England’s Economic Heartland

Main line Priorities Rail Study | Final Draft Report

Version 0.5

September 2024

Contents

ARUP

Part 1

Introduction

Introduction

Context for this study

In January 2024, Ove Arup & Partners Limited (Arup) was commissioned by England's Economic Heartland (EEH) to deliver a **Main line Priorities Study**. This study builds on previous work undertaken by EEH, including its Passenger Rail Study (Phases 1 and 2) and connectivity studies. This study also builds on EEH's overarching, strategy for the region, which stretches from Swindon across to Cambridgeshire and from Northamptonshire to Hertfordshire.

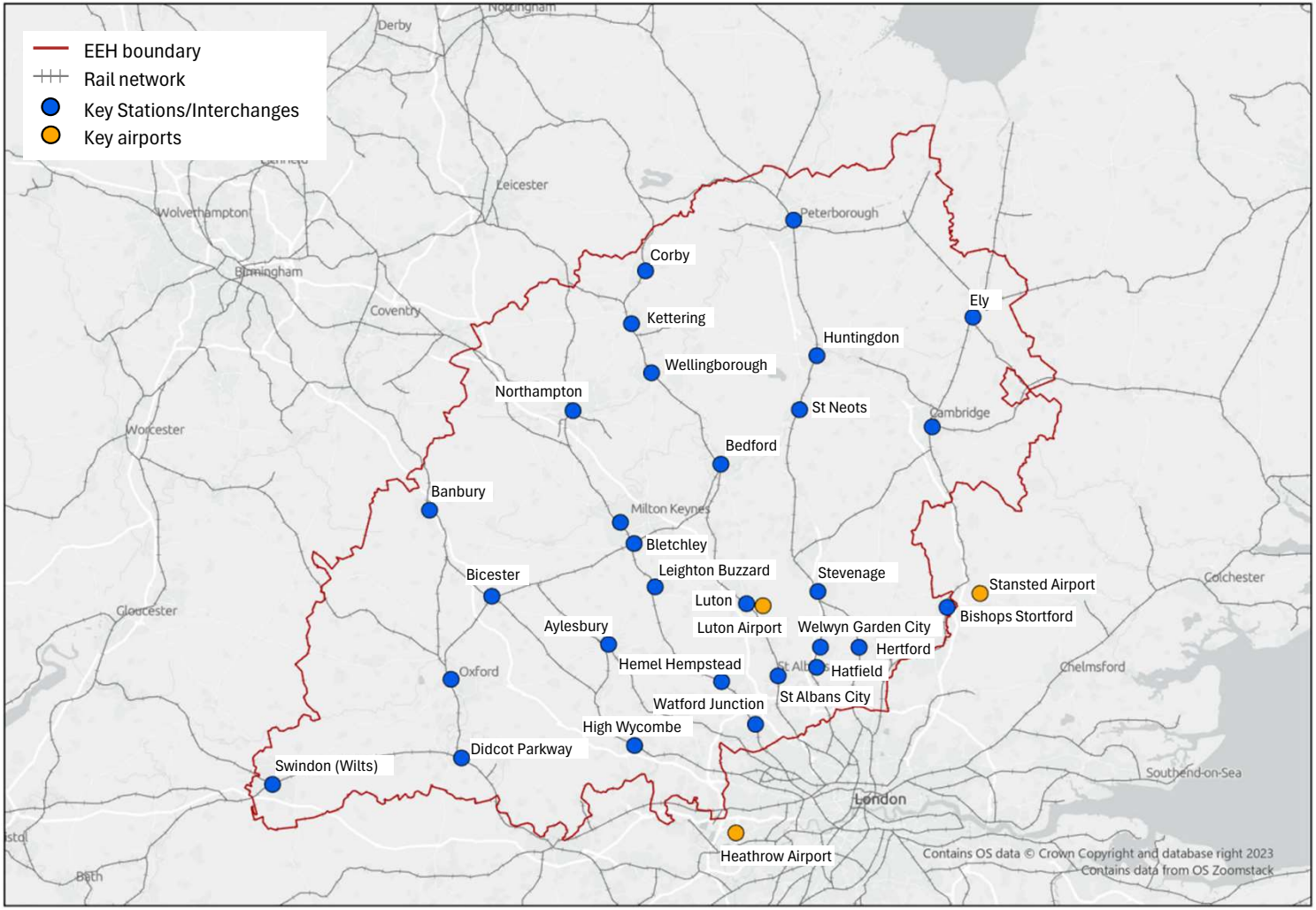
This study was commissioned by EEH to:

- Facilitate internal alignment within EEH by providing a single point of reference for all EEH's rail priorities and allowing for simpler ratification by the EEH Strategic Transport Leadership Board.
- Provide a clear external view of EEH's priorities to stakeholders and rail industry partners, providing a clear rationale and evidence base for working together on specific interventions.

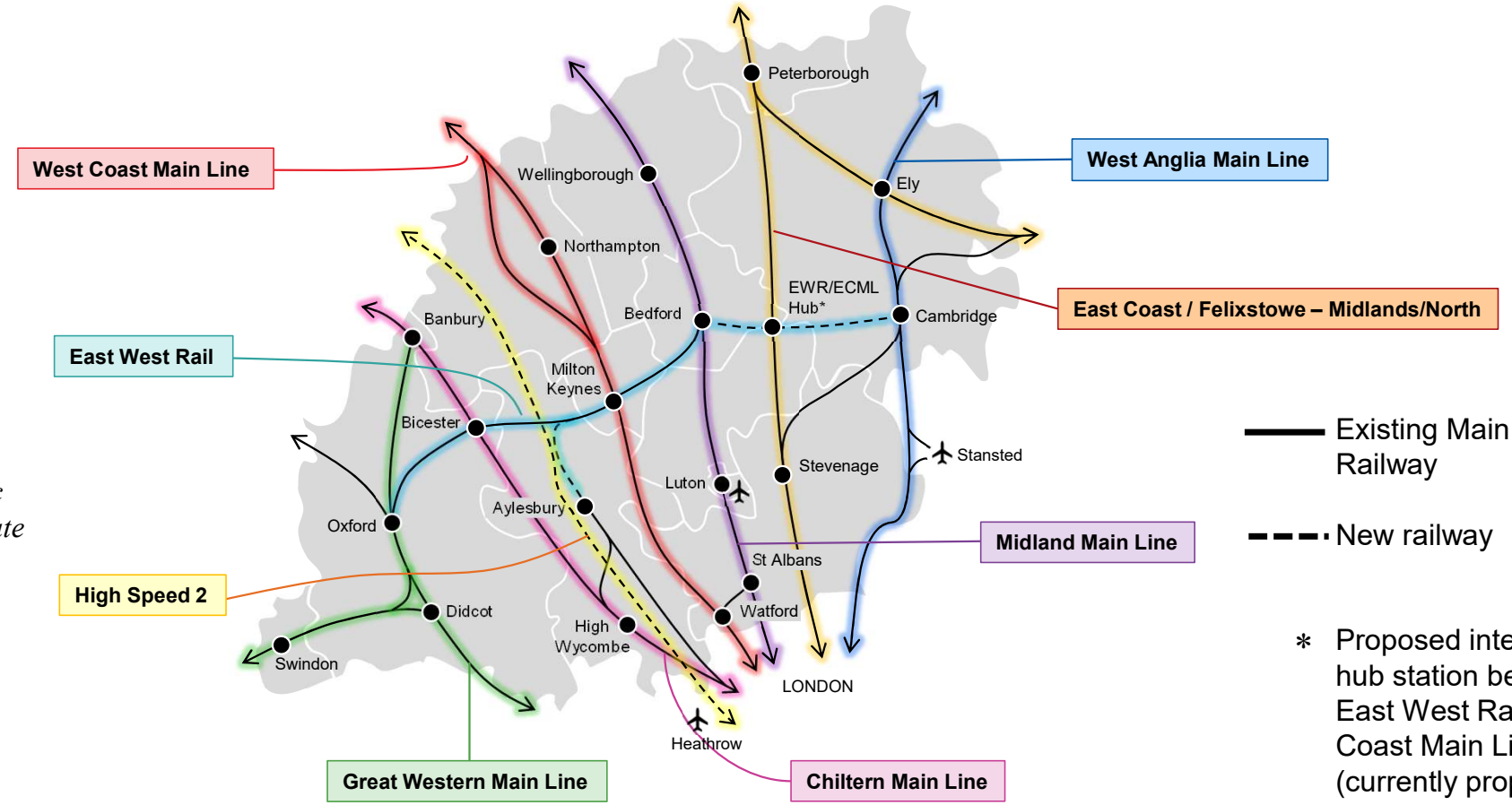
To meet these objectives, we have:

- Provided a comprehensive view of the rail priorities across the EEH area.
- Engaged with partners and stakeholders.
- Understood the rail context and how this will impact desired outcomes.
- Analysed the regional rail hubs and identified weaknesses.
- Evaluated the schemes and services which would achieve EEH's strategic objectives.

EEH Rail Network



The EEH Area Main lines and Key Stations



This (and other) map (s) is a simplified schematic map showing approximate alignments of the main lines
Where routes link to key main line hubs/ stations these have also been shown.

Full line diagrams are available in Appendix A

Existing Main line Railway

New railway

* Proposed interchange hub station between East West Rail and East Coast Main Line (currently proposed in the Tempsford area)

The EEH Area Main lines and Hubs/ Interchanges

Main line	EEH LTA Areas	London Terminus	Key EEH Hubs	Key Rail Interchanges	Key Non EEH Destinations	Key linked lines in Study
Great Western Main Line	Swindon Oxfordshire (via Cherwell Valley Buckinghamshire (via shuttle services)	Paddington	Oxford Swindon	Didcot Banbury (on Cherwell Valley Line)	Reading Bristol Cardiff and Swansea Exeter and Plymouth	Oxford – Banbury Oxford – Hereford (Cotswold Line) Didcot – Oxford (Cherwell Valley Line)
Chiltern Main Line	Oxfordshire Buckinghamshire Hertfordshire (only via London – Aylesbury Line)	Marylebone	Aylesbury (on Aylesbury Line) Bicester	High Wycombe	Birmingham	Aylesbury – Marylebone Aylesbury – Princess Risborough
West Coast Main Line	Hertfordshire Buckinghamshire Milton Keynes West Northamptonshire	Euston	Watford Milton Keynes Northampton		Birmingham Manchester Liverpool Glasgow	St Albans Abbey – Watford Junction
Midland Main line	Hertfordshire Luton Central Bedfordshire Bedford North Northamptonshire	St Pancras (also Thameslink services)	St Albans Luton Bedford Wellingborough Kettering		Leicester Derby Nottingham Sheffield	
East Coast / Felixstowe – Midlands/North	Hertfordshire Central Bedfordshire Cambridgeshire and Peterborough CA	Kings Cross (also Thameslink services)	Stevenage Peterborough	EWR Interchange	Leeds Newcastle Edinburgh	Ely – Peterborough line Stevenage - Cambridge Line
West Anglia Main Line	Hertfordshire Cambridgeshire and Peterborough CA	Liverpool Street	Cambridge	Ely	Stansted Airport	Cambridge - Kings Lynn (Fen Line) Cambridge - Norwich/Ipswich Stansted spur
East West Main line	Oxfordshire Buckinghamshire Milton Keynes Central Bedfordshire Bedford Cambridgeshire and Peterborough CA	NA	Oxford Milton Keynes Bedford Cambridge	EWR/ECML proposed station	Potential future connections to east and west	Aylesbury – Milton Keynes (Proposed)

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Part 2

Context

Context

This Section

This section sets out the status of the post-pandemic railway context in the England's Economic Heartland area. It includes the following topics:

Policy Context

The key policies impacting the railway and investment, particularly those proposed in the CP6 Control Period.

Demand Recovery

An analysis of how the regions' railways have responded to post-pandemic demand, which illustrates variation in demand recovery and considers the drivers for these trends.

Revenue Challenges

An analysis of the one of the key consequences of changing rail demand, which is the impact on revenue and – in turn – government subsidy for day-to-day operations.

Crowding

An analysis of crowding on services across the EEH area to London terminals during the AM and PM peak.

Carbon

An analysis of current carbon emissions for the railway in the EEH area, and an assessment of progress towards decarbonisation.

Policy Context

The policy context has changed significantly in recent years

The national context presents both opportunities and challenges (but mostly challenges)

- **Demand is recovering** but revenue is further behind, meaning higher subsidy is needed to maintain current service levels.
- **DfT's 'Decarbonising Transport: A Better, Greener Britain' (2021)** highlights targets to deliver a net zero rail network by 2050 and remove diesel trains by 2040.
- The **cancellation of HS2 2A and 2B** and subsequent **Network North proposals** means the future baseline of future schemes is uncertain
- However, individual project commitments through **Network North** are still subject to business case and treasury approval.
- The environment for **making the case** for investing in capital rail projects is harder.

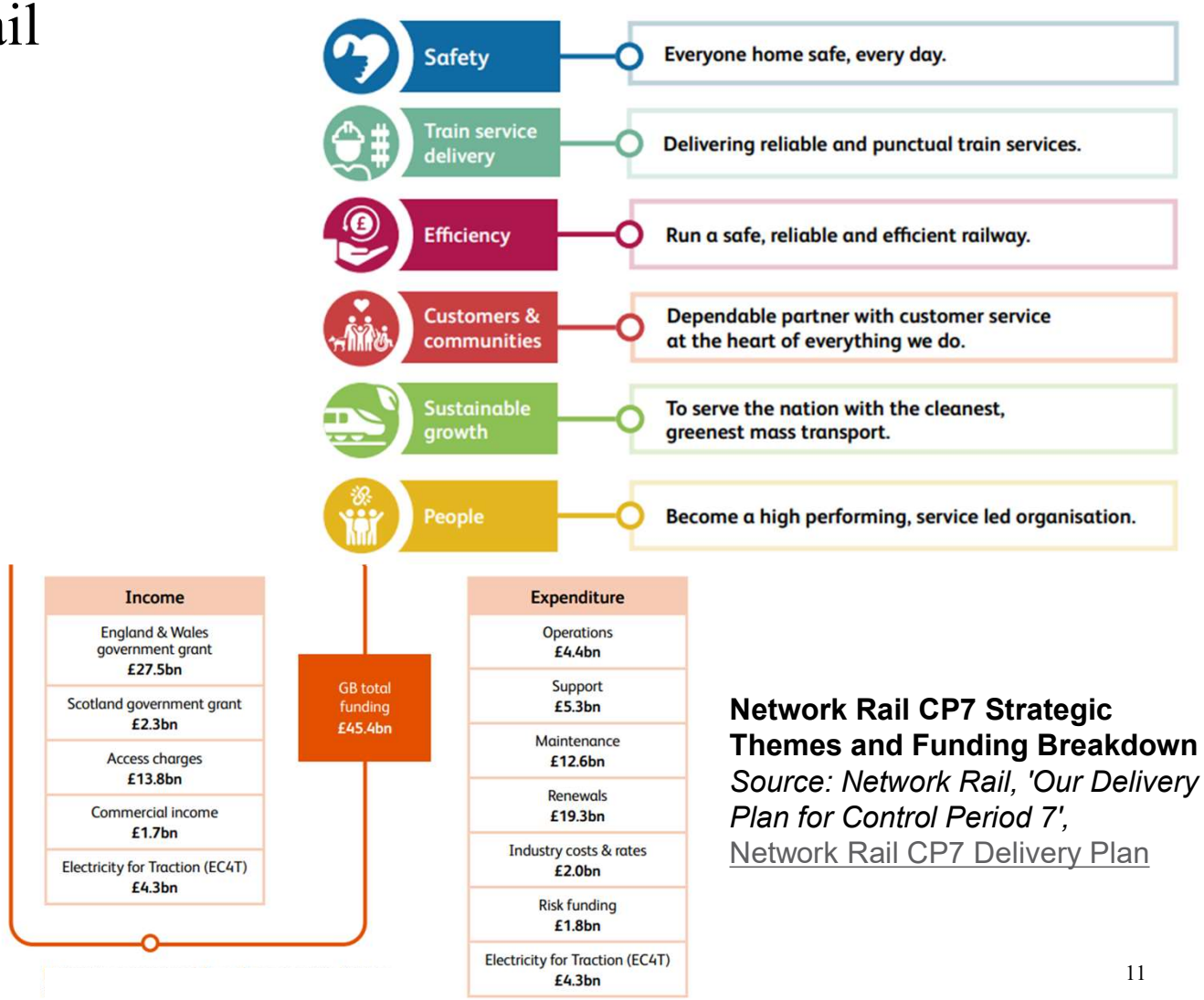
The future model and funding for railway investment remains uncertain, especially at a national level

- In 2021, the **Williams-Shapps plan for rail** set out the proposed future model for rail comprising the delivery of efficient railways and creations of Great British Railways (GBR). **The new Labour government has indicated it will implement much of this plan** but will take operating contracts "in house" rather than tender them (as originally proposed).
- The **appetite for large scale new capital programmes is unlikely to be significant** due to government spending constraints and existing commitments such as HS2 Phase 1, Trans-Pennine Route Upgrade, East West Rail.
- The levelling-up agenda means funding for **schemes in the south of England are hard to justify** on journey time saving/connectivity alone.
- **Schemes linked to growing passenger demand and supporting wider objectives such as housing and supporting jobs can be more attractive** if they can provide a degree of self-funding that supports the case.

Policy Context | Network Rail

The wider policy background frames Network Rail's priorities for Control Period 7 (2024-2029)

- Overall funding for operations, maintenance and renewal is expected to be slightly less than the equivalent for Control Period 6 (2019-2024).
- There is expected to be a small decrease in asset reliability across all NR Regions covering EEH in CP7 as a result of funding pressures.
- There is a significant focus on realising greater efficiencies and working across the industry to continue to improve train performance.
- Enhancements (such as electrification or capacity upgrades) are funded separately.



Network Rail CP7 Strategic Themes and Funding Breakdown
Source: Network Rail, 'Our Delivery Plan for Control Period 7', Network Rail CP7 Delivery Plan

Demand Recovery | EEH Area

Rail demand is recovering, but recovery is uneven

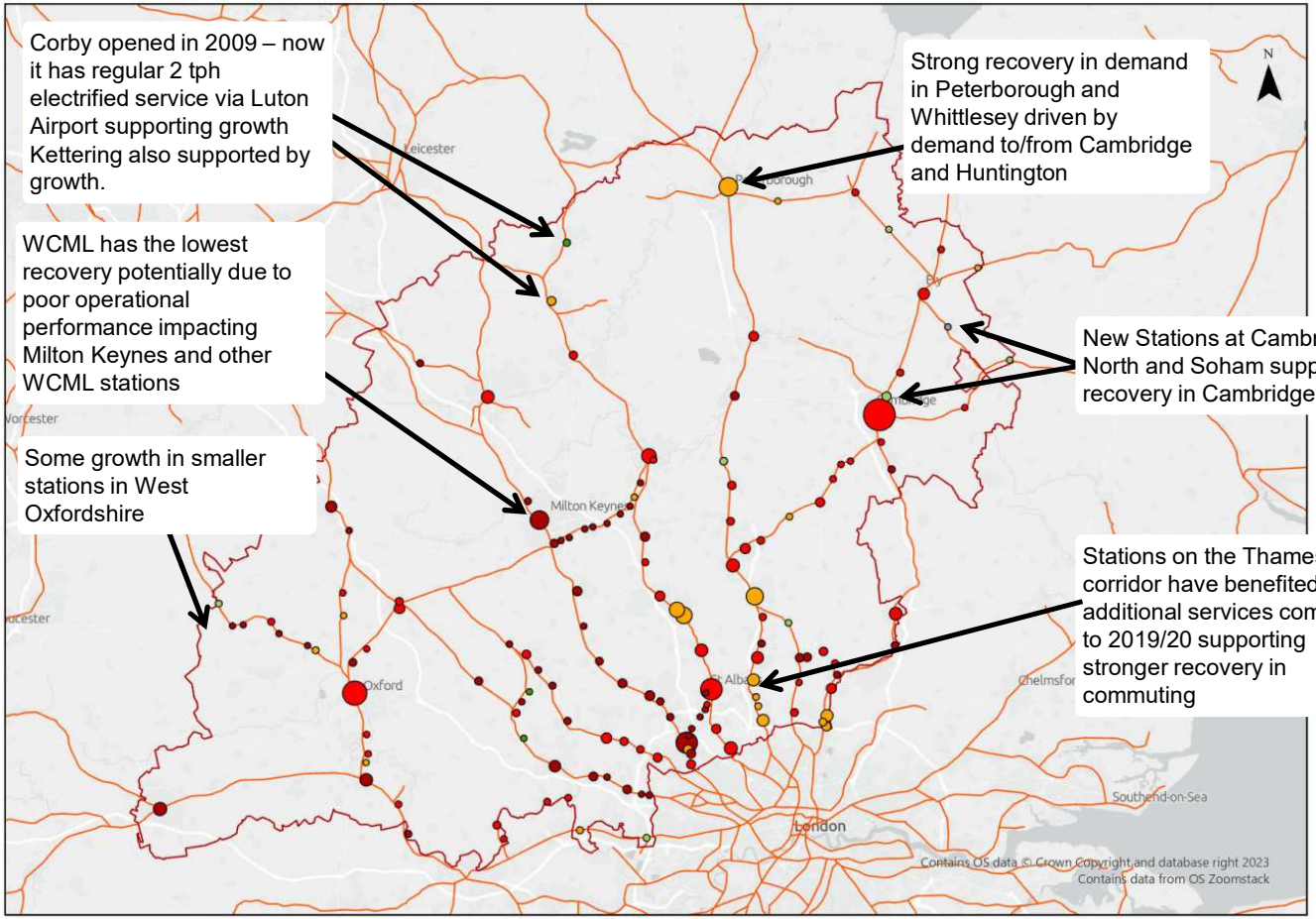
Growth or decline 2022/3 vs 2019/20

- < -30 %
- -30 to -15 %
- -15 to 0 %
- 0 to 15 %
- > 15 %

Passenger demand (2022/23)

- 100
- 1,000
- 10,000
- 100,000
- 10,000,000

- UK rail network
- LA boundaries
- EEH boundary



Demand Recovery | National

Recovery in the EEH area is lower than other parts of the country

Overview

Demand recovery across the EEH area has not been uniform and trends have been identified across the region explaining the variability.

Reliability

Services on the West Coast Main line suffered poor reliability during 2022/23 and this appears to have resulted in lower levels of demand recovery with stations such as Milton Keynes, Berkhamsted and Watford Junction showing levels of demand below 70% of previous levels.

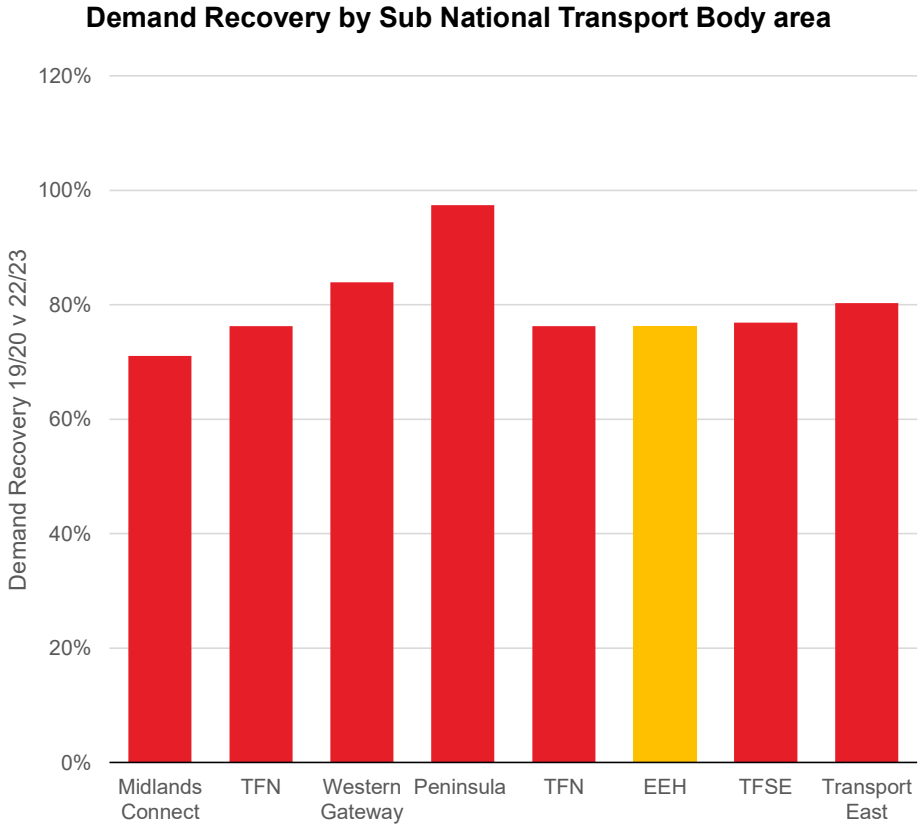
Service Frequencies

Stations that have maintained or increased service levels are recovering at a faster rate. Demand on Thameslink has been higher than on the WCML. New services, such as the 2tph Luton Airport Express to Corby, have helped drive higher levels of recovery, with Corby to London trips growing by 40% from 2019/20 to 2022/23. Where frequencies have been reduced such as on Chiltern services to Aylesbury Vale this has impacted demand with recovery at Aylesbury Vale only 50%.

New Stations and Connections

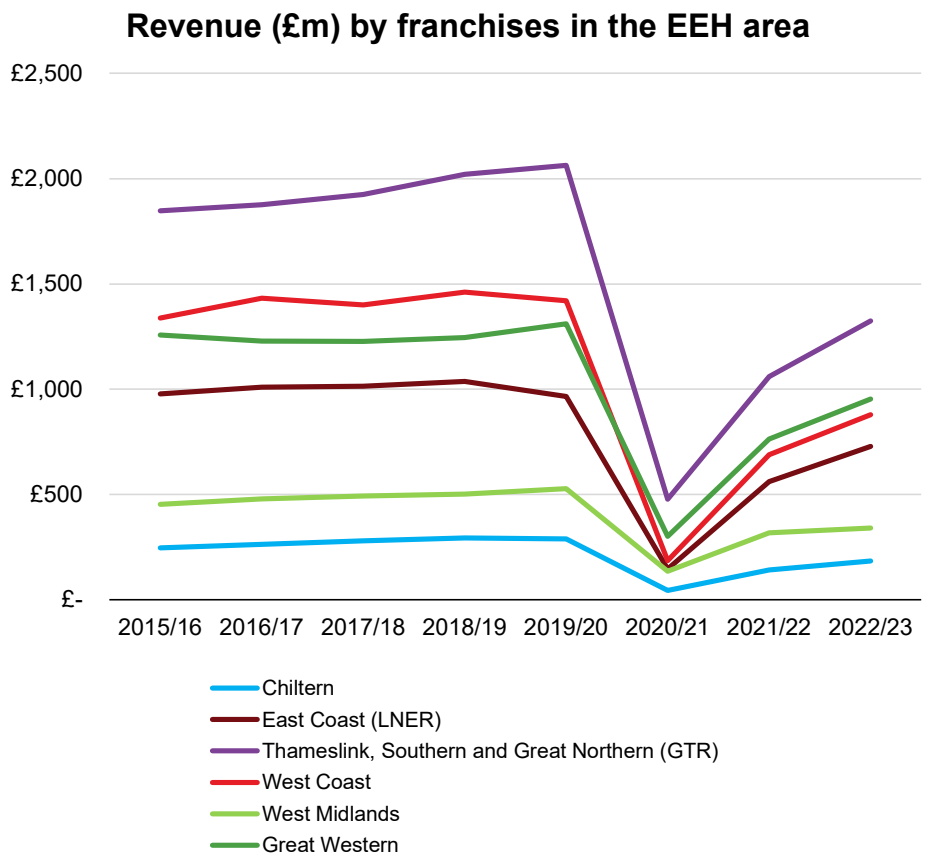
Where new stations have opened, this has enabled new journeys, for example Cambridge North have continued to grow demand with 13% more passengers in 2022/23 then 2019/20.

Overall recovery across the regions has been varied with the EEH areas around average for the United Kingdom at 78%.



Revenue Challenges | Operator Revenue

Government funding is now focussed on operational support rather than investment



One of the key challenges facing the railway in the EEH area is that **lower demand means revenue to the rail industry** is lower than before 2019. Changing travel patterns mean yields per passenger are falling with fewer season ticket travellers and more leisure travel.

The EEH area (as with the wider South East area) historically had a large share of passengers commuting to London on high yielding fares. This is a section of demand most heavily impacted by working from home.

This ongoing revenue gap means greater government funding support is needed just to maintain current service levels. It also means government has had to take sometimes unpopular measures to control costs in the short-term.

This means that, at the time of writing, it is a priority for the rail industry to try to return revenues to pre-pandemic levels. This, in turn, will unlock future funding to invest in potentially expanding services in the longer term.

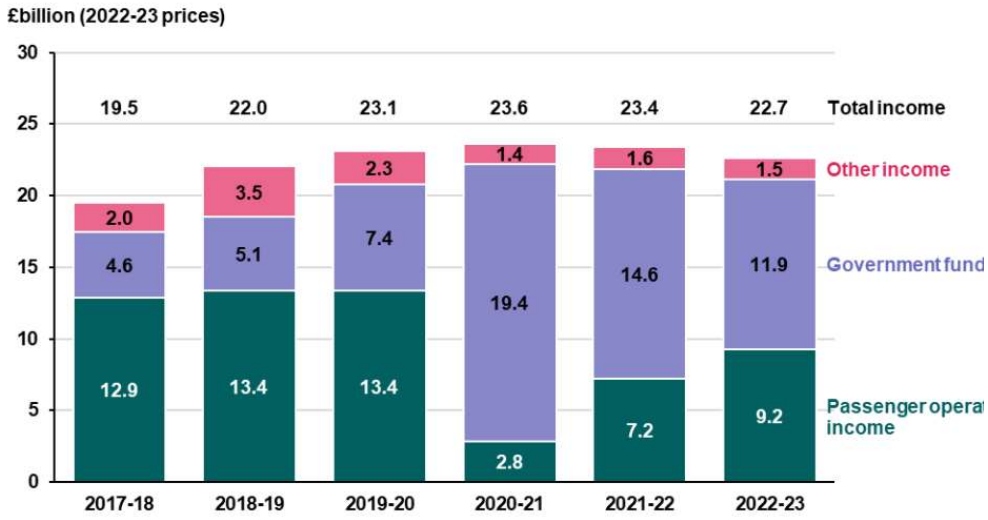
Private investment in the rail industry has also fallen since the pandemic.

For these reasons, it would probably be in EEH's interest to support policies that lead to demand recovery, which, in the longer term, will enable the government to reduce subsidy and re-focus on investment.

Revenue Challenges | Government Support

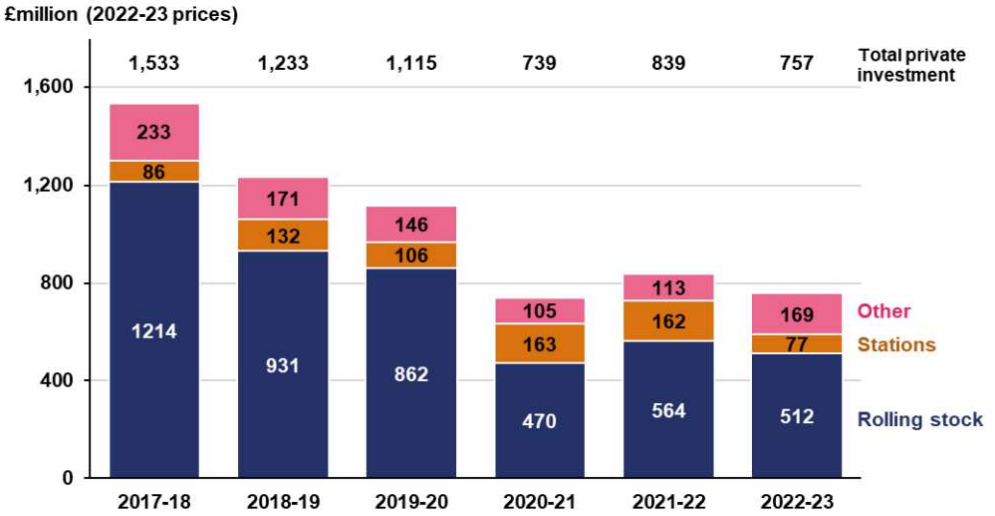
Government funding needs to focus on operational support due to a decline in revenue and private investment

Income for the operational rail industry, 2017-2023
Source: ORR



Income for railways has become more reliant on Government funding as passenger income has fallen.

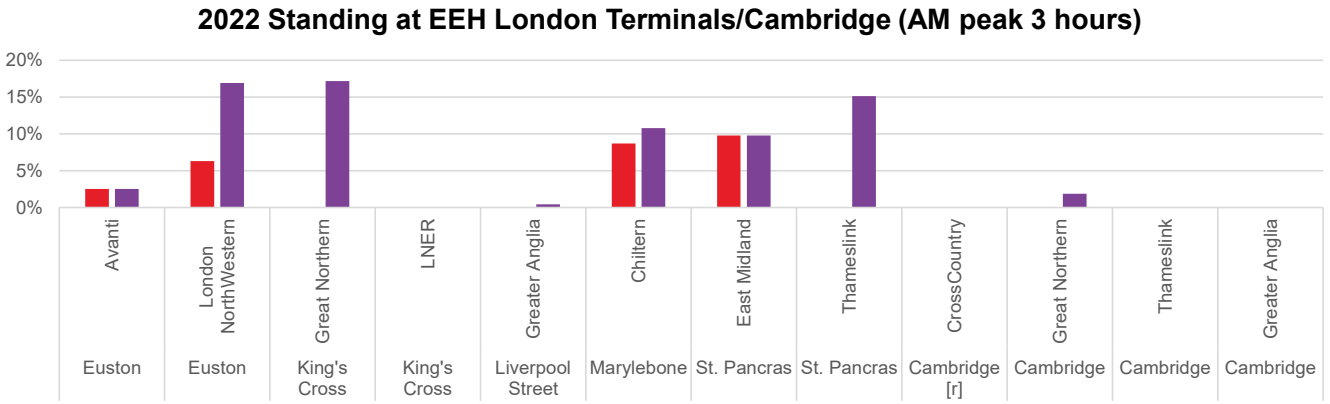
Private investment in the rail industry, 2017-2023
Source: ORR

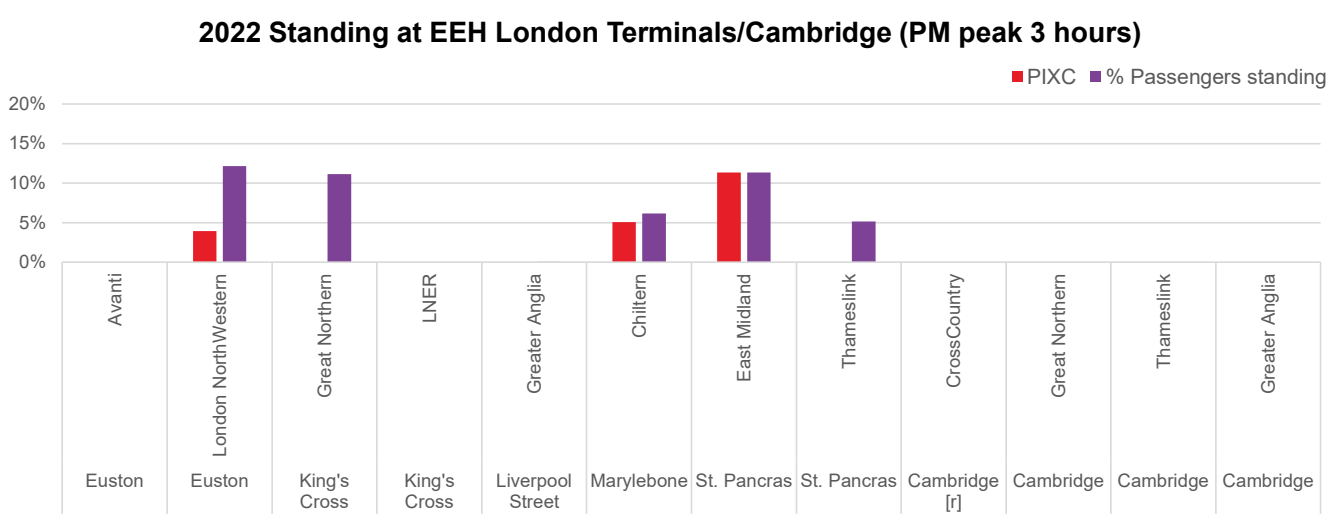


Private sector investment has fallen significantly a year from £1533m in 2017-18 to less than £800m, largely due to falling rolling stock investment.

Crowding

Crowding is a less significant issue than it used to be





Services from across the EEH area to London terminals were previously among the most crowded services in the country*. This demand (and subsequent crowding) was a key driver of high levels of investment in the rail network in the region.

The change in commuter patterns post-pandemic has meant that both the overall level and distribution of demand has changed. There are now fewer weekday peak hour commuters meaning crowding on peak services has fallen. This is most apparent on Monday and Friday with recovery highest recovery on other weekdays.

In the medium and long term there is likely to be an increase in demand as jobs and housing grow, albeit with lower commuter trip rates than previously and potentially peak demand higher on three day a week rather than five.

On many routes weekend demand has already recovered to pre-pandemic levels.

