



High Speed UK

Connecting the Nation,

Connecting the North:

The Only Way is Woodhead

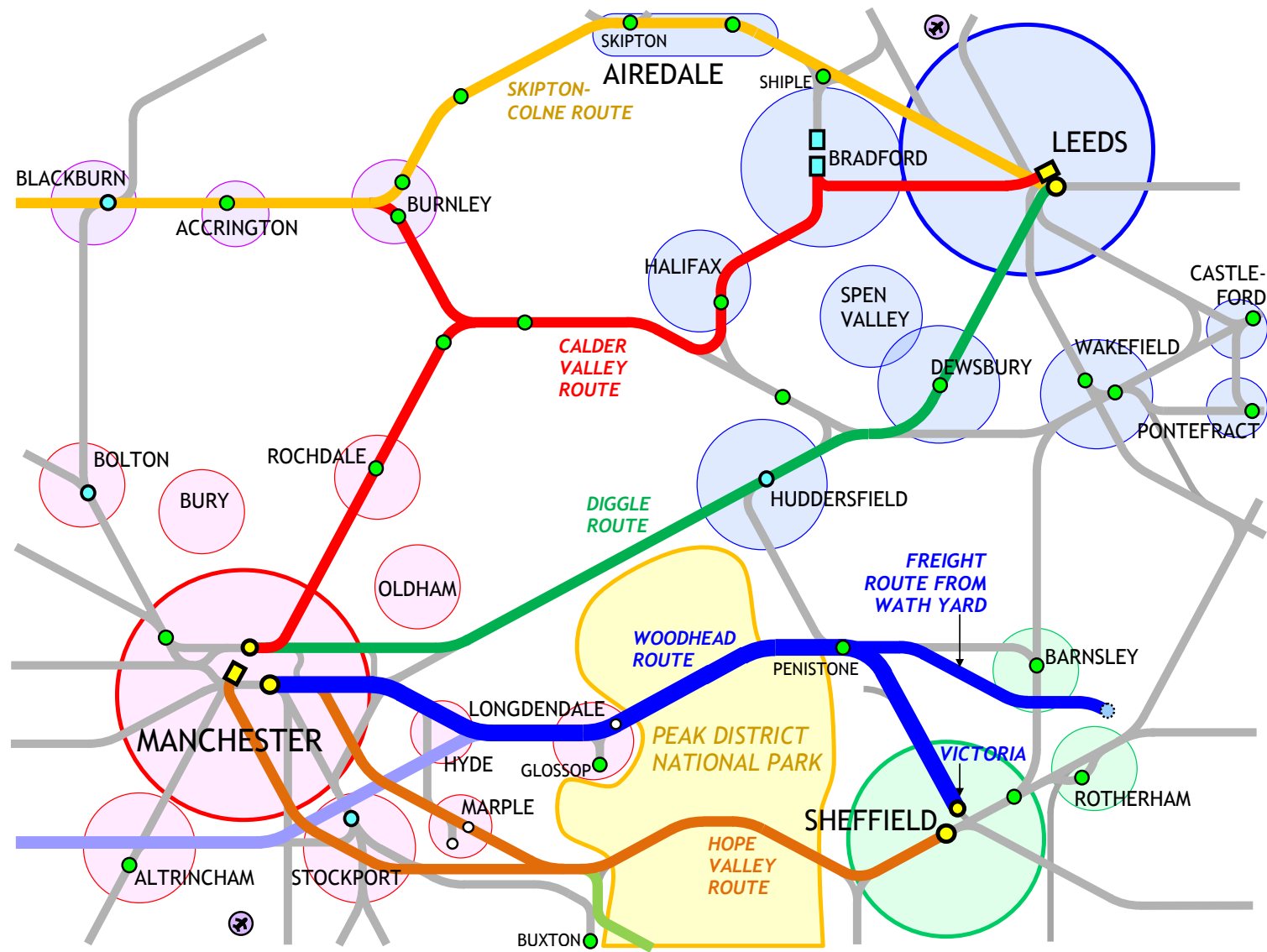
Who are we?

- Colin Elliff BSc CEng MICE
Civil Engineering Principal, HSUK



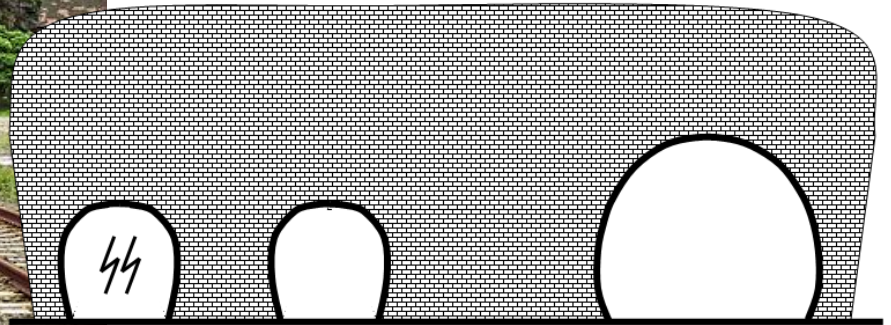
- Quentin Macdonald BSc(Eng)
CEng MIET FIRSE
Systems Engineering Principal,
HSUK

Woodhead - the missing link



The Woodhead Line : decline and fall

- 1963 - Cables in tunnel
- 1970 - closed to passengers
- 1981 - closed to freight
- Woodhead Line R.I.P.??



The Woodhead Line : reawakenings??

Infrastructure intact:

- Country trail?
- Reopening ambitions?

Central Railway

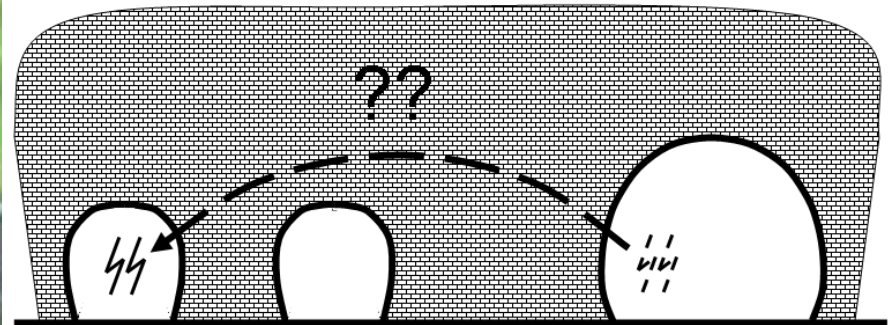


Translink
lorry
shuttle



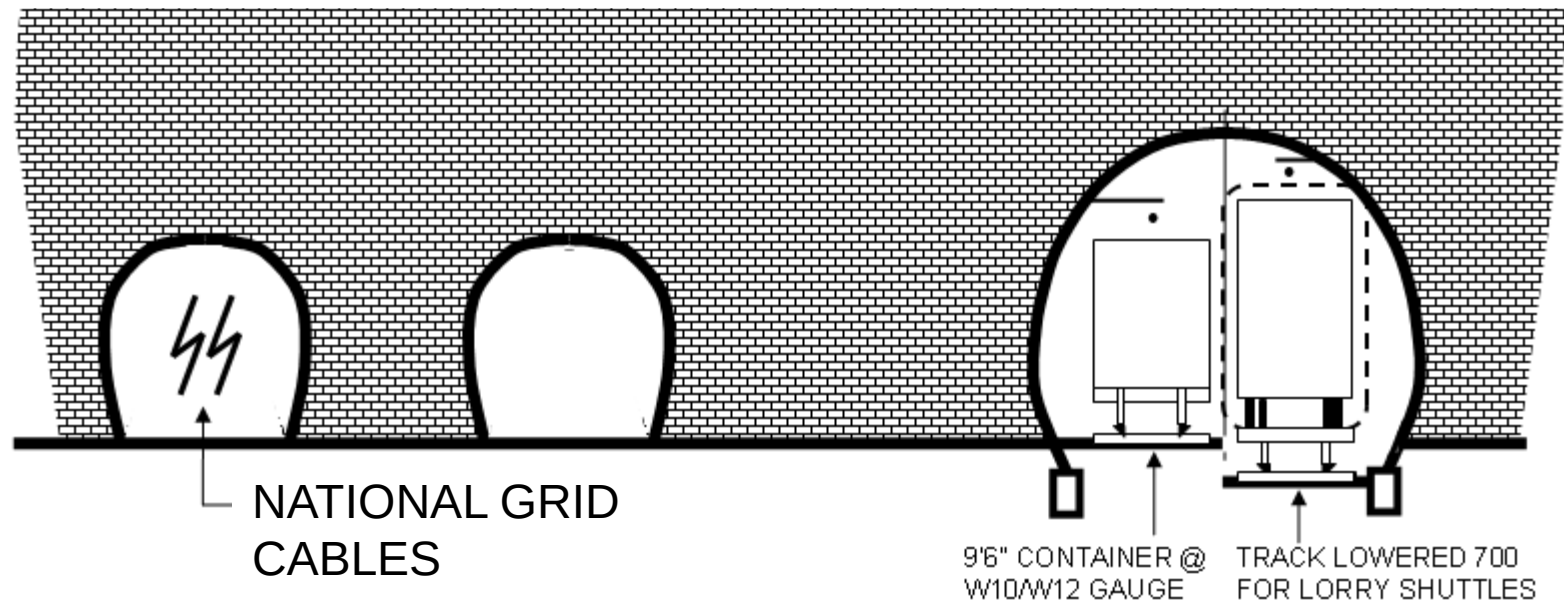
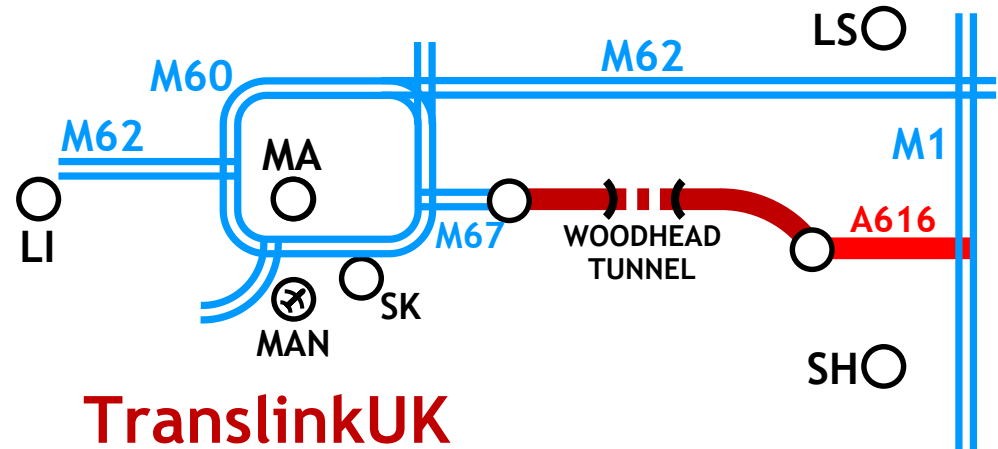
Save The Woodhead Tunnel??

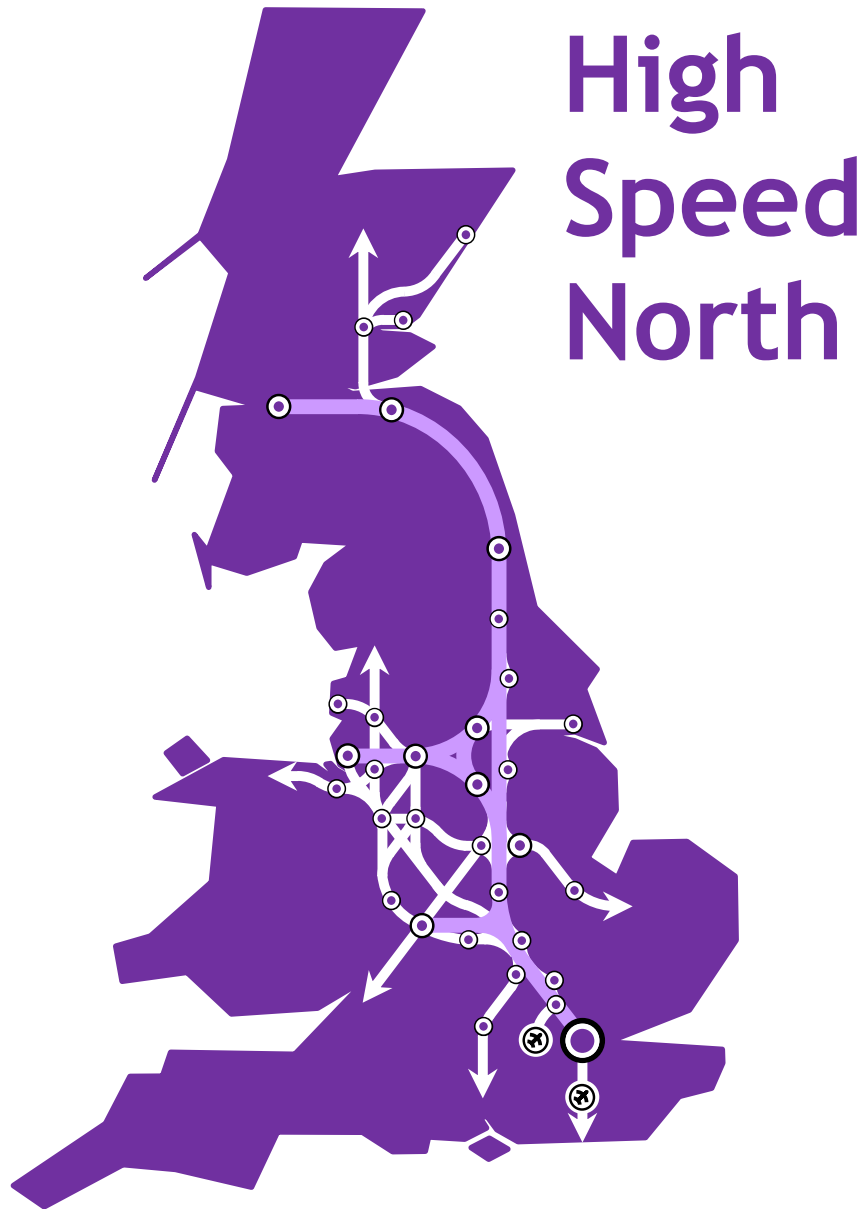
- January 2008
- 'Save The Woodhead Tunnel' campaign
- Questions asked in Parliament



TranslinkUK Lorry Shuttles via Woodhead

- Req^d for short-haul Manchester-Sheffield
- TranslinkUK scheme
- Concerns re viability
- Loading gauge issues!





High Speed North

LAUNCHED 2008

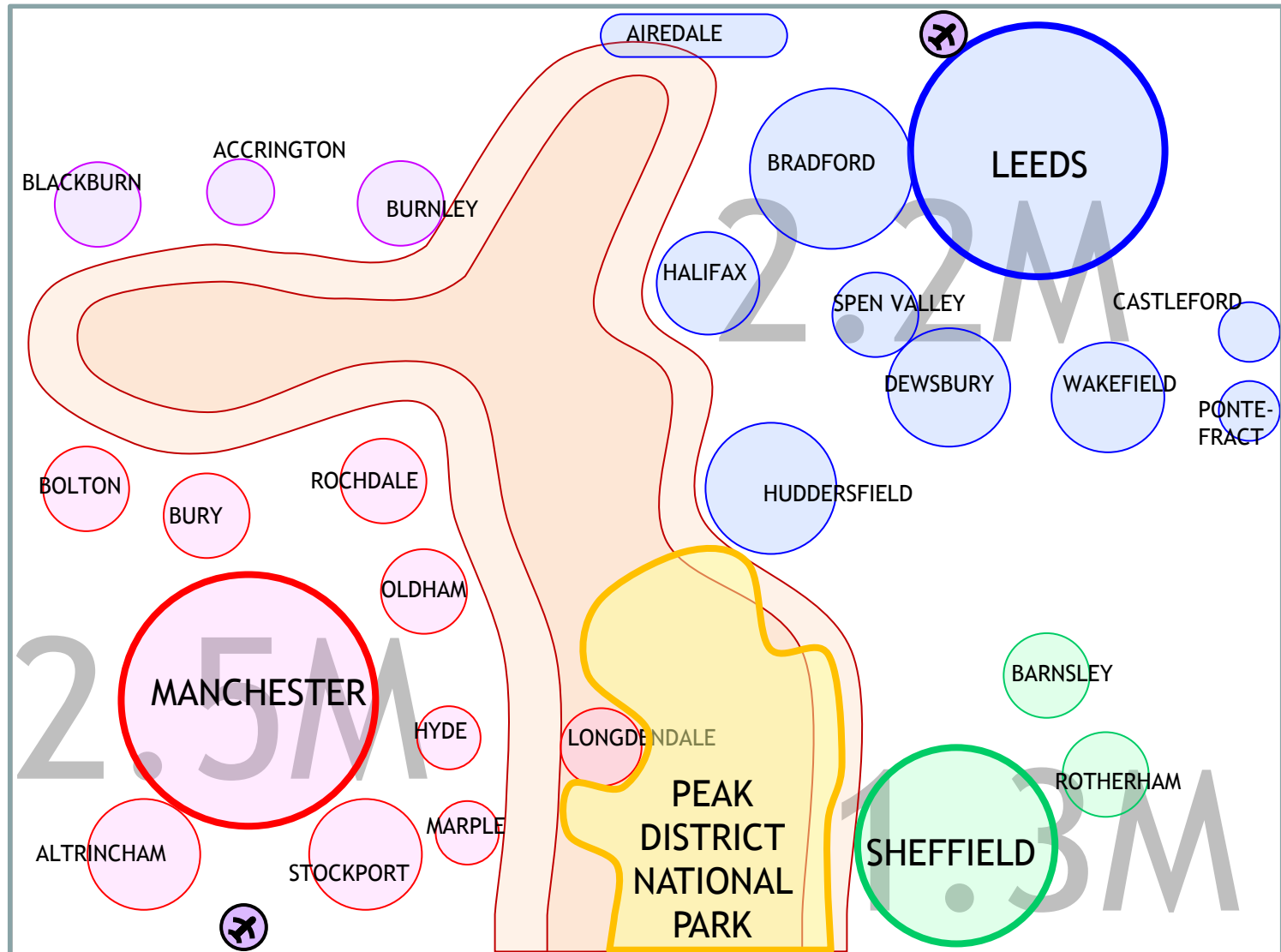
- Single east-sided spine
- Trans-Pennine spur to Manchester & Liverpool
- All primary centres directly interlinked
- Direct link to LHR

HS2 - 2010

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
• Stoke/Crewe	0.5M
	11.3M

March 2010

HS2 'Y'



June 2014

HS3!!



