

# Oxfordshire Rail Corridor Study (ORCS)

## Strategic Report

How can the rail system in Oxfordshire  
best support economic growth?

Published June 2021

# Oxfordshire

**Oxfordshire is one of the most productive economic regions in the United Kingdom with high growth forecast over the next 15 years.<sup>1</sup>**

The majority of the detailed work which informs this study was done between March 2019 and January 2020, before the onset of COVID-19. It is too early to know how the pandemic will affect working patterns, rail demand or current predictions for growth; however this study provides a blueprint for how rail could develop and support predicted economic and housing growth.

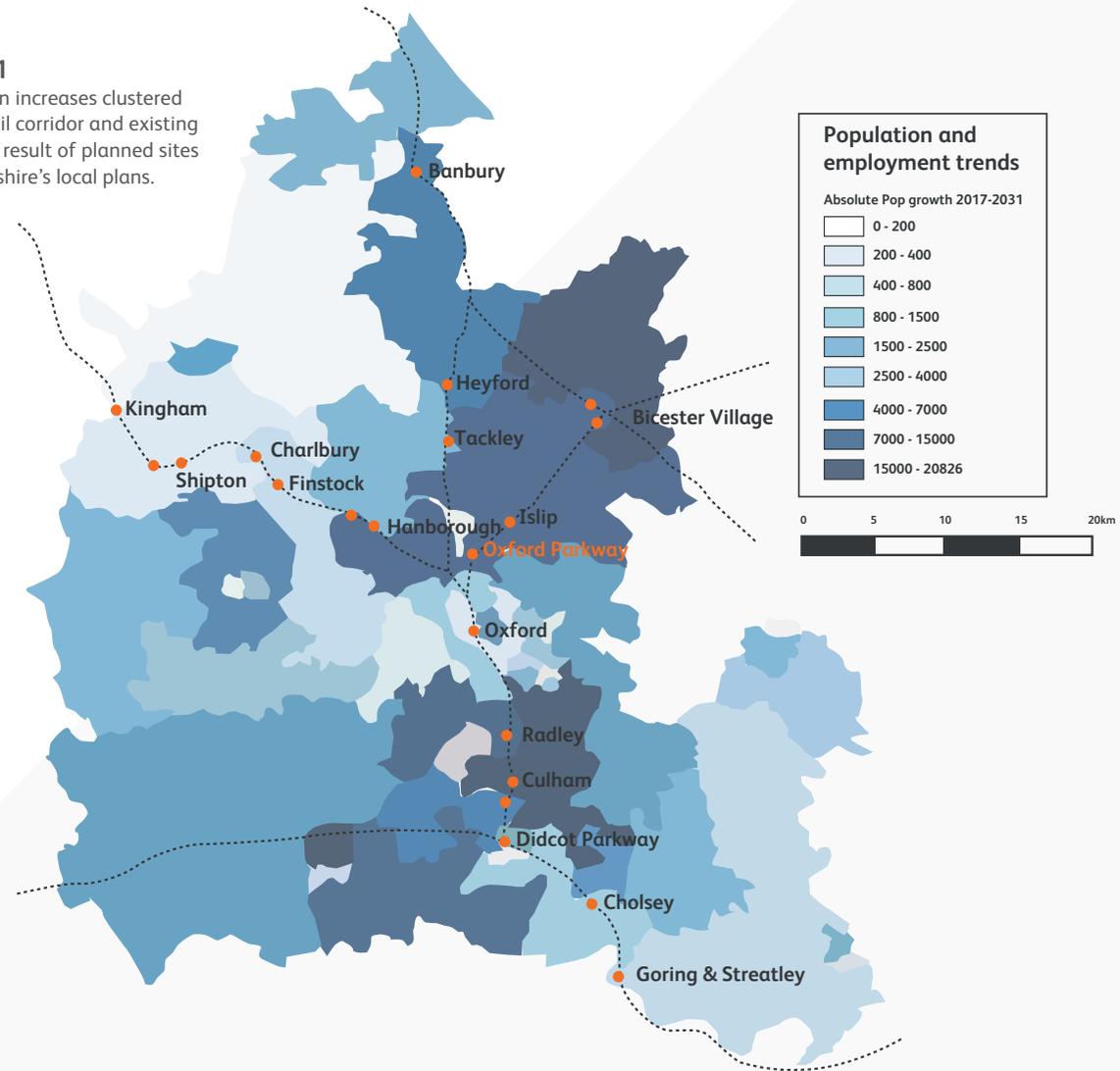
The housing growth already committed in Oxfordshire is delivering population and employment increases well above the national average, with 100,000 new homes committed to be built in Oxfordshire by 2031 and a 39% increase in population by 2040.

As identified in the Oxfordshire Infrastructure Strategy<sup>2</sup>, this growth must be supported by improvements in transport infrastructure.

The ambition of the Oxfordshire Local Industrial Strategy<sup>3</sup> is to position the county as one of the top three global innovation ecosystems and to be a pioneer for the UK in emerging transformative technologies and sectors.

**Figure 1**

Population increases clustered around rail corridor and existing hubs as a result of planned sites in Oxfordshire's local plans.



