



HS2 Construction

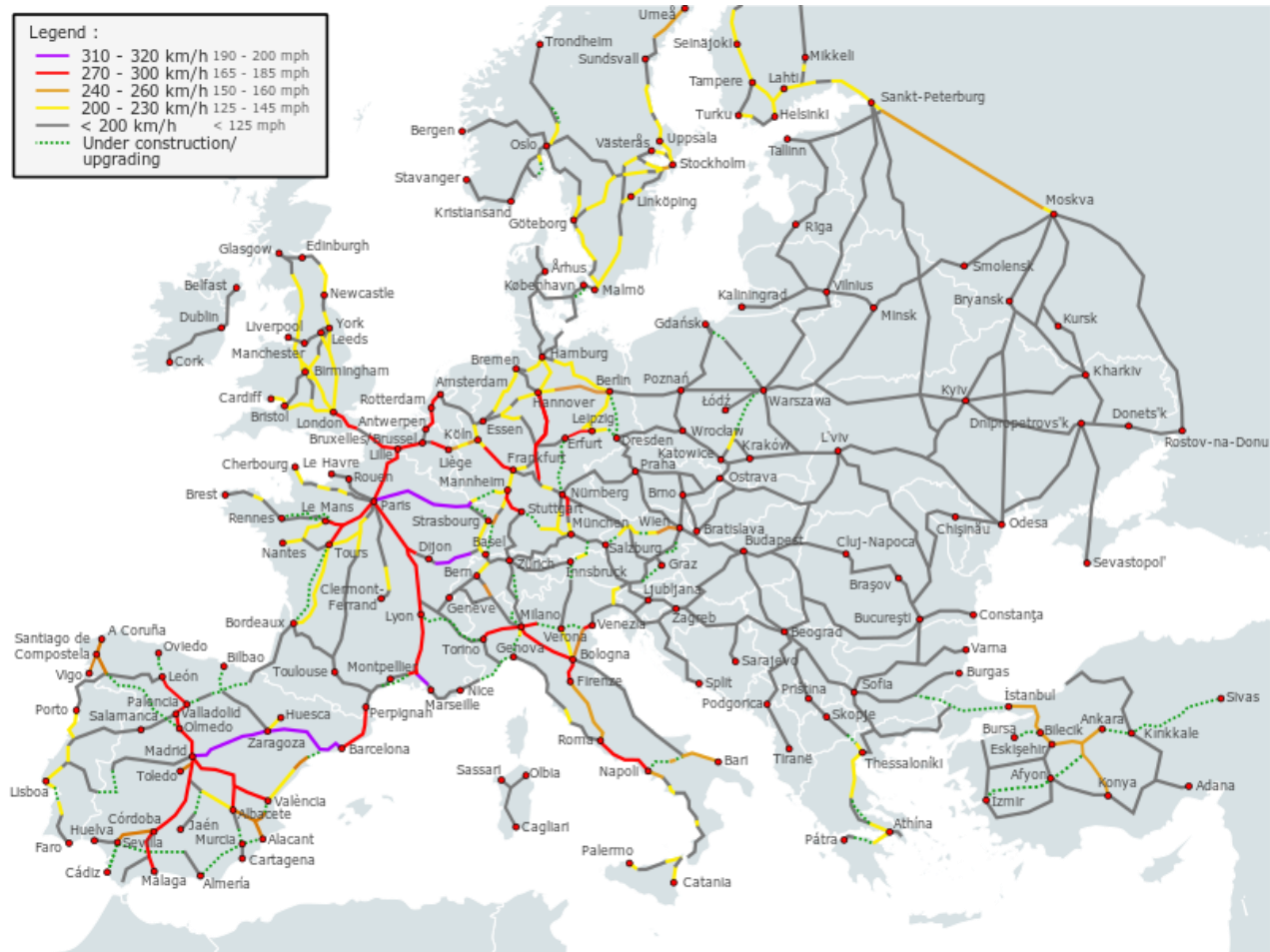
About Me

Semi-retired

Tour Guide
(UK and Europe)

Member of LNWR Society

European Railways

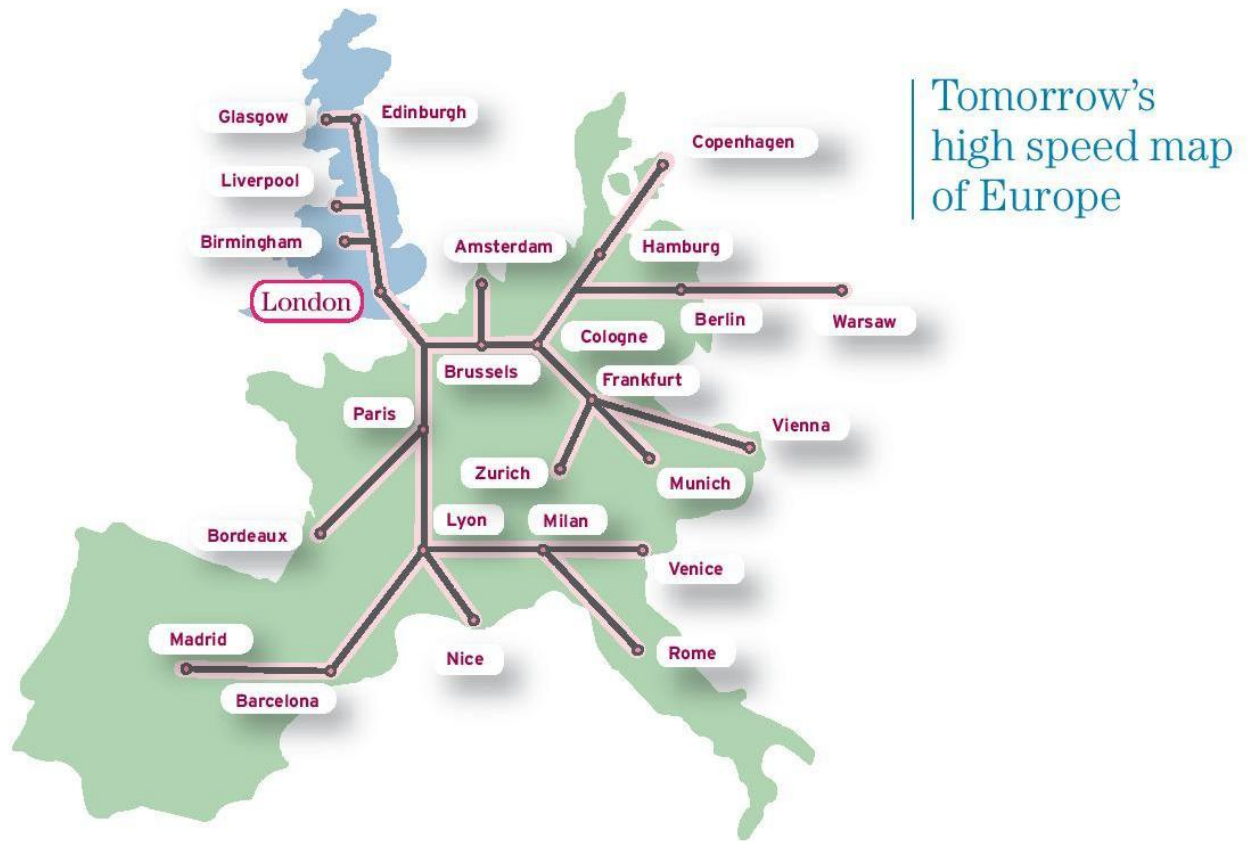


Trans-European Network - Transport (TEN-T)

EU policy aimed at creating a seamless, high-quality, and sustainable multimodal network across Europe:

- Roads
- Railways
- Inland waterways
- Shipping routes

European High-Speed Rail

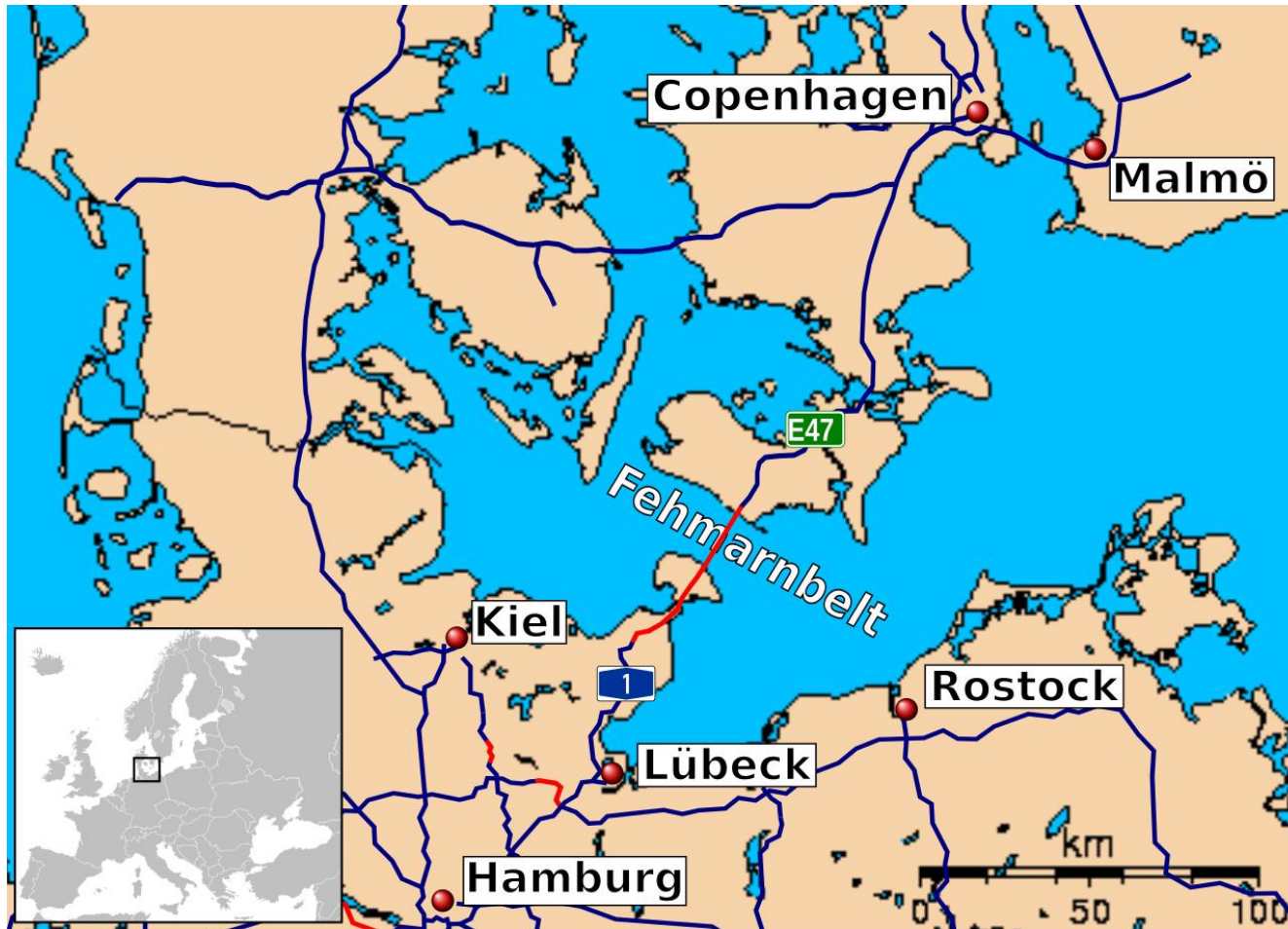


Rail Baltica



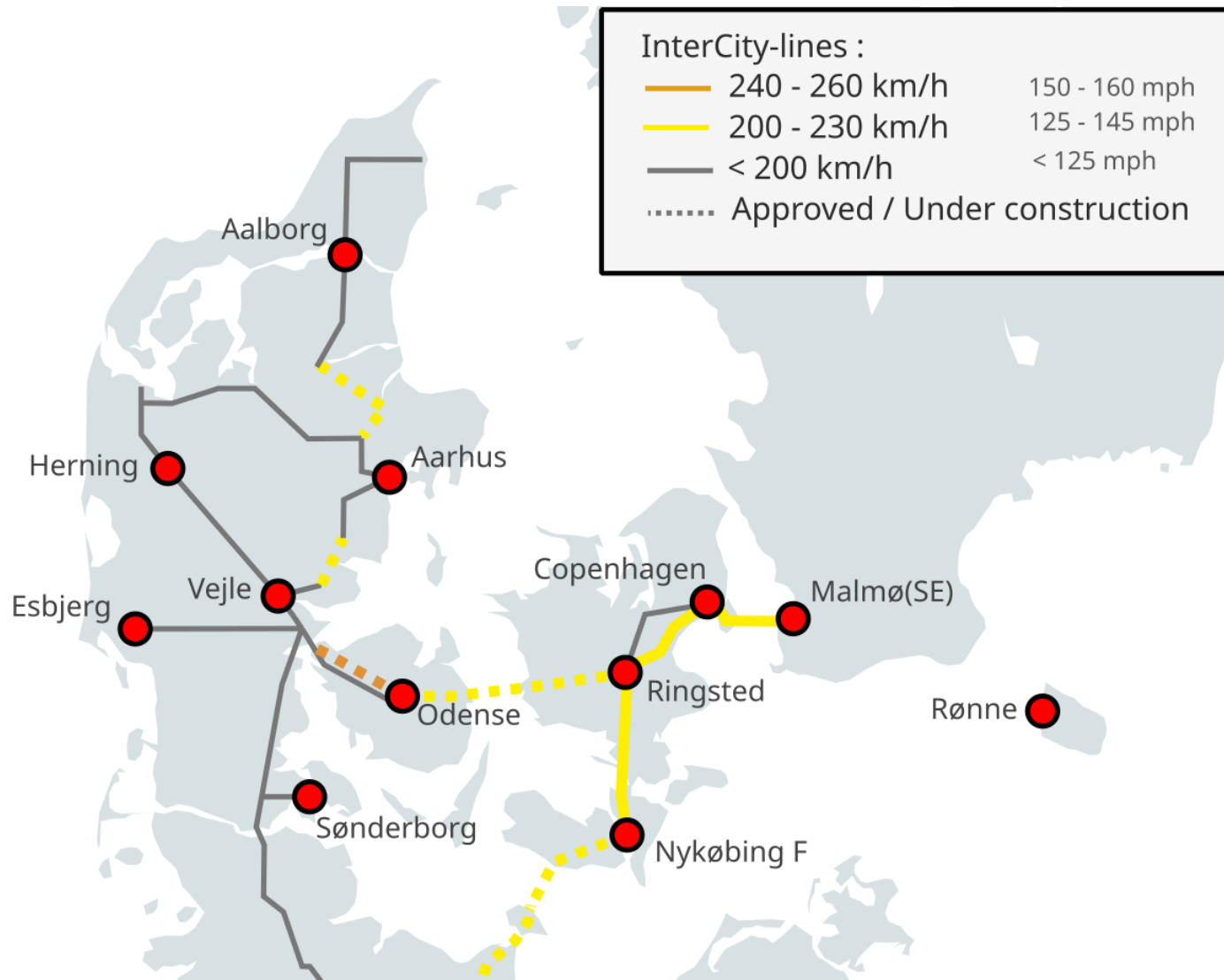
Fehmarn Belt Fixed Link

World's longest **road** and **rail** tunnel
(10.9 miles, 17.6 km)