The 'One North' Concept

July 2014

- Sheffield
- Manchester
- Liverpool
- Leeds
- Newcastle

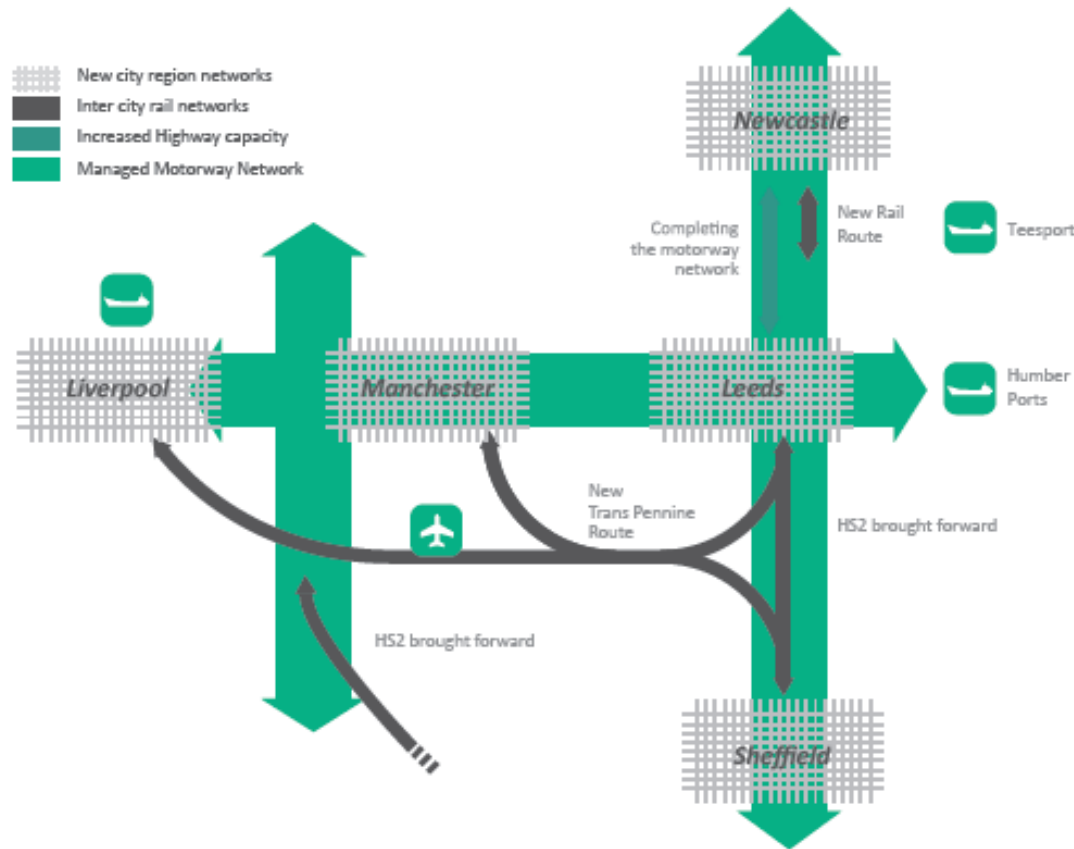
One North

A Proposition for an Interconnected North

July 2014

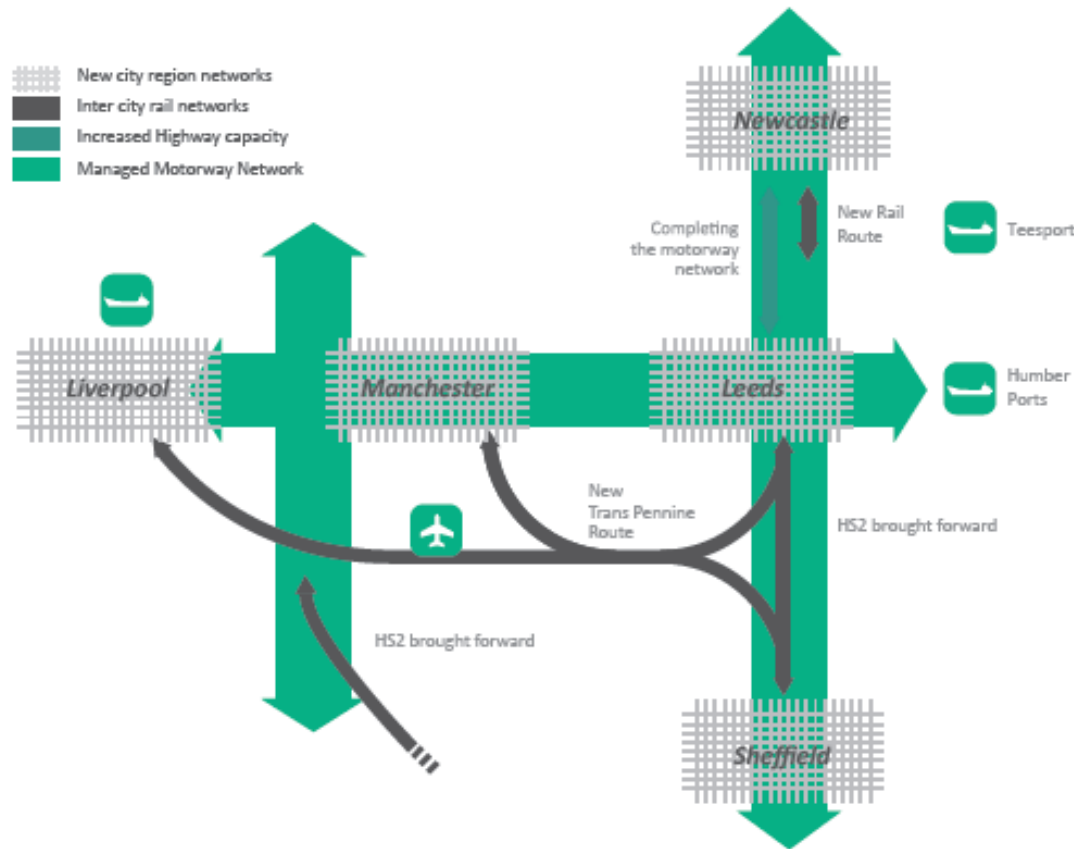


The 'One North' Concept



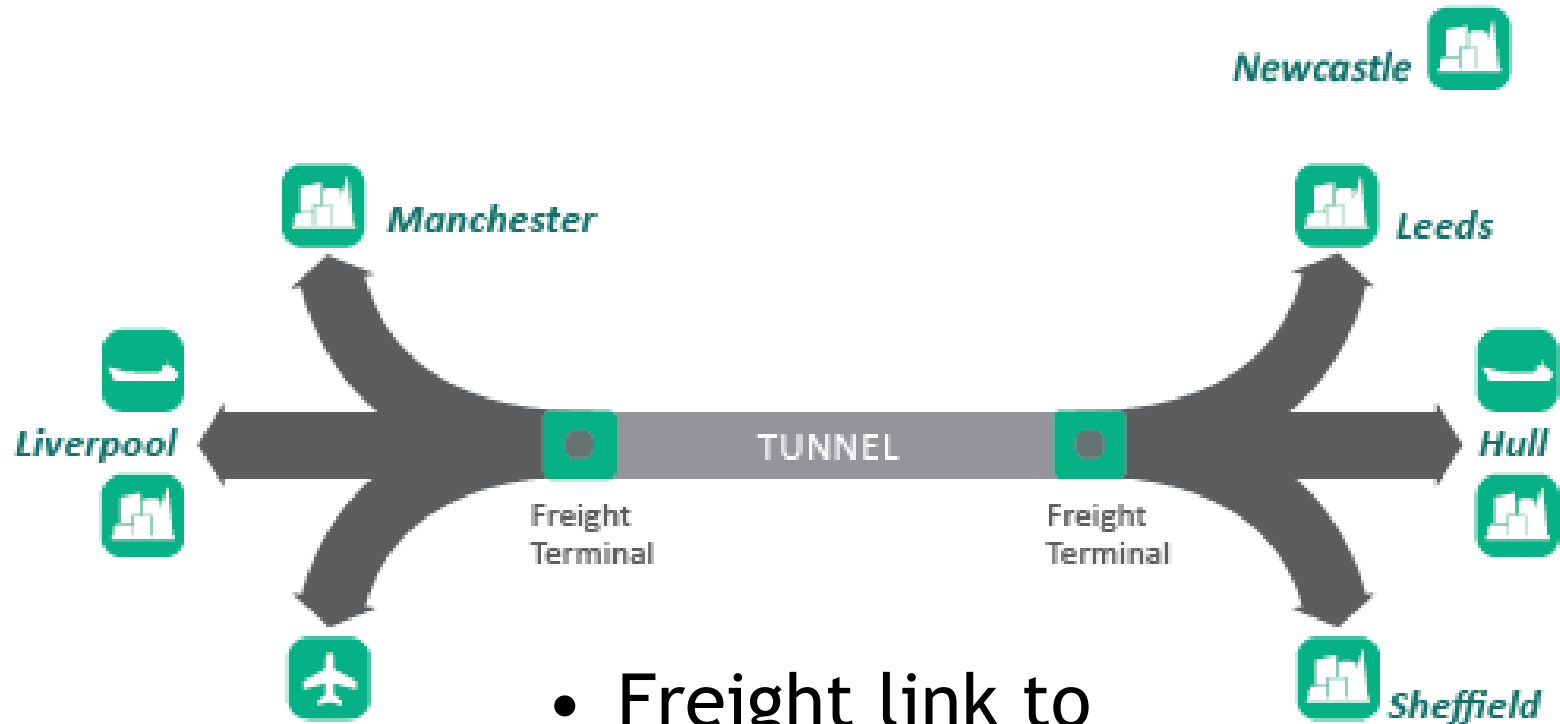
- Sheffield
- Manchester
- Liverpool
- Leeds
- Newcastle

‘One North’ Passenger Links



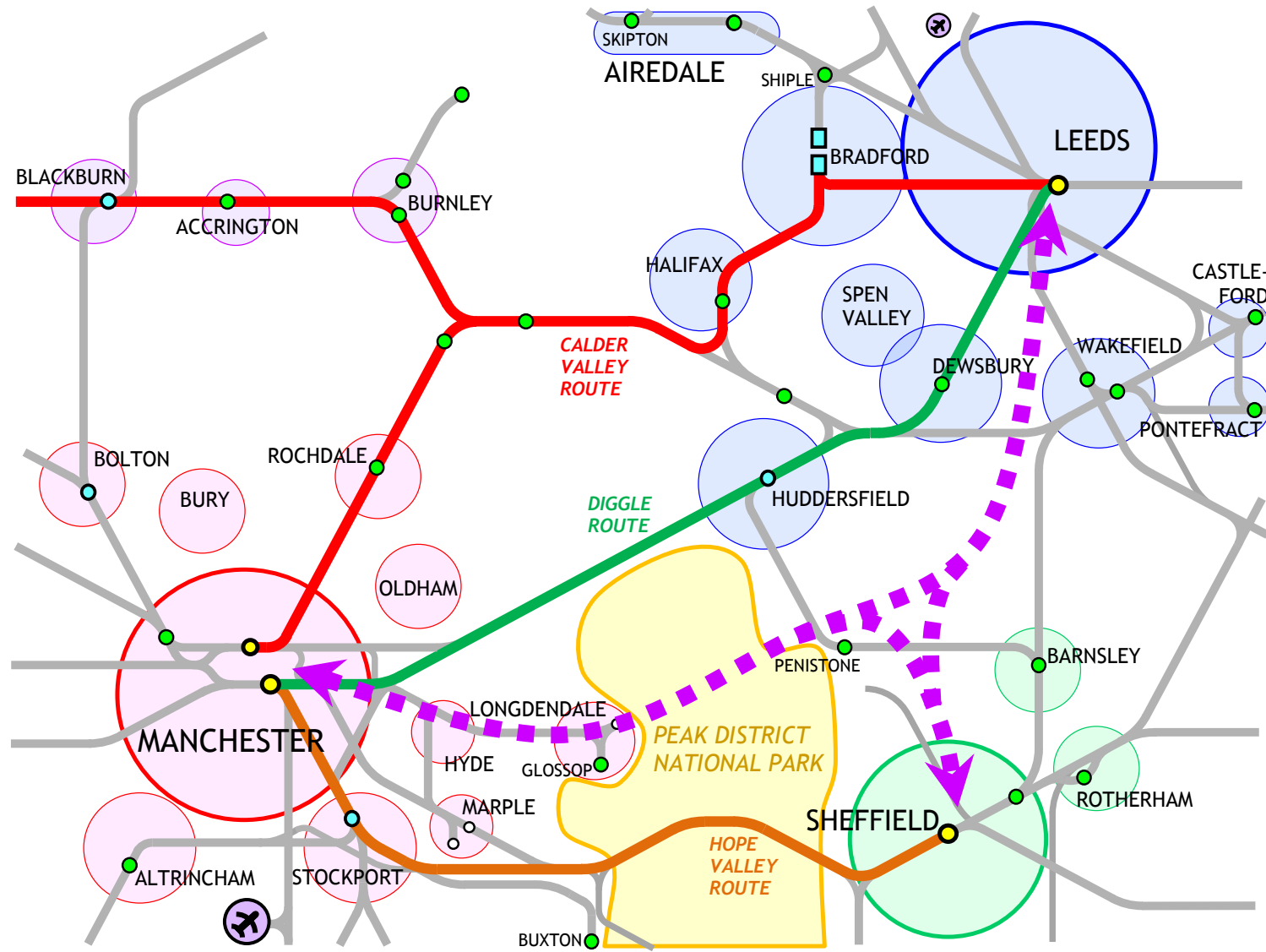
- Link city centres
- Link to Manchester Airport
- New T/P route

‘One North’ Freight Links

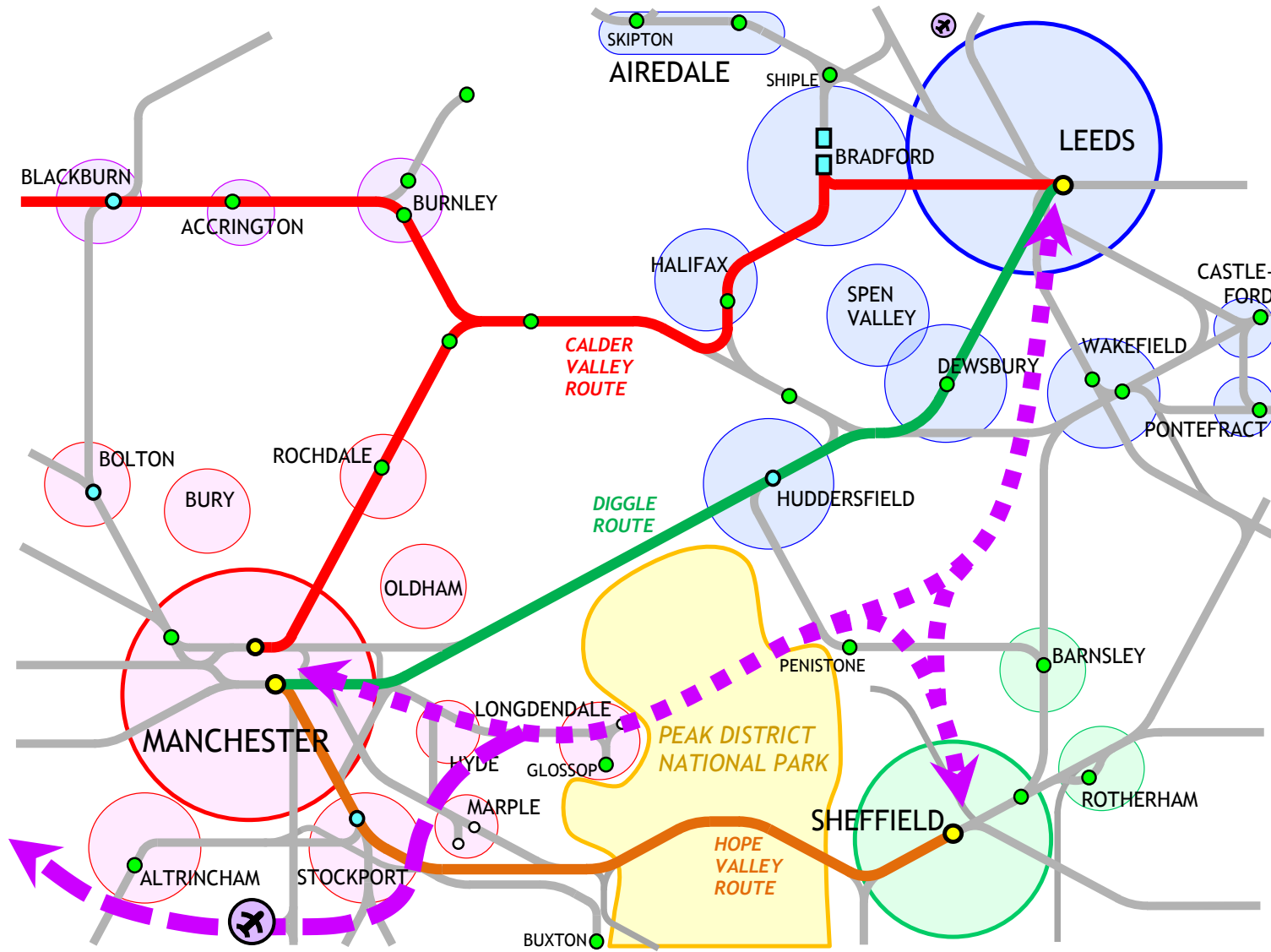


- Freight link to ports
- Lorry shuttles

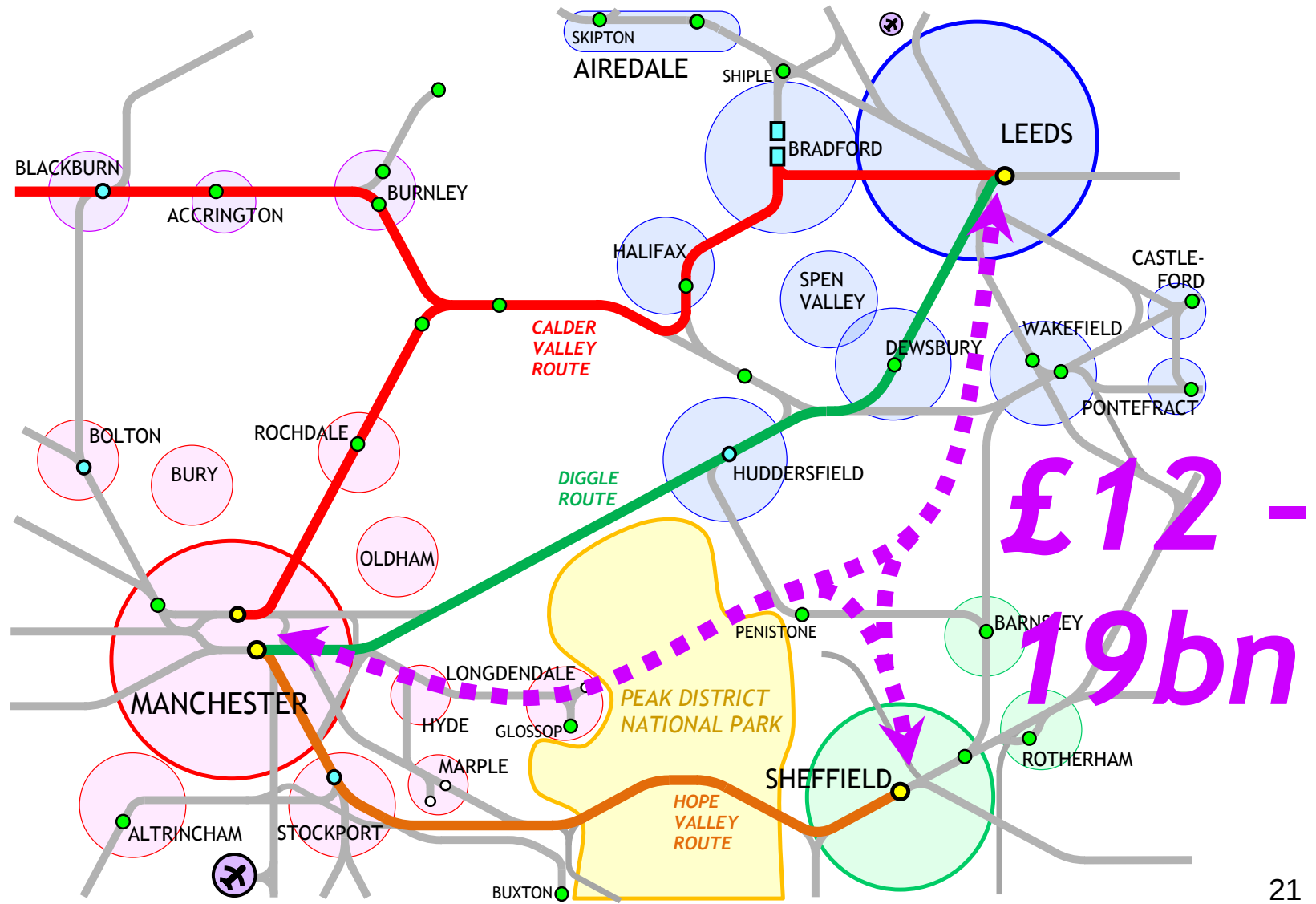
The 'One North' Concept



‘One North’ Airport Link



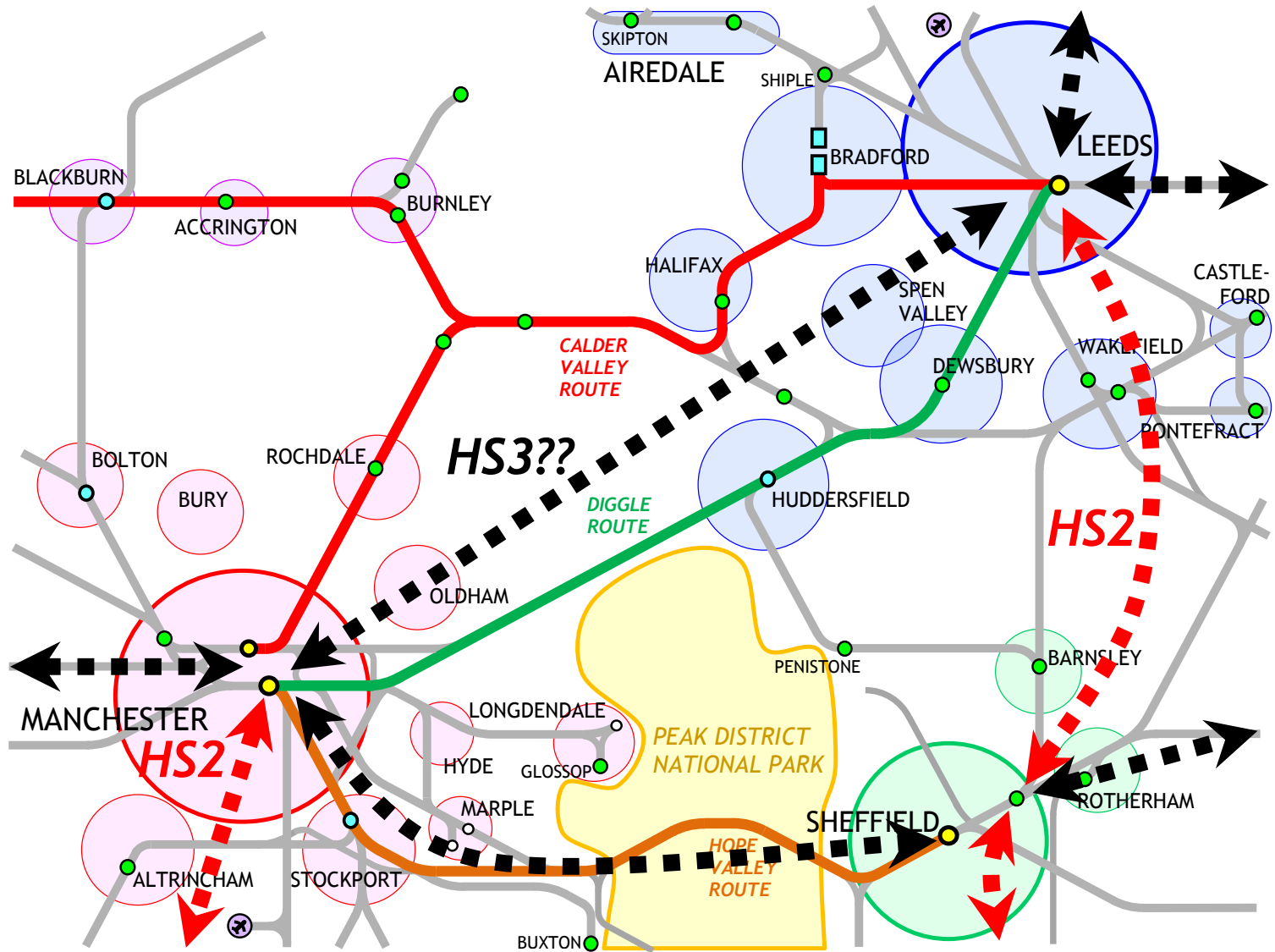
'One North' - as costed by DfT



Trans-Pennine Rail Issues

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

Northern Powerhouse 2015



The map illustrates the proposed high-speed rail network in the Yorkshire and Lancashire region. Key features include:

- Red Route (HS2):** Connects Manchester to Leeds. Estimated cost: £6.5-10bn.
- Green Route (Diggle Route):** Connects Manchester to Sheffield. Estimated cost: £5.5-9bn.
- Blue Route (Calder Valley Route):** Connects Manchester to Bradford. Estimated cost: £5.5-9bn.
- Other Routes:** HS3 (dashed black line), Hope Valley Route (dashed orange line), and HS2 (dashed red line).
- Major Cities:** Manchester, Leeds, Sheffield, Bradford, Halifax, Burnley, Bolton, Bury, Rochdale, Oldham, Penistone, Barnsley, Rotherham, Wakefield, Dewsbury, Spenn Valley, Castleford, Pontefract, Huddersfield, Stockport, Altrincham, Hyde, Marple, Longdendale, Glazebrook, Buxton, and Salford.
- Estimated Costs:**
 - Red Route: £6.5-10bn
 - Green Route: £5.5-9bn
 - Blue Route: £5.5-9bn
- Map Credit:** The Rail Project

DfT Dodgy Estimates??

- Manchester - Leeds : *all in tunnel?*

$$£_{M-L} = £6.5 - £10 \text{ bn} \quad A$$

- Manchester - Sheffield : *all in tunnel?*

$$£_{M-S} = £5.5 - £9 \text{ bn??} \quad B$$

Therefore 2 tunnels are required for...

- Manchester - Leeds & Sheffield

$$£_{M-L\&S} = £12 - £19 \text{ bn} \quad A+B$$

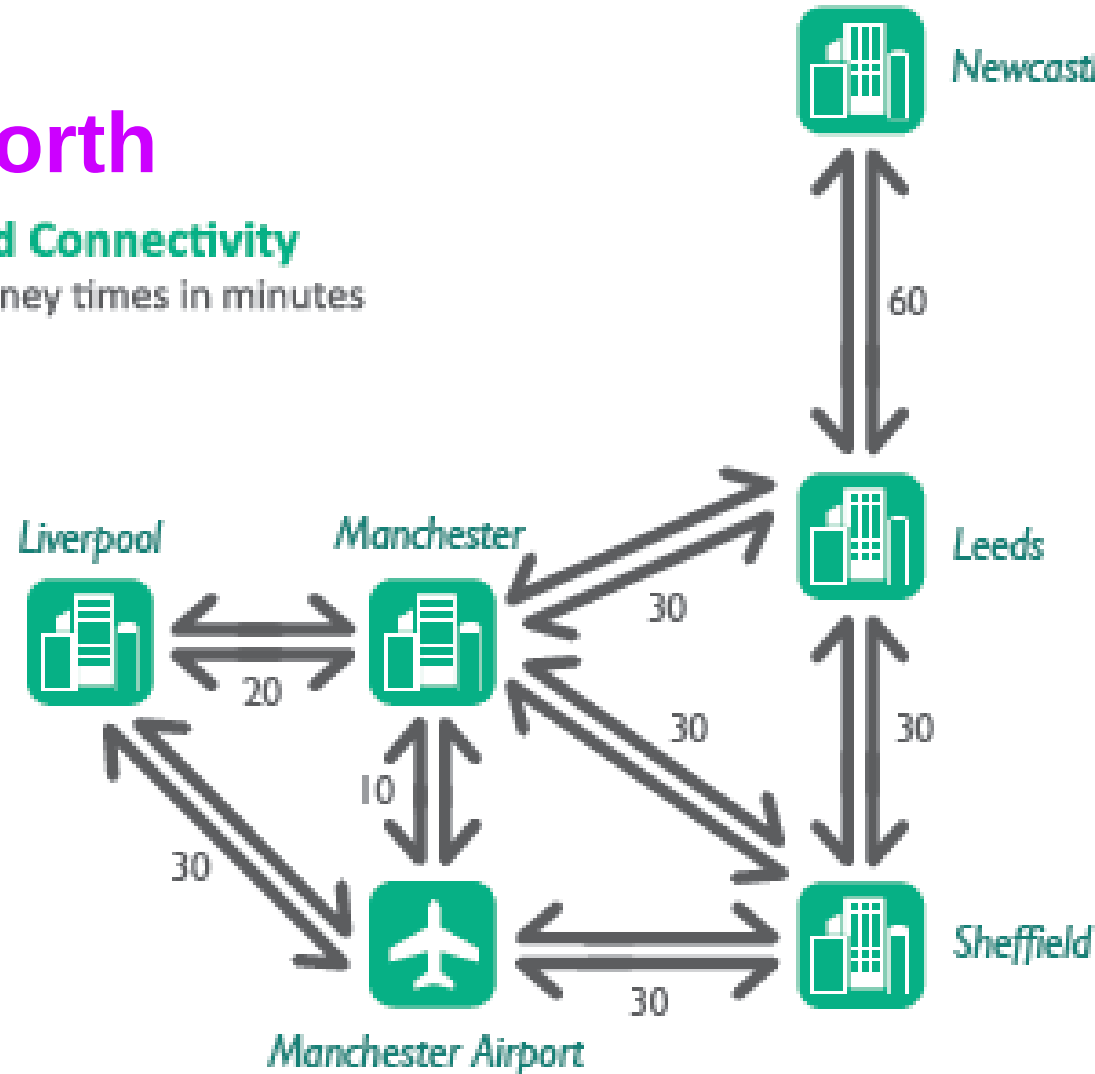
*even if the route only requires 1 T/P tunnel
and is much shorter than 2 separate routes* 25

