

To: Oxfordshire Growth Board
Title of Report: Oxfordshire Rail Corridor Study
Date: 28 January 2020
Report of: Bev Hindle, Growth Board Programme Director
Status: Open

Executive Summary and Purpose:

The purpose of this report is to set out the findings of the first stage of the Oxfordshire Rail Corridor Study, a programme of work part-funded by the Board and other partners. This stage of work has comprised a strategic analysis of “how can the rail system best support economic growth in Oxfordshire”, focusing at this stage on planned growth (as set out in Local Plans), the ambitions for the economy set out in the Oxfordshire Local Industrial Strategy (LIS) and the additional rail capacity and connectivity which will be required, covering passengers and freight. The report also summarises the outcomes of the specific report done on the potential to re-open the Cowley branch line for passenger services. The report concludes with a proposed approach for the next stage of this work programme.

Recommendations:

1. That the Growth Board welcomes the outcomes and conclusions of the first stage of the rail corridor study.
2. That the Growth Board approves the proposed next stages of work.

Appendices:

Annex 1 - Study scope plan
 Annex 2 – Oxfordshire Rail Corridor Study Executive Summary and Recommendations
 Annex 3 – Service Enhancements Overall and in Morning Peak from Oxford
 Annex 4 – Testing against for Conditional Outputs in 2028 and 2033

Introduction

1. The Oxfordshire Rail Corridor Study (ORCS) was commissioned by Central Government following the 2017 budget. It is a new model, based on partnership funding between DfT and Stakeholders, including the Growth Board. Other funding partners include England’s Economic Heartland, the East West Rail Company and principal train operators. Facilitated by County and City officers, the Study has been overseen by Steering Group which has given strategic direction and has been co-chaired by the Growth Board Strategic Director.

2. The Growth Board approved the project remit and financial contribution in June 2018, enabling DfT funding to be released.
3. The first stage of work has comprised two main workstreams:
 - An overall strategic study of the rail network focusing on central Oxfordshire (see map in annex 1) focusing on rail system capacity and connectivity requirements to best support economic growth in Oxfordshire
 - A specific study looking at the engineering feasibility / rail infrastructure requirement for re-opening the Cowley branch line, with the scope (at this stage) limited to the branch only
4. The second stage of work will take forward the priorities identified in stage 1 for a more detailed level of analysis similar to that undertaken for the Cowley study. The proposed areas of further study are identified later in the report.
5. The detailed study report, and a summary version, are being finalised by Network Rail over the next few weeks, with approvals to be sought via their decision making processes and those of the Department for Transport.
6. At this stage, an Executive Summary of the report and the Recommendations of the Study (including proposals for the next stages of work) have been put together in one document, which is attached as Annex 2. These will also require final approval as part of the final, completed study report. Once this has happened, the final report will be circulated to Growth Board members.

Background

7. The Rail Corridor study is a strategic priority project for Oxfordshire, as it will:
 - Establish the priorities for rail investment in Oxfordshire, building upon (and updating) the work completed as part of the Oxfordshire Infrastructure Strategy;
 - Demonstrate how prioritised rail investment can support the economy and development in Oxfordshire, including the Housing & Growth deal (and the commitment to housing provision it includes) the Oxfordshire LIS and the Oxfordshire Plan 2050;
 - Ensure that the opportunities and benefits of proposed national rail investment (in particular the planned phases of East West Rail) can be secured.
8. The Study followed the new industry approach to long term planning, which is based on a continuous 'pipeline' for rail enhancements. It considered 4 strategic questions focused on supporting and enabling housing, jobs and economic growth in Oxfordshire:
 - **Planned Growth:** What is required from the rail network in Oxfordshire to support planned growth to 2031? – **the subject of this report**
 - **Additional Growth:** How can the rail network in Oxfordshire influence the location and scale of additional growth sites? - to be considered alongside the development of Oxfordshire Plan 2050 and the economic ambitions set out in the Oxfordshire LIS
 - **Freight:** What does the rail freight industry require of the rail network in Oxfordshire? – **the subject of this report**

- **Technology:** How can new technologies be used to improve operation of the rail network in Oxfordshire? – initial thinking set out in this report
9. The Study has a baseline of 2018, with demand forecast intervals of 2024, 2028, 2033, 2038 and 2050 and has three growth scenarios:
- **Do nothing:** based on a Department for Transport annual growth rate;
 - **Do minimum:** *do nothing* plus planned rail schemes, in particular Oxford Station Phase 2 and East West Rail Phase 2;
 - **Planned growth:** housing & employment growth allocated to specific sites (note includes all currently proposed Local Plan growth)
10. At this stage, whilst the study has not identified specific solutions or projects for investment, it has identified (at a high level) likely interventions which will be required on the network, based on a proposed level of enhanced train service. Securing these interventions will ultimately depend on affordability and value for money and need to be deliverable and fundable.
11. These requirements can be met in a number of ways: additional capacity, new services, more frequent services, removing the need to change trains or altered stopping patterns. Further stages of the study will look at these in more detail, to enable a programme of projects to be considered for entry into the Rail Network Enhancement Pipeline.