Fehmarn Belt Fixed Link

Railways



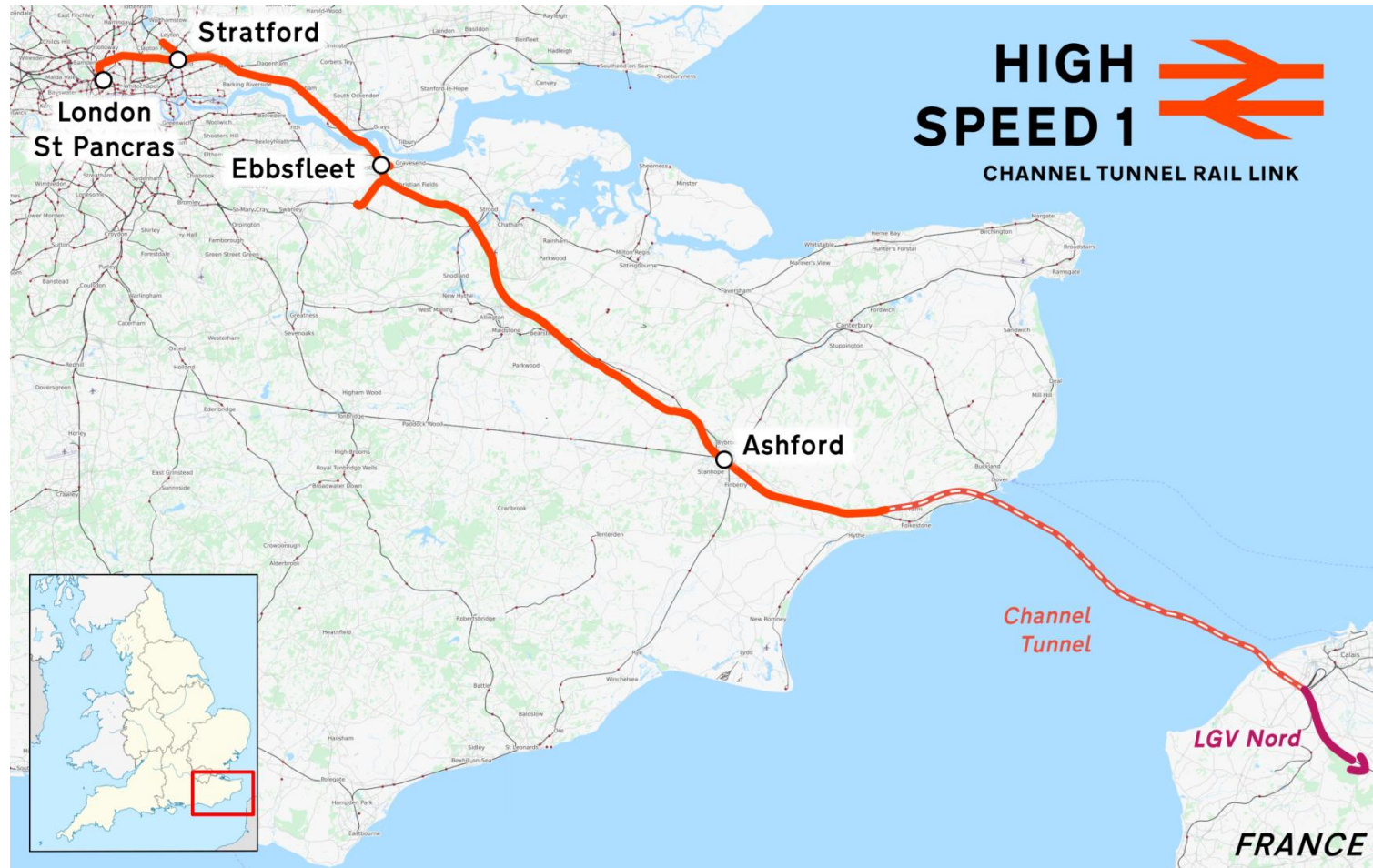
High Speed Rail

Around the World

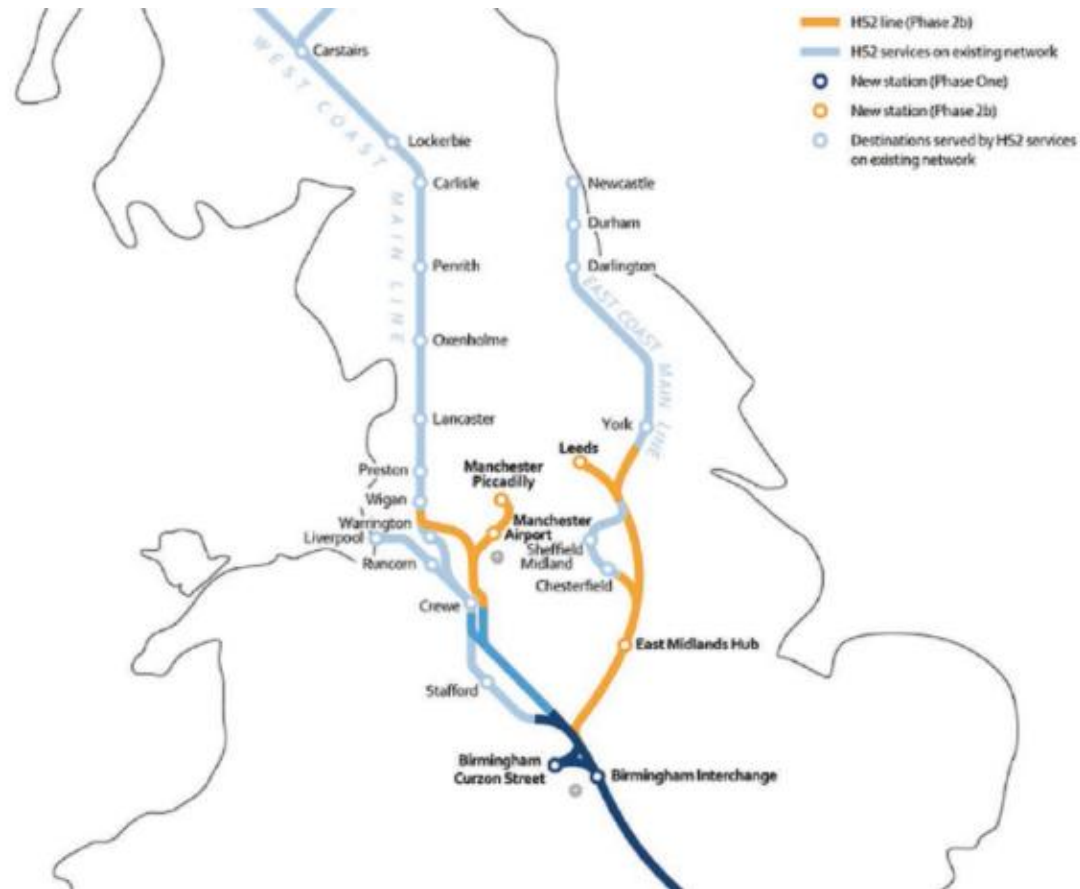
- China 31,300 miles (World leader)
- Spain 2,480 miles (Europe's largest; AVE system)
- Japan 2,280 miles (Shinkansen network, 1964)
- France 2,180 miles (TGV)
- Germany 1,015 miles (ICE trains)
- Turkey 765 miles (rapid expansion)
- Finland 695 miles (including upgraded lines)
- Italy 580 miles (Frecciarossa/Italo)
- Sweden 560 miles
- South Korea 540 miles (KTX)

HS1 (CTRL)

2003 (Section 1, Waterloo); 2007 (Section 2, St Pancras)



HS2 Original Route Map



February 2020

HS2 to go ahead, Boris Johnson tells MPs

Government backs high-speed rail line despite spiralling costs that could top £100bn



■ HS2: Boris Johnson gives go-ahead to high-speed rail project - video

Boris Johnson's cabinet has given its approval for the whole of the HS2 high-speed train line to go ahead, with work expected to start within weeks.

HS2 rail extension to Leeds scrapped amid promise to transform rail

🕒 18 November 2021 · 💬 5461 Comments



Pre-October 2023 Configuration



October 2023

Phase 2 Cancelled

Rishi Sunak announces scaling back of HS2 in Tory conference speech

PM makes expected announcement axing Manchester leg of rail link as he attempts to portray it as positive

- **UK politics live - latest updates**
- **International investors are laughing at the HS2 shambles**
- **Tory mayor Andy Street decides to stay in post**

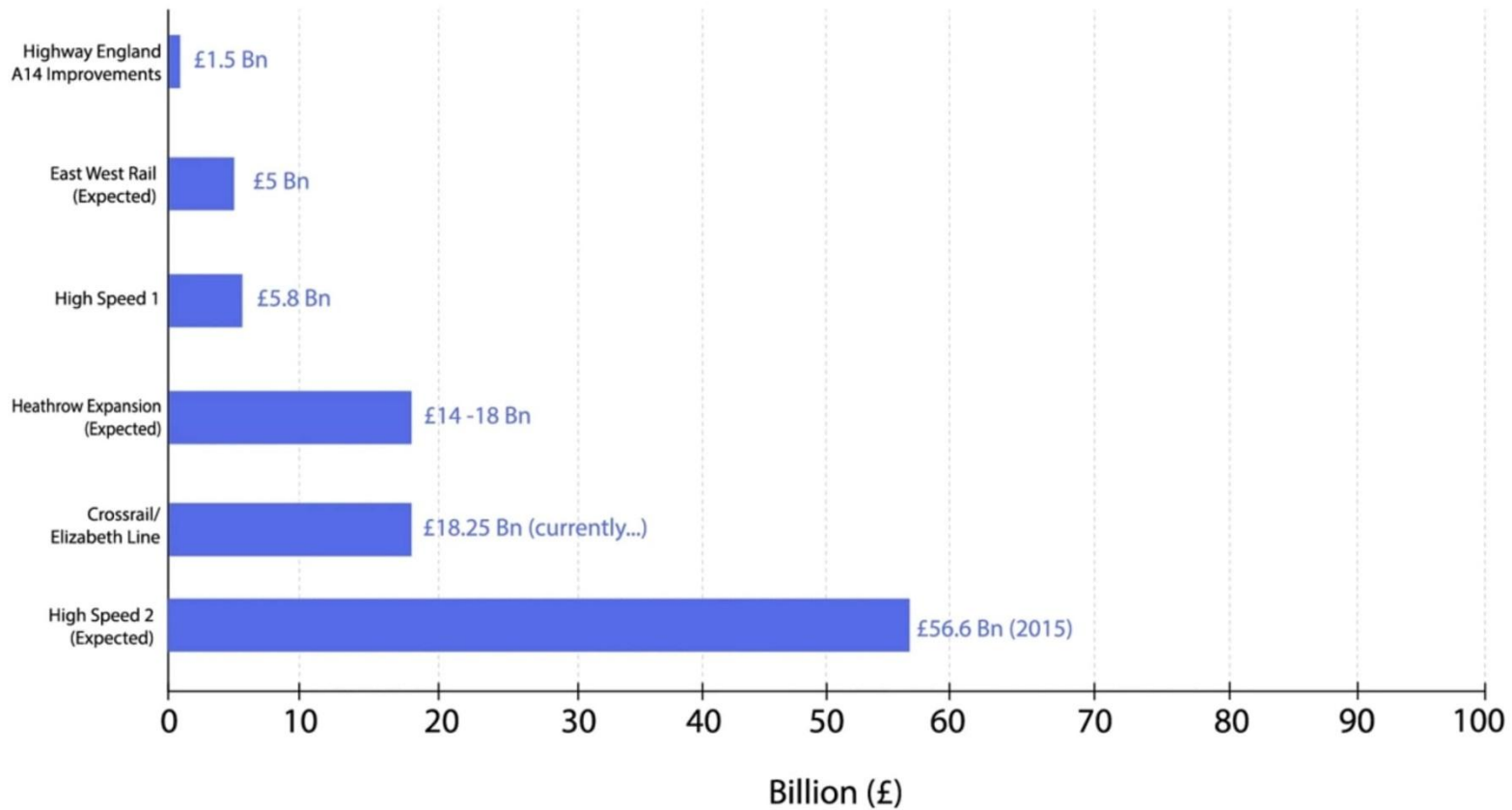


◀ Sunak scraps HS2 Manchester leg and confirms plan to raise legal smoking age – video



Cost

Cost of Major National Projects within the UK



Phases/Dates

2029-2033 ?

- **Phase 1**

London to West Midlands

- joining West Coast Main Line (WCML)

- **Phase 2A**

West Midlands to Crewe

Phases/Dates

2045

Phase 2B

Manchester, the East Midlands and the North

Maximum Speed

- **HS2:** **225** mph (360 km/h)
- **CR400 Fuxing:** **217** mph (350 km/h)
- **HS1/TGV:** **186** mph (300 km/h)
- **Shinkansen:** **177** mph (285 km/h)
- **"Javelin"** commuter services between St Pancras and Dover:
140 mph (225 km/h)
- **Normal rail:** **125** mph (200 km/h)

3 July 1938 Steam speed record: **126** mph (203 km/h)
1 November 1987 Diesel speed record: **148** mph (238 km/h)

Maglev: **268** mph (430 km/h)

Length/Travel Time

- London to West Midlands: 140 miles
- London to Crewe: 170 miles

London to Birmingham

from 1 hour 20 minutes

to 52 minutes

(London to Leeds: 1 hour 28 minutes)

(London to Manchester: 1 hour 8 minutes)

Construction Companies

Joint Ventures

- **Align**

Bouygues, Sir Robert McAlpine,
VolkerFitzpatrick



- **EKFB**

Eiffage, Kier, Ferrovial, BAM Nuttall



- **BBV**

Balfour Beatty Vinci



People (Pre-Election)

- **Mark Harper MP**
 - Secretary of State for Transport
- **Huw Merriman MP**
 - Minister of State for Rail and HS2
- **Mark Thurston**
 - HS2 CEO (until September 2023)

People (Post-Election)

- **Heidi Alexander MP (was Louise Haigh MP)**
 - Secretary of State for Transport
- **Lord Peter Hendy**
 - Minister of State for Rail
- **Mark Wild**
 - HS2 CEO (from December 2024)
 - Former Crossrail chief
 - HS2 'Reset'

Three existing routes

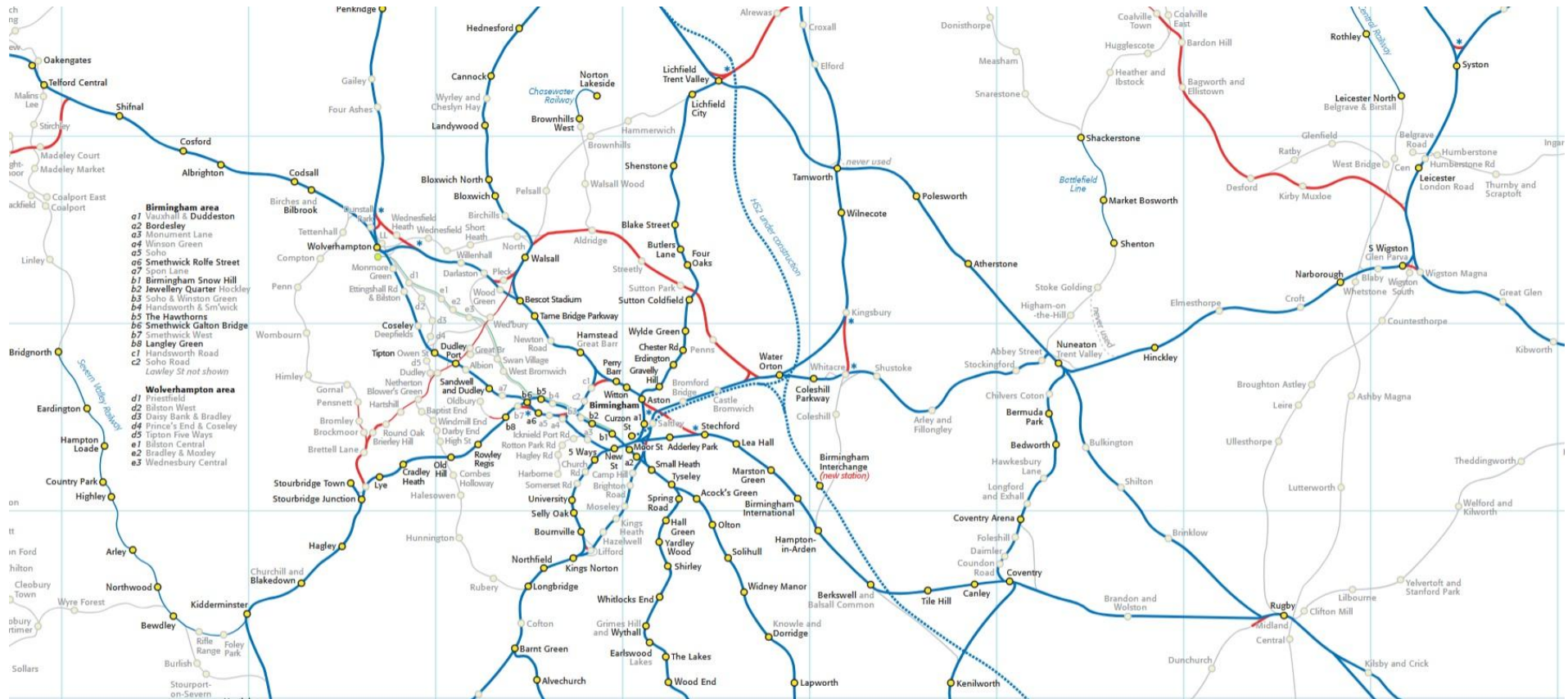
London to Birmingham
(Three different London stations)

1. **Euston** via Rugby and Coventry
to New Street (WCML)
2. **Marylebone** via Bicester/Banbury/Leamington Spa
to Moor Street (Chiltern Railways)
3. **Paddington** via Oxford/Banbury
to Moor Street (Great Western)

*(4. Great Central: Marylebone to
Aylesbury/Rugby/Leicester/Nottingham/Sheffield/Manchester)*

Existing Railways

Birmingham/Midlands



Stations

- 1. Euston (Terminus)
- 2. Old Oak Common - Elizabeth Line & GWML
inc. Heathrow Express
- 3. Birmingham Interchange (Airport)
- 4. Curzon Street, Birmingham Eastside
(Terminus) - 1838, Robert Stephenson

Birmingham

Curzon Street Station (1838)