Journey Time Specification (1)

One North

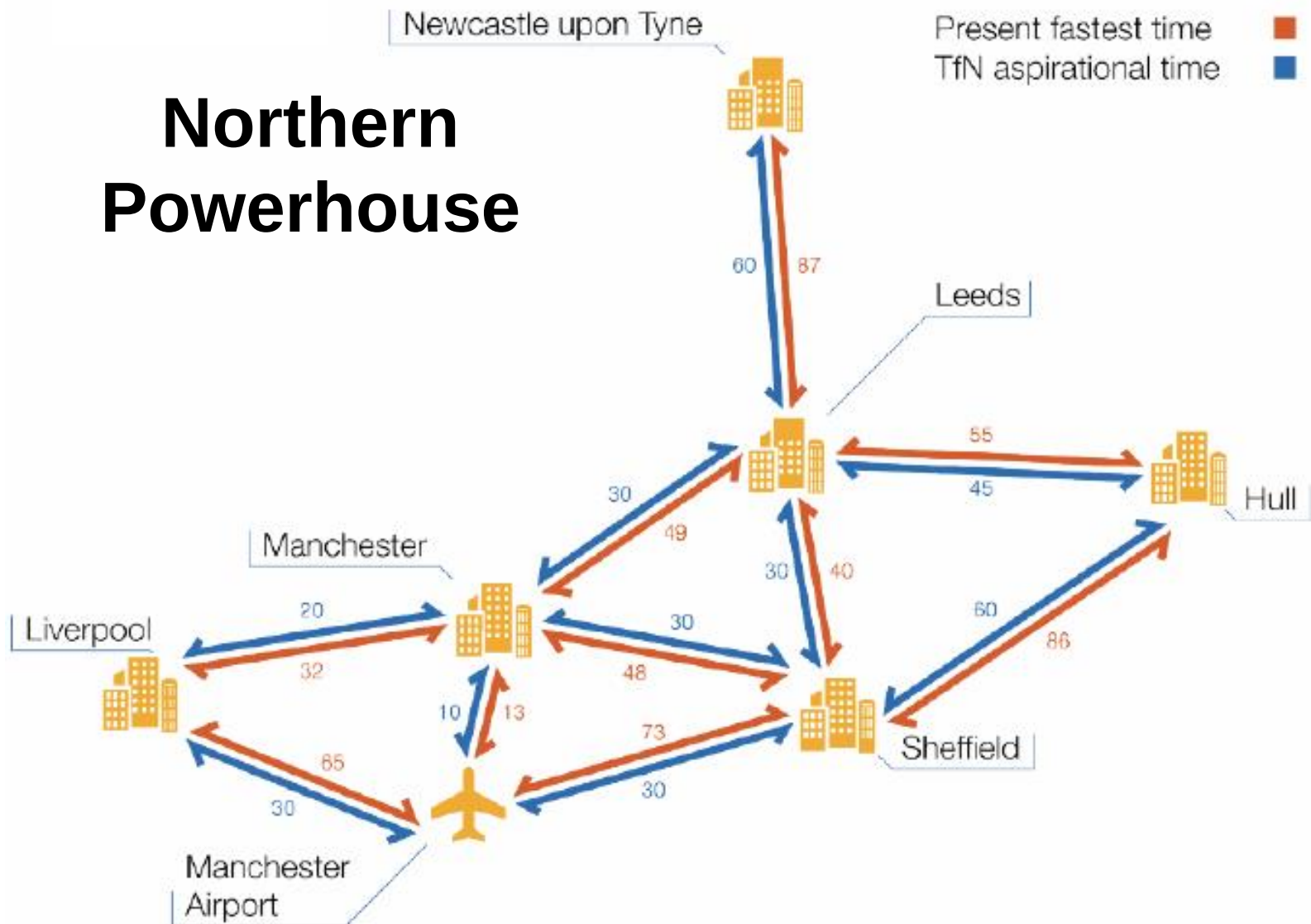
Transformed Connectivity

Target rail journey times in minutes



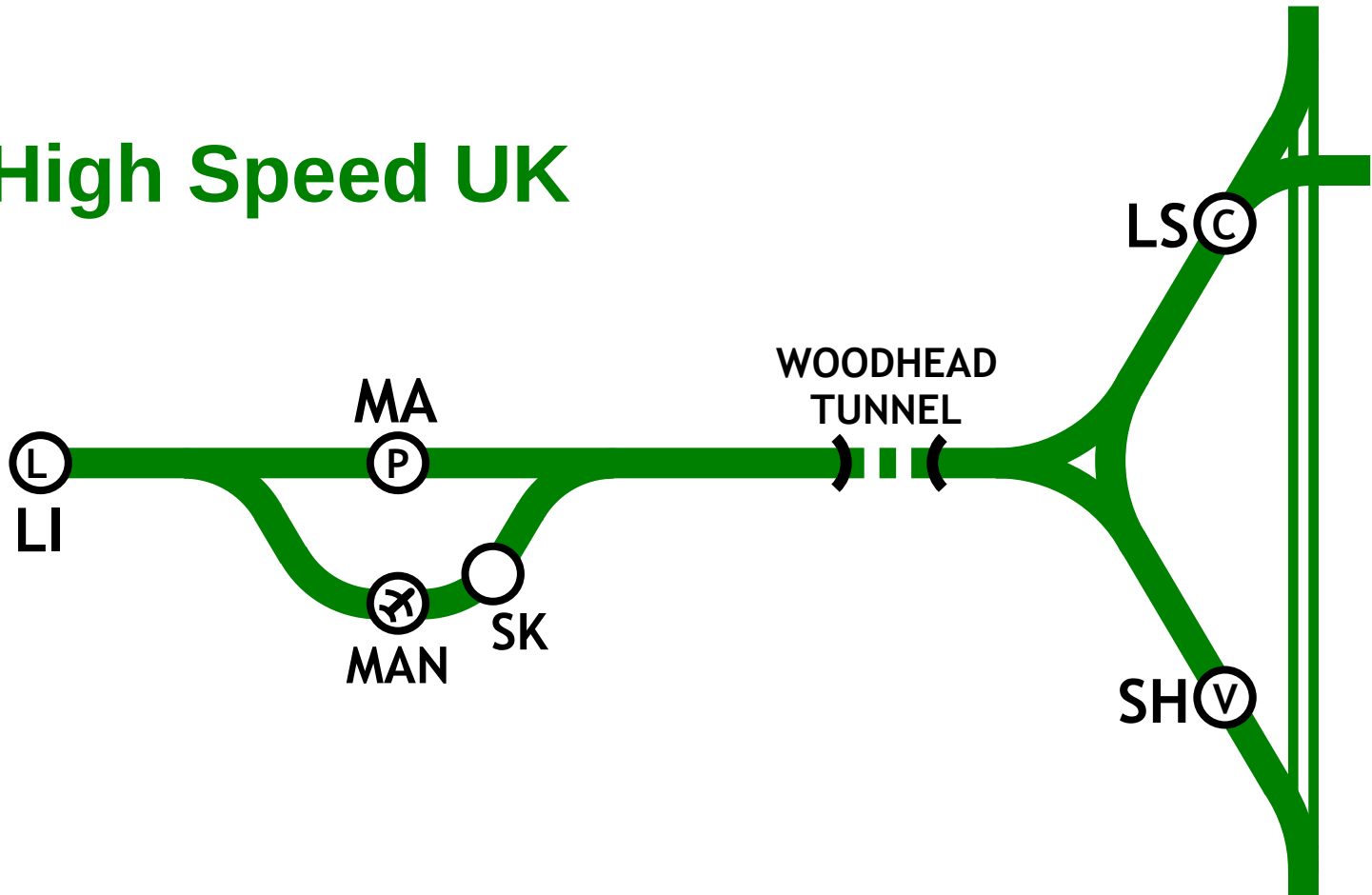
Journey Time Specification (2)

Northern Powerhouse



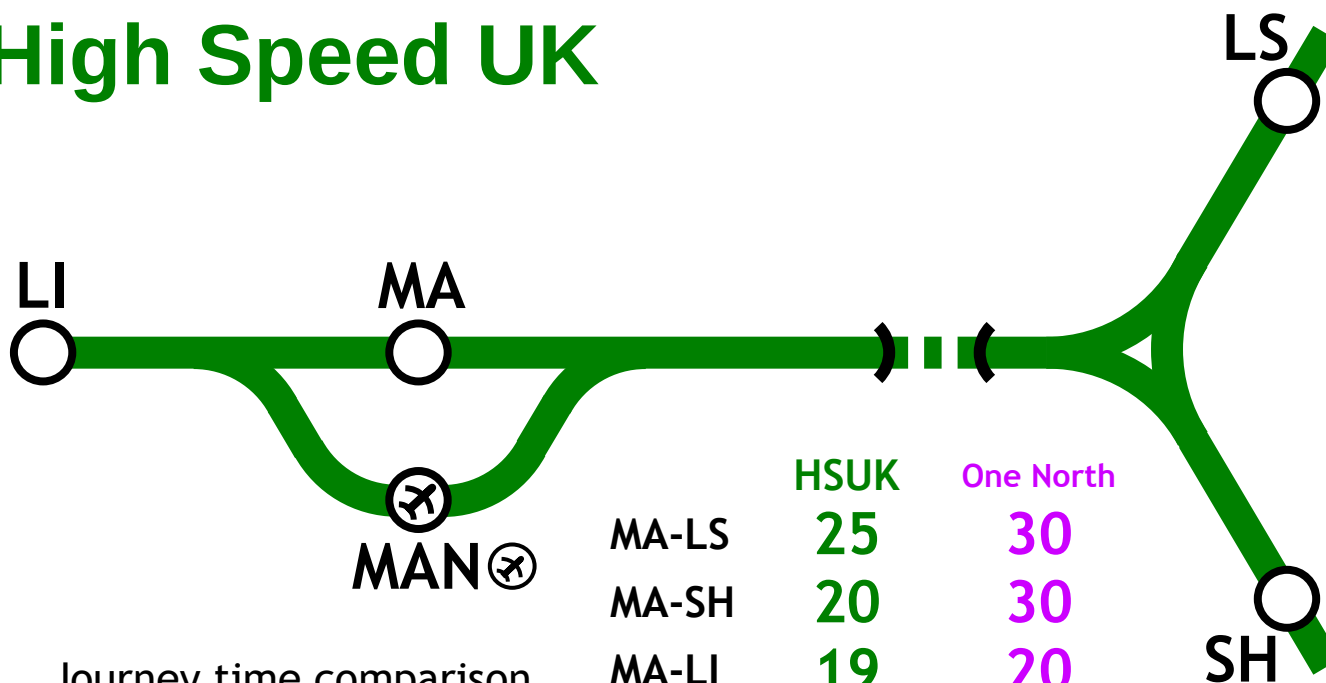
The High Speed UK Solution

High Speed UK



HSUK Journey Times

High Speed UK



Journey time comparison
between

High Speed UK design

and

Northern Powerhouse/
One North specification

	HSUK	One North
MA-LS	25	30
MA-SH	20	30
MA-LI	19	20
SH-LS	17	30
LS-✈	36	30+10
SH-✈	29	30
LI-✈	25	30

Congestion on Woodhead Road

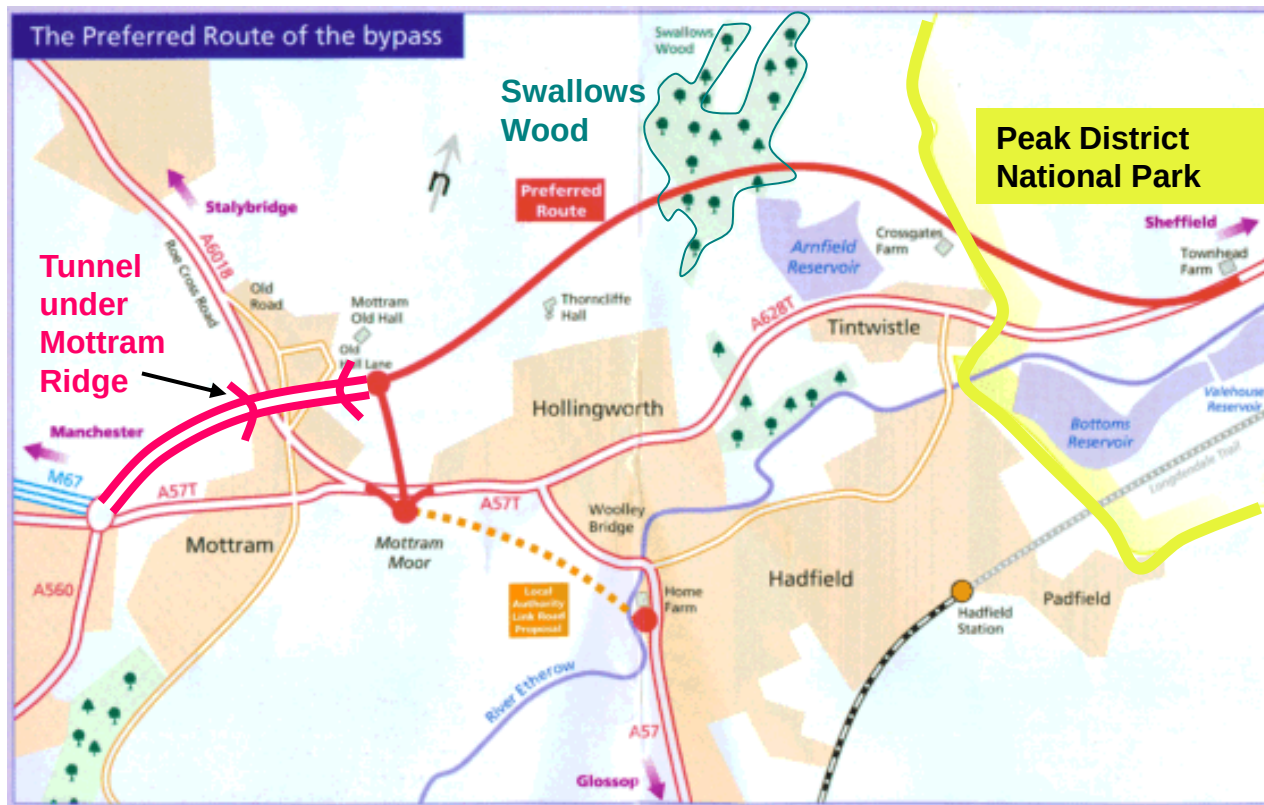
- The problem:
 - > 15,000 vehicles per day
 - > 5M vehicles per year
 - ~ 1.4M HGVs per year



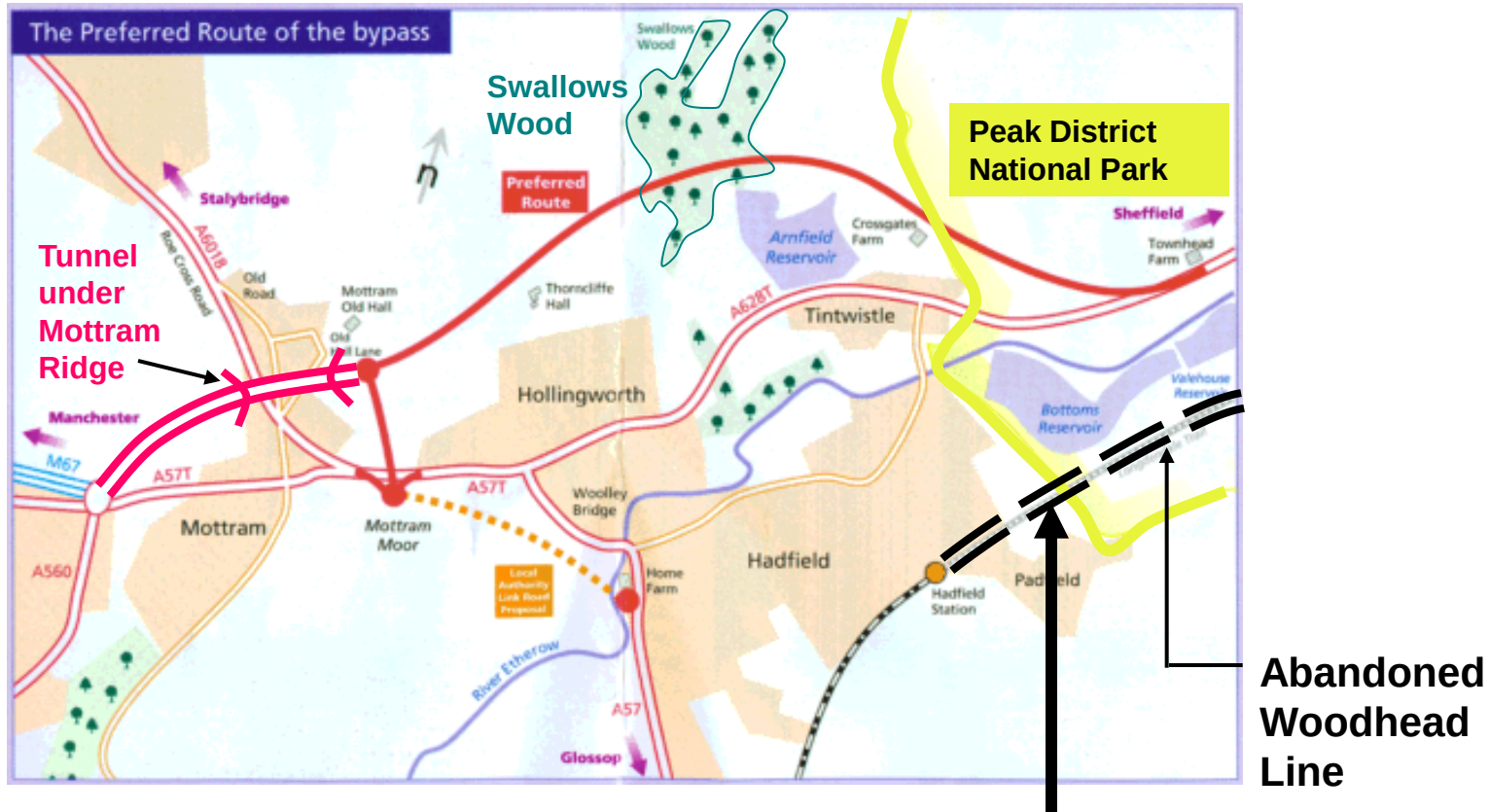
- HGVs 26% total by number
- HGVs 58% total by length

Mottram - Tintwistle Bypass

- The road solution?? > £300M

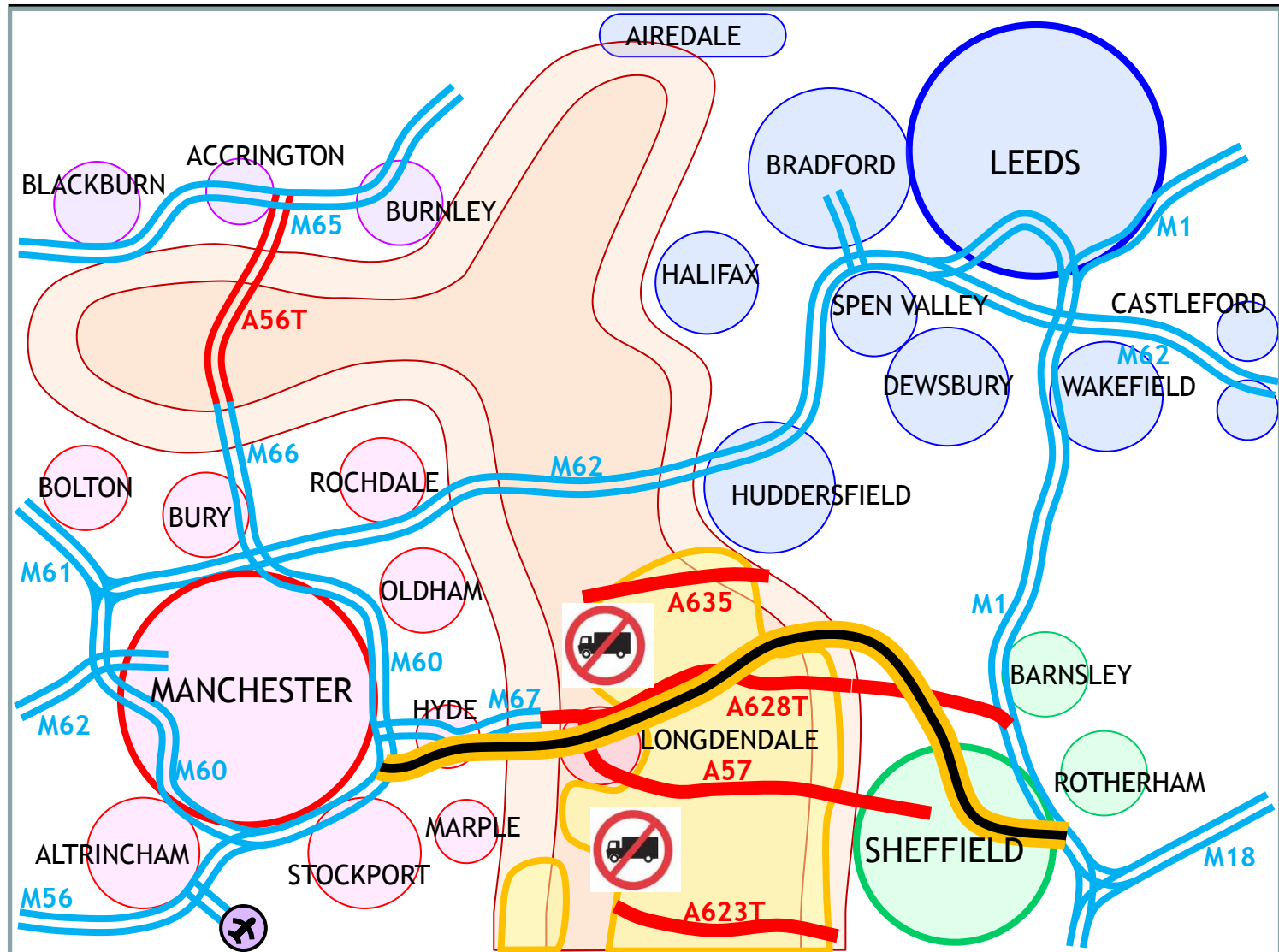


Mottram - Tintwistle Bypass



- The railway alternative??