Study Process

12. For passenger services, the study examined and set out an evidence base for how planned growth would lead to enhanced rail provision, in two main ways:
- i. Increased **Capacity** requirements, in the form of additional carriages.
 - ii. More significantly, better **Connectivity** between key rail hubs, using the measure of generalised journey time, a combination of on-board journey time, waiting time (i.e. frequency) and any time change trains (i.e. connection time). This work focused on seven main growth hubs requiring better connections: Banbury, Bicester, Culham, Didcot, Hanborough, Oxford and Oxford Parkway
13. These two needs were then translated into a proposed **Train Service Specification**, setting out the extra services needed to provide the extra capacity and improvements to generalised journey time required, with analysis focusing on peak travelling hour requirements (albeit that off-peak is also considered).
14. The Study also looked at the potential development of four **new stations** - two on the Cowley branch line (close to the Oxford Science and Business Parks), at Grove/Wantage and at Begbroke. It considered each station and the potential demand from planned housing and/or employment growth in its immediate vicinity including their economic potential as set out under the Oxfordshire LIS. At this stage, it is not a robust demand forecast and has not included detailed consideration of wider catchment areas that would result from any new rail offer or means of access to new stations. Both need to be considered in more detail.
15. Although the focus has been on Oxfordshire, the study has included the potential and opportunities for inter-regional / national rail connections from a number of major hubs, including Birmingham, Northampton, Bristol, etc.

Study Findings and Outcomes

16. These have been reported against the scenario years tested. Owing to the focus on Planned Growth, the 2024, 2028 and 2033 scenarios are most relevant

17. **Capacity** – the main headlines are:

- Significant additional capacity is required to relieve congestion on Cross Country services north and south of Oxford (and therefore through the station), with some additional capacity needed by 2024, and more services required by 2028, plus additional capacity the local Oxford-Didcot corridor from 2028.
- East West Rail Phase 2 (Oxford to Bedford and Milton Keynes) will significantly increase demand at key stations, such as Bicester Village, Oxford Parkway and Oxford, but there is sufficient capacity to meet forecast east-west demand on this corridor assuming this service comes into operation. There is also a requirement for additional capacity on existing services in and out of London Marylebone

18. **Connectivity**. This was the most significant finding of the study work, as:

- The Study identified the need for around 20 priority connections within Oxfordshire to be improved, as measured by ‘generalised journey time’.
- Particularly notable is the need for much better connectivity for trips through Oxford linking main growth areas or hubs across the “Innovation Ecosystem” as set out in the Oxfordshire Local Industrial Strategy, for example on the Didcot-Oxford-Bicester ‘Knowledge Spine’, both for end-to-end journeys and between intermediate stations at Culham and Oxford Parkway for example.

19. **Resulting Train Service Specification**. The tables set out in annex 2 identify these by time period. Of greatest strategic relevance are:

- The proposal to extend half-hourly East West Rail Phase 2 services through Oxford down to Didcot, calling at Culham, when EWR begins running in 2024. This would require further consideration on how it is achieved with the DfT and key Stakeholders in the East West Rail programme. Subject to this, it would restore the EWR service pattern originally envisaged, directly connect Bicester with Didcot, facilitating a new “innovation rail corridor” connecting significant science and employment opportunities being created along this line, including development of Culham as a rail hub.
- The requirement for a major uplift in services across the network by 2028, bringing forward proposals not previously considered needed until at least 2033. These include Cowley branch services, proposed service enhancement on the North Cotswold Line (two new local services connecting Hanborough and Didcot), two additional hourly ‘cross country’ services (doubling the current offer) and introduction of the full EWR service to Cambridge. In addition to this, the proposals include extending these EWR services beyond Oxfordshire to Bristol and Southampton. This would result in a significantly enhanced “inter-regional” service offer, as depicted in Annex 3. However, this

will require further consideration, as it as it goes significantly beyond the current specification of East West rail services.

- At this stage with the requirements for future growth to be agreed, the analysis of what additional services are required (over and above the 2028 provision) by 2033 simply adds further EWR services between Oxford and Cambridge

20. **New stations.** The conclusions at this stage are:

- The two stations on the Cowley branch line have the strongest justification, mainly owing to the proximity of proposed strategic housing allocations at Grenoble Road and Northfield Brook.
- A station at Grove/Wantage could also be justified by 2028 on the basis of the new housing currently being built or being planned for in the area and emerging proposals for further employment growth, including the Williams Technology Campus.
- A potential station at Begbroke is included, albeit currently in the 2033 scenario. This would support the development of a Global Innovation Campus with significant employment growth alongside planned housing growth, though further work will be required to justify the case for a station, partly due to its proximity to other rail hubs (especially Oxford Parkway).
- Any further development of the new stations at Begbroke and Grove should be based on the interventions identified as necessary in this study. It should be recognised that each involves significant infrastructure beyond the building of the station in order to fit with the proposed Train Service Specifications. For Grove the likelihood that interaction with fast Great Western Main Line services will drive more significant interventions should be recognised

Assessment against Study objectives

21. As annex 3 shows, the proposed service enhancements to achieve capacity have been tested against the outputs sought to enhance Connectivity. The table shows that, by 2028, 14 out of 19 are met, including the top 8 priorities, some with significant improvement. Of those that aren't, three are trips it would be counter-intuitive to take in most cases (Hanborough to Banbury for instance).
22. It is notable that the vast majority of outputs continue to be met in future years up to 2050. In other words, the service enhancements proposed would be sufficient to deal with planned growth up to 2050, *if no further growth was proposed in Oxfordshire*. This effectively means that growth identified through the Oxfordshire Plan 2050 would require a further set of service enhancements.
23. Heathrow Connectivity – this is achieved (but only just) through the delivery of the Western Rail Link to Heathrow by 2028 – with the frequency of connections at Reading sufficient.
24. Inter-regional connections - Although the study is Oxfordshire-centric, it takes into consideration rail proposals being developed by other bodies, such as Midlands Connect, which have a bearing on the solutions identified to meet output requirements. These may also increase the justification for investment by combining strategic and local benefits. For example, the Study supports direct

services to Bristol, Swindon and Northampton (via EWR at Milton Keynes) as a means of improving connectivity through reduction in generalised journey time.

