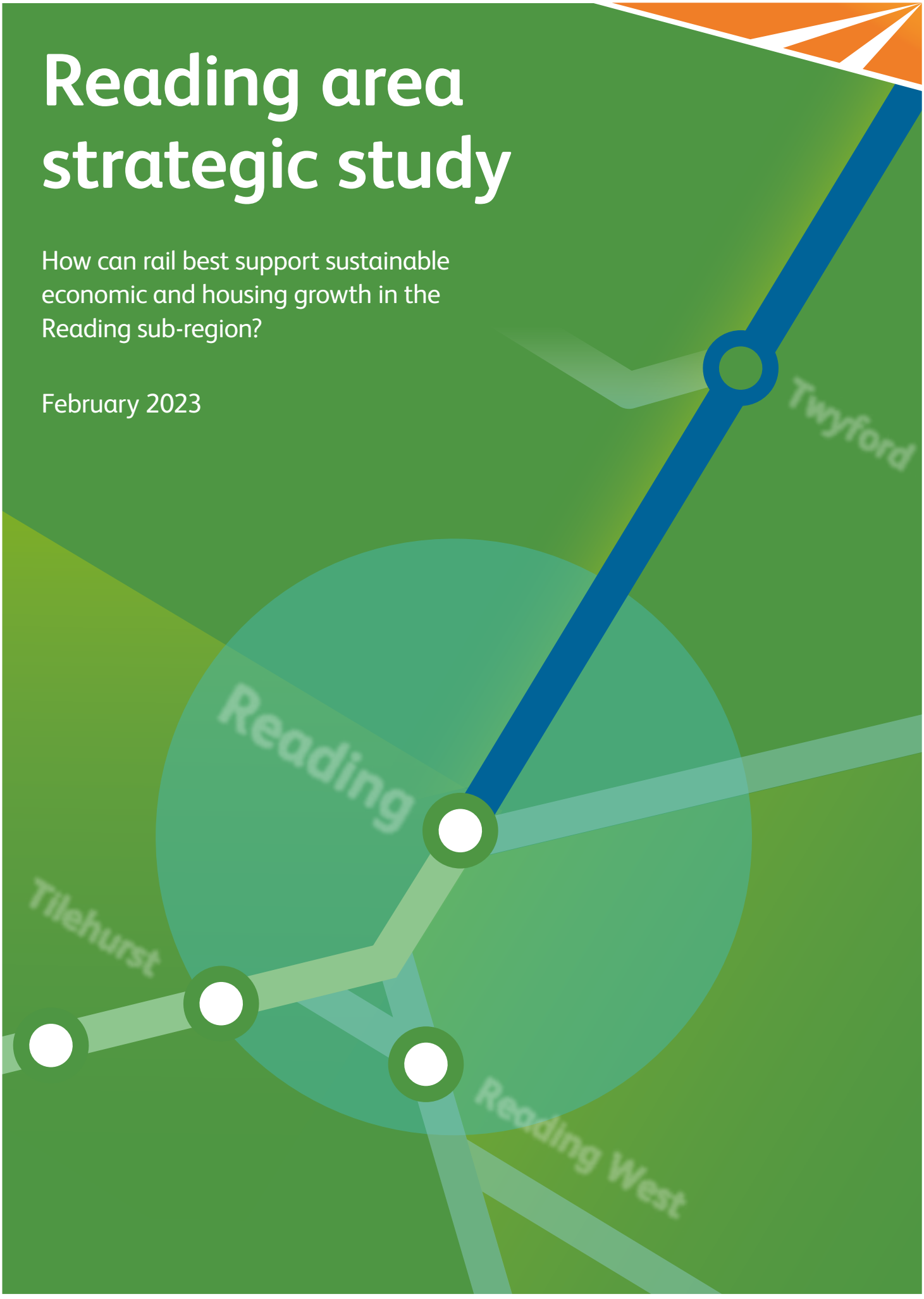
Reading area strategic study

How can rail best support sustainable economic and housing growth in the Reading sub-region?

February 2023



From November 2022 Elizabeth Line services from Reading (pictured) and Heathrow Airport were integrated with the central tunnels to provide cross London connectivity.

Passenger assistance is provided at stations throughout the study by GWR and can be booked with as little as two hours' notice.

Foreword

It's a great pleasure to publish the Reading Area Strategic Study.

This joint vision for a better railway is developed in close collaboration with our valued partners. It describes how the railway can continue to make people's lives better, benefit communities and support growth across the region, and play a major role in meeting some of the social and environmental challenges we face.

We've seen a hugely encouraging return to our railway since COVID-19, with our communities across the region re-embracing the railway and its unparalleled ability to connect people with one another, with special places, and with jobs and businesses.

And we know that the railway has a pivotal role in dealing with our regional, national, and global climate emergencies, and that this alone requires major improvement to the offer for passenger and for freight customers.

We have adopted the strategic objectives for the whole rail industry set out by the UK Government and shared our recommendations with Great British Railways Transition Team (GBRTT) to ensure they are firmly established as the strategic plan for our region.

This study sets out recommendations for improvements from those that require little or no investment to those that represent significant transformation, and our vision is a long term, sustainable one that can be delivered incrementally.

I believe that the future of the railway in the region is exciting and that the vision set out in this strategy can play a major role in improving productivity and attracting investment, contributing to improved health, wellbeing, and quality of life, and protecting and enhancing our unique environment.

It's more important than ever that we work with partners to set out a clear vision for development of the rail system to give our communities greater opportunities and help deliver a greener transport system on a railway that is always safe and reliable.

F McGarry

Francis McGarry
Investment Director, Wales & Western

NetworkRail

Foreword

This study sets out how the rail industry can enhance passenger service connectivity and grow rail freight capability, support a growing economy and population in the region, promote sustainable transport options, and deliver on the TfSE transport strategy within the Wessex Thameside region.

Reading and Berkshire is both an area of economic significance as a major centre of employment with a growing population and also a significant node in the UK rail network. This study puts forward a vision to maximise Reading's potential as a regional gateway and as a destination in its own right.

This study picks up important connections from Reading within the TfSE area, and to other parts of the UK. It identifies areas where improved rail connectivity adds value to passengers with improved connectivity to Hampshire and the Solent via Basingstoke. It recognises that Surrey and Sussex via Guildford both have scope for the railway to support economic growth connecting Reading and Berkshire with these other key centres. There is scope to make significant time savings to passengers making rail an attractive and convenient choice for passengers whilst adding value back to the UK economy. These corridors also reflect the need to create radial journeys around London, easing pressure on the public transport network or the congested M25 motorway. Furthermore, Reading sits on the freight corridor of both regional and national significance, connecting the Solent Ports with distribution centres in the Midlands and North of England.

We have worked with Network Rail throughout this study which presents options for investment aligned to the strategic priorities set out in our transport strategy and strategic investment plan. We look forward to continuing this work with Network Rail and the railway industry to develop improvements to rail services which support sustainable growth in the region, and deliver value for the UK.

The TfSE transport strategy and strategic investment plan provide a framework to integrate the various potential decisions to be made across the wider region which can combine to deliver the maximum potential value to the UK. We look forward to being able to work together with Network Rail and the wider rail industry to deliver improvements to rail services in the Reading area.

Mark Valleley
Head of Strategy, TfSE

TRANSPORT FOR THE South East

Contents

Introduction

How can rail best support sustainable economic and housing growth in the Reading sub-region?

Reading is a major economic hub and a regional employment and population centre. Its size and proximity to London mean it is also has sizable commuting outflows. As a key node on the UK rail network it connects large tracts of the country for both passenger and freight flows.

Although the railway offers sustainable links to settlements on all its axes, passengers travelling to Reading often do not choose rail. This means it has a low market share outside of the Great Western Main Line Inter-City markets. A mix of poor journey times and low frequency of service creates connectivity gaps, and means passengers tend to use less sustainable modes of transport (such as private cars). This adds to an already congested road network. Anticipated population and economic growth in Reading will worsen these issues.

Encouraging a shift from road to rail is essential for Britain to meet its climate obligations of net zero by 2050. Rail travel is already the most environmentally friendly form of transport, capable of moving large numbers of passengers (and goods) long distances.

Rail demand has recovered strongly since the impacts of Covid, but we are witnessing changes in travel behaviour that we need to capture in our strategy for rail service development. Whilst continuing to support the commuter role of the railway we also need to accommodate increased leisure travel. Both contribute to sustainable growth.

Reading is well served by railway infrastructure and a major national intersection of routes, but we need to make rail more attractive for local journeys, improve the range and frequency of longer distance journeys, and maintain an excellent service to London. We also need to allow continued growth in vital rail freight markets in the Reading area. Doing these things will support new jobs and housing across the region and contribute to national economic growth. And it will do so in a way that helps meet environmental goals.

