SLC Rail

Carterton to Oxford Rail Corridor

Technical Opinion for Witney-Oxford Transport Group

October 2021

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Contents

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Executive Summary

1. Witney Oxford Transport Group (WOTG) asked SLC Rail to review specific route elements of its proposals for new Carterton-Witney-Eynsham-Oxford rail infrastructure relevant to its response to Oxfordshire County Council's (OCC) A40 Eynsham-Wolvercote upgrade works programme.

2. This review has three key conclusions for potential locations of an Eynsham Station, rail/A40 alignment and options for connection to the National Rail network.

An Eynsham rail station integrated with the proposed A40 north-side Park and Ride

3. Location of Eynsham Station within the proposed A40 north-side Park and Ride site would offer a modern, multi-modal, high-capacity transport interchange, accessible to Eynsham, the new Salt Cross Garden Village and the wider A40 Corridor, extending the value of the A40 upgrade investment.

4. A south-Eynsham location does not offer these benefits and has not been developed further.

5. This preferred A40-north location in turn affects A40 alignment and National Rail connection options.

An Eynsham to North Cotswold Line rail alignment north of the upgraded A40

6. A rail route west of Eynsham Park and Ride/Station would require a north to south crossing of the A40.

7. A rail flyover across the A40 meeting and benefiting from westward-falling topography west of the Park and Ride/Station site could be a potential solution.

8. This would require elevated embankments and bridges at the Park and Ride/Station site, across the Freeland/Cuckoo Lane and Hanborough/Lower Road highways and the Evenlode flood plain west of Cassington, and resolution of some conflicting land uses (e.g. Tesco; Eynsham Wood; Salt Cross design).

9. A rail alignment north of the A40 is not thought to present major conflicts with the design of the OCC A40 upgrade scheme outside of amendment within the Park and Ride site to provide Eynsham Station.

10. A subterranean alignment across the Park and Ride site would be more challenging, costly and disruptive, requiring major re-modelling of the then-delivered OCC A40 upgrade access to the Park and Ride and Cuckoo Lane.

A connection with the National Rail network on the North Cotswold Line near Worton

11. There are 4 principal National Rail network connection options, 2 on the North Cotswold Line at Worton or Yarnton, and 2 on the Oxford-Birmingham/North Cotswold lines adjacent to Wolvercote Junction.

12. A junction on the North Cotswold Line near Worton would align with an A40-north Eynsham Station and rail alignment, avoid Cassington village, and potentially benefit from separate rail industry proposals to double track the North Cotswold Line.

13. Both connections at Wolvercote Junction present significant engineering, operational and ecological challenges, are unlikely to gain rail industry support and are not recommended for further development.

Capital cost

14. Capital cost has not been assessed in this review and would be required alongside market, demand and train service analysis, engineering, operational cost and land/planning components of a Strategic Outline Business Case for the Carterton-Witney-Eynsham-Oxford concept.

1. Introduction

1.1 The objective of the Witney Oxford Transport Group's (WOTG) proposal is to create a new West Oxfordshire rail corridor of c. 25 km/15 miles in length from Carterton/RAF Brize Norton, Witney and Eynsham to Oxford.

1.2 Three new stations at Carterton, Witney and Eynsham are proposed in the scheme.

1.3 WOTG's proposed route is planned to be located as close as practicable to the existing A40.

1.4 Local plans have been developed by Oxfordshire County Council (OCC) to upgrade the A40 and provide a bus-based Park and Ride facility at Eynsham.

1.5 WOTG needs to respond to these proposals and this technical report has been prepared to inform its opinion and commentary about how the A40 scheme may affect the future deliverability of its proposed rail scheme.

1.6 The review has benefited from discussions with OCC's A40 upgrade team, and provision of its relevant A40 design drawings.

1.7 WOTG's proposed route commences from the west of Carterton and RAF Brize Norton and extends north to come alongside the A40 at Worsham, then is orientated eastward on the south side of the A40 and Witney.

West of Eynsham the road crosses over the A40 to follow an alignment on its northern side through Eynsham and towards Oxford.