<sup>1</sup> [https://www.oxford.gov.uk/info/20283/oxfordshire\\_growth\\_board/1236/oxfordshire\\_housing\\_and\\_growth\\_deal](https://www.oxford.gov.uk/info/20283/oxfordshire_growth_board/1236/oxfordshire_housing_and_growth_deal)

<sup>2</sup> <https://www.oxfordshirelep.com/about/our-strategies/infrastructure-strategy-oxis>

<sup>3</sup> <https://www.oxfordshirelep.com/lis>

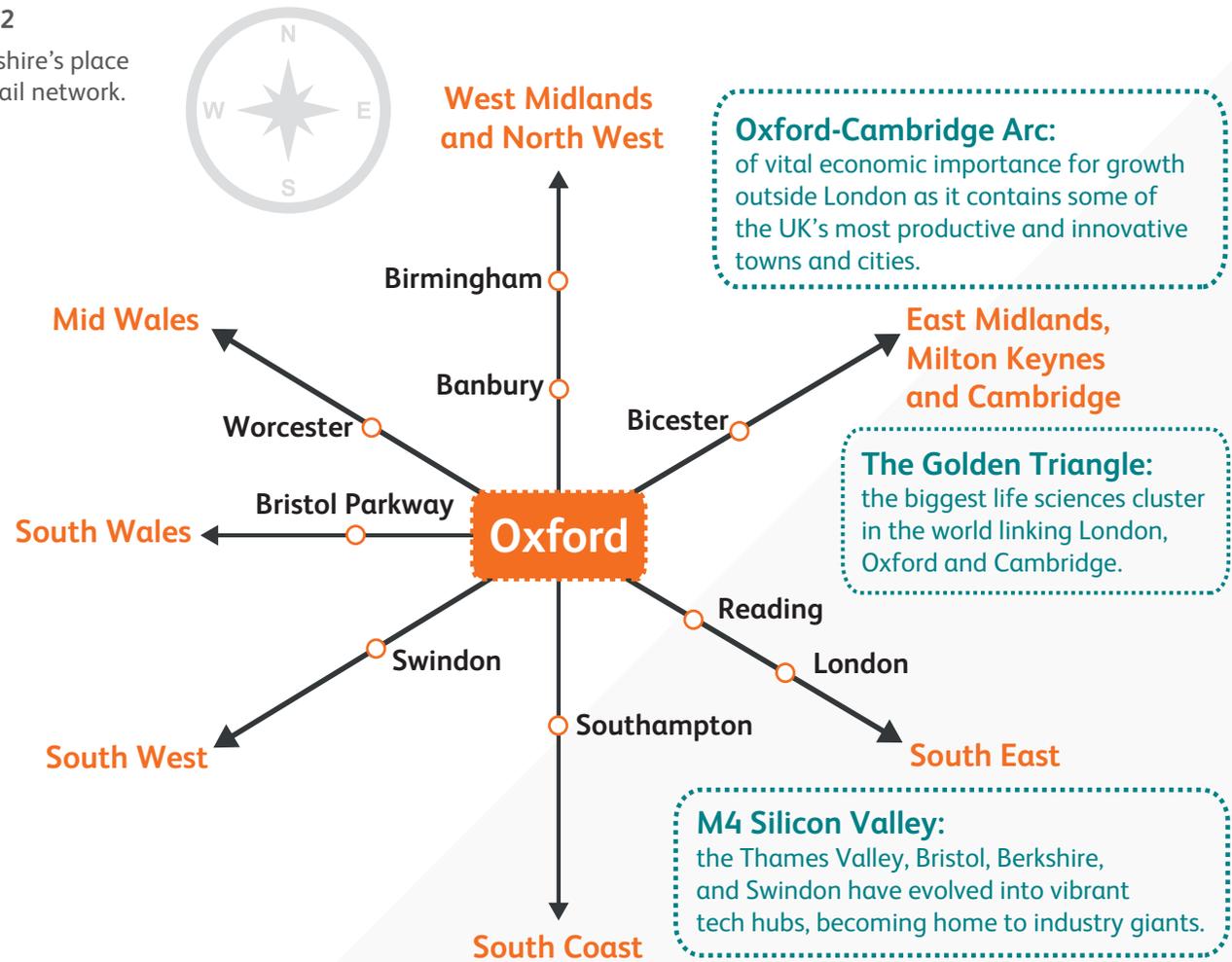
Oxford is positioned at the heart of a rail corridor linking the Great Western Main Line (GWML) at Didcot to the Thames Valley and the west, with London Marylebone and Birmingham to the north. This corridor is vital for passenger and freight services between the north and south of the country and provides rail connectivity through the north Cotswolds to Worcester, and to Bicester (and in future to Bedford and Cambridge) reconnecting the east to the west.

Oxfordshire’s rail system – which functions as a strategic hub for local, regional and national passenger services and freight – has accommodated significant growth in the last ten years, but there is now little capacity for any further growth or connectivity improvements on the existing rail network.

Demand for rail travel in Oxfordshire has grown rapidly and well above the UK average. Journeys to and from stations in Oxfordshire have increased by 75% in the 10 years to 2018 against a UK average increase of 44%, with growth in the last 5 years particularly significant, averaging 5.2% annually against a national average of 2.7%.<sup>4</sup>

<sup>4</sup> <https://www.orr.gov.uk/>

Figure 2  
Oxfordshire’s place in the rail network.