Birmingham

Curzon Street Station

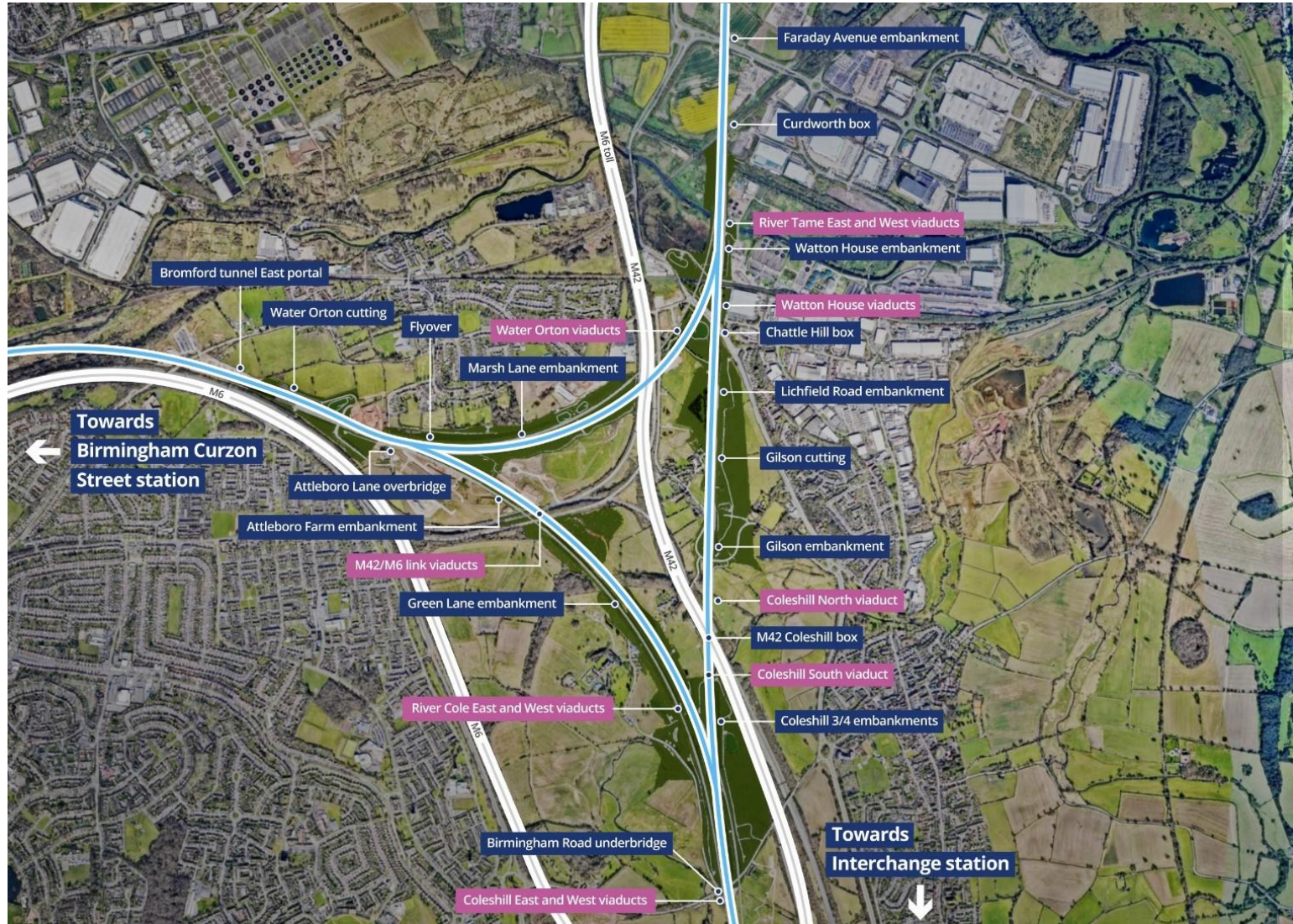


Birmingham

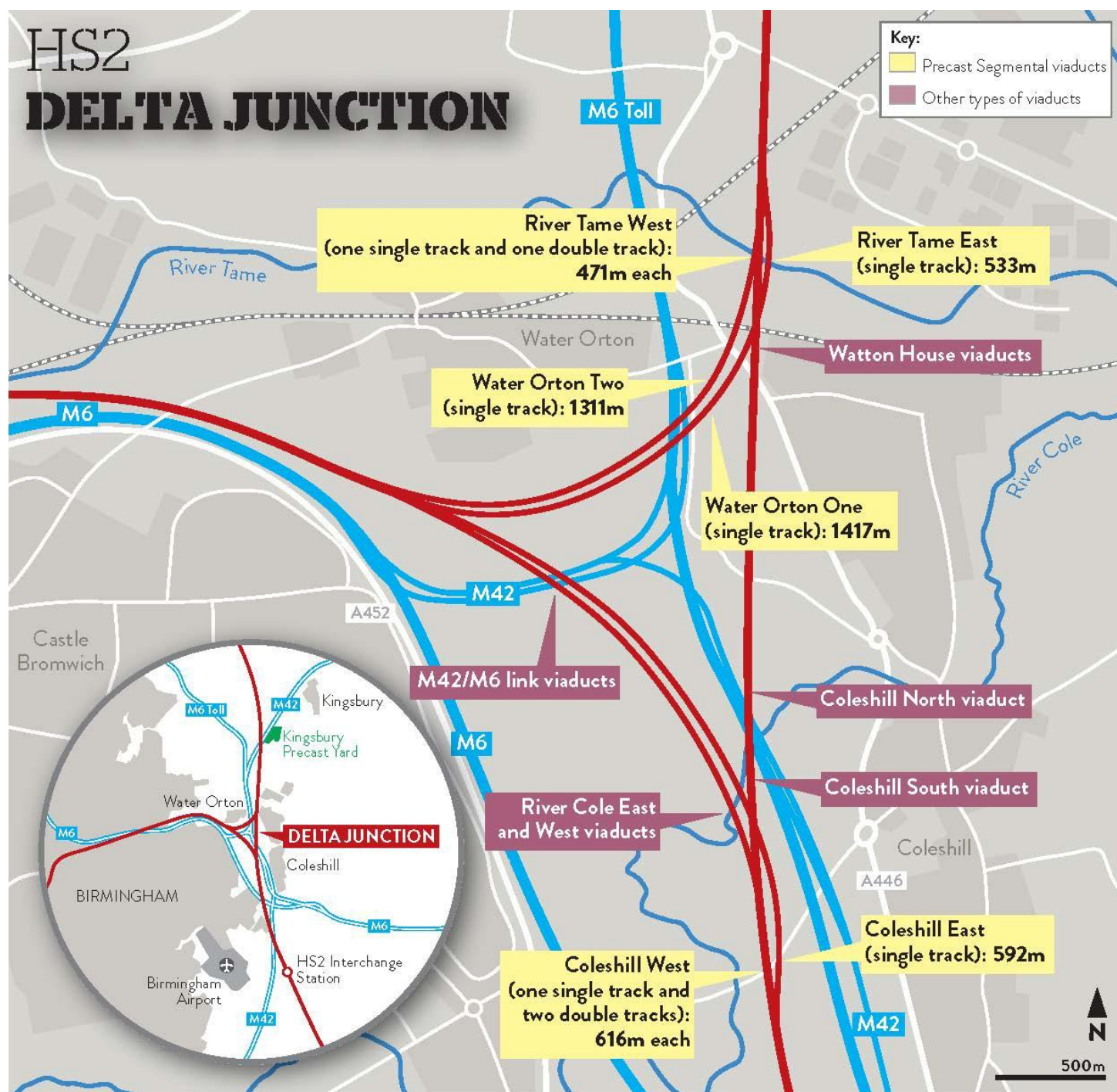
New Street/Moor Street/Snow Hill/Curzon Street



Birmingham 'Delta' Junction

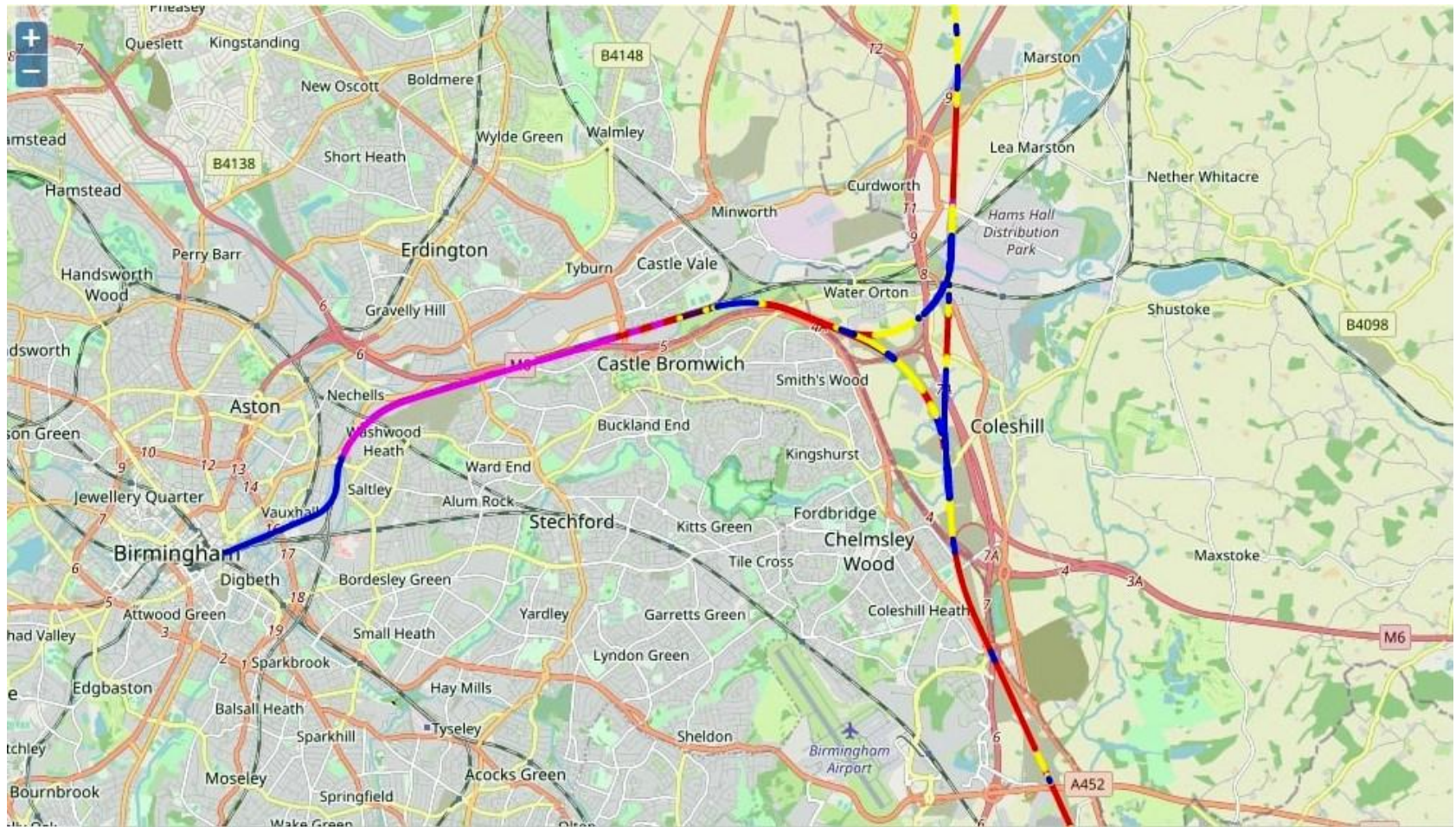


HS2 DELTA JUNCTION



Birmingham 'Delta' Junction

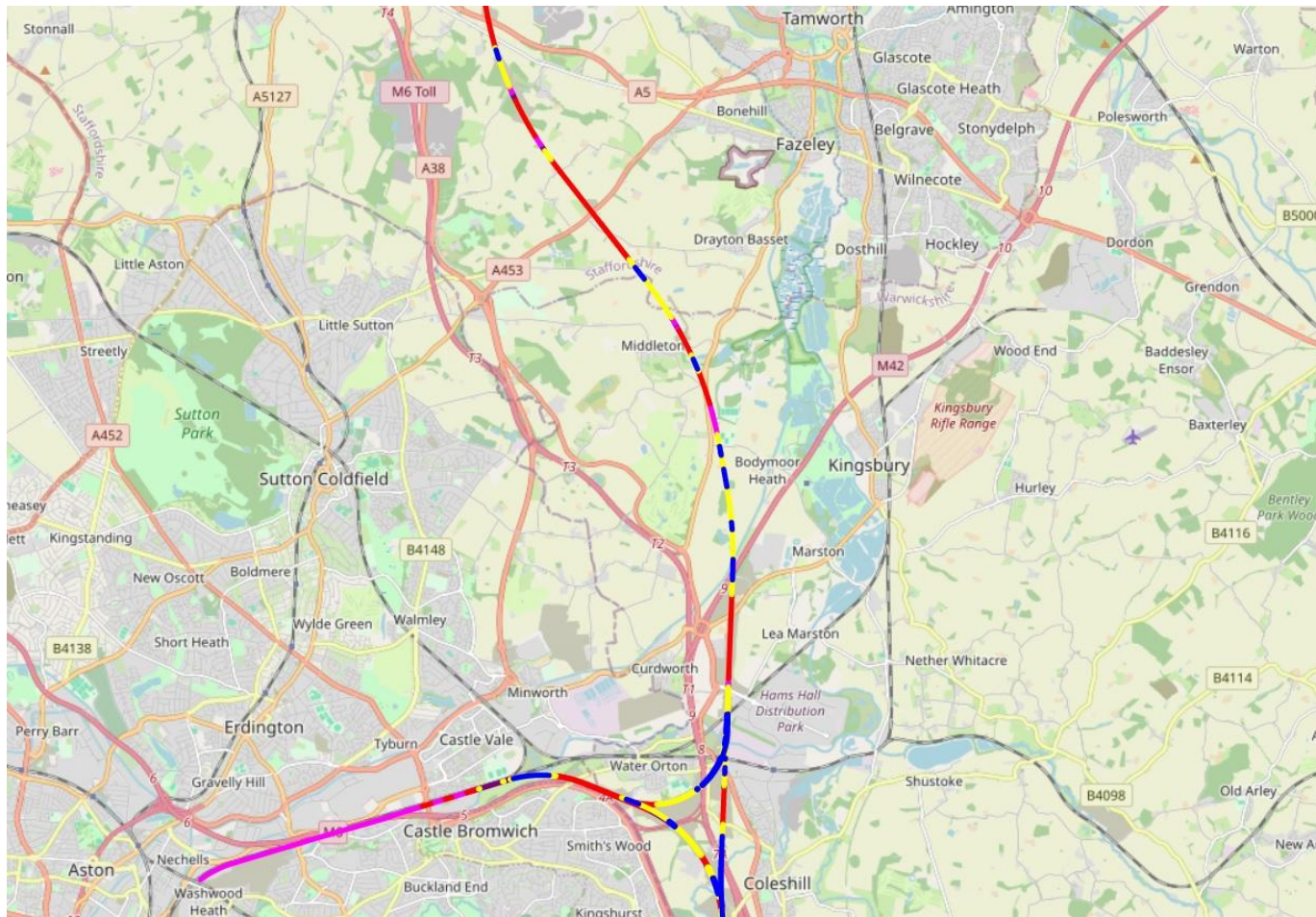
Bromford Tunnel and Washwood Heath





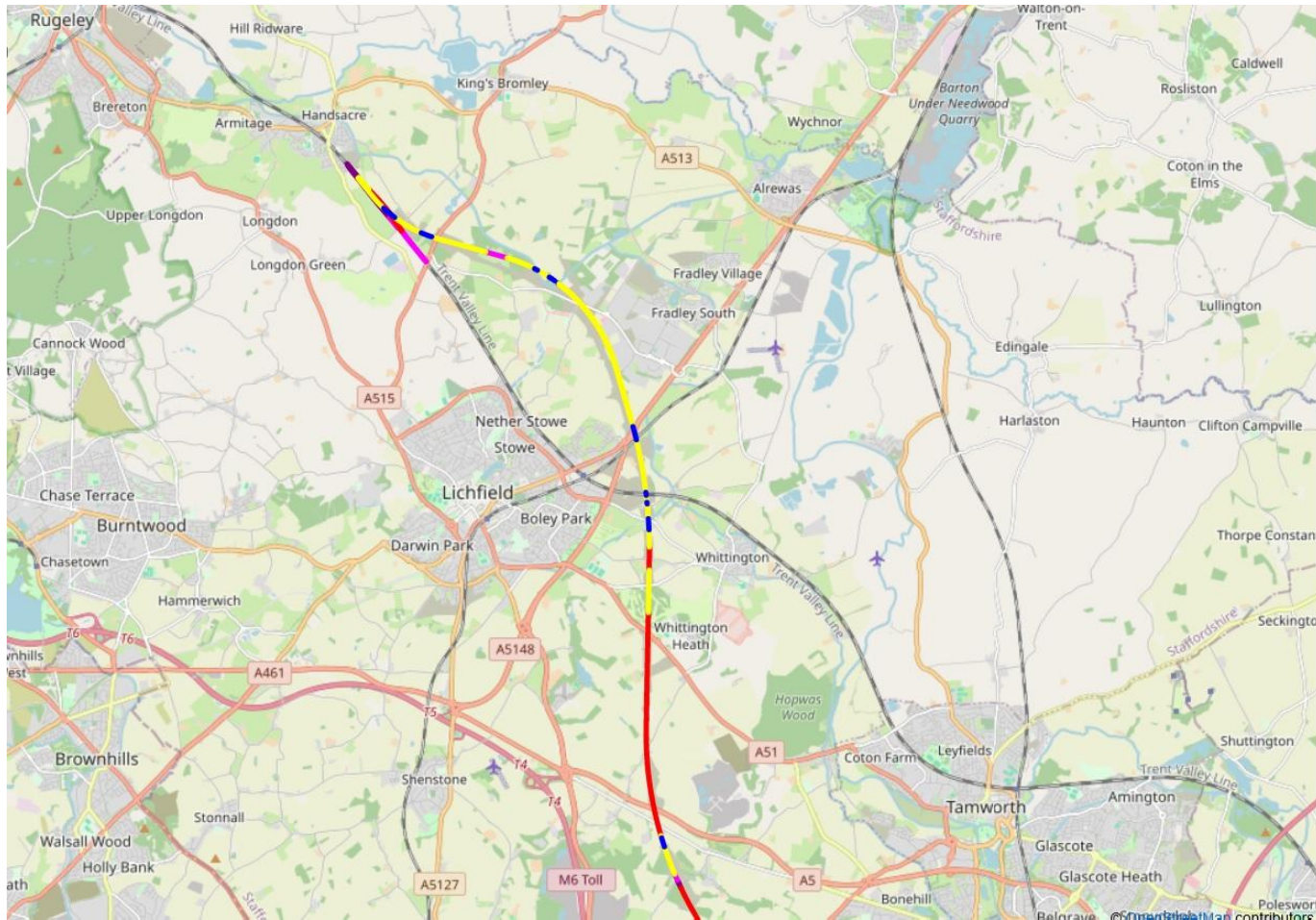
Link to WCML (Trent Valley Line)

Marston 'Junction'



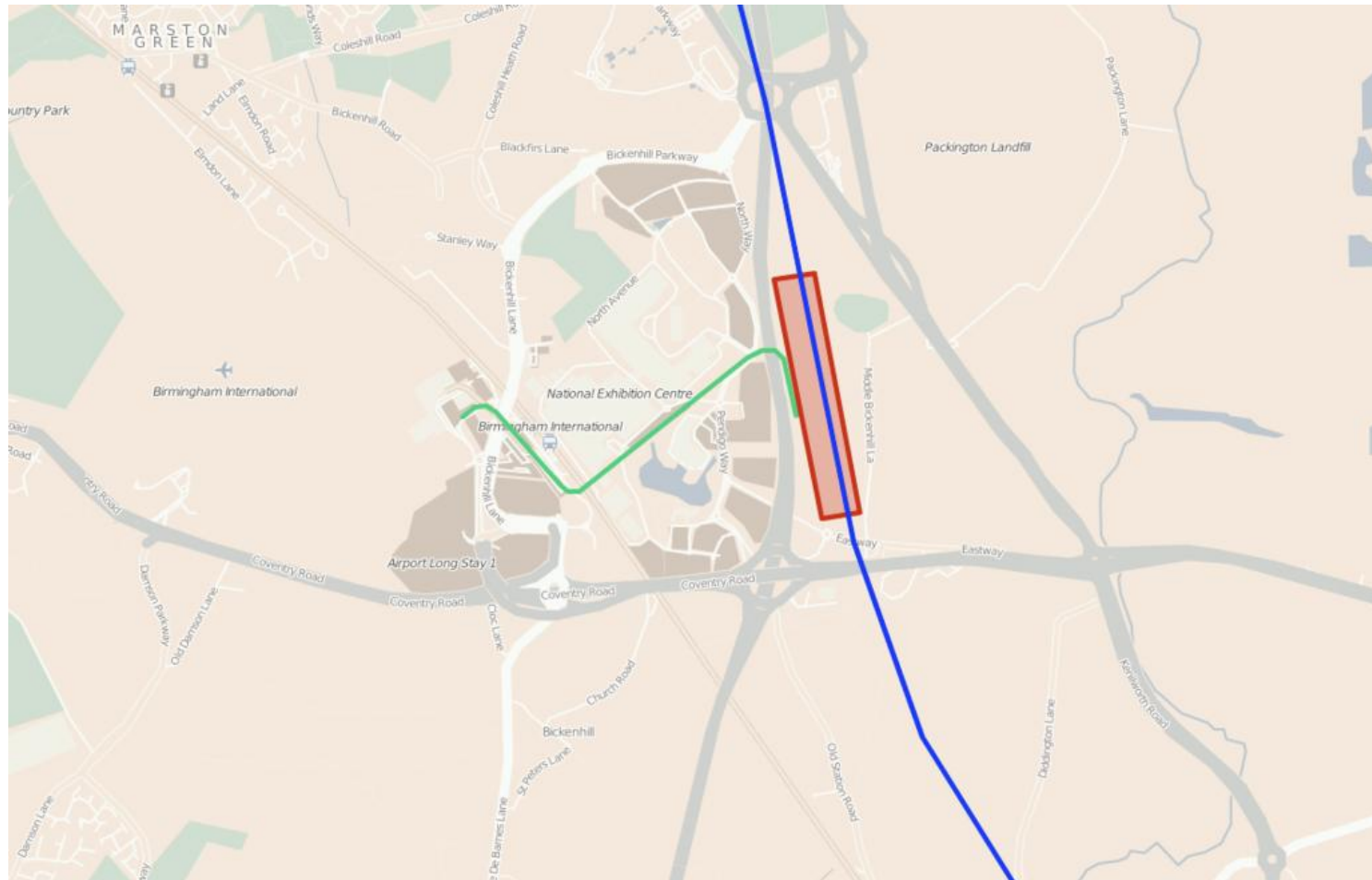
Link to WCML (Trent Valley Line)