Cowley Branch Line

25. Network Rail have completed the outline definition study for re-introducing passenger services on the Cowley line. A summary report of this work is available as a background paper. The main conclusions of the report are:
- It is clearly feasible in engineering and operational terms to restore services on the line itself, with a (relatively) low infrastructure investment cost of between £29m and £38m for the basic level of provision, rising to £35m to £53m with potential enhancements. This excludes costs for land acquisition for stations, but land required is largely under control or has low risk in terms of acquisition
 - Track improvement works on the branch mean a doubling of line speed to 50mph and journey times of less than 10 minutes to/from Oxford
 - As previously raised however, this service cannot be achieved without capacity enhancement on the main line through Oxford down to Kennington junction, which is over and above enhancements currently committed.
26. Bringing the two pieces of work together, the strategic study outcomes – which as referenced include the extension of services from London Marylebone through Oxford to Cowley – directly support the strategic case for the Cowley Branch Line. Subject to confirmation as part of the next stage of work, the expectation is that main line interventions would be included in the scope of Phase 3 of the Oxford Station project, currently not a committed scheme.

Freight

27. Similar work has been undertaken on freight, looking at capacity, opportunities and what some of the detailed requirement would be. There is recognition that the rail network through Oxford is critical for freight operations – and that there is an opportunity to support major infrastructure projects with rail freight. At this stage, the number of freight paths (both directions) between Didcot and Oxford is predicted to rise from 6 in 2023, to 7 by 2024 and 8 by 2043.

North Cotswold Line

28. The findings of this Study are fully consistent with the work which has been taking place on the Cotswold line, led by the North Cotswold Line Taskforce. The Taskforce has now submitted the Strategic Outline Business Case for the next stage of work to develop the proposals further, which will be considered alongside the next stages of this study, as set out below.

Next Steps

29. Endorsement of the completed Stage 1 study report is also being sought from the DfT and Network Rail decision making bodies, as well as funding Shareholders including England's Economic Heartland and the East West Rail Consortium. This is expected to be completed, and the full study report finalised and published, over the next few weeks.

30. The report also sets out the proposals for the next stages of work to complete the study. A number of options have been considered, with the proposal to take forward a programme of study works – whilst the highest priority projects have been identified, recognising that within the current funding envelope not all of the study work necessary may be able to be completed. There will also be several future stages if work undertaken if the envisaged Train Service Specification and other outcomes of this stage of work are to be achieved.
31. Specifically, it is clear that the highest priority for more detailed consideration and analysis is the core rail corridor between Oxford North Junction through Oxford Didcot, as this is fundamental to the rest of the rail network through Oxfordshire. Building on work previously done, there is a clear need to understand the likely scope, scale and cost of the interventions that would be required on this corridor to enable the proposed Train Service Specification, including Cowley branch line proposals. Work on this next stage, to develop four tracking options, Oxford Station requirements and capacity analysis, is proposed to commence in March and last approximately 9 months.
32. In addition, on the same timeframe, it is proposed to undertake a more detailed study of the Didcot to Swindon section of the network, including the junctions to the north and east of Didcot - it's clear that the Didcot area needs to be considered as whole system in order to understand the need for and options around Didcot East junction enhancement, and the relationship with platform and track configuration in the station area. This will also enable additional services to and from the west to be considered, which also takes in Grove station.
33. It is also important to consider the interventions required to deliver the North Cotswolds Line services through an integrated approach with the North Cotswolds Line Task Force programme, which is proposed to be taken forward alongside the next stage of this wider Oxfordshire study.
34. The overall study programme still needs to reach a view on how additional growth expected up to 2050 (being considered in the emerging Oxfordshire Plan 2050) is taken into account. This would enable the study to identify potential interventions that provide the capacity and connectivity necessary to accommodate passenger and freight growth over a 30-year timeframe
35. It is expected that the next stage of work would be completed and reported back to the Growth Board by early 2021

Financial Implications

36. None specific at this stage – the next identified stages of work are fully funded

Legal Implications

37. None specific at this stage

Other Implications

38. The main risk at this stage is ensuring that, beyond the current funding identified, sufficient funding is made available to complete the full programme of study work
39. The study conclusions and recommendations for next steps also need to be agreed by England's Economic Heartland and the EWR Consortium as funding shareholders. However, the findings appear to support the aspirations of both organisations and, in the case of EEH, would inform wider rail study work.
40. It is important that regional and national level decisions on rail consider these emerging findings. So, for example, the current remit for the East West Rail Company is for operation of services between Oxford, Milton Keynes / Bedford and, eventually, Cambridge. If the outcomes of this study are to be achieved, this remit may need to change to enable services to continue through Oxford.
41. There are no specific environmental impacts or implications to note at this stage, but it is worth referencing that extension of rail electrification to Oxford remains under consideration and the rail industry is looking nationally at how it helps reduce its carbon impact.