# Oxfordshire Rail Corridor Study (ORCS)

The Oxfordshire Rail Corridor Study assesses the impact of planned growth in jobs and housing on Oxfordshire’s rail system and identifies the role that rail can play to support the delivery of that growth. It reflects and aligns with both the Housing and Growth Deal and the Oxfordshire Local Industrial Strategy.<sup>5</sup>

ORCS identifies a suite of conditional outputs – *statements of what the rail system must deliver* – to deliver anticipated growth and identifies strategic rail interventions required. Led by Network Rail, in collaboration with industry partners including the Department for Transport (DfT), local authorities and train operators, the study was overseen throughout by the Oxfordshire Growth Board.

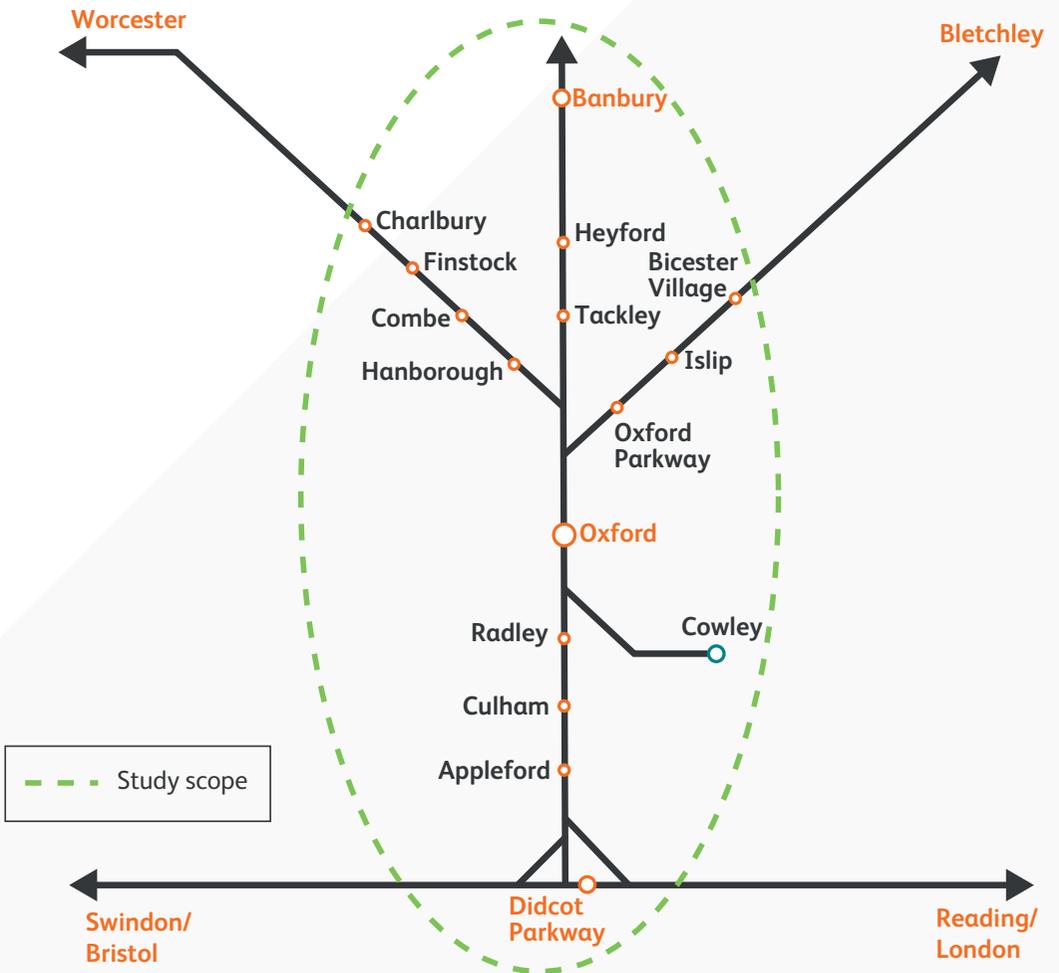
A joint steering group was established including all study partners to coordinate the study. Oxfordshire County Council represented the views of other important stakeholders including Oxfordshire Local Enterprise Partnership and Oxfordshire’s district councils.

## Scope area of the study

The scope of the study is the railway through Oxfordshire, between Didcot and Banbury, the lines to Bicester Village and the North Cotswolds and includes the Cowley branch line.

The study considers all passenger and freight train services, stations and freight terminals through or within the scope area.

Figure 3  
ORCS study scope area.



<sup>5</sup> <https://www.oxfordshirelep.com/lis>

## What does ORCS do?

ORCS provides a strategic vision for the proposed development of rail services in Oxfordshire that addresses connectivity gaps and aligns major programmes seeking to introduce new services; allowing rail to play a full role in supporting sustainable economic growth.

It provides an evidence-based set of rail outputs and enhanced train services required to support forecast passenger and freight growth in the short-term to 2024; in the medium term to 2028 and the long-term (2033). This identifies, at a high level, the railway system interventions required to enable the enhanced indicative train service to be provided to accommodate this future growth up to 2033.

The study follows the four-stage approach of the industry's long-term continuous modular strategic planning process. These stages, which build upon one another, describe the future role of rail in supporting Oxfordshire's growth.

