

HSUK HEATHROW RAIL ACCESS STRATEGY

Ever since its opening in 1946, Heathrow Airport has been the UK's primary airport, and in more recent years its principal international gateway. Although regional airports offer valuable international connectivity, it is Heathrow's juxtaposition to the nation's capital, and to its 10-million population, that makes it the UK's busiest airport, with by far the greatest number of flights and widest range of destinations. This gives Heathrow 'hub' status, and it gives London and the South-East a level of international connectivity far greater than any other UK region. This accounts, at least in part, for the Metropolitan area's significantly greater economic prosperity, compared with other UK regions.

This North-South divide is greatly reinforced by Heathrow's poor connectivity to the national intercity rail network. Most journeys to Heathrow from regional cities involve a time-consuming and difficult Tube transfer across London which is inconvenient to any traveller, but which is possibly a critical deterrent to international business visitors to a UK region. This has led to calls for major improvements in regional rail links to Heathrow; and with the advent of the UK high speed rail initiative, a political imperative has developed for the new high speed line to include a direct link to Heathrow.

Airports Commission Initiative : 2012

The situation has been complicated in recent years by the Government's establishment (in 2012) of the Airports Commission, to examine the need for extra runway capacity in the South-East, and to make recommendations for development of a higher-capacity London hub airport. Whilst the Government cancelled (in 2015) the proposed HS2 spur to Heathrow, in 2016 it accepted the Airport Commission's recommendation that Heathrow should remain London's hub airport, with an extra runway planned to the north of the airport. This is very similar to the scheme that was advanced, and rejected, in the previous decade.

The Airport Commission's recommendation appears to have been driven by the airline industry's and business community's desire for continuity at an established hub airport; but the proposed expansion at Heathrow, involving the demolition of the villages of Harmondsworth and Sipson, seems certain to provoke intense local opposition which may well once more frustrate the ambitions of the expansionists. Accordingly, the Commission initially retained an expanded Gatwick as a fall-back option. A second runway at Gatwick would certainly be less controversial than a third runway at Heathrow, but - in the absence of any credible proposal for a surface link between the two airports, it would compromise the integrity of the existing airline 'hub' at Heathrow. Additionally, Gatwick carries the major drawback of being located on the far side of London from most communities in the UK regions.

This raises the key issue of surface access. It must not be forgotten that wherever the London hub airport might be located, it must also function as the primary hub airport for all of the UK. This should demand the development not just of local rail access schemes such as Airtrack and Western Access, but of a comprehensive strategy to ensure that Heathrow (or whichever airport is chosen as the new London hub) is well connected to its entire regional hinterland, effectively all of mainland UK. Rail is clearly the 'mode of choice', and HS2 was intended to fulfil this role. However the Government's cancellation of the dedicated HS2 spur to Heathrow, and the absence of any coherent and comprehensive surface access strategy in the Airport Commission's recommendations, indicates a clear failure on this front.

With direct high speed rail links to the UK regions no longer on the agenda, the Airports Commission has suggested that a proportion of the new runway capacity at Heathrow should be devoted to short-haul flights to regional airports. However, on most routes there would be insufficient passenger volumes to support commercially-attractive frequencies, and it is likely that - as at present - most of the UK population would be at a long distance from an airport with frequent services to Heathrow. Although historically Heathrow had much better regional coverage, these flights generally operated at low frequencies, and were 'squeezed out' of Heathrow as the airport became busier; there is no guarantee that this situation will not happen again. Also, contemporary passengers are less inclined to accept long intervals between flights, and with intercity rail now offering a faster, more frequent and more attractive product, it is only the passengers making 'interlining' connections to international flights (for which continental airports such as Schiphol and Paris CDG offer competitive alternatives) who would use domestic flights to Heathrow. The only exceptions are the longer-haul routes to Scottish airports, where air dominates the market; here there are sufficient 'intercity' passengers to augment the 'interlining' flows, and thus support the necessary high frequencies.

Nonetheless, at least in an English and Welsh context, the classic ‘hub and spoke’ model favoured by the Airports Commission seems not to be viable, and its choice of candidate airports for expansion seems unlikely to comprise a solution that will adequately serve either the Metropolitan area or the wider UK regions. Alternative strategies are required, and this paper sets out a rail-based ‘third way’ for airport expansion in London and the South-East that will:

- retain the integrity of the existing aviation hub at Heathrow without damaging surrounding communities;
- allow expansion (if required) with a second runway at Gatwick;
- provide the necessary interconnectivity to allow both airports to function as a single integrated hub;
- provide the necessary surface connectivity to allow passengers from the UK regions to directly access either airport by means of high-quality, high speed services operating at hourly frequencies.

Heathrow Rail Access Mapped in Detail

HRA1 : HEATHROW AIRPORT - CONNECTIONS TO INTERCITY NETWORK AT 1946 OPENING

HRA2 : HEATHROW AIRPORT - CONNECTIONS TO EXISTING INTERCITY NETWORK

HRA3 : HEATHROW AIRPORT - PROJECTED CONNECTIONS TO LOCAL RAIL NETWORK

The establishment of Heathrow Airport in 1946, on a large area of undeveloped land relatively close to London, made it almost inevitable that it would be located clear of the existing railway network. This can be seen in diagram HRA1, which shows Heathrow located well to the south of the Great Western Main Line, and to the north of the Reading-Waterloo line; its closest rail link was the London Underground Piccadilly Line, which terminated at Hounslow West (from which point a bus link operated to Heathrow). The necessary rail links for Heathrow, the UK’s principal international gateway, were slow to develop; it took until 1977 for the Piccadilly Line to be extended to Heathrow, and only in 1998, with the opening of Heathrow Express, was there a link to the main line rail network.