North of Oxford the proposed route steps away from the A40 to join the National Rail network either on the Oxford-Worcester 'North Cotswold Line' west of Wolvercote North Junction (as shown in Figure 1 below) or on the Oxford-Birmingham Line south of Wolvercote Junction (Figure 2 over).

1.8 Note – Network Rail 'Engineer's Line Reference' for the Oxford-Birmingham Line is 'DCL' (Didcot-Chester Line) and for the North Cotswold Line it is 'OWW' (Oxford, Worcester and Wolverhampton), both reflecting the original 19th century geography of the routes.

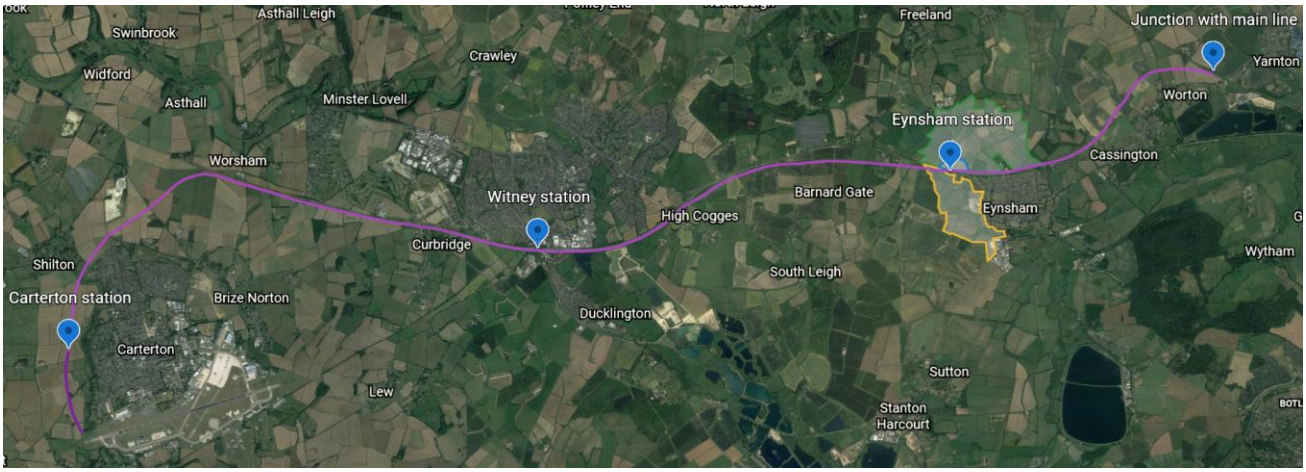

Figure 1 – Carterton to Oxford rail route option connecting to North Cotswold Line near Worton (WOTG/Google Maps)