Study area identified for detailed analytical work and the wider geographic area for context

Figure 1.0

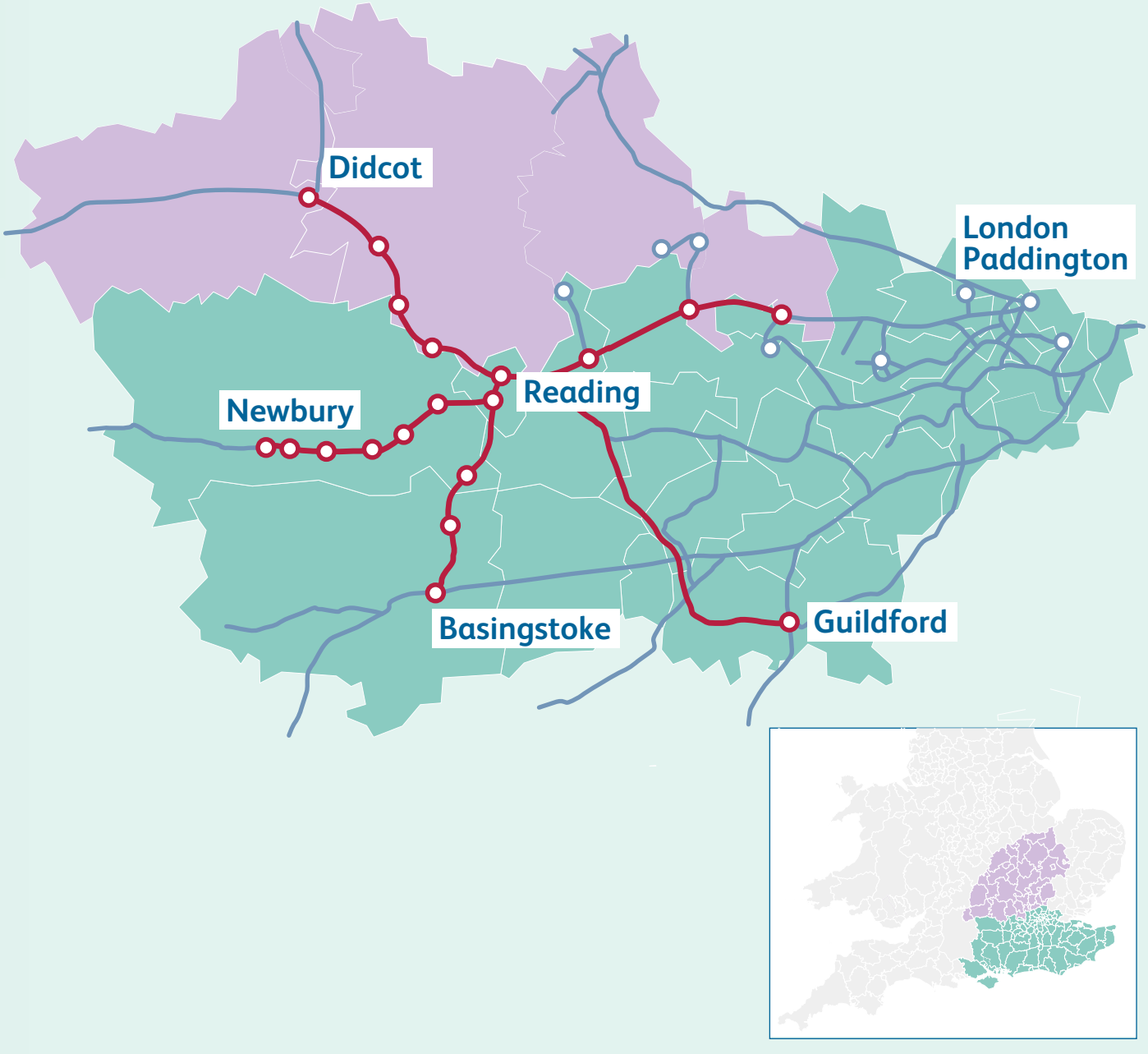
Stations within the study area

Stations outside study area

Study Area Districts

Transport for the South East (TfSE)

England's Economic Heartland (EEH)



Study overview

In the Reading Area Strategic Study we identify gaps in connectivity so we can plan improvements. The options outlined take into account projected economic and population growth, as well as evaluating stakeholder aspirations within current constraints in the shorter term, and a longer term planning scenario when significant capital investment in rail may become an option.

The Reading Area Strategic Study considers passenger and freight services that use any part of the network in the area marked in pink of Figure 1.0. Due to the interface Reading has with other parts of the network, we have also considered contextual impacts to changes on a wider geographic area. This means we can assess the impact of projects (such as the construction of an HS2 interchange station at Old Oak Common) in relation to Reading.

The annual rail user benefit generated by each proposed service change in terms of the value of time was calculated using MOIRA2 passenger demand forecasting software. We used a scenario-led approach to test and rank the benefits delivered by each origin/destination flow. This helped us identify the service enhancements that could best target connectivity gaps. We compared them so we could identify those that would best support our study's objectives.

We identified service uplifts in three phases. A minor stage that sought to close connectivity gaps in the Reading area within current infrastructure constraints. Meanwhile, incremental and transformational phases outline proposals for future longer-term train service scenarios. These are subject to investment in infrastructure and predicated on the delivery of wider network changes (including the delivery of East West Rail).

These stages of service uplifts also align to national Strategic Freight Network forecasts which have the potential to double freight traffic passing through the Reading area. This provides a vital function in reducing road freight vehicles and connecting the Solent ports to the Midlands and the North. This impact on road traffic levels is important to the Reading area where key road arteries for long-distance freight pass through including the M4, A4 and A34. It is important that the network freight capability in the Reading area grows alongside the development of improved passenger services.

Our main priority is to identify opportunities to make rail a more attractive option within the constraints of a heavily-used mixed-traffic railway that serves multiple markets and different passenger characteristics. We need to evaluate additions to the existing timetable against their cost to the industry. And we also need to consider the impact of changes on new and existing customers.

Further analysis is needed for us to understand the full cost and benefit of any service uplift. Our early economic analysis presents evidence of the costs and journey time implications associated with increased station calls and new services.

Service enhancements that deliver improvements to priority origin-destination flows

Table 1.0

Improvement Priority	Service Enhancement	Phase Delivered
Reading-Winnersh	2tph Reading Spur Junction/Reading	Incremental
Reading West-Earley		
Reading-Tilehurst	Addition of call into Didcot/Reading fast service	Minor
Pangbourne-Reading		
Cholsey-Didcot Parkway		
Reading-Theale	+1tph Newbury/Reading local service	Incremental
Bramley-Basingstoke	+1tph Basingstoke/Reading local service	Incremental
Reading-Reading West	Addition of call into Newbury/Reading service	Minor
Midgham-Newbury		
Oxford-Reading	+1tph Cambridge/Reading	Transformational
Cambridge-Reading		
Milton Keynes Central-Reading		
Gatwick-Reading	Inter-regional routing options	Transformational**
Portsmouth-Reading		Transformational
Reading-Southampton	2tph inter-regional service every hour rather than every other hour	Incremental*
Reading-Manchester		
Reading-Salisbury	+1tph Basingstoke/Reading inter-regional service	Incremental
Reading West-Tilehurst	N/A	No improvement delivered by study recommendations

*Some benefits gained in Minor Phase **Some benefits gained in Incremental Phase

A CrossCountry Voyager sits alongside a GWR Intercity Express Service.

The remodel of Reading station provides enhanced connectivity with other modes of transport to the north of the station.

The railway today

The railway in the Reading area is a busy, mixed-traffic railway that serves a variety of markets, each with its own unique characteristics and requirements. Reading is a station call for long-distance as well as local passenger services. Reading is also key for the freight sector to access the 'golden triangle' of logistics – an area with high-density distribution facilities in the East Midlands that provides connectivity to much of Britain from the major port areas in the Solent.

The rebuild and remodel of Reading station was opened to passengers in July 2014. It sought to remove a known bottleneck on the rail network and improve capacity. Previously, trains would often queue, waiting for a platform to become available. The main issue was the limited number of through platforms, combined with several slow-speed flat junctions, and north-south services needing to reverse direction at Reading.

The project also delivered increased capacity to accommodate service provisions such as the opening of the Elizabeth Line and the anticipated future need for a Western Rail Link to Heathrow Airport.

By 2019 the Great Western Route Modernisation (GWRM) programme had delivered electrification to Newbury, Bristol Parkway, and Cardiff allowing quicker journeys times and improved performance with upgraded rolling stock.