Handsacre, Staffordshire



Birmingham Interchange

(Birmingham International/BHX)





Birmingham Interchange Station



Birmingham Interchange
Automatic People Mover (APM)

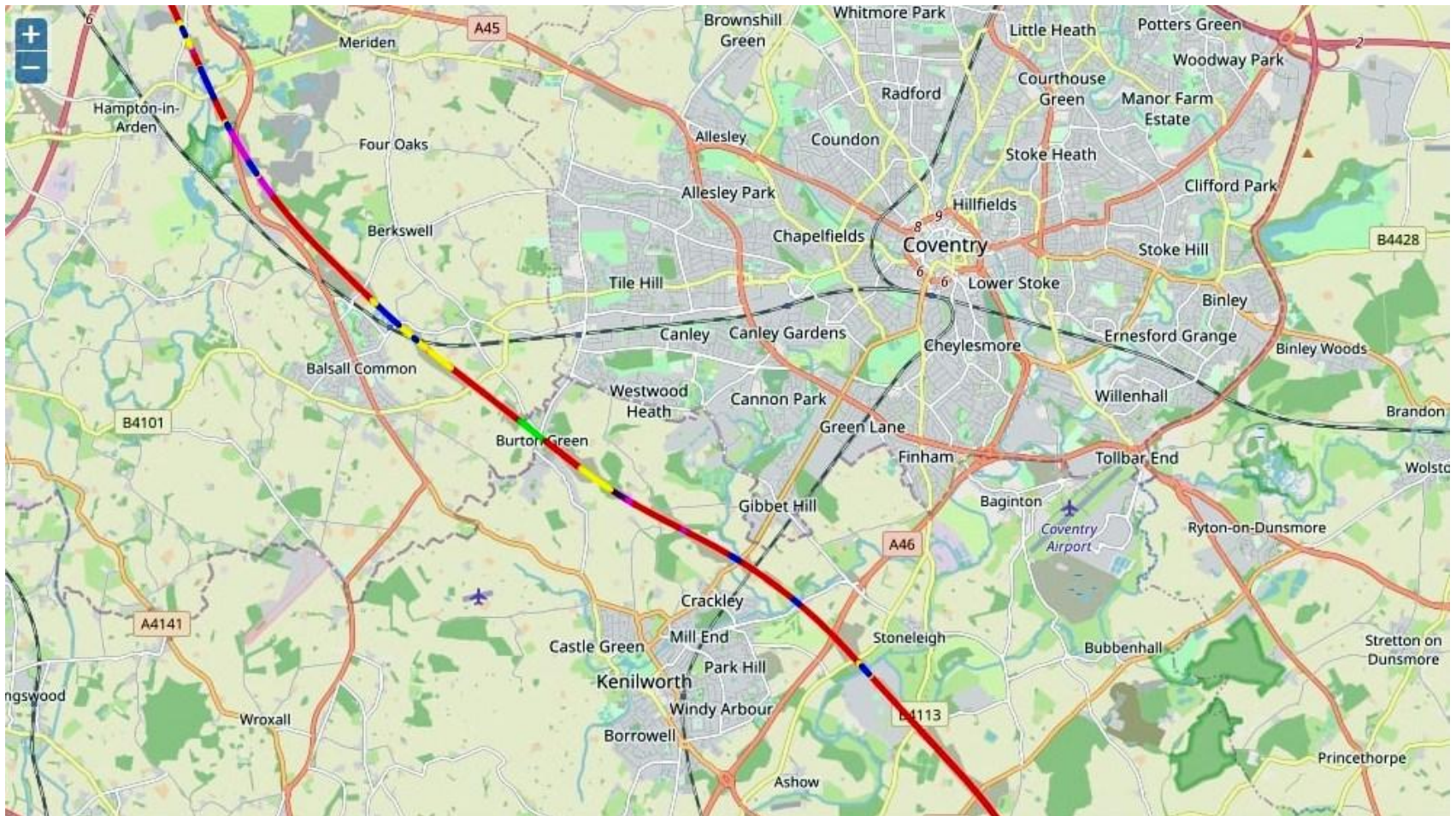
Birmingham Viaduct Push

M6 Motorway



Coventry

Credit: www.thehs2.com



Burton Green 'Green' Tunnel



Burton Green

Broadwells Wood and Crackley



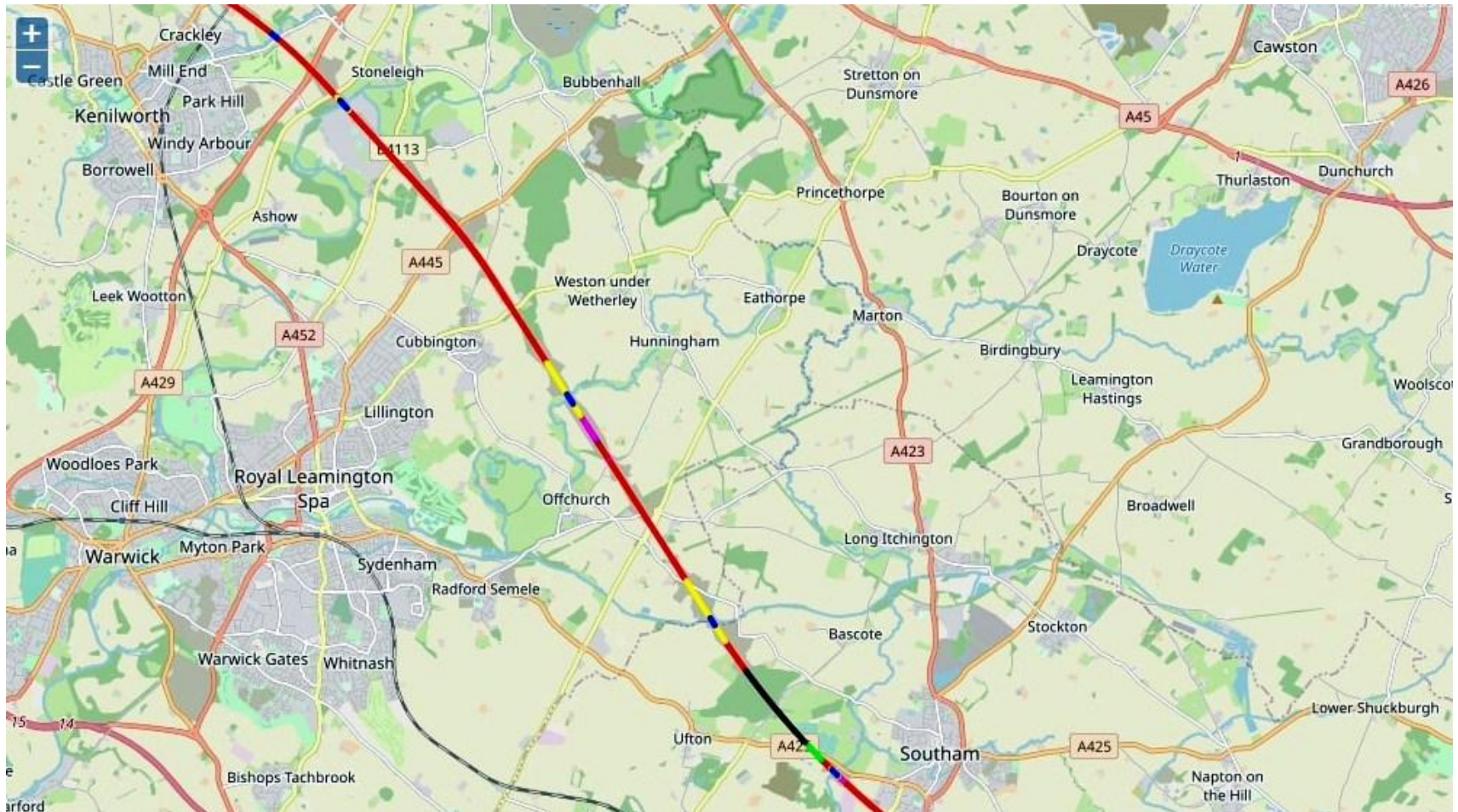
A46 Box Structure

(Stoneleigh/Kenilworth)



Leamington/Southam

Credit: www.thehs2.com



Cubbington Wood

September 2020



Cubbington Wood

January 2021



Maintenance Depots

- **1. Steeple Claydon**
near Calvert, Buckinghamshire
(East West Railway, GC route)
- **2. Washwood Heath**
Birmingham

Rolling Stock

Hitachi and Alstom joint venture



Rolling Stock

Joint venture (50/50):

- **Hitachi Rail**
 - Newton Aycliffe
- **Alstom** (previously Bombardier)
 - Derby and Crewe

Number of units under construction: 54

In service: 2029-2033

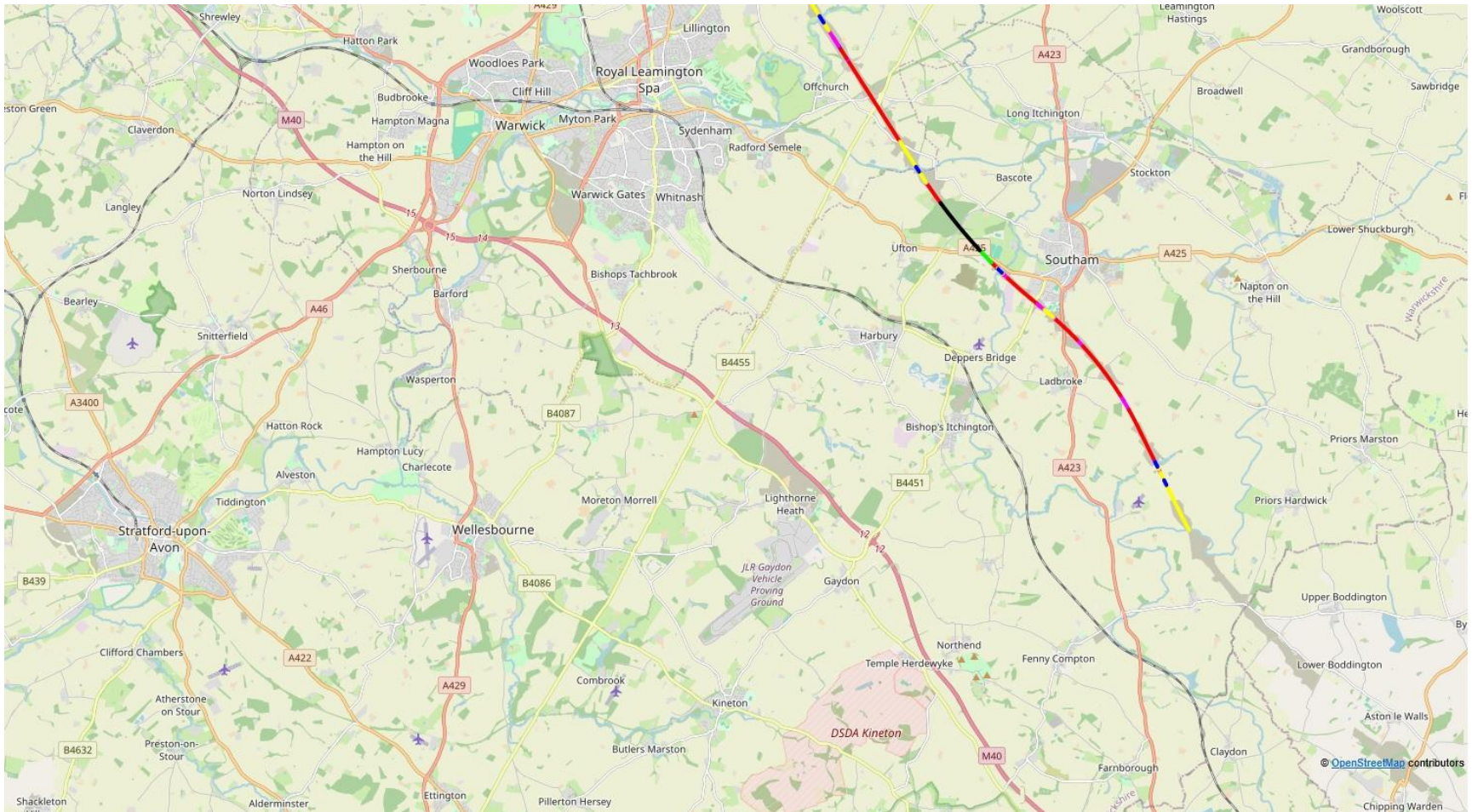
Tunnels

Total: 62 miles

- Euston to Old Oak Common: 4.5 miles (7.2km)
- Old Oak Common to West Ruislip: 8.4 miles (13.5km)
- Copthall 'Green Tunnel': ½ mile (880m)
- **M25 to Great Missenden** (Chilterns): **10 miles** (16km)
TBM: 45mm per minute 15 metres per day, 24 hours per day
- Wendover 'Green Tunnel': 1 mile (1.6km)
- **Greatworth 'Green Tunnel': 1.6 miles** (2.6km)
- Chipping Warden 'Green Tunnel': 1.5 miles (2.4km)
- Long Itchington Wood Tunnel : 1 mile (1.6km)
- Burton Green 'Green Tunnel': ¼ mile (400 metres)
- Bromford Tunnel (Birmingham): 3.5 miles (5.6km)

Southam

Offchurch/Long Itchington/Priors Hardwick



Long Itchington Wood

North Portal



Dallas Burston Polo Club

Near Southam

HS2 Construction - Southam, Warwickshire - 2021-09-18



Warwickshire and Northamptonshire



Chipping Warden 'Green' Tunnel



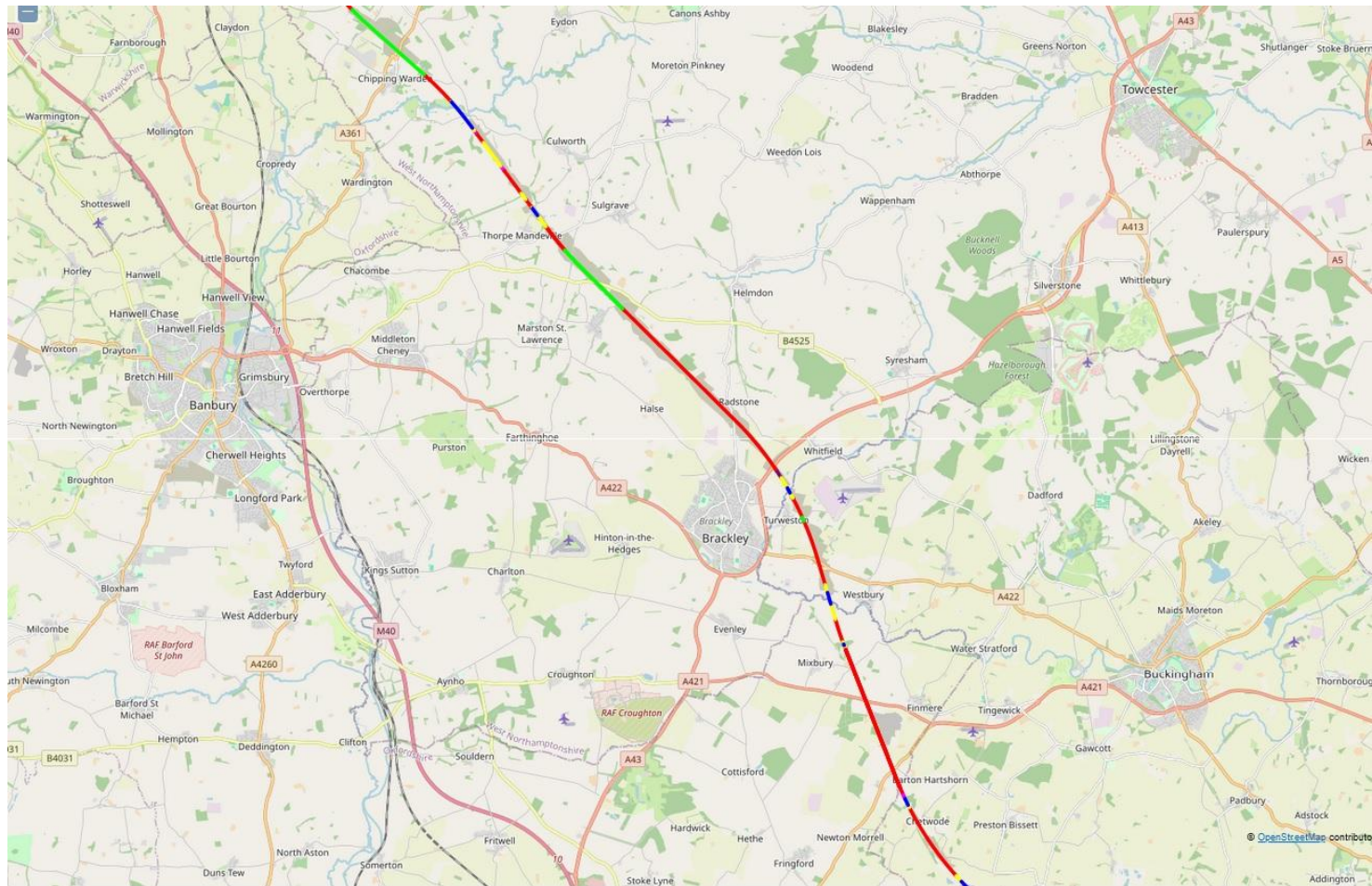
Greatworth 'Green' Tunnel

Longest Green Tunnel: 1.6 miles (2.6km)



Brackley

Chipping Warden and Greatworth



Sheephouse Wood Bat 'Tunnel'

900m long



Where is the Bat Structure?