HGV Bans & Lorry Shuttles

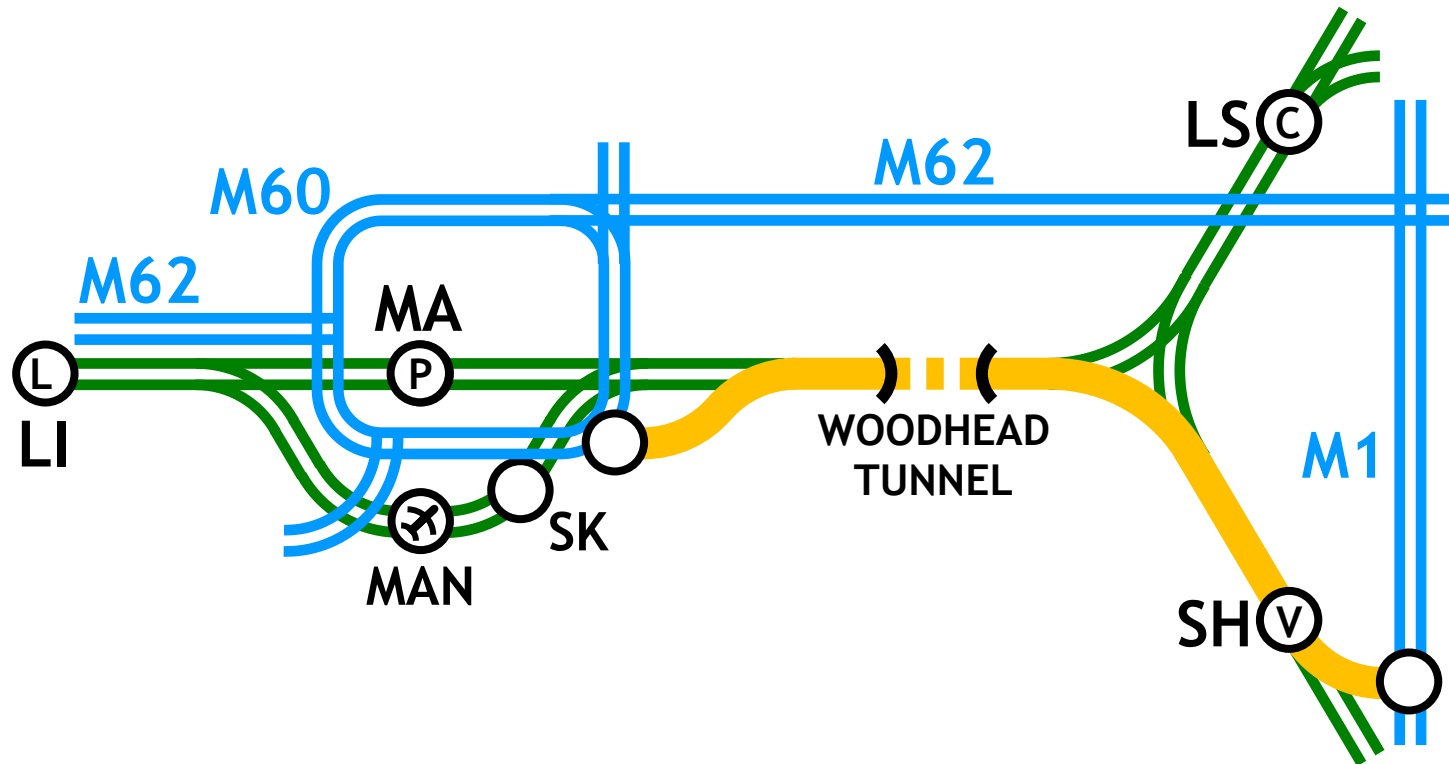


Woodhead Reopening

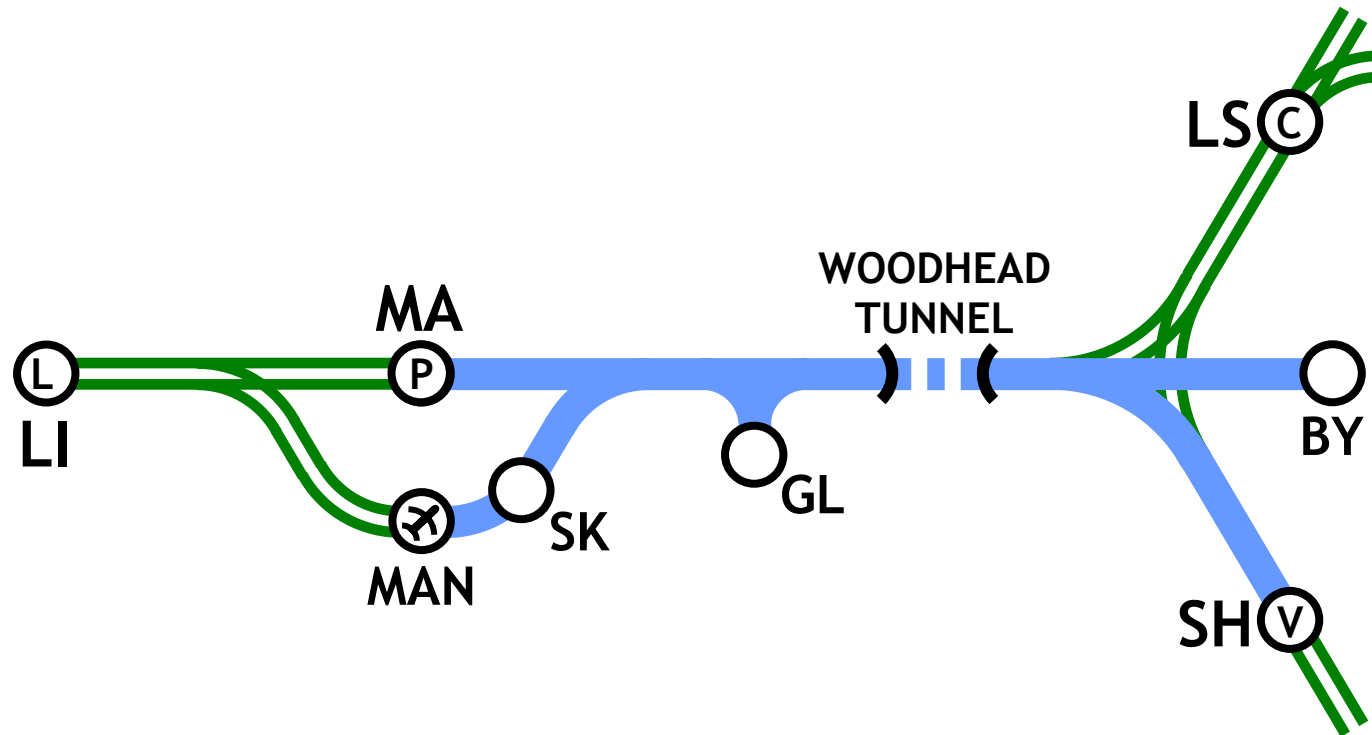
Traffic type??

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

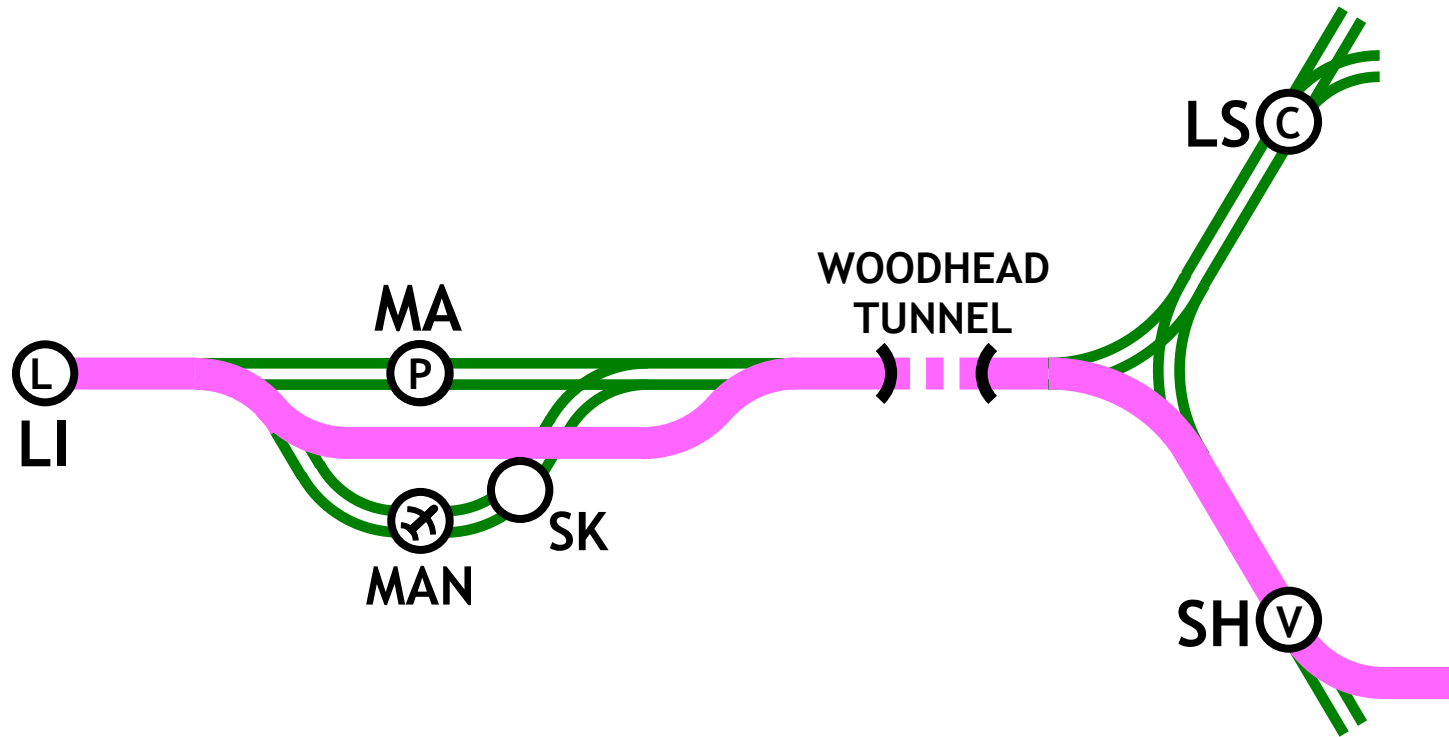
Woodhead Lorry Shuttles



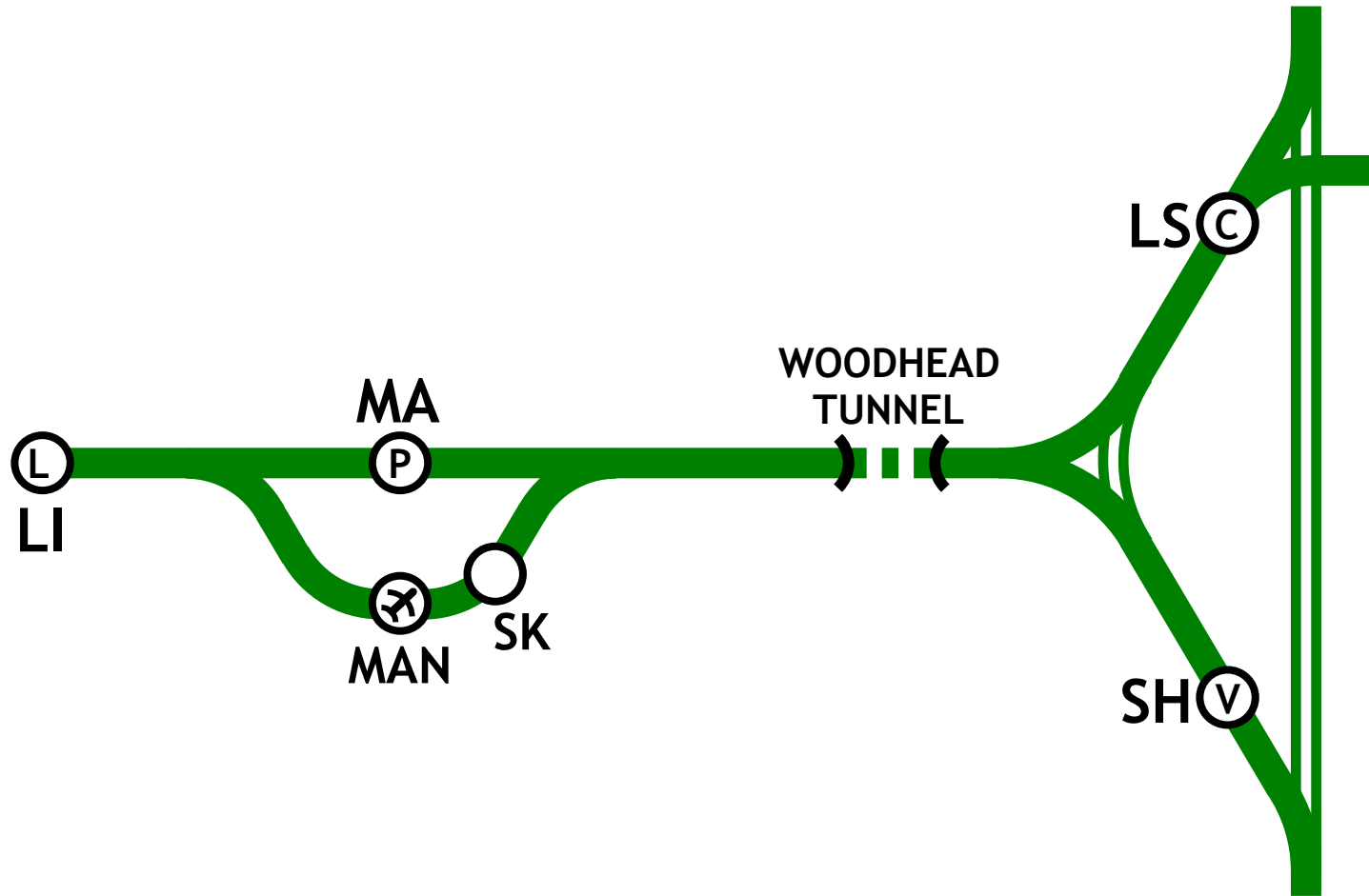
Woodhead Local Services



Trans-Pennine Railfreight



High Speed UK



Woodhead Reopening

Traffic type??

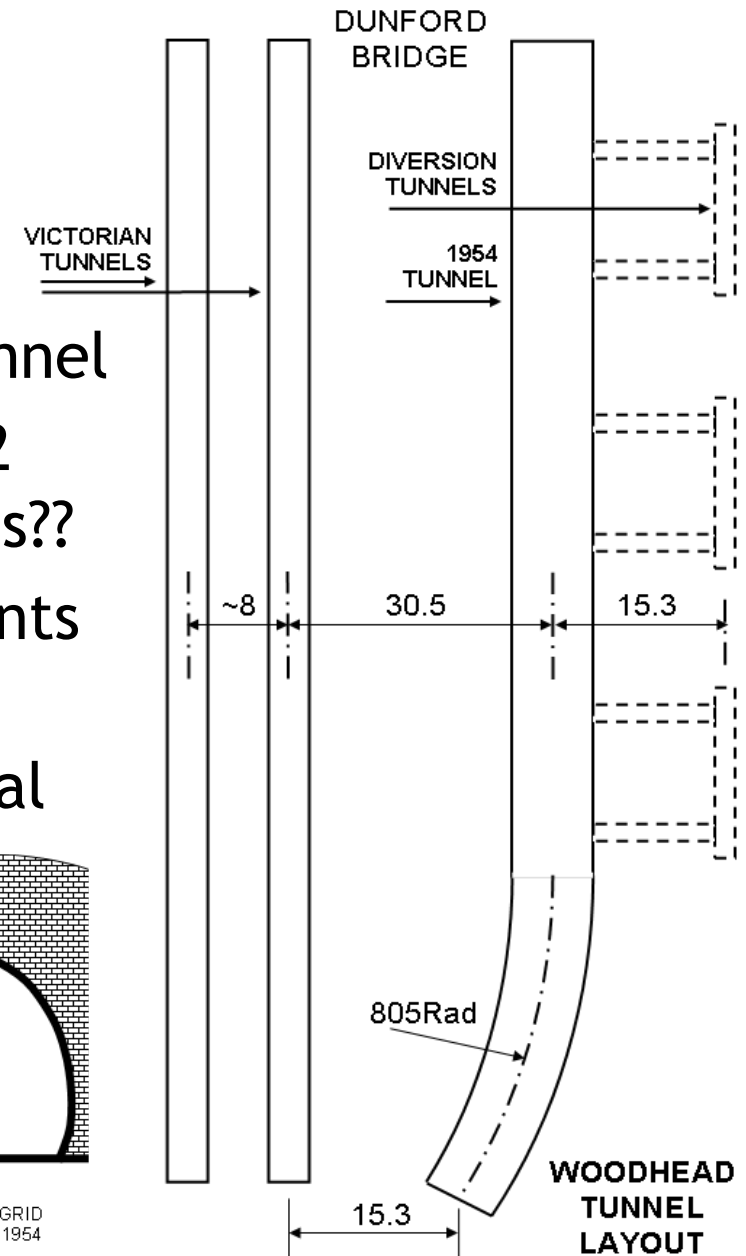
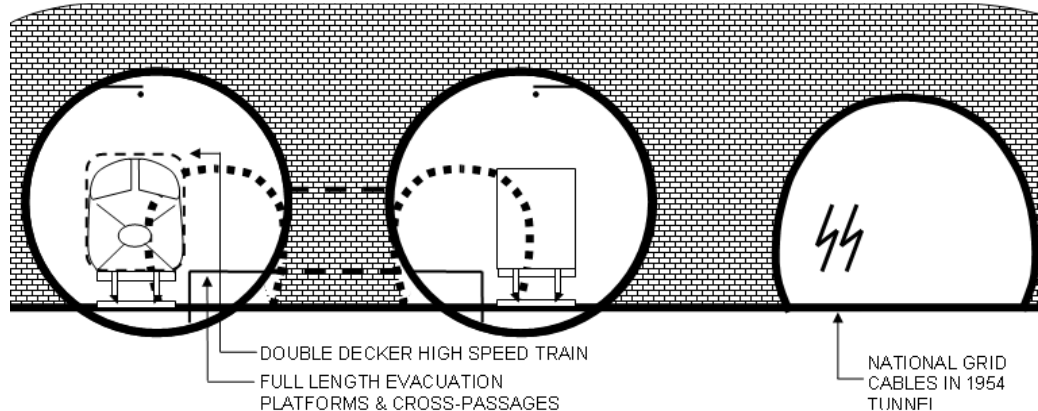
- Lorry shuttles
- Local passengers
- Freight
- High speed rail

Infrastructure issues??

- Tunnel
- Abandoned approaches
- Existing railway - operational interface

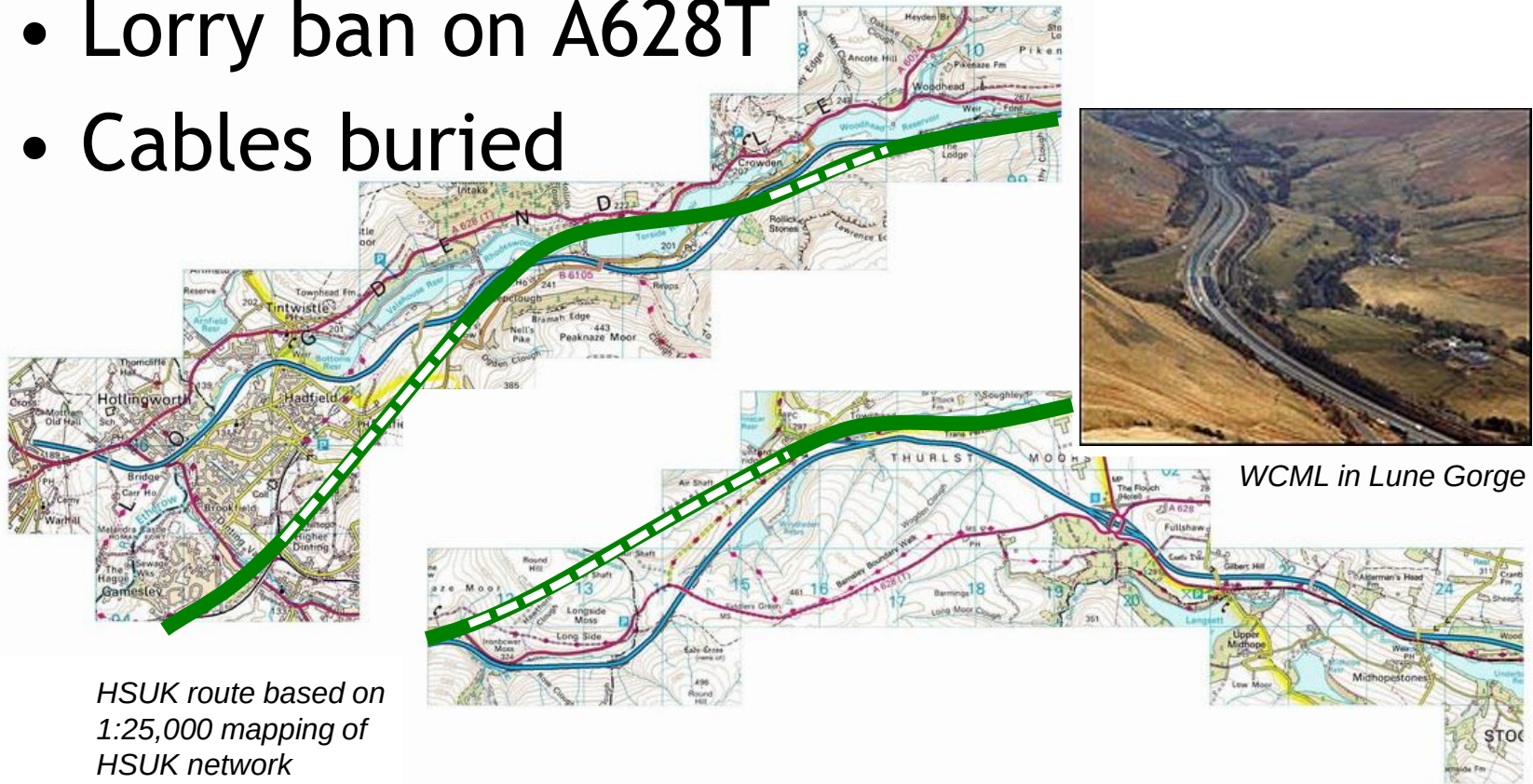
High Speed in Woodhead Tunnel??