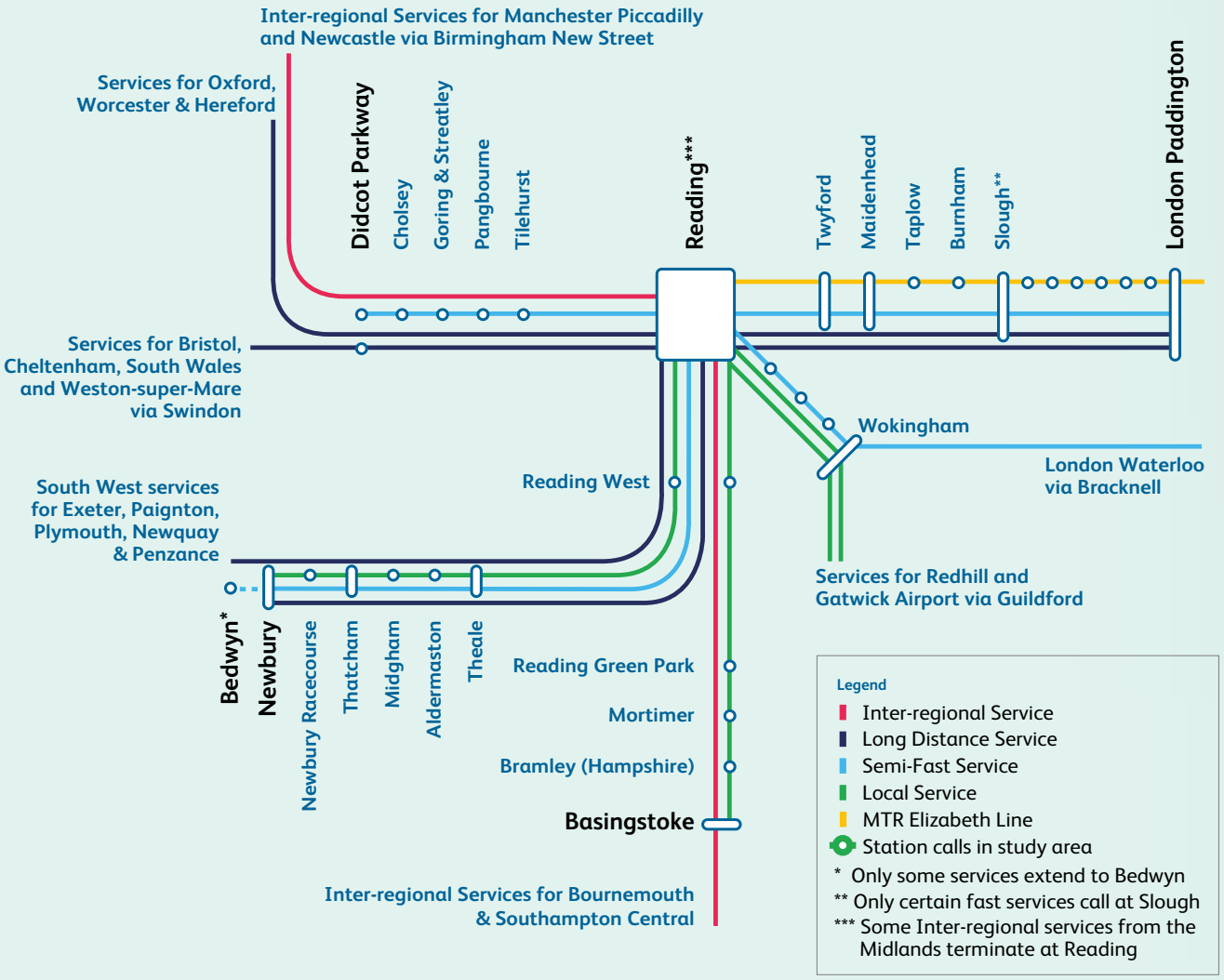
Passenger services

Four different Train Operating Companies provide passenger services in the Reading area - CrossCountry; Great Western Railway; South Western Railway; and the Elizabeth Line (Crossrail). These services were then divided into four categories for this study:

1. **Long distance high speed: fast limited stop services that link regional hubs within the Wales and Western Region to London**
2. **Semi-fast Outer Suburban: limited stop services that mainly link regional hubs within Wales and Western Region with a focus on commuters**
3. **Inter-regional: fast, limited stop services that cover large distances**
4. **Local: calling at all stations with slower end-to-end journey times or providing a frequent metro-style service.**

Reading service routes

Figure 2.0



The busiest radial routes into Reading are the Didcot (11tph) and Slough (18tph) corridors; forming part of the core Great Western Main Line. The Newbury (5tph), Basingstoke (4tph), Guildford (3tph) and Bracknell (2tph) complete the standard off-peak hour service structure. This baseline has been taken as the quantum of services included in the Covid-recovery May-23 timetable.

Freight services

The Reading area is a busy through route for Freight traffic reflecting its position as a major node on the railway network. Major national flows crossing the Reading area include intermodal traffic from the Solent to the Midlands and North; cargo from Bristol Channel ports to London and the East; aggregates from Mendip quarries supplying the construction sector in the South East, as well as more localised flows such as serving the freight terminal at Theale. Operators include DB Cargo, Freightliner and GB Railfreight. Currently all freight traffic entering the Reading area is operated using diesel traction.

Key challenges

Significant population and employment growth across the study area mean that future travel patterns and rail demand are likely to be different from that of today. The recommended service uplifts have considered known infrastructure and operational constraints that limit improvements to connectivity, performance, journey time and service frequency. Although not an exhaustive list, some of these are detailed below outlining the value of a punctual railway to passengers:

- **A mixture of flat, slow speed junctions at Didcot, Southcote and Oxford Road limit capacity**
- **Track capacity is limited particularly between Basingstoke and Reading as several lines converge through a 2-track section with a mixture of traffic. 775m freight between Basingstoke and Didcot has an impact on the wider system due to it taking longer to clear junctions**
- **Terminating and reversing trains at Reading limits access to platforms from all routes and limits overall network capacity**
- **Intensively used level crossings (particularly between Newbury and Reading) limit train movements and create performance and safety risks**
- **Differing traction power supply systems constrain operational flexibility and limit diversionary routes during perturbation**
- **The Thames Valley between London and Reading is intensively-used with a mixture of long distance and high frequency services. We need to recognise the potential impact of delays on the whole route and in delivering cross-London Elizabeth Line services.**

Previous Development Work

The Reading Area Strategic Study is the next in a series of modular strategic planning activities undertaken by Western Route Strategic Planning on behalf of Network Rail in partnership with the rail industry. It follows the recommendations of stakeholders to identify and prioritise a long-term vision for rail in the Reading sub-area in anticipation of forecast population and employment growth and the needs to decarbonise the wider transport network.

As a key node on the British rail network and to ensure alignment with a number of existing aspirations for service enhancement, the Reading Area Strategic Study reviewed recommendations from past development work to understand how they will impact the Reading area. A summary of these related workstreams are outlined on the following pages.

Paddington to Reading Corridor Study

Network Rail completed a Corridor Study between Paddington and Reading as part of the Western Route Continuous Modular Strategic Planning activities in 2020. This sought to identify how future growth and operations could best be supported following the introduction of the full Elizabeth Line timetable from 2022 and the completion of Old Oak Common HS2 Interchange later this decade.

The study identified six recommendations targeted at finding solutions to increase capacity to meet growing demand while maintaining a high-performing railway without significant infrastructure interventions. In summary:

1. **Raising on-train capacity through train lengthening.**
2. **Targeting measures to improve passenger experience, including the role of a digital railway to alleviate capacity challenges.**
3. **Supporting and encouraging freight growth through better path utilisation and exploration of new markets.**
4. **Completing a junction and crossover strategy for the Reading to London Paddington corridor.**
5. **Using First-Last Mile principles to work with stakeholders to improve station access and integration with other modes of transport.**
6. **Removing diesel traction in the Reading to London Paddington corridor.**

The challenges and recommendations outlined in the Paddington to Reading Corridor Study are likely to have a material or performance impact at Reading. Therefore, the Reading Area Strategic Study must consider the whole system impact derived from increased Elizabeth Line frequency and the introduction of Main Line calls at Old Oak Common.

Oxfordshire Corridor Study

Reading also has an interface with the recommendations of the Oxford Rail Corridor Study on its Didcot axis. This study was completed by Network Rail Strategic Planning in 2021 in direct response to Oxfordshire County Council's need to identify strategic requirements for rail in and around Oxford.

The study recommends increased train service frequencies on multiple radial corridors to Oxford and focuses on connecting markets either side of the city. This adds value for passengers by reducing the number of interchanges and make efficient use of rail infrastructure. It also brings potential for services from the Midlands via Banbury and Milton Keynes via East West Rail to reach the GWML at Didcot.

