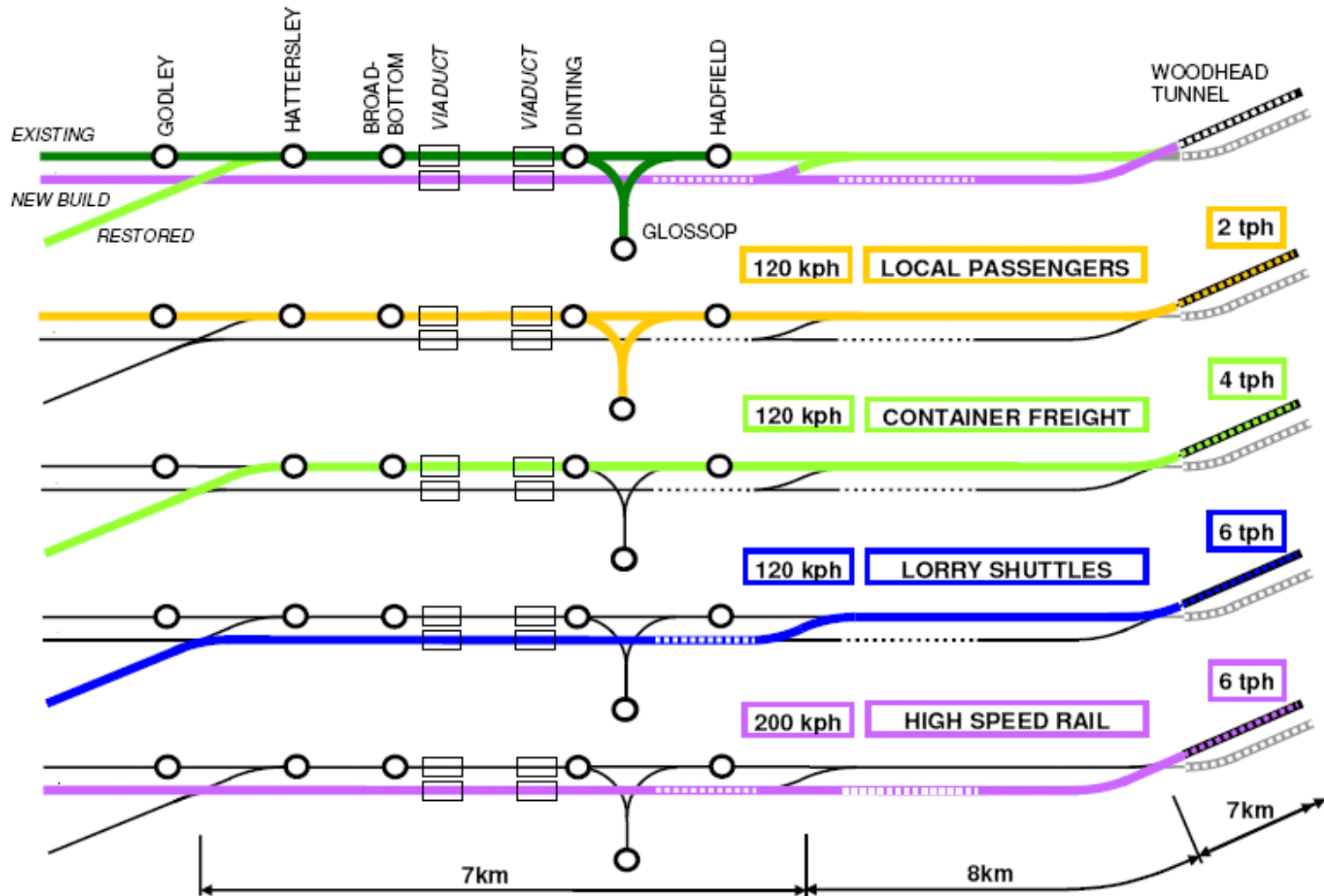


# HSUK in Longdendale

- Existing line also restored
- Lorry ban on A628T
- Cables buried



# Woodhead : Total Transport Solution



TRAIN PATHING ON WESTERN APPROACHES TO WOODHEAD

# Woodhead Reopening

## Traffic type??

- Lorry shuttles
- Local passengers
- Freight
- High speed rail

## Infrastructure issues??

- Tunnel
- Abandoned approaches
- Existing railway - operational interface

## Local issues??

- NP access
- Cycle track on old railway
- New railway construction

# Woodhead Reopening

## Traffic type??

- Lorry shuttles