### Four long-term planning stages:



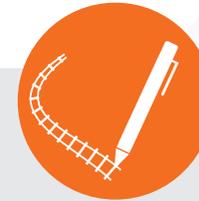
#### Stage 1:

Undertake market analysis and forecast growth scenarios for rail travel in and through Oxfordshire



#### Stage 2:

Define Conditional Outputs for rail in Oxfordshire that meet market needs



#### Stage 3:

Propose an Indicative Train Service Specification that delivers the Conditional Outputs



#### Stage 4:

Identify changes required to deliver the Indicative Train Service Specification and choices for funders and service specifiers

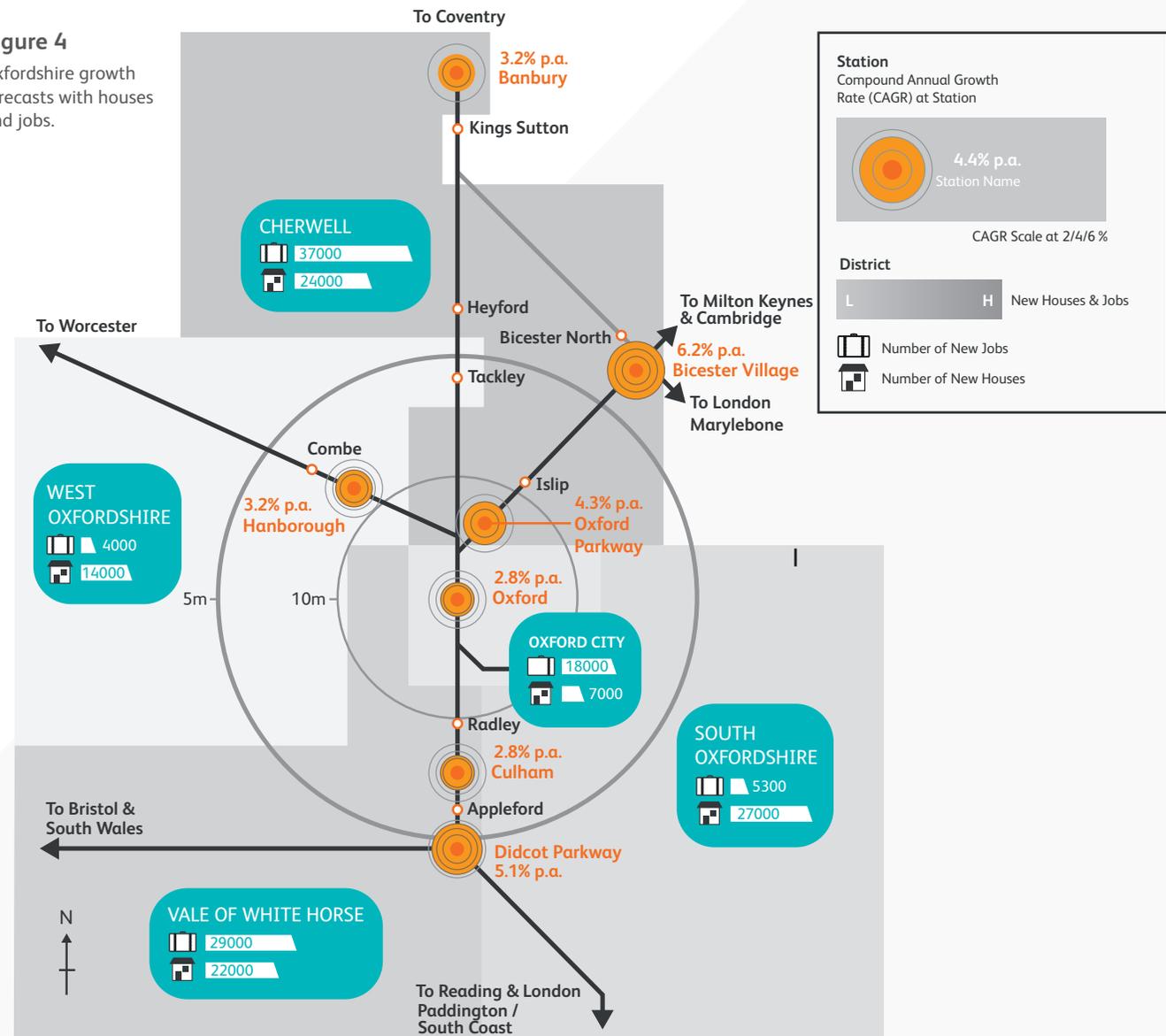
# Stage 1: The Oxfordshire Planned Growth Scenario

The study develops locally-driven short, medium and long-term rail demand forecasts specific for Oxfordshire rail markets using the committed and planned growth forecasts for housing and jobs – taken from local planning documents.

The growth forecasts reflect the precise pattern and scale of growth for rail for anticipated passenger and freight demand. This demonstrates that most of the additional and amended train services proposed in the study could be required by 2028 based on anticipated levels of passenger growth.

ORCS forecasts for freight growth across Oxfordshire combines the updated rail industry Freight Market Study (2018) plus an assessment of the potential usage of the East West Rail route for rail freight. This calculation identifies the capacity requirement for freight services based on freight trains per day and per-hour, demonstrating an anticipated need of a 50 % increase in capacity.