- 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

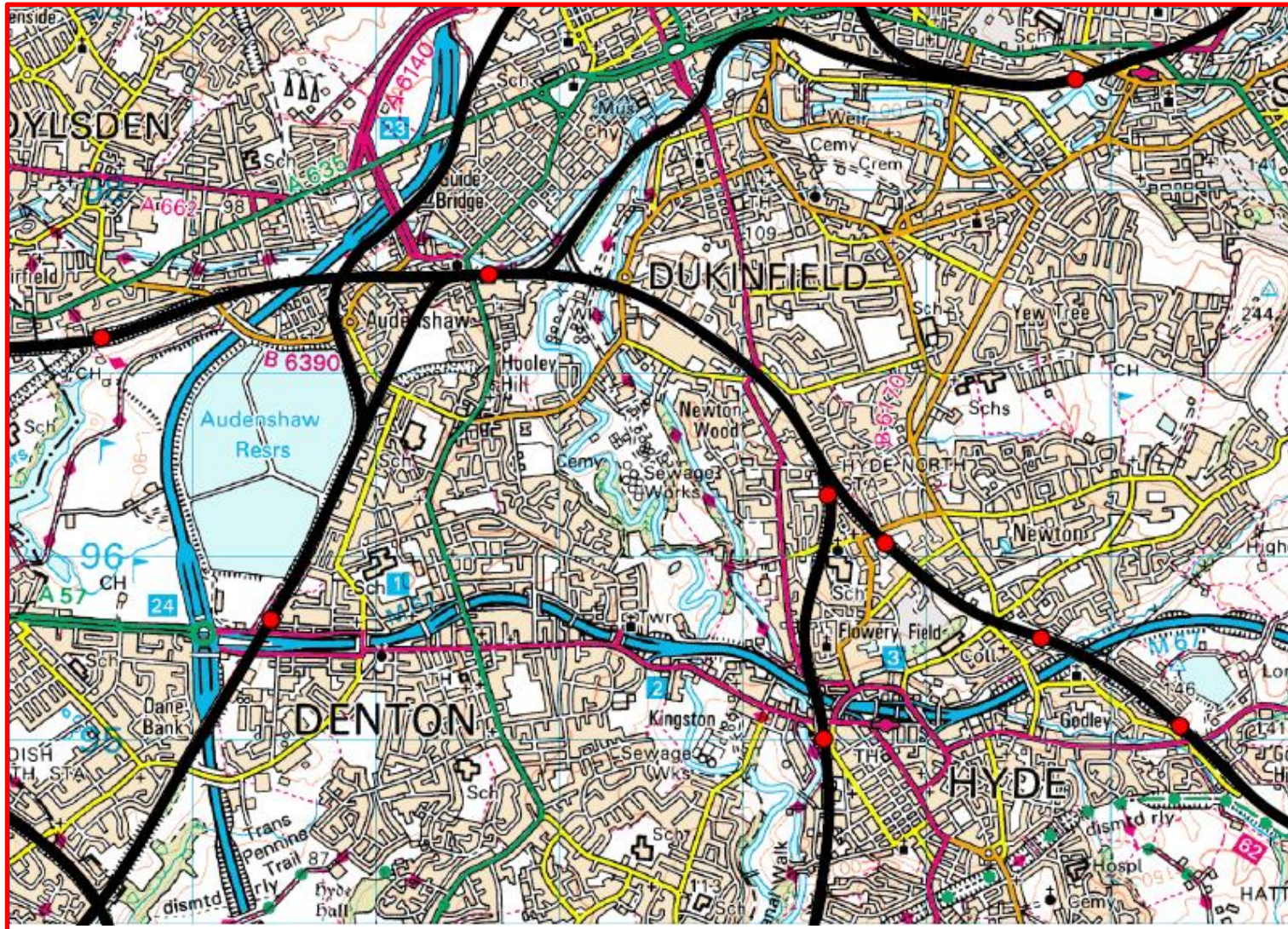


HSUK in Longdendale

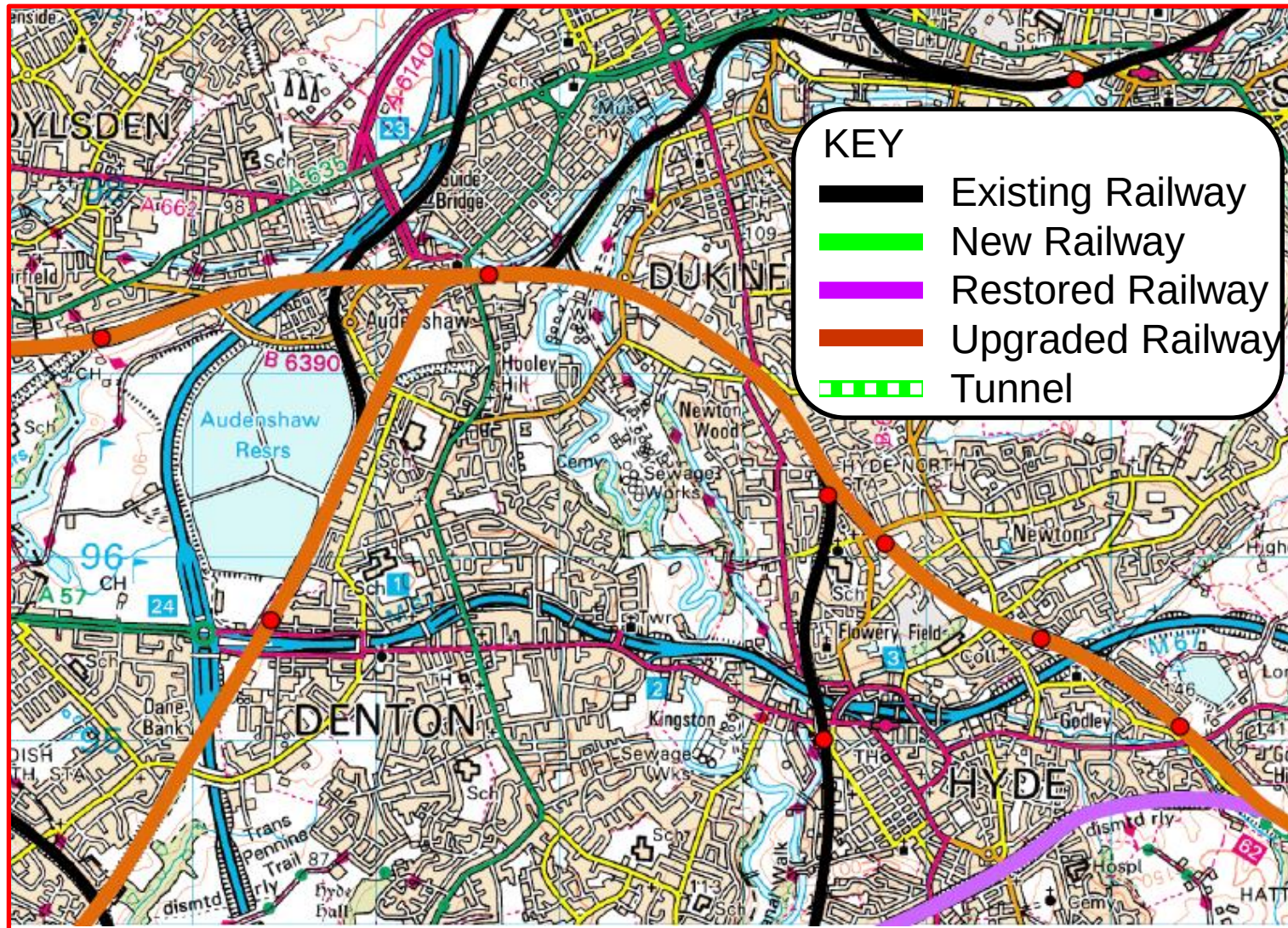
- Existing line also restored
- Lorry ban on A628T
- Cables buried



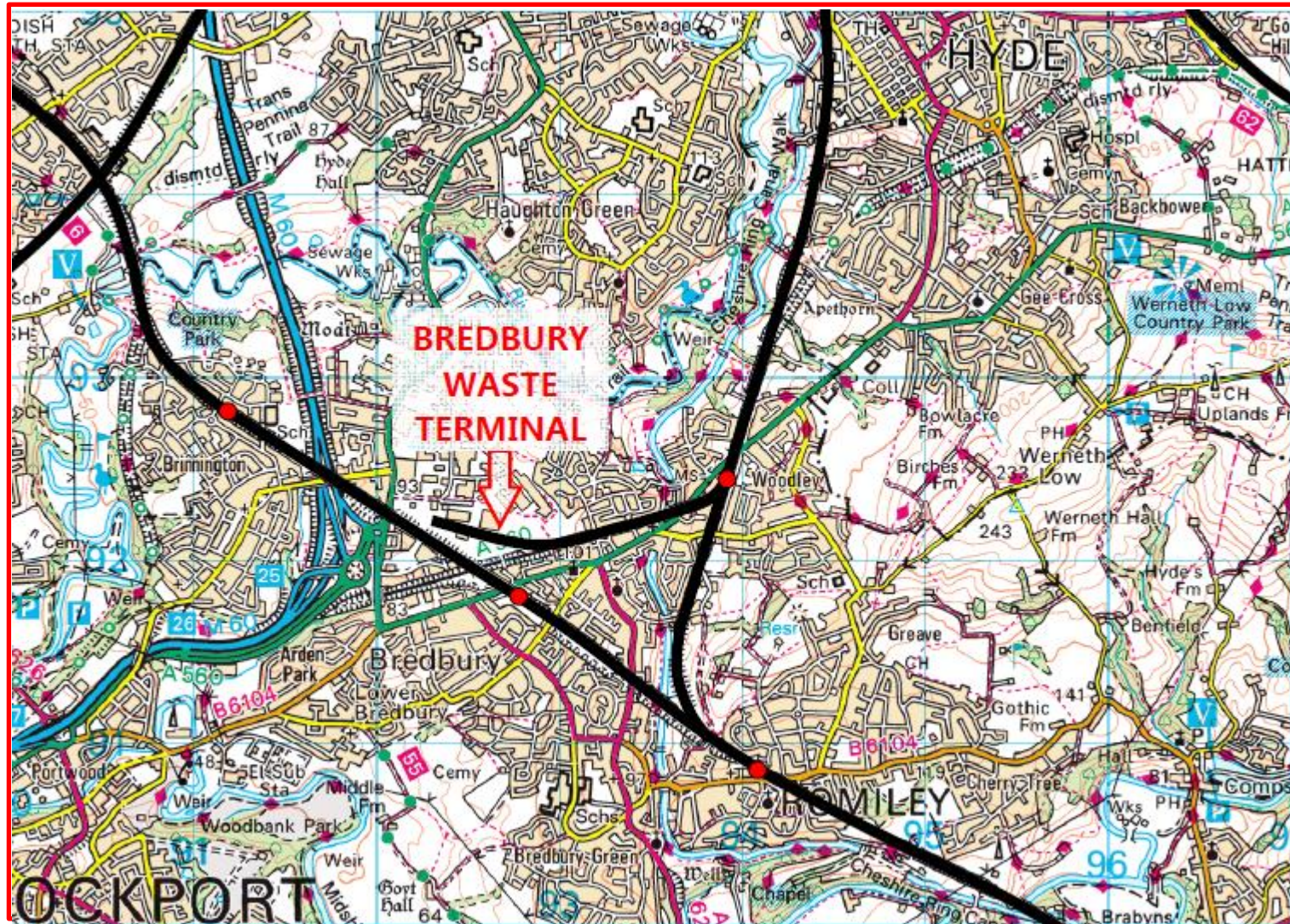
HSUK Route : Guide Bridge



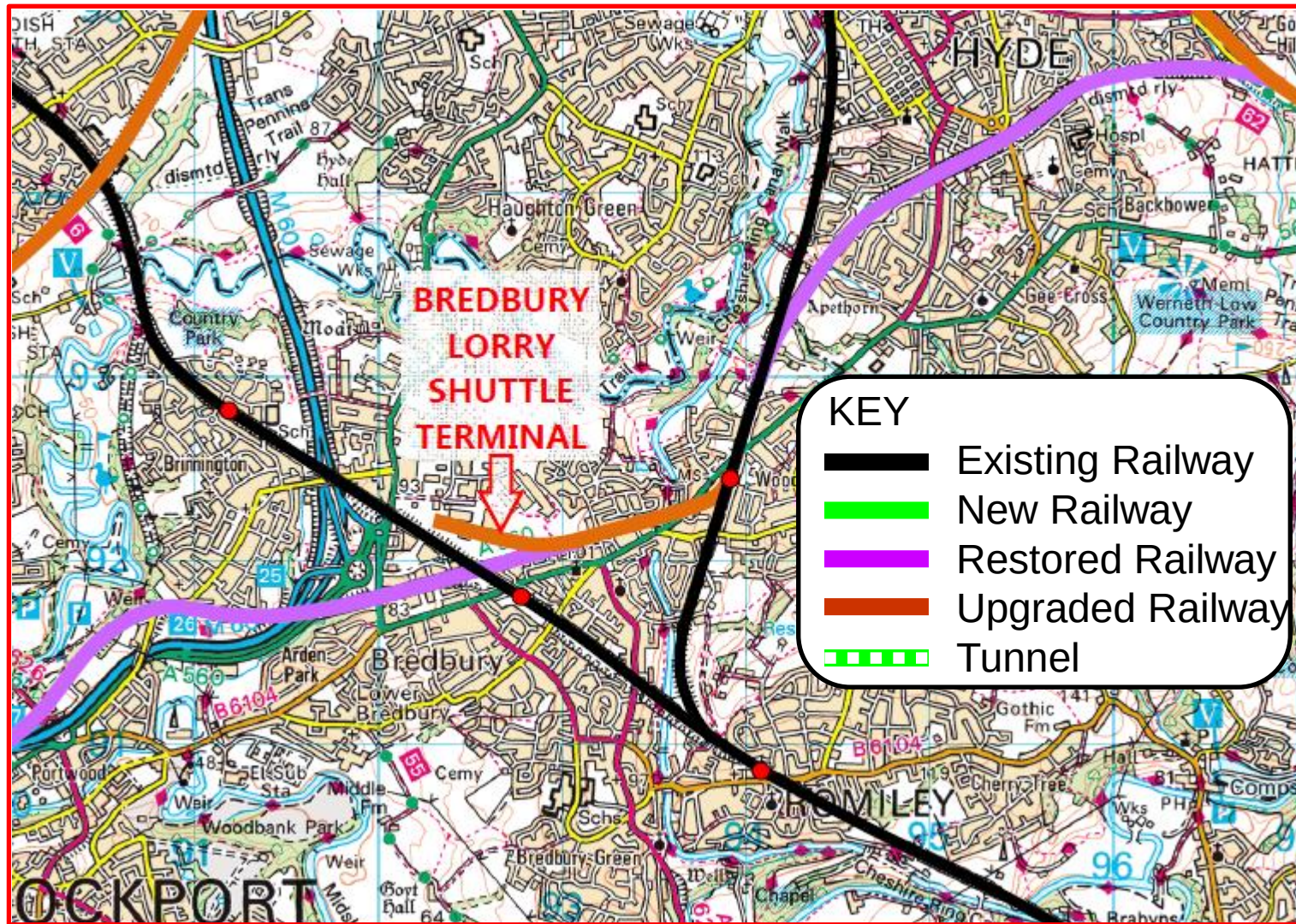
HSUK Route : Guide Bridge



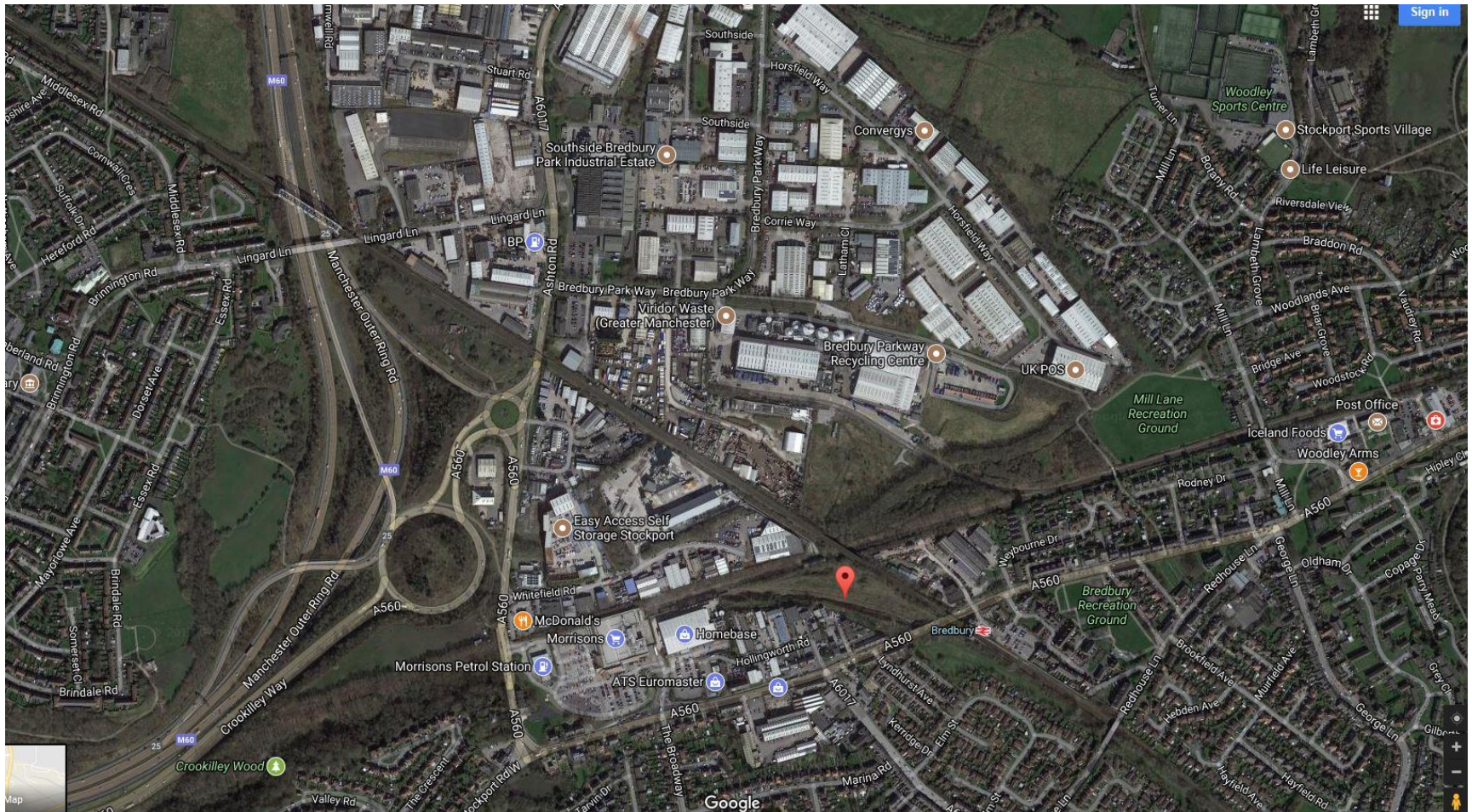
HSUK Route : Bredbury



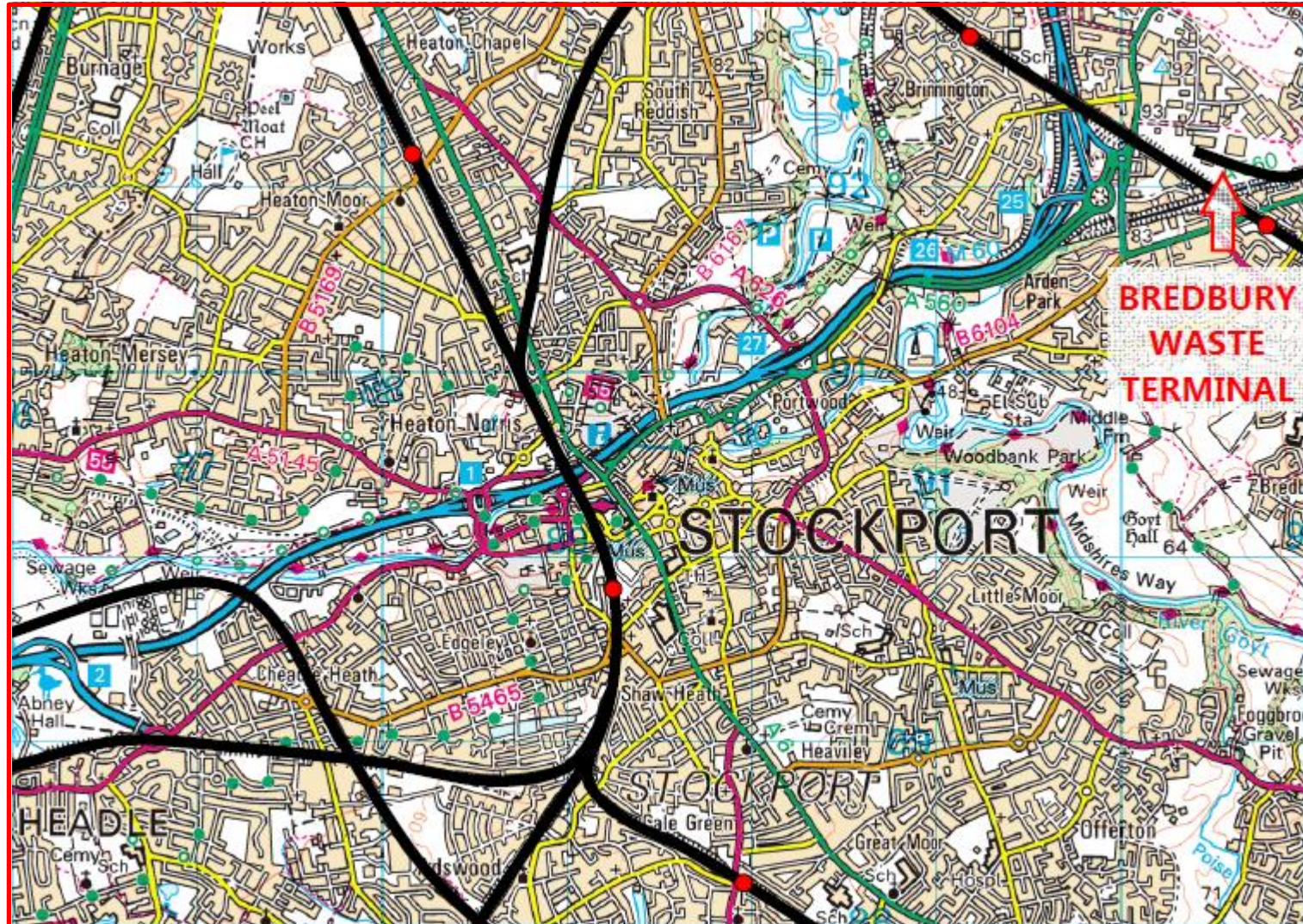
HSUK Route : Bredbury



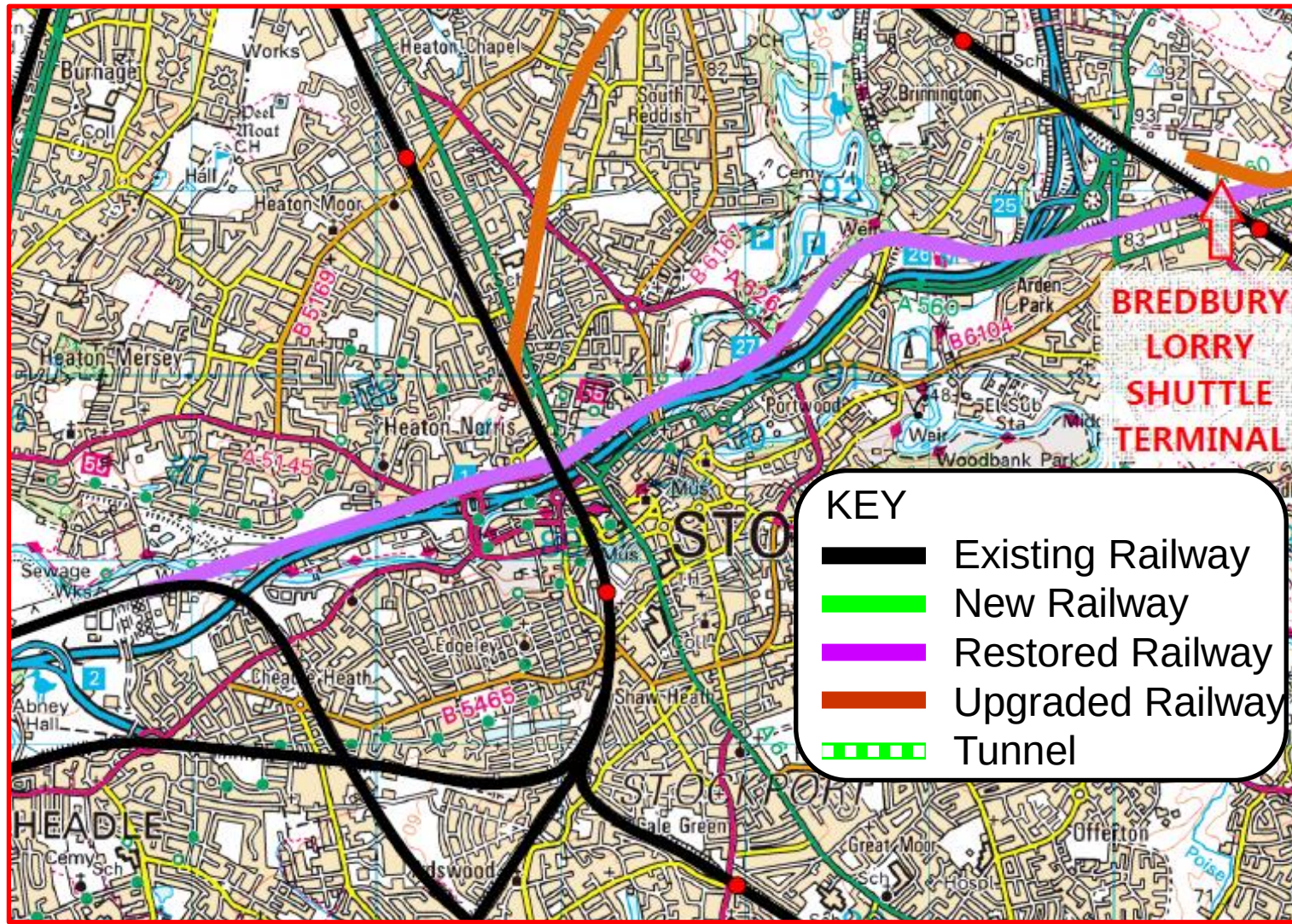
Bredbury Lorry Shuttle Terminal?