- Local passengers
- Freight
- High speed rail

## Infrastructure issues??

- Tunnel
- Abandoned approaches
- Existing railway - operational interface

## Local issues??

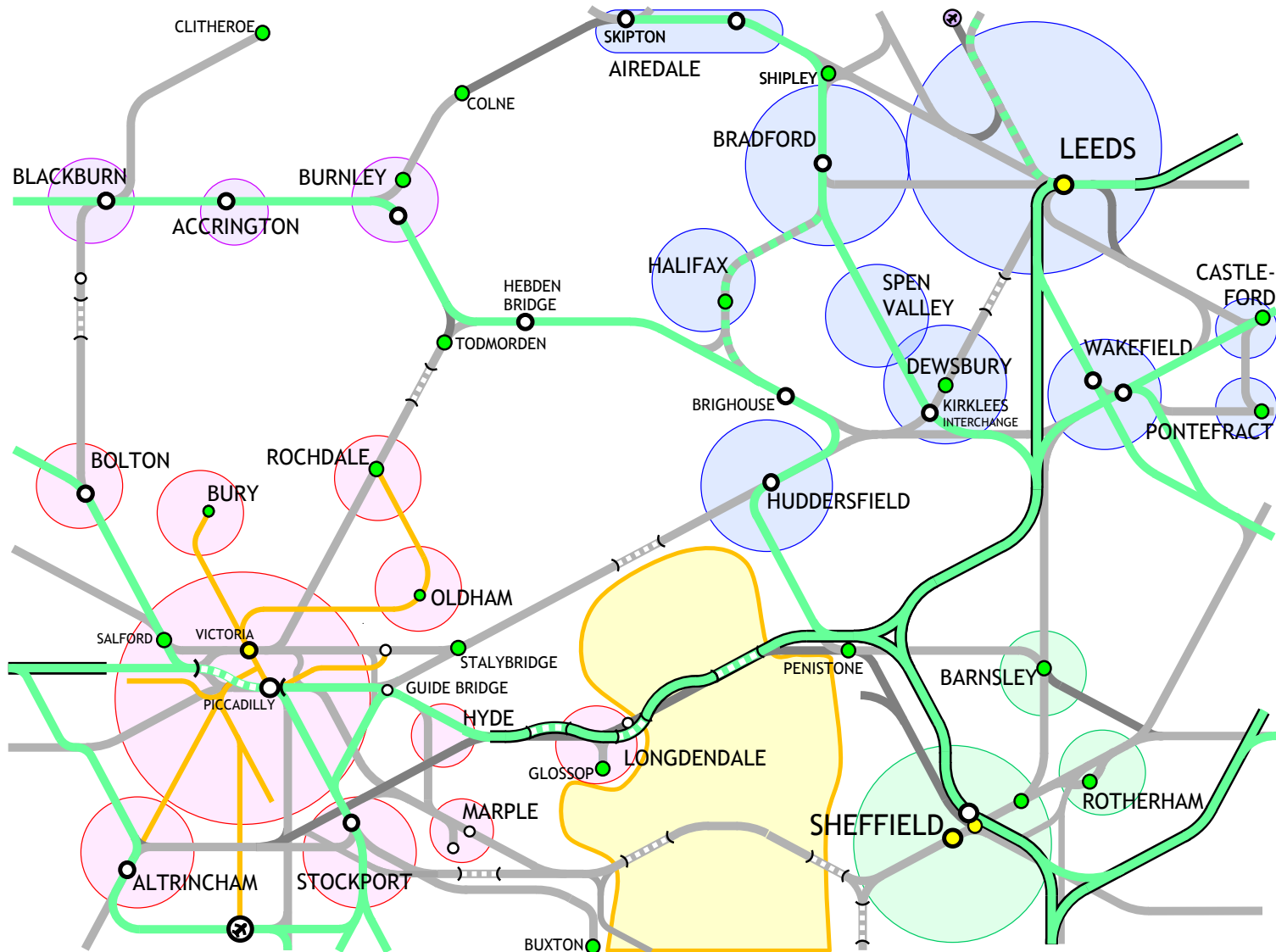
- NP access
- Cycle track on old railway
- New railway construction

## National issues??

- Fully connected rail network
- Minimise cost, maximise benefit
- Regional development
- CO<sub>2</sub> reductions as per 2008 CCA
- Preservation of landscapes



# HSUK network in Pennines





HSUK

Network?

or HS line?