Even with the Piccadilly Line extension and Heathrow Express in place, Heathrow’s rail links are still inadequate. They are inward-facing, offering good quality links only to central London, and to a narrow wedge of suburbia along the routes of the Piccadilly Line and the Great Western Main Line. Surrounding major communities such as Uxbridge, Slough, Staines, Kingston and Richmond are disconnected by rail from Heathrow, with poor quality bus links comprising the only public transport option. As a result, the vast majority of local journeys to Heathrow are by private car, or by taxi, and there is crippling congestion on the surrounding road network, including the M4 and the M25.

These problems have become ever more critical with the ongoing development of Heathrow, in particular the opening of Terminal 5 in 2008 and the anticipated construction of a third runway to the north of the airport. There has been a long-term target, for 50% of all journeys to Heathrow to be made by public transport, and this has spurred the development of projects to create new links from Heathrow to the nearby existing main lines. Diagram HRA3 illustrates both the ‘Airtrack’ scheme - linking Heathrow to Staines, and to the wider Southern network - and also the ‘Western Access’ scheme - linking Heathrow to Slough, and to the Great Western Main Line. Whilst the development of Western Access appears to be progressing, Airtrack has stalled, primarily due to increased rail traffic causing unacceptable road congestion at level crossings in both the Egham and the Richmond/Mortlake/Barnes area.

It is important to emphasise that both Western Access and Airtrack are local schemes, and will do little or nothing to improve longer-distance journeys to Heathrow. With no rail equivalent to the M25, travellers to Heathrow from the Midlands, the North and Scotland will still be forced to make a highly inconvenient central London Tube transfer.

HRA4 : HS2 PROPOSALS: FIRST STAGE HEATHROW ACCESS VIA OLD OAK COMMON

At the outset of the HS2 project, the promise of direct high speed links from regional UK cities to Heathrow was one of the primary factors in achieving widespread support in the UK regions. Yet these direct links have proved impossible to achieve. Instead, travellers from the few regional cities actually served by HS2 will be compelled to change at Old Oak Common to local Heathrow Express services. For all other travellers, from cities not served by HS2, there will be no improvement to the existing journey routed via central London.

HRA5 : HS2 PROPOSALS: HS2 HEATHROW LOOP & AIRPORT ACCESS VIA 'HEATHROW HUB'

HRA6 : HS2 PROPOSALS: HS2 DIRECT HEATHROW ACCESS VIA SPUR TO TERMINAL 5

Diagrams HRA5 and HRA6 show the Loop and Spur schemes for Heathrow access that have been considered in the development of HS2. Neither option has proved practical. The Loop requires unfeasible lengths of tunnel to achieve Heathrow access for a relatively small number of passengers, and whilst the Spur requires a lesser length of tunnel, the costs would still be prohibitive and moreover there is no capacity for Heathrow services on HS2's 2-track London-West Midlands stem. The 18 trains per hour capacity of this route has already been fully allocated to trains from London to the UK regions; additional services from Heathrow to UK regional cities are therefore not possible. Accordingly, in 2015 the Secretary of State for Transport cancelled all HS2 schemes for direct routes to Heathrow.

HRA7 : HEATHROW COMPASS POINT LINKS TO NORTH, WEST, SOUTH & EAST (illustrated independent of HIGH SPEED UK proposals)

HRA8 : HIGH SPEED UK LINKS TO HEATHROW, GATWICK & WIDER METROPOLITAN RAIL NETWORK

The problems of both the Airtrack and HS2 projects in achieving improved rail access to Heathrow are completely different, but both can be attributed to a fundamental failure to recognise:

- Heathrow's requirement for 360-degree connectivity to destinations near and far;
- The requirement of all mainland UK communities for radically improved rail access to the nation's primary international gateway.

These requirements cannot be satisfied by schemes such as Airtrack and HS2, developed as stand-alone projects with no effective integration with the existing rail network. A holistic overview of the entire regional and national network is essential to achieve the necessary full integration and optimised 360-degree connectivity.

The High Speed UK proposals for Heathrow will integrate all existing and proposed rail routes with a new 'Northern Orbital Arm' to create a 'Compass Point' network with links to east, south, west and north:

- **East:** Heathrow Express fully integrated with Crossrail to connect to City of London, Canary Wharf and eastern suburbs to north and south of the Thames.
- **South:** Link to Staines as per Airtrack scheme, but with full integration with existing Southern service patterns to minimise congestion problems at existing level crossings. (This scheme was published by the 2M Group of London and South-East councils as 'Airtrack Lite' in 2011).
- **West:** Link to Slough as per Western Access scheme.
- **North:** 'Northern Orbital Arm' linking Heathrow to northern suburbs and to the main lines to the Midlands and the North.

The Heathrow 'Compass Point' network on its own would create vastly improved rail access to the UK's national airport. However, when connected (at Brent Cross) to the High Speed UK national network of high speed lines, it is capable of satisfying the key political objective of direct high speed links from every UK regional primary city to the heart of Heathrow. And with such a link in place, the next stage of development - a direct high speed rail link from Heathrow to Gatwick - can be realised. This will permit Heathrow and Gatwick to operate as a single multi-site hub, and should eliminate any requirement to construct a third runway at Heathrow.

HRA9 : 'M1 CORRIDOR' PROPOSAL AS REPRESENTED BY HS2 Ltd IN 'HS2 REVIEW OF ROUTE & SPEED SELECTION' (Jan 2012)

Diagram HRA9 highlights the huge shortcomings in HS2 Ltd's analysis of an M1-aligned route from London to the West Midlands. Although such a route requires a north-westerly exit from the Metropolitan area to reach the M1 corridor, it is instead forced to conform with HS2 Ltd's arbitrary selection of an interchange station at Old Oak Common, from which point it heads north - all in tunnel - to resume its M1-aligned route. Such a route is clearly incompatible with either the 'Loop' or the 'Spur' model of Heathrow rail access shown in Diagrams HRA 5 & 6. This was one of the primary reasons offered by HS2 Ltd for rejecting any M1-aligned route.