Will it be visible?

The Sheephouse Wood Bat Structure is located in an area known for its important bat habitats.

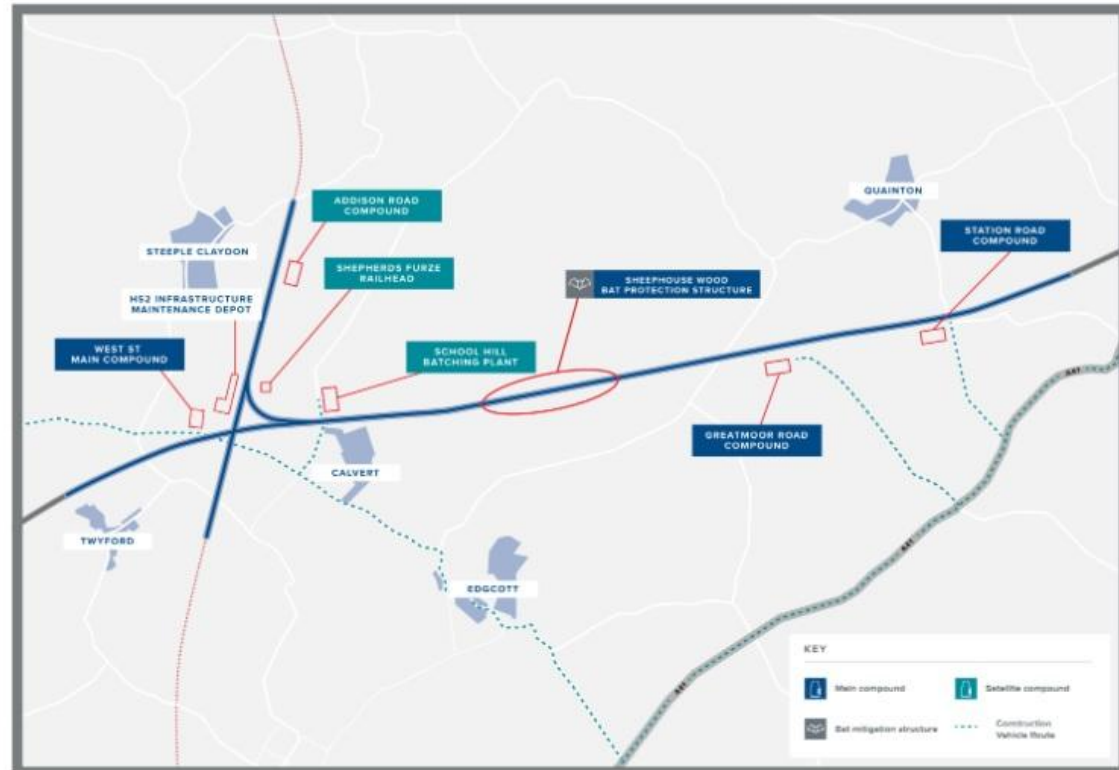
As part of the HS2 Green corridor strategy, we are committed to protecting habitats and species along the railway line.

It is also screened by trees and hedgerows along its length.

The map shows the HS2 trace in blue, where it will sit alongside the woodland as it runs northeast of Calvert.

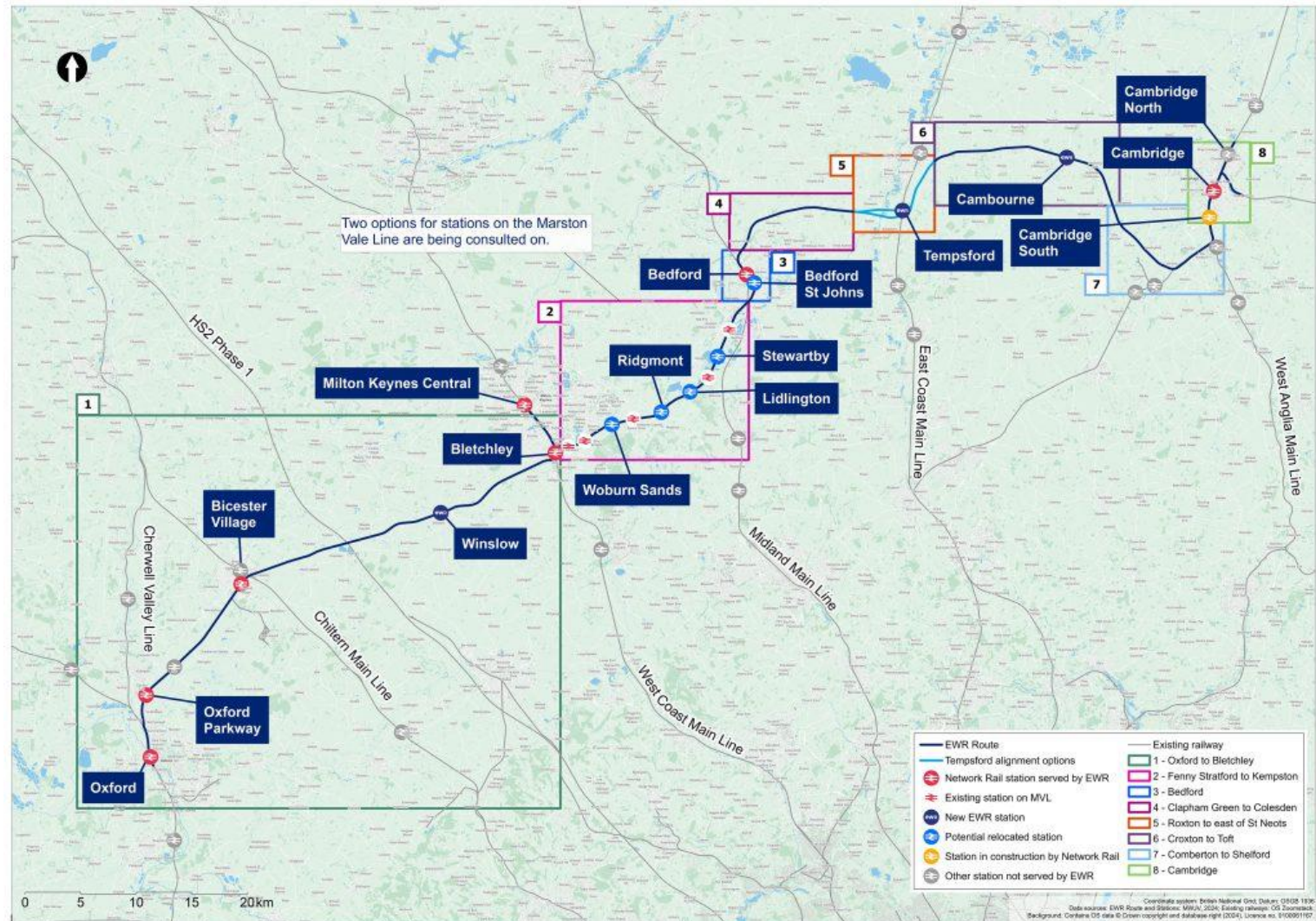
The red circle is the span of the structure.

The blue lines show the line of the trace



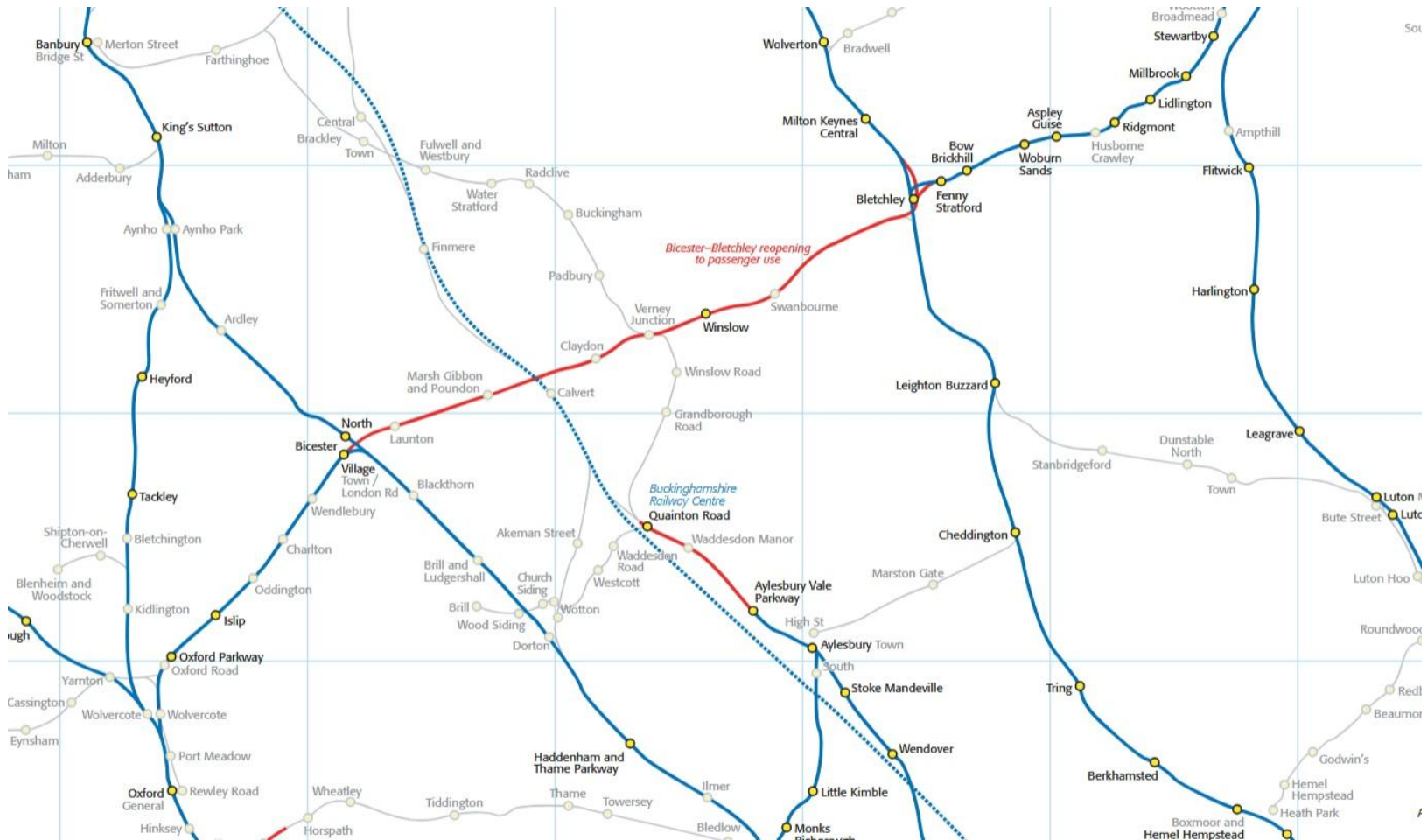
The red circle above shows the Bat Structure locations with Calvert located to the North West

East West Rail (EWR)



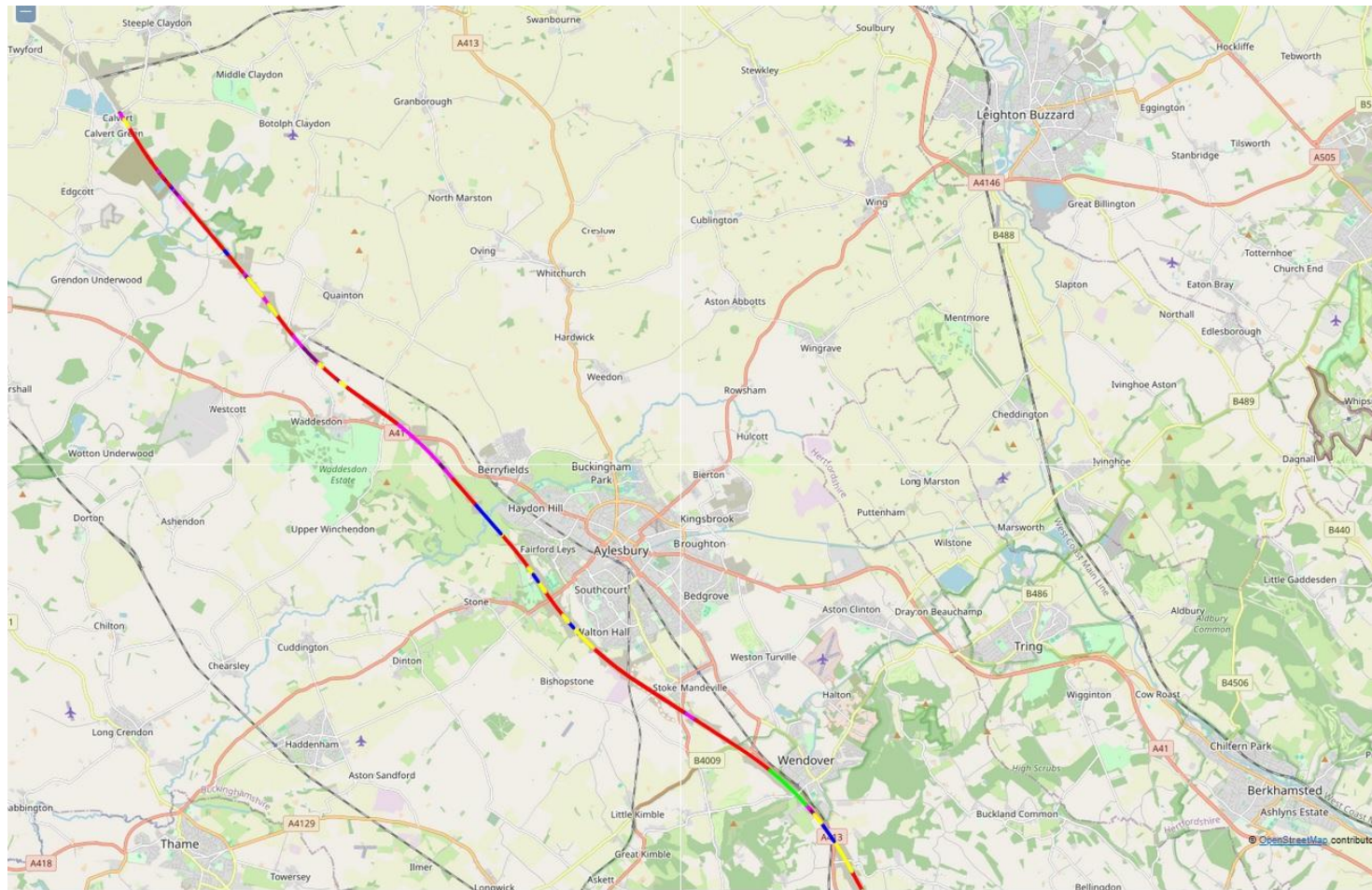
Great Central (GCR) Section of HS2

South of Woodford Halse



Aylesbury

Calvert/Quainton/Stoke Mandeville/Wendover



Wendover 'Green' Tunnel

(Chiltern Line to Aylesbury)



Wendover Viaducts



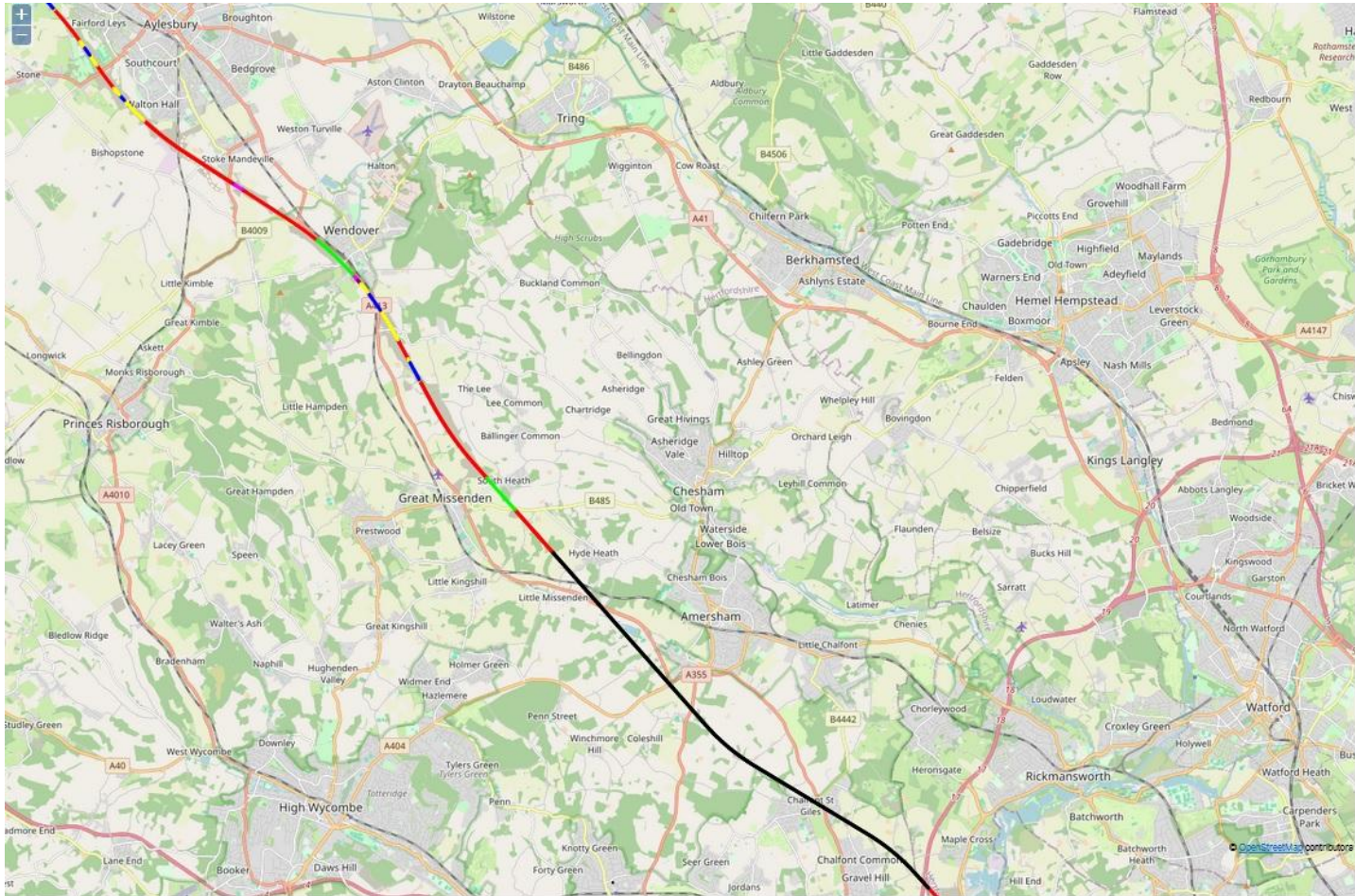


Wendover Dean Viaduct



Great Missenden

Wendover/Small Dean/Chiltern Hills



Chilterns Tunnel

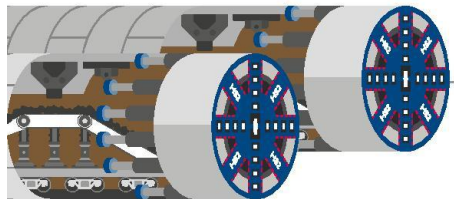


HS2 tunnels: Buckinghamshire

Over 20 miles of tunnelling under the Chilterns

HS2

Key	
Tunnel boring machine (TBM) direction	←
Green tunnel	==
Tunnel start/end point	}[