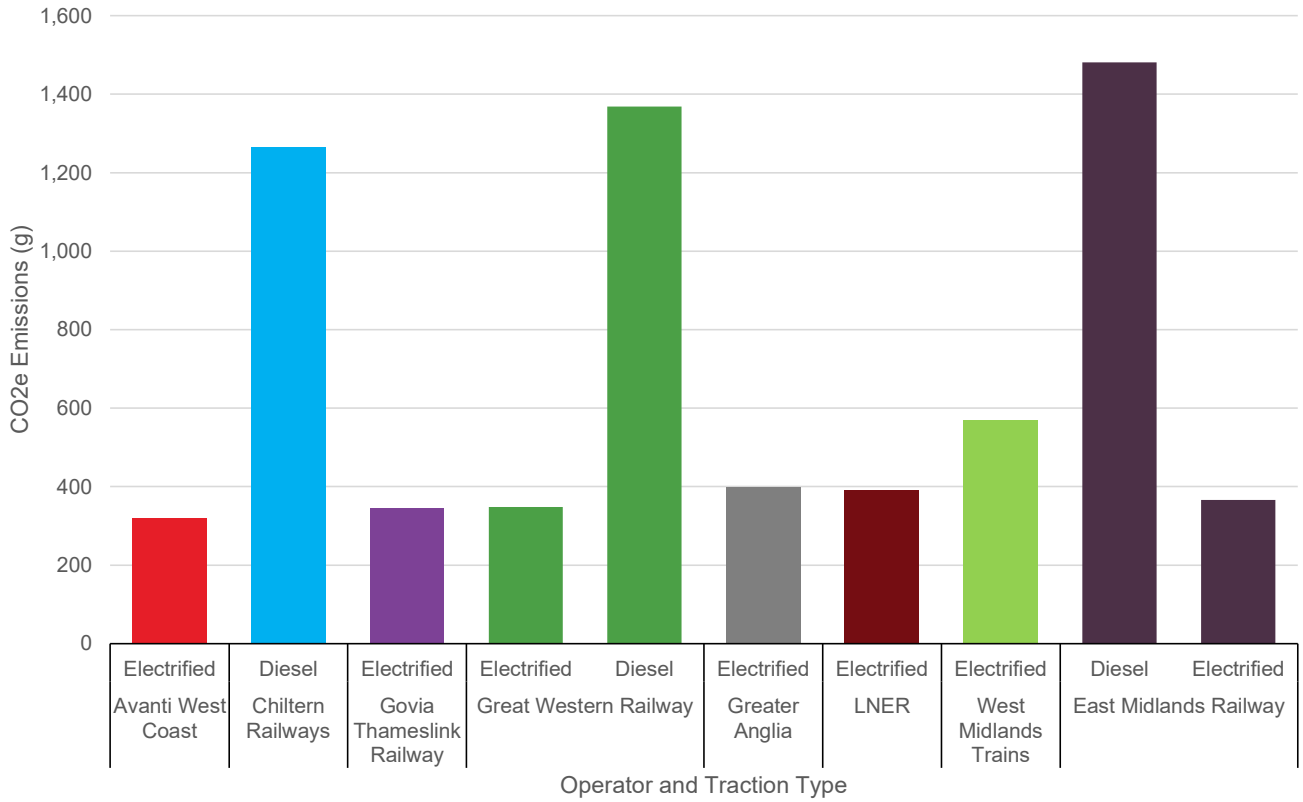
*https://assets.publishing.service.gov.uk/media/5f6c8abad3bf7f723ad68d0f/rail-passengers-crowding-2019.pdf – Cambridge is the only EEH station with available data

PIXC = The number of standard class passengers on a service that are in excess of the standard class capacity.

Carbon

Electrification matters for emissions

Carbon per (passenger) vehicle KM (well to wheel) 2022/23 EEH TOCS



Emissions per vehicle KM are largely dependent on the rolling stock traction with diesel emissions between 3 to 4 times as high as overhead electrification. Emissions from electrified traction are dependent on grid carbon emissions, forecast to fall as the UK transitions to zero emission energy production. Overall, travel by rail remains a low carbon mode of travel per passenger mile even if the journey is untaken by diesel traction due to higher occupancy of trains compared to other modes (further details available from Department for Energy Security and Net Zero[1)].

1 https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023

Summary

Demand is recovering, but it is uncertain how future demand will play out, which is impacting the railway

Over the last 5 years, the rail industry has gone through a period of great uncertainty. The COVID-19 pandemic accelerated some trends that were emerging before 2020, such as increased home working, which has impacted demand levels (especially commuting) and resulted in reduced income from rail across the region. The rate at which demand will grow in the medium and long term is also uncertain, and short-term recovery is likely to have been impacted by poor reliability and strikes in the short term. While demand from commuting to London may be lower than 2019, it remains the dominant use of rail within the region, particularly those areas closest to London where a high percentage of workers have jobs in the capital.

The need for increased funding from central government, along with widening interest rates and slow economic growth, has put pressure on investment in the region. It is becoming increasingly hard to make the case for centrally funded rail projects. Beyond the East-West Rail Project, current plans for Control Period 7 are not expected to deliver significant investment in the EEH region.

At the same time the rail industry is going through a period of reform, moving away from the franchising model and towards a new model of contracted services. During this process, government has focused on reducing industry costs, and many operators are focussed on cost control rather than growth. Simultaneously, costs are increasing with inflationary pressures on wages and construction. Once the future model for the rail industry is established and revenue has recovered, there may be more scope for greater investment in the EEH area.

The cancelation of HS2 phase 2, along with uncertainty over what might replace it (if anything), has meant establishing the future baseline for rail services on the main lines. In the absence of a long- term strategy for the current railway, there is a clear opportunity for bodies like EEH to fill the void with a coherent vision for the railways.

Traditional business cases for funding rail enhancement have relied on the benefits of congestion relief and improved journey times on routes which have existing high levels of demand. In the future, schemes are likely to need to develop wider strategic cases for schemes aligned with national and regional objectives.

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Part 3

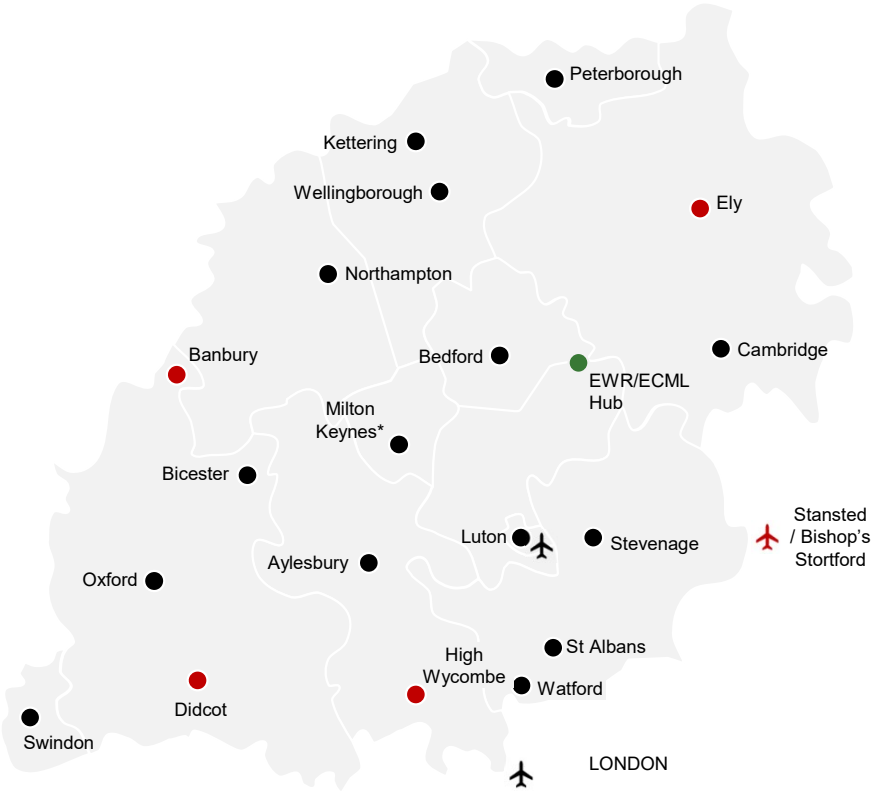
Baseline | Decarbonisation and Connectivity

Baseline | Decarbonisation and Connectivity

This Section

This section sets out the baseline context across the network as follows:

- Electrification Baseline
- Connectivity Baseline
- Constraints



- Identified Rail Hubs from previous study
- Additional key Main line Interchanges
- Future Interchange Hubs

Basemap explanation:

This map shows the key main line rail nodes used within scope of this study where main lines connect and interchanges. These locations were identified from Rail Strategic Objectives report undertaken by EEH (published at: https://www.englandseconomicheartland.com/publications-and-responses)

In addition, High Wycombe, Didcot, Banbury, Ely and Stansted Airport/Bishop Stortford have been added as these hubs are key interchange points on the main line rail network

* A hub at the intersection of the East Coast main line and East West Rail Main Line has also been identified and added.

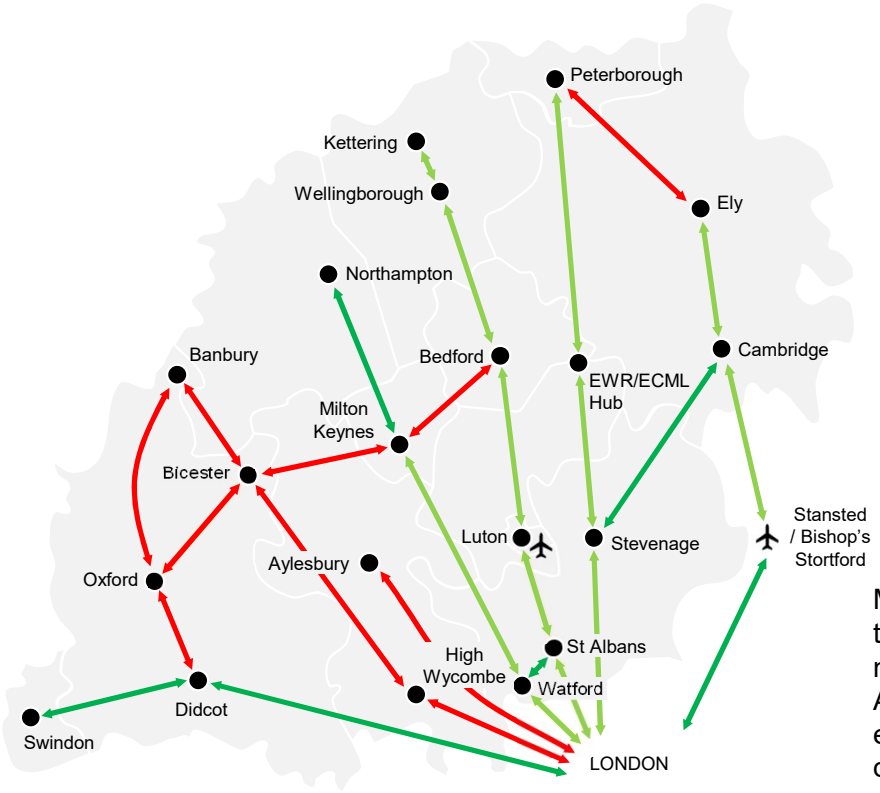
* Milton Keynes has been identified as the key hub station, although with future EWR services proposed to primarily service Bletchley the proposals for Milton Keynes cover both Milton Keynes Central and Bletchley.

Baseline | Electrification

Most of the EEH area's rail network is electrified, although there are some areas operating under diesel traction

Electrification

- Unelectrified
- Electrified (some diesel passenger services)
- Fully electrified

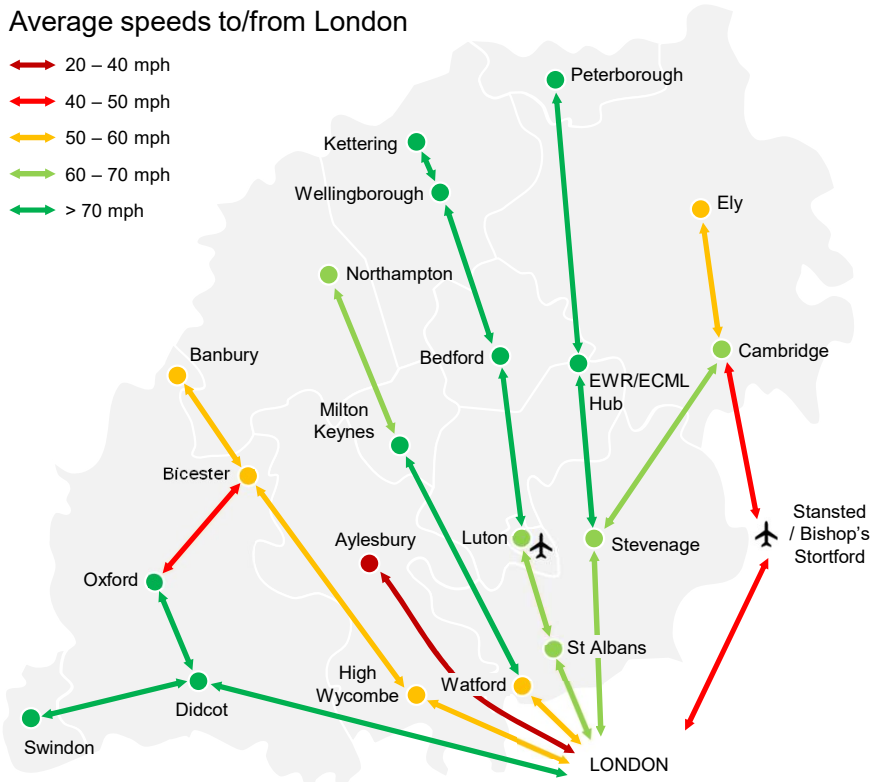


Most core main lines in the EEH are electrified through overhead electrification. There is one notable exception – the Chiltern Main line (including Aylesbury to London). Despite this high level of electrification, there remains a mix of electrified and diesel services operating on some lines as these services run under electrified sections of the railway outside the EEH area.

Baseline | London Connectivity

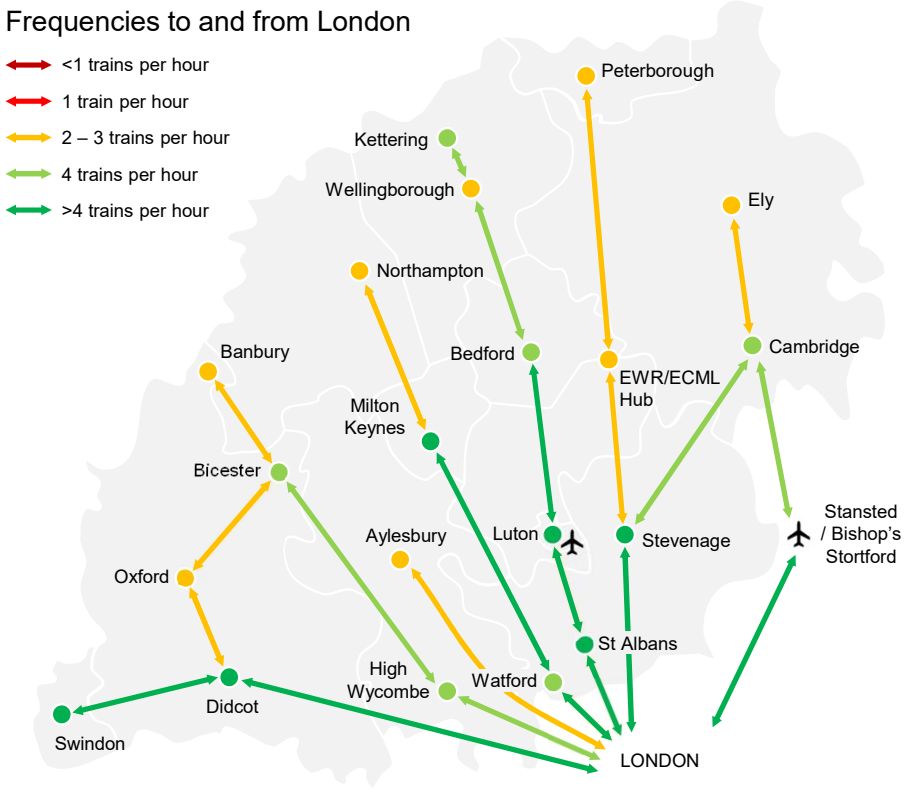
Most hubs in the EEH area are well served by services to and from London, although Aylesbury is an outlier

Average speeds to/from London



Average speeds are the typical journey time between hubs divided by the distance between them.

Frequencies to and from London

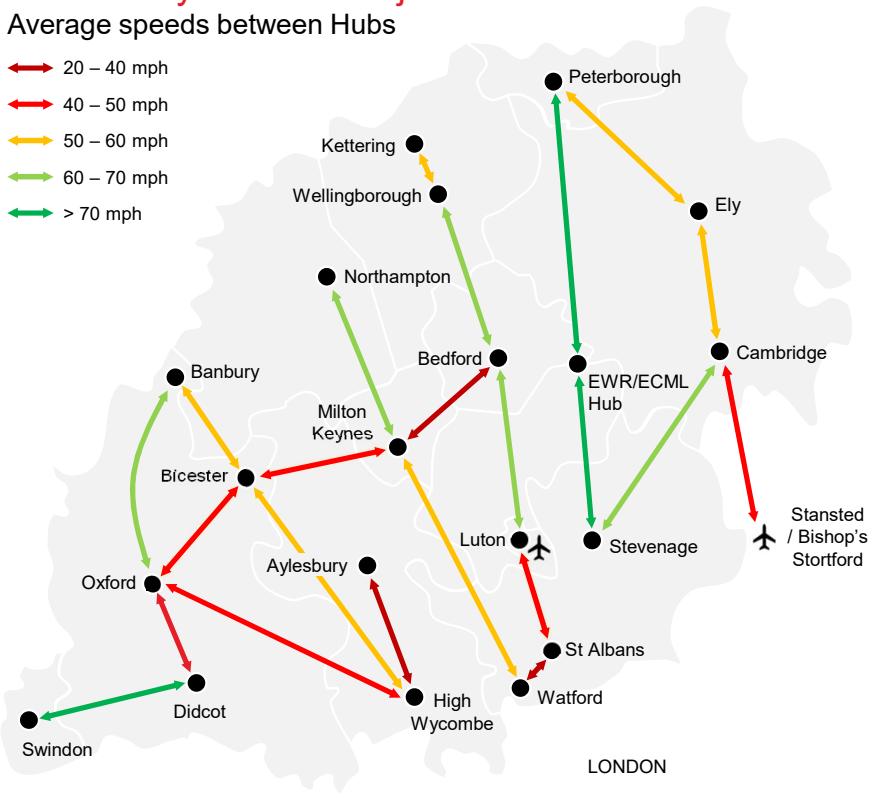


Frequency is the typical frequency between hubs per hour in the typical off-peak timetable (between 10:00 and 16:00).

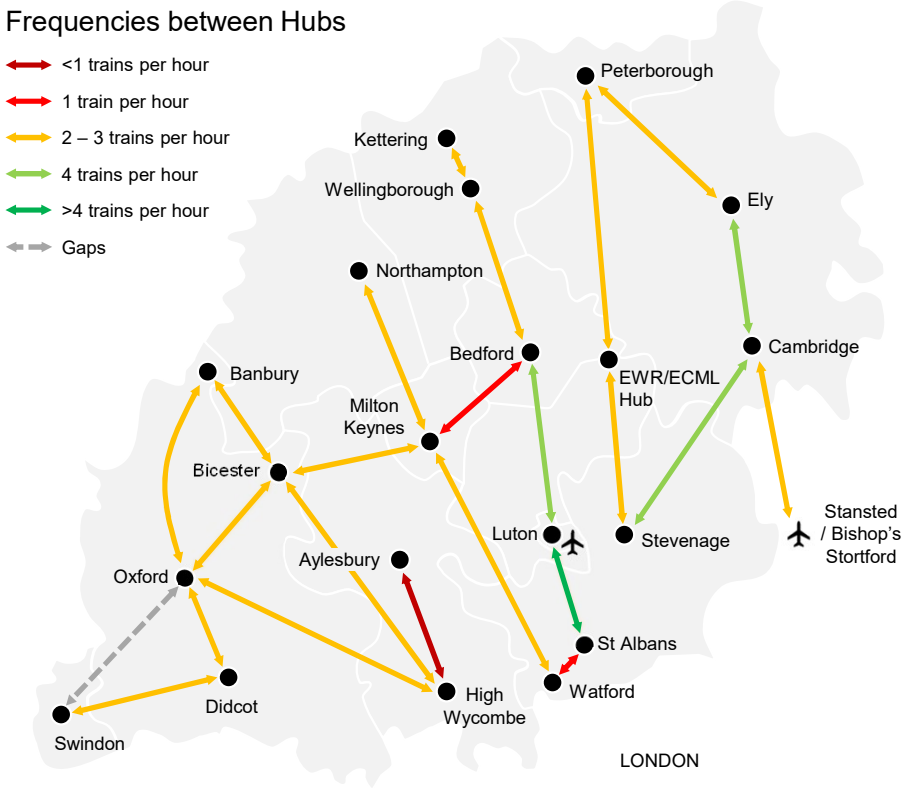
Baseline | Connectivity within the EEH Area (with EWR next stage)

East-West connectivity across the EEH area is weak compared to radial routes from London, with some gaps in connectivity between adjacent hubs also identified

Average speeds between Hubs



Frequencies between Hubs



Average speeds are the typical journey time between hubs divided by the distance between them.

Frequency is the typical frequency between hubs per hour in the typical off-peak timetable (between 10:00 and 16:00).

Baseline | Outside the EEH Area

There is limited connectivity between the EEH area and the South West and East of England. Midlands connectivity is better

In the Passenger Rail Study (Phase 2) Network Rail identified the following intra-regional flows as most important to the EEH area:

Current direct services

- Oxford – Southampton
- Oxford – Birmingham
- Oxford – Manchester

Reasonably good frequency, but slow and often crowded

- Cambridge – Ipswich
- Cambridge – Norwich
- Swindon – Bristol

Low frequency and slow

- Northampton – Birmingham
- Milton Keynes – Birmingham
- Peterborough – Leeds

Fast, regular services

- Peterborough – Leicester
- Stevenage – Leeds

Reasonably fast but less frequent services

Requires change(s)

- Oxford – Bristol — *One change required, still reasonably fast*
- Cambridge – Bristol
- Cambridge – Manchester

Multiple changes required, long journey times

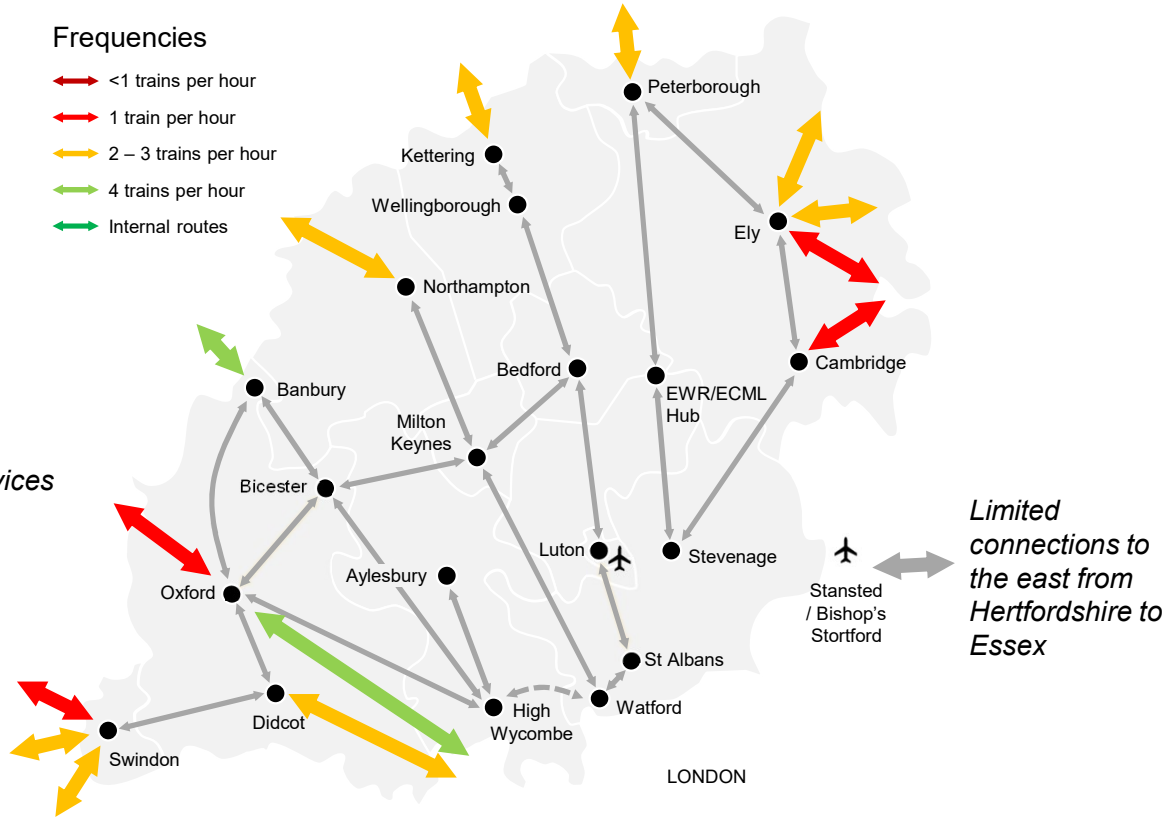
Other Idented key flows

- *Reading to Didcot*
- *Reading to Oxford*

Moderate Frequency, fast journey times

- *Oxford to Worcester*

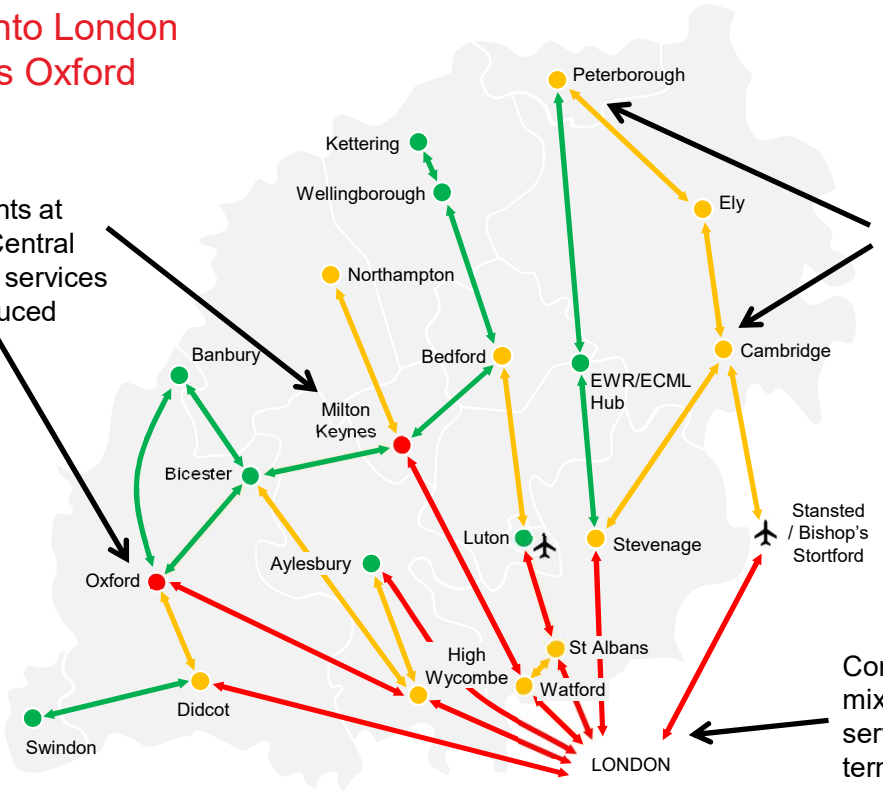
Moderate frequency, limited stops with competitive journey time



Constraints | Todays Railway (with EWR next stage)

There are constraints on most lines into London and key interchange stations, such as Oxford

Station constraints at Milton Keynes Central and Oxford with services due to be introduced



Other key hub stations have limited capacity preventing some specific services operating and will require upgrades to increase capacity

Constraints on main lines into London with mix of local, regional and high-speed services on both track and platform capacity terminal stations.

- Full
- Moderately full
- Capacity

Constraints | Future Railway | Committed Upgrades

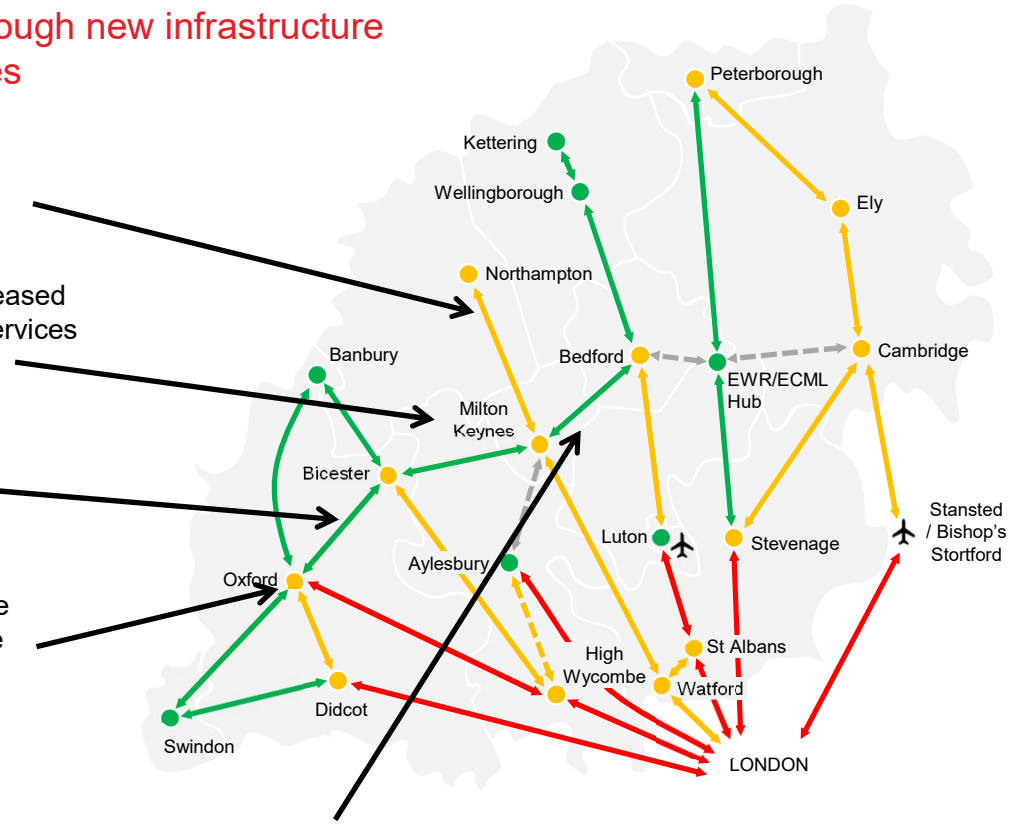
New capacity is provided through new infrastructure and station capacity upgrades

Train paths on WCML released from HS2 Phase 1

Mitton Keynes station capacity released by some London to Birmingham services transferring to HS2

Introduction of EWR services from Oxford to Milton Keynes at 2tph

Capacity at Oxford alleviated due to upgrade but increased service levels likely to utilise capacity



- Full
- Moderately full
- Capacity
- Gaps

Improvement in service levels between Bedford to Milton Keynes and Oxford with funded improvements on Marston Vale Line

Key Schemes

EWR – Will operate a service between Oxford and Milton Keynes and potentially Bedford through enhancements to Marston Vale line.

HS2 – The proposed service pattern will depend on completion of the Euston to Old Oak Common section with the potential for 6tph operating on HS2, with 3tph operation to Birmingham Curzon Street and 3tph to the north west, which replace some existing WCML services.

Constraints | Future Railway | HS2 (Phase 2 and EWR in full)

A more complete high speed rail network enables more services to avoid the existing lines

Key Schemes

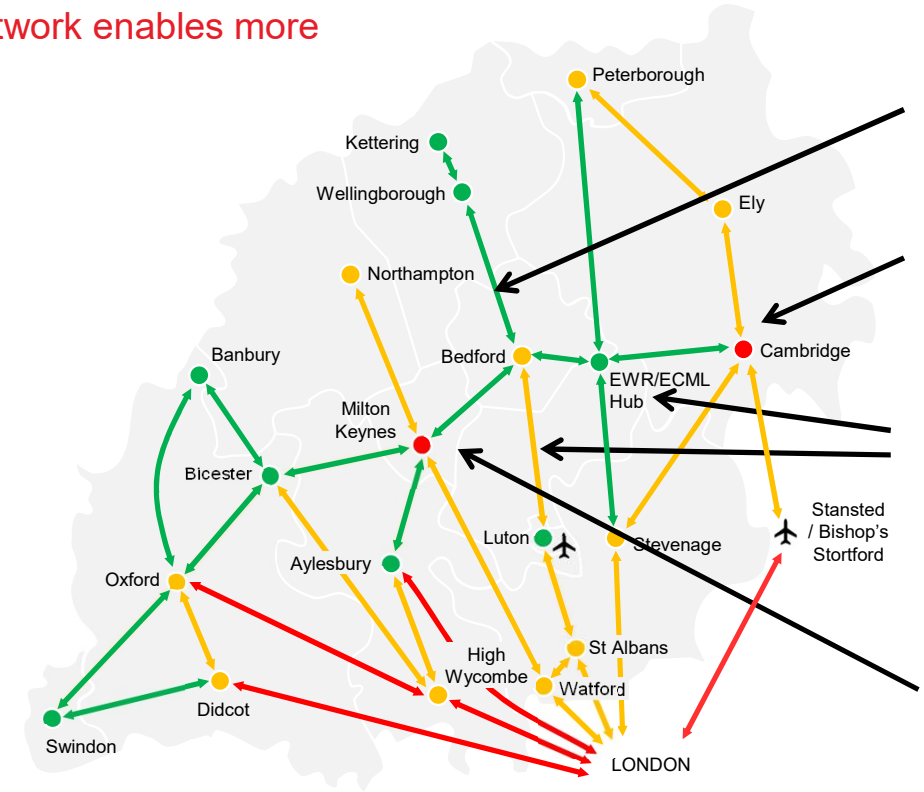
East West Rail (EWR)

It is assumed that EWR will operate a 4tph or higher service into Cambridge and Oxford. This assessment also assumes full delivery of the Aylesbury Link.

High Speed 2 (HS2)

HS2 phases 2a and 2b would have enabled direct services of up 17tph from Euston with potential express services on the WCML, MML and ECML. The Leeds leg and Golborne Link were cancelled in 2021 and phases 2A and B were cancelled in 2023, leaving uncertainty over the future of services from London to the north-west. The potential benefits are shown here to illustrate future opportunities, recognising later phases of Hs2 have been cancelled with no alternative currently proposed.

- Full
- Moderately full
- Capacity



East West Rail is assumed to deliver required capacity at Bedford through delivery of additional tracks to the north and new platforms.

A completed EWR would boost east – west connectivity, but would also add more pressure on capacity at Cambridge Station despite proposed capacity

A full HS2 network would have relieved some capacity on the Midland Main lines and potentially also some East Coast main line services depending on the future HS2 service proposals

Aylesbury's connectivity would be significantly improved through connection to Milton Keynes, but there would be pressure on capacity at Milton Keynes Central with additional terminating or through services needing somewhere to reverse on the WMCL

Summary

Baseline

Electrification

The EEH area has a high level of electrification, and further investment in the Midland Main line is underway. There are some unelectrified lines on the connecting routes of the main lines between Didcot, Banbury, Ely and Peterborough. The most significant unelectrified lines is probably the Chiltern Main line. The future traction of East West Rail is uncertain, and no electrification is currently planned on existing routes. There are currently some battery bi-mode trains in operation within EEH between Cambridge and Norwich/Ipswich.

London services

Connections within London are both high speed and, in most cases, high frequency (3/4tph) with faster average speed from longer distance services but often lower frequency (2/3tph). Services on the Chiltern Line are lower reflecting the lower capacity of Chiltern Line and lack of electrification.

Services within the EEH Area

Connections in the EEH area by rail are often poor, especially between different main lines, in particular neighbouring cities on the Midland, West Coast and East Coast main lines.

Services outside the EEH Area

The EEH area has a range of connections to its neighbouring regions. However, in many cases, these have lower frequencies. Current proposals for HS2 may involve some loss of connectivity from key hubs such as Milton Keynes and Northampton.

Constraints

London terminals

Most of London's key rail terminals have reached capacity, particularly during peak periods. Terminal station capacity constraints also impact the scope for additional services outside the EEH area – for example, Manchester Piccadilly Station is heavily constrained, which reduces scope for more services on the WCML to Manchester.

Hub stations

Key regional stations within the EEH area also have capacity constraints. This is particularly pertinent at Oxford, Milton Keynes and Cambridge, where track layouts and platform provision limit opportunities for more services.

Mixed traffic

One common issue on the EEH area's busiest railway lines is that there is a need to operate mixed speed traffic, sometimes over two tracked sections. This limits the number of services which can operate and often results in fewer local services (as these generate lower income then services to London). It also can limit opportunities for new rail stations.

Industry finances

As outlined in earlier slides, the weak finances of the rail industry pose arguably the greatest constraint to improving services. Any services that might be at risk of operating at deficit is likely to be seen as unattractive to government. Similarly, capital investment will need to demonstrate a credible return on investment while supporting sustainable economic growth (e.g. through delivering jobs and planned housing growth).

ARUP

Part 4

Baseline | Regional Interchange Hub Stations Assessment

Introduction

This Section

The EEH Rail Strategic Objectives Report identified locations for several station ‘multi- transport interchanges’, (which in turn builds on the work in the previous Passenger Rail Studies Phase 1 and 2). This section identifies components of station hubs and distinguishes the components of high-quality ones.