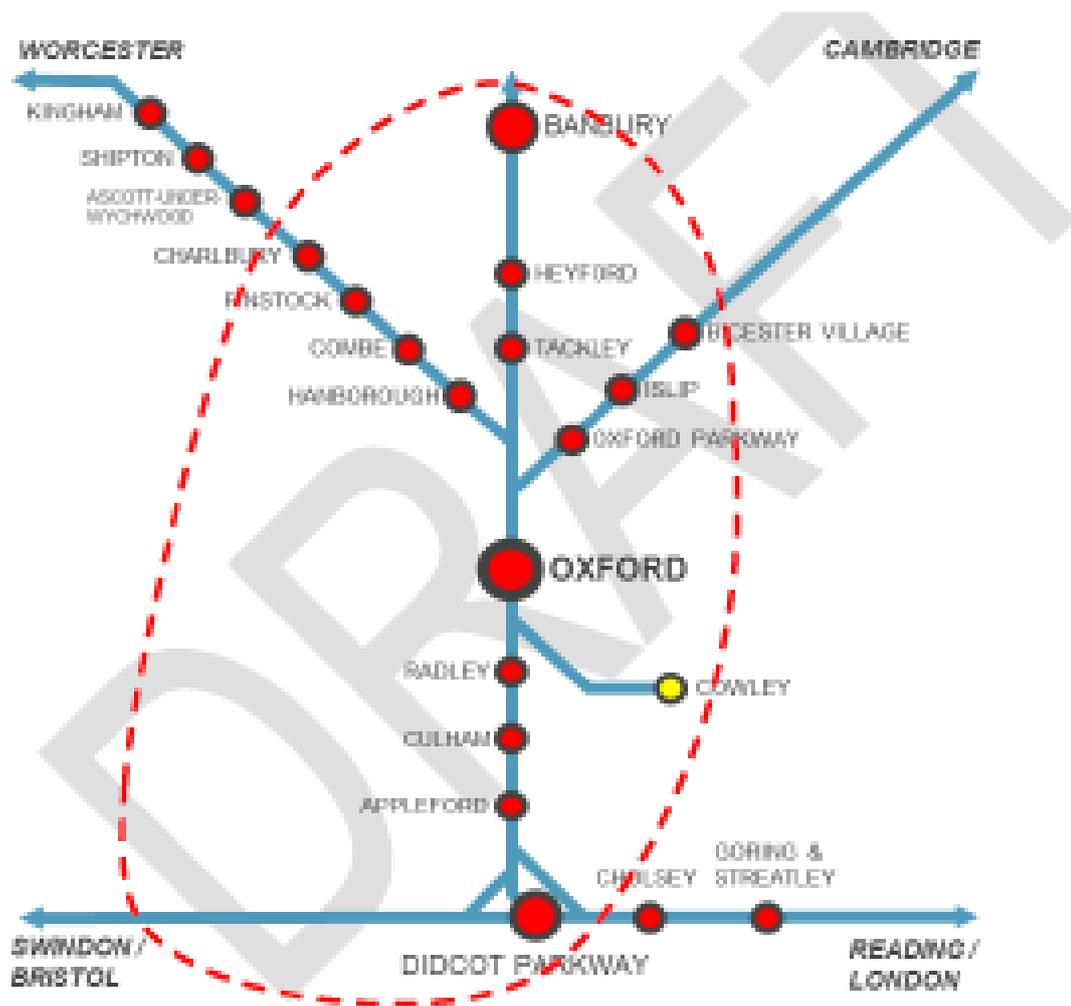
Conclusions

42. The outcomes of the first stage of Rail Corridor Study work are generally very positive. They clearly demonstrate that Rail can have a critical role in supporting planned growth and significant employment opportunities across Oxfordshire and the opportunity exists to develop and enhance the rail offer with significant additional capacity, much improved connectivity which can link our major employment hubs, new stations and a step change in rail travel options which can facilitate the significant modal shift which is going to be required to help meet the 'Climate Emergency' agenda. Likewise, the specific piece of work on the Cowley branch line shows its clear potential.
43. As the tables and plan in Annex 3 show the proposals outlined in the study would place Oxford in a central position as a major UK rail hub for inter-regional travel, as well as providing significant rail connectivity and capacity benefits locally.
44. In order to fully demonstrate the case and justification for further rail investment in Oxfordshire, the next stages of work identified need to be completed, which will enable specific projects and interventions to be taken forward for business case submission, enabling access to the rail industry 'pipeline' of projects.
45. To achieve this, it is important that the Board endorses the proposals for the next stages of study work as set out in paragraphs 31 and 32.

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Annex 1 – Study Scope



Annex 2 – Study Executive Summary, Recommendations and Next Steps

Oxfordshire Rail Corridor Study

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

Executive summary

Oxfordshire is one of the most productive economic regions in the United Kingdom and will enjoy uniquely high growth over the next fifteen years as a result of the Housing and Growth Deal agreed with government. Housing and employment growth must be supported by a transformation in transport infrastructure. Oxfordshire’s rail system – which functions as a strategic hub for local and national services – has accommodated significant growth in the last ten years but has little further capacity and does not link important hubs within Oxfordshire.

The Oxfordshire Rail Corridor Study assesses the impacts of planned growth on Oxfordshire’s rail system and identifies the role the system can play to support growth. It delivers four key outputs that build sequentially to describe the future role of rail in supporting Oxfordshire’s growth:

- The Oxfordshire Planned Growth Scenario – short, medium, and long-term forecasts of Oxfordshire’s rail markets forming an evidence-based mandate for improvements
- Conditional Outputs for Oxfordshire’s Rail System – a set of objective, quantitative statements of the rail outputs required to support the OPGS
- Oxfordshire Train Service Specifications – a recommended suite of industry-aligned and endorsed proposals for train services that deliver the Conditional Outputs
- Oxfordshire Rail System Interventions – a prioritised list of the system enhancements required to deliver the Oxfordshire Train Service Specifications

The housing growth already committed in Oxfordshire is delivering population and employment increases well above the national average. The Oxfordshire Planned Growth Scenario converts this growth into locally sensitive rail demand forecasts that reflect the precise pattern and scale of growth. These show that demand for rail in Oxfordshire will increase significantly more than would otherwise have been forecast.