Twin-bore tunnel

2 TBMs will bore a combined length of 20 miles, creating 10 miles of twin-bore tunnel



Green tunnel

0.9 miles of green tunnel will be blended into the landscape

Aylesbury

Wendover tunnel

0.9 mile green tunnel

Chilterns tunnel

From Chalfont Lane to South Heath

2 TBMs tunnelling 10 miles each

Amersham

High Wycombe

M40

M25

Watford

Find out more at hs2.org.uk

Great Missenden

South Heath/Chiltern Hills AONB

HS2 Construction - Chiltern Tunnel North Portal - South Heath, near Great Missenden - 2023-03-02



Chiltern Tunnel North Portal

‘Porous portals’, designed to eliminate a sonic boom

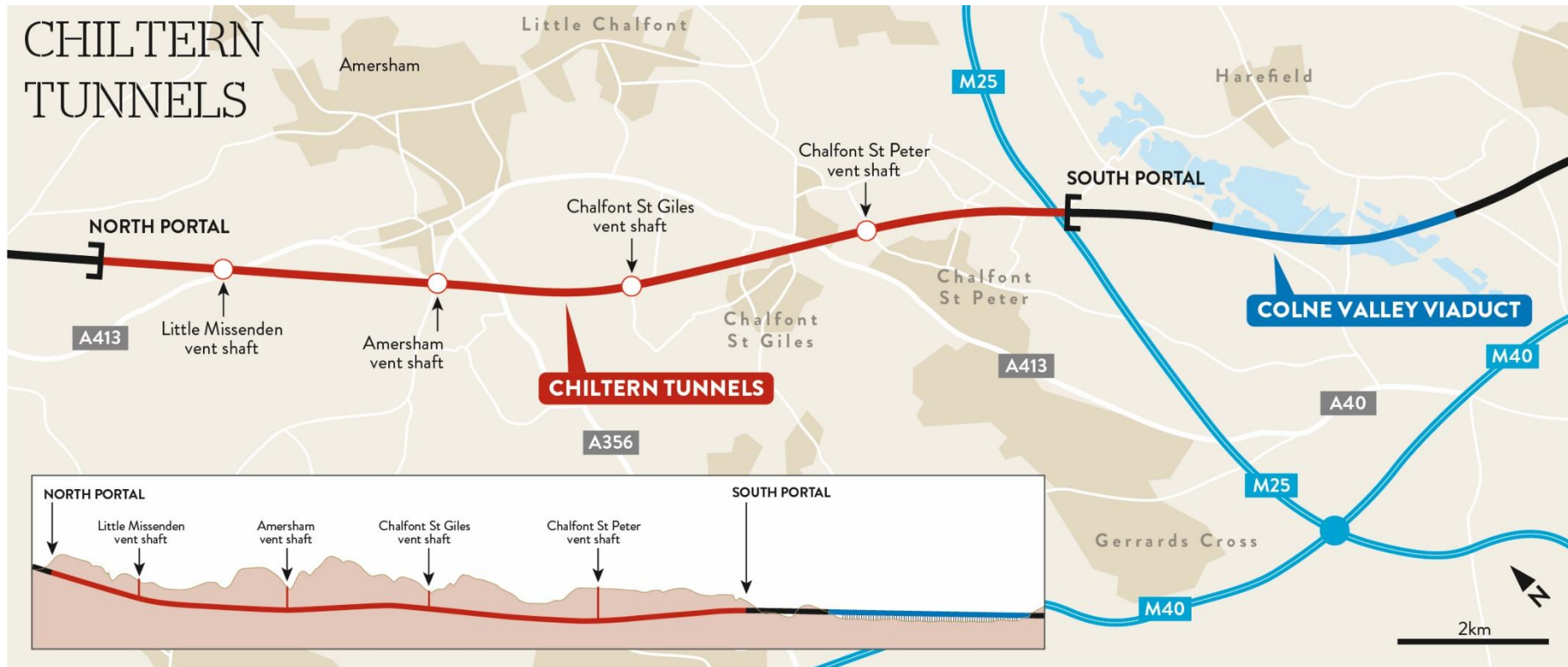


Chiltern Tunnel South Portal (M25)



Chiltern Tunnel

Cross Section



Chiltern Tunnel Ventilation Shafts

- Chalfont St Peter
- Chalfont St Giles
- Amersham
- Little Missenden

Depths of up to 78 metres (255 ft)

Shaft diameters around 18 metres (60ft)

Headhouses resemble small barns or sheds

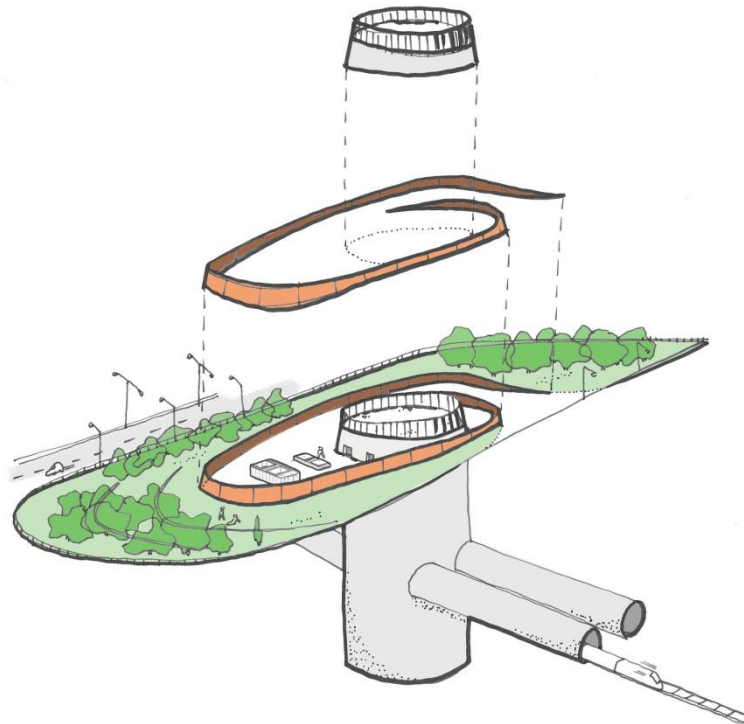
Chalfont St Giles Ventilation Shaft



Amersham Ventilation Shaft



Amersham Vent Shaft

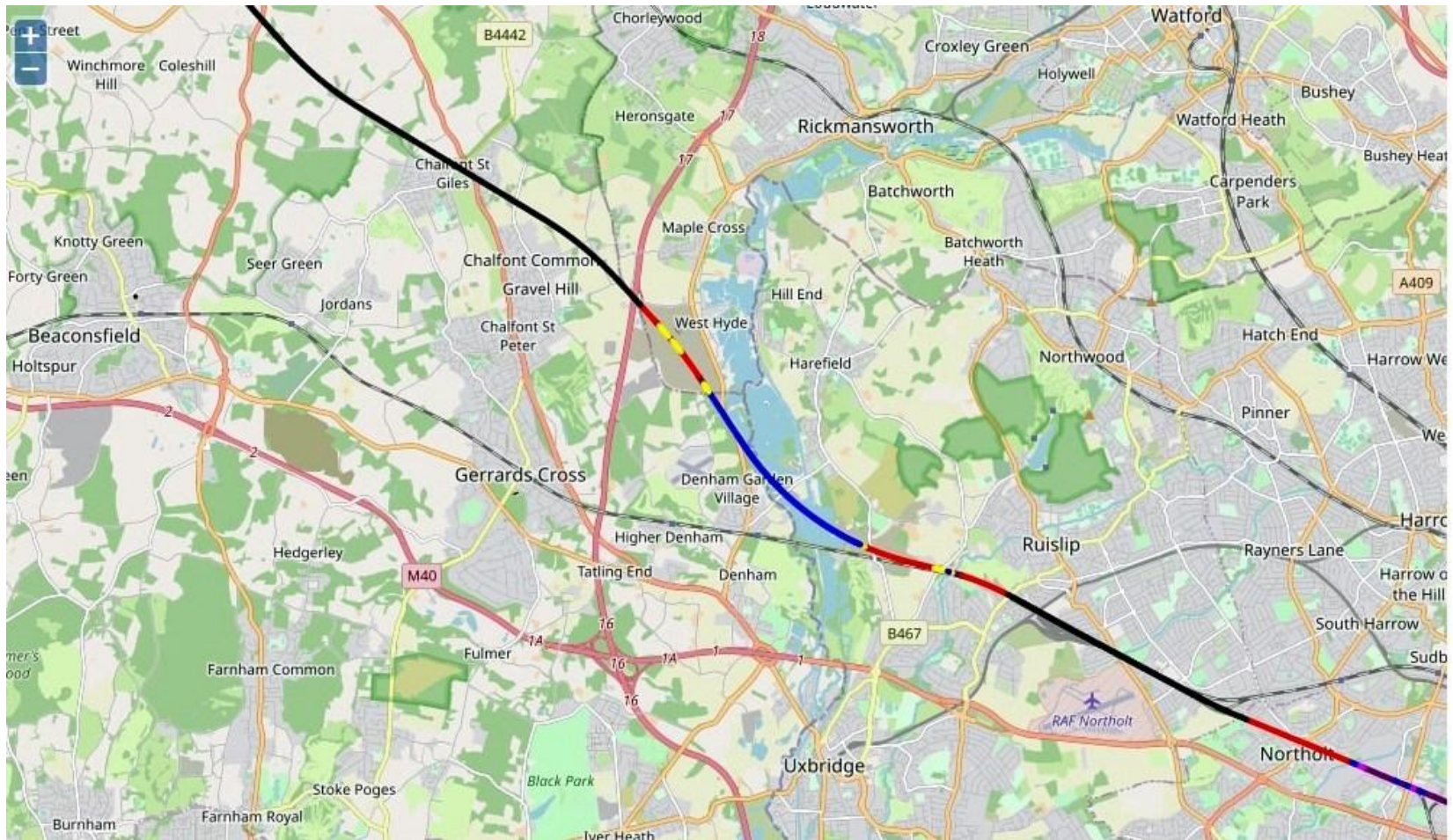


Bridges and Viaducts

- More than 500 bridges
- Over 50 viaducts : 9 miles; 15km
- UK's longest viaduct (Colne Valley)
2.1 miles; 3.38km
cf. 'new' Tay Bridge (2 miles; 3.29km, 1887)

Colne Valley

Chalfonts/Ruislip/Northolt



Colne Valley Viaduct

(Artist's Impression)