**Figure 4**  
Oxfordshire growth forecasts with houses and jobs.



# Stage 2: Conditional Outputs for Oxfordshire's Rail System

The conditional outputs are a set of quantitative statements of the proposed rail outputs required to support the delivery of the growth forecasts created in the first stage.

The Conditional Outputs focus on Connectivity (including journey time improvements) and Capacity requirements:

## Connectivity

- Better connectivity between:
  - the seven growth hubs that are forecast to see significantly higher growth: **Banbury, Bicester Village, Culham, Didcot Parkway, Hanborough, Oxford, and Oxford Parkway;**
  - key intermediate stations in the Didcot – Oxford – Bicester corridor such as **Culham and Oxford Parkway;**
- Most passenger services should be extended across Oxford to link growth areas, rather than terminating at Oxford station;
- The provision of new direct services from Oxford to Swindon/Bristol plus strengthening connections with Birmingham, Worcester and the South Coast;
- Improve connectivity between Oxford and Heathrow Airport.

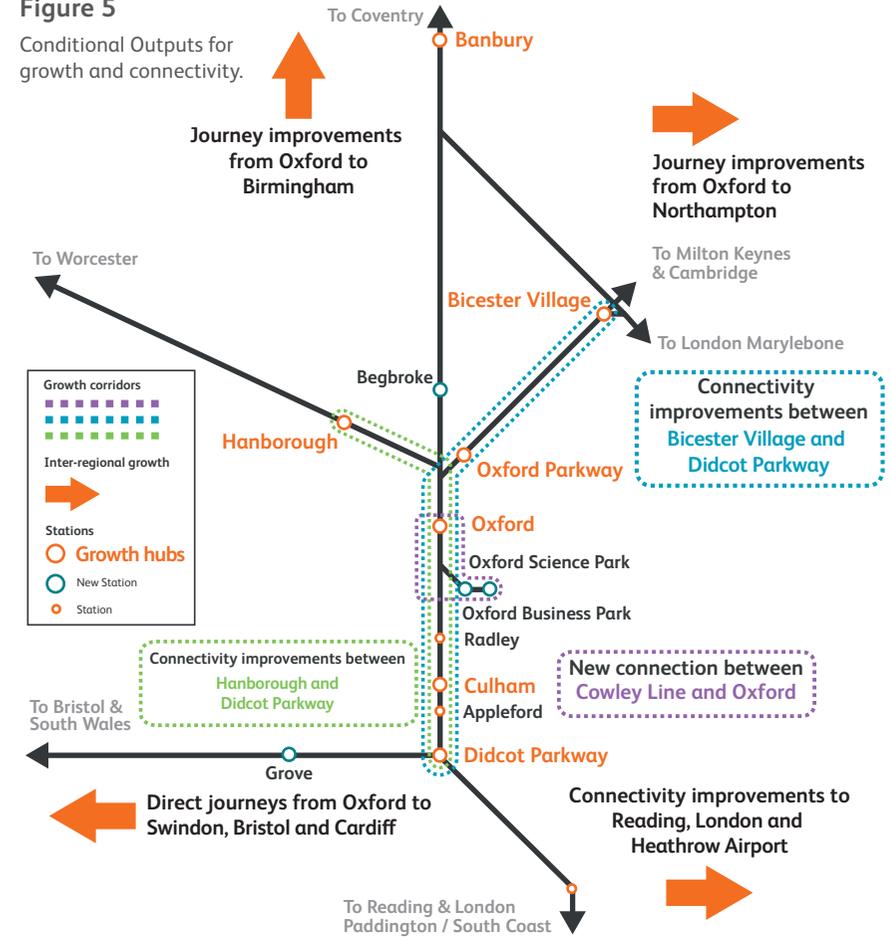
## Capacity

- Additional capacity to accommodate forecast growth on the following passenger services:
  - Oxford – Banbury from 2024; Oxford – Didcot from 2028 and Oxford Parkway and Bicester Village–London Marylebone from 2028.
- East West Rail (Oxford to Milton Keynes and Bletchley) will provide enough extra capacity to meet forecast demand on the Bicester – Oxford corridor, so long as it is operating by 2024; and
- Freight is forecast to increase significantly to six freight paths per hour in 2024 (currently 4 paths per hour), and seven paths per hour by 2033, using longer, heavier trains – predominantly across the Strategic Freight Network between the Port of Southampton and the West Coast.

These outputs can be met in various ways, such as adding carriages to existing trains; removing the need to change train; altering the calling pattern of trains, or by more frequent services by, for example, extending services or introducing new services. This is assessed in the next stage.

Figure 5

Conditional Outputs for growth and connectivity.



# Stage 3: Oxfordshire Indicative Train Service Specification

Using the anticipated growth scenarios and conditional outputs, a suite of potential future train services that deliver the Conditional Outputs has been created to produce a strategic vision for the development of passenger and freight services: an Indicative Train Service Specification.

Existing services and planned programmes were the starting point, and where conditional outputs are not met amendments to services and new services are recommended.