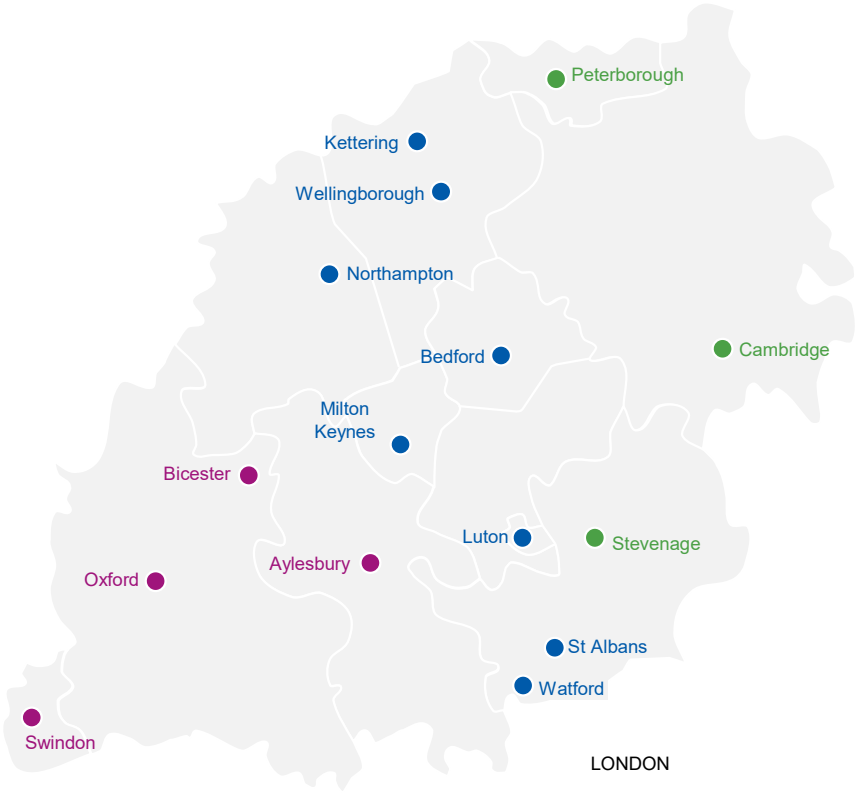
We have measured several rail attributes to assess the baseline condition of each station hub. This exercise has enabled us to outline priorities for improving the quality and performance of hubs in the EEH area.

This section outlines:

- Identified Rail Hubs
- Components of a Station Hub
- Measuring Rail Hub Attributes
- Summary of Rail Hub Assessment

Identified Regional Interchange Hubs

Rail hubs provide opportunities to improve connectivity between services and other transport networks



Identification

The EEH Rail Strategic Objectives Report identified locations for "multi-transport interchanges" which built on the previous Rail Studies phase 1 & 2. These have been grouped geographically.

West

- Swindon
- Oxford
- Bicester (Bicester North and Village)
- Aylesbury

Central

- Watford
- Milton Keynes
- Northampton
- St Albans
- Luton
- Bedford
- Wellingborough
- Kettering

East

- Stevenage
- Cambridge
- Peterborough

Components of a Station Hub

The key station hubs/multi-modal interchanges shown in the previous page serve the key populations and employment markets in the EEH area. They should aim to enable seamless interchange between rail services and other modes of transport.

Station Context

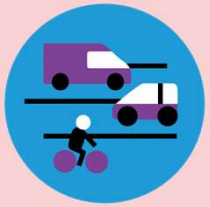
Where is the station located in relation to local population, other nearby settlements and key demand attractors

Public Transport

Does the station have the right public transport network and frequency to support its role as a hub station.

Integration and facilities

Does the station have the correct facilities to support the hub such as cycle storage, public transport infrastructure and pedestrian access



Transport Network

Connections and integration to SRN, bus priority network and active travel networks such as cycleways and pedestrian networks

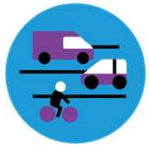
Components of high-quality hubs

Good rail hubs should serve multiple functions

Context – While the key regional hubs have already been identified in previous studies, there remain key contextual differences between them that need to be understood – both in terms of local context role in the transport network, as well as usage and potential for change. Despite their differences, we believe all hubs should be connected into the local urban area by high quality sustainable transport.

Public Transport Connections – High quality public transport can support the growth of the regional hubs by increasing the accessible catchment and by increasing the number of journeys that can delivered through public transport.

Well, Integrated with high quality facilities – Hub stations should be well integrated into their environment, and provide high quality access to neighbouring areas and interchanges with other modes, as well as with adequate cycle storage and parking where appropriate.



Connected into wider transport infrastructure – Stations should as far as possible be well integrated into key transport networks to enable access by private car, bus and active travel.

Measuring Rail Hub Attributes

Comparison Matrix

To compare and contrast the services provided by each of the rail hubs in the EEH area, we have collated key transport data, which is listed in the table to the right.

The metrics we have collated have been accessed to give each station a score out of 5 with 5 indicating the highest scoring and 1 the lowest.

For some attributes, the scores have been scored using a “per passenger” weighting, as larger stations are likely to have a higher share of passenger demand, and the number of cycle parking bays should be in line with the number of rail passengers.

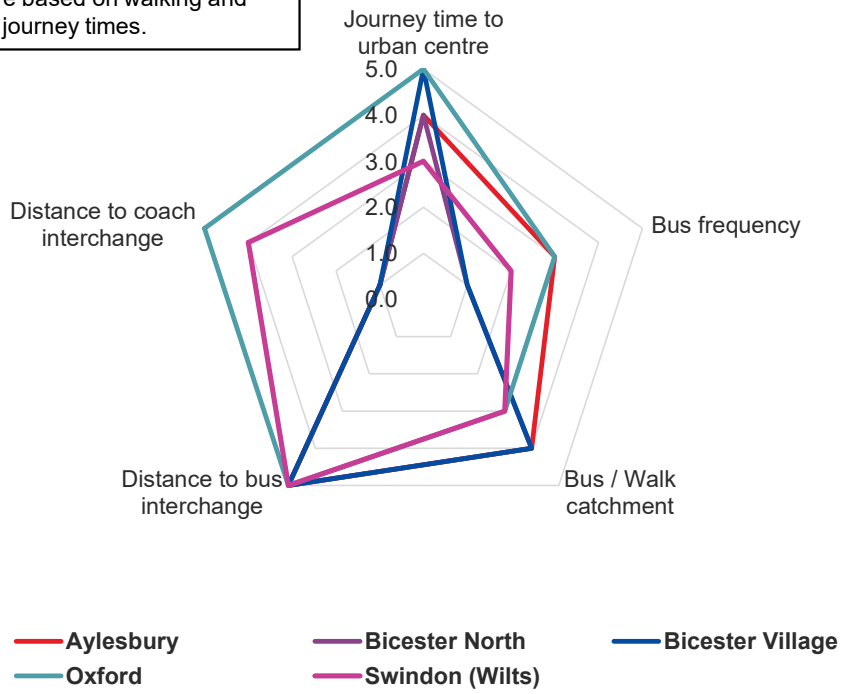
The scoring was quantitively based, using information readily available. A qualitative assessment of facilities, such as through use of site visits, were not within the scope of this work.

Component	Metrics	Description	Source
Connectivity	Journey time to urban centre	The minimum journey time to the town centre by walking or public transport, where journey times less than 5 minutes corresponds to the highest score 5 and a journey time greater than 20 minutes is associated with the lowest score 1	Arup Assessment
	Bus frequency	The total frequency of bus service per hour (bph) within a short distance of the station	GTFS timetable
	Bus / Walk catchment	The population within 30 mins of bus/walk distance of the station	GTFS timetable analysis using Podaris
	Distance to bus Interchange	The distance to the nearest significant bus interchange	Arup Generated
	Distance to coach interchange	The distance to the nearest significant coach interchange	Arup Generated
Facilities	Cycle storage	The amount of cycle storage located at the station; scored based on number of cycle storage per passenger.	Arup Assessment using National Rail station information
	Passenger facilities	Number of key passenger facilities, including ticket office, ticket machines, toilets, waiting rooms, seating area, retail, hospitality, public Wi-Fi	Arup Assessment using National Rail station information
	Bus interchange facilities	Assessment of bus facilities, including high quality bus stand, countdowns, proximity to rail station and bus timetable information	Arup Assessment
	Connection to cycle network	Number of connections to local, regional and national cycle network	Arup Assessment using OpenStreetMap
	Connection to bus network	Number of bus routes serving the station and considers connection to bus priority network (i.e. guided busway)	Arup Assessment

Station Hubs | West

Chiltern Main line & Great Western Main line – Connectivity

Note that the journey time to urban centre is a combined score based on walking and bus journey times.



Aylesbury

Aylesbury performs well as an integrated transport hub with a high level of bus accessibility from the nearby bus station which although not located directly at the station is only a short walk, the bus station has local buses and is only short distance from the urban centre. Aylesbury's public transport catchment covers a high share of its local population, and this can be further increased by improving the station's proximity to a coach interchange.

Bicester (North and Village)

Bicester stations both score well in terms of distances to bus interchange and journey time to urban centre. However, both stations score low under bus frequency. Bicester no longer has direct coach services but previously these served the retail area. Both Bicester stations' bus/walking catchment covers a high share of its local population and therefore, scored 4.

Oxford

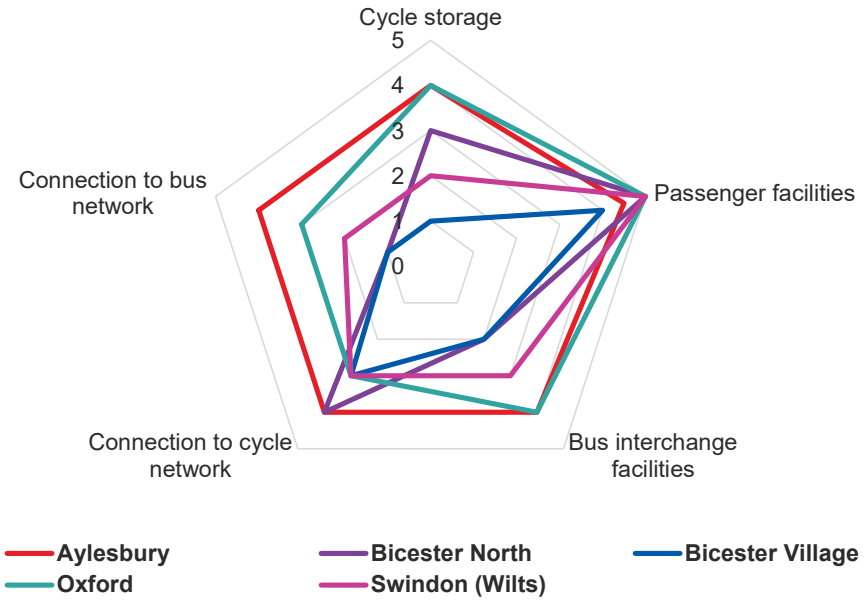
The public transport journey time to urban centre is four times shorter than the walking journey time, so the combined journey time score is high scoring. Oxford Station currently has comparatively low bus frequency allowing for the size of the station.

Swindon

Swindon Station performs well in the context distance to bus and coach interchange and bus / walk catchment. Whilst it has low bus frequency serving the railway station directly, most buses in the town use the larger bus station. The distance to the town centre is comparatively long by walk or public transport.

Station Hubs | West

Chiltern Main line & Great Western Main line - Facilities



Aylesbury

Aylesbury performs well across all the categories – particularly passenger facilities.

Bicester (North and Village)

Bicester North performs better than Bicester Village when considering connection to cycle network, cycle storage and passenger facilities. Both stations score low under connection to bus network and bus interchange facilities.

Oxford

Oxford Station scores highly under passenger facilities and performs well under bus interchange facilities and cycle storage. The station scores moderately under connections to bus and cycle network though it is noted that improvements are currently being made.

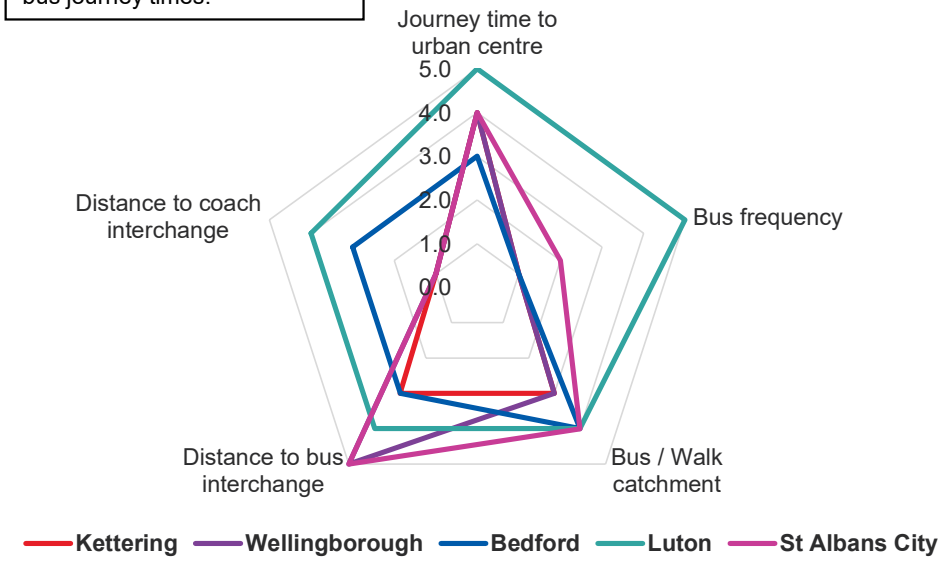
Swindon

Swindon Station scores highly under passenger facilities and performs well under connection to cycle network and bus interchange facilities. Of the five categories assessed, Swindon's connection to bus network (which is governed by the number of bus routes serving the station) and cycle storage at the station can be most improved.

Station Hubs | Central

Midland Main line – Connectivity

Note that the journey time to urban centre is a combined score based on walking and bus journey times.



Kettering

Kettering Station scores least well under bus frequency and most well under journey time to urban centre. The station could be better connected to its public transport networks and serve a greater share of its local population through improved bus and coach connections, which are limited.

Wellingborough

Wellingborough Station scores highly under ‘distance to bus interchange’ category, while performing low under bus frequency and distance to coach interchange. The station performs well under journey time to urban centre.

Bedford

Bedford Station scores sufficiently in the context of the proportion of bus/walk catchment to its local population. The station scores low for the remaining categories - notably bus frequency, distance to coach and bus interchanges, and journey time to urban centre.

Luton

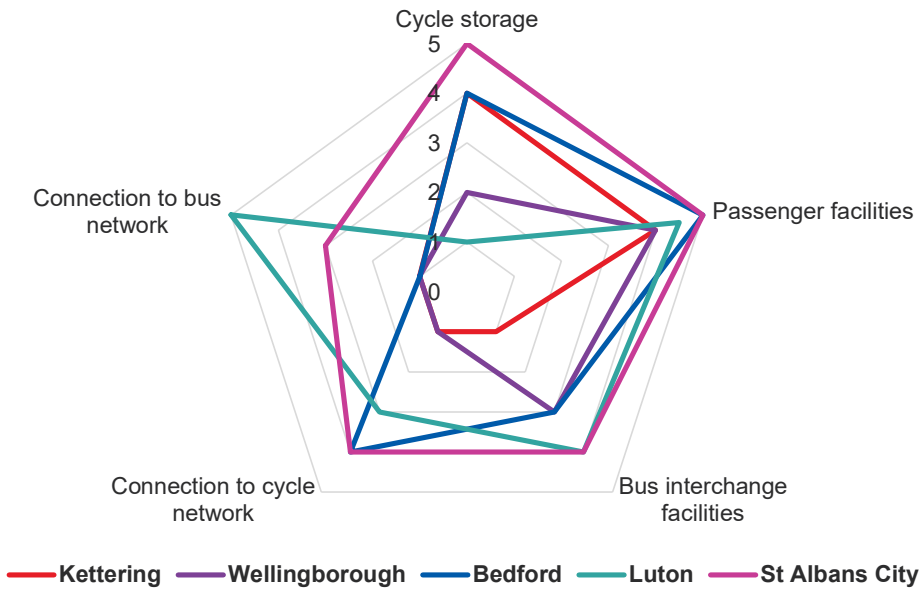
Luton Station performs best in the context of its journey time to an urban centre and bus frequency. The station performs well under distance to coach and bus interchange, as well as public transport catchment.

St Albans City

St Albans City Station scores highly under distance to bus interchange. St Albans City’s bus/walk catchment is sufficient share of its local population. The station hub scores low under distance to coach interchange and bus frequency due to the low service level per passenger.

Station Hubs | Central

Midland Main line - Facilities



Kettering

Kettering Station performs moderately well under passenger facilities and cycle storage. The station scores 1, the lowest score, under connection to bus and cycle networks, and bus interchange facilities categories.

Wellingborough

Wellingborough Station scores moderately well under passenger facilities and bus interchange facilities. The station performs least well under the connection to bus network and connection to cycle network categories.

Bedford

Bedford Station scores 5, the highest score, under two categories (passenger facilities and connection to cycle network). The station performs well in terms of cycle storage and bus interchange facilities; although its connection to bus network can be most improved.

Luton

Luton station's connection to the bus network scores highly, particularly compared far higher than its connection to cycle network. The station performs well regarding passenger facilities and bus interchange facilities. It performs least well under available cycle storage.

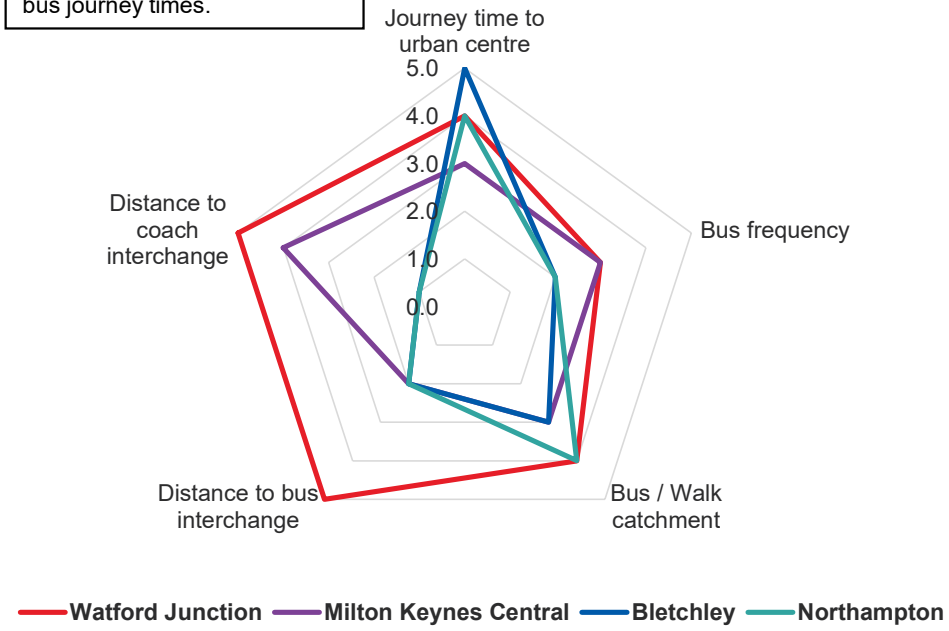
St Albans City

St Albans City Station scores the highest score 5 for two of the five assessed categories. The station scores moderately well in terms of connection to bus network as the local bus networks connects residential districts to city centre locations; however, it is not connected to a guided busway. The station scores better under bus interchange facilities as there are bus stops adjacent to the station and these stops are sheltered, have seating and timetable information.

Station Hubs | Central

West Coast Main line – Connectivity

Note that the journey time to urban centre is a combined score based on walking and bus journey times.



Watford Junction

Watford Junction performs well in the context of distance to coach and bus interchange, and bus/walk catchment. The station hub performs moderately in relation to journey time to urban centre and bus frequency per passenger.

Milton Keynes Central

Milton Keynes Central Station scores well under distance to coach interchange. The station performs sufficient in terms of the proportion of bus / walk catchment to its local population, journey time to urban centre and bus frequency.

Bletchley

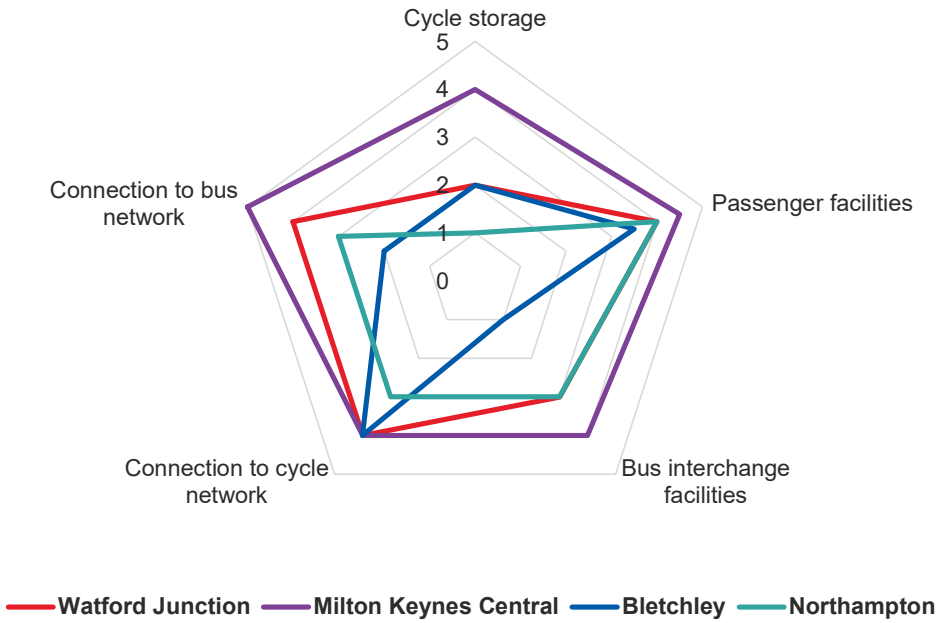
Bletchley Station scores highly under journey time to urban centre and performs moderately under bus/walk catchment. The station scores least well under bus frequency. It also scores low under distance to coach and bus interchange, which could be improved through a new easterly entrance to the stations.

Northampton

Northampton's bus/walk catchment covers a sufficient share of its local population. Similarly to Milton Keynes Central and Bletchley Station, Northampton Station scores low under distances to coach and bus interchanges - a challenge for developing the station as an interchange hub.

Station Hubs | Central

West Coast Main line – Facilities



Watford Junction

Watford Junction performs well under connection to bus network, connection to cycle network and passenger facilities - as the station has step-free access to platforms, toilets, refreshment facilities and waiting rooms; although the station's facilities could be improved by having public Wi-Fi. Amongst the assessed categories, the station hub's scores least well under cycle storage.

Milton Keynes Central

Milton Keynes Central Station scores well in each of the five categories – scoring 4 for cycle storage, passenger facilities, bus interchange facilities and connection to cycle network. The station scores highly under connection to bus network.

Bletchley

Bletchley Station performs moderately well in two categories: connection to cycle network and passenger facilities. For cycle storage, connection to bus network, and bus interchange facilities the station hub scores low.

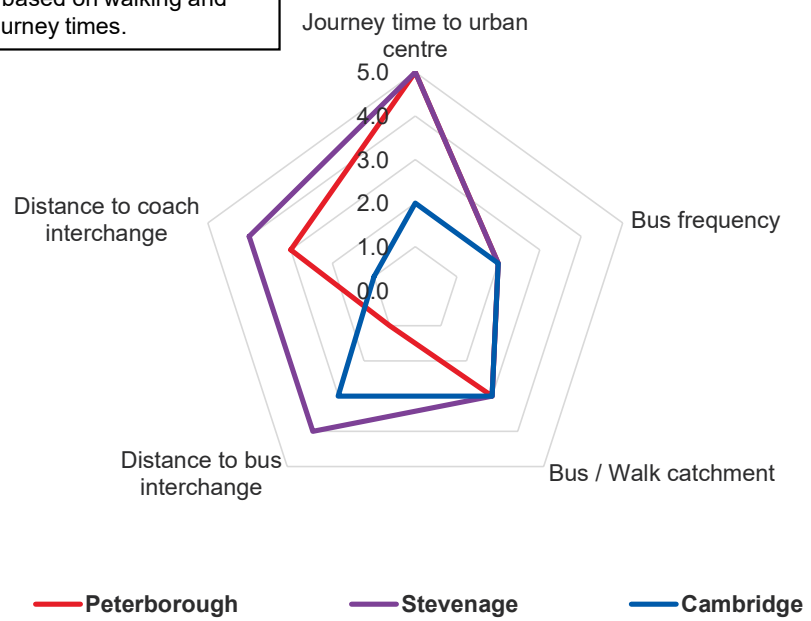
Northampton

Northampton Station's performs better under passenger facilities than bus interchange facilities, connection to cycle network and connection to bus network. The station scores 1, the lowest score, in the context of cycle storage.

Station Hubs | East

East Coast Main line & West Anglia Main line – Connectivity

Note that the journey time to urban centre is a combined score based on walking and bus journey times.



Peterborough

Peterborough Station performs highly under journey time to urban centre than other four categories assessed with a central station location. The station scores well under distance to coach interchange, but relatively poorly for distance to bus interchange.

Stevenage

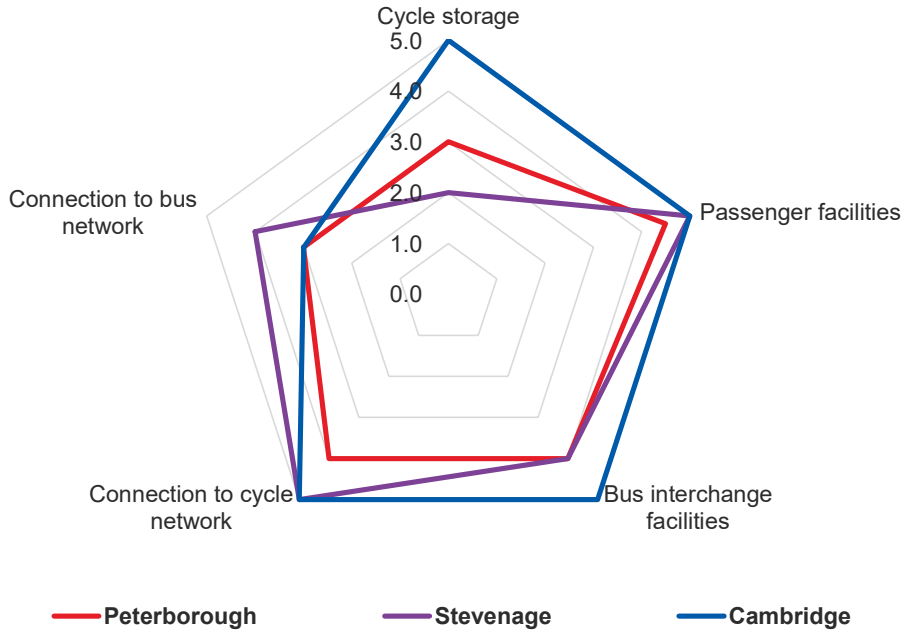
Similar to Peterborough Station, Stevenage Station performs best under journey time to urban centre. The station scores well for distance to bus and coach interchange. The station has low bus frequency and public transport catchment compared to its local population.

Cambridge

Cambridge Station preforms poorly in the context of its journey time to central Cambridge due its location although the station area is now fairly developed and is connected to Cambridge North and South via existing and stations under construction. The station performs moderately for the bus/walk catchment, and distance to bus interchange. The station scores poorly under distance to coach interchange, as the city's coach station is within central Cambridge.

Station Hubs | East

East Coast Main line & West Anglia Main line - Facilities



Peterborough

Peterborough Station performs well under passenger facilities, connection to cycle network and bus interchange facilities. The station's score associated with connection to bus network is determined by the number of routes serving the station and this score is influenced by Peterborough's connection to the Cambridgeshire guided busway. Nonetheless, the station scores lowest under the connection to bus network category.

Stevenage

Stevenage Station scores well under passenger facilities and performs well under connection to bus network and bus interchange facilities categories. The station has a connection to cycle network. Despite the station hub directly connecting to the national cycleway, the volume cycle storage facility at the station is comparatively low.

Cambridge

Cambridge Station scores well for passenger facilities, bus interchange facilities and connection to cycle network. Alternatively, the station hub's connection to bus network is moderate.

Station Hubs | Summary of scores

Station	Journey time to urban centre	Bus frequency	Bus / Walk catchment	Distance to bus interchange	Distance to coach interchange	Cycle storage	Passenger facilities	Bus interchange facilities	Connection to cycle network	Connection to bus network	Total score	Current RAG Score
Oxford	5.0	3.0	3.0	5.0	5.0	4.0	5.0	4.0	3.0	3.0	**40.0**	
Luton	5.0	5.0	4.0	4.0	4.0	1.0	4.5	4.0	3.0	5.0	**39.5**	
Watford Junction	4.0	3.0	4.0	5.0	5.0	2.0	4.0	3.0	4.0	4.0	**38.0**	
Aylesbury	4.0	3.0	4.0	5.0	1.0	4.0	4.5	4.0	4.0	4.0	**37.5**	
St Albans City	4.0	2.0	4.0	5.0	1.0	5.0	5.0	4.0	4.0	3.0	**37.0**	
Milton Keynes Central	3.0	3.0	3.0	2.0	4.0	4.0	4.5	4.0	4.0	5.0	**36.5**	
Stevenage	5.0	2.0	3.0	4.0	4.0	2.0	5.0	4.0	5.0	4.0	**36.0**	
Cambridge	2.0	2.0	3.0	3.0	1.0	5.0	5.0	5.0	5.0	3.0	**34.0**	
Peterborough	5.0	2.0	3.0	1.0	3.0	3.0	4.5	4.0	4.0	3.0	**32.5**	
Swindon (Wilts)	3.0	2.0	3.0	5.0	4.0	2.0	5.0	3.0	3.0	2.0	**32.0**	
Bedford	3.0	1.0	4.0	3.0	3.0	4.0	5.0	3.0	4.0	1.0	**31.0**	
Bicester North	4.0	1.0	4.0	5.0	1.0	3.0	5.0	2.0	4.0	1.0	**30.0**	
Bicester Village	5.0	1.0	4.0	5.0	1.0	1.0	4.0	2.0	3.0	1.0	**27.0**	
Northampton	4.0	2.0	4.0	2.0	1.0	1.0	4.0	3.0	3.0	3.0	**27.0**	
Bletchley	5.0	2.0	3.0	2.0	1.0	2.0	3.5	1.0	4.0	2.0	**25.5**	
Wellingborough	4.0	1.0	3.0	5.0	1.0	2.0	4.0	3.0	1.0	1.0	**25.0**	
Kettering	4.0	1.0	3.0	3.0	1.0	4.0	4.0	1.0	1.0	1.0	**23.0**	

Summary

Developing a baseline for the station hubs

We have collated key transport data, including journey time to urban centres, bus frequency and cycle storage, to compare and contrast the identified station hubs in the EEH area. This analysis was undertaken using both publicly available data as well as our assessment of the quality of the public transport network provided at each hub. However, we did not undertake further work, such as detailed site visits, as part of this assessment.

The collated data has fed into an assessment involving a 1 – 5 scoring system. These scores has allowed us to develop a baseline for the station hubs and identify individual opportunities for each hub.

Our analysis showed a significant variation in performance across the key hub stations in the EEH area. While some stations are high performing, there remains weaknesses in many stations.

We see opportunities to unlock significant improvements through targeting investment at:

- **Bletchley Station** – By delivering the eastern entrance (as part of East West Rail programme) to reduce journey times from the town centre and ensuring Milton Keynes MRT proposals serve Bletchley station to enable interchange with rail.
- **Wellingborough Station** – By improving bus connectivity with direct routes serving the station from the town centre and serving new communities.
- **Kettering Station** – By improving bus connectivity, the station could perform better as a multi-modal hub.
- Improving **bus interchanges** at several hub stations and increasing active travel provision including cycle storage and better access.

This assessment should be seen as the starting point for consideration of further detailed work to review options for improvements at each station hub.

ARUP

Part 5

Refined Objectives

Introduction

This Section

We have reviewed the strategic objectives set out in the previous rail studies and, alongside understanding the baseline of today's railway, have developed four priorities for the railway today.

This has included:

Existing Vision and Objectives

Reviewing the range objectives from previous EEH studies

Previous "Overarching Strategic Rail Objectives"

Reviewing the overarching strategic objectives and groupings

Revised Overarching Strategic Rail Objectives

Refining proposed main line rail objectives and using these to prioritise interventions.

Objective Mapping

Mapping revised EEH strategic objectives to Main line Priorities

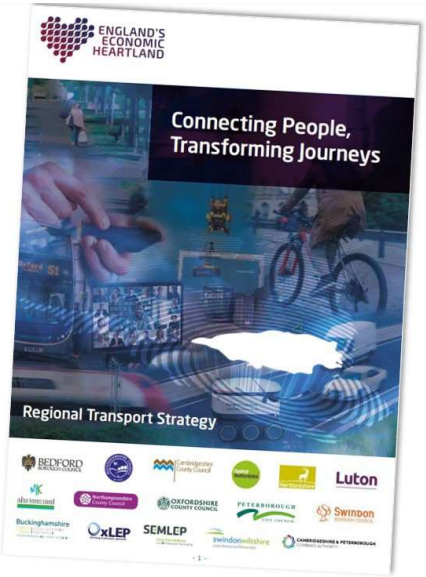
Delivery

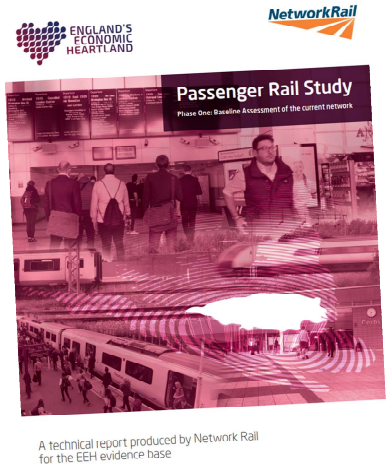
Outlining the broad process for developing and delivering interventions that achieve the Overarching Strategic Rail Objectives

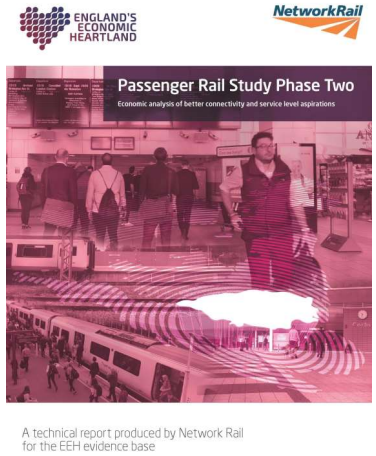
Existing Vision and Objectives

EEH's transport strategy and rail priorities studies sets an ambitious vision for the region's transport system

Arup has reviewed the objectives set out in EEH transport strategy and previous rail studies. This includes reviewing the status of committed projects, alongside the current economic and transport policy context. From this review, it is clear there is in a need to adapt the objectives for the challenges facing the rail sector and align them with future government policy to make investment in the EEH area attractive to government.







4 **(Overarching) Strategic Objectives**

83 **Objectives**

10 **Groupings**

191 **Schemes**

Previous “Overarching Strategic Rail Objectives”

The Strategic Objectives Study identifies four “Over-arching Strategic Objectives” and ten “Groupings”

Overarching Strategic Objectives

Decarbonisation – Focusing on supporting the net-zero 2050 legislative target through increasing the volume of goods and people traveling by rail and other public and active travel modes as well as decarbonisation of rail traction in its own right.

Safety and Inclusivity – Ensuring that that rail network is a safe and inclusive space for all passengers and travellers and making sure that facilities, trains and journeys to and from rail stations are able to be undertaken by everyone regardless of their background or protected characteristics.

Connectivity – Focusing on ensuring that villages, towns and cities are seamlessly connected with each other to enable access for all communities to essential facilities such as shops, education and healthcare facilities as well as leisure, business and personal travel.

Efficient Movement of People and Goods – Ensuring that people and goods from across and beyond the EEH geography are moved in the most efficient way possible to meet their needs. Multi-modal transfer will also be key for this to succeed.

Groupings

- Traction Decarbonisation
- Enabling improved journeys through Oxfordshire and Buckinghamshire
- Providing strategic multi-transport interchanges
- Connectivity beyond the EEH geography
- Connectivity between regions within the EEH geography
- Optimisation of transport of packages (Express Logistics)
- Connecting people to the East West Main Line
- Freight Growth and Optimisation
- Making use of HS2 released capacity
- Rail connectivity to airports

Most groupings align to the connectivity strategic objective, and one aligns to decarbonisation. None appear to map clearly to safety and inclusivity. We propose four refined overarching strategic objectives.

Revised Overarching Strategic Rail Objectives

Revised strategic objectives to those listed below – these reflect the need to grow the railway sector to enable more investment whilst supporting wider aims of accessibility, decarbonisation and Connectivity

Decarbonisation

The EEH area's railway should help the area achieve net-zero transport emissions

Sustainable Growth

The EEH area's railway should support sustainable economic development, bringing jobs and investment into the region (including within existing and new communities), as well as continuing to support rail demand recovery

Connectivity

The EEH area's major hubs should be better connected to each-other and other parts of Britain and key demand drivers with local connections by all modes

Accessibility

The EEH area's railway should be safe, accessible, integrated, and support equitable socioeconomic outcomes

Revised Overarching Strategic Rail Objectives | Rationale

Redefining Objectives

Previous Objectives

The existing objectives were broadly aligned with many aspects of the EEH Transport Strategy, yet they did not directly reflect the unique challenges and opportunities facing rail at this time.

Revised Overarching Strategic Rail Objectives

The proposed new strategic objectives include an objective centred on **sustainable growth**, which reflects the opportunity to use growth to generate demand for the railway (strengthening industry finances) and to use railways to support growth (unlocking sustainable housing and employment opportunities.

The refocus on **accessibility** (which includes both ensuring the railway is accessible to all users and improved access/integration with all modes) speaks to a wider set of ambitions that cut across all aspects of the passenger journey, and not those limited to safety, as was the case with the previous objectives and is a key responsibility within rail of the Rail Safety and Standards Board (RSSB).

Decarbonisation remains an objective to be achieved through removal of diesel operations and modal shift. The latter is related to **Connectivity** improvements, which will be supported by sustainable growth and investment in rail.