HS2+3

# Woodhead : Total Transport Solution

## Lorry Shuttles

- Essential for reduced road traffic & alternative to M-T
- Wider benefits across Peak District with HGV ban strategy
- Won't fit tunnels
- New alignment required alongside existing railway
- Major costs

## Container / Railfreight

- Essential to meet wider transport/environment aims
- No major infrastructure requirements

## High Speed Rail

- Woodhead key to cost-effective national network
- Environmental gains optimised
- Won't fit tunnels
- New alignment required alongside existing railway
- New construction in National Park

## Local Passenger Services

- Essential for local support
- No major infrastructure requirements but...
- Safety case concerns in 1954 tunnel

# Woodhead : Total Transport Solution

## Lorry Shuttles

- Essential for reduced road traffic & alternative to M-T
- Wider benefits across Peak District with HGV/lorries strategy
- Won't fit tunnels
- New alignment required alongside existing railway
- Major costs

**INTEGRATED  
TRANSPORT  
DEVELOPMENT**

## High Speed Rail

- Woodhead key to cost-effective national network
- Environmental gains optimised
- Won't fit tunnels
- New alignment required alongside existing railway
- New construction in National Park

**NEW  
NETWORK  
CAPACITY**

**WOODHEAD**

## Container/Trailers

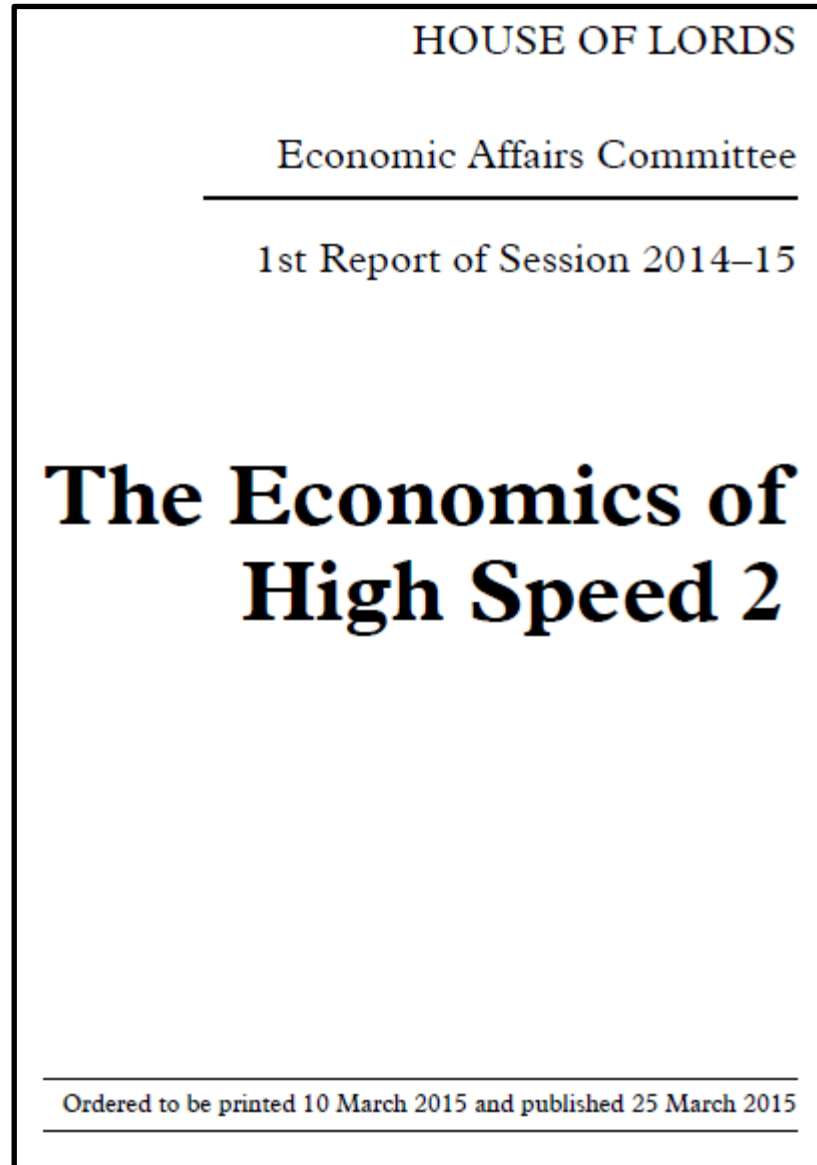
- Essential to meet wider transport/environment aims
- No major infrastructure requirements

**LOWER  
CO<sub>2</sub> NET ENVIRONMENTAL  
IMPROVEMENT**

## Local Passenger Services

- Essential for rail transport
- New infrastructure requirements but...
- Safety case concerns in 1954 tunnel

# House of Lords Report 25/3/15



# House of Lords Report 25/3/15

Key Question for Government:

## **National Transport Plan**

- In the absence of a co-ordinated transport plan, how can the Government be sure that HS2 is the best way to achieve the project's objectives?