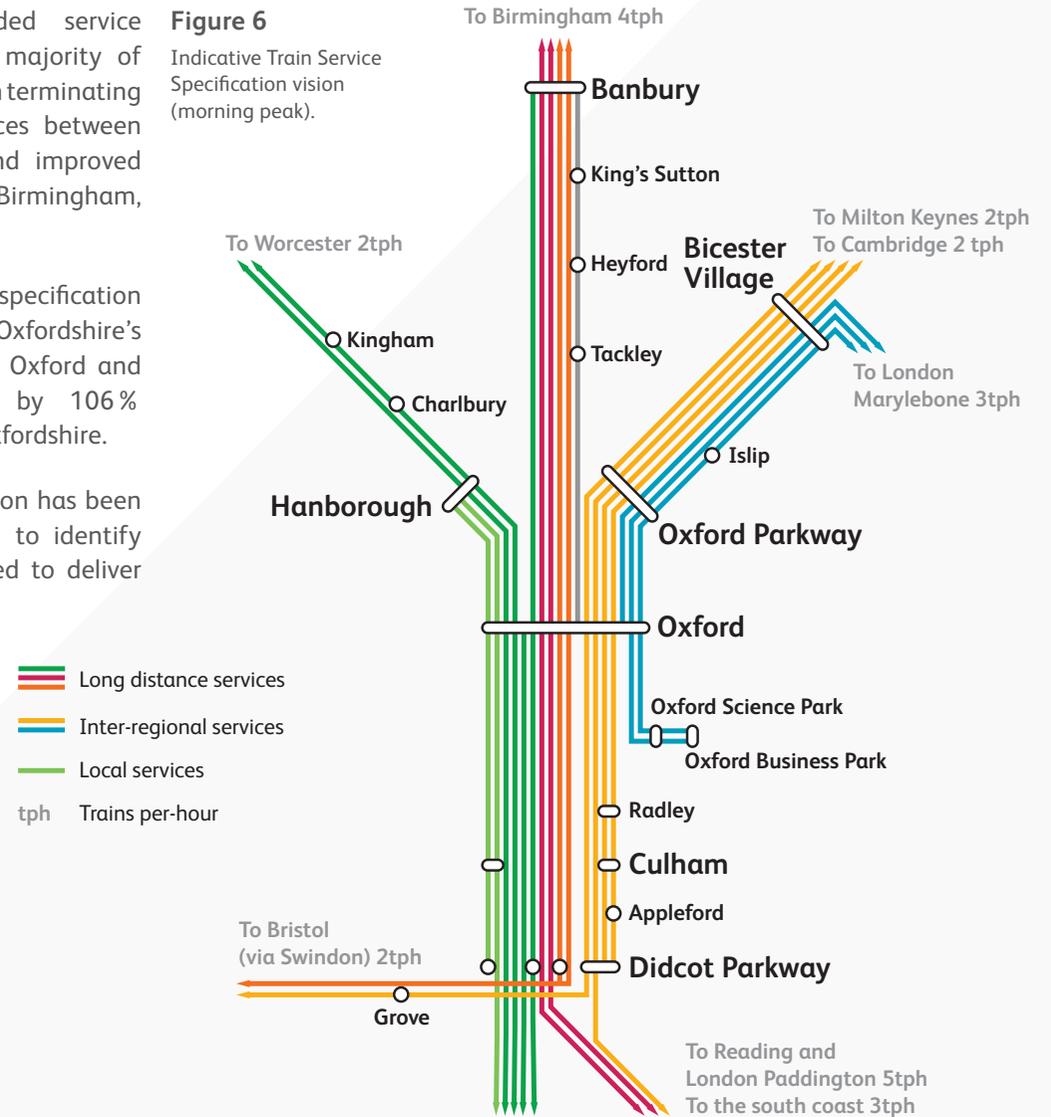
Overall, a 70% increase in the number of services is recommended alongside amendments to existing calling patterns and service coverage. Recommendations consider the East West Rail programme and the aspirations of Midlands Engine Rail and North Cotswolds Line Task Force and suggest how these could be reconfigured to best support growth in Oxfordshire.

Key features of the recommended service specifications are extension of the majority of passenger services through, rather than terminating at, Oxford station, new direct services between Oxford and Bristol and Swindon and improved connections between Oxfordshire and Birmingham, Worcester, and the South Coast.

The proposed 2033 train service specification improves direct connections between Oxfordshire's growth hubs by 160% and between Oxford and priority inter-regional connections by 106% bringing economic benefits beyond Oxfordshire.

This indicative train service specification has been assessed against today's rail system to identify where interventions would be required to deliver them as part of the next stage.

**Figure 6**  
Indicative Train Service Specification vision (morning peak).



# Key Output 4: Oxfordshire Rail System Interventions

In order to deliver stage 3 (the Oxfordshire Indicative Train Service Specifications) a number of interventions are required.

Some interventions can be associated with individual service enhancements, such as the North Cotswold Task Force service aspirations and Cowley Branch Line infrastructure for Cowley services, whilst the majority represent a system upgrade between Oxford North Junction and Didcot to unlock the portfolio of new services proposed to support growth in Oxfordshire.