Revised Overarching Strategic Rail Objectives | Mapping

Our proposed refined strategic objectives map to previous iterations

Decarbonisation — Decarbonisation —

UK Obligations and targets remain **decarbonisation by 2050**, although progress and committed funding on rail remains limited

Safety and Inclusivity — Accessibility —

UK railways are already safe. **RSSB already ensures safety** through its direct remit. Greater focus on making the railway accessible to all (step free but also by public transport).

Connectivity — Connectivity —

Growing rail demand in EEH will be vital to support further improvement in rail services which deliver better connectivity the region (with rail demand recovering faster in other regions at present).

Efficient Movement of People and Goods — Sustainable Growth —

The case for **transport investment** from government will be supported with an aligned narrative – significant investment is unlikely without a strong strategic case linked to government objectives and a viable commercial case supporting increased rail revenues.

Revised Overarching Strategic Rail Objectives | Output Specification

The future railway should deliver as a minimum the following as a long-term aspiration for the identified lines and hubs

1. Four trains per hour to/from London for all hub stations on main line railways
2. Two trains per hour between hubs where these are connected by rail
3. Average speeds of at least 50 mph over journeys of 10 miles or more, rising to over 60 mph on London services
4. Clockface timetables operating in the off-peak, and at peak times where possible
5. Hubs should have step-free access, good shelter and waiting, ideally some basic catering, high quality toilet facilities, parking provision (appropriate for the location) and active travel facilities.
6. They should be less than 10 minutes from city/town centres by walking or public transport and there should be minimal walking between modes at each hub.
7. Nobody should need to stand for more than 20 minutes on services.
8. Public performance measure (PPM) of at least 90% should be achieved on all main line services
9. National Rail Passenger Survey (NRPS) scores consistently above 80.
10. Integrated fares and tickets for all bus (and any future mass transit) links that interchange at hubs – all available digitally at a minimum.
11. High quality, real-time passenger information at all stations for all modes.
12. Zero-carbon emissions (by vehicle) by 2050
13. A connection to a key international airport (Stansted, Luton, Birmingham, Gatwick or Heathrow) by rail with at most a single interchange in under 90 minutes.

Revised Overarching Strategic Rail Objectives | Delivery

How EEH's objectives can be delivered

Interventions in the wider south-east have historically focussed on unlocking capacity to London, which used to yield higher revenues. This was seen as favourable to operators (who earned higher revenues) and government (who could reduce subsidies).

However, this route to investment is severely impacted by the fall in commuting demand, and the demise of the franchising system means operators are less strongly incentivised to invest in revenue generating interventions.

The case for future investment will therefore need to focus on today's priorities, which are less likely to focus on (for example) reducing crowding on London services, and more likely to focus on boosting productivity and industry revenue through modal shift and new connections. Also important will be reducing transport exclusion and other transport impacts such as congestion and air quality.

EEH and Local Transport Authorities will also need to ensure they have joined up strategies for supporting modal shift to rail through development, land use and transport policy. EEH will need to continue working with government departments and future rail authorities (e.g. GBR) to understand future funding opportunities and requirements.

Overview of the Business Case process

Interventions requiring a business case for central government funding will need to follow the five-case model:

The Strategic Case

- What is the case for change?
- How does it fit with wider projects?
- How does it reference local, regional and local strategies?

The Economic Case

- What benefits and costs are delivered/unlocked by the scheme?
- How does this compare between options and doing nothing?

The Financial Case

- How will the intervention be funded and finances?

The Commercial Case

- How will the intervention be procured?
- How much risk will be transferred (and to whom)?

The Management Case

- How will the intervention be delivered?

Summary

The objectives for the EEH Main lines

Reviewed Existing Objectives

The existing EEH objectives for transport were reviewed in the context of existing challenges for the railway.

Revised Overarching Strategic Rail Objectives

Four overall objectives have been developed, focusing on the challenges identified by EEH and its role within the railway sector:

- Decarbonisation
- Accessibility
- Connectivity
- Sustainable Growth

High Level Output Specification

A high-level set of ambitions which would be met for the key main lines to improve frequency, ensure high quality services and deliver the required connections, whilst also achieving a zero-carbon network.

Delivery

For supporting taking forward interventions to delivery there will need to be a focus on developing the wider case for schemes in partnership with local and national government.

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Part 6

Strategic Options

Introduction

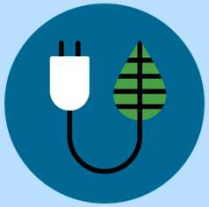
This Section

This section sets out the strategic options for achieving each of the EEH's Revised Overarching Rail Strategic Objectives:

- Decarbonisation
- Connectivity
- Sustainable Growth
- Accessibility

Strategic Options | Decarbonisation

In designing EEH's approach to decarbonisation, we have drawn on insights and frameworks from Network Rail's (generally well regarded) Traction and Decarbonisation Network Strategy



Decarbonisation

The EEH area's railway should help the area achieve net-zero transport emissions

The diagram to the right presents a simplified version of a prioritisation matrix developed by Network Rail to inform the development of their decarbonisation strategies.

If this framework were applied to the EEH area, then the following sections of the rail network would likely emerge as priorities for Overhead Line Electrification (OHLE) of the existing railway:

- **Didcot – Oxford – Banbury** (Southampton – Midlands freight services and fast London – Oxford services)
- **Marylebone – Banbury – Midlands** (Chiltern Main line)
- **Oxford – Milton Keynes** (East West Rail)

** HVO: Hydrogenated Vegetable Oil*

	OHLE	Battery	H_2 Other
Speed	High > 160 km/h	Low < 160 km/h	Low < 160 km/h
Frequency	High > 4 trains per hour	Low < 4 trains per hour	Low < 4 trains per hour
Distance	Long > 100 km	Short < 100 km	Long > 100 km
Freight	Viable	Unviable	HVO viable H_2 under development

Strategic Options | Connectivity

A wide range of options can help reduce Generalised Journey Times between hubs on the rail network – this section focuses on benefits of new, more, faster, and higher capacity passenger rail services

Connectivity

The EEH area's major hubs should be better connected to each-other and other parts of the UK

We have approached our analysis of connectivity by considering the whole passenger journey. Any option to improve connectivity would seek to reduce the time taken for each of these elements:

- **First-mile-last-mile:** From origin/destination to the station.
- **Waiting time:** Reflecting service frequencies.
- **On-board time:** Reflecting calling patterns and line speeds.
- **Interchange time:** Reflecting benefits of direct services.
- **Reliability and punctuality:** Reflecting how much additional time a regular user will "allow" for their journey.
- **Crowding:** Journey times "feel" longer if passengers stand.

First-mile-last-mile time

- Improve interchange facilities
- Improve links between hubs and town centres

See accessibility objective

Waiting time

- Increase service frequencies
- Adjust calling patterns

On-board time

- Increase line speeds
- Adjust calling patterns

Interchange time

- Introduce direct services
- Build new rail links
- Improve/build interchanges

Contradictions and/or major trade-offs

Reliability and punctuality

- Relieve congestion
- Add infrastructure capacity

Crowding

- Add train capacity (seats, cars)
- Increase service frequencies

Strategic Options | Connectivity

Different approaches would be needed to improve connectivity on each corridor and hub – the approaches listed in the previous slide are explored in more detail below.

Connectivity

The EEH area's major hubs should be better connected to each-other and other parts of the UK

Increase service frequencies

The following hubs are currently connected by relatively low frequency services:

- London – Aylesbury
- Watford – St Albans

Add train capacity

Crowding was previously reported as being a significant challenge on services to London but has reduced and in the future will depend on commuter growth.

Adjust calling patterns

Additional stops on through services would improve connections between:

- St Albans/Luton/Beford – stations north on the Midland Main line
- Watford – Milton Keynes – Northampton

Slowing down intercity services is probably not an option. More services are probably needed.

Improve average Speeds

The corridors that have relatively low speeds are:

- Oxford – Didcot
- Chiltern Main line
- West Anglia Main Line

Introduce direct services

The following hubs are currently not connected by any (regular) direct services (but could be):

- Oxford – Swindon

Improve/build interchanges

New interchanges are planned/could be considered at:

- EWR/ECML Hub
- Bicester

Add infrastructure capacity

Most corridors on approach to Central London are running close to capacity, but at least have four-track capacity.

The clear exception to this is the Chiltern and West Anglia Main lines.

Build new rail links

The following hubs are currently not connected by the railway but are relatively close together

- Oxford/Aylesbury – Milton Keynes
- Bedford – EWR/ECML Hub – Cambridge
- Milton Keynes – Luton – Stevenage
- Northampton – Wellingborough
- Aylesbury – Watford

Strategic Options | Connectivity

Current capacity constraints significantly limit opportunities to improve service frequencies and calling patterns – especially on the parts of the network where EEH believes these improvements are needed

Connectivity

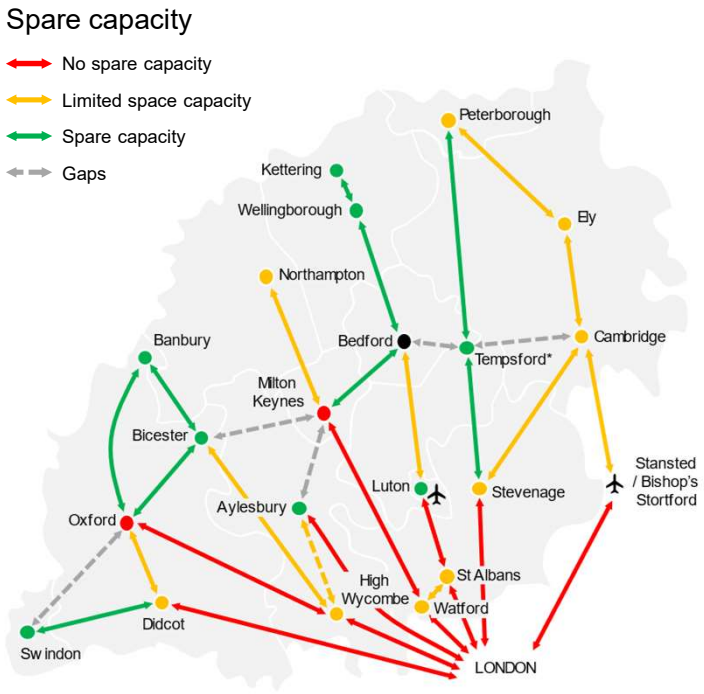
The EEH area's major hubs should be better connected to each-other and other parts of the UK

Due to current capacity constraints, it is expected that more passenger rail services can only be added on the following corridors:

- High Wycombe – Banbury
- Bedford – Kettering – East Midlands
- Stevenage – Peterborough (slow lines only)

With HS2 Phase 1, East West Rail, and capacity enhancements at Oxford, this list could extend to:

- Oxford – Milton Keynes – Bedford – EWR/ECML Hub – Cambridge
- Swindon/Didcot – Oxford – Banbury – West Midlands
- Watford – Milton Keynes – Northampton – West Midlands



Scope for improving connectivity on the Great Western, Chiltern Main line, Midland Main Line, East Coast Main Line, and West Anglia Main Line is very limited without further intervention

Strategic Options | Sustainable Growth

An expanded railway network could enable sustainable development to deliver sustainable and planned economic growth which in turn supports rail passenger demand

Sustainable Growth

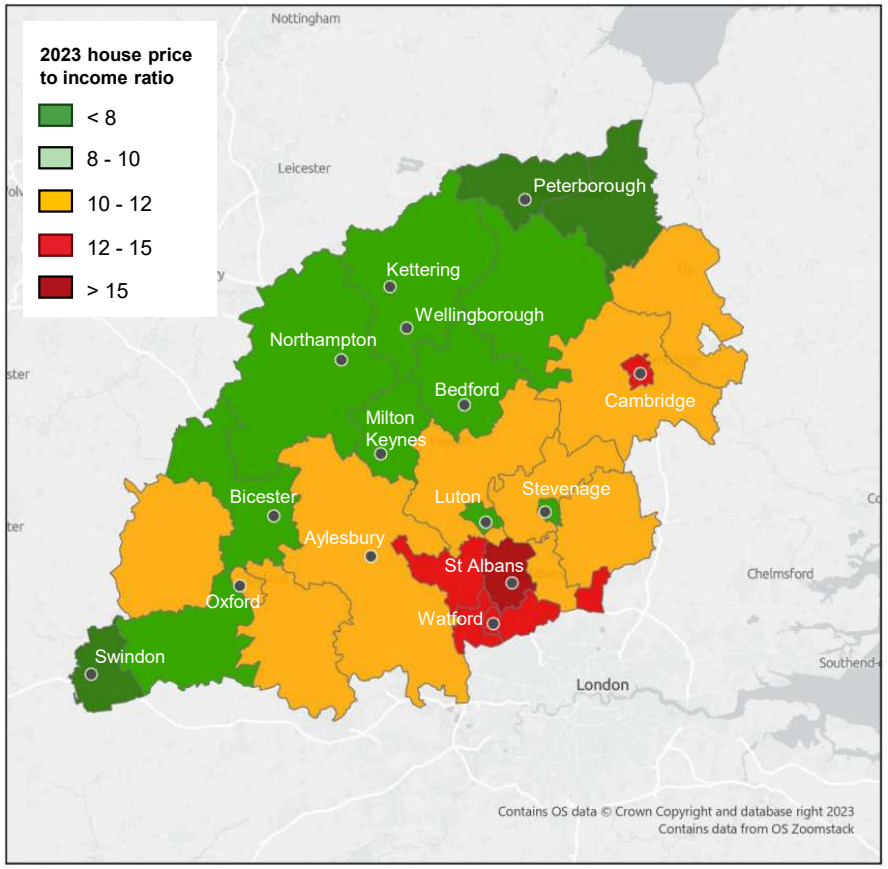
The EEH area's railway should support sustainable economic development, bringing jobs and investment into the region (including within existing and new communities), as well as continuing to support rail demand recovery

Housing affordability is especially poor in the southern part of the EEH Area, including:

- Oxfordshire
- Buckinghamshire
- Hertfordshire
- Milton Keynes
- Central Bedfordshire
- South Cambridgeshire
- South Northamptonshire

The railway could support existing and growing communities linking to city and town centre economies with sustainable transport:

- In the Oxford area (including Cowley)
- Along the wider East – West Rail corridor, including Milton Keynes, Swindon and Bedford
- Around Cambridge, including potentially Haverhill and Wisbech



Strategic Options | Accessibility

The railway should be as accessible as possible through intervention in rolling stock, stations and the ticketing and fare system

Accessibility

The EEH area's railway should be safe, accessible, integrated, and support equitable socio-economic outcomes

Stations are a key component for the accessibility of the railway including:

- Ensuring stations are well connected by all modes of transport and all parts the communities they serve
- Accessing by walking or wheels is safe and secure storage for cycles
- Stations are well connected to other transport infrastructure
- Stations should provide step free access to platforms and key facilities
- Waiting facilities at Hub stations should provide an environment that is welcoming, inclusive and secure

Other components include:

- Delivering level boarding as far as possible in new rolling stock and platform design
- New Rolling stock is well designed for all users
- Ensuring that the fare system and structure encourage usage and multi modal trips
- The rail network has coverage across the region and connections into key regional hubs
- Ensuring that the network connects areas of deprivation ensuring access to education and jobs across the region

Delivering these outcomes can be achieved through:

- Upgrading existing stations
- Designing high quality new stations
- Investment in rolling stock

Summary

How the objectives can be achieved

Decarbonisation

The rail industry has developed plans for the priorities for rail electrification and the decarbonation on non-electrified lines with the priority towards high use and higher speed lines. Within the EEH area this includes Didcot to Banbury, the Chiltern Main line and East West Rail. On other non-electrified lines new technology such as Battery Electric train and hybrids will be required.

Connectivity

There are a number of aspects of connectivity which make up the journey components which can be improved. This includes waiting time, interchange time, reliability and punctuality, and crowding.

These can be addressed through strategic interventions, which require new, improved or changes to existing services, many of which require investment in infrastructure as the existing lines and stations have limited spare capacity. Some of this investment may be outside the EEH area. Other interventions aim to deliver better integration between existing stations and other parts of the network.

Sustainable Growth

Rail can support the development of sustainable development across the region through better linking new and existing communities through sustainable transport where development is planned.

Accessibility

Options for improving accessibility are focussed on stations, providing interchange with other transport modes and improvements for rail to rail interchange. This will require high quality well designed new stations, but also investment in existing stations. New rolling stock also provides an opportunity for improved accessibility to rail by providing level boarding and accessible carriages. Wider accessibility includes connectivity improvements to surrounding communities.

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Part 7

Packages

Introduction

This section sets out nine Packages of Options for achieving the Revised Overarching Strategic Rail Objectives

Package 1 | East West Rail

Package 2 | Chiltern Transformation

Package 3 | Decarbonisation

Package 4 | Main line Connectivity

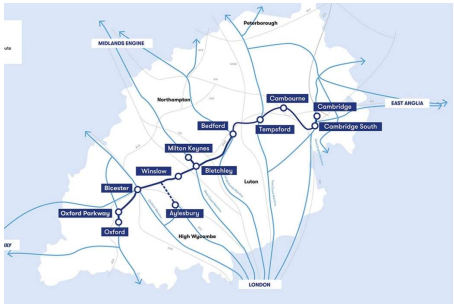
Package 5 | Investigating Hub to Hub Connections

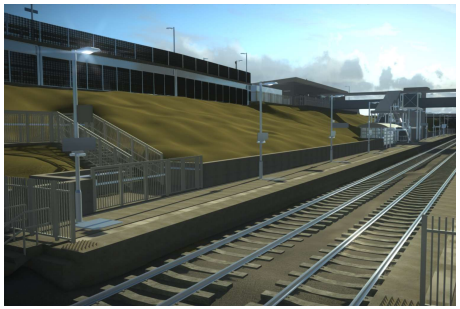
Package 6 | Regional Connectivity

Package 7 | New Stations

Package 8 | Hubs and Accessibility

Package 9 | Fares and Ticketing





Each of the packages has been assessed against the objectives set out in Part 5 using the following scoring.

✓ Some Alignment with Objective

✓✓ Strongly aligned with Objective

✓✓✓ Key to delivering Objective

Where scale costs have been assessed these have been reviewed relative to other similar schemes

£££ - High Cost Scheme

££ - Medium Cost Scheme

£ Low Cost Scheme

Package 1 | East West Rail

Connect Oxford, Milton Keynes, Bedford and Cambridge together by direct passenger rail services

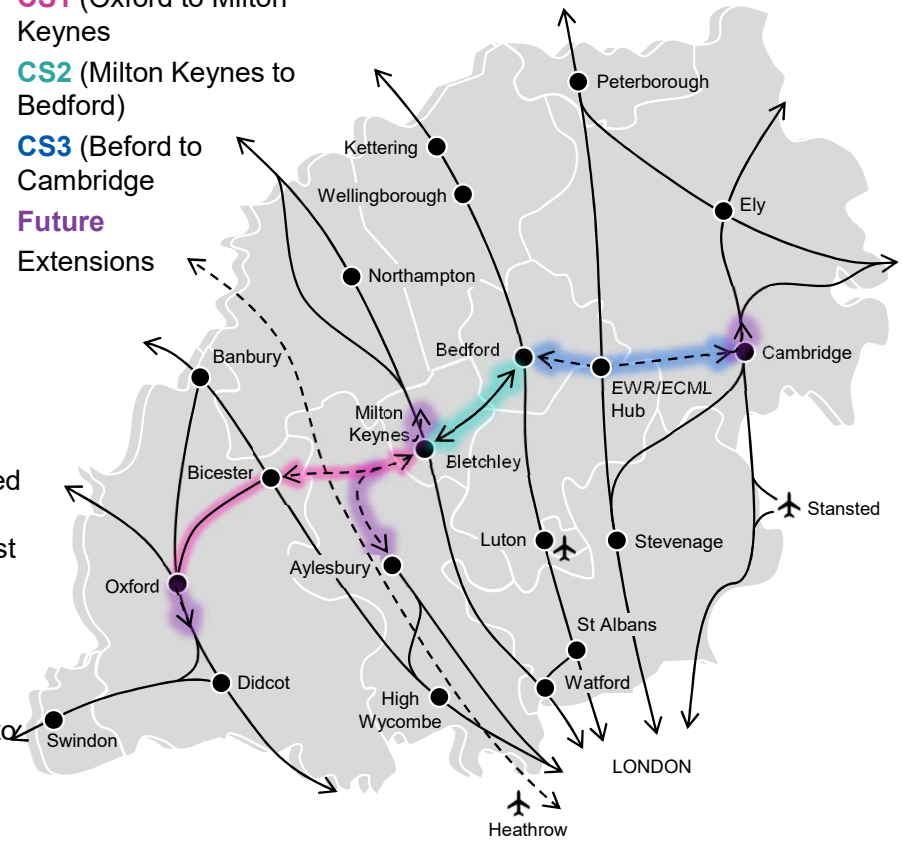
Description

The East West Rail project is formed of three Connection Stages (CS). The first stage is under construction, and the other two stages are committed (but not yet fully funded). This railway forms the centrepiece of EEH's strategy to transform east-west connectivity and connect the UK's preeminent academic centres with Milton Keynes and Bedford. Providing a link to Aylesbury remains a priority.

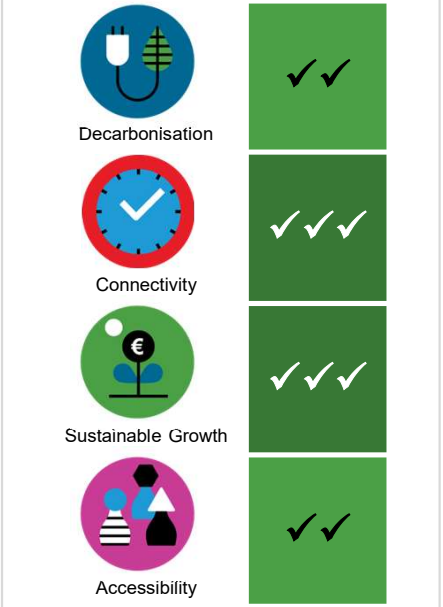
The East West Rail scheme would also enable longer distance passenger and freight rail services to operate across the EEH area, for example enabling Cross Country services to access the West Coast Main Line and new services to link to Northampton.

Scope

- **CS1** (Oxford to Milton Keynes
- **CS2** (Milton Keynes to Bedford)
- **CS3** (Beford to Cambridge
- **Future** Extensions



Alignment with objectives



Cost

The whole project is estimated to cost around £5bn.

High

Package 2 | Chiltern Transformation

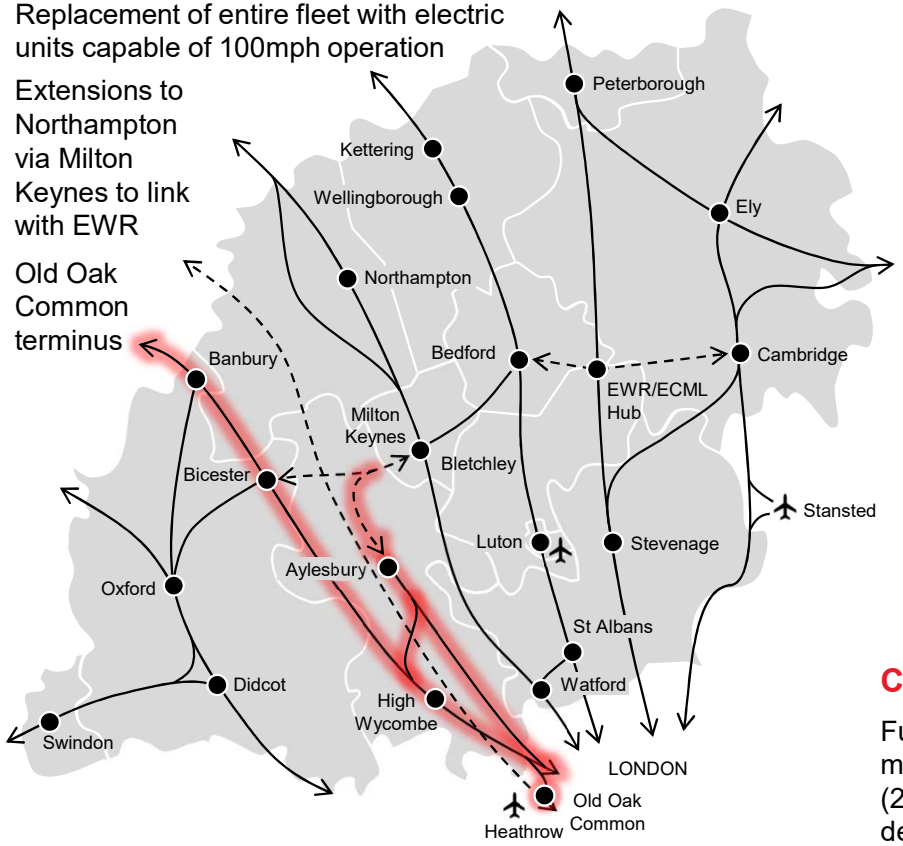
Modernise the Chiltern Main Line (CML) and associated lines to deliver a similar (local) service to the West Coast Main Line

Description

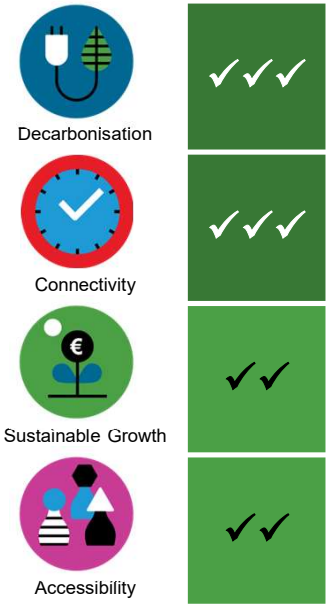
The Chiltern Railway is the last main line in southern England to still operate entirely under diesel traction. This generates air quality impacts in London and Birmingham and means services are relatively slow (impacted by steep inclines in the Chiltern Hills). Diesel units are heavier and costlier to operate and their slower acceleration and differential performance limits scope for higher average speeds and more frequent services. An electrified, modernised Main line would deliver transformational benefits for a large part of the EEH area and beyond (such as West Midlands) with new connections to an Old Oak Common terminus and to Milton Keynes via the hub at Aylesbury.

Scope

- Replacement of entire fleet with electric units capable of 100mph operation
- Extensions to Northampton via Milton Keynes to link with EWR
- Old Oak Common terminus



Alignment with objectives



Cost

Full Package of measures up to £4bn (2021 prices) but deliverable in stages

High

Package 2 | Chiltern Transformation

Key components

Component	Sub-Component	Proposal		Enables	Case for Investment	Likely cost
		Short Term	Medium/Long Term			
Rolling Stock Replacement	Replacement of 165 Replacement of 168 Replacement of Class 68 Electrification of Rolling Stock	Replacement of existing stock	All Electric /Electric/Hybrid Fleet with standardised performance	• Additional services through timetable alignment • Faster Journey Times • Reliability Improvements • Improved operational Costs	Enables a higher quality, higher capacity and more frequent railways operating at lower cost. Would support key commuter routes whilst retaining key local connections	Long term Replacement £1bn
Old Oak Common Terminus	New Old Oak Common (OOC) Terminus Enabling track works	NA – Safeguarding for station site	• Integrated stations for MCL at Old Common • Enabling works to allow frequency uplift	• Services to terminate at Old Oak common enabling additional services to operate on Chiltern Main Line (CML)	An Old Oak Common terminus would enable significant connectivity with proposed Hub at OOC to GWML, HS2, EL and to Heathrow in addition to serving new developments at OCC. The additional capacity will relieve Marylebone and enable higher overall service levels	<£500m
Electrification	Electrification of Marylebone – Aylesbury Electrification of Chiltern Main line	Tactical electrification of CML	• Wider electrification on CML • Electrification proposals on Aylesbury to Marylebone and new connections	• New high performing rolling stock and faster Journeys • Low carbon railway operations	Services on the Chiltern Line will need to be decarbonised to achieve a net zero rail network and given the high utilisation electrification will likely represent long term value for money and support passenger growth	Partial 0.5-£1bn Full £1-2£bn
Main line Connections	• Aylesbury–Princes Risborough line • Aylesbury – Milton Keynes		• Aylesbury – Princess Risborough line upgrade • Aylesbury to Milton connection via EWR and Aylesbury Station Upgrade	• High frequency through running services between CML and Aylesbury • Through running services between CML and Milton Keynes	A combination of upgrades to existing track open up new direct connections such as Milton Keynes (and potentially Northampton) to Buckinghamshire stations for new strategic services supporting modal shift, airport rail access (via OOC) and regional rail commuting.	Tactical 0.5-£1bn

Package 3 | Decarbonisation (beyond Chiltern)

Deliver a north-south electric spine and decarbonise remaining local services and support decarbonised freight

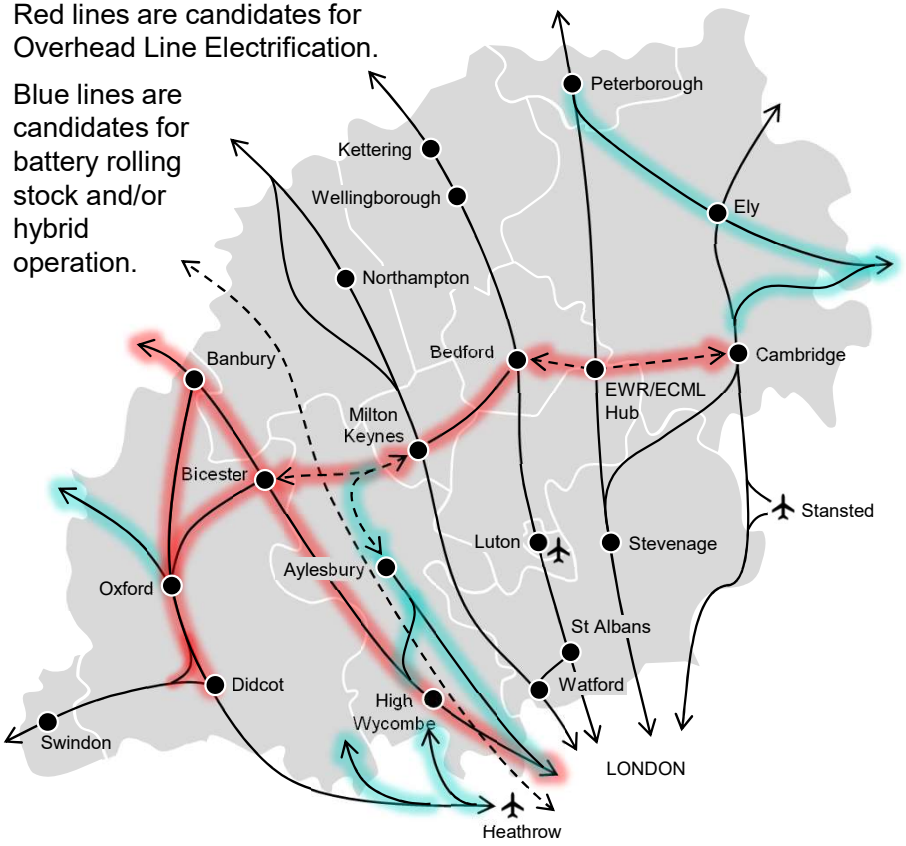
Description

Building on the Network Rail's Traction Decarbonisation Network Strategy, the best route to decarbonising the region's railways are to:

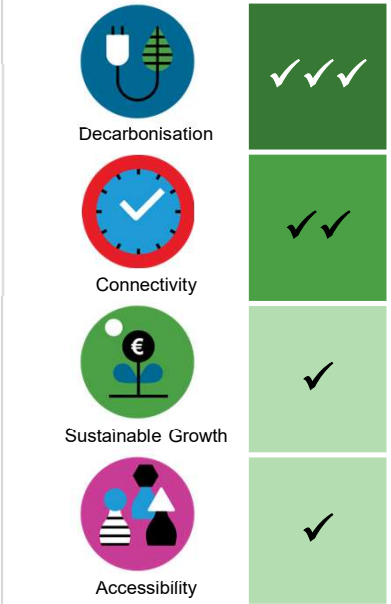
- Electrify the EEH's remaining intercity rail corridors, which include the CrossCountry corridor (Didcot – Banbury) and East West Main Line (Oxford – Cambridge).
- Utilise battery operated units on shorter, slower services, such as routes around Aylesbury and in Cambridgeshire.
- Enable increased electrified freight.

Scope

- Red lines are candidates for Overhead Line Electrification.
- Blue lines are candidates for battery rolling stock and/or hybrid operation.



Alignment with objectives



Cost

A rolling programme should deliver electrification costs of £10m/km

Med/ High

Package 4 | Main line Connectivity

Transfer services from existing radial routes to new railways and upgrade existing main lines

Description

There will need to be joint work with the wider rail industry and partners in the North and Midlands to maximise the utilisation of HS2 released capacity, as well as ensuring that other proposals arising from the Network North policy paper enable the emerging high speed rail network to carry more intercity services.

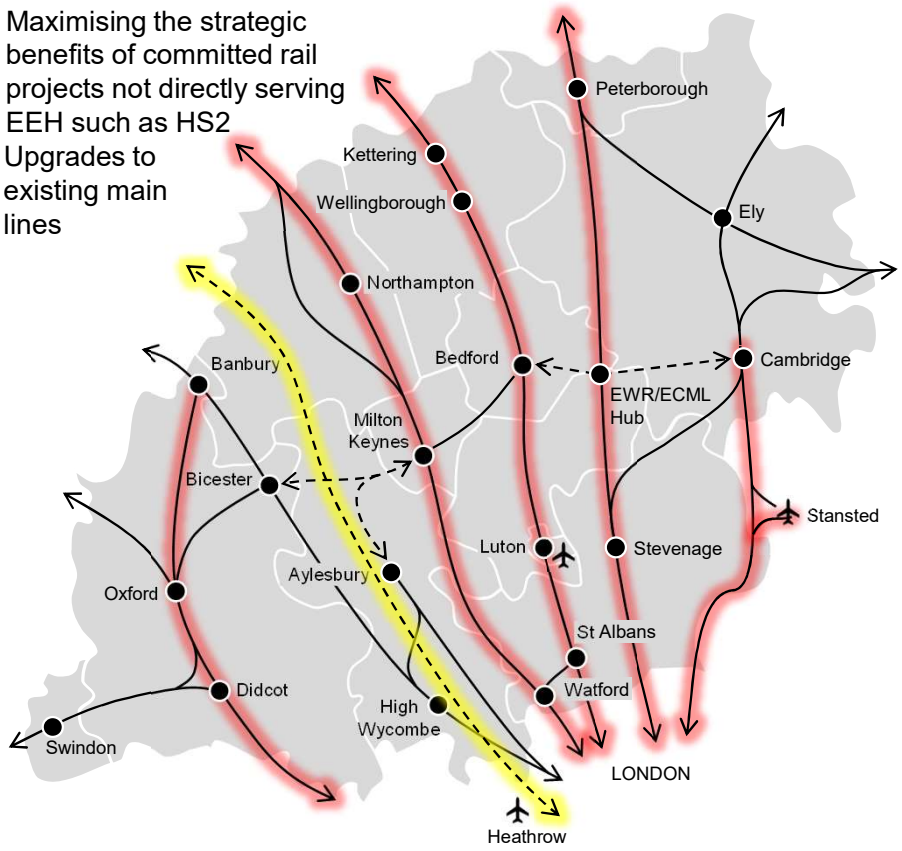
The capacity released by these services should be be used to help serve inter-regional flows, rather than risk worsening of current connections to outside the region.

Upgrading the West Anglia Route (e.g. through four tracking) would also unlock more capacity on this route, enabling more (and faster) services between Cambridge, East Hertfordshire, Stansted, and London.

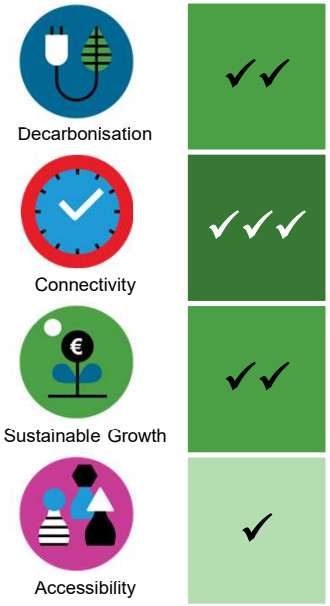
With or without HS2, there will be a need to improve capacity into Milton Keynes from the south to enable a range of East West rail and other potential future routes, including those serving Aylesbury.

Scope

- Maximising the strategic benefits of committed rail projects not directly serving EEH such as HS2
- Upgrades to existing main lines



Alignment with objectives



Cost

Most costs would be incurred outside the EEH area but will still be material.