There is no record of HS2 Ltd or the Government ever undertaking an audit upon their decision-making process, which might have revealed that only the M1-aligned HSUK route (rejected by HS2 Ltd on account of its remoteness from Heathrow) has succeeded in establishing direct high speed rail access to Heathrow, while all variants of HS2, aligned much closer to Heathrow, have failed.

DIAGRAM HRA 1
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HEATHROW RAIL ACCESS
 CONNECTIONS TO INTERCITY NETWORK AT 1946 OPENING

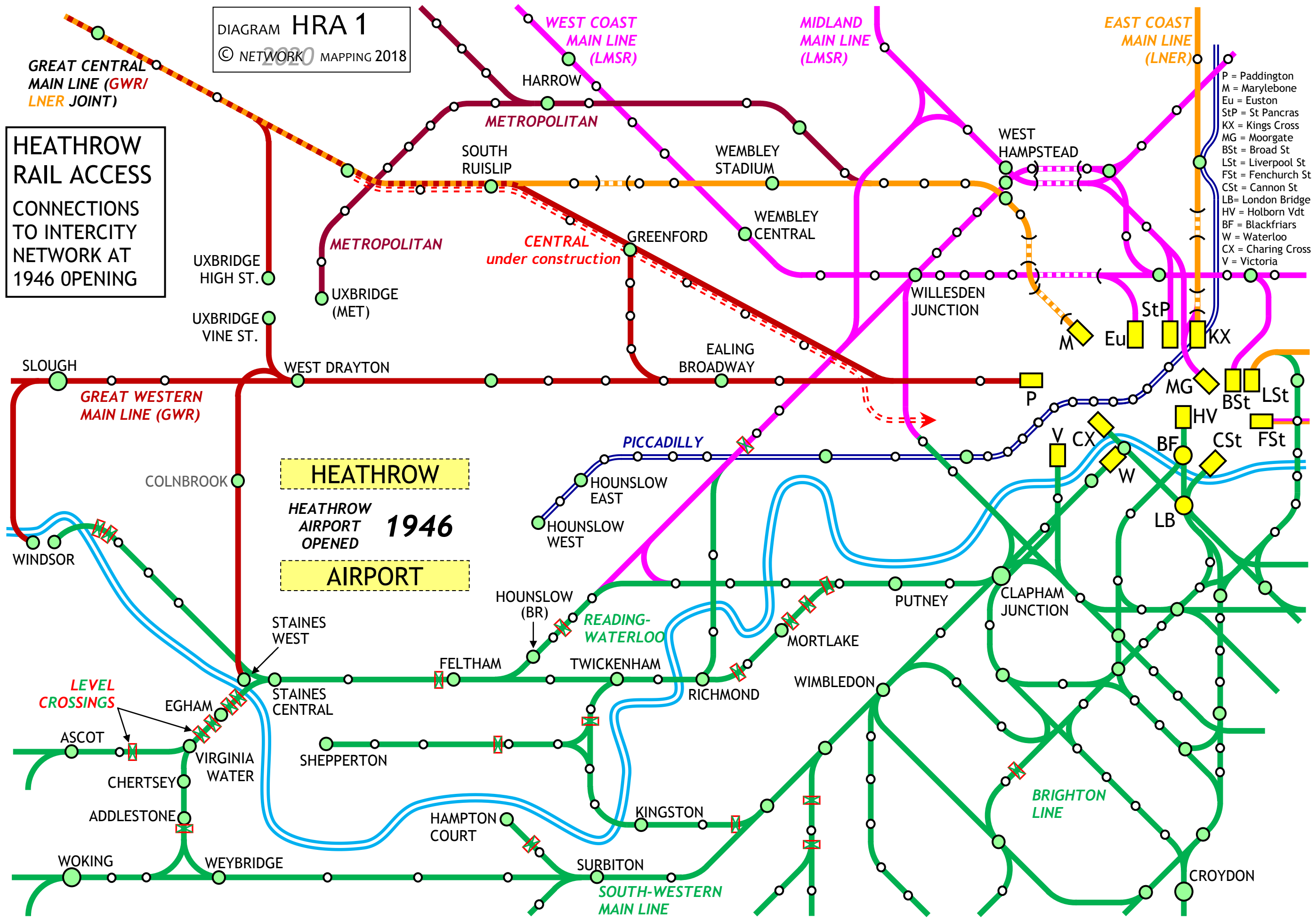
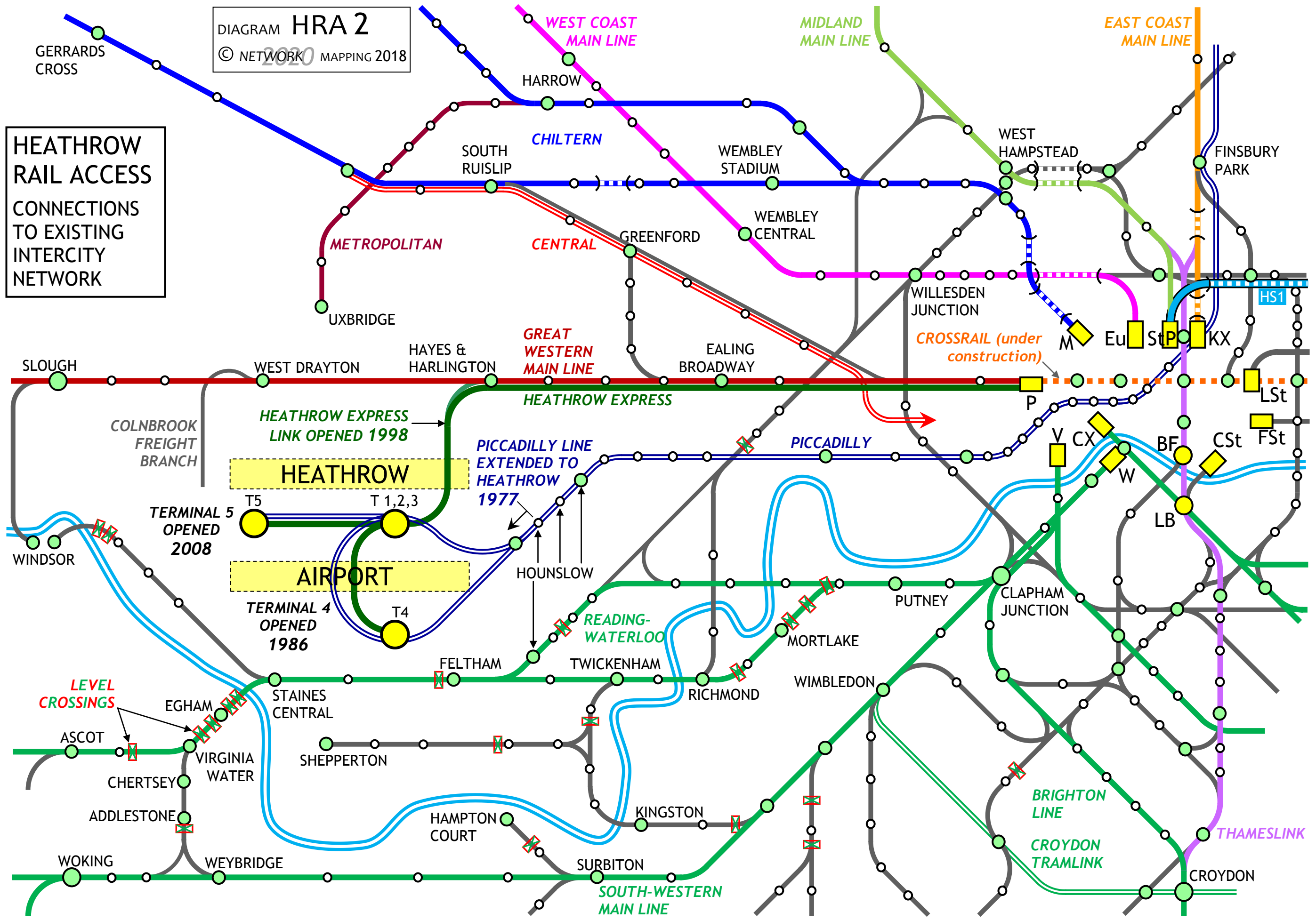