There are seven growth hubs in the Oxfordshire rail system: Banbury, Bicester Village, Culham, Didcot Parkway, Hanborough, Oxford, and Oxford Parkway. This study assesses how Oxfordshire’s rail system can support growth at these hubs. The market for rail freight in Oxfordshire is also forecast to grow and Oxfordshire’s rail system will continue to have a vital strategic role.

Conditional Outputs for Oxfordshire’s Rail System define what the rail system must deliver to support growth. This indicates that capacity improvements are required on inter-regional services and two other service groups, whilst substantial connectivity improvements are required between Oxfordshire’s seven growth hubs. Improved connectivity is also required between Oxford and priority inter-regional locations, including Heathrow Airport. Analysis of potential new stations suggests that two stations on the Cowley Branch Line have a role to play in supporting growth.

Conditional outputs for freight services involve providing capacity for more services, enhancing access to the network, and accommodating changes in the rail freight industry.

Major improvements to rail services in Oxfordshire are required to deliver the conditional outputs determined by the study. The proposal is that 70% more services are required as well as amendments to calling patterns and service coverage. Recommendations for new services are also proposed considering the programme for East West Rail and the aspirations of Midlands Engine Rail and North Cotswolds Line Task Force. How these could be reconfigured to meet the conditional outputs is also set out. Owing to the pace of growth most additional and amended services are required by 2028.

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%. This level of improvement is required to deliver the conditional outputs. All improvements, and particularly those to inter-regional connections, will have economic benefits beyond Oxfordshire.

A key proposal is that the majority of passenger services are extended through, rather than terminating at, Oxford station. Another key feature is provision of new direct services to Bristol and Swindon and strengthening of connections with Birmingham, Worcester, and the South Coast to support Oxfordshire's economic growth.

New services do not meet capacity shortfalls for inter-regional and London Marylebone services so lengthening of these services is recommended.

A number of significant interventions are required to deliver the Oxfordshire Train Service Specifications. Delivery of Oxford Phase 2 is critical to support the 2024 specification and all subsequent specifications. A portfolio of interventions is required to deliver the 2028 specification. Some can be associated with individual service enhancements, but the majority represent a comprehensive system upgrade between Oxford North Junction and Didcot that is required to unlock the portfolio of new services necessary to support growth in Oxfordshire.

Key interventions identified at this stage include Oxford station, which should be developed following the existing masterplan principles, four tracking between Oxford station and Radley, and grade separation of Didcot East Junction. Alongside the key interventions proposed to deliver the specifications, other interventions are identified that may need to be delivered to provide a robust train service. The identified suite of interventions comprise a system that supports growth in the long term.

The outputs of ORCS have been endorsed at a cross-industry Steering Group and should be considered as the bases of strategic rail planning for Oxfordshire. The outputs provide an opportunity to inform and influence the development of major programmes including East West Rail, and of new aspirations, such as the new station proposals at Grove and Begbroke.

The next steps are to establish a portfolio of interventions that can enter the Rail Network Enhancements Pipeline and secure a decision to progress to the next stage and the development of Strategic Outline Business Cases.

Continued engagement with the many beneficiaries of this extremely ambitious programme of investment is essential. Consideration should be given to how such beneficiaries can support the case for investment, including by identifying opportunities for third party funding.

Recommendations and next steps

The Oxfordshire Rail Corridor Study establishes a compelling rationale for significant improvements to rail services in Oxfordshire. The four principal outputs of the study form a robust analysis that can be used to establish a comprehensive strategic vision and to develop investment cases for the rail interventions recommended.

The suite of interventions identified sets out an extremely ambitious investment programme as well as an approach to how this may be aligned with other investment programmes so that growth in Oxfordshire can be fully supported. This offers significant benefits both to Oxfordshire and far beyond. Further development of the proposed interventions will require active engagement with all beneficiaries.

Use of ORCS outputs

The four principal outputs and the strategic vision they establish should be adopted as the bases for strategic planning for the rail system in Oxfordshire.

The **Oxfordshire Planned Growth Scenario** offers a robust, evidence-based, locally sensitive demand forecasting framework that should be considered for strategic case development and as a sensitivity scenario alongside a required central case in government funding appraisals.

The housing and employment data that underpin the OPGS should be refreshed as local plans are confirmed and revised, and, in the longer term, when further plans become available.

The OPGS should be used as the basis for further detailed analysis on the role and likely demand for new stations, and for requirements for existing stations – in particular their function, size, and service provision.

The OPGS should be shared with industry planning partners and with programmes in development – in particular East West Rail, Midlands Engine Rail, and the North Cotswolds Line Task Force – to allow assessment of interdependencies, wider benefits, and strategic alignment.

The **Conditional Outputs for Oxfordshire's Rail System** should be considered as an objective statement of service requirements in Oxfordshire. Decisions involving changes to the service specifications as schemes develop should be assessed against impact on the conditional outputs. This should include exploring opportunities to meet the outputs that are not met by the Oxfordshire Train Service Specifications. The freight capability conditional outputs should inform priorities for freight strategic planning and improvement schemes.

The key principles established by the conditional outputs – that the pattern of growth in Oxfordshire creates seven growth hubs and better links are required between these hubs to support economic growth, and that Oxfordshire's growth is restricted through lack of direct connections to nearby economic hubs – should be endorsed as fundamentals within the strategic vision for the rail system Oxfordshire.

The **Oxfordshire Train Service Specifications** should be endorsed and established as the proposed strategic baseline for rail system planning and the development of services within and through Oxfordshire. The fundamental underlying principles – that the majority of services are proposed to go through rather than terminate at Oxford, and that service groups that are envisaged as independent should be connected – should be recognised.