Med/ High

Package 5 | Investigating Hub to Hub Connections

Explore improving connectivity gaps where these exist

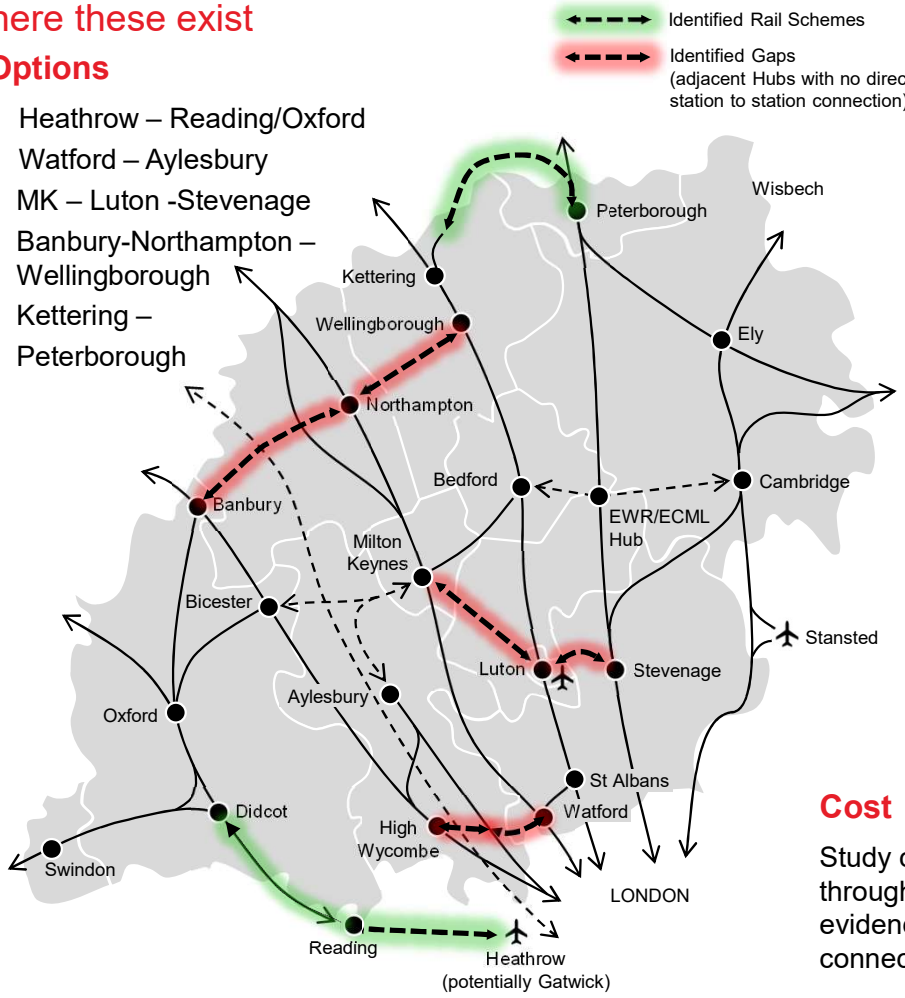
Description

Beyond the East – West Rail Main Line corridor, there may be opportunities to better connect some of the EEH Interchange Hub stations better together with fast public transport – which could be an express bus, heavy rail or light rail.

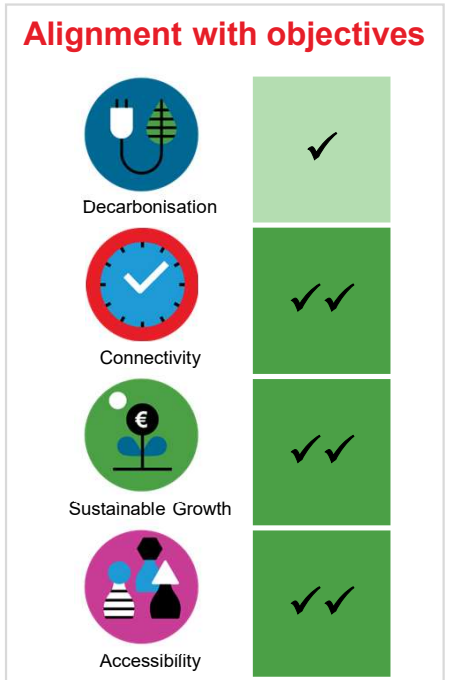
Most of the options shown to the right are undeveloped schemes that should be studied before being adopted as priorities. The recommendation at this stage is therefore to study these potential links and identify the most appropriate transport modes and an approach to delivery which could also be phased over time.

Options

- Heathrow – Reading/Oxford
- Watford – Aylesbury
- MK – Luton -Stevenage
- Banbury-Northampton – Wellingborough
- Kettering – Peterborough



Alignment with objectives



Cost

Study costs only, delivered through EEH's on-going evidence base and connectivity studies.

Med

Package 5 | Investigating Hub to Hub Connections

Options for improving connectivity through delivering new links between existing stations

Link	Existing Proposals Status	Current Status	Potential Options	Key Development partners
Watford Junction – High Wycombe/ Aylesbury	Previous Croxley Rail Link cancelled	Poor connections from Watford Junction to the west including Aylesbury and High Wycombe	Rail, Underground Extension, Tram/Train, Bus Connections/Extensions	• Watford Borough Council • Hertfordshire County Council • Transport for London
Heathrow – Reading (and Oxford)	Western Rail Link	Existing RailAir coach link Cross-country from Reading or connection via Hayes and Harlington	Rail	• Heathrow • Transport for South East • Network Rail
MK – Luton – Stevenage	New proposal	Lack of direct high-speed connections between hubs on different main lines	Light Rail, Bus, Bus Rapid Transit	• Luton Council • Milton Keynes Council • Hertfordshire County Council • Central Beds Council
Northampton – Wellingborough	New proposal	Direct bus service does not serve either stations reducing opportunities to interchange between modes	Express Bus Extension	• North Northamptonshire Council • West Northamptonshire Council
Banbury Station - Northampton	New proposal	No direct service connecting the stations or limited options to interchange or provide connections to key towns such as Brackley and Towcester	Express Bus, Bus Rapid Transit	• Oxfordshire County Council • West Northamptonshire Council
Kettering – Peterborough	Reopening proposal	Services to Corby from Kettering and from Oakham to Peterborough /Cambridge but no direct link	Rail – reopening or new curve at Manton	• Cambridgeshire and Peterborough CA • Welland Valley Rail Partnership • North Northamptonshire

Package 6 | Regional Connectivity

Improve connections between regional hubs and neighbouring areas where connectivity is currently poor

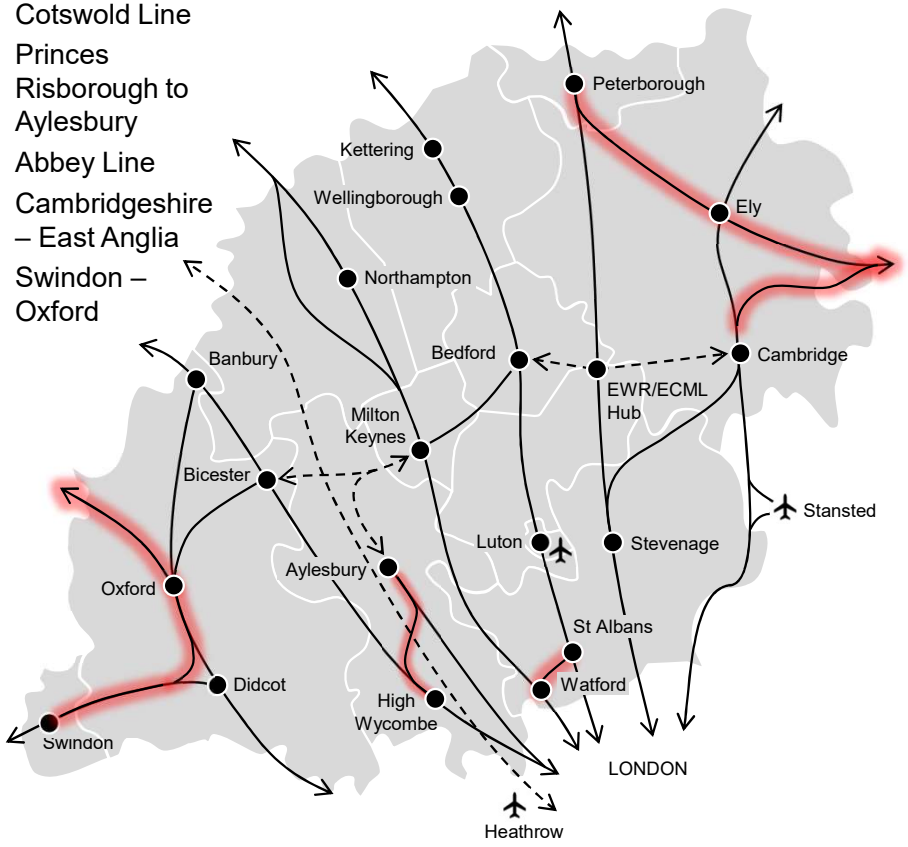
Description

Some inter-regional connectivity gaps could be addressed in the relatively short-term through utilising the existing rail network. For example, introducing regular direct services between Oxford and Swindon (linking with wider connections) would enhance Midland to South West connectivity and directly connect two fast-growing, relatively large urban areas.

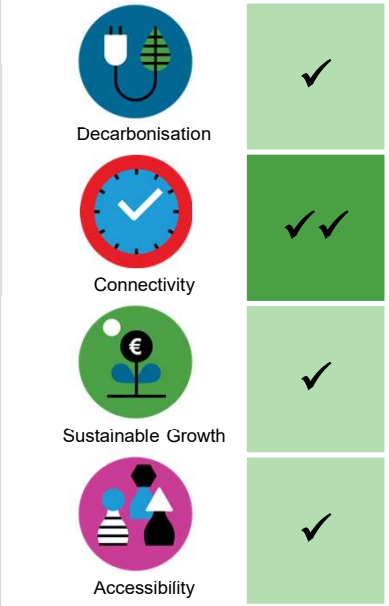
There are also opportunities to improve capacity on the Cotswold Line and in Cambridgeshire, following delivery of committed investment, particularly Ely and Haughley capacity improvements, which will also have major benefits for rail freight movements.

Scope

- Cotswold Line
- Princes Risborough to Aylesbury
- Abbey Line
- Cambridgeshire – East Anglia
- Swindon – Oxford



Alignment with objectives



Cost

Running additional services may be low cost, whereas new tracks are higher cost.

Low/ Med

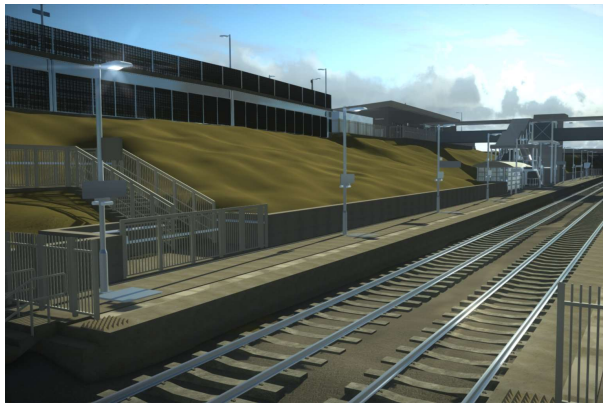
Package 6 | Regional Connectivity

Options for improving regional connections

Link	Existing Proposals Status	Scale of Cost	Potential Options	Key Development partners
Oxford – Swindon (linking with wider connections towards Bristol and East West Rail in longer-term)	Potential 4 tracking/ capacity upgrades of the Great Western/ Cherwell Valley Lines	£££	Option to deliver direct Oxford to Swindon service (with onward connections to Bristol) with rolling stock upgrades in short-term. Infrastructure upgrades would help enable an hourly service between Oxford/ Didcot and Swindon stopping at new stations in the longer-term, as well as on-ward connections via EWR to Milton Keynes/ Northampton.	Oxfordshire Council Western Gateway West of England Combined Authority
Cotswold Line (Oxford – Cheltenham	Selective track doubling between Pershore and Evesham, Hanborough and Wolvercote New Platforms at Pershore and Hanborough identified in SOBC.	££	Improved frequency from Oxford to North Cotswold line and improved journey times	Worcestershire County Council Gloucestershire County Council Oxfordshire County Council Hertfordshire County Council Warwickshire County Council West Midlands Rail Executive/ Midlands Connect
Aylesbury – Princes Risborough	Selective double tracking to enable more services (passive provision made in HS2 scheme).	£	Enabling a 2tph service and additional future connections	Buckinghamshire Council
Watford Junction– St Albans Abbey	Options to improve public transport frequency	£	Higher frequency services, including review of bus options	Watford Borough Council Hertfordshire County Council
Peterborough/Ely - Norwich/Ipswich	Linked to the commitment in Network North improvements at Ely and Haughley	££	Improved direct services between East Midlands, Cambridgeshire and East Anglia	Cambridgeshire and Peterborough CA Transport East
Cambridge- Norwich/Ipswich	Linked to the commitment in Network North improvements at Ely and Haughley	££	A 2tph service between Cambridge and Norwich	Cambridge and Peterborough CA Transport East

Package 7 | New Stations

Support growing cities and towns by providing improved access to the main line rail network



Description

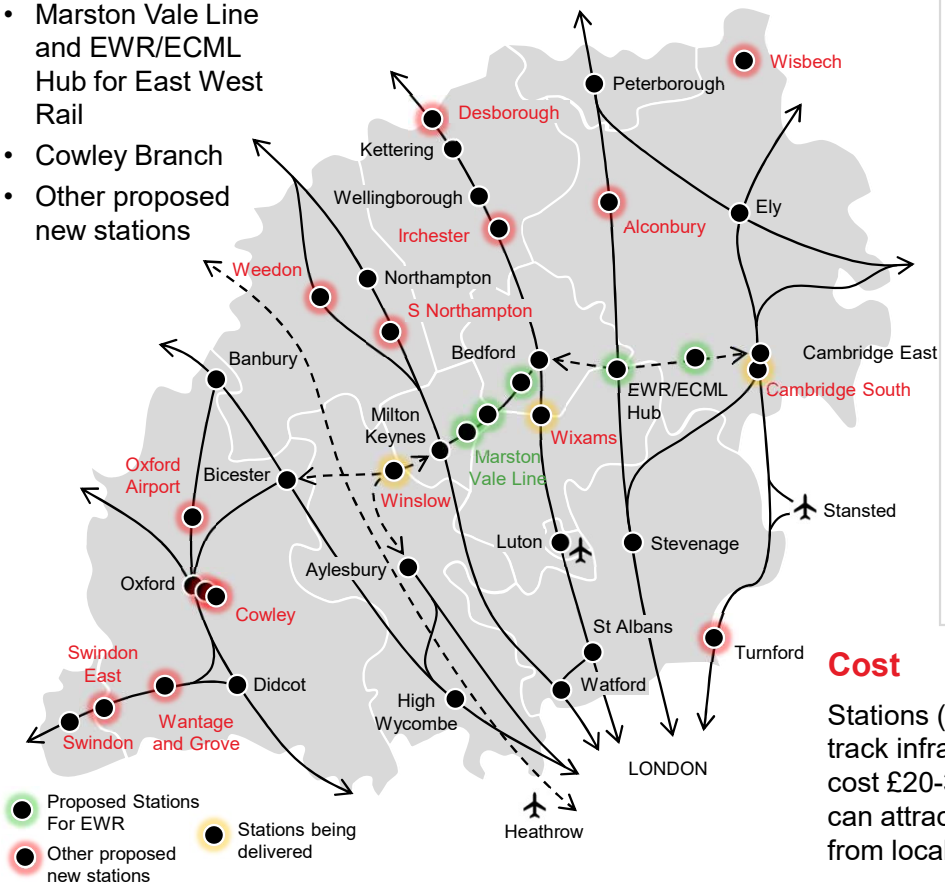
EEH's Connectivity Studies have identified opportunities for new stations to serve established and/or growing communities that currently have limited access to the rail network.

New stations are good candidates for securing contributions from developments, which benefit from increased land values delivered by improved connectivity.

In some areas, such as Oxford and Cambridge, there are opportunities to leverage new stations to improve connectivity within urban areas, e.g. between South Oxford and the City Centre.

Scope

- Marston Vale Line and EWR/ECML Hub for East West Rail
- Cowley Branch
- Other proposed new stations



Alignment with objectives

Cost

Stations (excluding major track infrastructure) typically cost £20-30m each – Many can attract contributions from local development

Low

Package 7 | New Stations

Options for new stations identified by stakeholders and connectivity studies to date 1/2

Project	Stations	Scale of Cost*	Study	Future Service	Required Infrastructure
Wisbech Rail Link	Wisbech	££	NA	2tph/light rail	A number of options remain for connecting March including heavy and light rail.
East West Rail	Cambourne	£	There are several options for future East West Rail stations and services on the Marston Vale Line. These include redeveloping existing stations or fewer but improved new stations.	There are several options for future East West Rail stations and services on the Marston Vale Line. These include redeveloping existing stations or fewer but improved new stations.	There are several options for future East West Rail stations and services on the Marston Vale Line. These include redeveloping existing stations or fewer but improved new stations.
	Woburn Sands	£			
	Ridgmont	£			
	Lidlington	£			
	Stewartby	£			
	Bedford St Johns	££			
East West Rail Interchange Hub	EWR/ECML Interchange (currently proposed at Tempsford)	£££	East West Rail Project	4tph EWR 2tph East Coast Main Line (ECML)	

*Some stations may require additional track infrastructure to enable stopping services
This could increase costs significantly (depending on works required)

Package 7 | New Stations

Options for new stations identified by stakeholders and connectivity studies to date 2/2

Project	Stations	Scale of Cost*	Study	Future Service	Required Infrastructure
Cowley Branch	Oxford Cowley	£	Swindon - Didcot –Oxford	2tph	Cowley branch upgraded for passenger rail services
	Oxford Littlemore	£			
Bristol (via Swindon) to Oxford	Wantage and Grove	££	Swindon - Didcot -Oxford	1tph	Oxford Stations Capacity improvements and four tracking/ capacity upgrades on Great Western Main Line would be needed to enable greater frequency.
	Swindon East	££			
Others	Weeden/ Daventry Parkway	££	EEH Connectivity Study 4	1/2tph	Only viable with HS2 capacity released on WCML.
	South Northampton	££	EEH Connectivity Study 4	1/ 2 tph	May require further line capacity
	Alconbury Weald	£	NA	2tph	Stopping services
	Desborough	£	EEH Connectivity Study 6	2tph	TBD
	Irchester	£	EEH Connectivity Study 6	2tph	TBD
	Oxford Airport	£	Oxfordshire Rail Corridor Study	2tph	2 platform station
	Turnford	£	NA	2tph	2 platform station

*Some stations may require additional track infrastructure to enable stopping services.
This could increase costs significantly (depending on works required)

Package 8 | Hubs and Accessibility

Ensure hubs in the EEH area deliver a minimum level of service

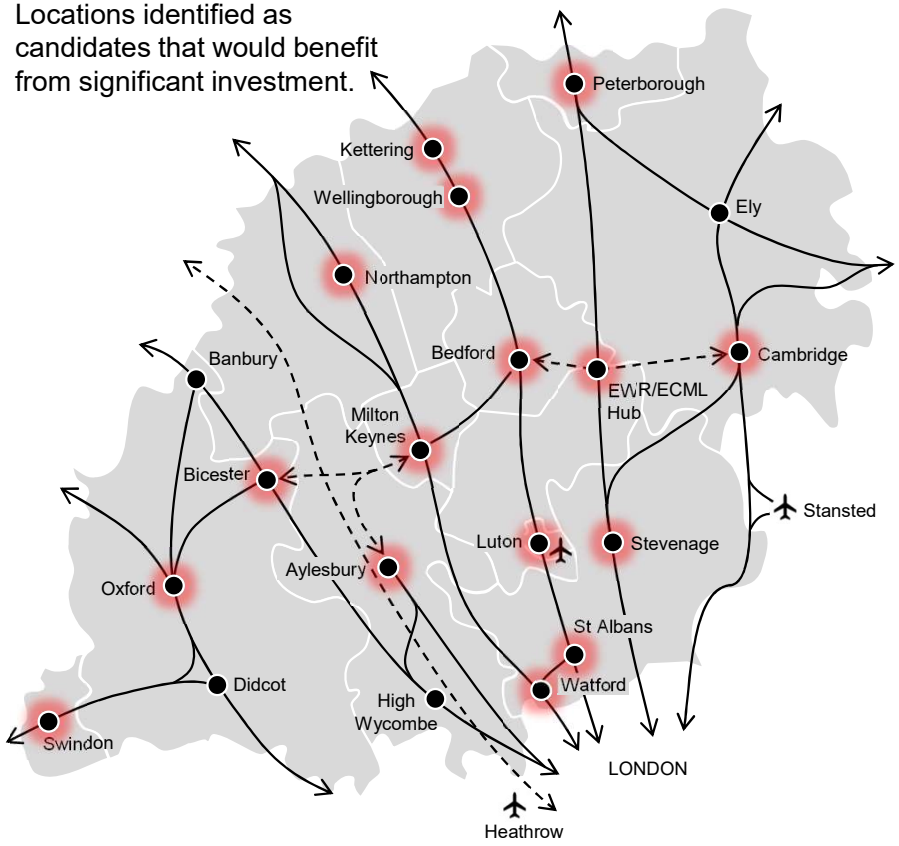
Description

We have assessed the level of service provided by each hub and identified a shortlist of stations that currently fall short of expectations. Improving these hubs will materially boost accessibility and support growth.

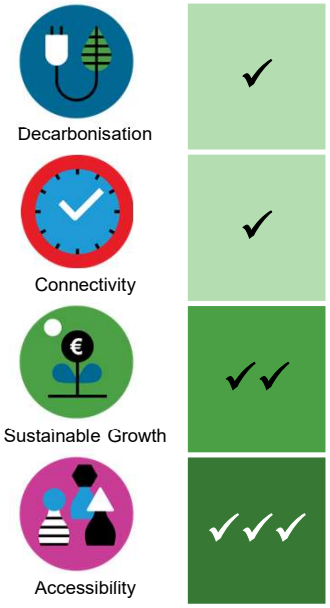
Additionally, this package seeks to improve integration at hubs and across the railway. This should include (for example) integrated fares and ticketing across rail operators and between rail operators and underground/bus operators.

Scope

- Locations identified as candidates that would benefit from significant investment.



Alignment with objectives



Cost

Improving existing hubs should be achievable for similar costs to new stations

Low

Station Hubs | West

Recommendations

	Aylesbury	Bicester (North/Village)	Oxford	Swindon
Short Term	• Deliver improvements outlined in BSIP to improve bus priority into the town centre through better SCOOT provision and improved services • Ensure DRT services can provide improved access to the station.	• Further secure cycle storage facility can encourage sustainable travel to and from both stations which would support sustainable access	• The committed upgrades to Oxford Station will deliver improved passenger capacity- both improved bus interchange and improved active travel access	• Fleming Way improvements will improve bus interchange at the town centre and increase development opportunities adjacent to the station • Deliver active travel improvements on Bridge Street to improve access to the town from the station
Medium/Long Term	• Deliver improved bus station and station quarter ensuring passengers can interchange easily between the bus and railway stations to encourage more interchange between modes and improve the accessibility of the town from the station.	• Develop improved bus interchange facilities to support multi modal journeys including real time information. • Improved service connecting both stations and key bus stations.	• In the longer-term Oxford Mass transit would support a step change in the accessibility of the stations from across Oxford • Future connections to EWR and Cowley are likely to increase station passenger demand which will require increased public transport capacity	• Linked to active transport improvements enhanced cycle storage at the station may be required

Station Hubs | Central

Recommendations

	Kettering	Wellingborough	Bedford	Luton	St Albans City
Short Term	• North Northamptonshire has developed the Kettering station quarter masterplan which it should continue to develop • In the short-term improved bus connectivity would be key to improving the station as a multi modal hub	• Proposals for a new entrance has been developed as part of development plans which would enhance the multi modal transport interchange • Improving bus connectivity should be a short-term priority with direct routes serving the station from the town centre and serving new communities	• Improved active travel provision between the station and the town centre would make the station more attractive for non-motorised users. • Increasing the frequency of bus services serving the station	• Delivery of the access for all project at Luton will provide step free access and passenger experience • Increasing the volume of secure cycle storage at the station would support an increase in active travel use	• Proposed improvements identified • Further improvements to bus frequency would improve connectivity from the station particularly to the west of St Albans which is not directly connected by bus
Medium/Long Term	• In the longer term delivering the Kettering station quarter masterplan proposals	• Improved bus and active facilities at the station • New connection potentially through bus/rail could link to Peterborough significantly shortening east-west journey times	• Enhancements as part of EWR should enhance active and public transport through improved cycle storage and access and improved bus service including real time information	• Improvement to active travel routes to Luton station would support increase active travel use, including improved dedicated cycle access from High Town Road and the northern side of the station	• Integrating proposals for high-capacity bus through HERT (Hertfordshire Essex Rapid Transit) would provide a step change in public transport connectivity from the station

Station Hubs | Central

Recommendations

	Watford Junction	Milton Keynes	Bletchley	Northampton
Short Term	• Delivering improvements identified in the Transforming Travel in Watford strategy which includes improved active travel. via the Green Loop East Scheme. • Improved secure cycle storage could increase active travel use.	• Ensuring that Milton Keynes MRT serves the station adequately • Ensuring Milton Keynes MRT proposals serve Milton Keynes Station to enable interchange with Rail.	• Improvements to the urban realm connecting the station to Bletchley are proposed through a Towns fund and Network rail funded project to enhance the interchange.	• Achieving the proposed station scheme will increase provision of car parking and some improvement to active travel priority and new cycle alongside housing development • Improving bus frequency to support the development and station access
Medium/Long Term	• Delivering the proposed station upgrade and over site development would provide opportunity to improve passenger facilities and deliver improved active and public transport facilities.	• Delivery of MK MRT proposals • Longer terms interventions may be required for East West rail and other service proposals to increase the onward transport capacity.	• Delivering an eastern entrance as part of East West Rail programme would reduce journey times from the town centre. • Ensuring Milton Keynes MRT proposals serve Bletchley station to enable interchange with Rail	• Delivering the proposed station scheme and enhancing active travel.

Station Hubs | East

Recommendations

	Peterborough	Stevenage	Cambridge
Short Term	• Improving bus frequencies for services serving the station. • Securing funding for the Peterborough Station Quarter project which includes new highway access and entrances to the west and refurbishment of the existing entrance. Cycle storage would be improved and enhanced bus station access.	• Increasing cycle storage and facilities to support an increase in active travel use at the station.	• Continuing to improve bus frequency serving the station and the new station at Cambridge South.
Medium/Long Term	• Delivering the Peterborough Stations quarter to improve all aspects of access to the station.	• Delivering Stevenage Station Gateway Area Action Plan - improving accessibility, urban realm improvement, new pedestrian access, and integration between sustainable transport modes.	• Improve transport to the east of the station to support connection to developments in the east. • Upgrade to stations access to ensure passengers capacity. • Second eastern entrance to support link to proposed development site at the airport.

Package 9 | Fares and Ticketing

Make it easier to select, purchase, and validate tickets across different modes and areas

Description

The current fares and ticketing system in the EEH area heavily relies on a variety of nationally co-ordinated systems that include contactless “tap in tap out” capability, which has recently been extended to selected stations on the ECML, Chiltern, and Midland Main lines. Most Train Operating Companies (TOCs) also offer their own smart card products, which include Pay-As-You-Go (PAYG) and pre bought tickets.

Unlike London and other combined authorities, there is no single integrated fares and ticketing system across the whole EEH area. Some parts of the area fall into London systems, and some are served by West Midlands Systems.

This Package therefore outlines opportunities for expanding integrated bus and rail ticketing and fares systems.

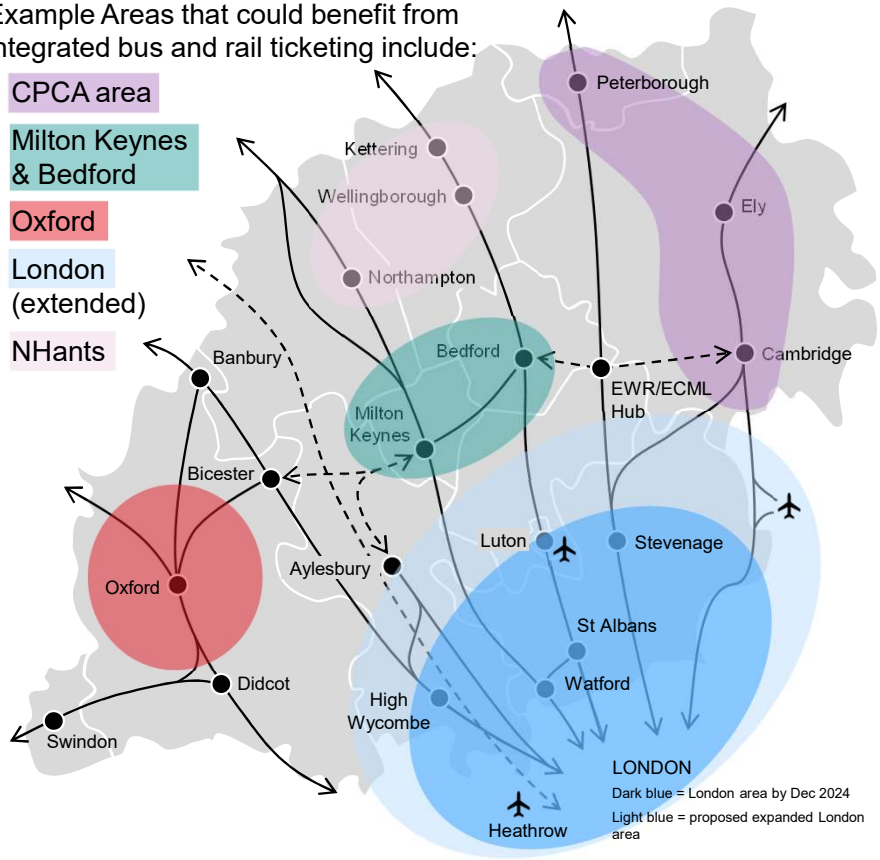
Scope

- Expansion of contactless payment zones
- New city-region ticketing products (where significant inward commuting occurs)
- Fare simplification/zoning in line with Industry Proposals

Options

Example Areas that could benefit from integrated bus and rail ticketing include:

- CPCA area
- Milton Keynes & Bedford
- Oxford
- London (extended)
- NHants



Alignment with objectives

✓

✓

✓

Cost

Costs and impact on revenue will depend scale of reform, but capex should be low

Low

Package 9 | Fares and Ticketing

Options for improving integrated fares and ticketing

Proposal	Key components	Demand and Cost Impacts	Key Benefits	Key Challenges
Continue to expand "Project Oval" across EEH region	• This proposal will enable users to travel between any station within the contactless area using only a credit or debit card. • Journeys would be treated as single fares and would not be capped within the contactless area.	• The demand impact is not known at this stage, but in principle, any perceived reduction in the level and complexity of fares should result in higher demand. • Exact costs will only be known when levels of induced demand are understood.	• Simpler walk-up fares for local trips and into London. • Simpler user interface. • System is well known to users due to frequent use in London.	• Project Oval appears to be "paused" with no confirmed completion date. • External funding may be needed to complete this project due to changes in fares between some stations. • Due to a lack of integration with National Rail railcards, some fares will be more expensive. • Project Oval does not deliver integration with non-TfL buses.
Develop city-region ticketing products	• Other city regions are developing integrated city region products, which could be mimicked in the EEH area. • These schemes normally involve creating standardised fares across defined zones.	• This could encourage more local trips by rail as part of a linked journey. • In many cases, proposed zonal fares are lower than existing one-way rail fares, which can lead to falling revenue depending on how demand responds to these changes.	• Simpler walk-up fares for local trips and into London. • Enables city regions to develop own integrated fare structures across modes. • Can enable multi-modal fare capping.	• Creates boundaries where different products are accepted. • If rail revenue is reduced, then compensation may be sought by National Government. • It can be challenging to establish compensation schemes between different modes when operated by different providers.
Simplification and review Fares and Ticketing (Rail Delivery Group proposals)	• This proposal would introduce a fare system-based primary on single leg fares rather then return fares. • Discounts could be applied to encourage greater utilisation of spare capacity in off-peak periods. • Potential for fare capping on flows into London and into other cities.	• If the Treasury/DfT mandates this scheme to deliver revenue neutral outcomes, then there will be some "losers" (facing higher fares on some routes) and some "winners" (benefitting from lower fares). The former group may influence politicians to drop the proposal.	• Delivers simpler fares. • Can enable rail fare capping. • Potentially provides cheaper off-peak journeys, which could encourage more off-peak trips.	• Requires some fares to increase while others may fall. • Focussed on integration within rail sector rather than across modes.

Qualitative Assessment of Packages against Objectives | Summary

Key to packages

1. East West Rail
2. Chiltern Transformation
3. Decarbonisation
4. Main line Connectivity
5. Investigating Hub to Hub Connections
6. Regional Connectivity
7. New Stations
8. Hubs and Accessibility
9. Fares and Ticketing

Objectives

Package	1 EWR	2 Chiltern	3 Decarb	4 Main lines	5 New links	6 Regional	7 Stations	8 Hubs	9 Ticketing
Decarbonisation	✓	✓✓	✓✓✓	✓✓	✓	✓	✓	✓	✓
Connectivity	✓✓✓	✓✓✓	✓	✓✓✓	✓✓	✓✓	✓	✓	
Sustainable Growth	✓✓✓	✓✓	✓	✓✓	✓✓	✓	✓✓✓	✓✓	✓
Accessibility	✓✓	✓✓			✓✓	✓	✓✓	✓✓✓	✓
Cost	High	High	Med/ High	Med	Med/ Low	Med/ Low	Low	Low	Low

Qualitative Assessment of Packages | Focus on Decarbonisation

Key to packages

1. East West Rail
2. Chiltern Transformation
3. Decarbonisation
4. Main line Connectivity
5. Investigating Hub to Hub Connections
6. Regional Connectivity
7. New Stations
8. Hubs and Accessibility
9. Fares and Ticketing

Package	1 EWR	2 Chiltern	3 Decarb	4 Main lines	5 New links	6 Regional	7 Stations	8 Hubs	9 Ticketing
Traction decarbonisation			✓✓✓						
Modal shift to rail	✓✓	✓✓	✓	✓✓	✓✓	✓✓	✓✓	✓	✓
Cost	High	High	Med/ High	Med	Med/ Low	Med/ Low	Low	Low	Low

Qualitative Assessment of Packages | Focus on Connectivity

Key to packages

1. East West Rail
2. Chiltern Transformation
3. Decarbonisation
4. Main line Connectivity
5. Investigating Hub to Hub Connections
6. Regional Connectivity
7. New Stations
8. Hubs and Accessibility
9. Fares and Ticketing

Package	1 EWR	2 Chiltern	3 Decarb	4 Main lines	5 New links	6 Regional	7 Stations	8 Hubs	9 Ticketing
London		✓✓		✓✓✓	✓✓		✓		
Intra-regional	✓✓✓	✓✓	✓	✓✓	✓✓	✓	✓	✓	
Inter-regional	✓✓	✓	✓	✓✓	✓✓	✓✓		✓	
Airports and Ports	✓	✓✓		✓	✓	✓			
Cost	**High**	**High**	**Med/ High**	**Med**	**Med/ Low**	**Med/ Low**	**Low**	**Low**	**Low**

Qualitative Assessment of Packages | Focus on Growth

Key to packages

1. East West Rail
2. Chiltern Transformation
3. Decarbonisation
4. Main line Connectivity
5. Investigating Hub to Hub Connections
6. Regional Connectivity
7. New Stations
8. Hubs and Accessibility
9. Fares and Ticketing

Package	1 EWR	2 Chiltern	3 Decarb	4 Main lines	5 New links	6 Regional	7 Stations	8 Hubs	9 Ticketing
Connecting existing communities	✓✓✓	✓✓	✓	✓	✓✓	✓✓	✓✓✓	✓	
Improving access to jobs and growth	✓✓✓	✓✓		✓✓✓	✓✓	✓✓	✓✓	✓✓	✓
Supporting sustainable development	✓✓✓	✓✓		✓	✓✓	✓	✓✓✓	✓✓✓	✓
Cost	**High**	**High**	**Med/ High**	**Med**	**Med/ Low**	**Med/ Low**	**Low**	**Low**	**Low**

Qualitative Assessment of Packages | Focus on Accessibility

Key to packages

1. East West Rail
2. Chiltern Transformation
3. Decarbonisation
4. Main line Connectivity
5. Investigating Hub to Hub Connections
6. Regional Connectivity
7. New Stations
8. Hubs and Accessibility
9. Fares and Ticketing

Package	1 EWR	2 Chiltern	3 Decarb	4 Main lines	5 New links	6 Regional	7 Stations	8 Hubs	9 Ticketing
Improved Access to Stations	✓✓	✓			✓		✓	✓	
Transport Integration	✓						✓✓	✓✓	
New communities served by rail					✓✓		✓✓✓	✓✓	
Cost	**High**	**High**	**Med/ High**	**Med**	**Med/ Low**	**Med/ Low**	**Low**	**Low**	**Low**

Summary

Packages of Options for achieving the Revised Overarching Strategic Rail Objectives

Packages of Options

Nine packages of schemes have been developed - these could all play a key role in improving rail across the region.

Package 1 | East West Rail

East West Rail is key to connecting settlements across the region enabling sustainable development, supporting cities and towns, and enabling more connections across the EEH region.

Package 2 | Chiltern Transformation

Chiltern transformation includes multiple components such as electrification, new rolling stock, a connection to Old Oak Common, and improvements in service frequency enhancements.

Package 3 | Decarbonisation

Decarbonisation of the EEH railway using a combination of electrification of core routes and battery and hybrid technology on other routes.

Package 4 | Main line Connectivity

Supporting more intercity connectivity through maximising HS2 and upgrades to key main lines.

Package 5 | Investigating Hub to Hub Connections

Opportunities for new multi-modal connections connecting into and between the main lines.

Package 6 | Regional Connectivity

Opportunities for upgrades to routes to enable more regional services.

Package 7 | New Stations

Proposals for new stations on and providing access into main lines.

Package 8 | Hubs and Accessibility

Identification of key opportunities to improve hub stations across the region.

Package 9 | Fares and Ticketing

Options for improving fares and ticketing structures in the region.

Assessment of Options

The assessment of packages against each objective indicated that objectives(decarbonisation, connectivity, sustainable growth and accessibility) would be achieved through a combination of packages.

ARUP

Part 8

Scenarios

Introduction

This Section

While every effort is made to understand long term drivers and trends, there will always be some uncertainty in how the future will play out. Scenario testing can be a powerful tool to understand how proposed strategies and interventions might perform under different, plausible versions of the future.

In this section we explore how the Packages developed in Section 7 might perform under four plausible scenarios:

- Regional growth
- London growth
- Leisure growth
- Decarbonisation

The insights drawn from this exercise are summarised at the end of this Section and provide some guidance on how EEH can adapt its policies and strategies to reflect different future outcomes.