DIAGRAM HRA 2
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HEATHROW RAIL ACCESS
CONNECTIONS TO EXISTING INTERCITY NETWORK



COLNBROOK
FREIGHT
BRANCH

HEATHROW

AIRPORT

LEVEL
CROSSINGS

TERMINAL 5
OPENED
2008

TERMINAL 4
OPENED
1986

SOUTH-WESTERN
MAIN LINE

CROSSRAIL (under
construction)

BRIGHTON
LINE

CROYDON
TRAMLINK

THAMESLINK

DIAGRAM HRA 3
 © NETWORK 2020 MAPPING 2018

HEATHROW RAIL ACCESS
PROJECTED CONNECTIONS TO LOCAL RAIL NETWORK

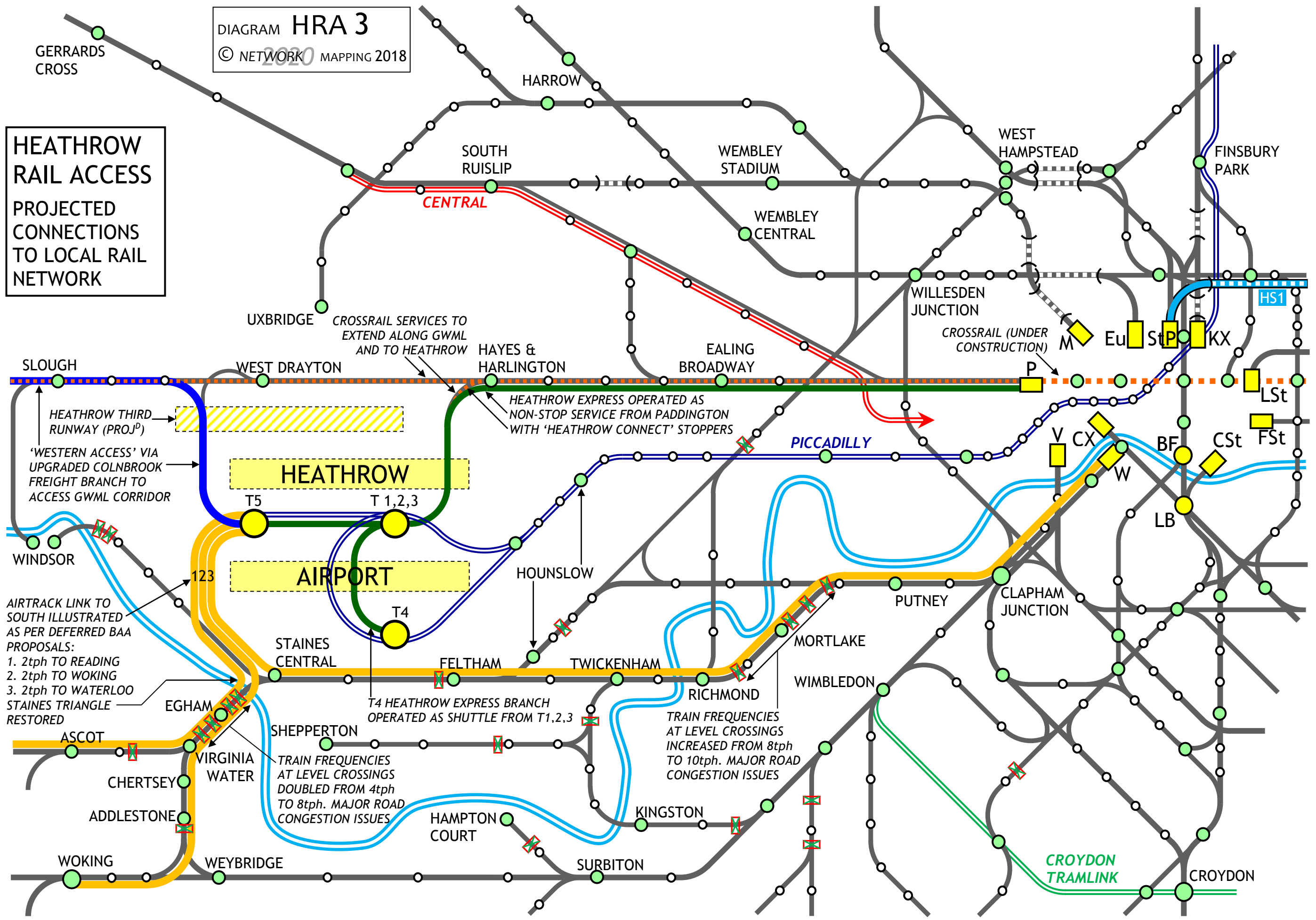


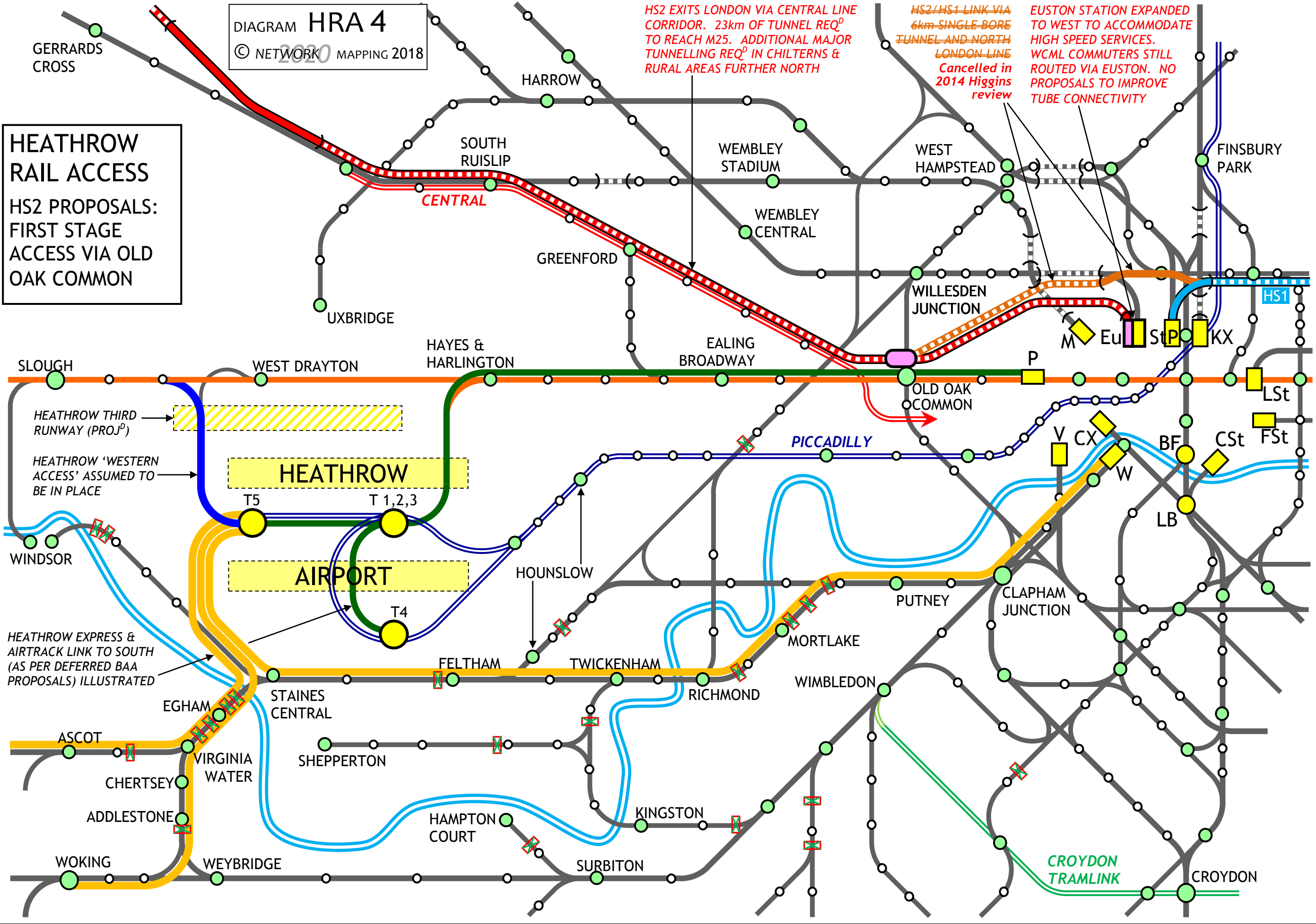
DIAGRAM HRA 4
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HEATHROW RAIL ACCESS
HS2 PROPOSALS:
FIRST STAGE
ACCESS VIA OLD
OAK COMMON

HS2 EXITS LONDON VIA CENTRAL LINE
CORRIDOR. 23km OF TUNNEL REQ^d
TO REACH M25. ADDITIONAL MAJOR
TUNNELLING REQ^d IN CHILTERN &
RURAL AREAS FURTHER NORTH

HS2/HS1 LINK VIA
6km SINGLE BORE
TUNNEL AND NORTH
LONDON LINE
Cancelled in
2014 Higgins
review

EUSTON STATION EXPANDED
TO WEST TO ACCOMMODATE
HIGH SPEED SERVICES.
WCML COMMUTERS STILL
ROUTED VIA EUSTON. NO
PROPOSALS TO IMPROVE
TUBE CONNECTIVITY