To support this, an upgrade to Oxford's rail infrastructure has been identified comprising:

- **Infrastructure interventions in and around Oxford station to raise capacity, including new platforms and easements to track capacity**
- **Re-opening the Oxford to Cowley route to passengers**
- **Upgrading Didcot Parkway station, including a new platform**

Western Rail link to Heathrow Airport

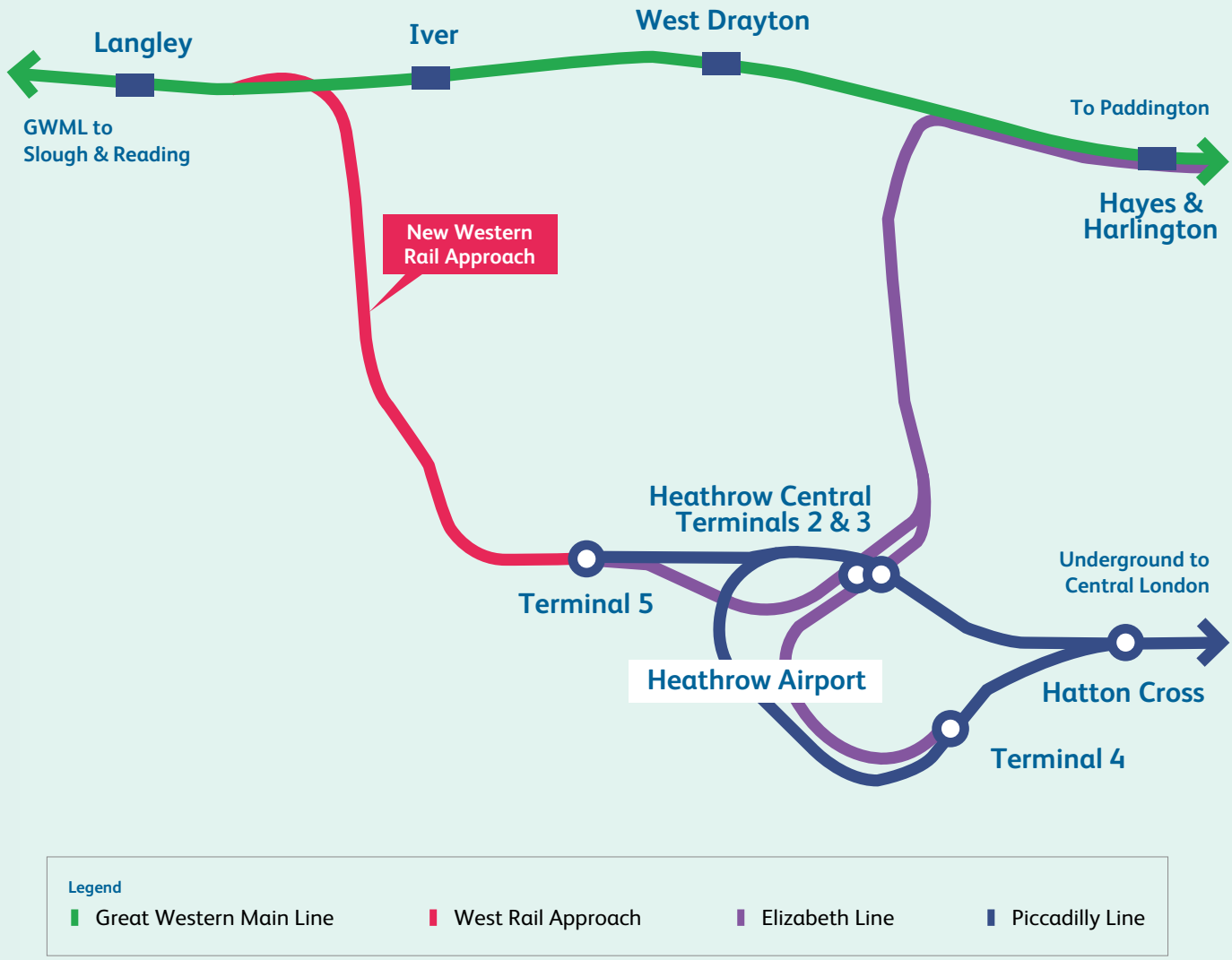
Over the last ten years, Network Rail has been developing plans with stakeholders for a new rail link between the Great Western Main Line (GWML) and Heathrow Airport, leaving the GWML between Langley and Iver. The proposed scheme would reduce rail journey times between Reading (and further west) and Heathrow by delivering four trains per hour in each direction.

The scheme would significantly improve rail connectivity to Heathrow from the Thames Valley, South West, South Wales and West Midlands, and provide an alternative, sustainable form of transport for passengers and airport staff who currently travel by road.

This scheme is not currently funded but will be progressed between Heathrow Airport Limited and Network Rail when funding becomes available. The project outputs are compatible with both the baseline and potential changes identified in this study.

Proposed Western Rail Link to Heathrow Airport

Figure 3.0



About the study

A westbound Intercity Express Service makes its final approach into Reading.

Our headline question is: How can rail best support sustainable economic and housing growth in the Reading sub-region?

To answer this, we need to answer these supporting questions:

- What are the capacity and connectivity requirements for key markets operating into and out of the Reading area and cross-Reading flows?
- What are the options to address aspirations for increased freight use of the rail network in the Reading area?
- What interventions are necessary to deliver the rail capacity and connectivity needed to help deliver economic growth and support growth for existing and new settlements in the Reading area?
- What is rail's role in the Reading area in supporting the British Government's legislative objective of net zero carbon emissions by 2050. As part of this, what is our role in delivering against local aspirations to increase public transport usage as a sustainable mode of transport (as an alternative to cars) and improve air quality in the area?

Key stages and components of our process

Our report and recommendations will affect rail services in the Reading area in the short (0-5 years), medium (5-15 years), and long (15-30 years) term.

Stakeholder engagement and priorities

The UK Government has developed five strategic objectives for the next 30 years: meeting customers' needs, delivering financial sustainability, contributing to long-term economic growth, levelling up & connectivity, and delivering environmental sustainability. These objectives are at the heart of all rail industry reforms.

Our study involved close collaboration with stakeholders including sub-national transport bodies, statutory transport and planning authorities, and passenger and freight train operating companies.

Two stakeholder working groups supported the study's development. Each concentrated around a key objective for the study, capacity and connectivity, and freight.

Stakeholder working groups' representatives

Table 2.0

Train Operating Companies and Service Delivery Partners	Sub National Transport Bodies	Local Government	Freight Partners and Freight Operating Companies
South Western Railway Great Western Railway CrossCountry Trains Transport for London (TfL) MTR Elizabeth Line	Transport for the South East (TfSE) England's Economic Heartland (EEH)	Reading Borough Council Berkshire County Council Hampshire County Council	DB Cargo, GBRf, Freightliner, Colas, and DC Rail Chartered Institute of Transport and Logistics Rail Freight Group Rail Operations Group Network Rail Freight & Network Strategy

Priorities identified by Sub-National Transport Bodies

Table 2.1

SNTB	Priority	Study Objective
TfSE/EEH	Improved Connectivity	Service uplifts recommended to tackle road congestion and connectivity deficiencies across the study area by promoting the efficient movement of people and goods.
TfSE	Value for Money	To increase its modal share and for the UK to meet its climate objectives the railway must provide a more attractive service offering.
TfSE	Capacity, Performance and Resilience	Study identifies some of the infrastructure constraints which limit capacity. Further line of route feasibility studies recommended to improve levels of service particularly between Reading and Basingstoke.
TfSE/EEH	Accessibility	To deliver a safer and more inclusive railway analysis was undertaken for each station within the study area to prioritise improvements.
TfSE/EEH	Transport integration	As Reading is a strategic node of the British rail network and both an origin and a destination for journeys it can act as a natural transport interchange. The study explores how the transport offering should be enhanced to improve rail connectivity and integration with other modes.
EEH	Support regional economies	The study recommends service uplifts based on a principle of developing improved interregional links particularly for journeys that have traditionally required a minimum of two changes. The completion of projects such as HS2 and East-West rail will improve journey times and attract more passengers onto rail.

An aerial shot of the River Kennet and surrounding urban landscape courtesy of Reading Borough Council, taken by www.jsaerial.co.uk.