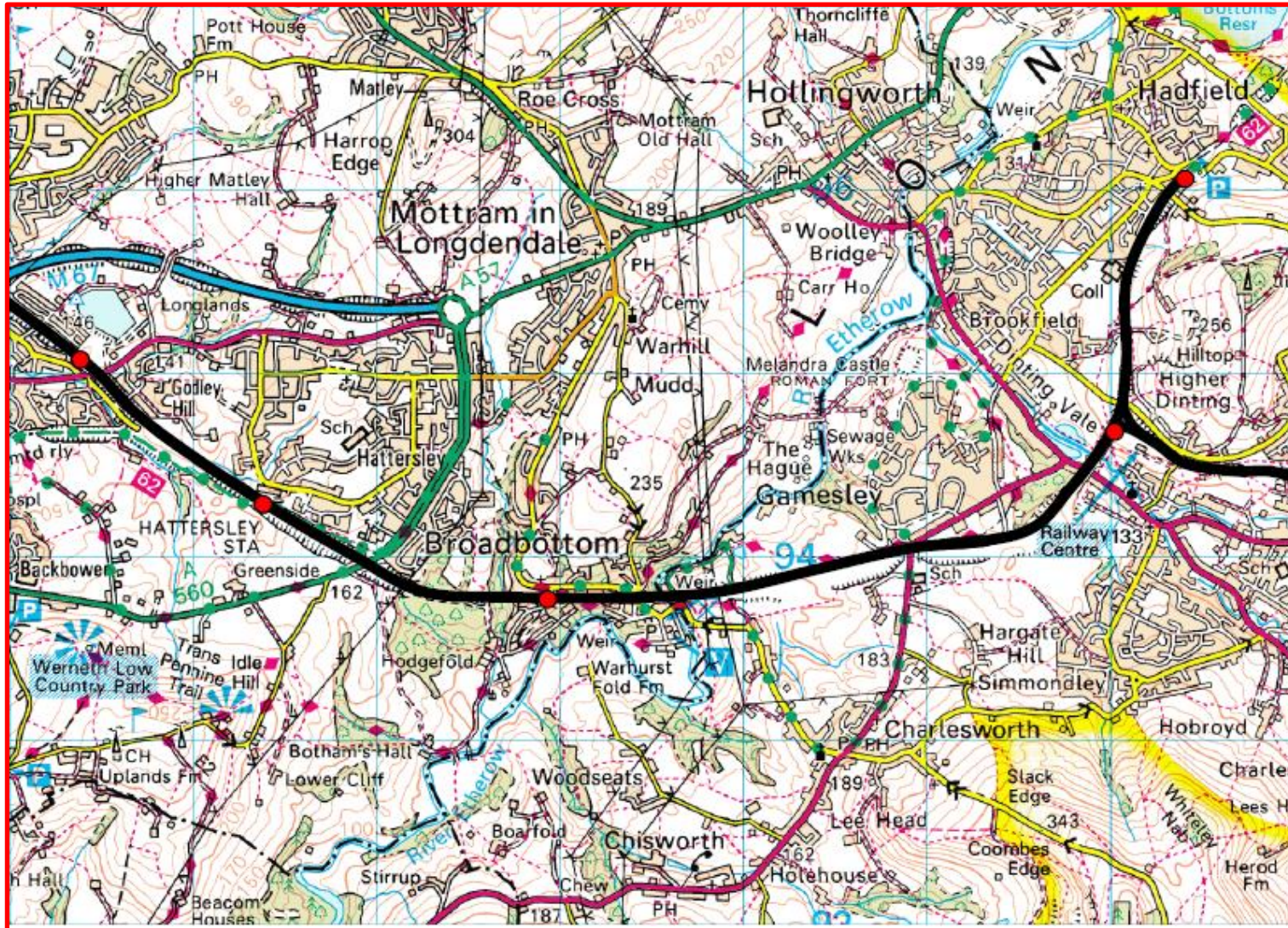
HSUK Route : Stockport



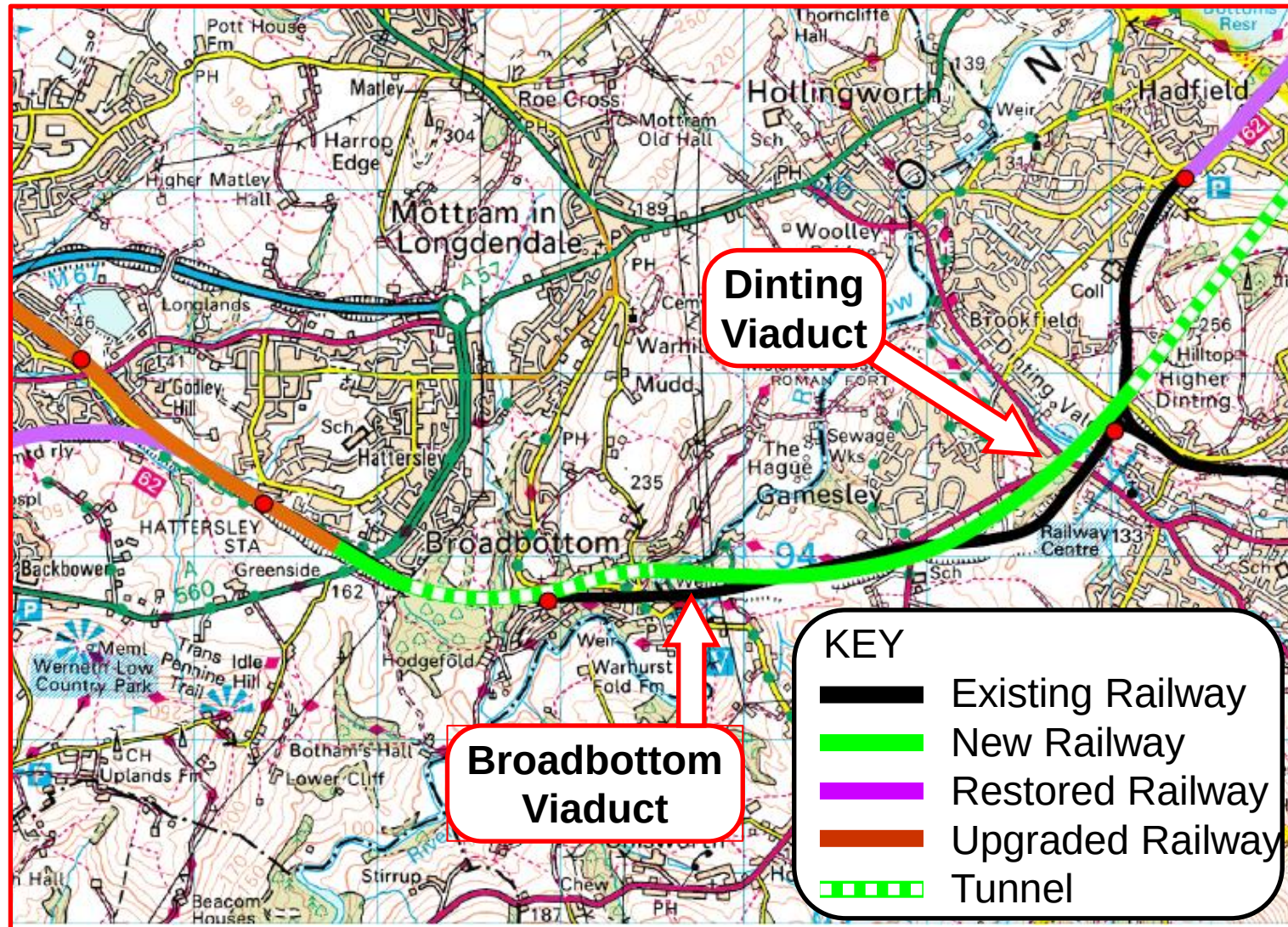
HSUK Route : Stockport



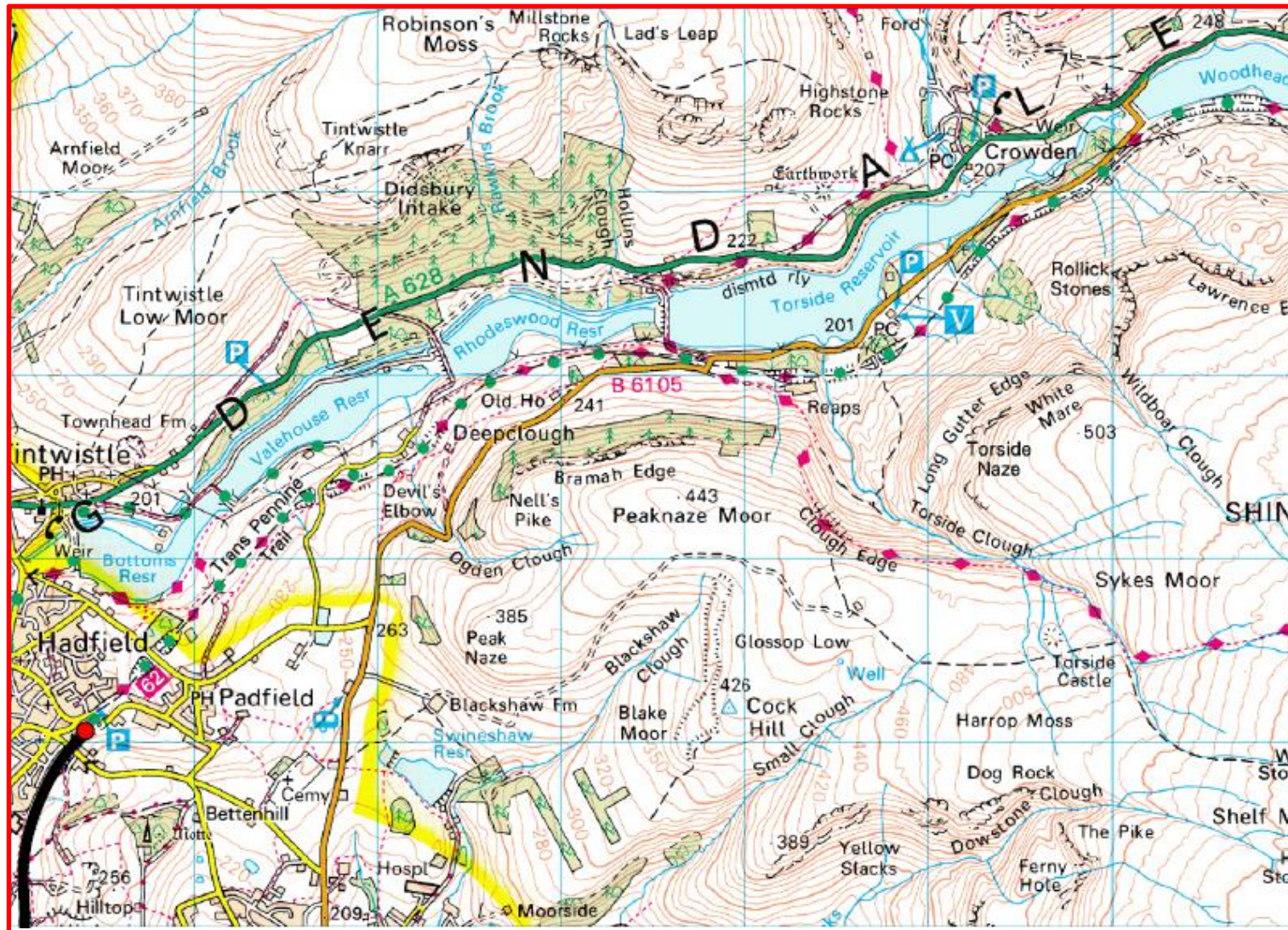
HSUK Route : Broadbottom



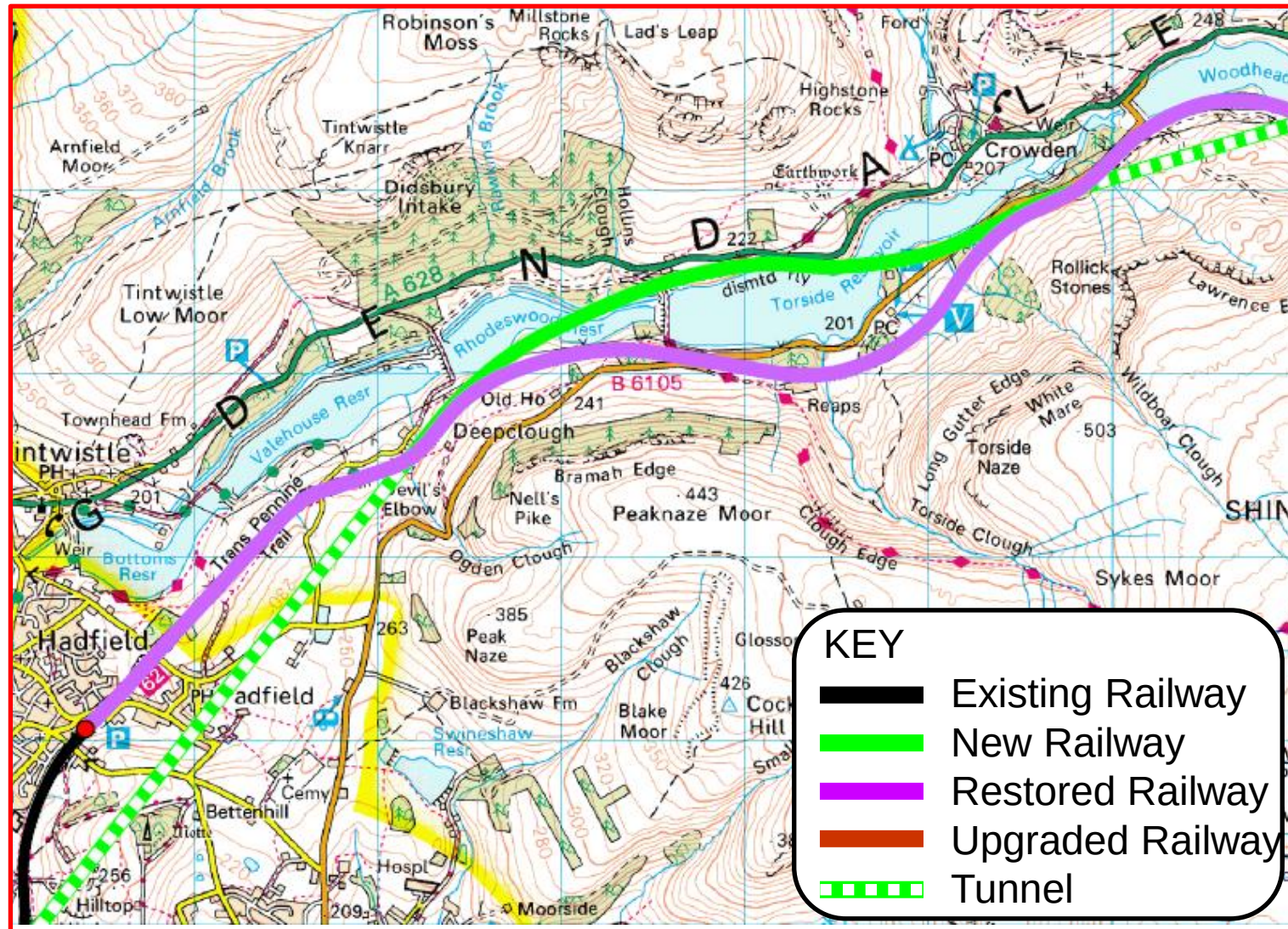
HSUK Route : Broadbottom



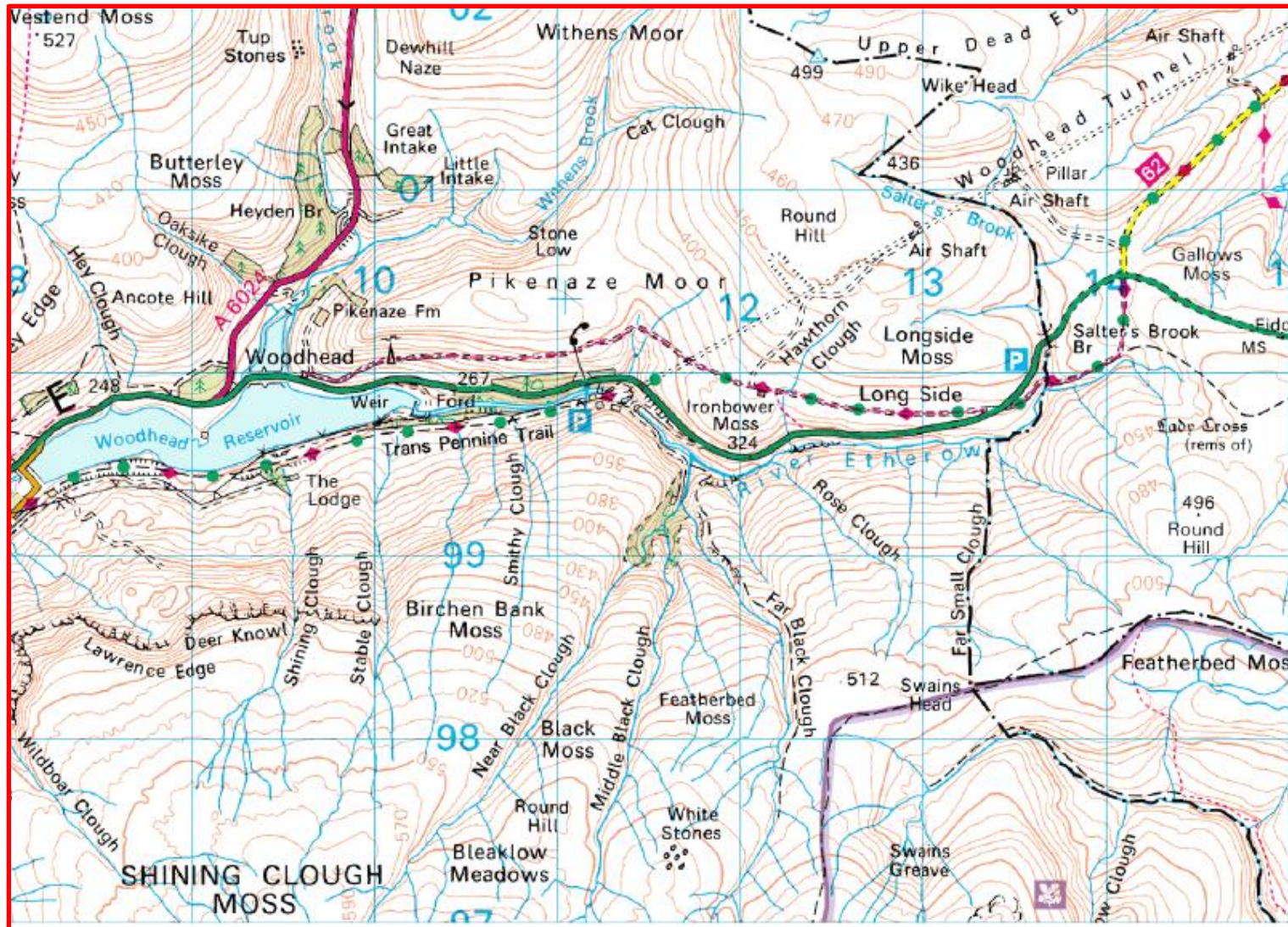
HSUK Route : Longdendale



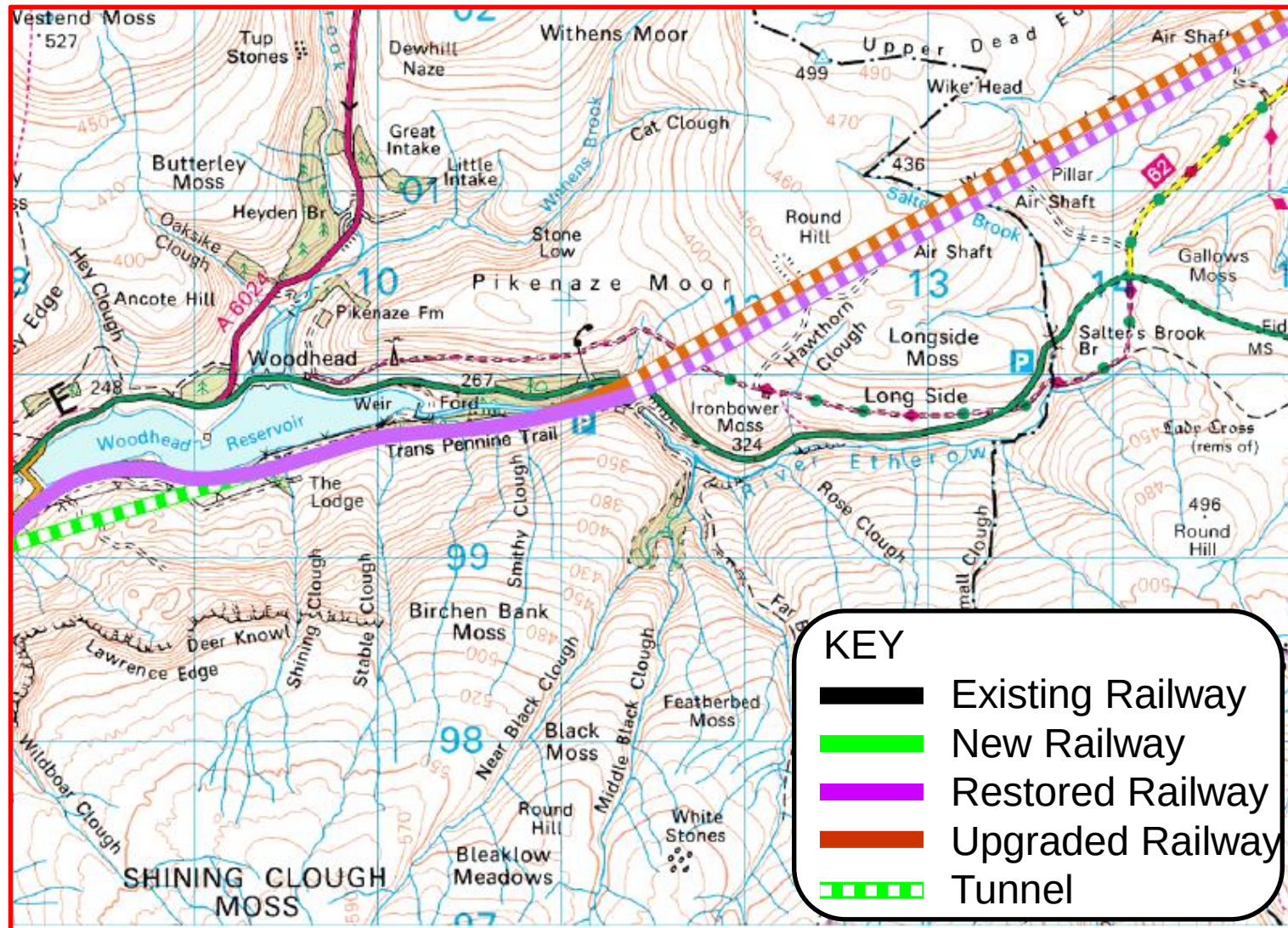
HSUK Route : Longdendale



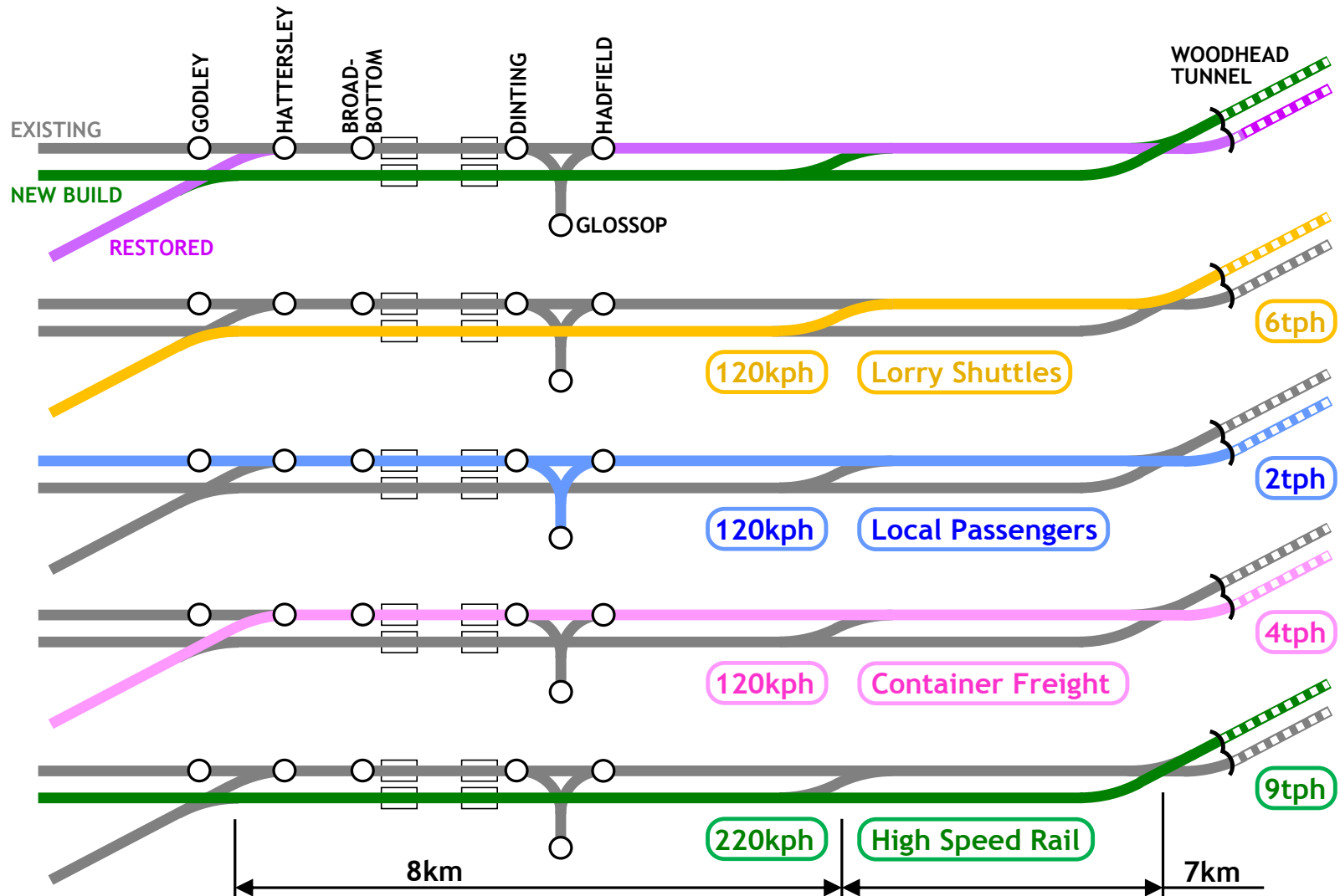
HSUK Route : Woodhead



HSUK Route : Woodhead



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??