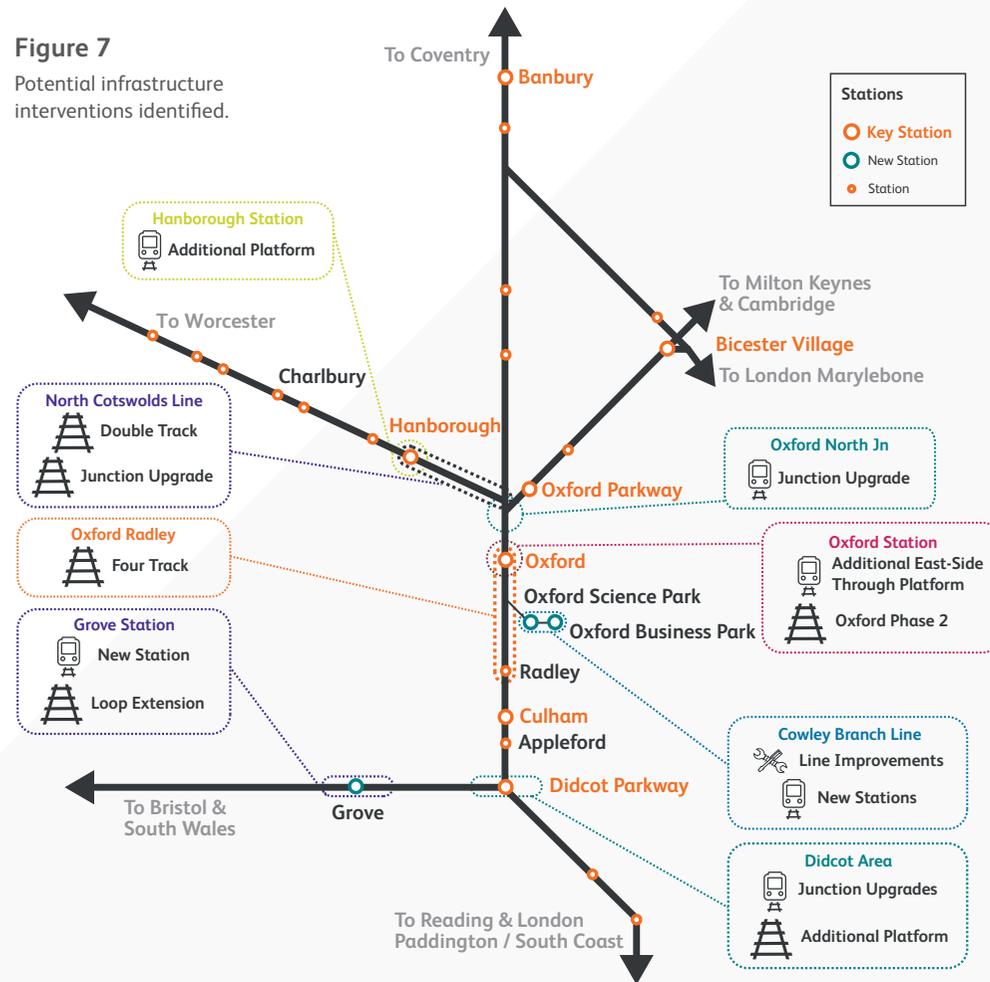
Delivery of the rail enhancement scheme referred to as Oxford Phase 2 (high-speed crossovers, level crossing improvements and additional platform and associated station works) is critical to support these services from 2024 and provides the base for any further growth.

Key interventions identified include Oxford station, which should be developed following the principles of the current station masterplan that is being developed with the City and County councils, four tracking between Oxford station and Radley, and making the Cowley branch line fit for passenger services. Alongside interventions that are essential to deliver the specifications, some are identified that may need to be required to provide a robust train service. The identified suite of proposed interventions comprises a system that could support growth in the long term.

Subject to funding, these interventions could form the priorities for high level feasibility work to assess their engineering and operational feasibility, their deliverability, affordability and value for money.

Figure 7

Potential infrastructure interventions identified.



The strategy demonstrates how rail can support jobs, housing and economic growth through an improved service provision across Oxfordshire, predominantly through offering connectivity improvements to increase the attractiveness of rail. The outputs of the strategy are a proposed suite of rail improvements presented as choices, to funders.

The key themes of the strategy are:

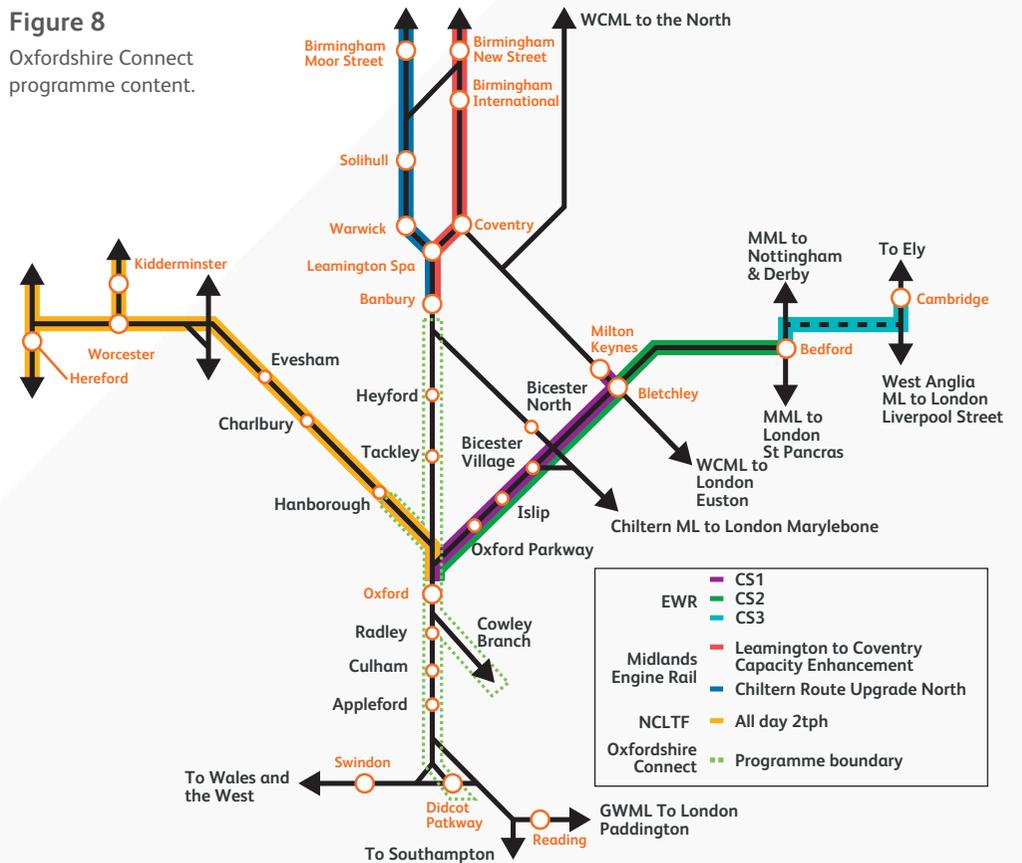
- Improved connections across Oxford (especially Bicester Village – Didcot Parkway and Hanborough – Didcot Parkway);
- Improving Oxford’s connections with priority inter-regional economic hubs along the Didcot – Oxford – Bicester corridor, such as Culham and Oxford Parkway;
- Supporting growth in seven Oxfordshire hubs by improving inter-connectivity: Oxford, Didcot Parkway, Oxford Parkway, Bicester Village, Banbury, Hanborough, and Culham;
- The significance of Cowley branch passenger services; and
- Supporting rail freight through Oxfordshire which is forecast to grow with Oxfordshire’s rail system continuing to have a vital place in the Strategic Freight Network.

Central to the strategy is Oxford Station. This is the critical enabler to unlock capacity and connectivity across the region, with delivery of the additional platform, station works and bridge enhancements under Phase 2 the first step towards this.

ORCS provides an integrated strategy for aligning the major rail programmes that are seeking to introduce new services into Oxford (East West Rail, Midlands Engine Rail (Leamington to Coventry Capacity Enhancement, Chiltern Route Upgrade North) and North Cotswolds Line Transformation) and collectively identifying the most optimal way to deliver these. Without the ORCS strategic vision, indicative service specification and identified interventions, these aspirations become mutually exclusive.

Figure 8

Oxfordshire Connect programme content.



## Next Steps

**Now the study is complete, the next step is to progress the strategy into a rail investment programme for Oxfordshire. Drawn together this will generate an overarching integrated industry programme of strategic interventions known as ‘Oxfordshire Connect’. This will present a cohesive vision for how rail programmes can be aligned, developed and delivered.**

Oxfordshire Connect will be the vehicle used to take forward the recommendations from ORCS, into the Rail Network Enhancements Pipeline (RNEP) to seek funding. Strategic interventions will need to be prioritised; development and delivery strategically phased and co-ordinated to enable project synergies to be utilised to maximise benefits and minimise impacts on passengers and customers.

The Oxfordshire Connect programme formally entered RNEP in March 2021. Development work will continue to progress the priority interventions identified to the next stage of business case development, subject to funding.

The development of the Oxfordshire Connect programme, can inform wider bidding and funding opportunities to support the implementation of the vision and provide supporting evidence for related programmes including the Oxfordshire Local Industrial Strategy Investment Programme and the Oxfordshire Plan 2050. We will need to develop a strong funding strategy to be able to achieve these Oxfordshire Connect aspirations.

Many of the County’s science parks, innovation districts and research assets will see enhanced connectivity through the county’s rail hubs as a result of Oxfordshire Connect. Key business and research locations including Oxford’s West End Innovation District, South Oxford Science Village, Harwell Technology Campus, Culham Science Centre, Milton Park and Bicester will all benefit significantly.

The outputs of ORCS have been endorsed by a cross-industry Steering Group and should be considered as the bases of strategic rail planning for Oxfordshire. Continued engagement with the many beneficiaries of this extremely ambitious programme of rail investment is essential.

We look forward to working with you to achieve the transformation of rail across Oxfordshire.



The logo for Oxfordshire Connect features a stylized 'O' on the left, followed by a colorful 'X' composed of four arrows pointing towards each other in blue, green, orange, and pink. To the right of the 'X' is the word 'OXFORDSHIRE' in a bold, dark blue, sans-serif font. Below this, the word 'CONNECT' is written in a larger, dark blue, sans-serif font.

## Find out more at:

[www.networkrail.co.uk/running-the-railway/our-routes/western/oxfordshire](http://www.networkrail.co.uk/running-the-railway/our-routes/western/oxfordshire)

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](http://networkrail.co.uk)

Company number: 4402220  
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