# House of Lords Report 25/3/15

NTP Key Principles for HS National Network:

- All primary cities fully interlinked

# House of Lords Report 25/3/15

## NTP Key Principles for HS National Network:

- All primary cities fully interlinked
- Services at hourly or better frequencies



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- Services at hourly or better frequencies
- All second tier cities included in network
- Full interchange with local networks

# House of Lords Report 25/3/15

## NTP Key Principles for HS National Network:

- All primary cities fully interlinked
- Services at hourly or better frequencies
- All second tier cities included in network
- Full interchange with local networks
- Direct services from primary cities to national hub airport

# House of Lords Report 25/3/15

## NTP Key Principles for HS National Network:

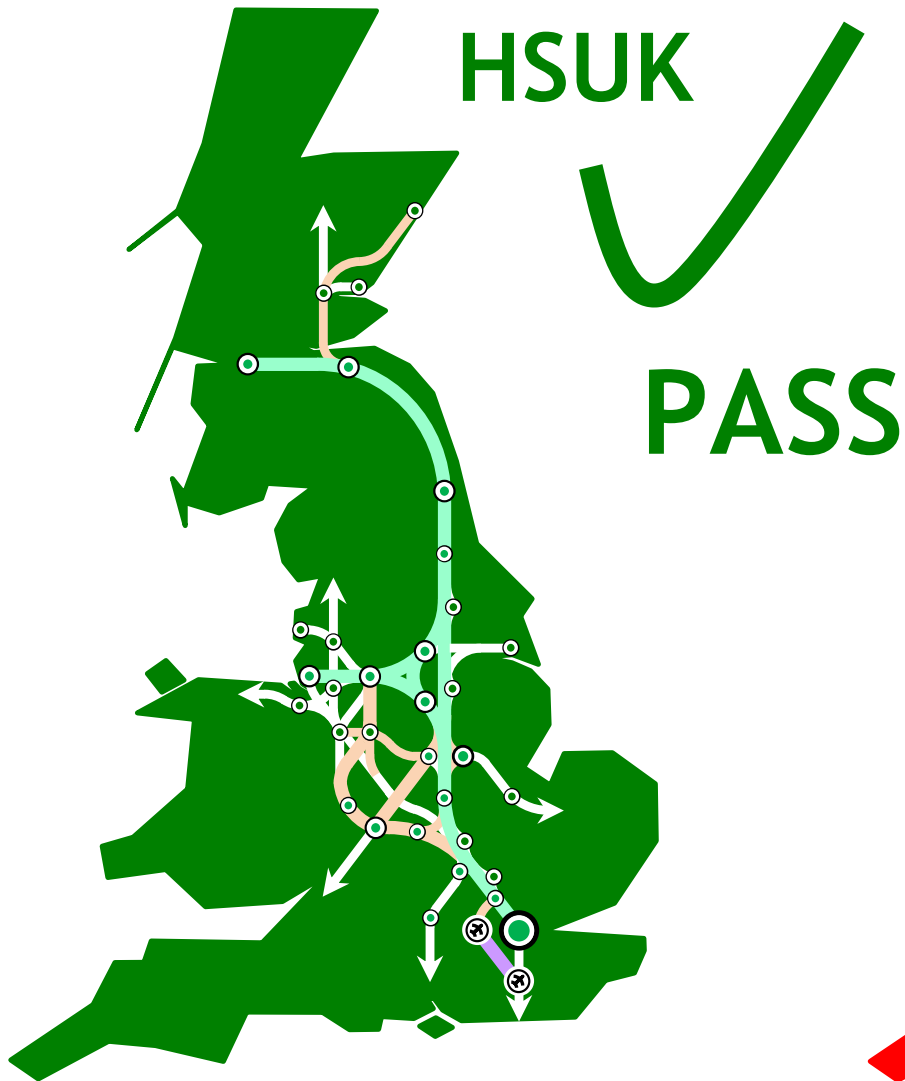
- All primary cities fully interlinked
- Services at hourly or better frequencies
- All second tier cities included in network
- Full interchange with local networks
- Direct services from primary cities to national hub airport
- Direct services also to regional airports

# The New Exam Questions!!

## NTP Key Principles for HS National Network:

- All primary cities fully interlinked
- Services at hourly or better frequencies
- All second tier cities included in network
- Full interchange with local networks
- Direct services from primary cities to national hub airport
- Direct services also to regional airports
- Direct connection to Europe via HS1