Scenario Development

Approach to Scenario Development

We have approached this task by considering the **drivers** that are likely to have the greatest impact on the future railway, and that also represent the greatest level of uncertainty. In doing so, we considered demographics, climate change, political/policy change, social trends, and technology.

One of the key impacts we identified that is common to many of the drivers listed above is **demand for passenger rail services** – not just the **scale** of growth, but also its **distribution**.

We can easily imagine a future where there is stagnant growth in demand for passenger rail. Under this scenario, there would be less revenue, less available capital, and therefore less scope to intervene. The response from EEH and its partners would likely be to continue to pursue the packages outlined in Section 7, but do so at a slower pace, and potentially prioritise those that contribute to growing demand. In contrast, a higher growth environment would offer greater scope to implement the packages at a faster pace.

While exploring different levels of demand offers some insights, we found exploring **different distribution of demand** may offer more scope for scenario testing. We also consider a scenario focussed on prioritising decarbonisation is plausible. We therefore assessed the following scenarios:

- **Regional focussed growth**: Where there is higher growth on intra-regional trips between the EEH area's hubs, and comparatively lower growth on intercity and London focussed markets.
- **London focussed growth**: Where commuting returns to pre-pandemic levels, placing pressure on London services.
- **Leisure focussed growth**: Where commuting continues to stagnate, but more leisure journeys are undertaken across the country, necessitating more longer distance and intercity services through the EEH area.
- **Focus on decarbonisation:** Where decarbonisation is prioritised over every other intervention.

Assessment

We have undertaken a high-level qualitative assessment of potential impact of each scenario on the viability of package.

In particular, we assess the potential for each scenario to strengthen or weaken the strategic case for each package (see key below).

We also have assessed the impact each scenario is likely to have on each of the key markets considered in this study (London, inter-regional, and intra-regional), as well as on revenue recovery and the wider case for investment.

Key for Assessment

Strengthens case for the package

Neutral impact – may make some components stronger and others weaker

Weakens case for the package

Scenario 1 | Regional focussed growth

Description

Under this scenario, routes within the EEH area experience significant growth, reflecting a relative rebalancing of the economy. Growth in rail demand is highest around the region's fastest growing settlements, particularly where pro public transport policies are in place and high employment growth is concentrated. This creates demand for inward and local travel by rail, which is supported by sustainable development along rail corridors. More capacity will be needed at key stations to boost frequencies for regional and local services. In contrast, growth in demand for services to/from London stagnates, which enables the railway to gradually reassign capacity from London services to regional markets. That said, there is growth in demand for travel to key cities outside London, which drives demand for intercity connections between the EEH area and the Midlands and North of England.

In general, this scenario rebalances capacity while accommodating growth, rather than necessitates significant investment in additional capacity.

Market	Demand Growth
EEH to London	✓
Within EEH	✓✓✓
Between EEH and other areas	✓✓
Strategic Case	**Impact on Rail Industry**
Farebox Recovery	✓✓✓
Case for Investment	✓✓✓✓✓

Impact on Packages

1. East West Rail
2. Chiltern Transformation
3. Decarbonisation
4. Main line Connectivity
5. Investigating Hub to Hub Connections
6. Regional Connectivity
7. New Stations
8. Hubs and Accessibility
9. Fares and Ticketing

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Scenario 2 | London focussed growth

Description

Under this scenario, demand for London services grows to pre-pandemic levels, but potentially becomes more concentrated on midweek days. There is continued pressure for growing housing to accommodate London's buoyant economy, which spills over into much of the EEH area. Longer distance commuting grows too, as some people are forced to move further away from London to find affordable housing. Many of the crowding issues experienced before the pandemic return, but recovery in industry finances will create the right conditions to invest in growing capacity in infrastructure and rolling stock.

One can easily imagine interventions that relieve capacity on the EEH area's main line railways (like HS2) being given serious consideration under this scenario, and the case for transforming the Chiltern Main Line would be greatly enhanced thanks to the stronger financial position of the industry. However, pressure on housing will force many people into longer commutes, which may not an ideal outcome from a productivity or wellbeing perspective.

Market	Demand Growth
EEH to London	✓✓✓✓
Within EEH	✓
Between EEH and other areas	✓✓
Strategic Case	**Impact on Rail Industry**
Farebox Recovery	✓✓✓✓
Case for Investment	✓✓✓

Impact on Packages

1. East West Rail
2. Chiltern Transformation
3. Decarbonisation
4. Main line Connectivity
5. Investigating Hub to Hub Connections
6. Regional Connectivity
7. New Stations
8. Hubs and Accessibility
9. Fares and Ticketing

Scenario 3 | Leisure focussed Growth

Description

Under this scenario, continued home working and technological developments (such as automation) continue to dampen demand for commuting, but demand for leisure travel continues to grow. Concern about climate change and more relaxed attitudes to journey times means there is high demand for longer distance services, especially at weekends. Many of the EEH area's tourism hot spots experience high demand from other parts of the country during peak tourist season. Under this scenario, it is likely the industry will take longer to recover revenue, as leisure travellers are traditionally more price sensitive. However, one can imagine there would be busy long-distance services on the Great Western, West Coast, and Cross County corridors on Fridays under this scenario. Investment in the rail network is likely to be lower as demand is more evenly spread across the week and demand for high yield peaking time fares. Investment is focussed on making the railway accessible to all and ensuring more people use rail, including new stations.

Market	Demand Growth
EEH to London	✓✓✓
Within EEH	✓✓
Between EEH and other areas	✓✓
Strategic Case	**Impact on Rail Industry**
Farebox Recovery	✓✓
Case for Investment	✓

Impact on Packages

1. East West Rail
2. Chiltern Transformation
3. Decarbonisation
4. Main line Connectivity
5. Investigating Hub to Hub Connections
6. Regional Connectivity
7. New Stations
8. Hubs and Accessibility
9. Fares and Ticketing

Scenario 4 | Focus on decarbonisation

Description

Under this scenario, the government prioritises decarbonisation over any other intervention. Electrified railways – however crowded – receive less attention than unelectrified railways. There is also a focus on modal shift, which has greatest impact on longer journeys. Intercity services between London and Scotland (a route served by c. 50 flights per day) are therefore enhanced to enable modal shift from domestic aviation to rail. There will also be interest in using the railway to support more sustainable housing growth (e.g. garden towns and/or developments with low car provision/use).

Under this scenario, there is high investment with some return through growth on intercity corridors. The Chiltern and CrossCountry routes would also benefit from electrification. However, under this scenario, some opportunities will need to be deprioritised. For example, one can imagine improving services that accommodate lower demand, shorter distance journeys (e.g. rural service) will be seen to be less of a priority under this scenario.

Market	Demand Growth
EEH to London	✓✓✓✓
Within EEH	✓✓
Between EEH and other areas	✓✓✓
Strategic Case	**Impact on Rail Industry**
Farebox Recovery	✓✓
Case for Investment	✓✓✓✓

Impact on Packages

1. East West Rail
2. Chiltern Transformation
3. Decarbonisation
4. Main line Connectivity
5. Investigating Hub to Hub Connections
6. Regional Connectivity
7. New Stations
8. Hubs and Accessibility
9. Fares and Ticketing

Summary

The scenarios demonstrate the packages are broadly resilient

Overall, the scenarios demonstrate that the proposed packages will deliver in a range of plausible futures with each scheme delivering improvements which can be used to enhance a range of services.

There are some nuances to consider. Clearly, a more London focussed growth scenario would mean routes into London would likely be seen as a higher priority than regional routes, and the reverse would be true for a regionally focussed scenario.

The packages that might be most influenced (in different ways) by the scenarios are probably the Chiltern Transformation package and the Regional Connectivity package. This reflects the direct trade-off between London and regional priorities outlined above.

The Hubs and Accessibility package appears to be particularly resilient, and indeed might see an “up-side” benefit in three of the four scenarios assessed.

Overall, this assessment helps provide EEH with the confidence to continue to promote these packages as viable means of achieving their overarching rail objectives, despite the inherent uncertainty the future brings.

	Scenarios			
	1 Regional focussed growth	2 London focussed growth	3 Leisure focussed Growth	4 Focus on decarb.
East West Rail	⇧	⇔	⇧	⇔
Chiltern Transformation	⇩	⇧	⇔	⇔
Decarbonisation	⇔	⇧	⇔	⇧
Main line Connectivity	⇔	⇧	⇔	⇧
Investigating Hub to Hub Connections	⇧	⇔	⇧	⇔
Regional Connectivity	⇧	⇔	⇔	⇩
New Stations	⇧	⇔	⇔	⇧
Hubs and Accessibility	⇧	⇧	⇧	⇔
Fares and Ticketing	⇧	⇔	⇧	⇔

ARUP

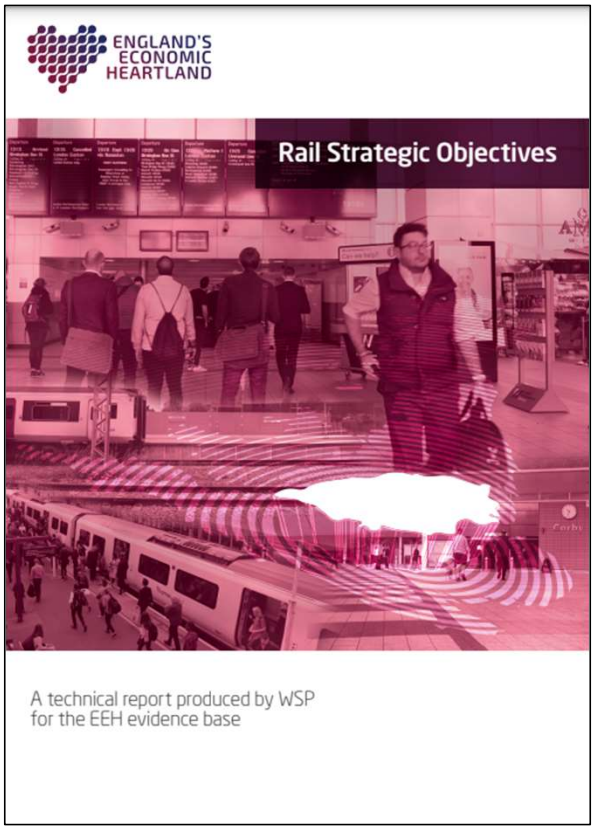
Part 9

Outcomes

Introduction

This section set out the key outcomes of delivering the packages of interventions in terms of decarbonisation, increasing frequency, improving line speed and improving connections with neighbouring regions.

A full assessment of each of the 81 objectives in the EEH Rail Strategic Objectives Report against those measures identified in the Packages set out in Section 7 has also been undertaken and shown in Appendix B.



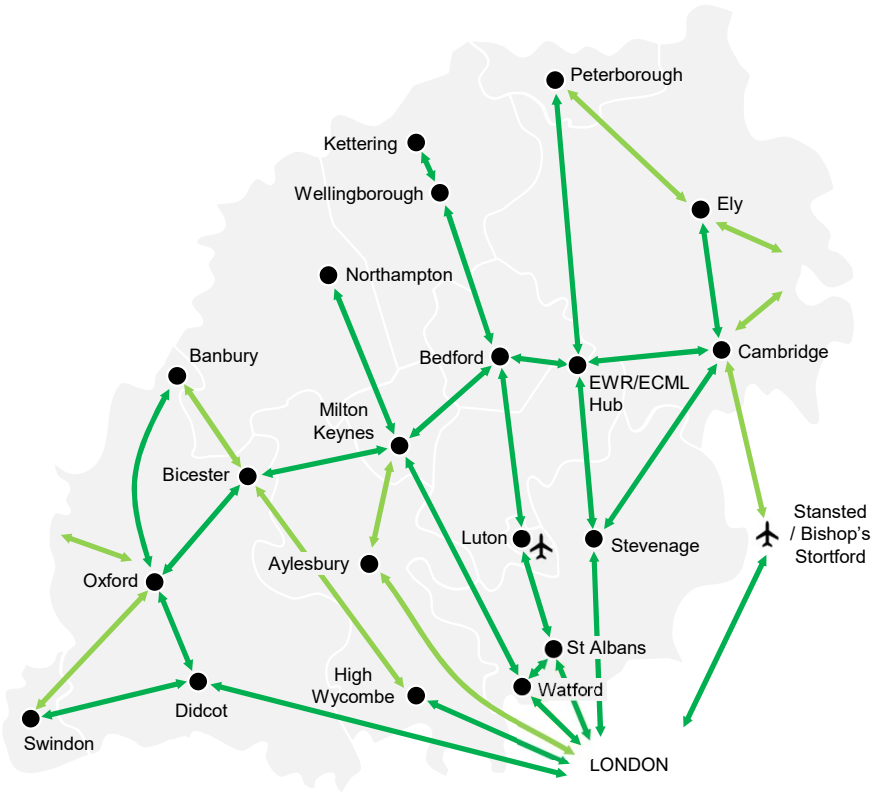
Electrification Proposals | Electrification of rail network

A Fully Decarbonised Railway by 2050*

Electrification

Overhead line electrification (OHLE)

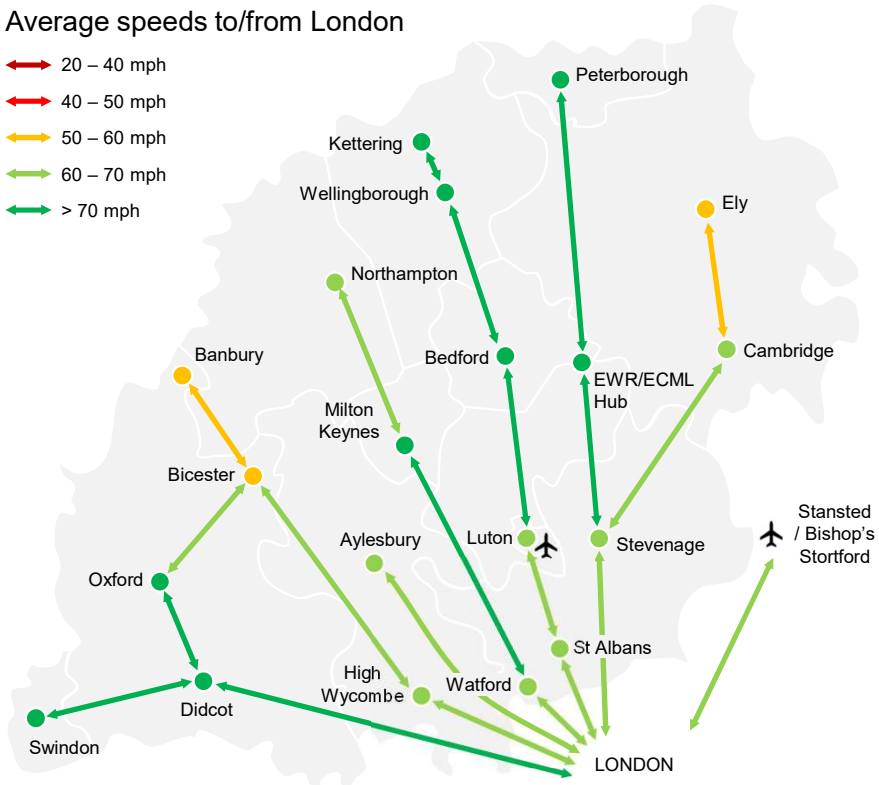
Hybrid (operating with both OHLE and Battery

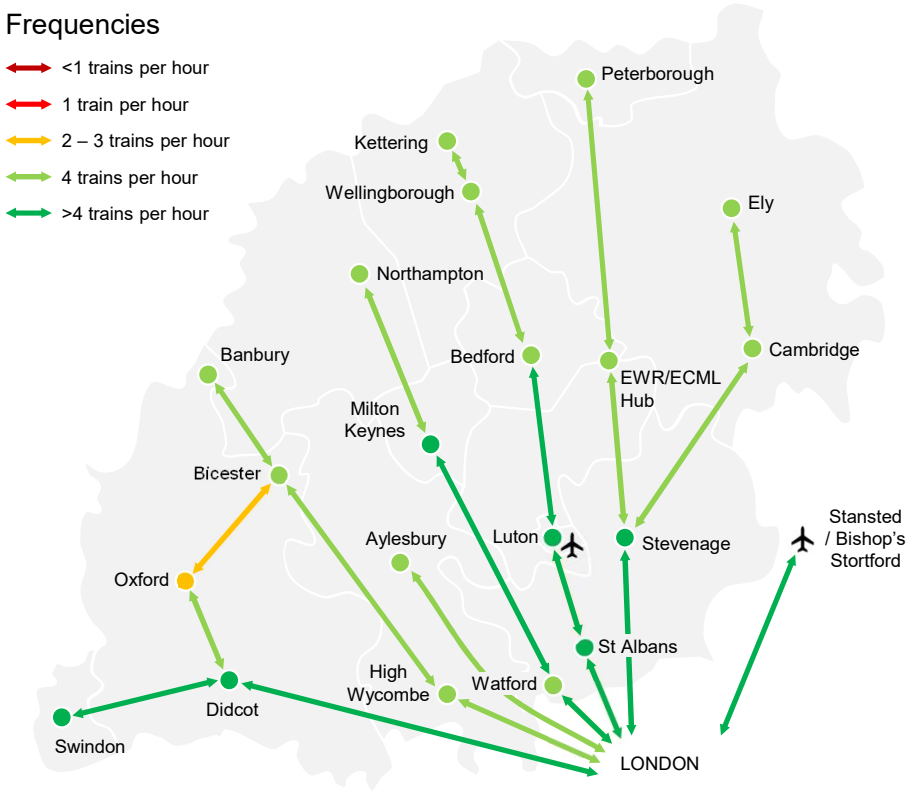


*Decarbonisation/ Electrification will also need to cover some branch lines and any new rail links (not shown)

Connectivity Improvements | London

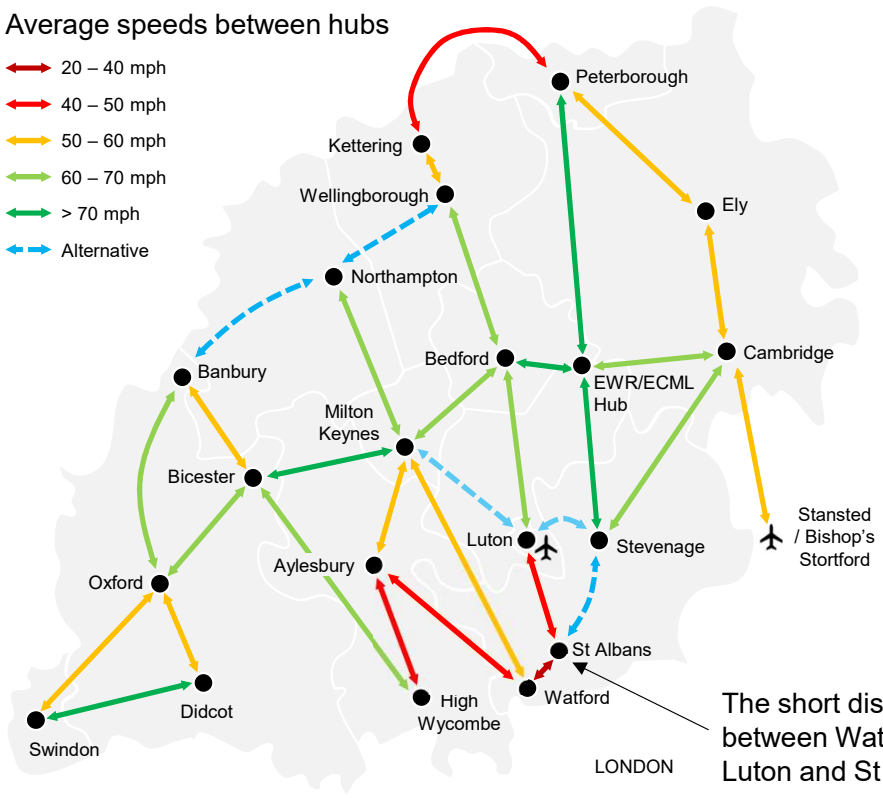
All Links from core station to London are over 60mph and each hub has at least one route with 4tph



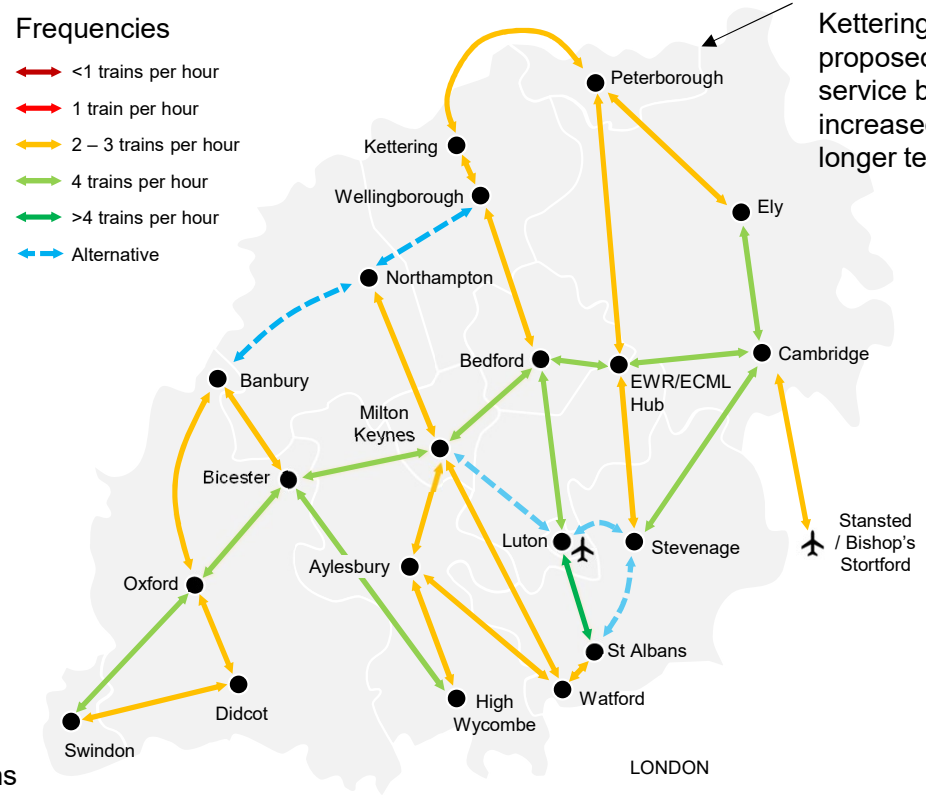


Connectivity Improvements | Within the EEH Area

Delivering new connections unlocks improved connections across the region between the key hubs



The short distance between Watford Luton and St Albans means speed is less important

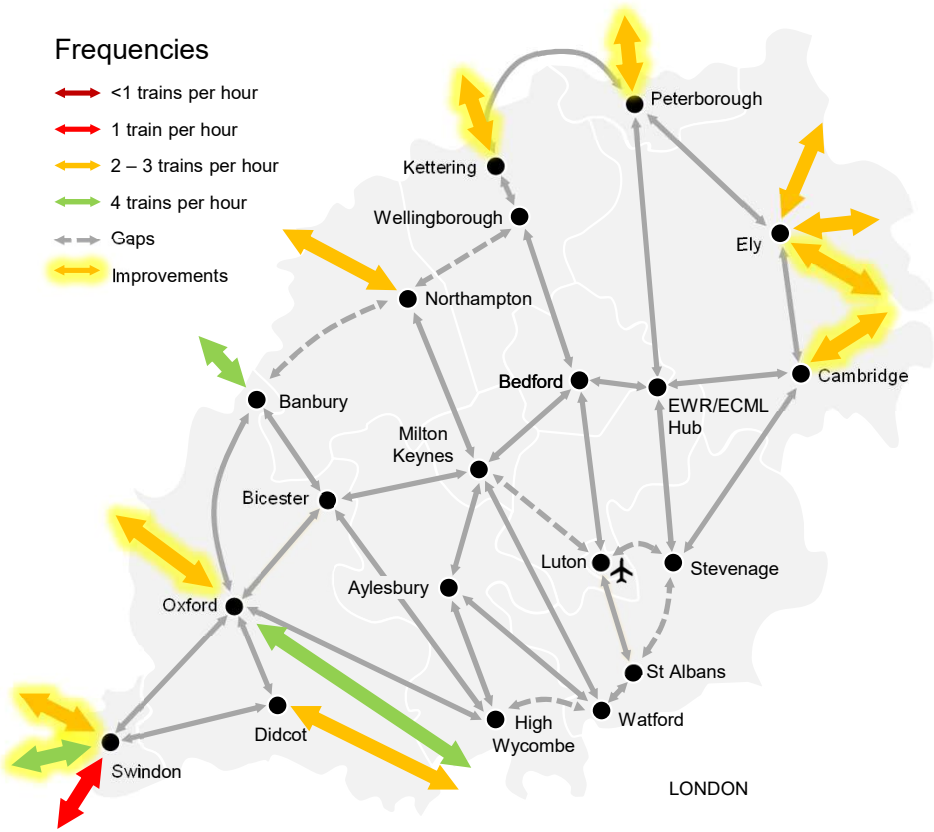


Peterborough to Kettering is proposed as a 1tph service but could be increased over longer term

Connectivity Improvements | Outside the EEA Area

There is limited connectivity between the EEH Area and South West and East of England. Midlands connectivity is better.

Enabling Package	Service	Future Proposal
East West Rail Main line (including Haughley and Ely junctions)	Oxford – Ipswich	Increase from 1 – 2tph (Cambridge – Ipswich)
	Oxford – Norwich	Increase from 1 – 2tph (Cambridge – Norwich)
	Bristol – Oxford – Milton Keynes – Cambridge	Potential for 1 tph through service via Oxford
High Speed 2 • HS2 Phase 1 • HS2 Phase 2A (or equivalent) • MML connection	Nottingham – Leicester – St Pancras	Potential for additional regional/airport service connecting Bedford and Luton Airport
	WMCL – Euston (intercity)	Potential for additional services stopping at Milton Keynes and or Watford Junction from Glasgow/Manchester
	WMCL – Euston (regional)	Potential to increase services stopping at Rugby Northampton and from Crewe and Liverpool
	ECML – Kings Cross	Potential additional services
Cotswold Line	Cheltenham – Oxford	Increase to 2tph
Swindon – Oxford (via Didcot Curve)	Bristol - Swindon	Proposal for direct hourly service



Summary

Outcomes

A Fully Decarbonised Railway

Through the electrification of the Chiltern Main line, East West Rail and key links plus upgrading to Battery and Hybrid rolling stock the rail network in the region will be fully decarbonised.

Connectivity Improvements

Frequency of main line services will be 4tph in most places including all key hubs to London. Faster line speeds and higher frequency journeys operate across the region and improved connections with neighbouring regions operating at 2tph or higher.

EEH Rail Objectives

Through delivery of the packages set out in section 7 each of the 81 objectives identified can be achieved through the provision of additional capacity through new infrastructure, new stations and services.

The full 81 objectives are set out in appendix B.

Appendix A: Service Diagrams

Baseline | Services

This Section

This section sets out service diagram railways operating in the EEH area for the following lines:

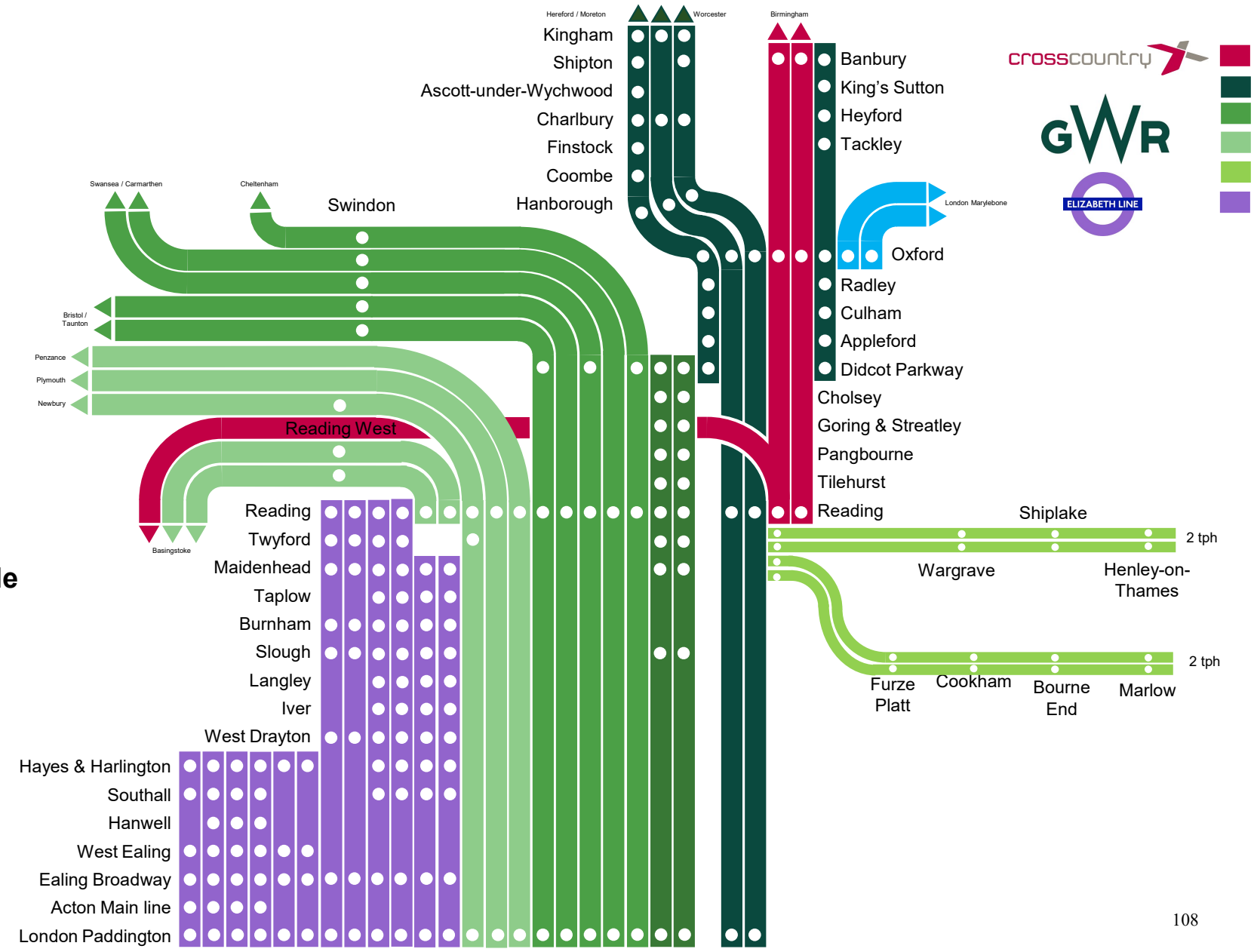
- Great Western Main Line (GWML)
- Chiltern Main Line (CML)
- West Coast Main Line (WCML)
- Midland Main Line (MML)
- East Coast Main Line (ECML)
- West Anglia Main Line (WAML)

Great Western Main Line

Weekday peak PM timetable

Paddington departures

17:00 – 18:00, 23rd July 2024

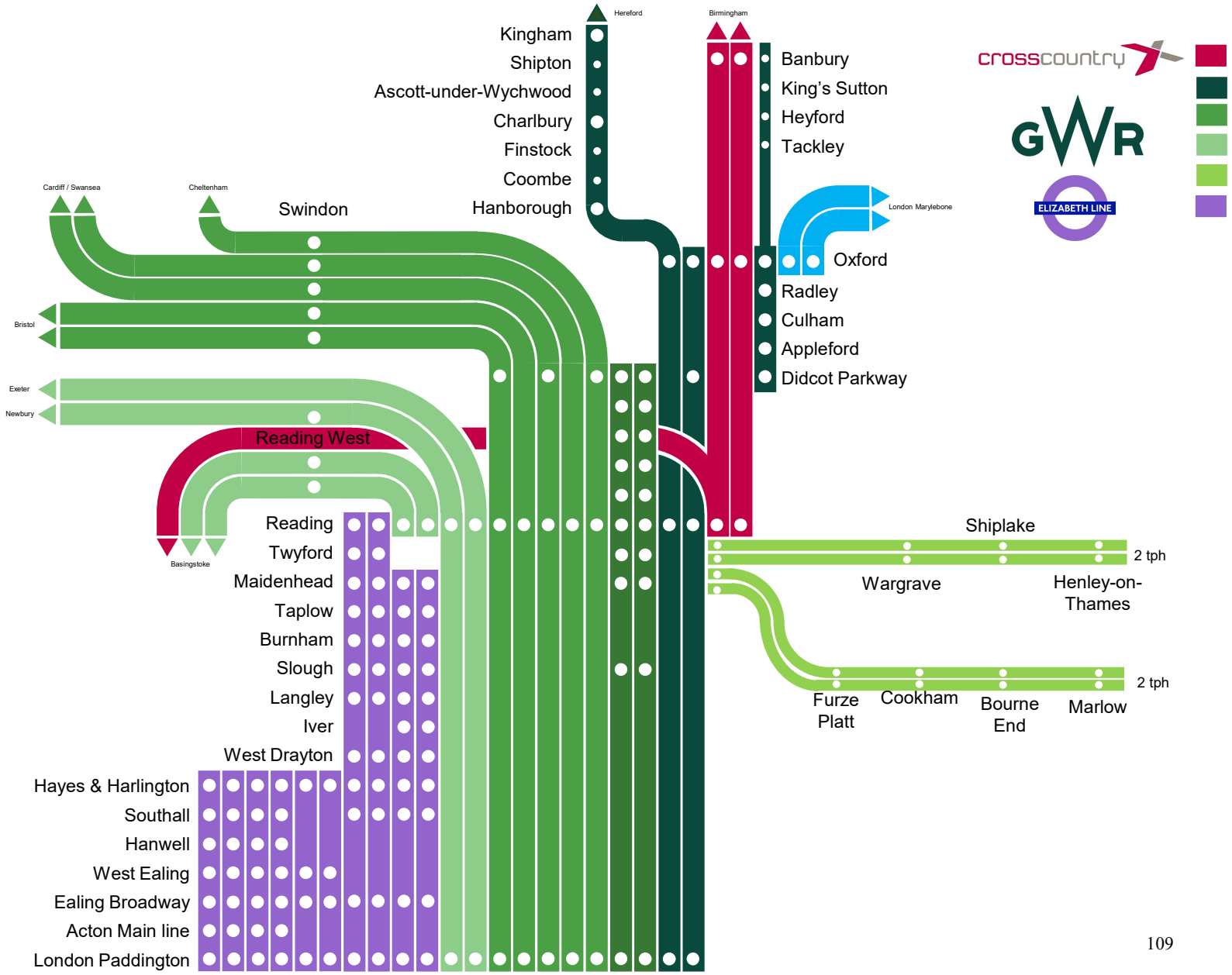


Great Western Main Line

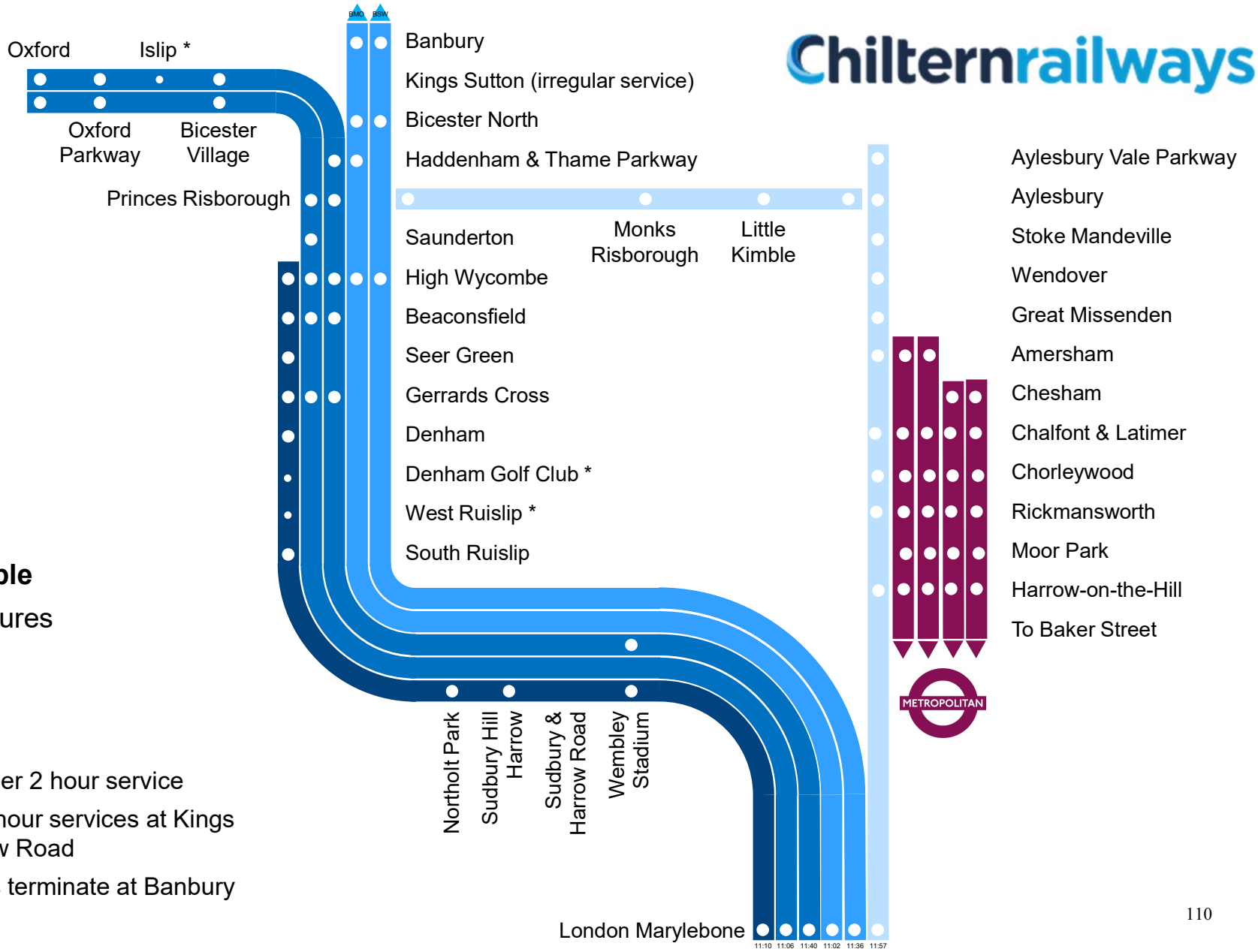
Weekday off-peak timetable

Paddington departures

11:00 – 12:00, 26th April 2024



Chiltern Main Line



Weekday off-peak timetable

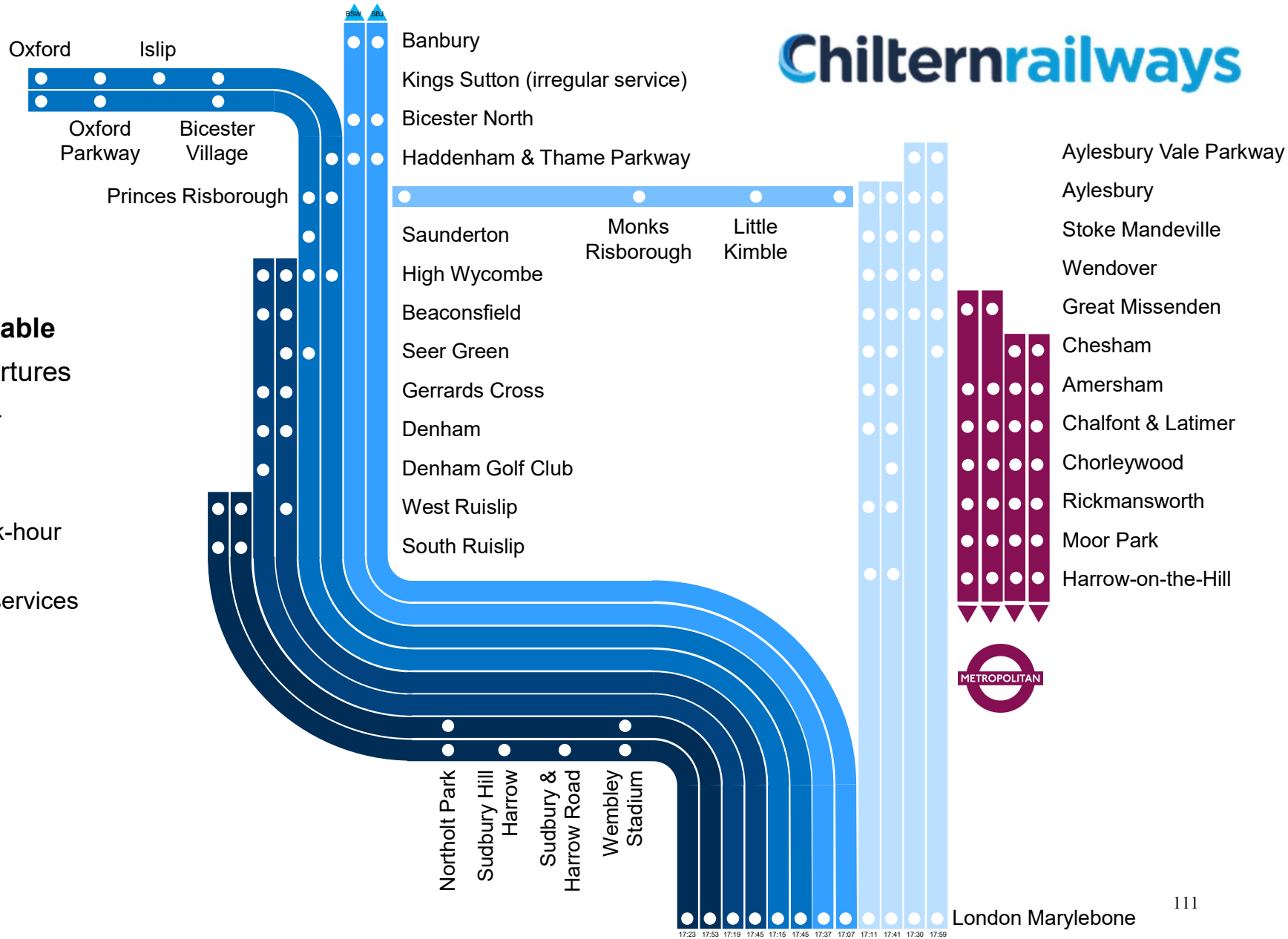
London Marylebone departures

11:00 – 12:00, 19th April 2024

Notes

- Asterisk (*) indicates train per 2 hour service
- There are no regular peak-hour services at Kings Sutton or Sudbury & Harrow Road
- Some Birmingham services terminate at Banbury