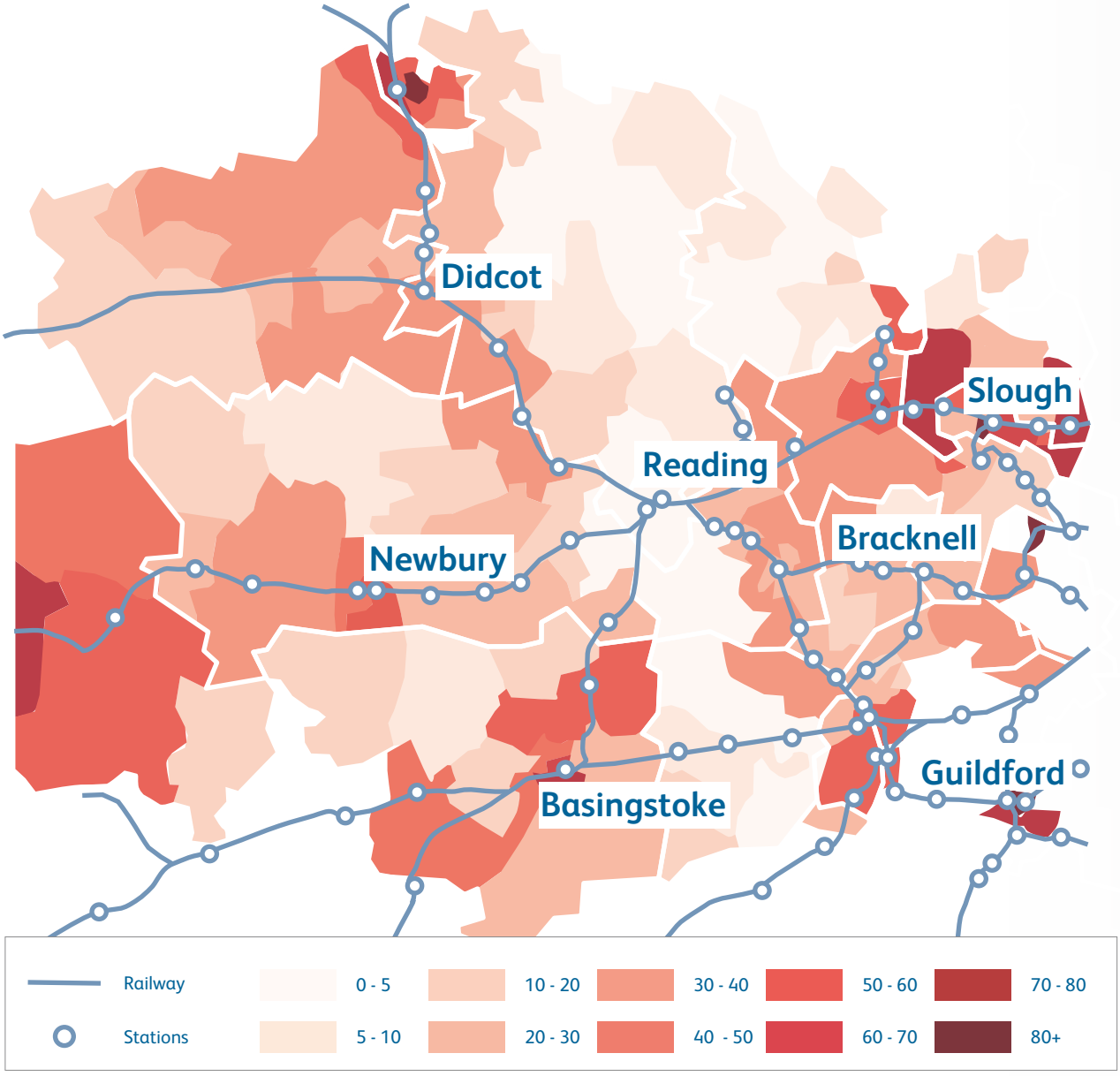
Gathering evidence

We used the growth outlined within each of the study districts' local plans to provide a detailed projection of population and employment growth and mapped these to rail demand forecasts across the study area. This is significantly higher than assumed in the standard, less locally-sensitive method. Of the 18 local authorities listed, only two have lower population growth estimates in their local plans.

Current rail demand

Rail commuting by mode share into Reading City Centre

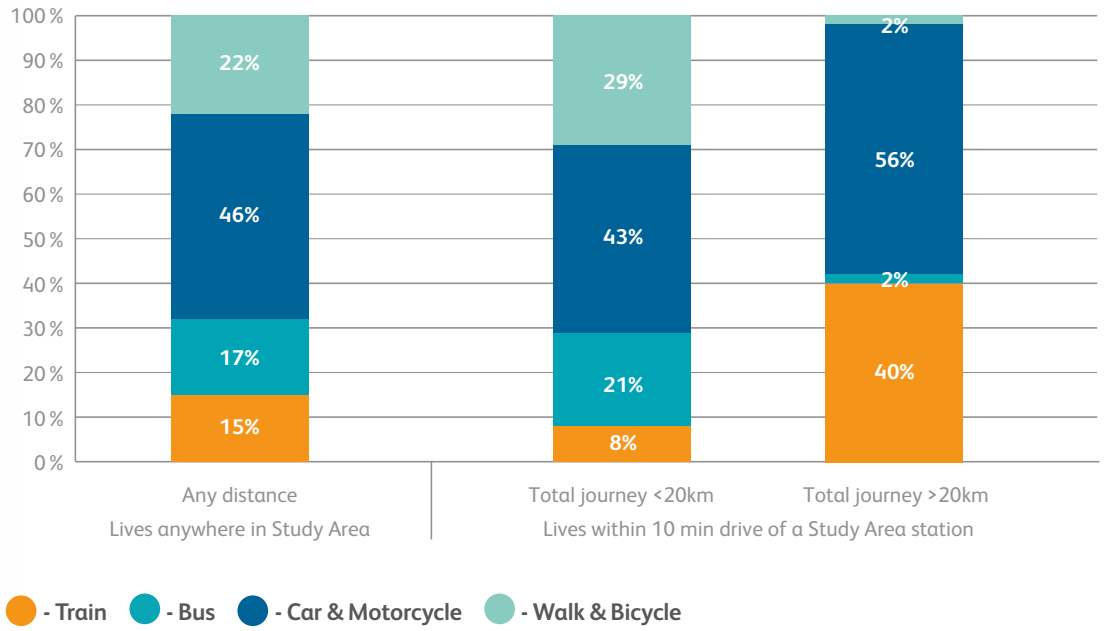
Figure 4.0



Reading is a significant attractor of journeys as a key employment and population centre circled by a series of sources of significant commuting outflow. The highest proportions of mode share can be found in found in conurbations with existing rail links into Reading. Figure 4.0 demonstrates that rail mode share into Reading is highest for all hubs across the study area, reflecting the frequent level of service into Reading from surrounding population centres. Figure 5.0 shows patterns of travel into Reading, broken down into any distance of journey as well as longer (greater than 20km) and shorter (less than 20km) journeys. This data highlights important trends:

Patterns of travel into Reading by distance and mode

Figure 5.0



- **Rail's mode share is relatively low for Reading when compared to similar sized employment hubs. For example, Birmingham has a 38% rail commuter mode share whereas Reading has only 15%.**
- **For journeys which are under 20km, rail mode share is particularly low (8% of commuter journeys) considering the high number of stations within the geography. This is compared to journeys made by car/motorcycle 43%, bus 21%, with 29% by walking or cycling, suggesting that the attractiveness of shorter journeys by rail is not particularly high.**
- **Rail mode share is higher when journeys are over 20km but still within the study area. 40% of commuter journeys are made using rail compared to 56% car/motorcycle, 2% Bus and 2% via walking or cycling.**

The key output from Figure 5.0 is that long-distance flows are a far lower proportion of overall demand (c. 20-25%) yet have a far higher mode share than shorter commutes. This suggests that a balance is required between providing greater long-distance and inter-regional connectivity into and through the Reading area, whilst seeking to increase rail's mode share for shorter journeys.

Station staff at Reading regularly assist passengers to find the correct platform when interchanging between services.