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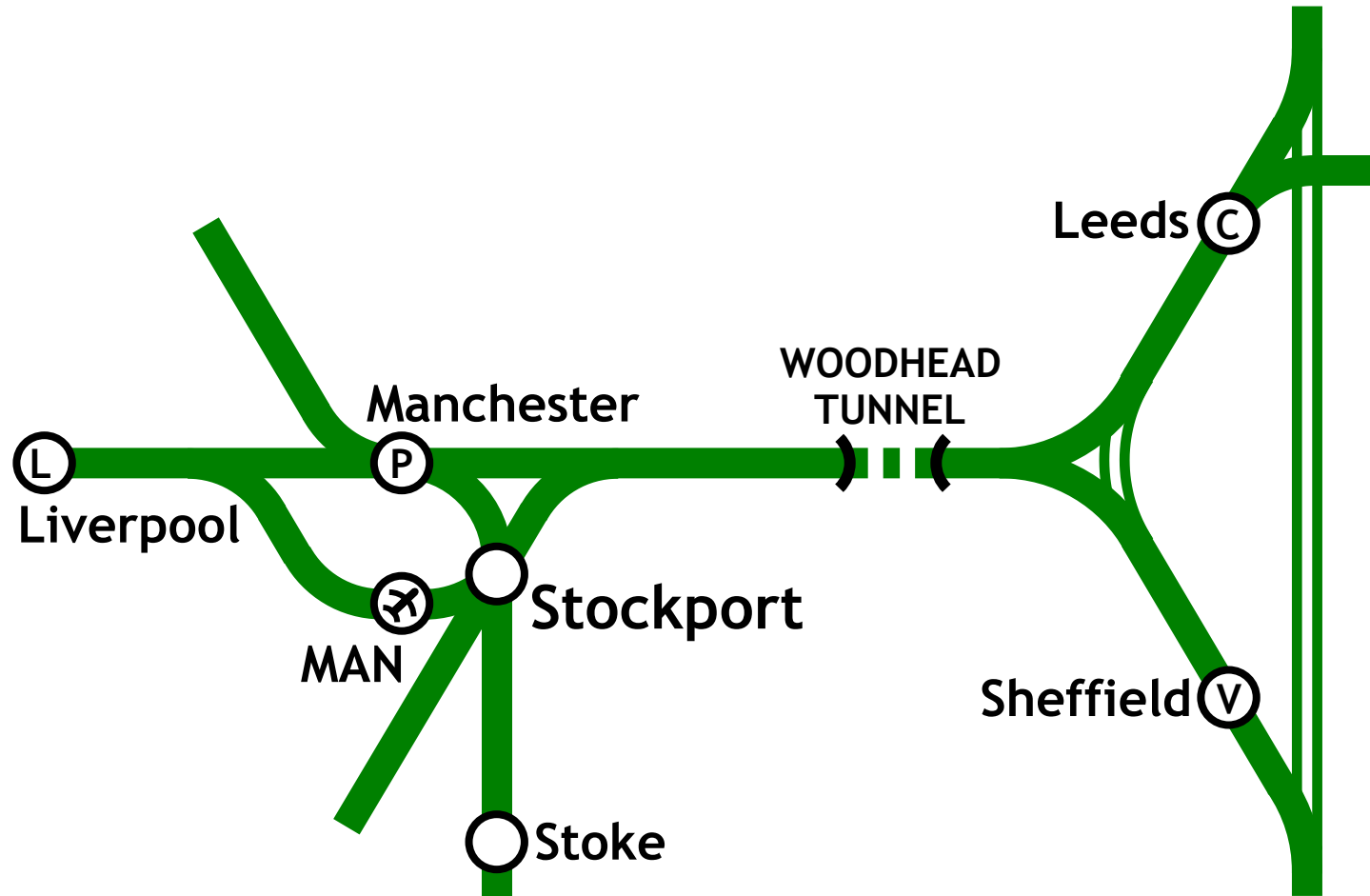
Local issues??

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

National issues??

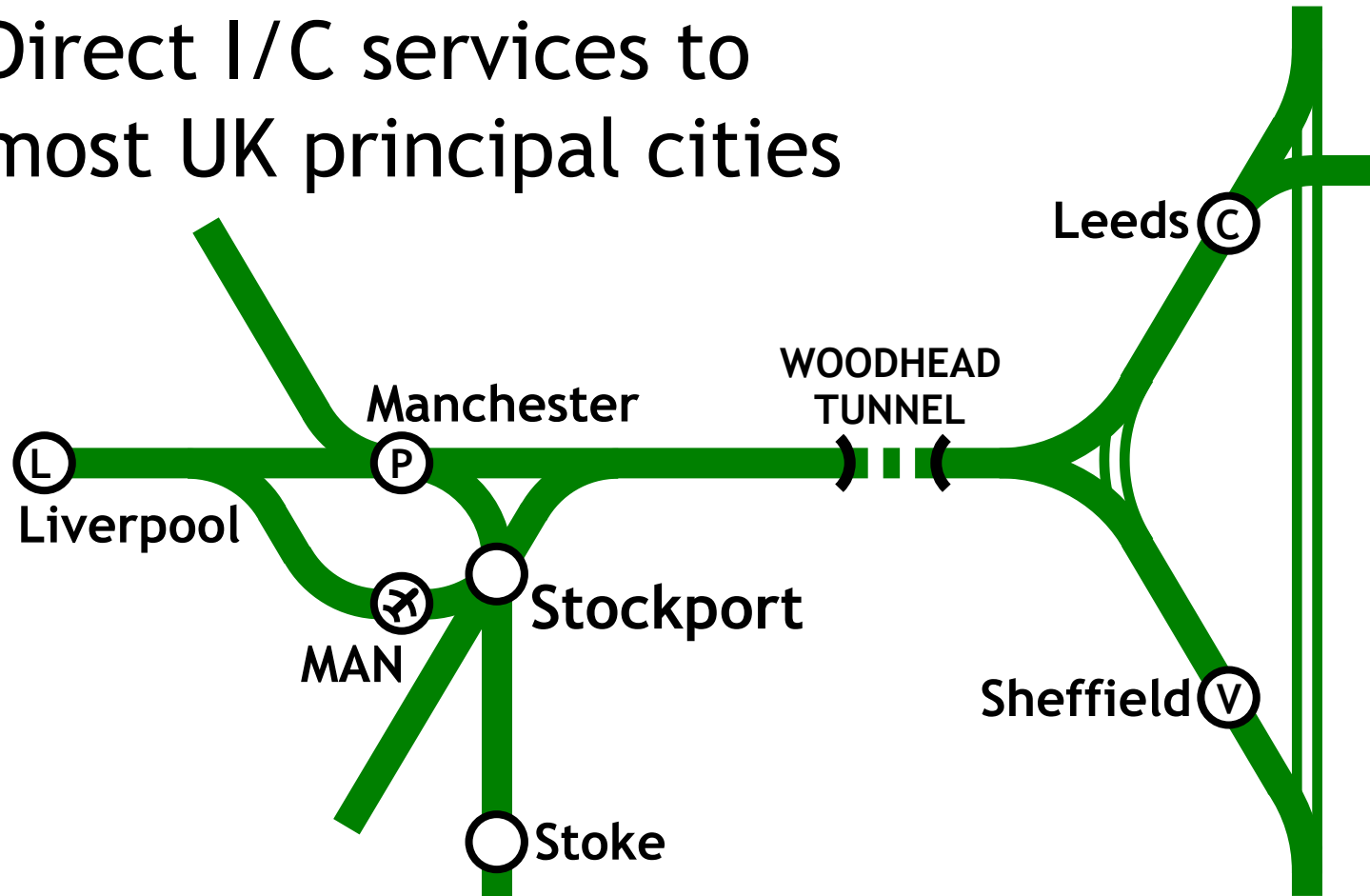
- Fully connected rail network
- Minimise cost, maximise benefit
- Regional development
- CO₂ reductions as per 2008 CCA
- Preservation of landscapes

HSUK network for Stockport



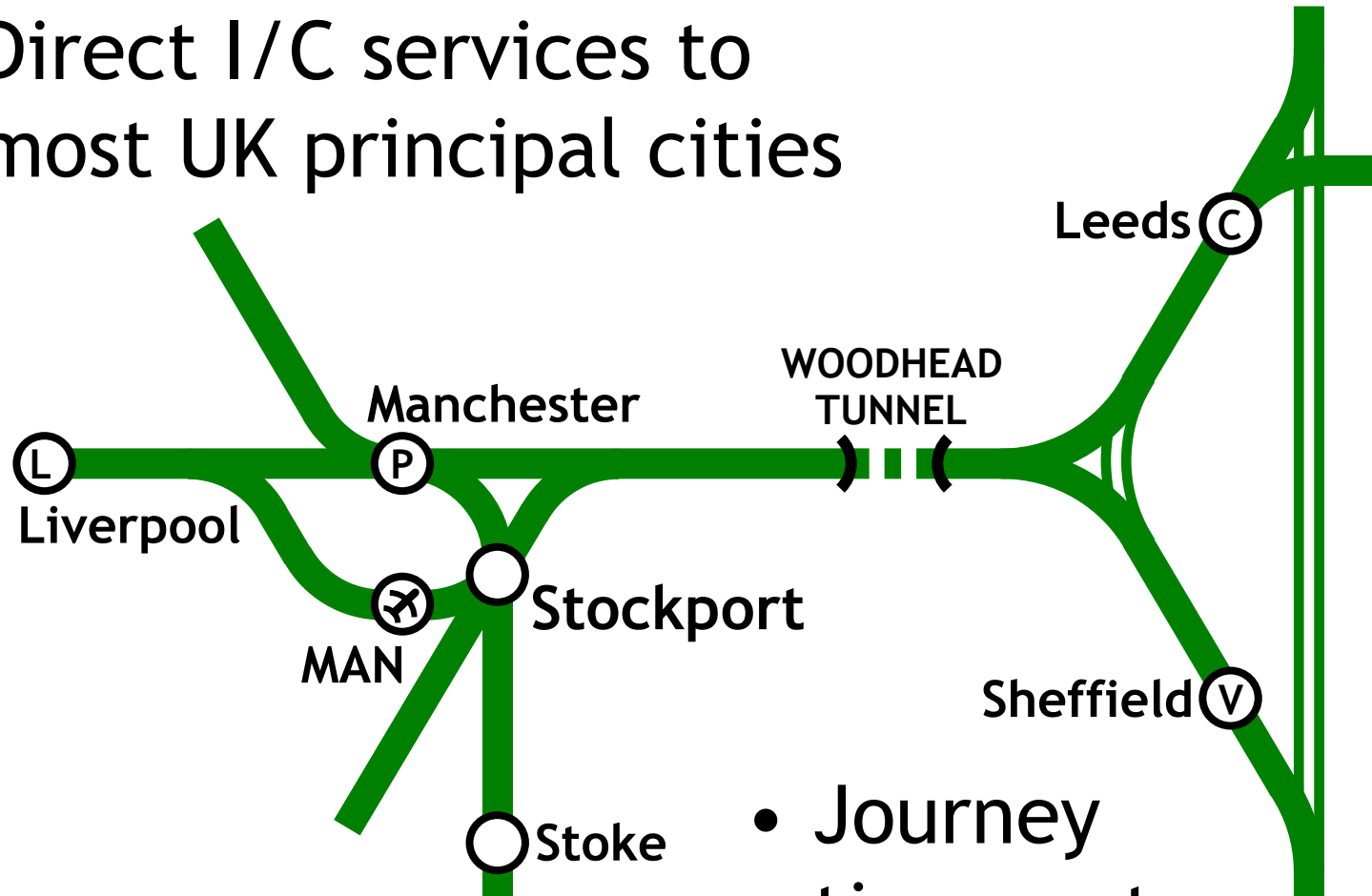
HSUK network for Stockport

- Direct I/C services to most UK principal cities



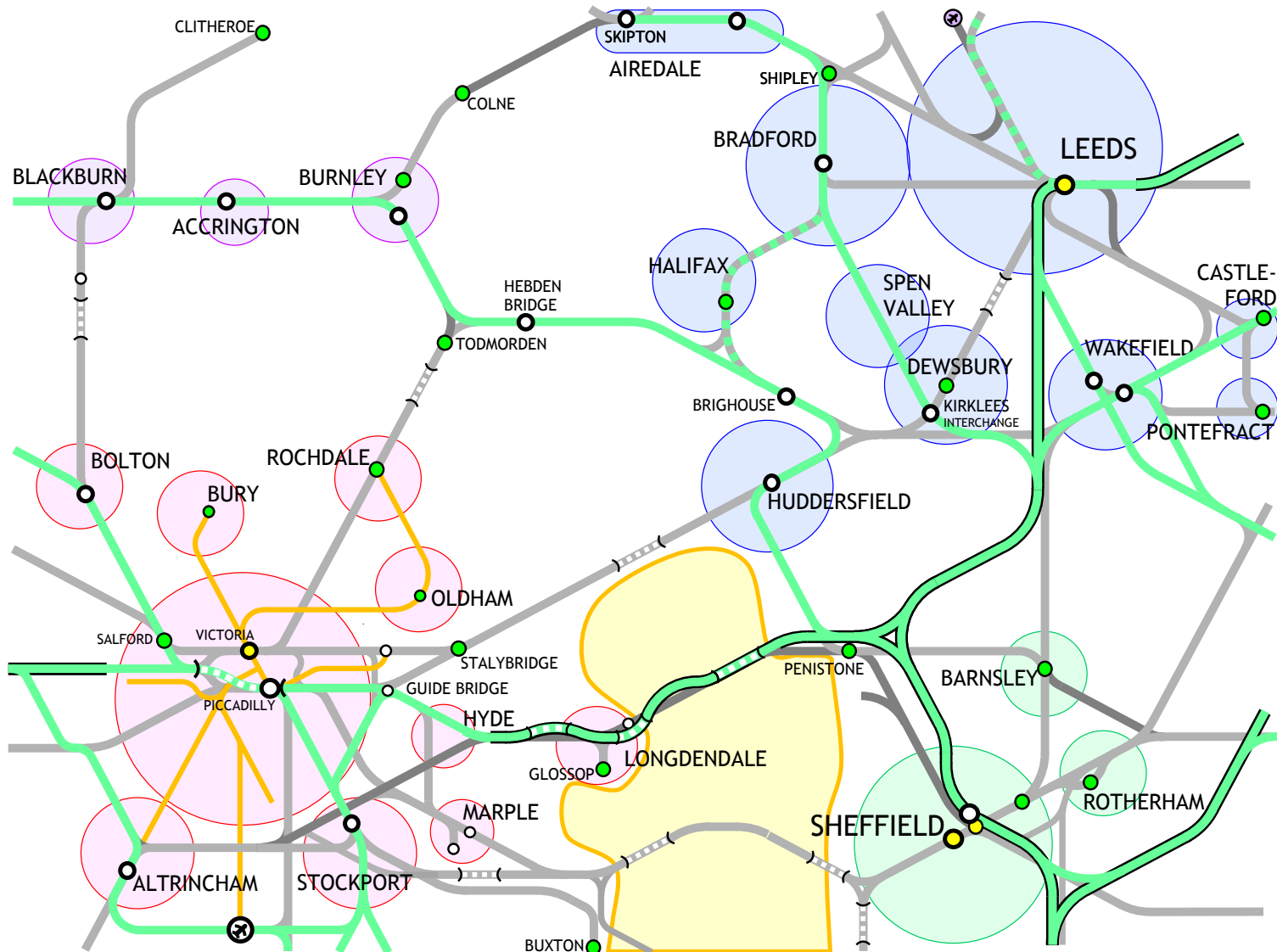
HSUK network for Stockport

- Direct I/C services to most UK principal cities



- Journey times cut by ~40%

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
- Partial new alignment req^d 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 local 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 / Rail Freight

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

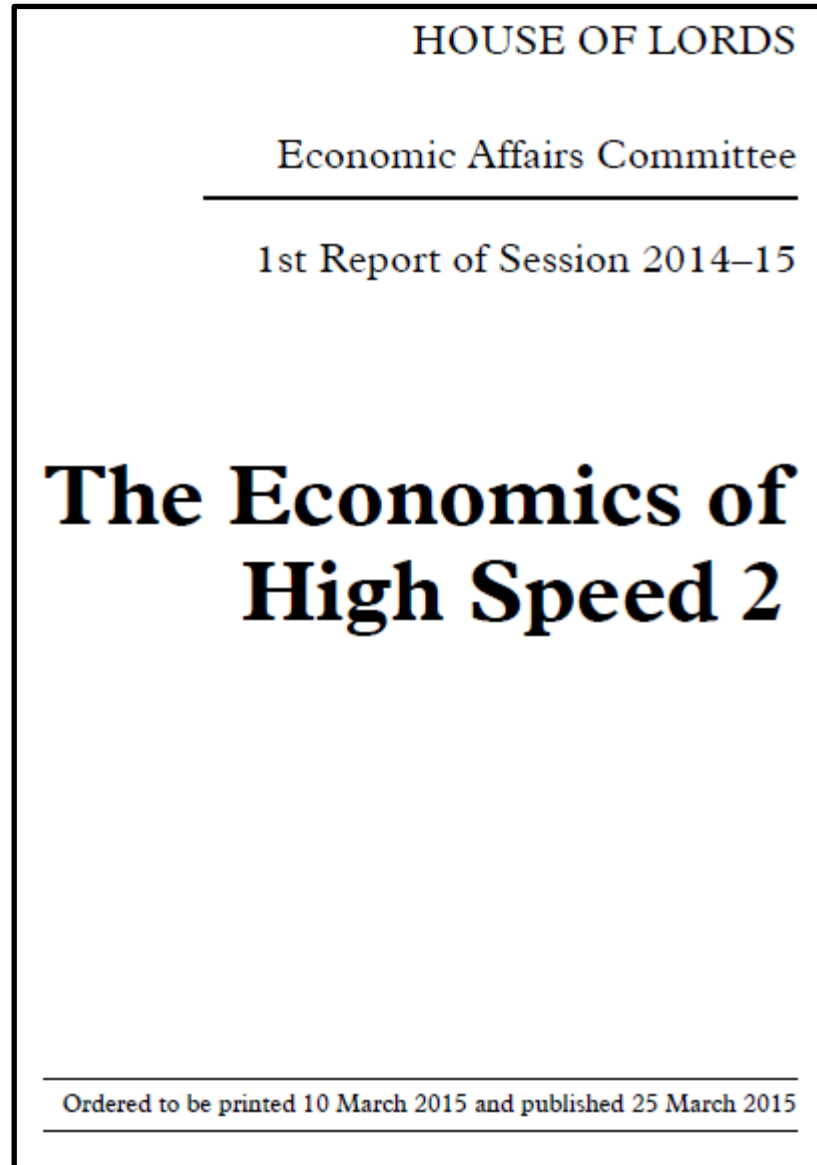
**LOWER
CO₂**

**NET ENVIRONMENTAL
IMPROVEMENT**

Local Passenger Services

- Essential for local support
- No major 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?

National Transport Plan??

NTP Key Principles for HS National Network:

- All primary cities fully interlinked

National Transport Plan??

NTP Key Principles for HS National Network:

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

National Transport Plan??

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

National Transport Plan??

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

National Transport Plan??

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

National Transport Plan??

NTP Key Principles for HS National Network:

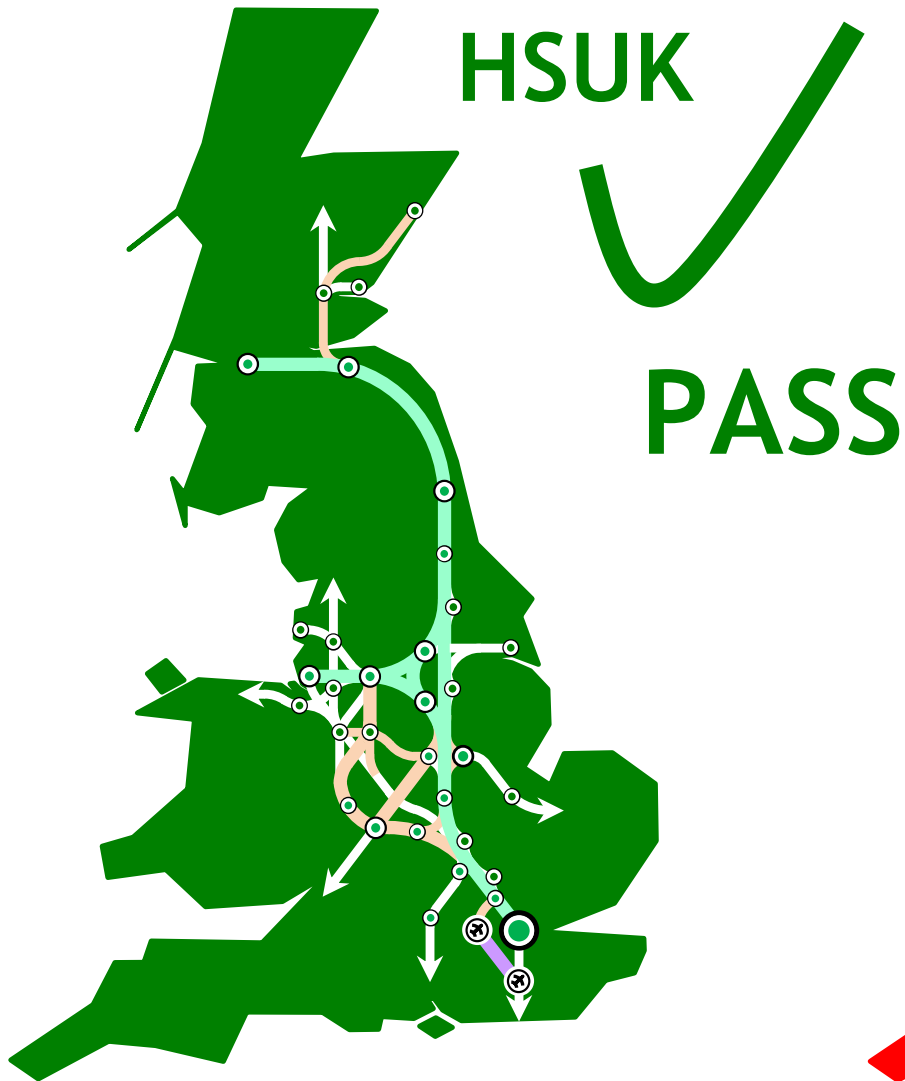
- All primary cities fully interlinked
- Services at hourly or better frequencies
- All second tier cities included in network
- Full interchange with local networks
- Direct services from primary cities to national hub airport
- Direct services also to regional airports

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

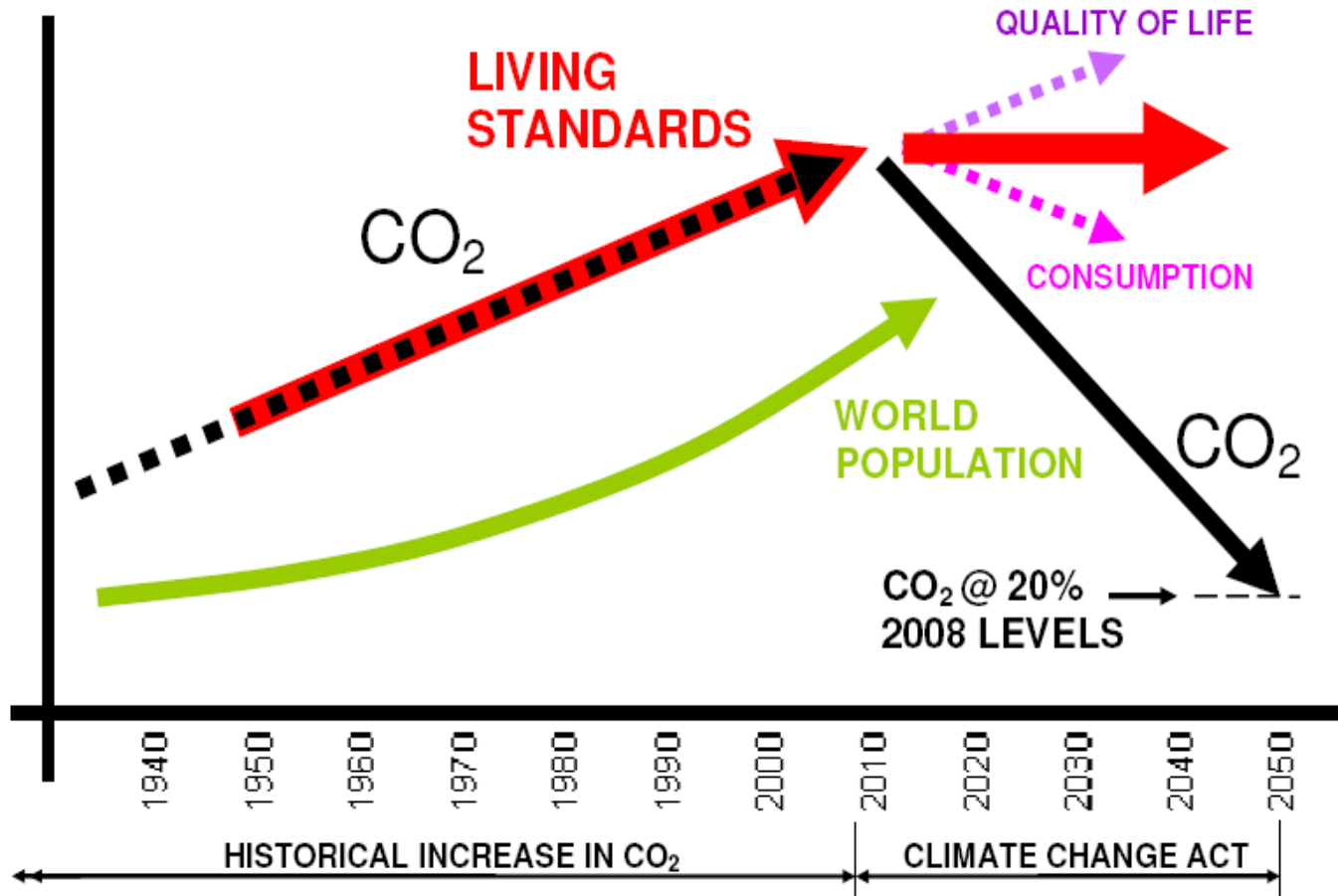


More Exam Questions!!