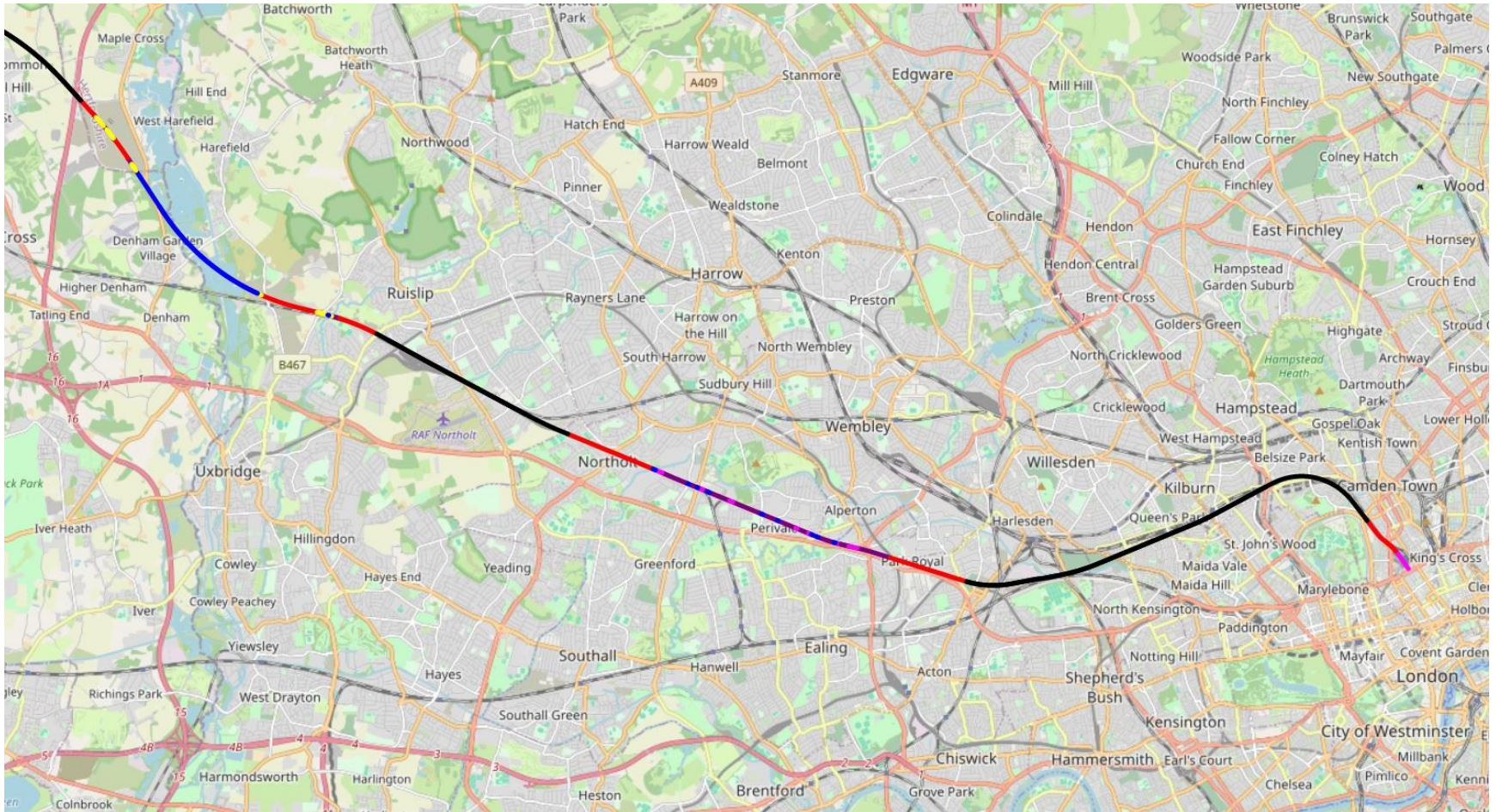
Colne Valley Viaduct

56 Concrete Piers



London Area

Credit: www.thehs2.com



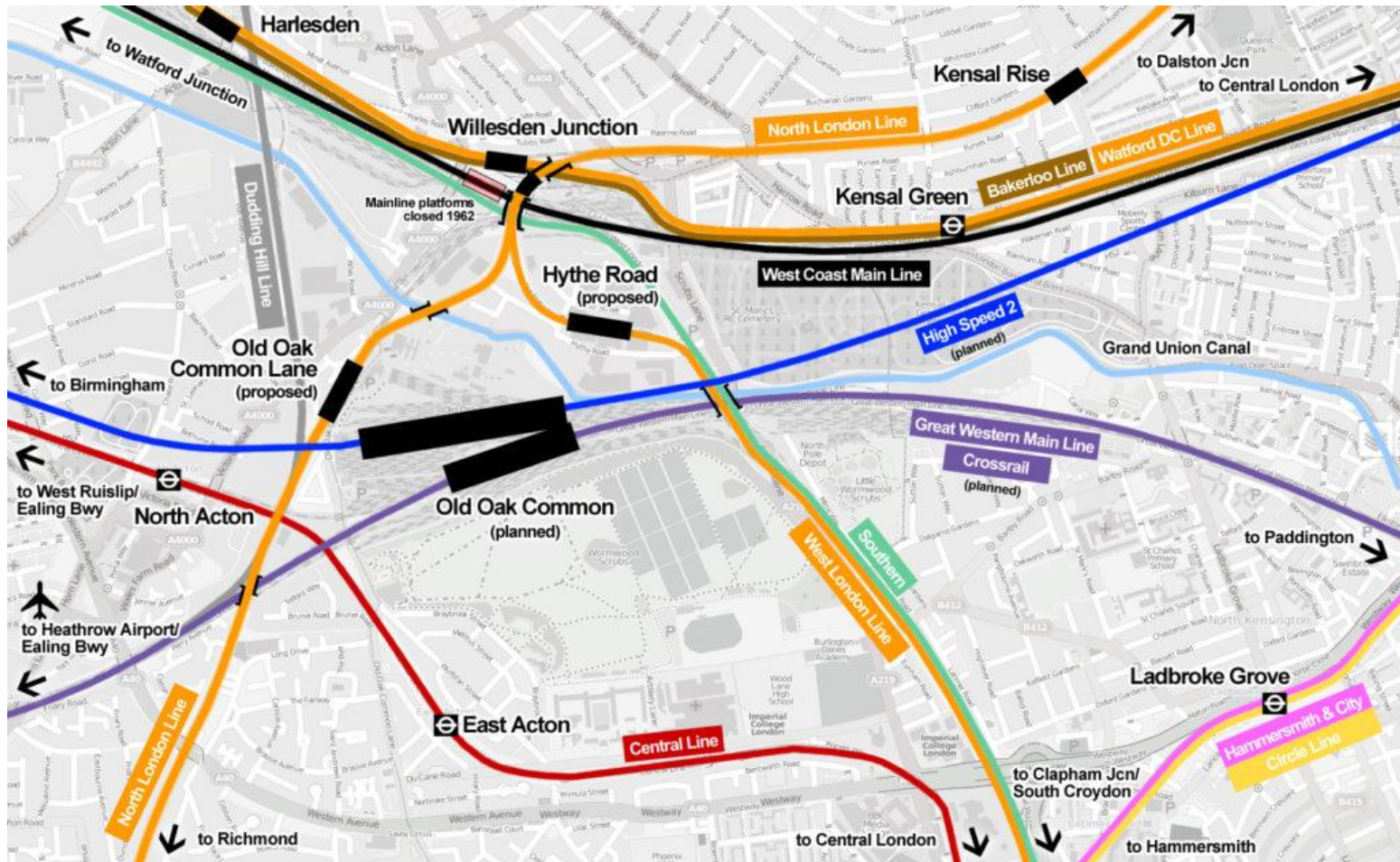
Copthall 'Green' Tunnel



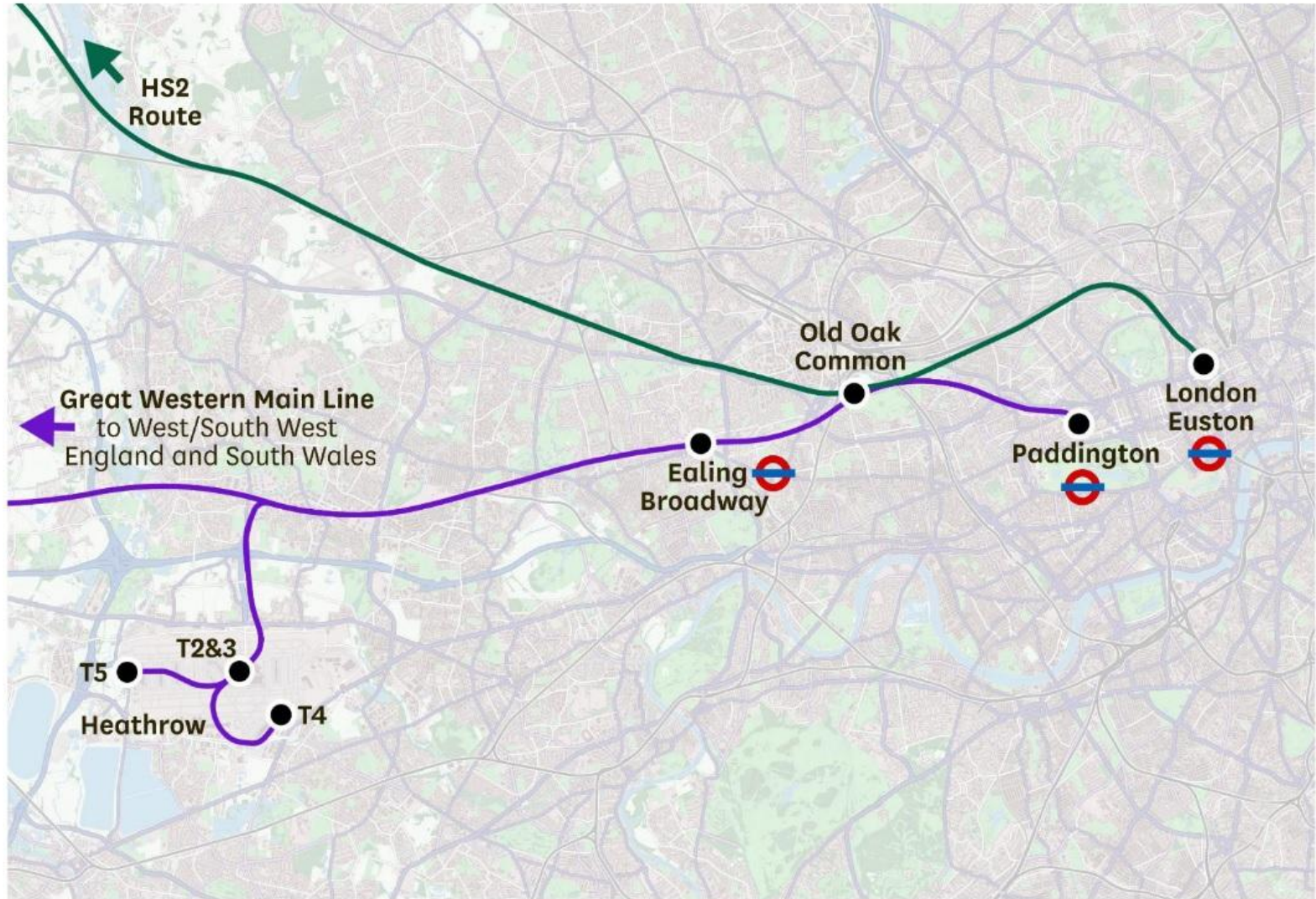
London Area



Old Oak Common Interchange Station (Hub)



HS2 route and Great Western Main Line/ Elizabeth Line.



Map: House of Commons Library. Contains Ordnance Survey data © Crown copyright and database rights [2024] OS [AC0000813358]. Contains data © OpenStreetMap contributors.

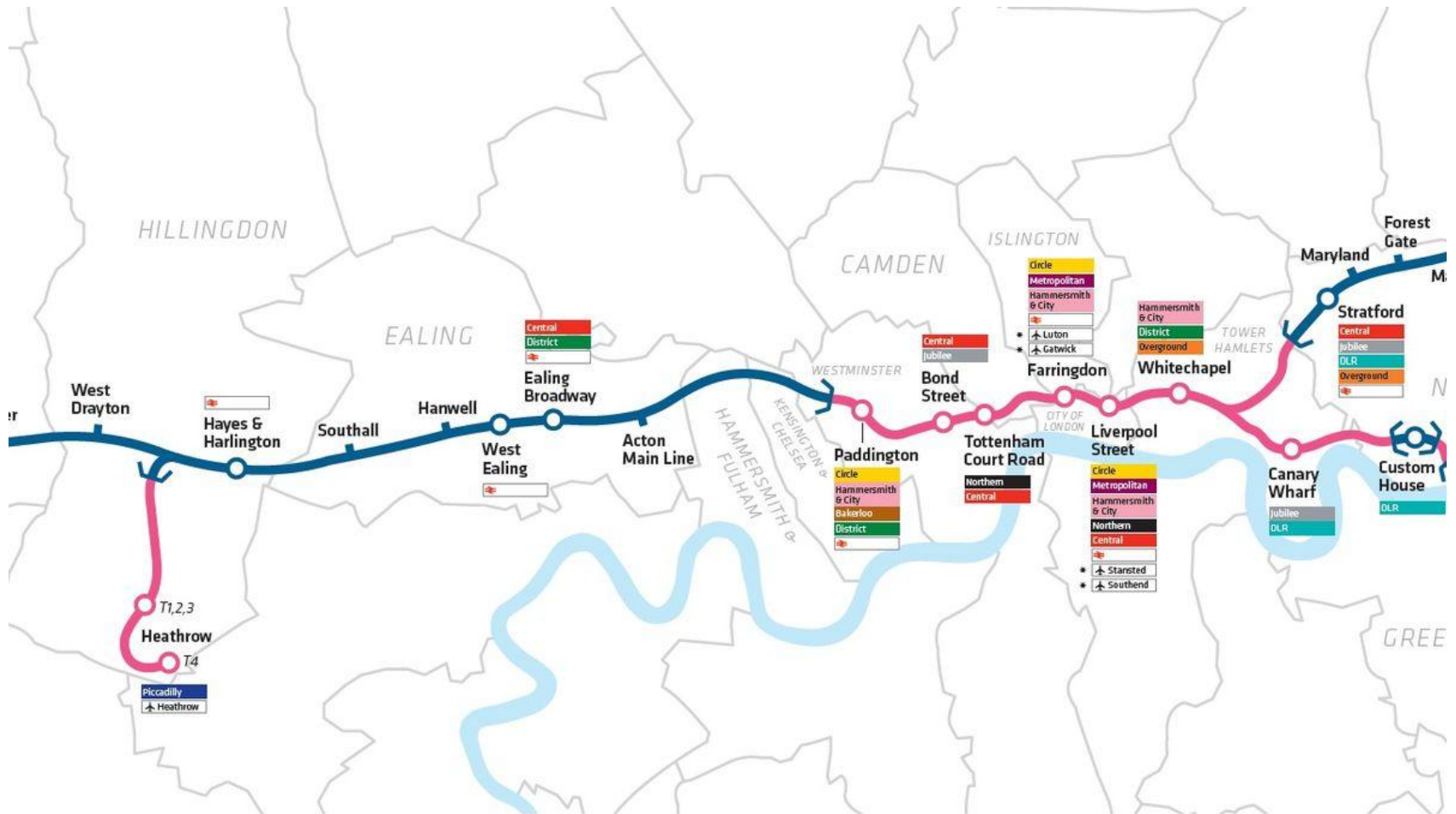
Old Oak Common (OOC)



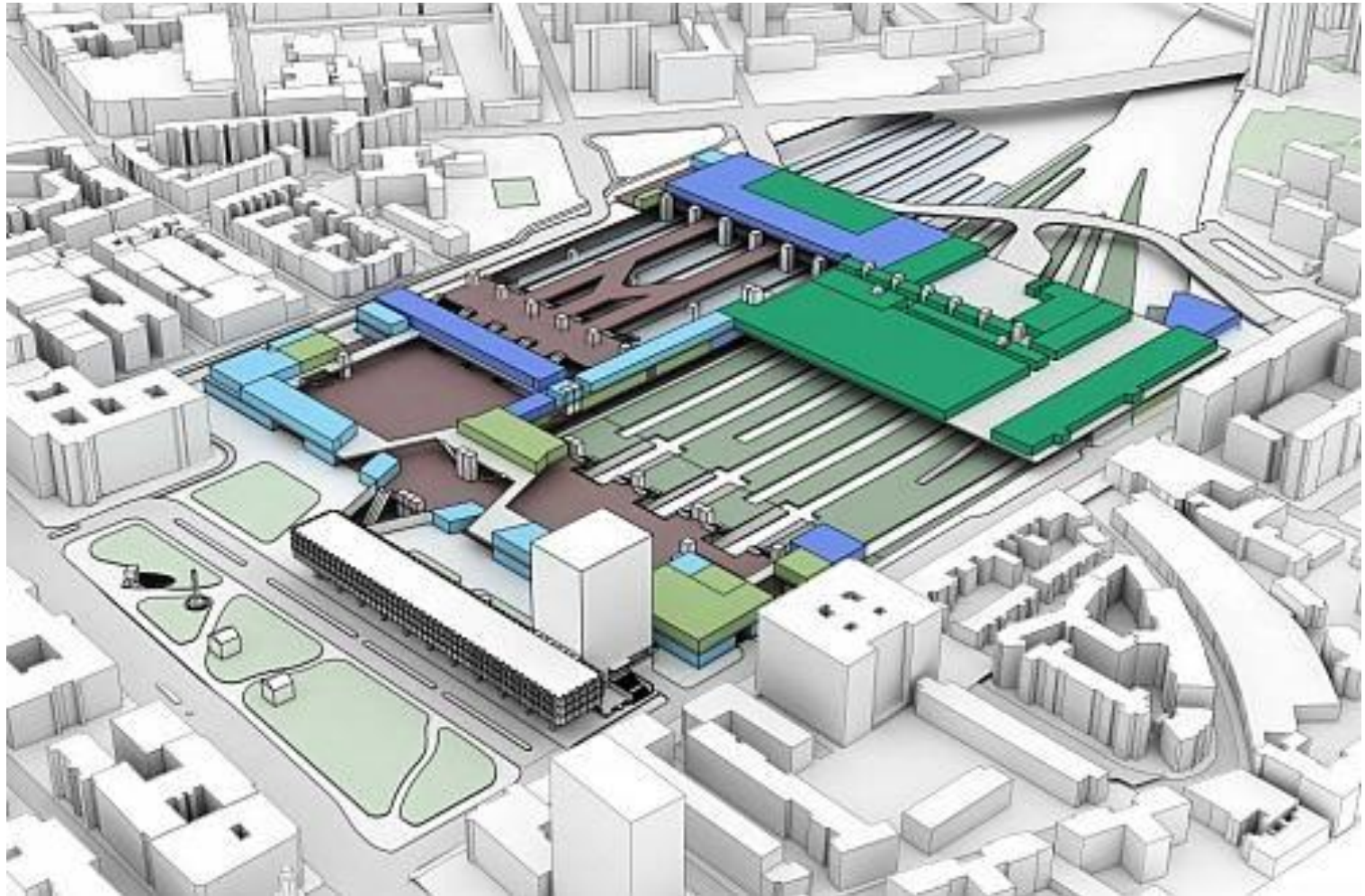
OOC Interior



Elizabeth Line (Crossrail)



Euston...



Jeremy Hunt - 27th January 2023

Daily Telegraph

- *It had been reported that the high-speed rail network could terminate permanently in the western suburbs of the capital (OOC), stopping short of central London to save money.*
- *The chancellor has moved to quash speculation that HS2 trains will not run to central London, saying he did not see “any conceivable circumstances” in which the planned Euston terminus would not go ahead.*

... we have a problem

“A delay in constructing the HS2 tunnel to Euston has been confirmed, with the project's final shape remaining unclear. Both the DfT and HS2 did not disclose how long the delay would be for”

City AM – 18th April 2023

Update

Rachel Reeves confirmed in her **October 2024** Budget that HS2 **would** terminate at Euston, not at Old Oak Common.

Euston



Euston

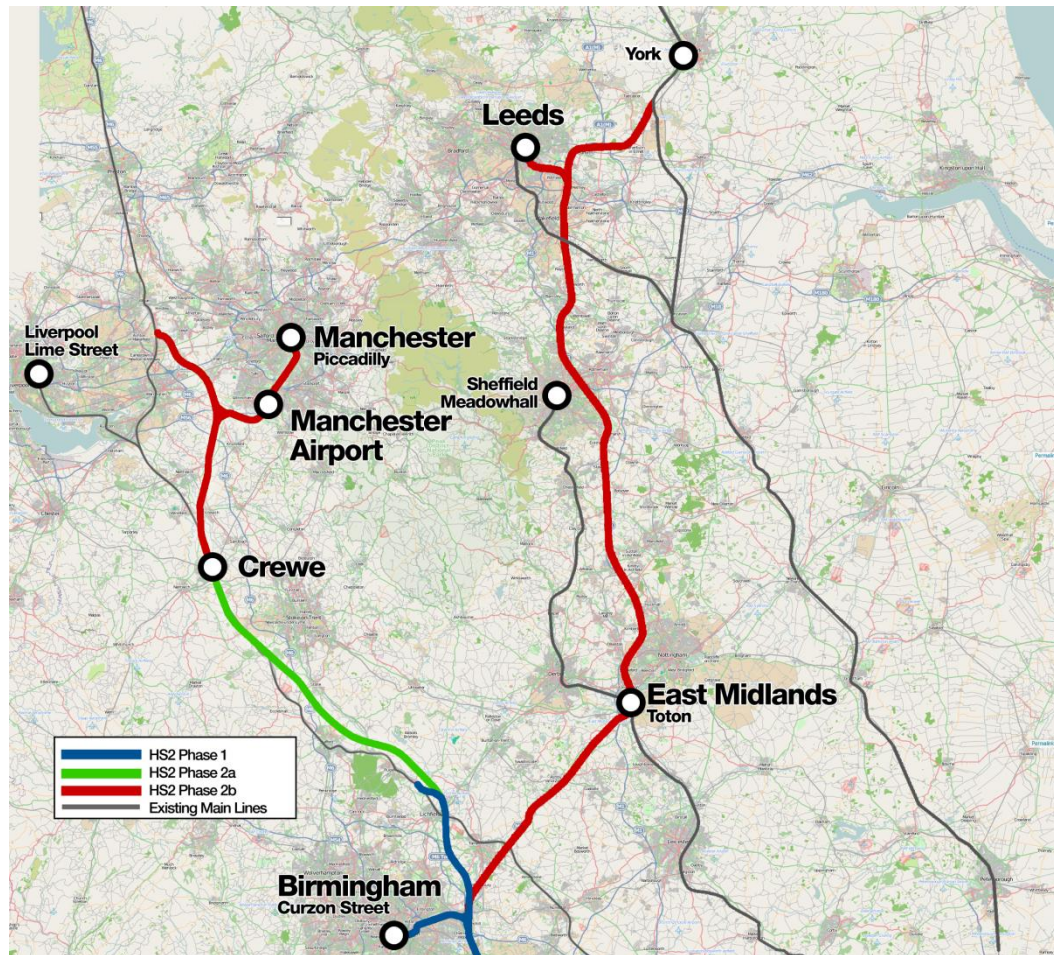


Summary – ‘Phase 1’

(London to West Midlands)



Cancelled Phase 2 (A & B)



Cancelled Phase 2 Stations

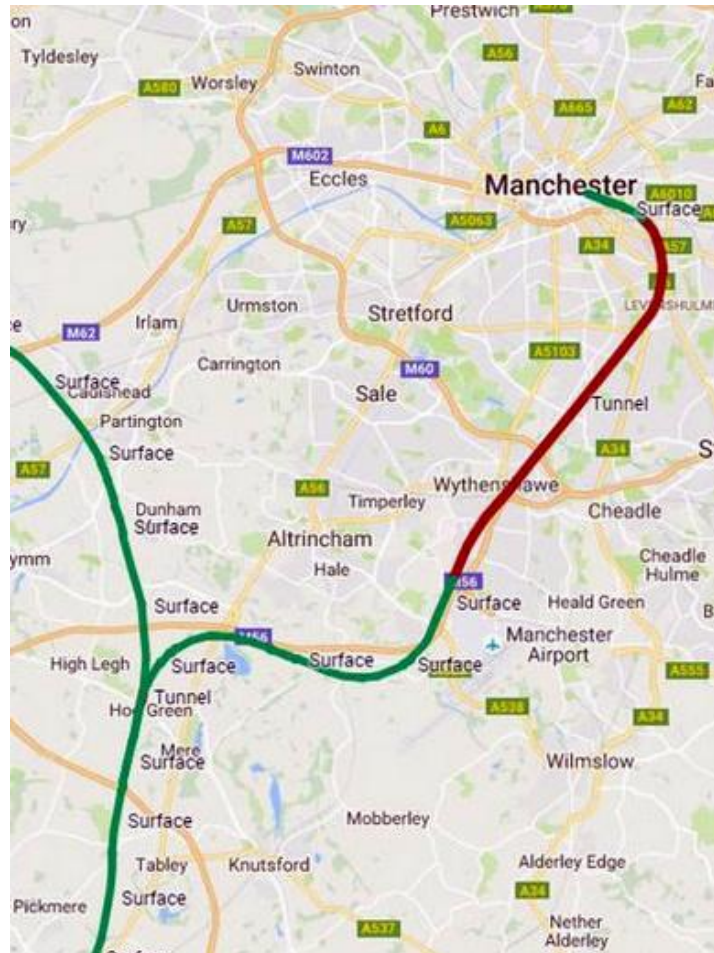
Phase 2A

- Crewe
- Manchester Airport
- Manchester Piccadilly

Phase 2B

- East Midlands Parkway
Previously 'Hub' at Toton/Long Eaton
(midway between Derby & Nottingham)