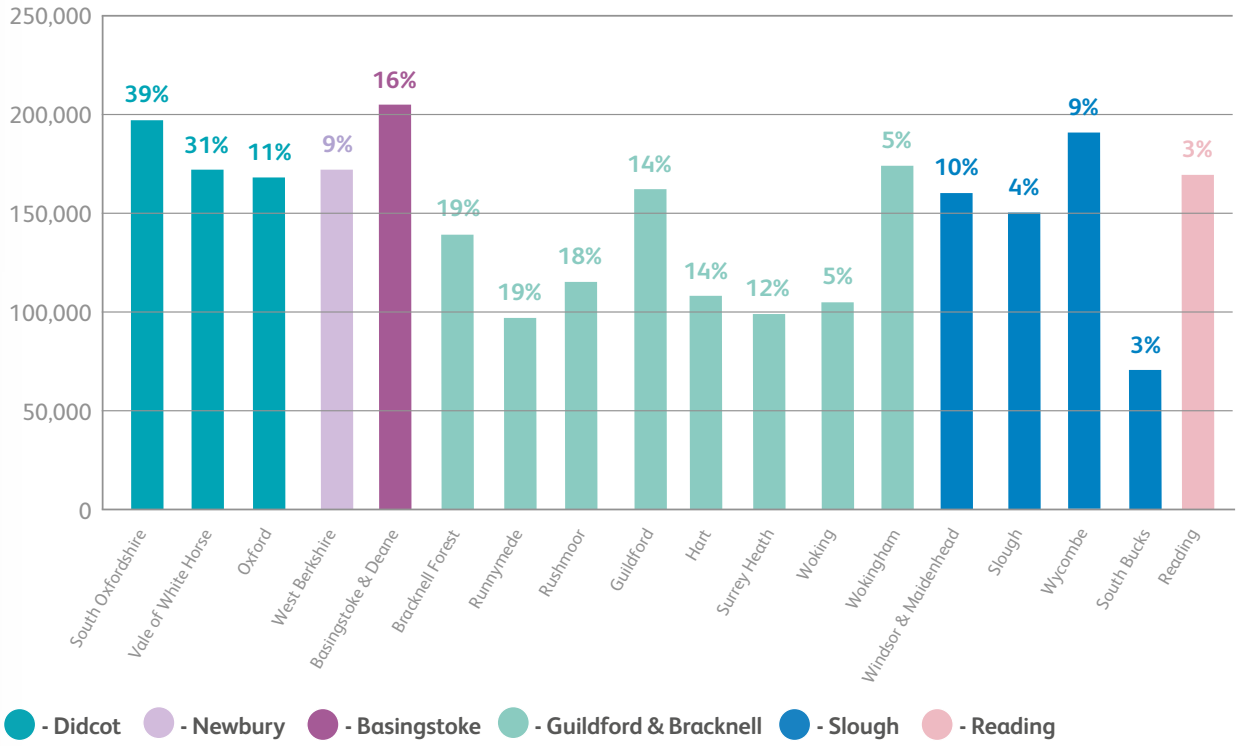
A major visitor attraction, Reading is home to the confines of one of Europe's largest former royal monasteries. Image courtesy of Reading's Economy and Destination Agency (REDA).

Forecast study area growth

Significant growth is planned on each of the five radial routes into Reading. The connectivity improvements we have identified seek to improve rail provision to meet these levels of growth. The geographical areas assigned to some of these local authorities goes beyond the boundary of the Reading Area Strategic Study. However, this data offers vital evidence as to why service provision improvement is required into Reading.

Forecast population and percentage growth

Figure 6.0



Of the 18 local authorities, Reading has the highest forecast employment growth within the study area. It is more than double the next nearest local authority in percentage increase terms. This reflects Reading's role as the primary employment hub in the study area. Reading is home to several large corporations such as Microsoft, Oracle, SSE, Thames Water, Huawei, and PepsiCo. The disparity between housing growth increase and employment growth suggests that Reading will continue to be a significant destination for inbound flows. It is essential to identify improvements in rail services to deliver connectivity to and from areas of significant housing growth to areas of significant employment growth such as Reading.

Flow connectivity analysis estimates how well rail performs for specified flows relative to other modes. We do this by calculating the share of 2035 commuting trips made by rail compared to other modes. Low values show rail has a low mode share and may not be providing an attractive commuting mode choice. This suggests that improve service levels on these flows may be justified.

The analysis identified a significant number of intra-study area, local flows with connectivity values whose rail service could be improved. It aligns with statistics showing that rail mode share is only 8% for journeys of less than 20km into Reading. Enhancements to these journey opportunities can help rail increase its mode share as well as reduce road congestion and help in wider decarbonisation.

However, we need to strike a balance between intra-study area, local mode share improvement opportunities and longer-distance inter-regional connectivity aspirations highlighted by stakeholders. This reflects Reading's role as a key hub for a mix of local, long-distance and inter-regional services. Flows such as between Reading and Basingstoke was identified as requiring improvement to strengthen rail's share of commuting demand and to ensure that TSS option development took account of inter-regional connectivity aspirations.

Customers boarding a Class 387.

Findings and recommendations

We recommend train service improvements based on the following principles:

- **Supporting economic growth in and around Reading** with connectivity improvements. Improved travel opportunities will ensure widespread access to employment and the labour market, as well as promote business and leisure travel by rail. Connectivity enhancements will make Reading more attractive for employment and will underpin the environmental sustainability of economic growth in the region.
- **Provide onward long-distance connectivity for the Reading area** with Reading station already providing a wider range of direct connections around the United Kingdom. Improved access to Reading will help facilitate onward rail journeys to London, the West of England, Wales, the Midlands, and the North of England.
- **Develop improved interregional links** with improved rail connectivity between the South-East of England and the wider country. The rail market has traditionally depended on interchange through London for many of these journeys. This has created a minimum of two interchanges using London Underground services. Improved direct connections avoiding London will have fewer connections and will attract more passengers to rail.

We have only recommended changes where there are clear benefits. Service changes that do not provide tangible benefit (or create disadvantages) to passengers are not included. Value of time represents the opportunity cost to the traveller and therefore the value a passenger places on the convenience of rail travel (i.e., a willingness to travel). It also represents a willingness to choose rail over other modes of transport.

Table 3.0 details the recommended service improvements according to the current level of network capacity and hence the requirement for intervention to deliver each uplift. The Minor phase assumes service improvements which could be achieved within current infrastrucure constraints, while the incremental and transformational phases detail more ambitious recommendations to tackle connectivity deficiencies and promote growth across the study area.

Recommended service improvements

Table 3.0

Route	Minor Phase	Incremental Phase	Transformational Phase
Maidenhead	-	Additional one freight path per hour.	-
Didcot	New Didcot - Reading stopping service. Additional one freight path per hour.	Additional one freight path per hour (over and above minor phase).	Additional inter-regional service Cambridge to Southampton (EWR).
Basingstoke	Extension of both CrossCountry services to the Solent every hour. CrossCountry calls at Reading Green Park. Additional one freight path per hour.	Regular Salisbury - Reading path calling at intermediate stations. Additional one freight train per hour (over and above minor phase).	Additional inter-regional service Cambridge to Southampton (EWR). Removal of CrossCountry extensions for Newcastle - Reading services to Southampton.
Newbury	Additional one freight path per hour.	Creation of a new stopping service Newbury - Reading. Additional one freight train per hour (over and above minor phase).	-
Wokingham	-	Increase Waterloo - Reading service via Bracknell to 4tph. Additional North Downs path towards Guildford providing a total of 4tph.	Extension of Newcastle-Birmingham-Reading service to Guildford and Portsmouth as 4th North Downs path.

This study has also analysed some of the known network constraints which limit capacity, identifying, where possible, some interventions to accommodate service improvements. Though the list in Table 4.0 isn't exhaustive and further development is required for each radial route, the identified constraints suggest the Basingstoke corridor as a possible priority for further development.

Possible infrastructure interventions identified to accommodate specific service improvements.

Table 4.0

	Required	Services which trigger intervention
Third bi-directional line between Southcote Junction and Oxford Road Junction Intervention is needed to provide additional track capacity between two key junctions. Bi-directional capability is essential to enable trains in both directions to use the additional line.		• +1tph Salisbury/Reading • +1tph Newbury/Reading • +1tph Cambridge/Southampton • Freight quantum from Basingstoke (3fpph), Newbury (2fpph) and Reading alongside existing passenger services.
Upgrading of crossover at Oxford Road Junction to bi-directional capability Conversion of existing crossover into bi-directional crossover will provide greater flexibility for an upgraded mix of passenger and freight services. This is particularly beneficial to route up services from the Basingstoke Line into Reading.		• Essential for +1tph Salisbury/Reading • Provides robustness for total freight quantum.
Enhancement of Southcote Junction Additional junction capacity at Southcote Junction that may need a full grade separation.		Combination of +1tph Salisbury/Reading and freight quantum in Incremental Layer. Would also be able to accommodate the Transformative Layer TSS.

- Interventions are required. - Would make timetabling more robust. - A choice between interventions.

HS2 are currently constructing a new interchange station adjacent to the Great Western Mainline at Old Oak Common.

A Freightliner Class 59 returning to Merehead Quarry after unloading in London.

Train Service Recommendations

We looked at a range of new services to address identified gaps. We compared options to generate a recommended vision for passenger and freight train services in the Reading sub-area – our Recommended Train Service Specification (TSS).

Our Recommended TSS presents a series of service enhancements and represents the optimal service offering for customers to support forecast housing and employment growth in the Reading area.