# The New Exam Questions

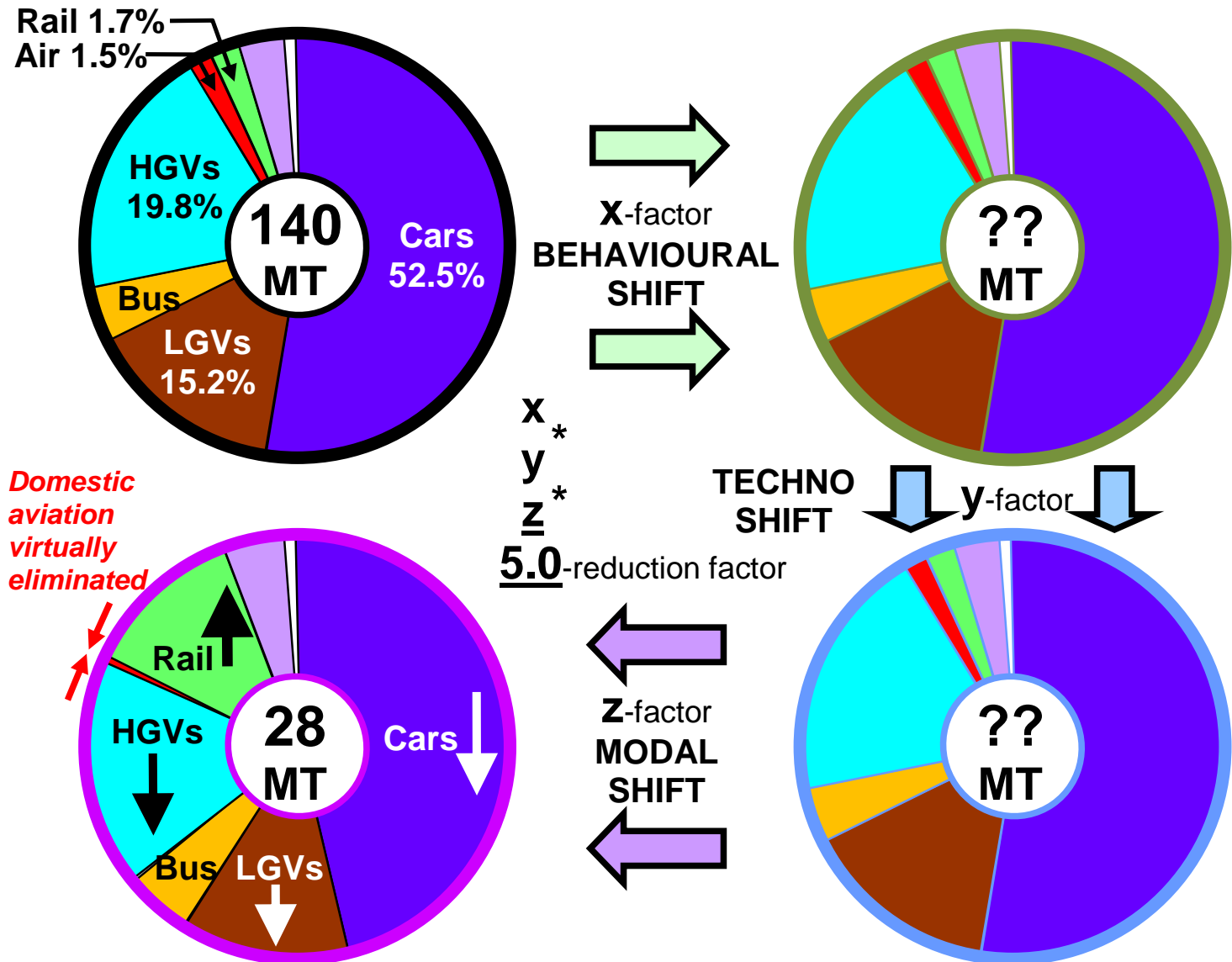


# More Exam Questions!!

## NTP Public Policy Issues:

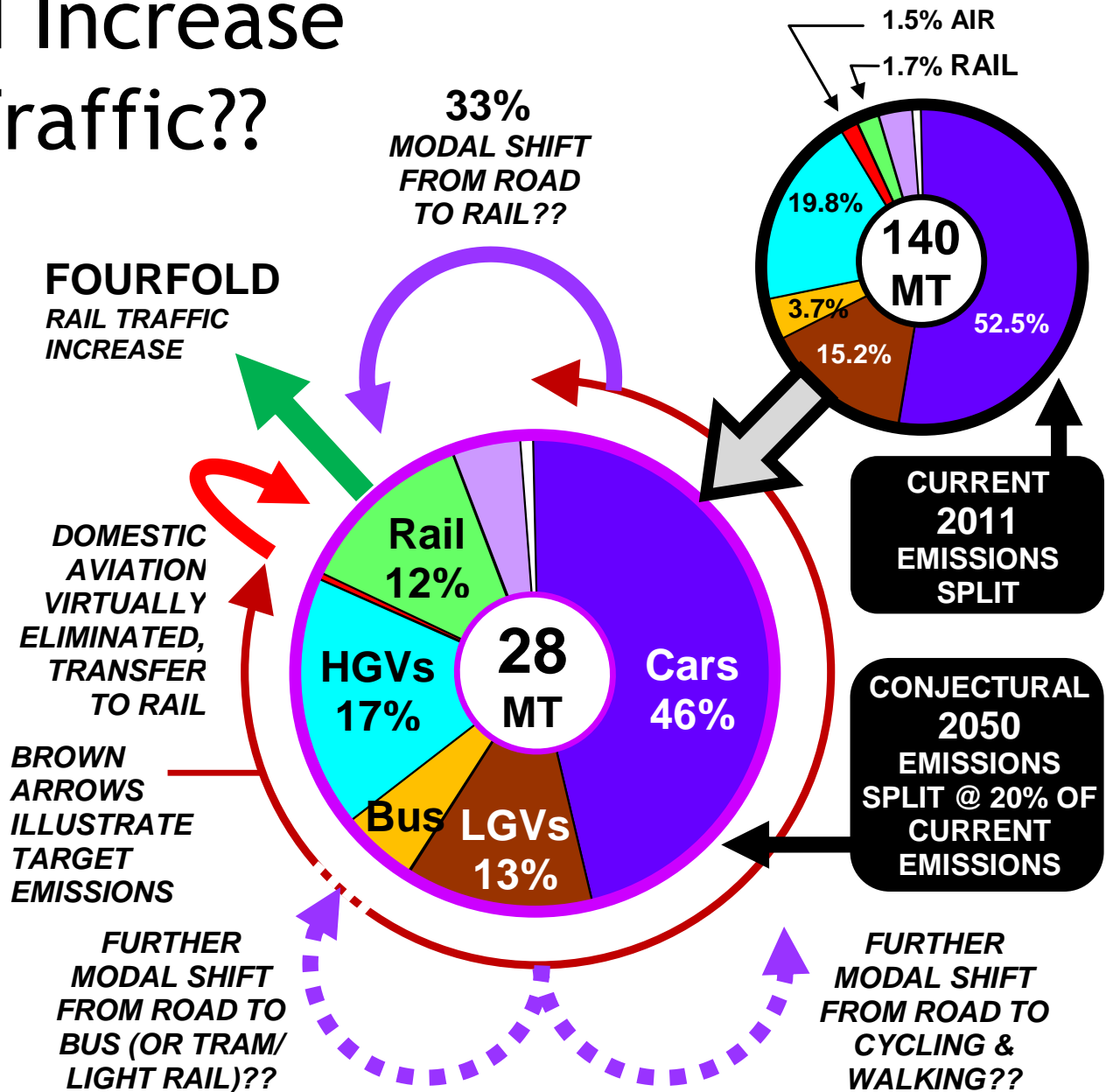
- Inclusivity
- Value for money
- Promote integrated transport
- Prioritise town centres (TCPA)
- Promote regional development
- Protect rural communities/landscapes
- Reduce transport CO<sub>2</sub> in line with 2008 Climate Change Act