SLOUGH

WEST DRAYTON

HAYES & HARLINGTON

EALING BROADWAY

OLD OAK COMMON

PICCADILLY

HEATHROW

AIRPORT

HOUNSLOW

PUTNEY

CLAPHAM JUNCTION

WINDSOR

HEATHROW EXPRESS &
AIRTRACK LINK TO SOUTH
(AS PER DEFERRED BAA
PROPOSALS) ILLUSTRATED

EGHAM

STAINES CENTRAL

FELTHAM

TWICKENHAM

RICHMOND

MORTLAKE

WIMBLEDON

ASCOT

CHERTSEY

VIRGINIA WATER

SHEPPERTON

HAMPTON COURT

KINGSTON

WOKING

WEYBRIDGE

SURBITON

CROYDON
TRAMLINK

CROYDON

GERRARDS
CROSS

HARROW

SOUTH
RUISLIP

WEMBLEY
STADIUM

WEMBLEY
CENTRAL

GREENFORD

WEST
HAMPSTEAD

FINSBURY
PARK

UXBRIDGE

WILLESDEN
JUNCTION

M

Eu

St

P

KX

HS1

LSt

FSt

V

CX

W

BF

CSt

LB

DIAGRAM HRA 5
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HEATHROW RAIL ACCESS
HS2 HEATHROW LOOP & AIRPORT ACCESS VIA 'HEATHROW HUB'

PROPOSAL AS PER 2011 CONSULTATION DOCUMENTS, SUBSEQUENTLY ABANDONED

HS2 EXITS LONDON VIA CENTRAL LINE CORRIDOR. 23km OF TUNNEL REQ^d TO REACH M25. ADDITIONAL MAJOR TUNNELLING REQ^d IN CHILTERN & RURAL AREAS FURTHER NORTH

HS2/HS1 LINK VIA 6km SINGLE BORE TUNNEL AND NORTH LONDON LINE
Cancelled in 2014 Higgins review

EUSTON STATION EXPANDED TO WEST TO ACCOMMODATE HIGH SPEED SERVICES. WCML COMMUTERS STILL ROUTED VIA EUSTON. NO PROPOSALS TO IMPROVE TUBE CONNECTIVITY

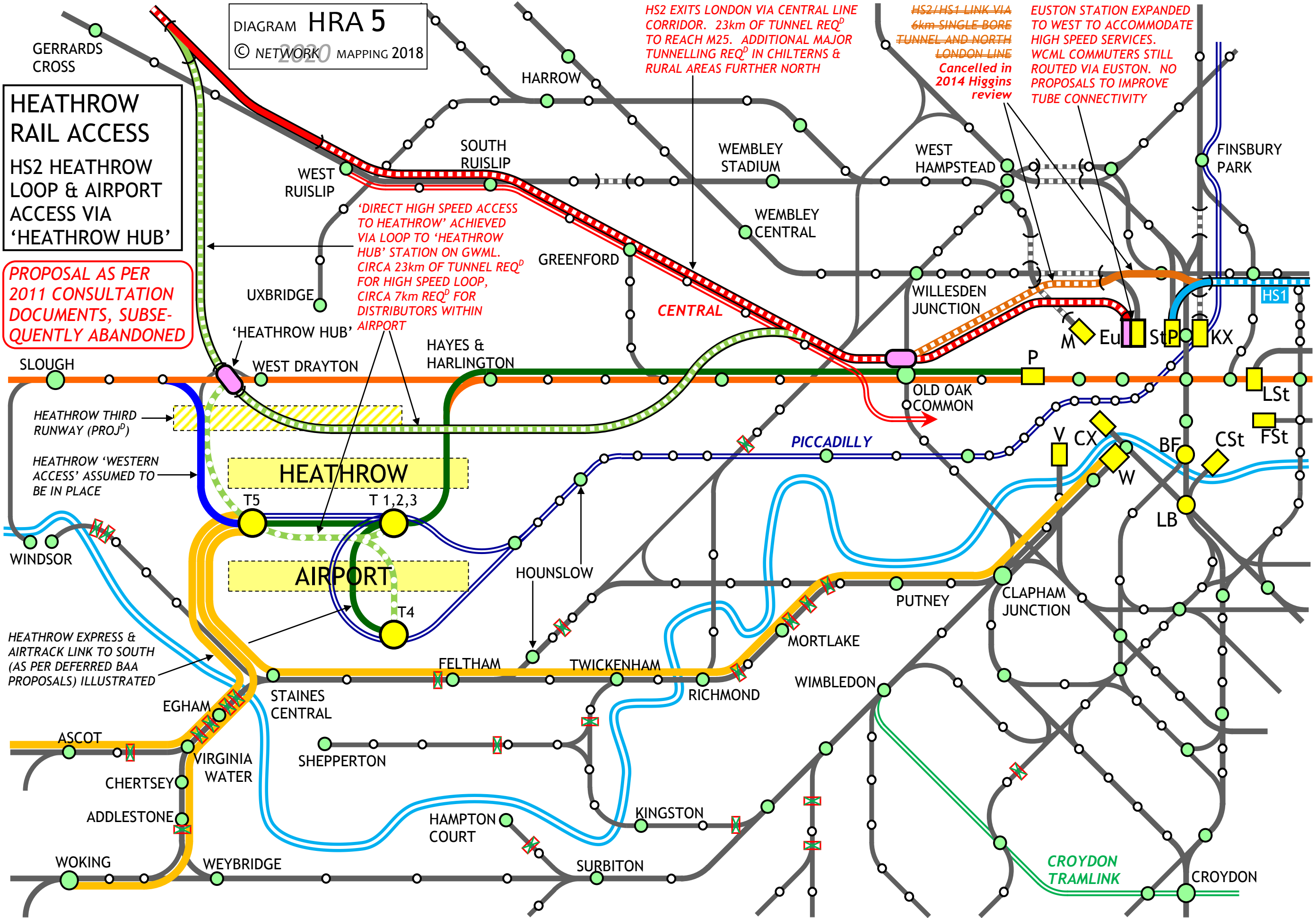


DIAGRAM HRA 6
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HEATHROW RAIL ACCESS
HS2 PROPOSALS:
HS2 HEATHROW ACCESS VIA SPUR TO TERMINAL 5