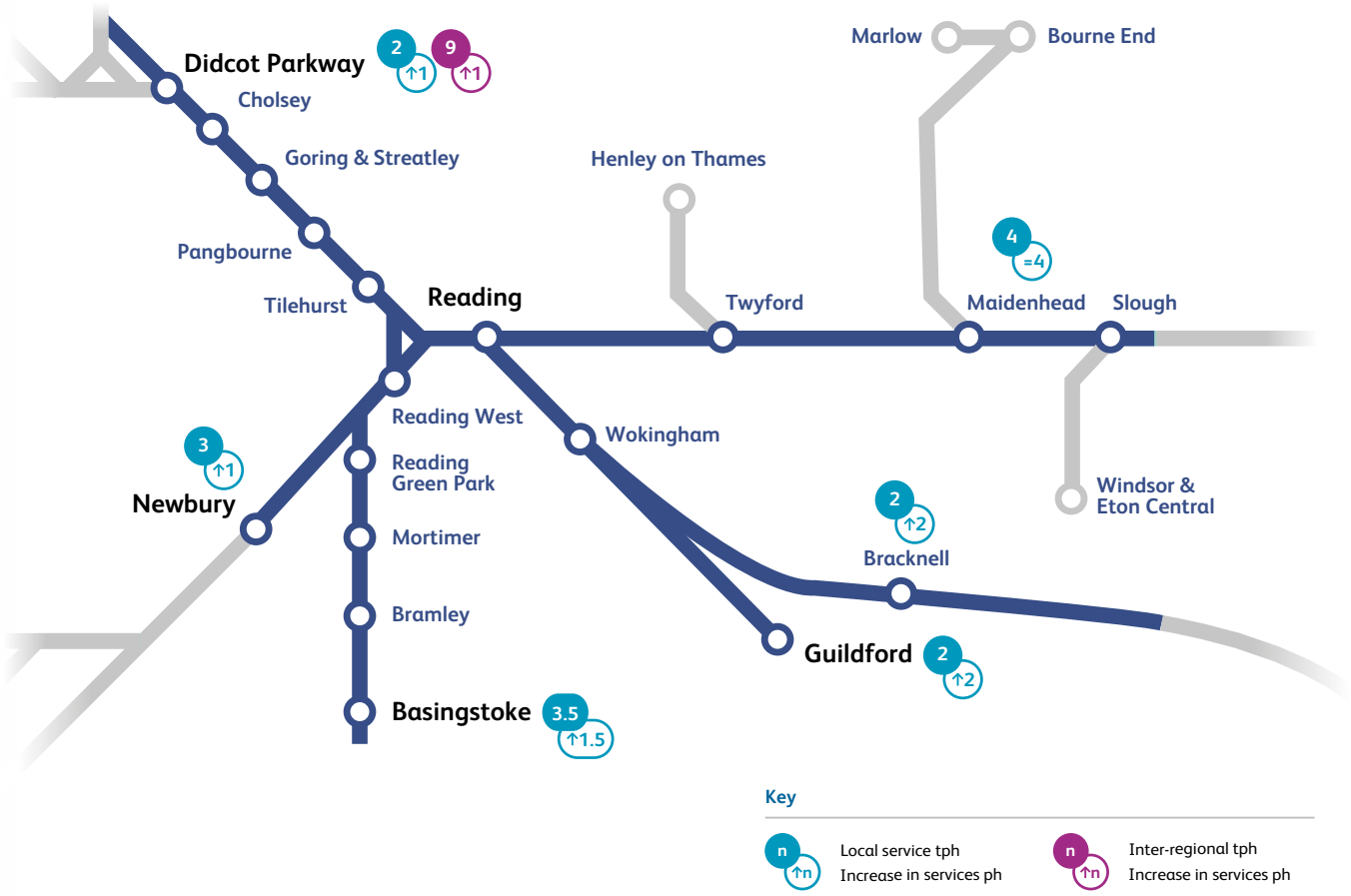
There are increases in both local service calls and inter-regional calls, with key connectivity recommendations targeted. This will dramatically improve connectivity between regional hub stations. In addition, local intermediary stations are provided by improved service frequency. This supports the view that Reading is a key interchange on the British rail network and an attractor of employment and leisure journeys.

We recommend preserving a distinction between inter-regional and local services to prevent an erosion of journey time for passengers on longer intercity journeys. As a result, proposals that increased calling patterns into a single, or several service groups did not stand as favourably in the analysis compared to the introduction of new local services to provide connectivity.

However, the ability to deliver the proposed services is constrained by the Oxford Road Junction to Southcote Junction section of the network, connecting Reading towards Newbury and Basingstoke. Services beyond the scope of the study area may also be constrained by the wider network or require additional resources (such as extra rolling stock) to be delivered.

Local and inter-regional connections between stations in the Recommended TSS

Figure 7.0



Freight

Facilitating freight growth has also been identified as a priority for stakeholders. It supports the policy objective of decarbonising transport by reducing road congestion and associated emissions. In line with this objective we recommend additional freight paths that align with projected freight growth:

- **Minor phase:** An additional Class 4 freight path to be provided each hour across Reading. However, we need further analysis to understand how through services from Solent Ports to Midlands freight terminals are realised within the industry.
- **Incremental phase:** An additional freight path each hour over and above the minor phase from the Maidenhead, Didcot, Basingstoke, and Newbury axes.
- **Transformational phase:** An additional freight path between Didcot and Reading able to be compliantly provided. Further analysis is required to understand how this provides a path from the Solent to the West Midlands.

It may be feasible to deliver freight capacity benefits sooner at lower capital cost with enhancement to freight looping capability. For example, a freight loop approaching Southcote Junction from the Basingstoke direction that allows freight traffic to be regulated awaiting a clear path across the constrained infrastructure. Such an intervention needs validating through a wider freight network timetabling study (beyond the scope of this study) and integration with wider Strategic Freight Network investments.

Next steps

Further development of each individual corridor will help us to understand the feasibility of our recommended vision for services. It will also help us to understand where interventions are needed and how service groups relate to each other.

This will help validate our analysis through the business case process and evaluate which options align with the study area's strategic vision and best deliver value for the railway and its passengers. It will also define how we will deliver service uplifts incrementally. This information will help us to identify programmes and projects for investment.

We will develop business cases as a rail industry for improvements to the corridors radial to Reading based on the opportunities identified in this study. These improvements will seek to deliver connectivity enhancements and secure funding for their implementation. This includes through the Rail Network Enhancements Pipeline as well as the potential for third-party funding opportunities.

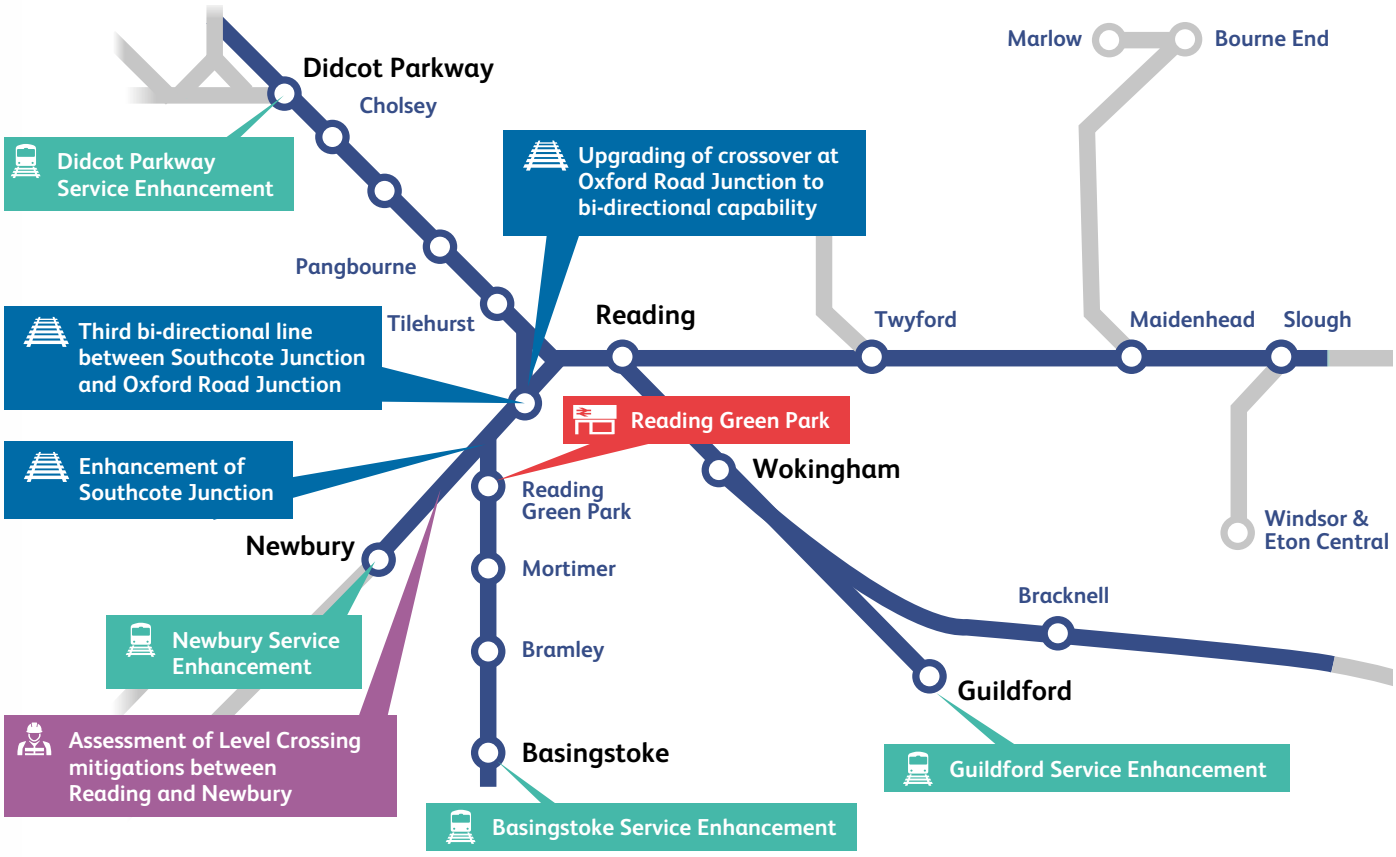
It is recommended that a line of route feasibility study is prioritised between Basingstoke and Reading taking account of the constraints identified at Southcote and Oxford Road Junctions. The Didcot axes is also of substantial importance to ensure wider network capability for freight accessing major distribution hubs in the Midlands from the Solent Ports. Completion of the Wessex Suburban Study will also ensure alignment for recommended service enhancements towards Bracknell and Guildford. In each instance feasibility studies will help validate recommended service uplifts and the interventions required to deliver these.