# Roadmap to 2050??



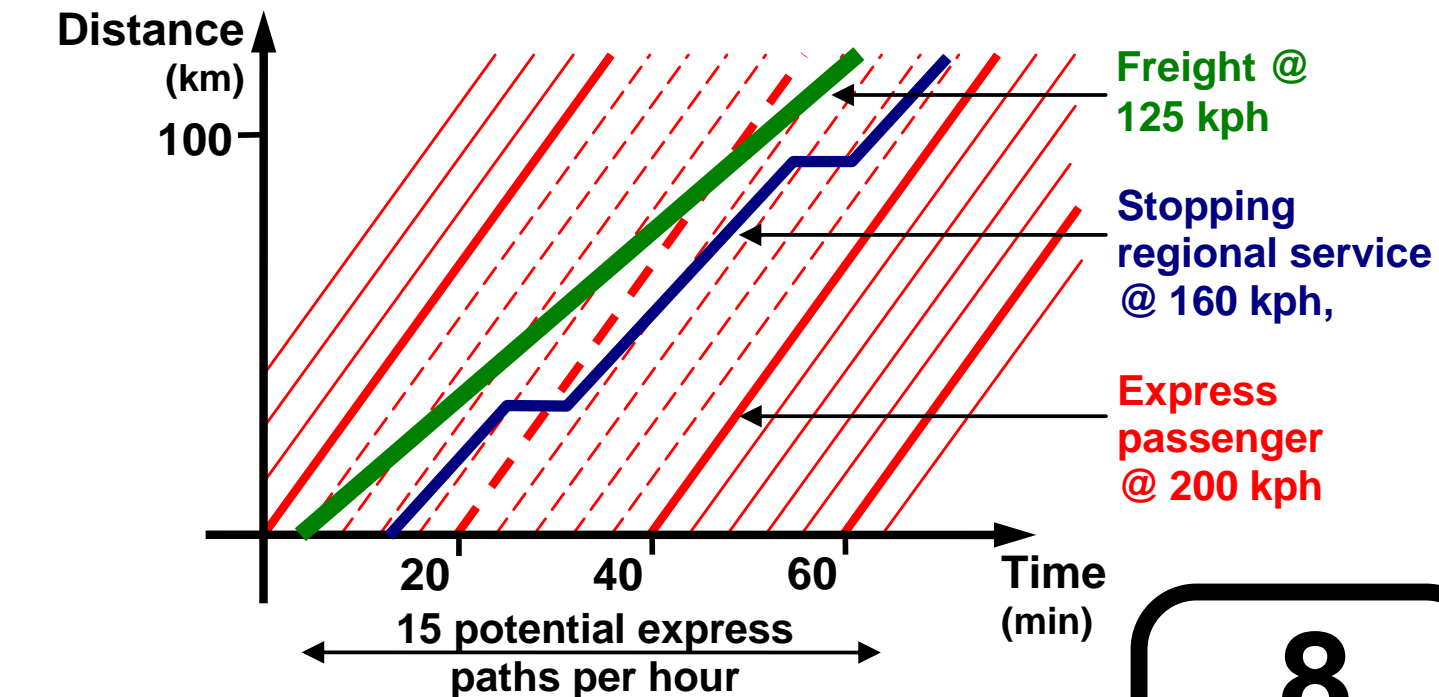


# Fourfold Increase in Rail Traffic??

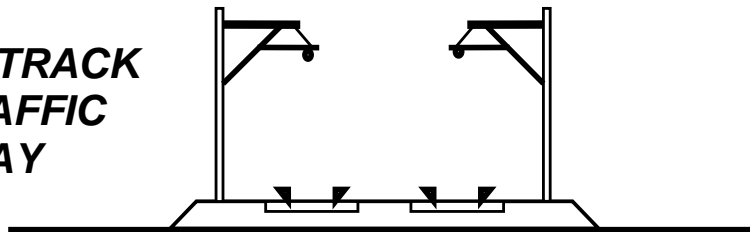


# Solution:

## 2 new tracks parallel to all main lines?



**EXISTING 2-TRACK  
MIXED TRAFFIC  
RAILWAY**

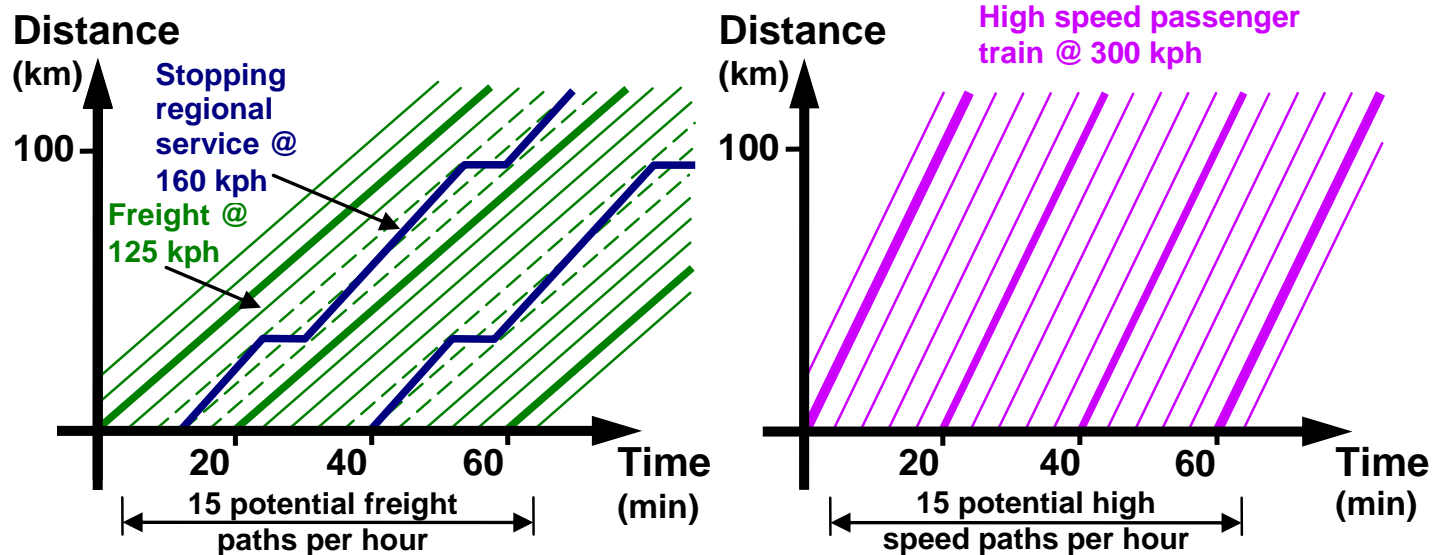


**8**

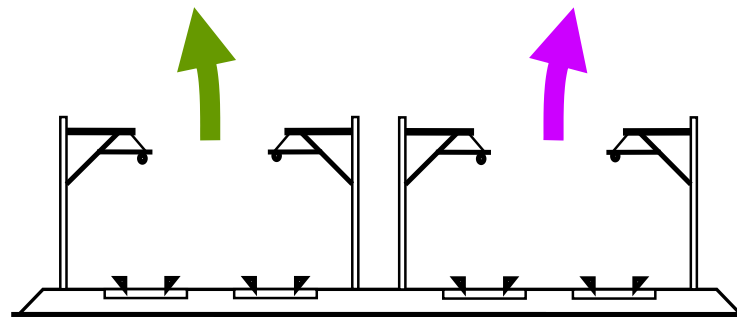
**trains per hour**  
*Practicable  
capacity on  
2-track mixed  
traffic railway*