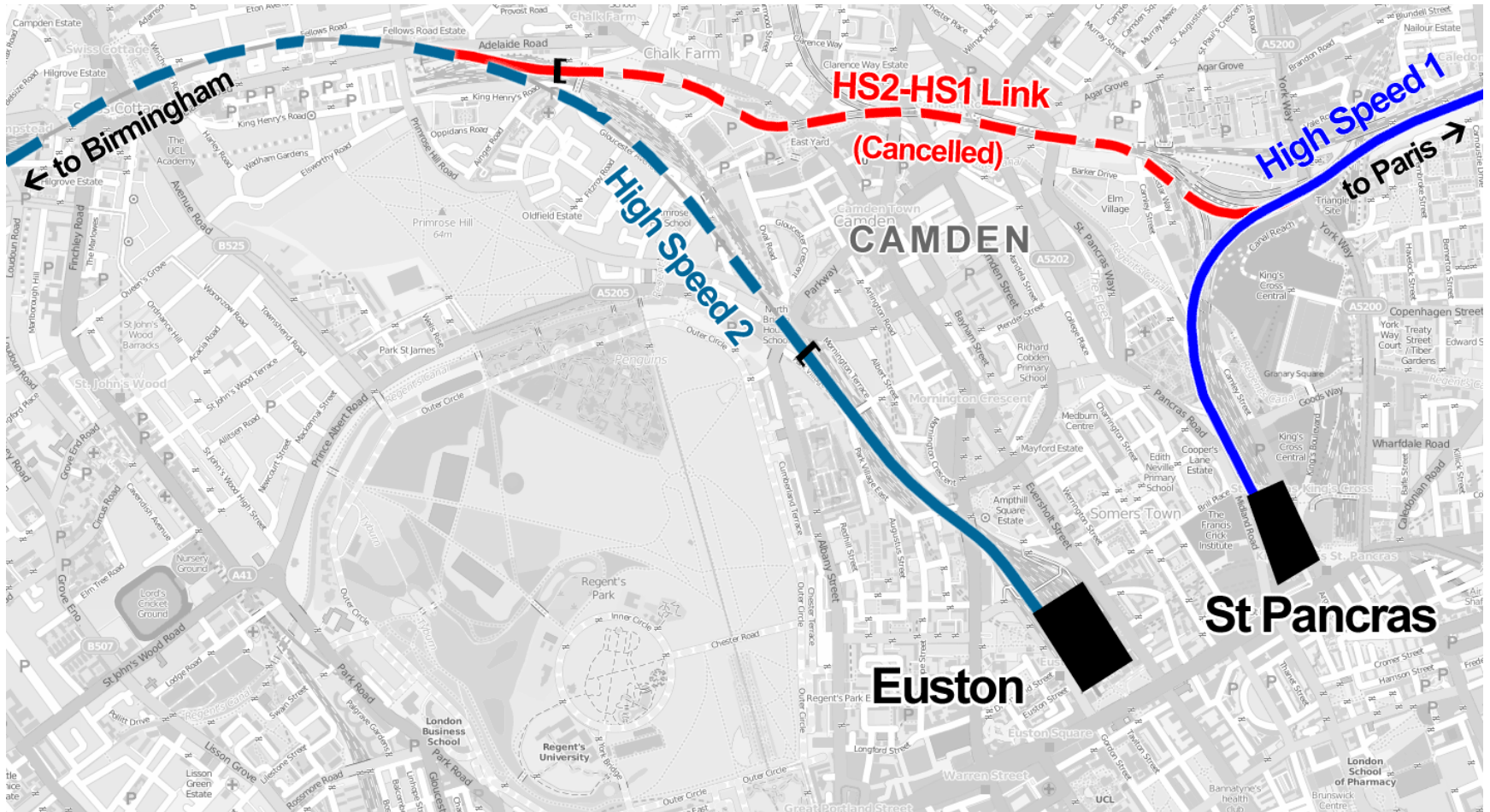
Cancelled Phase 2A: Manchester



HS2 Summary (Reminder)



HS2-HS1 Link (Cancelled)



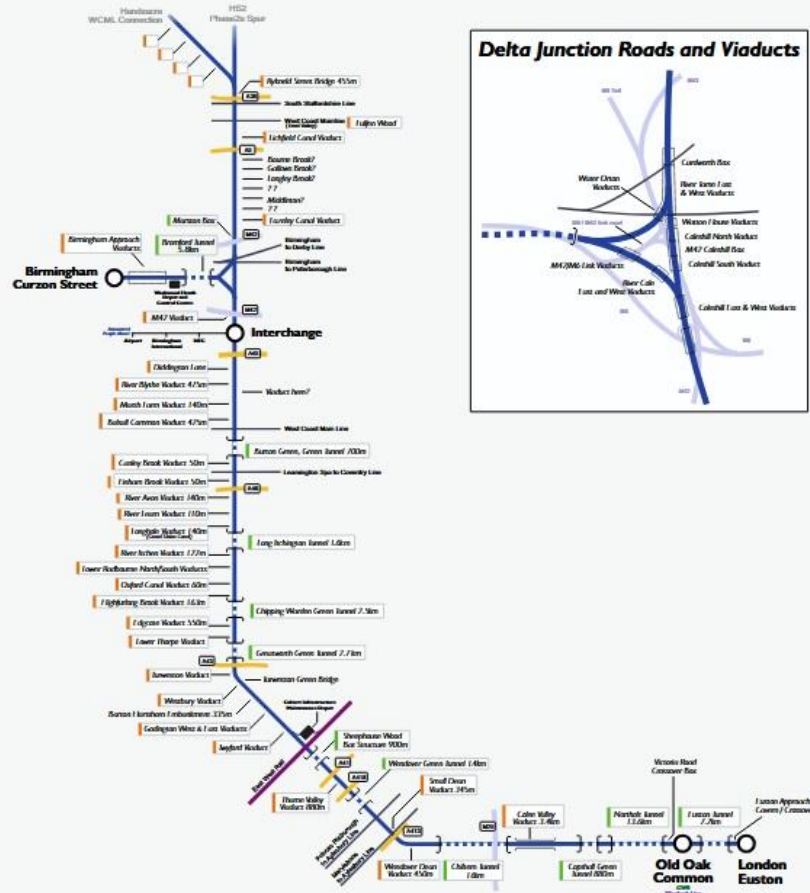
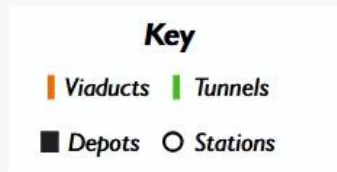
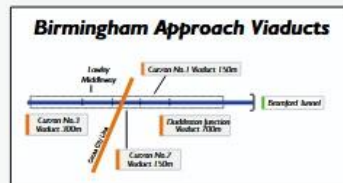
Future (HS3/NPR) ?



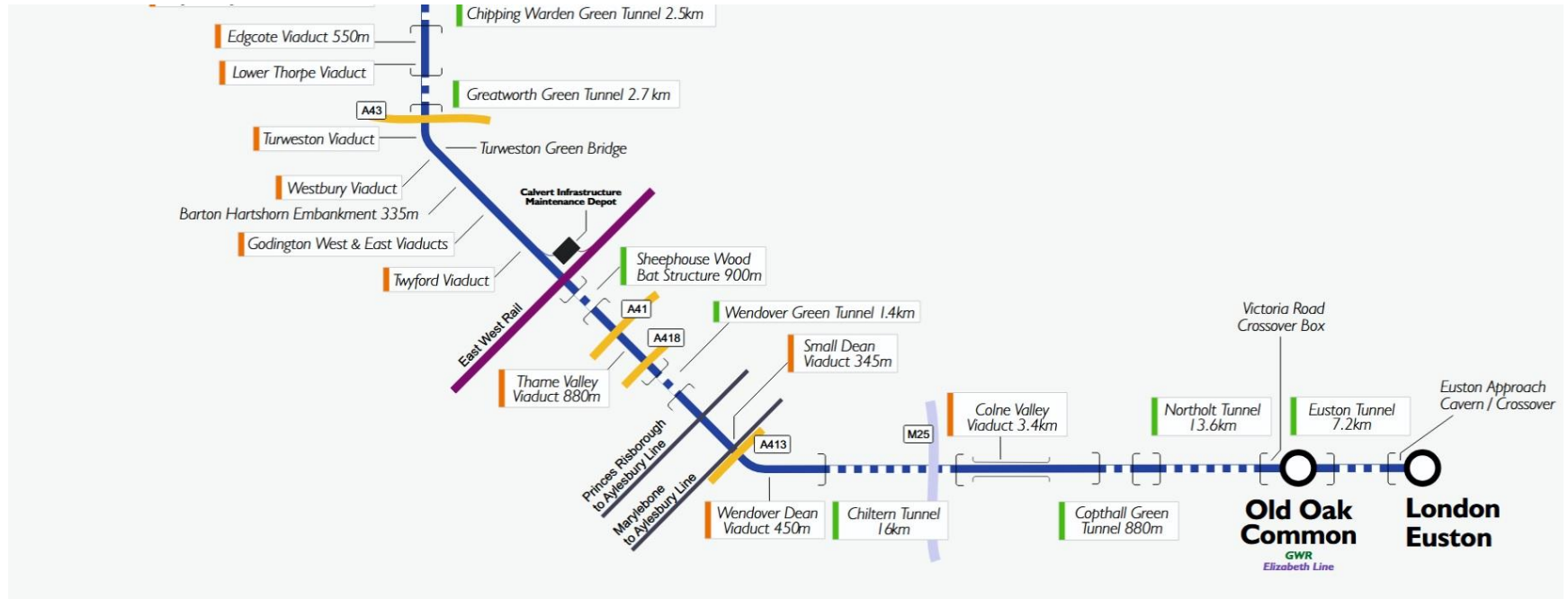
Future (HS4Air) ?



HS2 Diagram

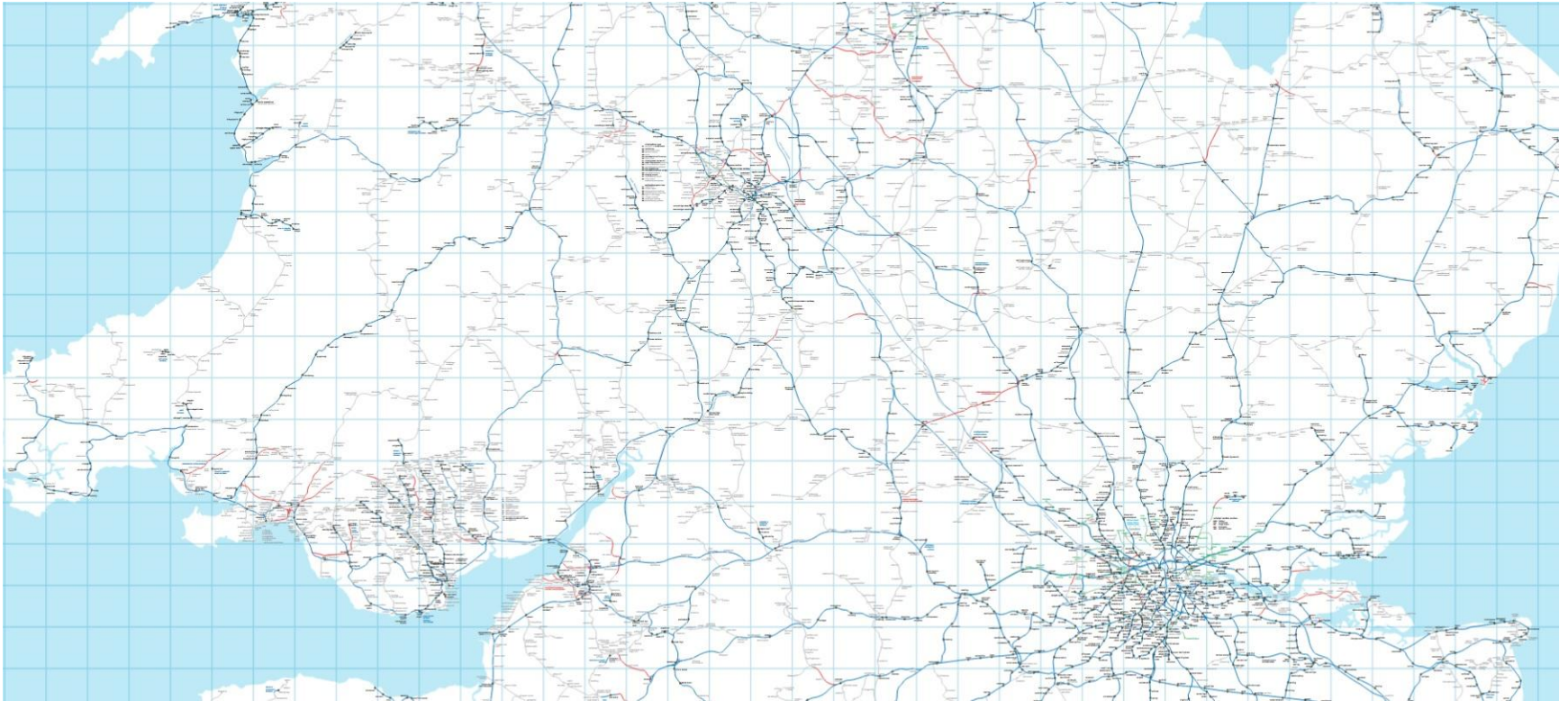


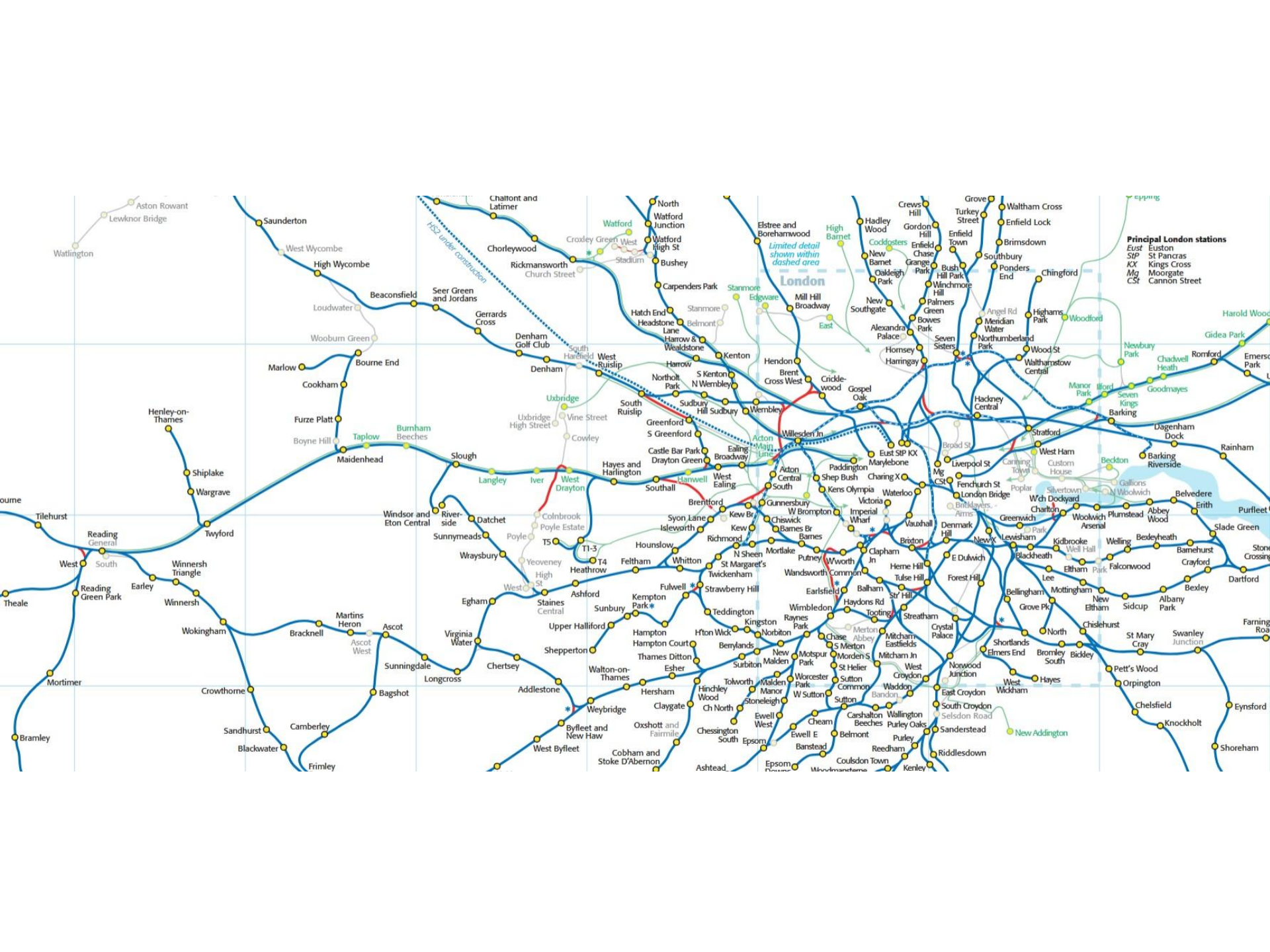
www.geofftech.co.uk/downloads/HS2Map.pdf



New Adlestrop Railway Atlas

Richard Fairhurst





YouTube Videos

Mainly aerial (drone) footage

Search for:

HS2 Construction

Mark Thrushton

Questions ?

Opinions ?

Comments ?