LATEST PROPOSAL FOR HS2 HEATHROW ACCESS, CANCELLED MARCH 2015

HS2 EXITS LONDON VIA CENTRAL LINE CORRIDOR. 23km OF TUNNEL REQ^d TO REACH M25. ADDITIONAL MAJOR TUNNELLING REQ^d IN CHILTERN & RURAL AREAS FURTHER NORTH

HS2/HS1 LINK VIA 6km SINGLE BORE TUNNEL AND NORTH LONDON LINE
Cancelled in 2014 Higgins review

EUSTON STATION EXPANDED TO WEST TO ACCOMMODATE HIGH SPEED SERVICES. WCML COMMUTERS STILL ROUTED VIA EUSTON. NO PROPOSALS TO IMPROVE TUBE CONNECTIVITY

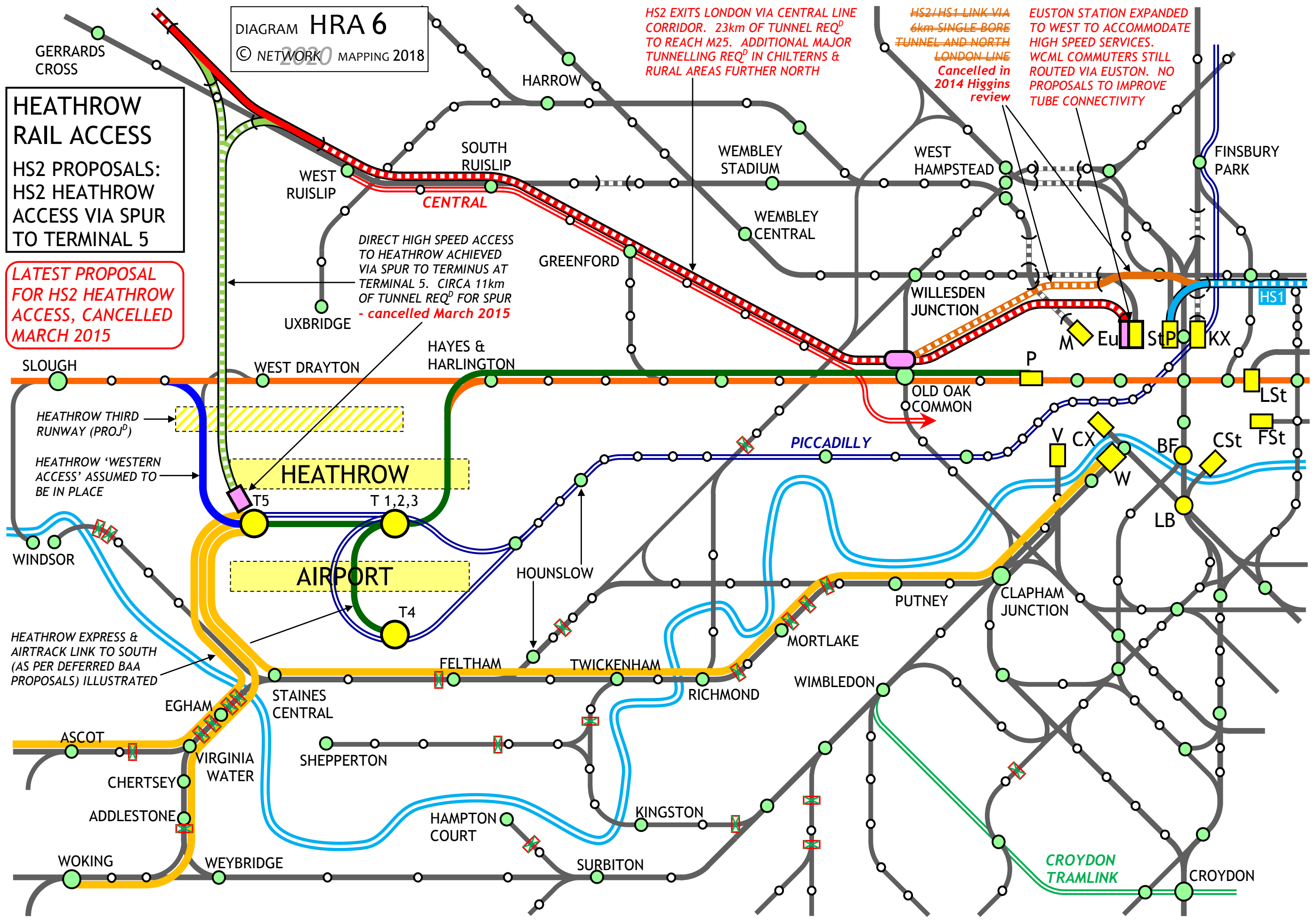
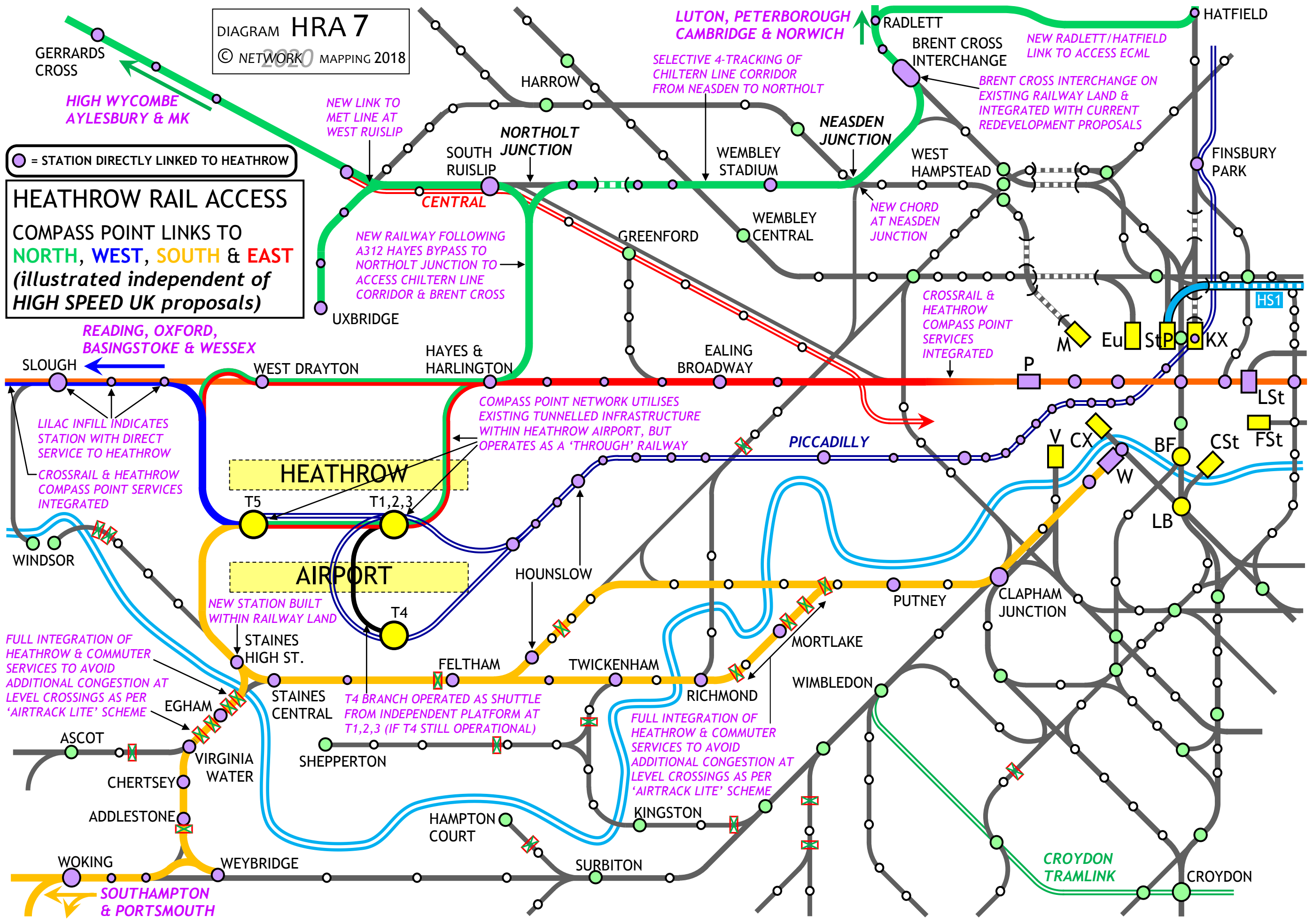