# Solution:

## 2 new tracks parallel to all main lines?



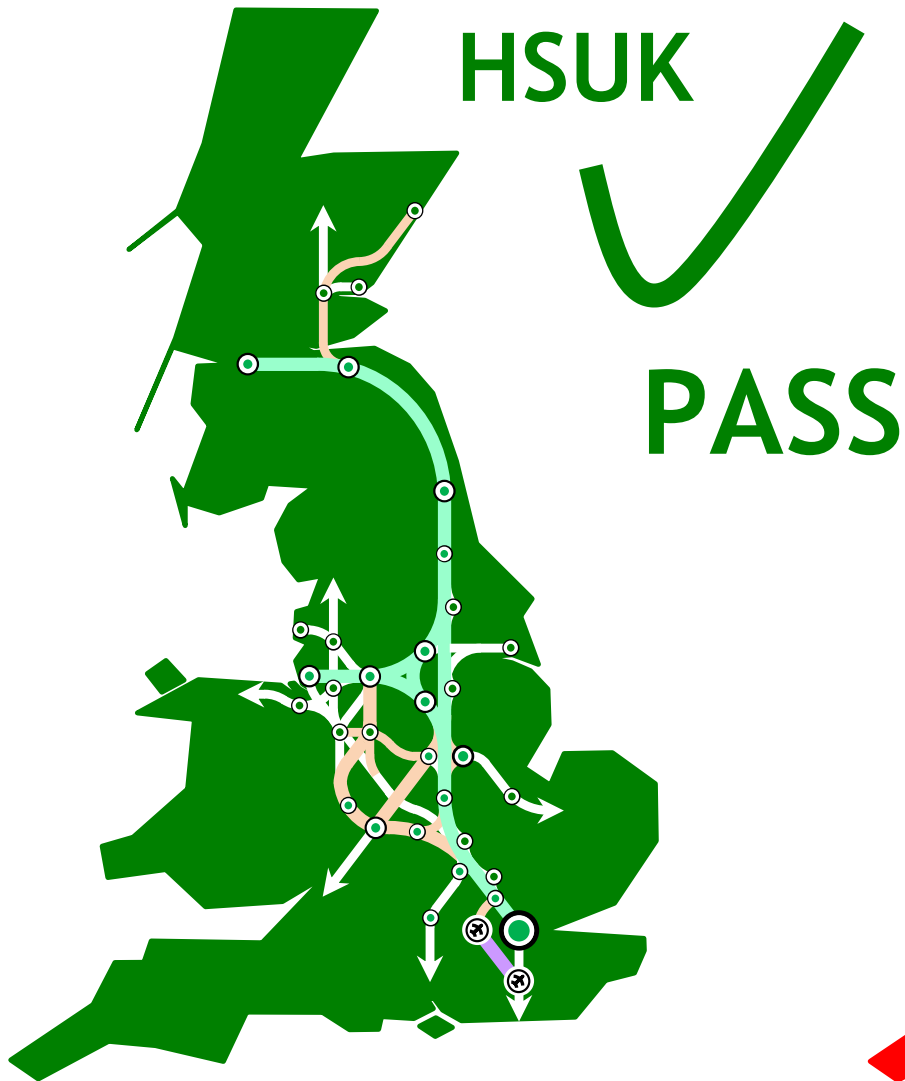
**11**  
trains per hour  
*Practicable  
regional/freight  
capacity on  
classic line*



**HIGH SPEED LINE BUILT  
PARALLEL TO  
EXISTING RAILWAY**

**15**  
trains per hour  
*Practicable  
capacity on  
2-track high  
speed line*

# More Exam Questions



And finally...  
Dateline 20??...



I now declare this...

- New Transpennine passenger link...
- New coast-to-coast freight railway...
- New rolling road lorry shuttle...
- New high speed line

**OPEN!!**

# And finally...

## The Payback??....

And can I please  
have my fiver for  
every ton of CO<sub>2</sub>  
I save??

I now declare this...

- New Transpennine passenger link...
- New coast-to-coast freight railway...
- New rolling road lorry shuttle...
- New high speed line

**OPEN!!**