Chiltern Main Line



Weekday peak PM timetable

London Marylebone departures

17:00 – 18:00, 19th April 2024

Notes

- There are no regular peak-hour services at Kings Sutton.
- Morning Peak has a MP services terminating at Amersham

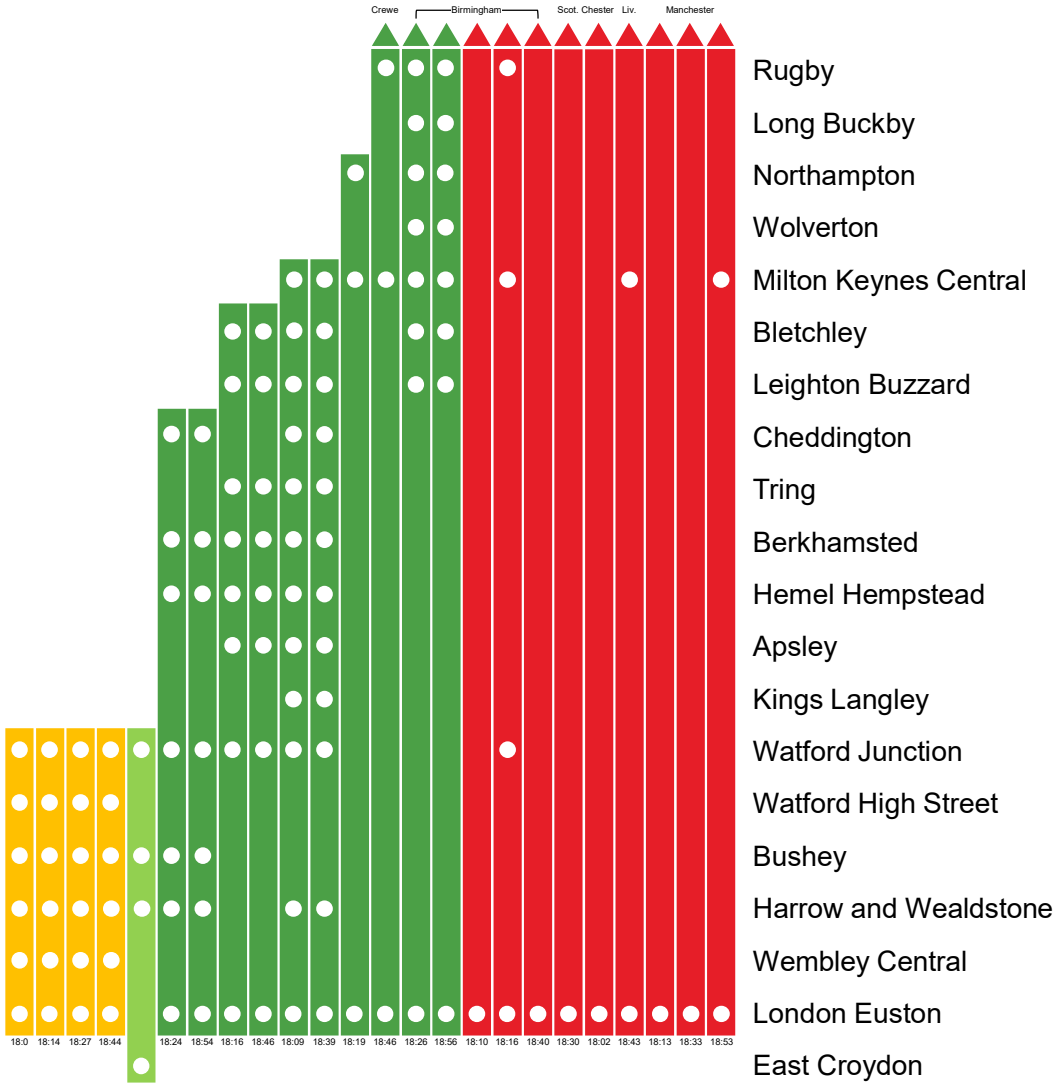
West Coast Main Line

Weekday off-peak PM timetable

Euston departures

15:00 – 16:00, 29th May 2024

West Coast Main Line



Weekday peak PM timetable

Euston departures

18:00 – 19:00, 29th May 2024

Midland Main Line

ThamesLink/

EMR
EAST MIDLANDS RAILWAY

Weekday off-peak PM timetable

St Pancras departures

11:00 – 12:00, 24th April 2024

Midland Main Line

ThamesLink/

EMR
EAST MIDLANDS RAILWAY

Weekday peak PM timetable

St Pancras departures

17:00 – 18:00, 24th April 2024

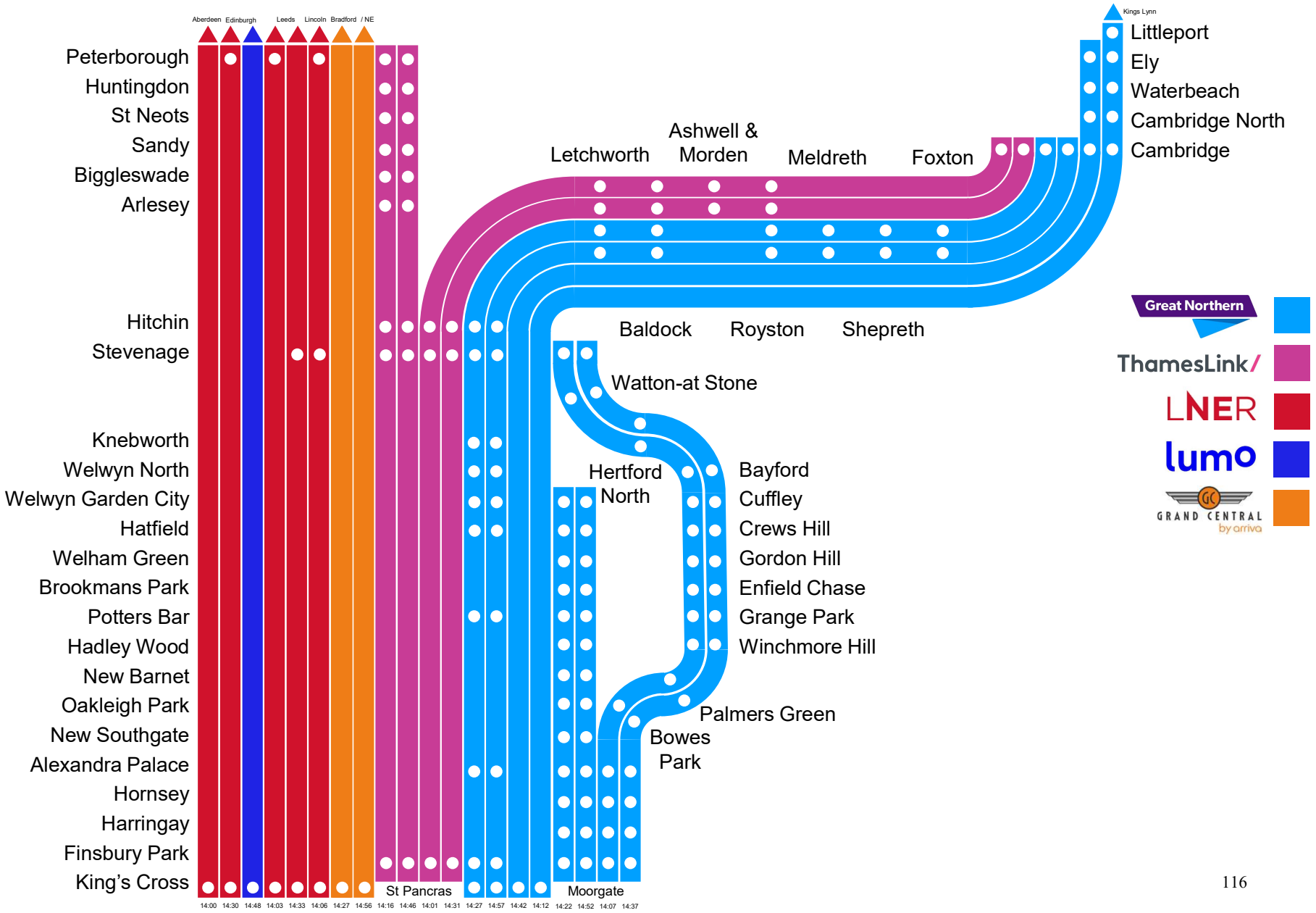
East Coast Main Line

Weekday off-peak PM timetable

Kings Cross / St Pancras / Moorgate departures

14:00 – 15:00

11th July 2024



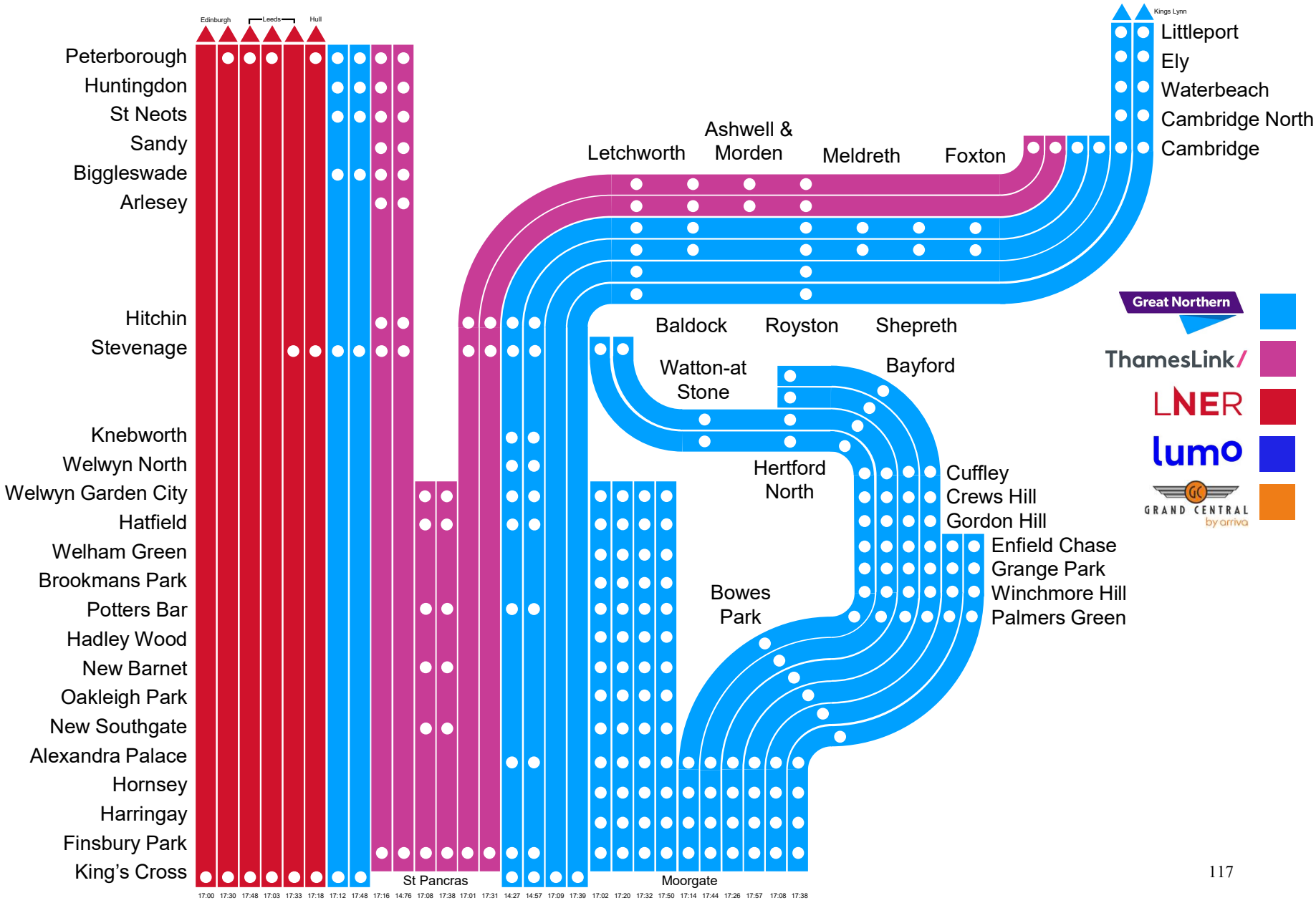
East Coast Main Line

Weekday peak PM timetable

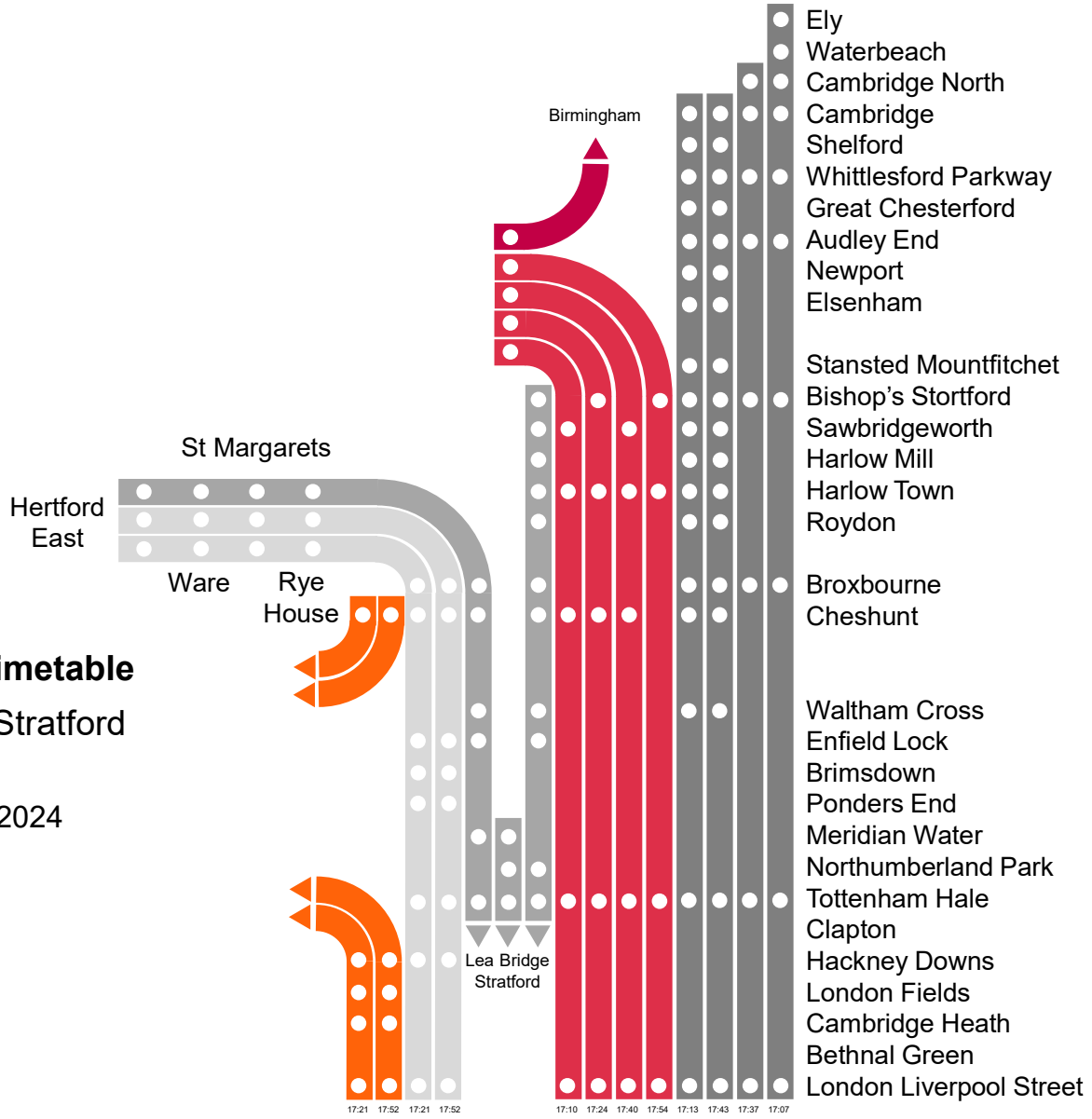
Kings Cross / St Pancras / Moorgate departures

17:00 – 16:00

16th July 2024



West Anglia Main Line



Weekday peak PM timetable

Liverpool Street and Stratford departures

17:00 – 18:00, 18th July 2024

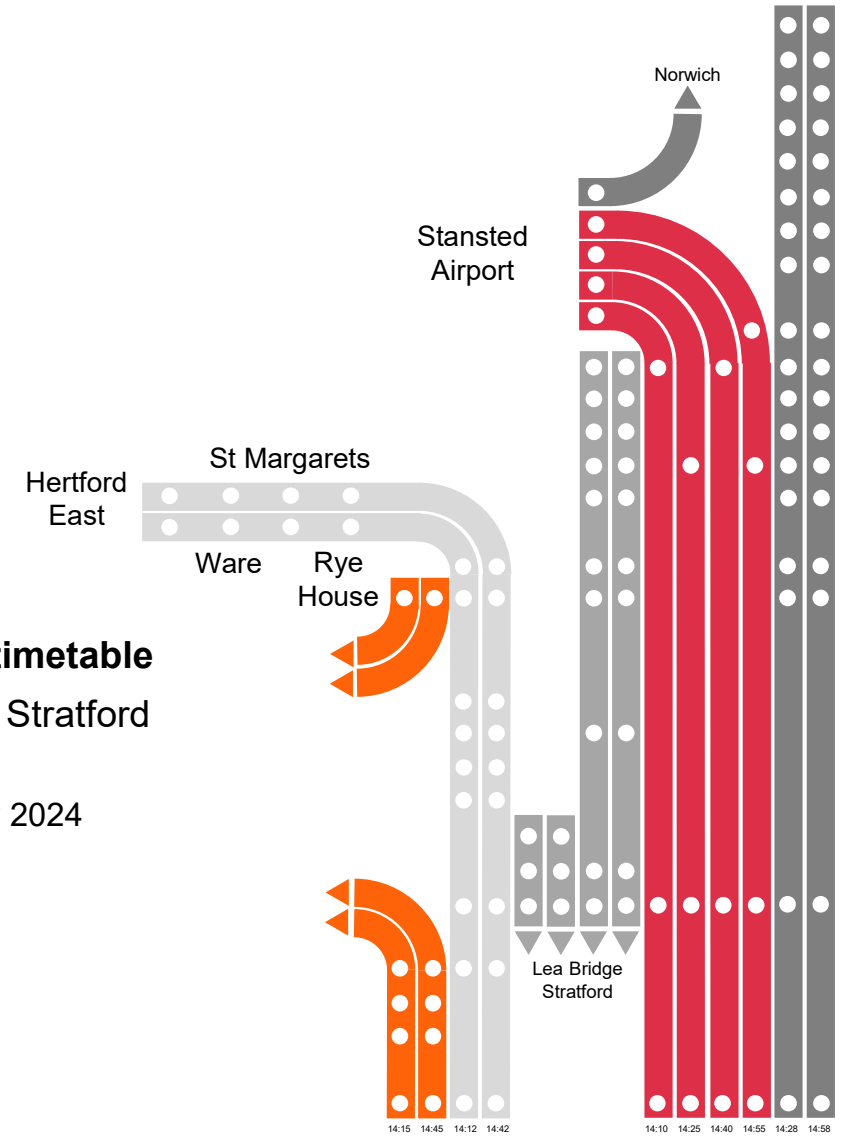
greateranglia

stansted express

OVERGROUND

crosscountry

West Anglia Main Line



Cambridge North
Cambridge
Shelford
Whittlesford Parkway
Great Chesterford
Audley End
Newport
Elsenham

Stansted Mountfitchet
Bishop's Stortford
Sawbridgeworth
Harlow Mill
Harlow Town
Roydon

Broxbourne
Cheshunt

Waltham Cross
Enfield Lock
Brimsdown
Ponders End
Meridian Water
Northumberland Park
Tottenham Hale
Clapton
Hackney Downs
London Fields
Cambridge Heath
Bethnal Green
London Liverpool Street

Weekday off-peak timetable

Liverpool Street and Stratford departures

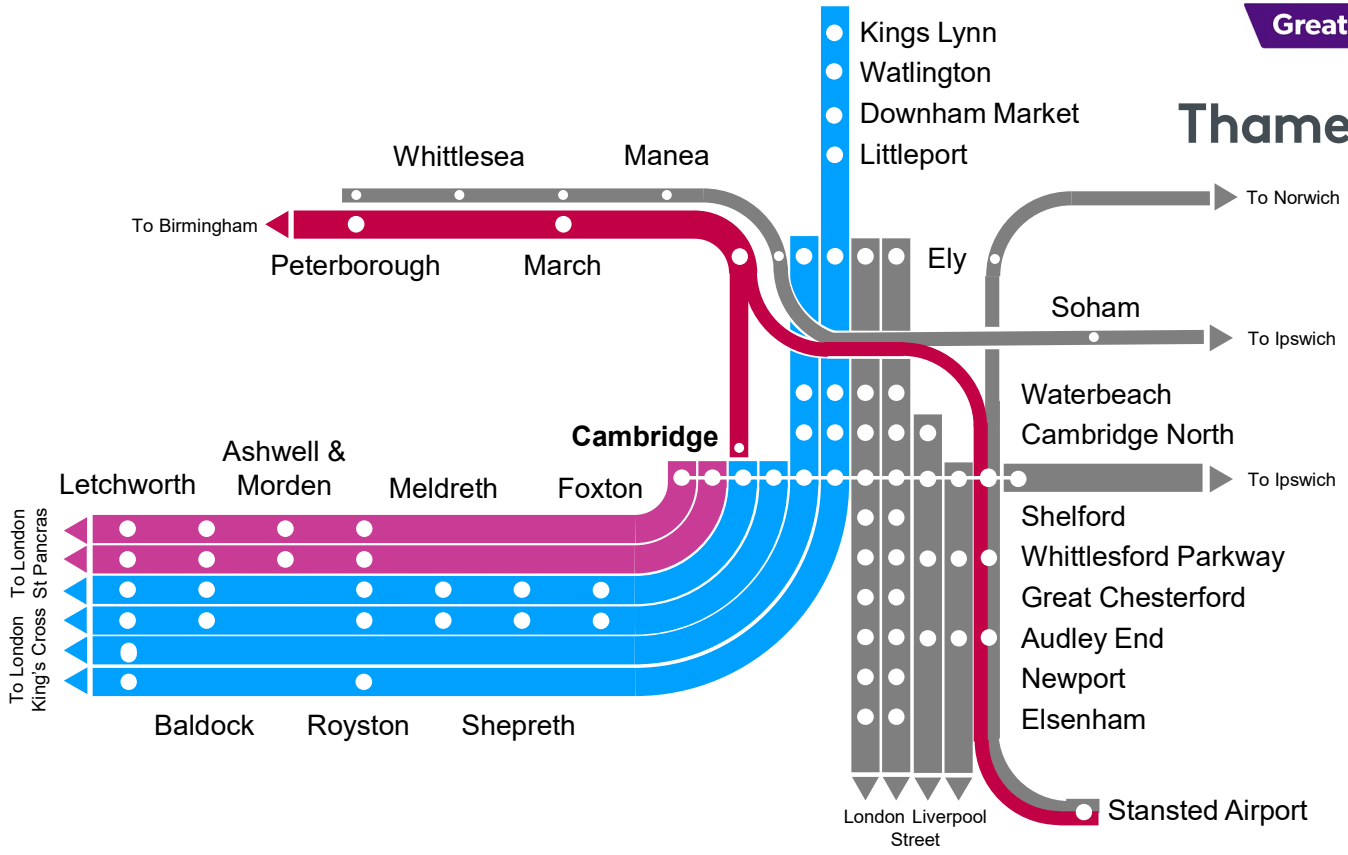
14:00 – 15:00, 18th July 2024

Cambridgeshire

Weekday peak PM timetable

Cambridge and Ely departures

17:00 – 18:00, 18th July 2024

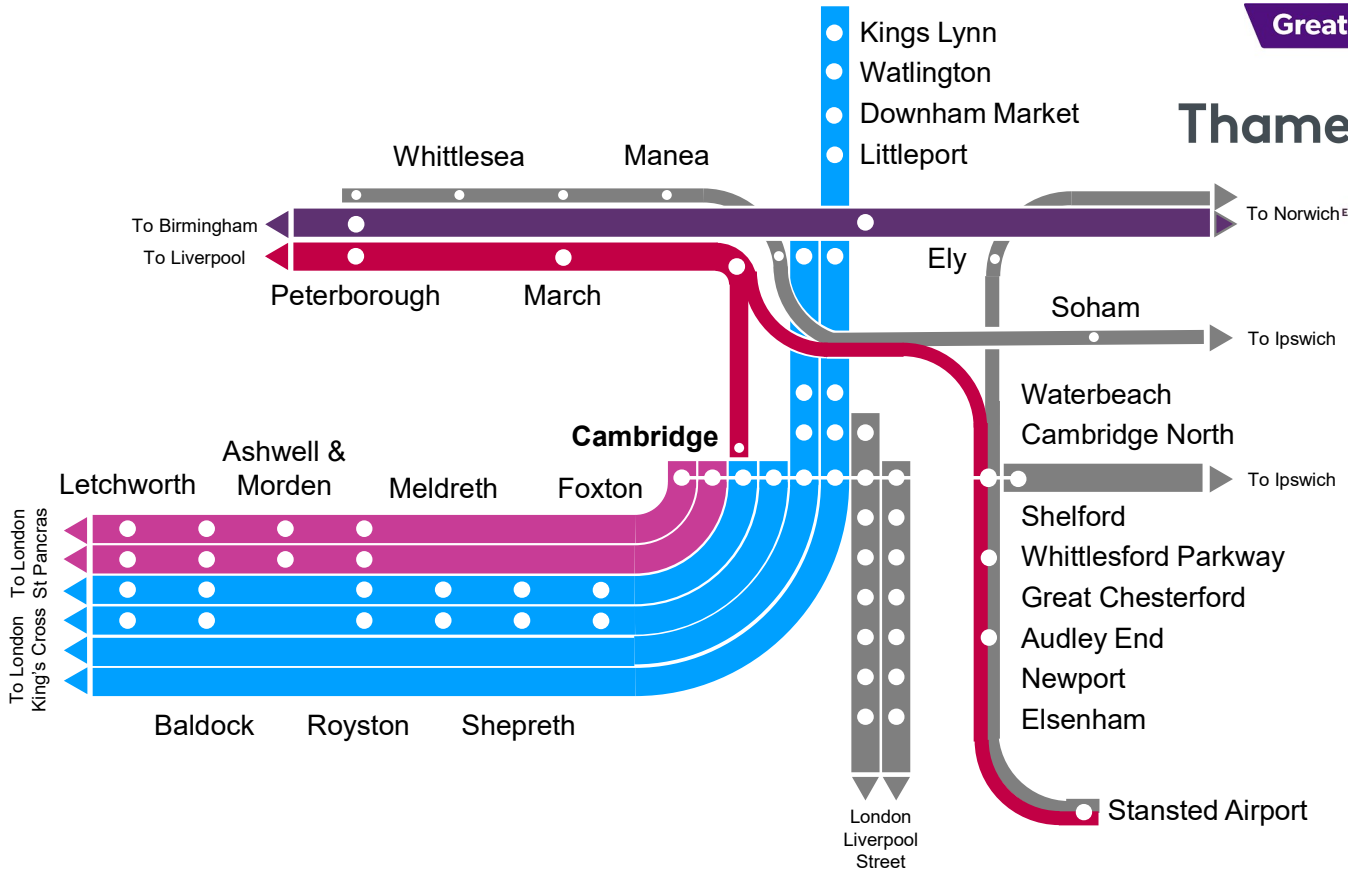


Cambridgeshire

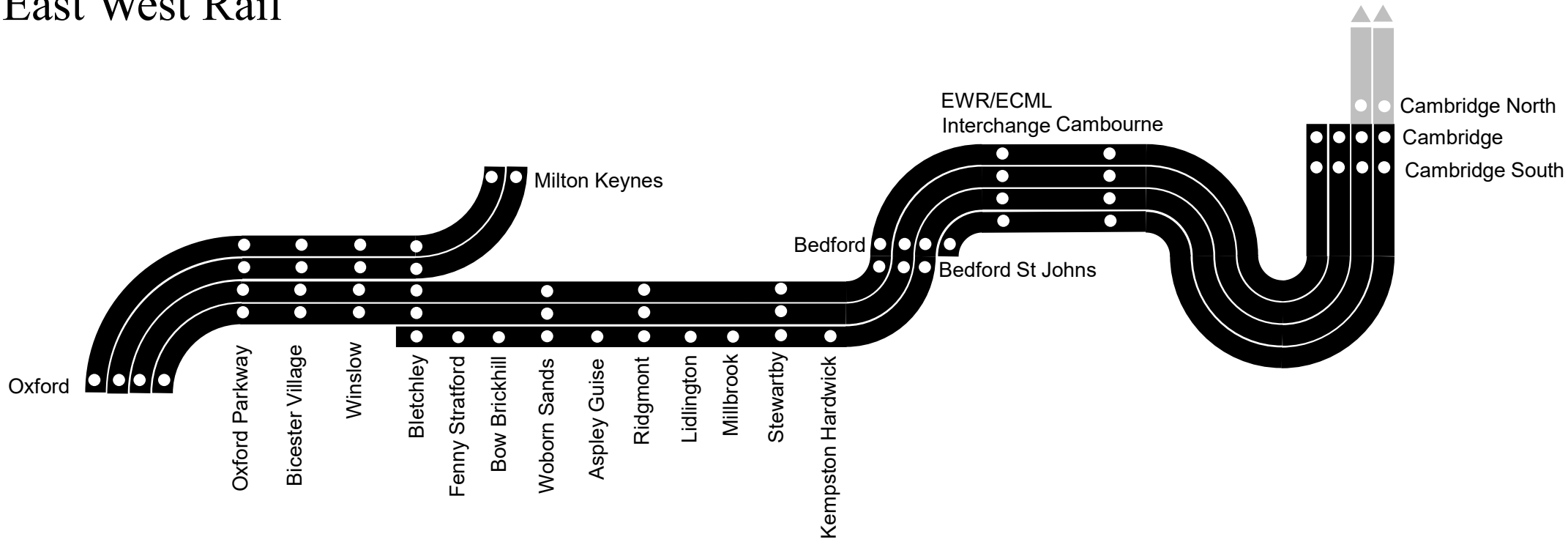
Weekday off-peak timetable

Cambridge and Ely departures

14:00 – 15:00, 18th July 2024



East West Rail



Proposed Services as set out in Route Update

Summary

Services in the region

The EEH area's railways serve a range of markets, including.

Medium Distance Commuting

Most main lines operate high frequency and high-density commuter services into London. Services for areas closer to London have a greater focus on capacity and frequency rather than journey times compared to areas further away from the capital.

Example: WCML services from Hemel Hempstead to London, some local services around Cambridge

Long Distance Commuting

Some areas further away from the capital also support sizeable commuter markets, often on fast, limited stopping services. These services provide a competitive journey time with lower frequencies.

Example: GWR services from Swindon to London

Intercity services

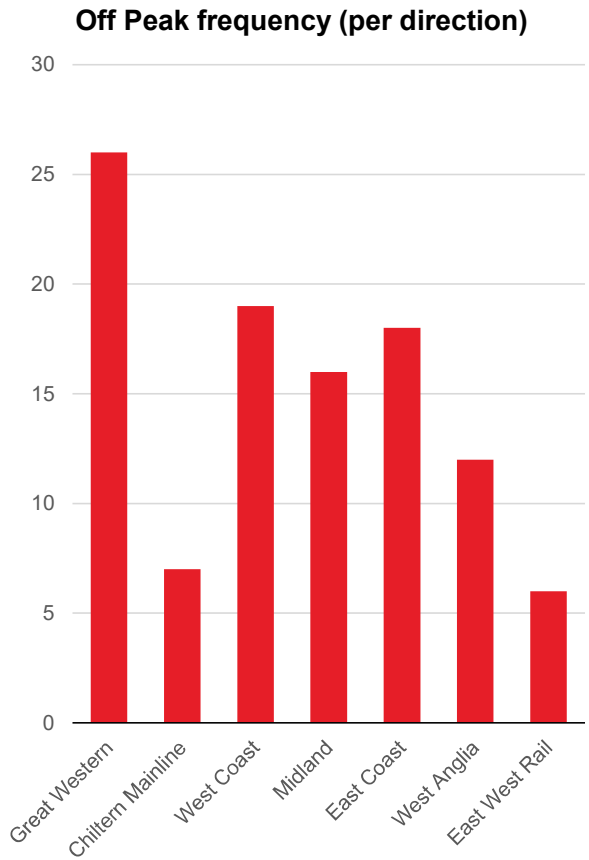
Many intercity services pass through the EEH region. Some run non-stop, while others call at major hubs such as Milton Keynes, Swindon, and Peterborough. This market includes cross-country intercity services, which link the South Coast to Midlands via Oxford and the Midlands to East via Peterborough.

Example: Avanti Services via Watford Junction and Milton Keynes

Local and regional services

Several local and regional services operate between key hubs and serve intermittent stations, often with low frequency at one or two services per hour.