The specifications should form the basis of development work on interventions – both individual and portfolio – and should also be used to inform and influence the development of the output specifications of major programmes proposing new services in Oxfordshire and strengthen their strategic cases.

The specifications should inform the franchising process as the basis of advice on priorities for service development and specification. Equally the capacity conditional outputs that are not met by the specifications should be pursued through consultation on franchise specification. That is lengthening of both inter-regional (CrossCountry) and London Marylebone (Chiltern) services.

The **Oxfordshire Rail System Interventions** should inform industry enhancement priorities and funding requirements as the investments required in order to deliver the strategic vision for Oxfordshire.

It should be recognised that system constraints in Oxfordshire mean that most new services depend on a portfolio of interventions comprising a systemwide upgrade and that therefore individual services cannot be solely associated with single interventions. Interventions identified should therefore form the basis of a programme for rail investment in Oxfordshire.

Further development should be undertaken to strengthen the link between interventions and benefits and to support the development of an investment case for a programme of rail interventions in Oxfordshire.

The interventions and the case established for them should directly inform programme development for existing major programmes and into business case development for new programmes.

The strategic vision for developing Oxfordshire's rail system should be used to inform local planning processes. ORCS outputs should inform updates to both the Oxfordshire Infrastructure Strategy and the Oxfordshire Rail Strategy, and through them the Oxfordshire Plan 2050 (the Joint Statutory Spatial Plan for Oxfordshire). The Oxfordshire Plan 2050 will set out where growth beyond that identified in Local Plans may be located. Whilst this report focuses on how rail can support planned growth the outputs will also inform how rail investment can influence the location of growth up to 2050.

Development of interventions

Analysis of interventions required to deliver the Oxfordshire Train Service Specifications shows that it is not possible to isolate interventions to deliver single outcomes, either new services or new stations. For example whilst it appears that interventions at Hanborough unlock NCLTF services in fact these would be stymied by a lack of capacity at Oxford North Junction and Oxford station. This case is repeated for every new service, so whilst it is possible to link some specific interventions to specific services – for example those Hanborough interventions are driven only by NCLTF services – it does not mean that delivering those interventions alone secures those services. In fact, significant systemwide upgrade is required.

The existing utilisation of available capacity means that a series of isolated interventions targeted at outcomes is not feasible. Similarly, the scale of systemwide interventions required means that no single outcome would be likely to represent sufficient value. The rail system between Oxford North Junction and Didcot, which all new services impact, should be recognised as in need of significant upgrade.

Therefore the highest priority for development work through ORCS should be a feasibility study considering the system infrastructure between Oxford North Junction and Didcot East Junction. This

should be assumed to involve enhancements to Oxford North Junction, Oxford station, Oxford to Radley track capacity, Didcot East Junction, and Didcot Parkway. Development work should adopt the Oxfordshire Train Service Specification as the required output for development of intervention options. Amongst the other new services this should include a Cowley Branch Line passenger service formed by extension of services between London Marylebone and Oxford.

The priority for further developing the Cowley Branch Line stations should be to understand the intervention required on the mainline between Kennington Junction and Oxford station and support development of this intervention.

The next priority should be to consider the interventions required to deliver the North Cotswolds Line services. However, this should be through an integrated approach with the North Cotswolds Line Task Force programme. Oxfordshire County Council, as the lead organisation in both programmes, should take responsibility for this integration.

Any further development of the new stations at Begbroke and Grove should be based on the interventions identified as necessary in this study. It should be recognised that each involves significant infrastructure beyond the building of the station in order to fit with the Oxfordshire Train Service Specifications. For Grove the likelihood that interaction with fast GWML services will drive more significant interventions should be recognised.

Identification of interventions establishes those that are essential to accommodate the specification and those that are not essential but would yield a more robust level of service. It should be recognised that as cases develop the latter may be deemed essential to meet rail industry priorities and therefore revise the categorisation as non-essential at this stage of analysis.

Development of business cases

Delivering the strategic vision for Oxfordshire’s rail system depends upon a portfolio of interventions which will deliver a transformational change. This systemwide upgrade should be further developed into a programme for strategic rail investment for Oxfordshire.

The case for investment should consider other separate but related work underway such as Network Rail’s decarbonisation and accessibility workstreams.

This Oxfordshire rail investment programme should be considered for entry into the Rail Network Enhancements Pipeline and a Decision to Initiate should be submitted to secure funding from central government to commence the work (Figure 1).

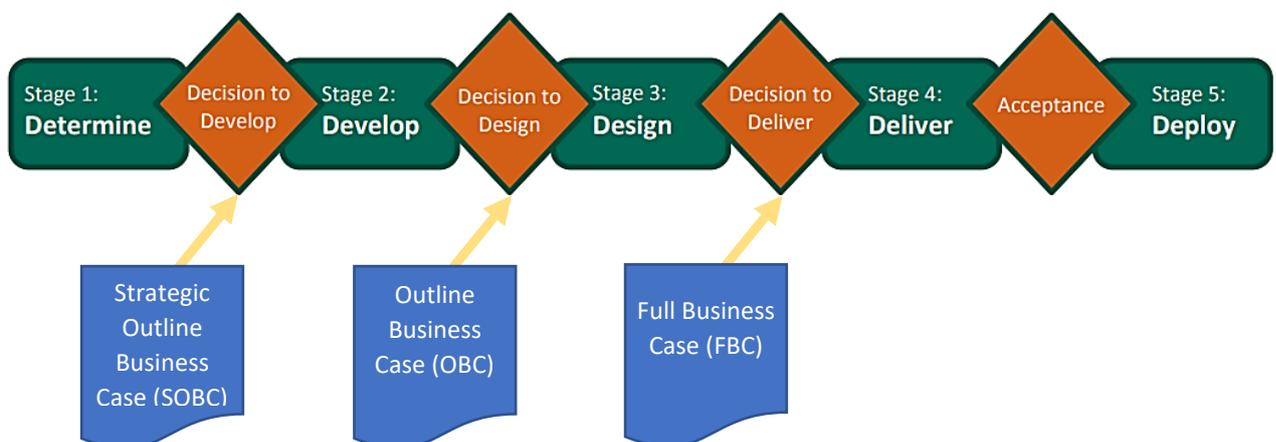


Figure 1 – The Rail Network Enhancements Pipeline process, with business case development stages