DIAGRAM HRA 7
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HEATHROW RAIL ACCESS
 COMPASS POINT LINKS TO NORTH, WEST, SOUTH & EAST
(illustrated independent of HIGH SPEED UK proposals)



● = STATION DIRECTLY LINKED TO HEATHROW

LILAC INFILL INDICATES STATION WITH DIRECT SERVICE TO HEATHROW
 CROSSRAIL & HEATHROW COMPASS POINT SERVICES INTEGRATED

FULL INTEGRATION OF HEATHROW & COMMUTER SERVICES TO AVOID ADDITIONAL CONGESTION AT LEVEL CROSSINGS AS PER 'AIRTRACK LITE' SCHEME

NEW LINK TO MET LINE AT WEST RUISLIP
 NORTHOLT JUNCTION
 SOUTH RUISLIP
 CENTRAL
 NEW RAILWAY FOLLOWING A312 HAYES BYPASS TO NORTHOLT JUNCTION TO ACCESS CHILTERN LINE CORRIDOR & BRENT CROSS

COMPASS POINT NETWORK UTILISES EXISTING TUNNELLED INFRASTRUCTURE WITHIN HEATHROW AIRPORT, BUT OPERATES AS A 'THROUGH' RAILWAY

T4 BRANCH OPERATED AS SHUTTLE FROM INDEPENDENT PLATFORM AT T1,2,3 (IF T4 STILL OPERATIONAL)

FULL INTEGRATION OF HEATHROW & COMMUTER SERVICES TO AVOID ADDITIONAL CONGESTION AT LEVEL CROSSINGS AS PER 'AIRTRACK LITE' SCHEME

LUTON, PETERBOROUGH CAMBRIDGE & NORWICH

SELECTIVE 4-TRACKING OF CHILTERN LINE CORRIDOR FROM NEASDEN TO NORTHOLT

BRENT CROSS INTERCHANGE
 NEW RADLETT/HATFIELD LINK TO ACCESS ECML

BRENT CROSS INTERCHANGE ON EXISTING RAILWAY LAND & INTEGRATED WITH CURRENT REDEVELOPMENT PROPOSALS

NEW CHORD AT NEASDEN JUNCTION

CROSSRAIL & HEATHROW COMPASS POINT SERVICES INTEGRATED

HEATHROW

AIRPORT

NEW STATION BUILT WITHIN RAILWAY LAND

CROYDON TRAMLINK

SOUTHAMPTON & PORTSMOUTH

DIAGRAM HRA 8
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HEATHROW RAIL ACCESS
'M1 CORRIDOR' PROPOSAL AS REPRESENTED BY HS2 Ltd IN 'HS2 REVIEW OF ROUTE & SPEED SELECTION' (Jan 2012)