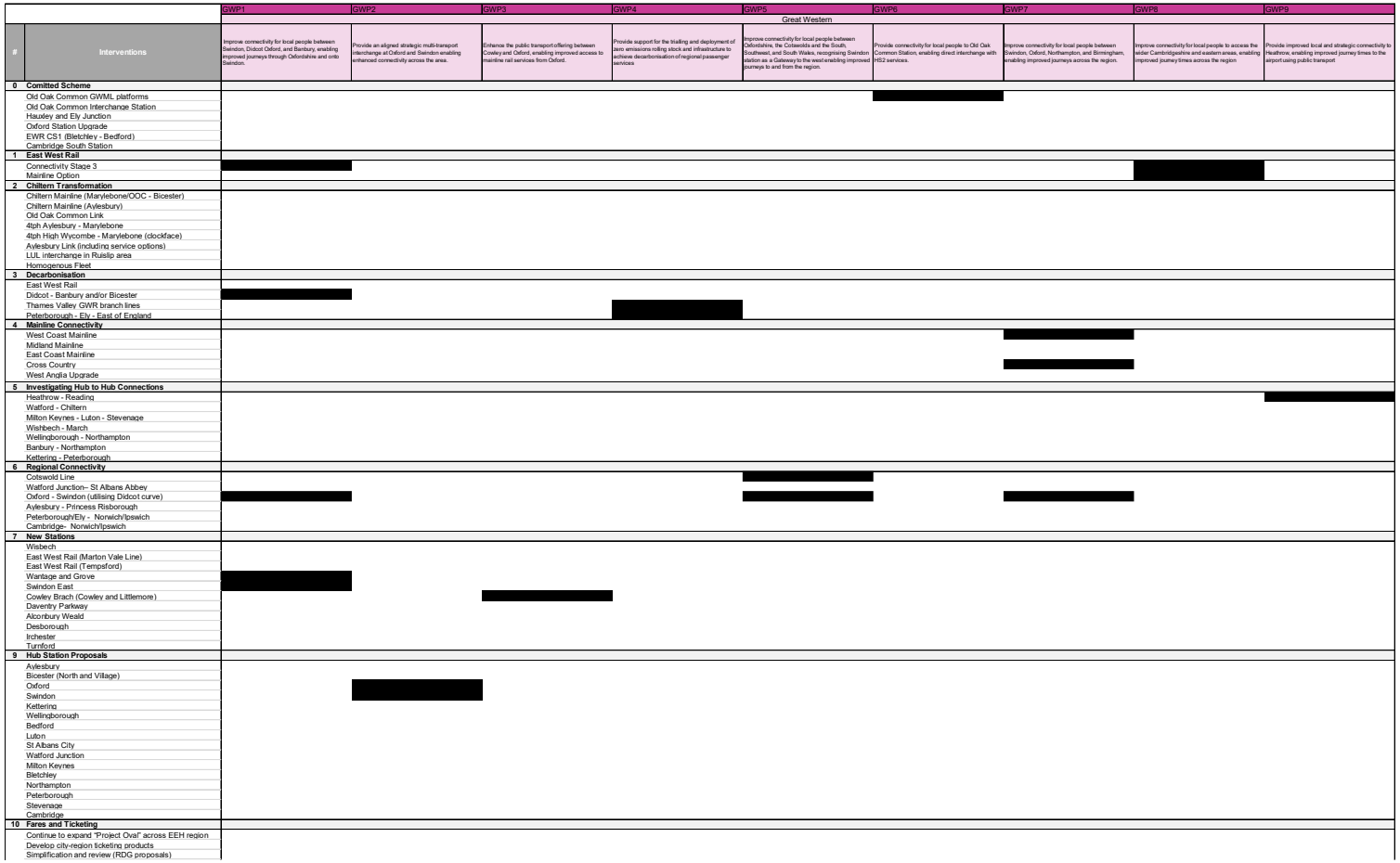
Example: Services between Didcot Parkway and Banbury



Appendix B: Objective Mapping

EEH Objectives Report Alignment

Great Western



EEH Objectives Report Alignment

Chiltern

#	Interventions	CLP1	CLP2	CLP3	CLP4	CLP5	CLP6	CLP7	CLP8	CLP9
		Chiltern								
		Improve connectivity for local people between Aylesbury, High Wycombe, Oxford, and Banbury, enabling improved journeys across Buckinghamshire and Oxfordshire and reducing impacts on the Strategic- and Major-Road Networks.	Improve service frequency and capacity on services from Buckinghamshire and Hertfordshire to London Marylebone and Birmingham, enabling improved journeys on services from Buckinghamshire, Hertfordshire and Oxfordshire to London and the West Midlands.	Improve regional connectivity for local people to Oxford, Bicester, Aylesbury, Bletchley and Milton Keynes enabling direct interchange with East West Main Line services.	Provide an aligned multi-transport offering at Aylesbury enabling enhanced connectivity in this area.	Achieve decarbonisation of rail passenger operations supporting decarbonisation of the wider rail network.	Provide an aligned strategic multi-transport interchange in the Oxford and Bicester areas, enabling enhanced connectivity across the area.	Improve connectivity for local people between Oxfordshire/Buckinghamshire and the South/South West and South Wales enabling improved journeys to and from the region.	Provide connectivity for local people to Old Common Station, enabling direct interchange with HS2 services and services to Heathrow.	Improve connectivity for local people to access the wider Cambridgeshire and Eastern areas, enabling improved journeys across the regions recognising Cambridge Station as a Gateway to the east.
0	**Comitted Scheme**									
	Old Oak Common GWML platforms									
	Old Oak Common Interchange Station									
	Haudley and Ely Junction									
	Oxford Station Upgrade	■								
	EWR CS1 (Bletchley - Bedford)									
	Cambridge South Station									
1	**East West Rail**									
	Connectivity Stage 3			■						■
	Mainline Option							■		
2	**Chiltern Transformation**									
	Chiltern Mainline (Marylebone/OOC - Bicester)	■	■			■				
	Chiltern Mainline (Aylesbury)									
	Old Oak Common Link								■	
	4tph Aylesbury - Marylebone	■	■							
	4tph High Wycombe - Marylebone (clockface)	■								
	Aylesbury Link (including service options)	■		■						
	LUL interchange in Ruislip area									■
	Homogenous Fleet	■	■							
3	**Decarbonisation**									
	East West Rail									
	Didcot - Banbury and/or Bicester									
	Thames Valley GWR branch lines									
	Peterborough - Ely - East of England									
4	**Mainline Connectivity**									
	West Coast Mainline									
	Midland Mainline									
	East Coast Mainline									
	Cross Country									
	West Anglia Upgrade									
5	**Investigating Hub to Hub Connections**									
	Heathrow - Reading									
	Watford - Chiltern									
	Milton Keynes - Luton - Stevenage									
	Wishbech - March									
	Wellingborough - Northampton									
	Banbury - Northampton									
	Kettering - Peterborough									
6	**Regional Connectivity**									
	Cotswold Line									
	Watford Junction– St Albans Abbey									
	Oxford - Swindon (utilising Didcot curve)							■		
	Aylesbury - Princess Risborough	■		■					■	■
	Peterborough/Ely - Norwich/Ipswich									
	Cambridge– Norwich/Ipswich									
7	**New Stations**									
	Wisbech									
	East West Rail (Marton Vale Line)									
	East West Rail (Tempsford)									
	Wantage and Grove									
	Swindon East									
	Cowley Brach (Cowley and Littlemore)									
	Daventry Parkway									
	Alconbury Weald									
	Desborough									
	Irchester									
	Turnford									
9	**Hub Station Proposals**									
	Aylesbury				■					
	Bicester (North and Village)						■			
	Oxford									
	Swindon									
	Kettering									
	Wellingborough									
	Bedford									
	Luton									
	St Albans City									
	Watford Junction									
	Milton Keynes									
	Bletchley									
	Northampton									
	Peterborough									
	Stevenage									
	Cambridge									
10	**Fares and Ticketing**									
	Continue to expand "Project Oval" across EEH region									
	Develop city-region ticketing products									
	Simplification and review (RDG proposals)									

EEH Objectives Report Alignment

Midland

#	Interventions	MMC1	MMP1	MMP2	MMP3	MMP4	MMP5	MMP6	MMP7	MMP8	MMP9
		Midland									
		Optimise Passenger and freight services on the Midland Mainline to enable efficient movement of people and goods across the region.	Improve passenger services for local people between Leicester and Bedford, Luton, St Albans and London, enabling improved journeys within the region.	Provide an aligned strategic multi-transport interchange at Kettering, Wellingborough, Bedford, Luton, and St Albans, enabling enhanced connectivity across the area.	Provide improved local and strategic connectivity to Luton Airport, enabling improved journey times to the airport using public transport.	Improve regional connectivity to Bedford and establish this as a major interchange hub between MML and EWML, enabling direct accessible interchange with East West Main Line services.	Investigate the potential to provide direct rail services between Kettering, Corby, and Peterborough, enabling improved regional connectivity.	Improve regional connectivity between Bedfordshire and the East Midlands to strengthen economic linkages with the East Midlands and support planned local plan developments.	Enhance the rail passenger service offering through efficient use of HS2 released capacity enabling improved regional connectivity between Bedford, Luton, and London.	Enhance the public transport offering between Buckinghamshire and Hertfordshire, connecting Chiltern main line, WCML, MML, ECML, and WAML, enabling improved access across this corridor.	Provide improved local and strategic connectivity to East Midlands Airport, enabling improved journey times to the airport using public transport.
0	**Comitted Scheme**										
	Old Oak Common GWML platforms										
	Old Oak Common Interchange Station										
	Haudey and Ely Junction										
	Oxford Station Upgrade										
	EWR CS1 (Bletchley - Bedford)										
	Cambridge South Station										
1	**East West Rail**										
	Connectivity Stage 3					[redacted]					
	Mainline Option									[redacted]	
2	**Chiltern Transformation**										
	Chiltern Mainline (Marylebone/OOC - Bicester)										
	Chiltern Mainline (Aylesbury)										
	Old Oak Common Link										
	4tph Aylesbury - Marylebone										
	4tph High Wycombe - Marylebone (clockface)										
	Aylesbury Link (including service options)										
	LUL interchange in Ruislip area										
	Homogenous Fleet										
3	**Decarbonisation**										
	East West Rail										
	Didcot - Banbury and/or Bicester										
	Thames Valley GWR branch lines										
	Peterborough - Ely - East of England										
4	**Mainline Connectivity**										
	West Coast Mainline										
	Midland Mainline	[redacted]			[redacted]		[redacted]	[redacted]			[redacted]
	East Coast Mainline										
	Cross Country										
	West Anglia Upgrade										
5	**Investigating Hub to Hub Connections**										
	Heathrow - Reading										
	Watford - Chiltern										
	Milton Keynes - Luton - Stevenage										
	Wisbech - March										
	Wellingborough - Northampton										
	Banbury - Northampton										
	Kettering - Peterborough						[redacted]				
6	**Regional Connectivity**										
	Cotswold Line										
	Watford Junction– St Albans Abbey										
	Oxford - Swindon (utilising Didcot curve)										
	Aylesbury - Princess Risborough										
	Peterborough/Ely - Norwich/Ipswich										
	Cambridge– Norwich/Ipswich										
7	**New Stations**										
	Wisbech										
	East West Rail (Marton Vale Line)										
	East West Rail (Tempsford)										
	Wantage and Grove										
	Swindon East										
	Cowley Brach (Cowley and Littlemore)										
	Daventry Parkway										
	Alconbury Weald										
	Desborough										
	Irchester										
	Turnford										
9	**Hub Station Proposals**										
	Aylesbury										
	Bicester (North and Village)										
	Oxford										
	Swindon										
	Kettering			[redacted]							
	Wellingborough										
	Bedford										
	Luton										
	St Albans City										
	Watford Junction										
	Milton Keynes										
	Bletchley										
	Northampton										
	Peterborough										
	Stevenage										
	Cambridge										
10	**Fares and Ticketing**										
	Continue to expand "Project Oval" across EEH region										
	Develop city-region ticketing products										
	Simplification and review (RDG proposals)										

EEH Objectives Report Alignment

West Coast

#	Interventions	OOC1	WCR1	WCR2	WCR3	WCR4	WCR5	WCR6	WCR7	WCR8	WCR9
		West Coast	West Coast	West Coast	West Coast	West Coast	West Coast	West Coast	West Coast	West Coast	West Coast
		Optimise Passenger and freight services on the West Coast Mainline to enable efficient movement of people and goods across the region.	Improve capacity on services from Northamptonshire Buckinghamshire, Hertfordshire (including Milton Keynes, Watford and Tring) and Bedfordshire to London, enabling improved journeys from the region into London and Birmingham.	Provide an aligned strategic multi-transport interchange in the Milton Keynes and Northampton areas, enabling enhanced connectivity across the area.	Improve regional connectivity to Bletchley and Milton Keynes, enabling direct interchange with East West Main Line services.	Provide an aligned multi transport offering at Bletchley and Milton Keynes, enabling enhanced connectivity across the region.	Improve connectivity for local people between Northampton, Milton Keynes, Bletchley, Oxford and Watford enabling improved journeys across Northamptonshire, Buckinghamshire, Oxfordshire and Hertfordshire regions.	Enhance the rail passenger service offering through efficient use of HS2 released capacity enabling improved connectivity between the north, Birmingham, Warwickshire, Northamptonshire, Buckinghamshire, Milton Keynes, Hertfordshire and London.	Provide improved local and strategic connectivity to Birmingham International Airport, enabling improved journey times to the airport using public transport.	Provide an aligned strategic multi-transport interchange at Watford Junction enabling enhanced connectivity across the area and to South London.	Provide suitable connectivity for local people to stations at Old Oak Common, Birmingham International and Birmingham Curzon Street for connections into the HS2 network.
0	**Comitted Scheme**										
	Old Oak Common GWML platforms										
	Old Oak Common Interchange Station										■
	Hauxley and Ely Junction										
	Oxford Station Upgrade										
	EWR CS1 (Bletchley - Bedford)										
	Cambridge South Station										
1	**East West Rail**										
	Connectivity Stage 3						■				
	Mainline Option										
2	**Chiltern Transformation**										
	Chiltern Mainline (Marylebone/OOC - Bicester)										
	Chiltern Mainline (Aylesbury)										
	Old Oak Common Link										■
	4tph Aylesbury - Marylebone										
	4tph High Wycombe - Marylebone (clockface)										
	Aylesbury Link (including service options)										
	LUL interchange in Ruislip area										
	Homogenous Fleet										
3	**Decarbonisation**										
	East West Rail										
	Didcot - Banbury and/or Bicester										
	Thames Valley GWR branch lines										
	Peterborough - Ely - East of England										
4	**Mainline Connectivity**										
	West Coast Mainline	■			■			■	■		■
	Midland Mainline										
	East Coast Mainline										
	Cross Country										
	West Anglia Upgrade										
5	**Investigating Hub to Hub Connections**										
	Heathrow - Reading										
	Watford - Chiltern							■		■	
	Milton Keynes - Luton - Stevenage		■	■	■						
	Wisbech - March										
	Wellingborough - Northampton										
	Banbury - Northampton										
	Kettering - Peterborough										
6	**Regional Connectivity**										
	Cotswold Line										
	Watford Junction- St Albans Abbey									■	
	Oxford - Swindon (utilising Didcot curve)										
	Aylesbury - Princess Risborough										
	Peterborough/Ely - Norwich/Ipswich										
	Cambridge - Norwich/Ipswich										
7	**New Stations**										
	Wisbech										
	East West Rail (Marton Vale Line)										
	East West Rail (Tempsford)										
	Wantage and Grove										
	Swindon East										
	Cowley Brach (Cowley and Littlemore)										
	Daventry Parkway						■				
	Alconbury Weald										
	Desborough										
	Irchester										
	Turnford										
9	**Hub Station Proposals**										
	Aylesbury										
	Bicester (North and Village)										
	Oxford										
	Swindon										
	Kettering										
	Wellingborough										
	Bedford										
	Luton										
	St Albans City										
	Watford Junction									■	
	Milton Keynes			■		■					
	Bletchley			■							
	Northampton										
	Peterborough										
	Stevenage										
	Cambridge										
10	**Fares and Ticketing**										
	Continue to expand "Project Oval" across EEH region										
	Develop city-region ticketing products										
	Simplification and review (RDG proposals)										

EEH Objectives Report Alignment

East West Main line

#	Interventions	EWP1	EWP2	EWP3	EWP4	EWP5	EWP6	EWP7	EWP8
		East West Mainline							
		Improve service for local people between Didcot, Oxford, Bicester, Bletchley, and Milton Keynes enabling improved journeys and planned local plan development across Buckinghamshire, Aylesbury and Oxfordshire.	Improve regional connectivity to Oxford, Bicester, and Bletchley, enabling direct interchange with GWR, Chiltern, and WCML services.	Improve service for local people between Oxford, Bletchley, Milton Keynes, Bedford, and Cambridge enabling improved journeys to and from Cambridgeshire, Bedfordshire and Oxfordshire.	Improve regional connectivity to Bedford, enabling direct interchange with Midland Mainline services.	Improve connectivity between Bedford, Bletchley and Milton Keynes to the South West and South Wales enabling improved journeys between the regions.	Improve connectivity between Aylesbury, Bletchley, Milton Keynes, and Northampton enabling improved journeys between these locations.	Improve regional and inter-regional connectivity from Cambridge, enabling direct services and interchange with the Midland Main Line, East Coast Main Line, West Anglian Main Line, and services to Norfolk and Suffolk. This should recognise Cambridge Station as a Gateway to the east.	Improve connectivity between Cambridge, the South West and South Wales enabling improved journeys between the regions.
0	**Comitted Scheme**								
	Old Oak Common GWML platforms								
	Old Oak Common Interchange Station								
	Hauxley and Ely Junction								
	Oxford Station Upgrade								
	EWR CS1 (Bletchley - Bedford)								
	Cambridge South Station								
1	**East West Rail**								
	Connectivity Stage 3								
	Mainline Option								
2	**Chiltern Transformation**								
	Chiltern Mainline (Marylebone/OOC - Bicester)								
	Chiltern Mainline (Aylesbury)								
	Old Oak Common Link								
	4tph Aylesbury - Marylebone								
	4tph High Wycombe - Marylebone (clockface)								
	Aylesbury Link (including service options)								
	LUL interchange in Ruislip area								
	Homogenous Fleet								
3	**Decarbonisation**								
	East West Rail								
	Didcot - Banbury and/or Bicester								
	Thames Valley GWR branch lines								
	Peterborough - Ely - East of England								
4	**Mainline Connectivity**								
	West Coast Mainline								
	Midland Mainline								
	East Coast Mainline								
	Cross Country								
	West Anglia Upgrade								
5	**Investigating Hub to Hub Connections**								
	Heathrow - Reading								
	Watford - Chiltern								
	Milton Keynes - Luton - Stevenage								
	Wisbech - March								
	Wellingborough - Northampton								
	Banbury - Northampton								
	Kettering - Peterborough								
6	**Regional Connectivity**								
	Cotswold Line								
	Watford Junction– St Albans Abbey								
	Oxford - Swindon (utilising Didcot curve)								
	Aylesbury - Princess Risborough								
	Peterborough/Ely - Norwich/Ipswich								
	Cambridge- Norwich/Ipswich								
7	**New Stations**								
	Wisbech								
	East West Rail (Marton Vale Line)								
	East West Rail (Tempsford)								
	Wantage and Grove								
	Swindon East								
	Cowley Brach (Cowley and Littlemore)								
	Daventry Parkway								
	Alconbury Weald								
	Desborough								
	Irchester								
	Turnford								
9	**Hub Station Proposals**								
	Aylesbury								
	Bicester (North and Village)								
	Oxford								
	Swindon								
	Kettering								
	Wellingborough								
	Bedford								
	Luton								
	St Albans City								
	Watford Junction								
	Milton Keynes								
	Bletchley								
	Northampton								
	Peterborough								
	Stevenage								
	Cambridge								
10	**Fares and Ticketing**								
	Continue to expand "Project Oval" across EEH region								
	Develop city-region ticketing products								
	Simplification and review (RDG proposals)								

EEH Objectives Report Alignment

East Coast and Felixstowe to Midlands and The North

#	Interventions	ECP1	ECP2	ECP3	ECP4	ECP5	F2MNP1	F2MNP2
		East Coast Main Line and Felixstowe to Midlands and The North Route					Felixstowe to Midlands and The	East Coast Main Line and Felixstowe
		Provide an aligned strategic multi-transport interchange at Peterborough and Stevenage, enabling enhanced connectivity across the area.	Preserve and enhance existing suburban routes from Cambridgeshire, Bedfordshire, and Hertfordshire into London, Cambridge and Peterborough, ensuring continued service provision into London, Cambridge and Peterborough.	Improve network resilience between Peterborough and London, enabling more reliable journeys for passengers.	Provide an aligned multi-transport offering at the EWR-ECML interchange, enabling enhanced connectivity across all communities.	Improve connectivity for local people to access Oxfordshire and the South West areas, enabling improved journeys across the regions.	Enhance the public transport offering between Wisbech and March, enabling improved access to Mainline rail services to Peterborough and Cambridge.	Improve connectivity for local people between Cambridge, Peterborough, Leicester and Birmingham, enabling improved journeys across the region.
0	**Comitted Scheme**							
	Old Oak Common GWML platforms							
	Old Oak Common Interchange Station							
	Hawkey and Ely Junction		[redacted]					[redacted]
	Oxford Station Upgrade							
	EWR CS1 (Bletchley - Bedford)							
	Cambridge South Station							
1	**East West Rail**							
	Connectivity Stage 3				[redacted]			[redacted]
	Mainline Option					[redacted]		
2	**Chiltern Transformation**							
	Chiltern Mainline (Marylebone/OOC - Bicester)							
	Chiltern Mainline (Aylesbury)							
	Old Oak Common Link							
	4tph Aylesbury - Marylebone							
	4tph High Wycombe - Marylebone (clockface)							
	Aylesbury Link (including service options)							
	LUL interchange in Ruislip area							
	Homogenous Fleet							
3	**Decarbonisation**							
	East West Rail							
	Didcot - Banbury and/or Bicester							
	Thames Valley GWR branch lines							
	Peterborough - Ely - East of England							
4	**Mainline Connectivity**							
	West Coast Mainline							[redacted]
	Midland Mainline		[redacted]					
	East Coast Mainline							
	Cross Country							
	West Anglia Upgrade							
5	**Investigating Hub to Hub Connections**							
	Heathrow - Reading							
	Watford - Chiltern							
	Milton Keynes - Luton - Stevenage							
	Wisbech - March						[redacted]	
	Wellingborough - Northampton							
	Banbury - Northampton							
	Kettering - Peterborough							
6	**Regional Connectivity**							
	Cotswold Line							
	Watford Junction– St Albans Abbey							
	Oxford - Swindon (utilising Didcot curve)							
	Aylesbury - Princess Risborough							
	Peterborough/Ely - Norwich/Ipswich							
	Cambridge– Norwich/Ipswich							
7	**New Stations**							
	Wisbech						[redacted]	
	East West Rail (Marton Vale Line)							
	East West Rail (Tempsford)				[redacted]			
	Wantage and Grove							
	Swindon East							
	Cowley Brach (Cowley and Littlemore)							
	Daventry Parkway							
	Alconbury Weald							
	Desborough							
	Irchester							
	Turnford							
9	**Hub Station Proposals**							
	Aylesbury							
	Bicester (North and Village)							
	Oxford							
	Swindon							
	Kettering							
	Wellingborough							
	Bedford							
	Luton							
	St Albans City							
	Watford Junction							
	Milton Keynes							
	Bletchley							
	Northampton							
	Peterborough	[redacted]						
	Stevenage							
	Cambridge							
10	**Fares and Ticketing**							
	Continue to expand "Project Oval" across EEH region							
	Develop city-region ticketing products							
	Simplification and review (RDG proposals)							

EEH Objectives Report Alignment

West Anglian

#	Interventions	WAP1 West Anglian: Provide an aligned strategic multi-transport interchanges in the Cambridge area, enabling enhanced connectivity across the area.	WAP2 West Anglian: Preserve and enhance existing suburban routes from Cambridgeshire and Hertfordshire into London, ensuring continued service provision to London.	WAP3 West Anglian: Provide improved local and strategic connectivity to Stansted Airport, enabling improved journey times to the airport using public transport.	WAP4 West Anglian: Improve capacity on services from Cambridgeshire and Hertfordshire to London stations, enabling improved journeys from the region into London.	WAP5 West Anglian: Improve regional and inter-regional connectivity to Cambridge, enabling direct interchange with East West Main Line services and recognising Cambridge Station as a Gateway to the east.	WAP6 West Anglian: Enhance connectivity from Hertfordshire and Cambridgeshire into Central and South London
0	**Comitted Scheme**						
	Old Oak Common GWML platforms						
	Old Oak Common Interchange Station						
	Haudley and Ely Junction					■	
	Oxford Station Upgrade						
	EWR CS1 (Bletchley - Bedford)						
	Cambridge South Station	■				■	
1	**East West Rail**						
	Connectivity Stage 3						
	Mainline Option						
2	**Chiltern Transformation**						
	Chiltern Mainline (Marylebone/OOC - Bicester)						
	Chiltern Mainline (Aylesbury)						
	Old Oak Common Link						
	4tph Aylesbury - Marylebone						
	4tph High Wycombe - Marylebone (clockface)						
	Aylesbury Link (including service options)						
	LUL interchange in Ruislip area						
	Homogenous Fleet						
3	**Decarbonisation**						
	East West Rail						
	Didcot - Banbury and/or Bicester						
	Thames Valley GWR branch lines						
	Peterborough - Ely - East of England						
4	**Mainline Connectivity**						
	West Coast Mainline						
	Midland Mainline						
	East Coast Mainline						
	Cross Country						
	West Anglia Upgrade		■	■	■	■	■
5	**Investigating Hub to Hub Connections**						
	Heathrow - Reading						
	Watford - Chiltern						
	Milton Keynes - Luton - Stevenage						
	Wisbech - March						
	Wellingborough - Northampton						
	Banbury - Northampton						
	Kettering - Peterborough						
6	**Regional Connectivity**						
	Cotswold Line						
	Watford Junction– St Albans Abbey						
	Oxford - Swindon (utilising Didcot curve)						
	Aylesbury - Princess Risborough						
	Peterborough/Ely - Norwich/Ipswich					■	
	Cambridge- Norwich/Ipswich						
7	**New Stations**						
	Wisbech						
	East West Rail (Marton Vale Line)						
	East West Rail (Tempsford)						
	Wantage and Grove						
	Swindon East						
	Cowley Brach (Cowley and Littlemore)						
	Daventry Parkway						
	Alconbury Weald						
	Desborough						
	Irchester						
	Turnford						
9	**Hub Station Proposals**						
	Aylesbury						
	Bicester (North and Village)						
	Oxford						
	Swindon						
	Kettering						
	Wellingborough						
	Bedford						
	Luton						
	St Albans City						
	Watford Junction						
	Milton Keynes						
	Bletchley						
	Northampton						
	Peterborough						
	Stevenage						
	Cambridge	■					
10	**Fares and Ticketing**						
	Continue to expand "Project Oval" across EEH region						
	Develop city-region ticketing products						
	Simplification and review (RDG proposals)						

Appendix C: Hubs Summary

Station Hubs | West

Chiltern Main line & Great Western Main line –Recommendations / Aspirations

Station	Key Context	Rail Services (proposed)	Public Transport Services Proposals	Integration and facilities	Transport Network
Aylesbury	Aylesbury Station is to the west of the town centre and close to the local station.	• A 4 tph peak services to London (from 2tph) • A 2 tph peak services to Milton Keynes • Improved service to Chiltern Main line	Proposed improvement identified in the BSIP and in the town transport strategy include traditional services connecting to bus station new services and Demand responsive.	Buckinghamshire has identified improvement to the bus station as key to improve public transport and a proposal for Aylesbury Station Quarter, this would represent a significant improvement in improving accessibility between bus and rail	Improvements are already proposed to improve access to the station through the Local Cycling walking action plan and BSIP including improvement to the Gyratory and station
Bicester (North and Village)	The key challenge is the split London services between the two stations in Bicester - with Village closer to a key shopping destination.	• 4 tph East West Rail service via Bicester Village • Increase service level to via Bicester North	The bus services primarily serve the bus station which is located between the cities – an improved core network through the city core between the cities could improve the service	Current cycle storage at the Bicester Stations is lower than comparative station hubs – further secure cycle storage facility can encourage sustainable travel to and from the stations. Bus stations could be upgraded to include improved facilities and real time information.	Improved active transport would support access to the stations by sustainable modes.
Oxford	Oxford station is located to the west of the city and the city's core bus network.	• 4 tph East West rail service to MK/CAM • 2 tph Service via Cotswolds Line • 1 tph Bristol/Swindon Service • 2 tph local service via Cowley	Oxford has a fairly comprehensive bus network via the railways station (although current impacted by station development)	Committed upgrades to Oxford station facilities already being delivered including a new entrance and improved cycle storage. Committed station upgrades will improve facilities including retail.	Committed upgrades to Oxford station should improve access for cyclists to the town centre via greater segregation of the road network Oxford has identified future mass transit option to connect the stations to the town centre
Swindon	Swindon Station is in the town centre close and only 200m from the town's bus station.	• 1tph Oxford Service (through to Bristol) • Potential services via East West Main line	Improve connectivity between the train station and town centre – this involves building a new bus interchange to replace an existing ageing bus station	Fleming Way improvements include allowing access for buses, taxis, and cycles only along Fleming Way - between Whalebridge junction and Milford Street (Swindon Borough Council).	Station Road to be converted into a two-way cycle path. The new path will link the train station to the new Fleming Way Bus Boulevard (Swindon Link, 2023).

Station Hubs | Central

Midland Main line – Recommendations / Aspirations 1/2

Station	Key Context	Rail Services (proposed)	Public Transport Services	Integration and facilities	Transport Network
Kettering	Kettering Station is located south-west of the town centre of Kettering in Northamptonshire.	New connection could link to Peterborough significantly shortening east-west journey times	The DfT has allocated North Northamptonshire Council (NNC) just over £2m to fund phase three of its BSIP in 2024/25). NNC's plans propose seven new bus services covering key routes in the region, including hourly bus service from Kettering to Brambleside. Another new hourly service will be from Weldon Airfield to Kettering. These new services could bring indirect benefits to Kettering Station – although details of the exact bus routes are unclear.	Kettering Station Quarter Masterplan includes improved access and public realm for a new station forecourt with multimodal interchange area and second entrance to the station.	Improved connection to the active travel network would support access by sustainable modes
Wellingborough	Wellingborough Station is located on the eastern edge of the town of Wellingborough in Northamptonshire.	New connection potentially through a bus/rail could link to Peterborough significantly shortening east-west journey times.	The DfT has allocated North Northamptonshire Council (NNC) just over £2m to fund phase three of its BSIP in 2024/25. NNC's plans propose seven new bus services covering key routes in the region, including new Monday to Saturday service from Wellingborough to Berrymoor. This new service could bring indirect benefits to Wellingborough Station - although details of the exact bus route is unclear. Wellingborough could be better connected by regional bus to neighbouring hubs of Northampton through an express bus link.	There are emerging plans for a new entrance on the north side of the station. The new entrance is expected to have large turning circle for buses so can be used to improve public transport access. The station has a comparatively low level of cycle storage which should be addressed through any station program.	Improved connection to the active travel network would support access by sustainable modes.
Bedford	Bedford Station is located to the west of the town centre, and it is the larger of two stations serving Bedford in Bedfordshire.	Bedford would be a key stop on east west rail	The current bus frequency at Bedford Station is 2 bph – an increase in bus services would improve opportunities for multi modal journeys with a turn up and go service	EWR proposals include a multi-million-pound renovation of the Bedford Station including additional car parking .	Improved bus priority and active travel between the station and the town centre would make the station more attractive for non-motorised modes as set out in Bedford Rail Strategy

Station Hubs | Central

Midland Main line – Recommendations / Aspirations 1/2

Station	Key Context	Rail Services (proposed)	Public Transport Services	Integration and facilities	Transport Network
Luton	Luton Station is in Luton town centre.	Hertfordshire's Rail Strategy includes aspirations create a new rail connection between Luton and Stevenage.	Luton Council and partners awarded £19.1m funding in 2023 from the Department for Transport to help improve bus services in the Luton area. Improvements include more evening and weekend serves, real time information at bus stop and bus shelters (Luton Council, 2024).	Work on the station's Access for All scheme expected to start on site in spring 2024. The scheme will see a new, accessible bridge installed with three lifts to make sure that all passengers can use the station freely and easily. Accessibility work is scheduled to be completed in spring 2025 (Network Rail, 2023).	The station is well connected into the existing bus priority network in Luton
St Albans City	St Albans City Station is the larger of two stations serving the city of St Albans in Hertfordshire. It is located to the east of the centre.	Hertfordshire's Rail Strategy includes aspirations to provide an additional stop at St Albans for all Corby to St Pancras services.	BSIP proposals in St Albans will benefit existing bus services, e.g., bus routes 84 and 357 (Hertfordshire County Council). These routes serves bus stop 'St Albans City Railway Station' – thus, the improvements to London Road (St Albans) is a secondary benefit to St Albans City Station as a rail hub. Further improvements to bus frequency would improve buses from the station.		Hertfordshire's Rail Strategy includes aspirations to Provide connection at St Albans City to proposed HERT (Hertfordshire Essex Rapid Transit) system.

Station Hubs | Central

West Coast Main line – Recommendations / Aspirations

Station	Key Context	Rail Services	Public Transport Services	Integration and facilities	Transport Network
Watford Junction	Watford Junction Station serves Watford in Hertfordshire. It is situated north of the town centre.	• Metropolitan Line Extension • Croxley regional link • Hertfordshire's Rail Strategy includes aspirations to increase intercity service from Watford Junction to Birmingham New Street to 2 tph, and new services to Liverpool (1 tph) and Manchester (1 tph)	NA	Previous Station Upgrade Proposals developed including wider development proposals and over site development; however, these have been placed on hold following post-pandemic fall in demand.	Watford Borough Council and Hertfordshire County Council's 'Transforming Travel in Watford 2021-2041' strategy suggests improved cycle and pedestrian routes to Watford Junction Station.
Milton Keynes Central	Milton Keynes Central is one of several stations serving the Milton Keynes urban area.	• East West Rail services to Oxford in 2024 • East West rail could enable west bound services from MK • Future inter city services dependant on HS2 capacity release to enable more service • Potential connection via any Aylesbury – East West rail leg	Improved public transport between the stations and coach station would improve opportunities for multi modal journeys.	Station upgrade to increase platform capacity would be required to deliver the scale of services proposed.	MK MRT could transform the way people travel to the rail station with faster and higher frequency system.
Bletchley	Bletchley railway station serves the southern areas of Milton Keynes, and the north-eastern areas of Aylesbury Vale.	• EWR services to Oxford • EWR CS3 enabling direct connection to Cambridge • Potential connection via any Aylesbury – East West rail leg		EWR proposals include altering or replacing the current footbridge, enlarging the car park and creating a new eastern entrance. Eastern Entrance would significantly improve access to the station to the Bletchley town and active transport and bus networks. Currently Bletchley station is not step free – thus fully step free access can increase the station's accessibility.	Future connection into MK MRT would support local access.
Northampton	Northampton Station serves the county town of Northampton and is situated west of the town centre.	• Improved WCML services with HS2 capacity release • Potential connection via any Aylesbury – East West rail leg		New facilities are proposed as part of the station including a new multi-story car park and other development including a hotel	Proposals to include active travel provision are included in proposals for the new station however further active travel enhancements could be delivered as part of this scheme.

Station Hubs | East

East Coast Main line & West Anglia Main line – Recommendations / Aspirations

Station	Key Context	Rail Services	Public Transport Services	Integration and facilities	Transport Network
Peterborough	Peterborough Station serves the city of Peterborough in Cambridgeshire. It is located west of the city centre.	Potential for future services to East Anglia as a result of Ely and Hughley junction improvements	Two bus routes (route 23 and 24) will be improved in Peterborough (Cambridgeshire & Peterborough Combined Authority). These routes both serve Queensgate bus station, which is 6-minute walk from Peterborough Station. Stagecoach will be introducing a new 27 bus route between Peterborough and Stamford from Monday June 2024 (Stagecoach, 2024). The service will operate Monday-Saturday with four departures in each direction (Stagecoach, 2024). It will serve Queensgate bus station - 6-minute walk from Peterborough Station.	Government has approved an outline business plan to transform Peterborough station and surrounding area (Station Quarter). The £65m scheme includes a refurbishment of the current entrance, a new western entrance, and a multi-storey car park (BBC, 2024)	
Stevenage	Stevenage Station serves the town of Stevenage in Hertfordshire. The station is located in the town centre		Proposal for a new mobility hub at Lister Hospital, which is north of Stevenage Station. The new mobility hub would cater more bus services (Hertfordshire County Council). This would benefit existing bus routes (i.e. bus route 301, 907 and 80) serving both Lister Hospital and Stevenage Station.	Stevenage Station Gateway Area Action Plan - It aims to improve accessibility, create a sense of arrival, and promote sustainable transport modes. Hertfordshire's Rail Strategy identifies cycle storage at Stevenage Station to be at capacity, and so more storage is needed.	
Cambridge	Cambridge Station serves the city of Cambridge. It is approximately 1 mile south-east of the city centre but located . Cambridge North services the northern part of the city and business park and Cambridge South will serve the south of the city and biomedical campus opening in 2025.	• The key service changes in the medium term are reliant on East West Rail delivery which has proposed a 4 tph service specification to Oxford via Bedford and Milton Keynes • Further extension of EWR services to Ipswich • Improvement in services via Ely • Additional services via Newmarket line and new station to the east of the city.	Five bus routes will be introduced or improve in Cambridge. This includes higher bus service frequencies between Trumpington to Cambridge Rail Station and Addenbrookes (Cambridgeshire & Peterborough Combined Authority)	• Cambridge will require upgrades to accommodate east west rail services including new platforms to accommodate 4tph EWR service • Upgrade to stations access to ensure passengers capacity • Second eastern entrance to support link to Airport Site	Future transport to the east to support connection to developments in the east.

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