The large majority of information required for the programme strategic case is contained within the ORCS outputs and development work should focus on assembling this evidence base. The other four cases should be developed as the programme is established (Figure 2).

Case	Sufficient information?
Strategic	Yes – can be assembled from ORCS outputs
Economic	No – intervention development required
Financial	No – programme development required
Commercial	No – programme development required
Management	No – programme definition required

Figure 2 – Status of five cases that should comprise the Oxfordshire rail investment programme SOBC

The programme strategic case should consider the programme benefits and how interventions identified can be separated and identified as priorities for progression within RNEP. Integration with other programmes and schemes should also be considered to ensure that benefits can be apportioned appropriately.

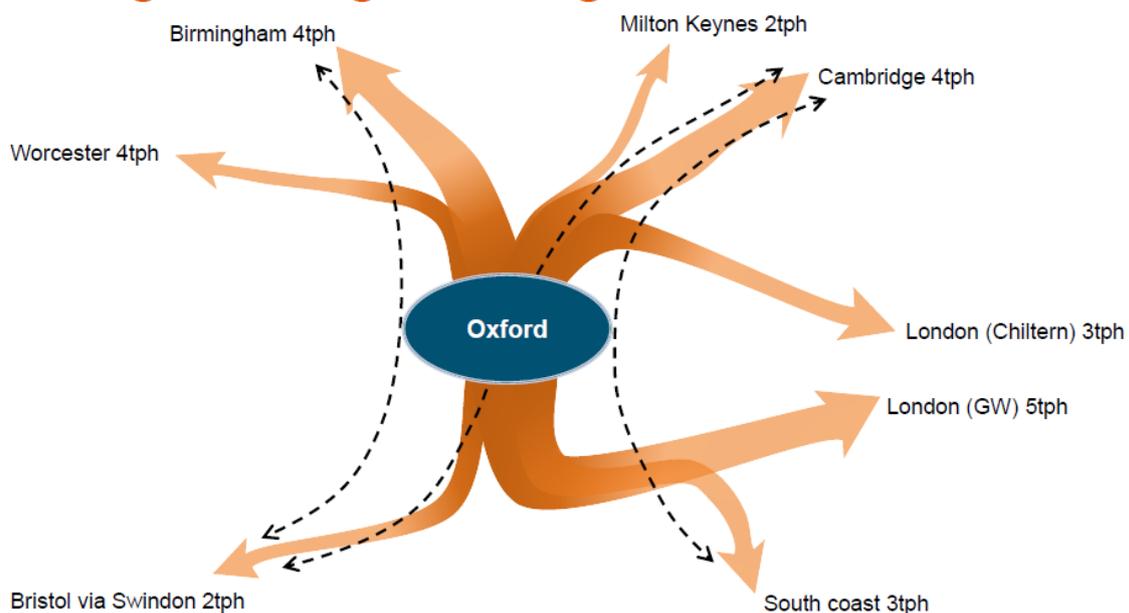
Since the premise of ORCS is supporting Oxfordshire’s economic growth close engagement with partner organisations outside the rail industry who have interests in supporting that growth should continue. The Oxfordshire rail improvement programme should function as an investment portfolio for all beneficiaries of the rail system taking on an explicit role in supporting housing and employment growth. The programme should engage with potential funders and make the study information available to facilitate the development of business cases outside the RNEP process.

Annex 3a – Summary of Proposed Service Enhancements

	Enhancement	Source	Tph	Origin	Destination	Oxfordshire calls (& inter-regional hubs)
2024	EWR Western Section	EWR	2	Milton Keynes	Oxford	(Milton Keynes), Bicester Village, Oxford Parkway, Oxford
	EWR Western Section	EWR	1	Bedford	Oxford	(Bedford), Bicester Village, Oxford Parkway, Oxford
	Oxford Phase 2	Chiltern	0.5	Birmingham	Oxford	(Birmingham Moor St), Banbury, Oxford
2028	Cowley Branch	ORCS	2	Cowley	Oxford	Oxford Business Park, Oxford Science Park, Oxford
	Hanborough	NCLTF	2	Hanborough	Oxford	Hanborough, Oxford
	North Cotswolds	NCLTF	1	Paddington	Gt Malvern	Oxford, Hanborough, (Worcester)
	EWR Central Section	EWR	2	Cambridge	Oxford	(Cambridge), (Bedford), Bicester Village, Oxford Parkway, Oxford
	Coventry corridor	Midlands Engine Rail	1	Birmingham	Oxford	(Birmingham Moor St), Banbury, Oxford
	Solihull Corridor	Midlands Engine Rail	1	Birmingham	Oxford	(Birmingham Moor St), Banbury, Oxford
	Banbury shuttle	ORCS	0.5	Banbury	Oxford	Banbury, Heyford, Tackley, Oxford
2033	EWR+	EWR	2	Cambridge	Oxford	(Cambridge), (Bedford), Bicester Village, Oxford Parkway, Oxford
	Grove new station	ORCS	-	-	-	Hourly call in EWR Central Section service
	Begbroke new station	ORCS	-	-	-	Hourly call in Banbury shuttle