It is important that we continue to work with our partners to seize the opportunity for development and enhance the case for implementing our recommendations. There are opportunities to align the aspirations of Sub-national Transport Bodies and other strategic planning partners through a joined-up approach of workstreams and available funds. This is particularly so where outputs represent significant benefits to partners, and where central government funding may be harder to secure.

The outputs of this study provide evidence that can support business case development for the Reading area and support broader industry planning, such as network decarbonisation and the future of rolling stock including specific depot and stabling requirements.

Key network challenges to implementing the Recommended TSS

Figure 8.0



Study Wide

- Mixture of services operating at high frequencies between Reading and London Paddington.
- Southcote Junction capacity constraint means any delays impact performance.
- Long and heavy freight impacts capacity due to taking longer to clear junctions.

Legend

- Key Operational Challenges
- Key Safety Challenges
- New/Major Upgraded Rail Infrastructure
- New/Major Service Enhancement
- New/Upgraded Station

Multi modal connectivity is provided throughout Reading by a mixture of segregated bus and cycle lanes. Image courtesy of Reading's Economy and Destination Agency (REDA).

Our vision

As Reading is a strategic node of the British rail network there is scope for the railway to grow its modal share and contribute towards a more sustainable transport network while also supporting rail's recovery and regional growth.

Employment and population are forecast to grow rapidly over the next 30 years. This, combined with a need to support sustainable travel, means that identifying and closing current connectivity deficiencies will be key to an increased uptake of rail journeys into Reading and for interchange.

This report sets out an overall, long-term vision for the Reading area, with options and opportunities to maximise how the railway delivers. A range of services and interventions are needed to provide maximum benefit and full delivery. We recommend further development in the form of line of route feasibility studies on each route radial from Reading, prioritising the Basingstoke corridor in the first instance as it delivers strongest against the vision set out by this study. Completing a feasibility study will allow us to confirm the need for a project or programmes to deliver against the proposed vision and recommended service enhancements on this corridor. We hope that this exercise can be completed jointly in collaboration with TfSE and industry colleagues.

Improved rail connectivity will help build good connections between new housing and employment hubs. It will also make rail travel a more competitive and viable option for leisure journeys and help meet the increasing demand for moving goods by rail. This is essential for supporting growth and assisting the decarbonisation of transport.

The case for investment needs to consider work already underway to develop initiatives such as traction decarbonisation. It should also identify opportunities for efficient delivery of service enhancements alongside planned renewals investment to minimise the impact on passenger and freight customers, and the funding required.

The outputs of this study are to be used, shared and progressed by industry and regional partners as well as Network Rail. This is particularly so for Sub-national Transport Bodies and local authorities as the study's outputs align with their stated objectives and their transport, rail and investment strategies and plans.

Summary of study recommendations and answers to key questions.

Table 5.0

Questions & Study Recommendations	Type	Next Steps
What are the capacity and connectivity requirements for key markets operating into and out of the Reading area and cross-Reading flows?		
Our TSS includes potential improvements to service groups designed to maximise benefits, accommodate stakeholder aspirations, address connectivity shortfalls and provide additional freight paths to facilitate growth.	P F	Complete feasibility studies with stakeholders to evaluate specific options for funders on each radial route prioritising the Basingstoke corridor.
Rail system interventions for new and improved service provisions are designed to maximise passenger benefit within current capacity and infrastructure constraints. Infrastructure interventions are only considered when all other options are exhausted or where demand requires significant service uplifts.	P	Complete further development to identify the service enhancements that could be delivered without an infrastructure enhancement or a compromise to existing service performance.
What options are available to address aspirations for increased freight use of the rail network in the Reading area?		
775m freight has an impact on the wider system due to taking longer to clear junctions, and options to recess freight trains are reduced following the increase in Thames Valley services with the Elizabeth Line. **Maximising freight path utilisation and creating service efficiencies is a priority for this and other strategic studies completed by Western Route.**	F	Work closely with the strategic freight network and other NR routes and regions to ensure a whole system approach.
It may be feasible to deliver freight capacity benefits with enhancement to freight looping capability. For example, stakeholders identified a freight loop approaching Southcote Junction from the Basingstoke direction as a potential solution.	F	Evaluate specific proposals through a process of wider frieght network validation.
The lack of an alternative route between Southampton and Didcot results in the track being subject to significant tonnage. This leads to multiple rail defects which are often unrepairable.	F	Work closely with the strategic freight network and other NR routes and regions to ensure a whole system approach.
The Network Rail Passenger & Station Analysis (P&SA) team supported this study by providing station analysis. This included identifying which stations could potentially act as hubs for light logistics traffic to support the development of new freight flows.	F	Work with the freight industry and other NR teams to identify and evaluate new and existing opportunities for rail freight growth.
What interventions are necessary to deliver the rail capacity and connectivity needed to help deliver economic growth and support growth for existing and new settlements in the Reading area?		
Development of train services is needed to support the long-term growth vision for Reading. We need to confirm the necessary infrastructure investment to decongest the Reading West area between Southcote Junction and Oxford Road Junction.	P F	Secure funding to undertake line of route feasibility studies which prioritise the Basingstoke corridor and confirm the viability of proposed options within current infrastructure constraints.
We recommend safety improvements at level crossings surrounding Reading to support higher frequencies of rail operations and protect passengers and lineside neighbours.	P F	Work with partners to ensure everyone is home safe everyday by exploring different options and technologies to mitigate known safety risks.
Further rolling stock and train crew are likely to be needed, as are improvements to depot and stabling capability across the wider region to support enhancements to train services.	P	Assess the potential depot and stabling implications of proposed service uplifts within the Reading area as part of business case development.

Questions & Study Recommendations	Type	Next Steps
What is the role of rail in the Reading area in supporting the British government's legislative objective of net zero carbon emissions by 2050?		
Stakeholder strategies support the need to decarbonise transport to meet government policy objectives. They highlight the role of modal shift to rail as essential to meet the 2050 deadline.	P F	Working with stakeholders to improve the attractiveness of rail travel as modal shift from road to rail is essential to meet British climate obligations.
Connectivity improvements to rail services provide an opportunity to attract more rail users. This will reduce road congestion and associated emissions.	P	Consider the negative impact of economic and population growth on local road congestion as part of rail services business case development.
Taking steps to improve the attractiveness of rail freight as a viable alternative to road haulage will reduce emissions. This requires a reduction in operating costs for Freight Operating Companies and end-users.	F	Work with the rail freight industry to maximise whole industry efficiencies and the attractiveness of rail freight.
Traction power decarbonisation will be an important element to achieving net zero by 2050. The study geography contains two key routes which are currently operated using diesel traction (Southcote Junction to Basingstoke and the North Downs Line). Options for decarbonisation exist on both routes, identified as part of the Traction Decarbonisation Network Strategy (TDNS).	P	To be developed through regional decarbonisation strategies.
The study has identified a range of First-Last Mile opportunities to deliver station accessibility and integration with the local transport network. These will enable the wider decarbonisation of end-to-end journeys by promoting more sustainable means of accessing the rail network and by making it a more attractive choice for passengers.	P	Work with stakeholders to integrate strategies between rail and other modes to promote end-to-end journeys and rail use.

Type: P - Passenger. F - Freight.

Network Rail Wales and Western
Western House
1 Holbrook Way
Swindon
Wiltshire SN1 1BD

Network Rail Limited
1 Eversholt Street
London NW1 2DN

Tel **020 7557 8000**

networkrail.co.uk

Company number: 4402220
Registered in England and Wales

Published February 2023