NTP Public Policy Issues:

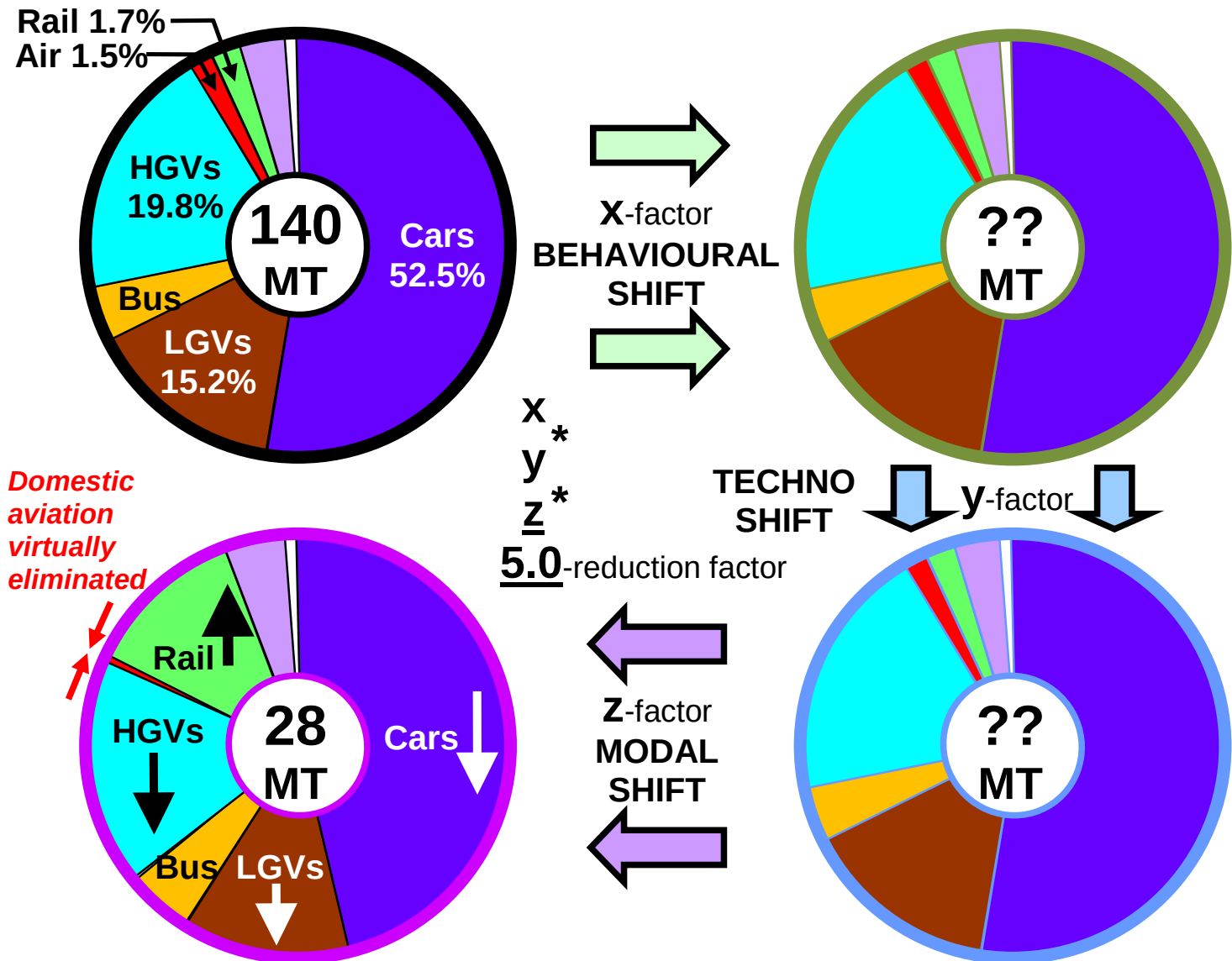
- Inclusivity
- Value for money
- Promote integrated transport
- Prioritise town centres (TCPA)
- Promote regional development
- Protect rural communities/landscapes
- Reduce transport CO₂ in line with 2008 Climate Change Act

The Environmental Imperative

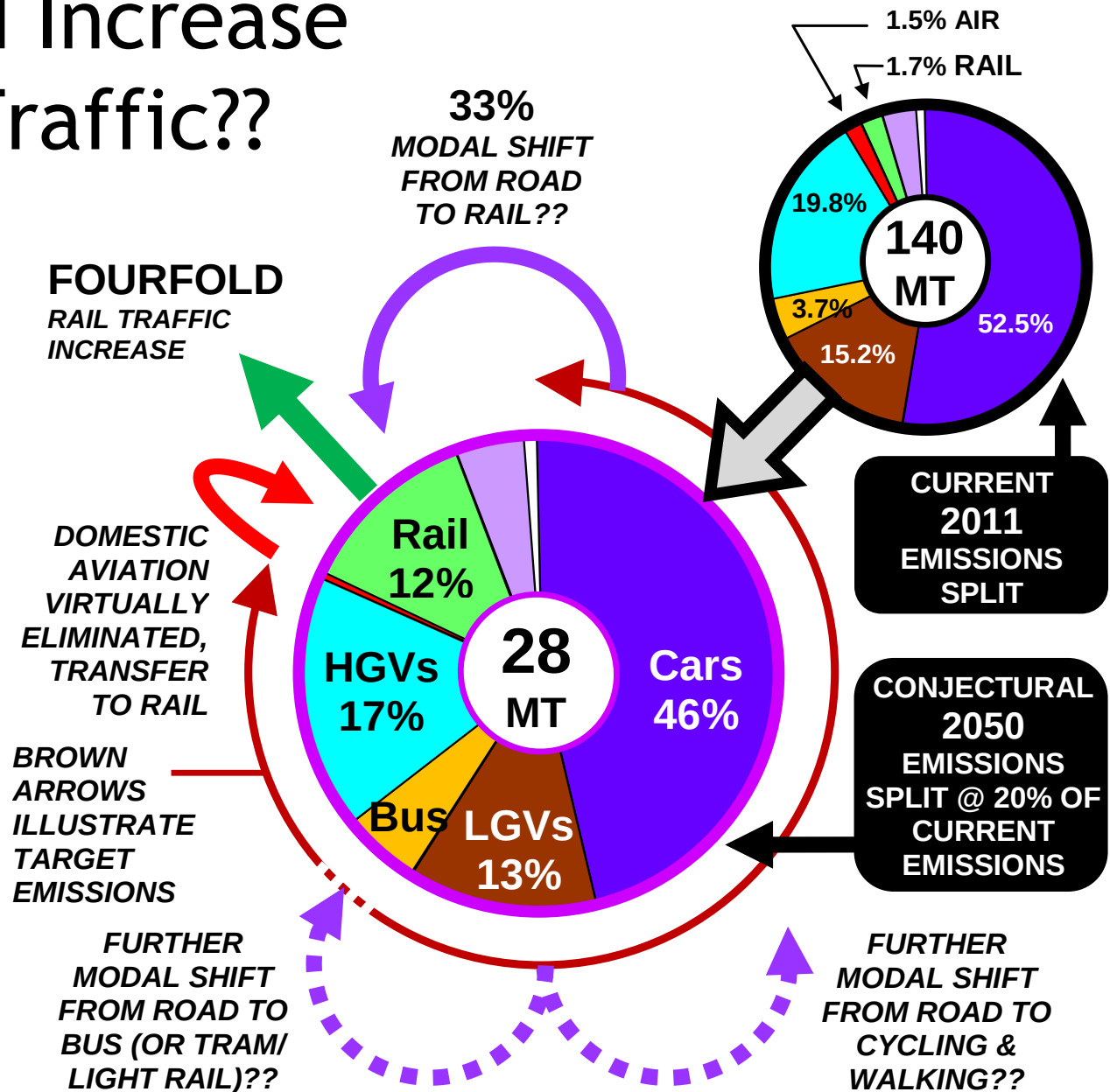


- 2008 Climate Change Act

Roadmap to 2050??

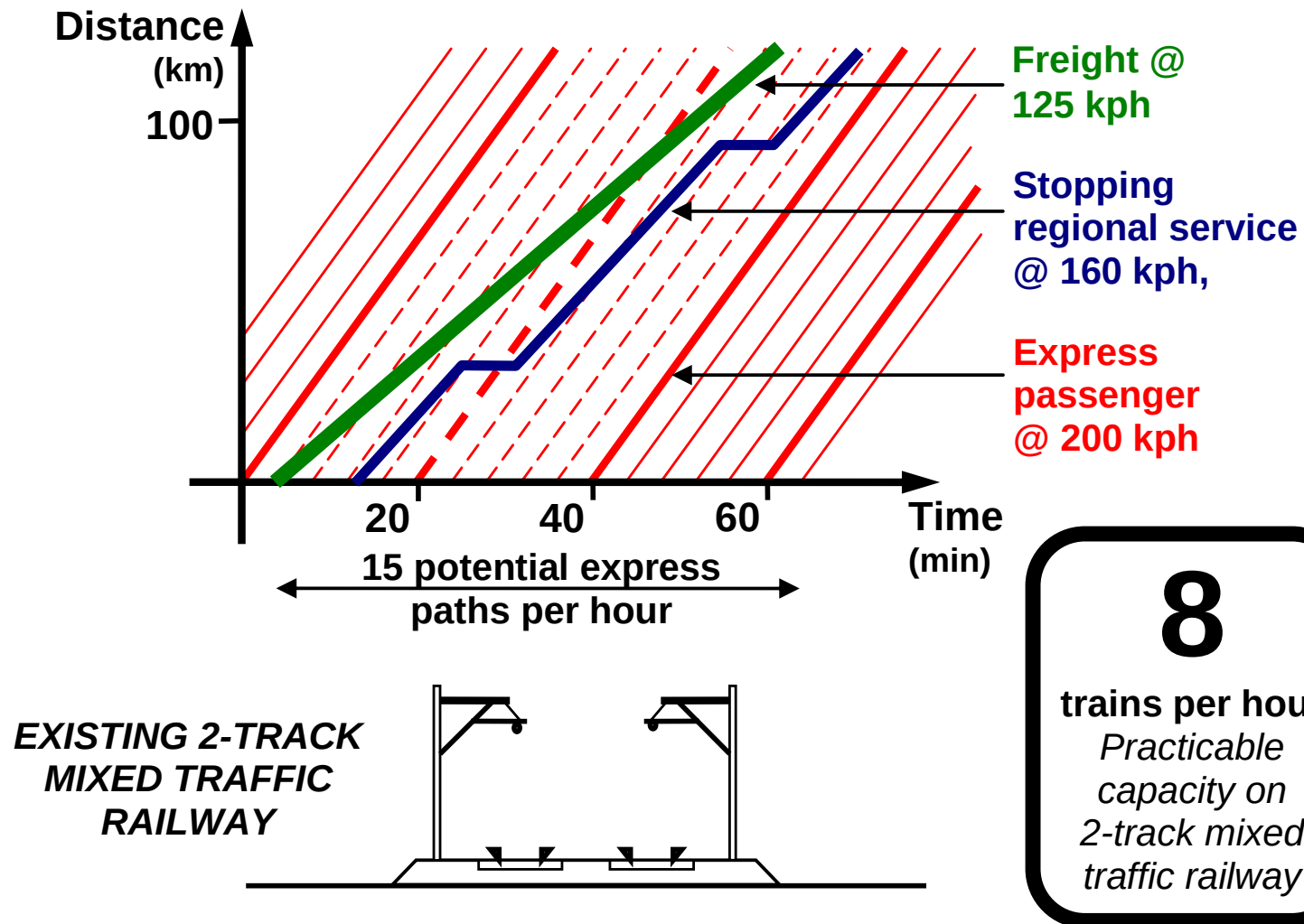


Fourfold Increase in Rail Traffic??



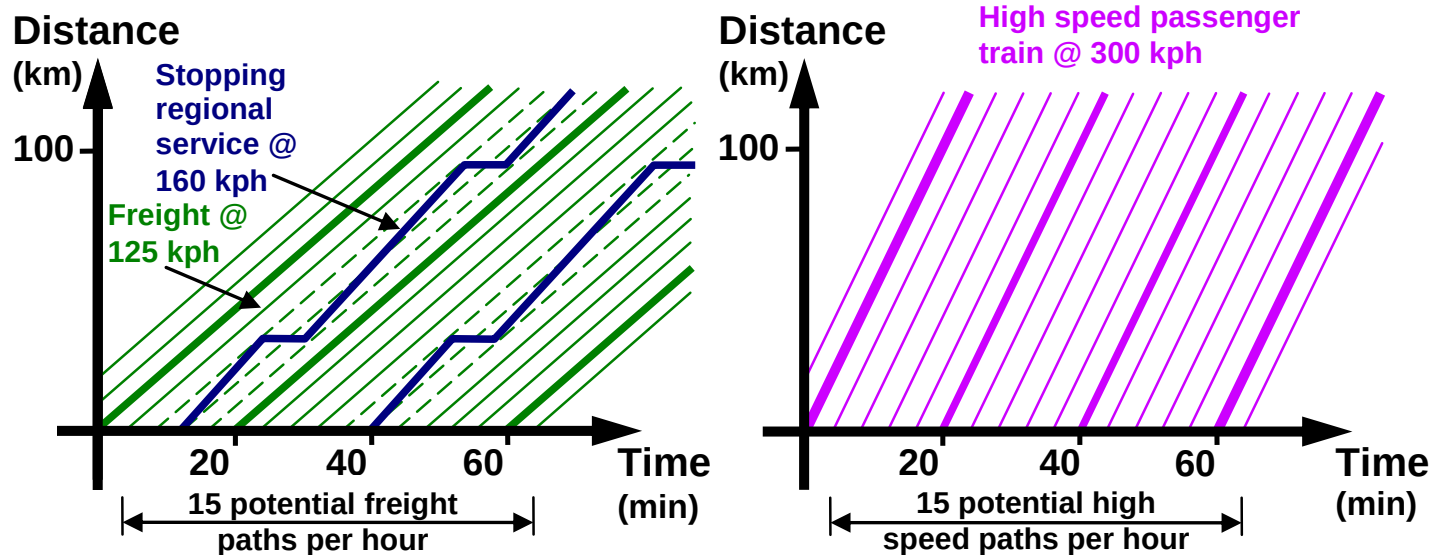
Solution:

2 new tracks parallel to all main lines?



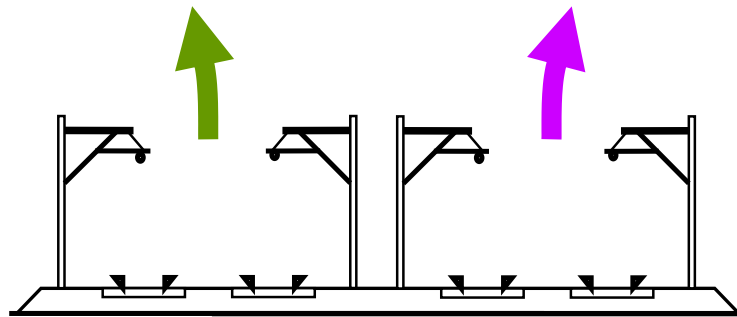
Solution:

2 new tracks parallel to all main lines?



11

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

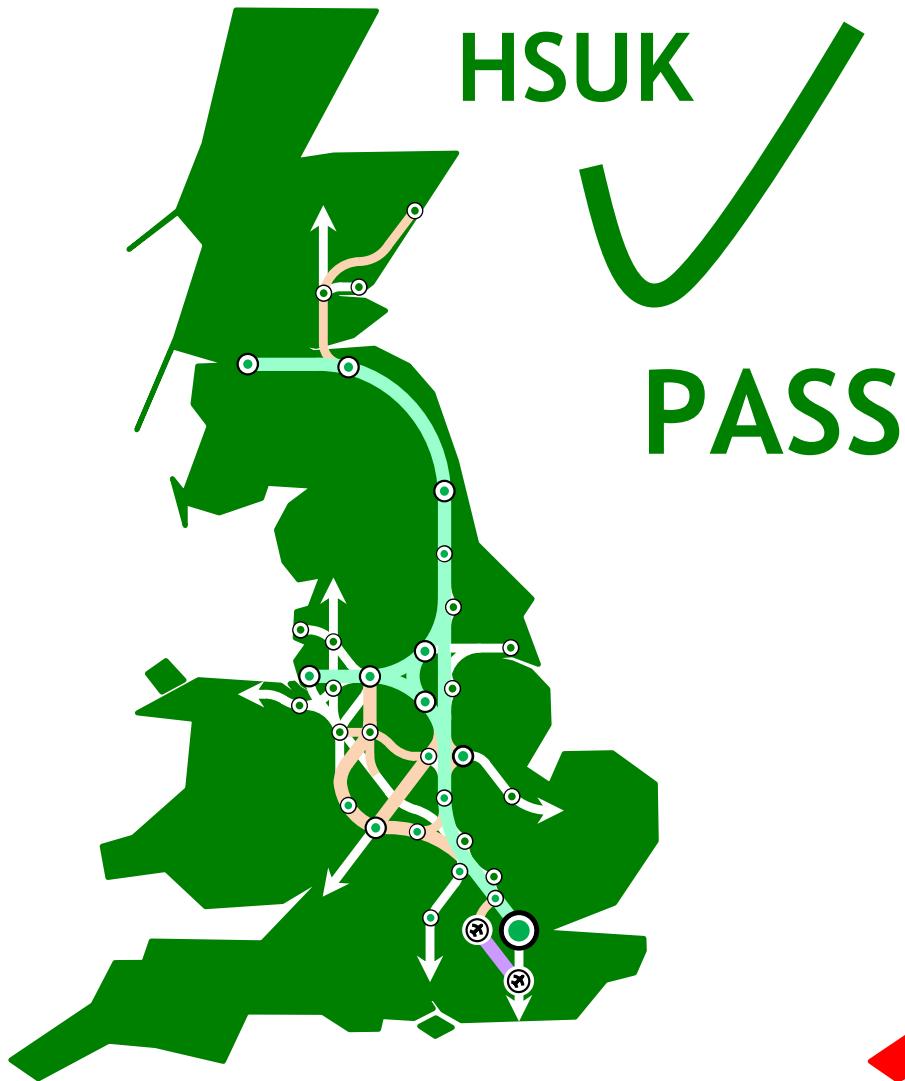


**HIGH SPEED LINE BUILT
PARALLEL TO
EXISTING RAILWAY**

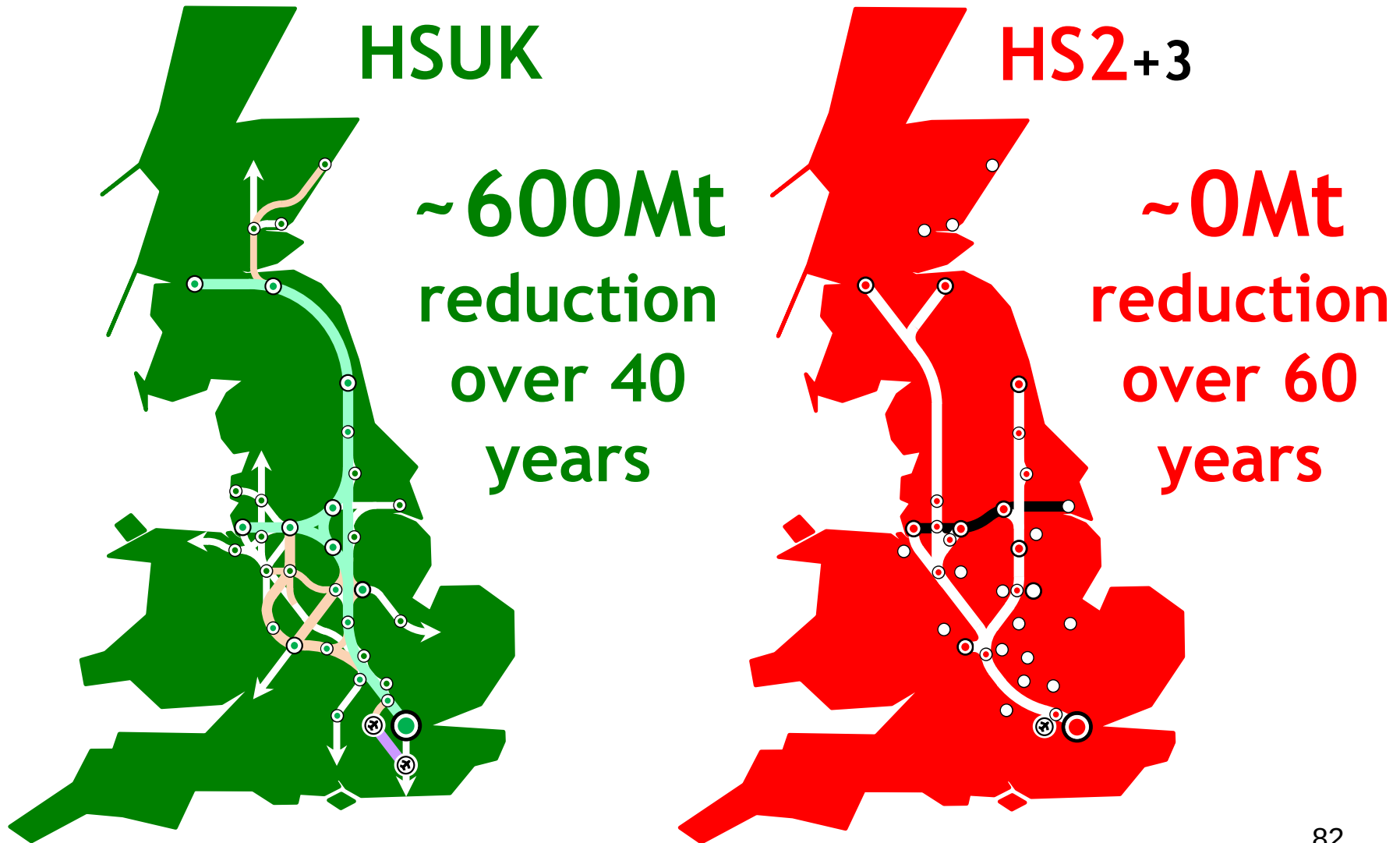
15

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

More Exam Questions



The CO₂ Question



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 CO₂
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!!



www.highspeeduk.co.uk