Note – all proposed enhancements, services shown and calling points are indicative assumptions and subject to more detailed consideration, justification and approval

Passenger offering – Inter-regional direct



Annex 3b – Proposed Service Enhancements - Morning Peak from Oxford

2019			2024			2028			2033		
13tph			15tph			20tph			22tph		
Type	Origin	Destination									
GW fast	Oxford	Paddington									
GW fast	Oxford (Banbury)	Paddington									
GW fast	Worcester SH	Paddington									
GW fast	Hereford	Paddington									
GW slow	Banbury	Didcot	XC	Birmingham NS	Southampton	XC	Birmingham NS	Southampton	XC	Birmingham NS	Southampton
GW slow	Oxford	Reading	XC	Manchester	Bournemouth	XC	Manchester	Bournemouth	XC	Manchester	Bournemouth
XC	Birmingham NS	Southampton	Chiltern	Oxford	Marylebone	Chiltern	Cowley	Marylebone	Chiltern	Cowley	Marylebone
XC	Manchester	Bournemouth	Chiltern	Oxford	Marylebone	Chiltern	Cowley	Marylebone	Chiltern	Cowley	Marylebone
Chiltern	Oxford	Marylebone									
Chiltern	Oxford	Marylebone	Freight	Oxford North jn	Didcot North jn	Freight	Oxford North jn	Didcot North jn	Freight	Oxford North jn	Didcot North jn
Chiltern	Oxford	Marylebone	Freight	Oxford North jn	Didcot North jn	Freight	Oxford North jn	Didcot North jn	Freight	Oxford North jn	Didcot North jn
Freight	Aynho jn	Didcot North jn	EWR WS	Milton Keynes	Didcot	EWR WS	Milton Keynes	Didcot	EWR WS	Milton Keynes	Didcot
Freight	Aynho jn	Didcot North jn	EWR WS	Milton Keynes	Didcot	EWR WS	Milton Keynes	Didcot	EWR WS	Milton Keynes	Didcot
			EWR WS	Bedford	Oxford	EWR CS	Cambridge	Bristol	EWR CS	Cambridge	Bristol
			Shuttle	Banbury	Oxford	EWR CS	Cambridge	Southampton	EWR CS	Cambridge	Southampton
						Shuttle	Banbury	Oxford	Shuttle	Banbury	Oxford
						NCLTF	Hanborough	Didcot	NCLTF	Hanborough	Didcot
						NCLTF	Hanborough	Paddington	NCLTF	Hanborough	Paddington
						Midlands	Birmingham MS	Bristol	Midlands	Birmingham MS	Bristol
						Midlands	Birmingham MS	Oxford	Midlands	Birmingham MS	Oxford
									EWR+	Cambridge	Oxford
									EWR+	Cambridge	Oxford

Shaded services in London direction only

Annex 4 – Testing Against Conditional Outputs



Testing against Conditional Outputs – 2028

Origin	Destination	2019 GJT	2024 GJT	Improvement	CO Target GJT	CO Met?
Hanborough	Didcot Parkway	84	49	35	59	Yes
Culham	Oxford	62	33	30	46	Yes
Didcot Parkway	Culham	58	26	31	46	Yes
Oxford Parkway	Didcot Parkway	80	45	35	59	Yes
Culham	Didcot Parkway	56	26	30	47	Yes
Bicester Village	Didcot Parkway	92	55	37	65	Yes
Hanborough	Oxford Parkway	76	55	21	56	Yes
Didcot Parkway	Bicester Village	92	55	37	66	Yes
Hanborough	Bicester Village	88	66	22	65	No
Didcot Parkway	Oxford Parkway	81	45	36	62	Yes
Oxford Parkway	Hanborough	84	55	30	61	Yes
Didcot Parkway	Hanborough	92	48	43	67	Yes
Oxford Parkway	Banbury	85	69	15	66	No
Oxford	Culham	62	33	29	49	Yes
Cholsey	Oxford	70	62	8	56	No
Hanborough	Banbury	90	74	16	68	No
Hanborough	Radley	85	65	20	62	No
Culham	Cholsey	83	64	20	71	Yes
Radley	Oxford Parkway	77	52	25	62	Yes

Testing against Conditional Outputs – 2033

Origin	Destination	2019 GJT	2024 GJT	Improvement	CO Target GJT	CO Met?
Culham	Oxford	62	32	30	45	Yes
Hanborough	Didcot Parkway	84	50	35	59	Yes
Didcot Parkway	Culham	58	26	32	46	Yes
Oxford Parkway	Didcot Parkway	80	44	36	59	Yes
Culham	Didcot Parkway	56	26	31	47	Yes
Bicester Village	Didcot Parkway	92	54	38	65	Yes
Hanborough	Oxford Parkway	76	52	24	56	Yes
Didcot Parkway	Bicester Village	92	54	38	66	Yes
Hanborough	Bicester Village	88	64	24	65	Yes
Didcot Parkway	Oxford Parkway	81	44	37	62	Yes
Oxford Parkway	Hanborough	84	52	32	61	Yes
Didcot Parkway	Hanborough	92	49	43	67	Yes
Oxford	Culham	62	32	30	48	Yes
Oxford Parkway	Banbury	85	65	20	66	Yes
Cholsey	Oxford	70	62	8	53	No
Hanborough	Banbury	90	72	18	68	No
Hanborough	Radley	85	65	20	62	No
Culham	Cholsey	83	63	20	71	Yes
Radley	Oxford Parkway	77	51	26	62	Yes