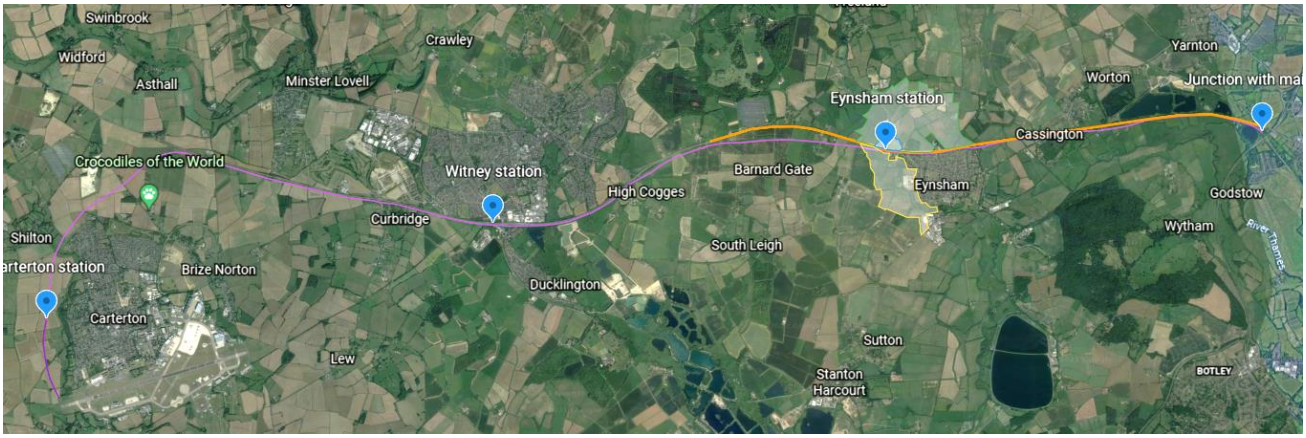

Figure 2 – Carterton to Oxford rail route option connecting to Oxford-Birmingham Line near Wolvercote North Junction (WOTG/Google Maps)

1.9 SLC has prepared an engineering opinion focusing on 3 key issues agreed with WOTG as follows: -

- **Eynsham Station location** – Options for a new station to the north of the upgraded A40 integrated with the proposed A40 Park and Ride, or the south of Eynsham, taking account of the accessibility to Eynsham itself, Salt Cross Garden Village and the wider A40 Corridor.
- **A40 Alignment Eynsham** - Prospective alignment options with the Barnard Gate-Wolvercote section of the A40 and its various dual carriageway, bus-lane, cycle and pedestrian and Park & Ride components promoted by OCC, together with the Salt Cross Garden Village development immediately to the north of the A40 at Eynsham.

  This upgrading is a major engineering project. Without a rail route being defined and protected, there is a significant risk that the planned A40 works could preclude its future delivery.
- **National Rail connection** – Alignment options to connect a new Carterton-Witney-Eynsham line to the existing North Cotswold or Oxford-Birmingham National Rail routes.

1.10 These 3 key issues are closely inter-related and are presented and discussed in this 3-stage sequence within the report based upon the review's findings. The preferred options for further investigation are shown first in each case.

1.11 Commentary upon the route from Eynsham to Witney and Carterton beyond Chil Brook (c. 1 mile/1.6km west of Eynsham) is not included in this report given the focus agreed with WOTG on the items at 1.9 and their key importance to the immediate developmental and consultation stages of OCC's A40 project and options for connection to the National Rail network.

1.12 The report is based upon initial review of publicly available information, visual site observation, detailed drawings from and discussions with Oxfordshire County Council's A40 Programme team (which is appreciated) and application of SLC Rail's rail infrastructure, stations and operations engineering experience and judgment.

It is not part of formal engineering or rail industry project development requirements or products set out within Network Rail 'Governance of Rail Investment Projects' (GRIP) or 'Project Acceleration in a Controlled Environment' (PACE) processes, or those in the Department for Transport's 'Rail Network Enhancement Pipeline (RNEP).

1.13 Potential capital costs of the proposal have not been examined in this report.

2. Eynsham Station location and crossing the A40

2.1 2 alternative locations for Eynsham Station have been considered. The first would integrate a rail station with the proposed Park and Ride facility on the north side of the A40 within OCC's A40 upgrade scheme. The second would place a station adjacent to the B4449 to the south of Eynsham.

2.2 The A40-north side location is the preferred option given the railway station would be at the heart of what will be an expanded Eynsham area when Salt Cross Garden Village and West Eynsham developments are delivered and add capability and value to the bus Park and Ride that is part of the current OCC A40 enhancement scheme. It could form a modern, integrated transport interchange accessible from Eynsham, Salt Cross Garden Village and the wider A40 Corridor. This option and its route alignment and A40-crossing implications are described at 2.4 and its direction eastwards at 2.5.

2.3 A south-Eynsham location, discussed at 2.6, does not offer these benefits and has not been developed further.

2.4 A40-North Station and its rail route requirements

2.4.1 Location of Eynsham Station within the A40 Park and Ride would require the rail route towards Witney and Carterton to cross the A40 from north to south to the west of Eynsham. The overall route, A40 crossing, and Park and Ride/Station option is illustrated at Figure 3. Figure 4 (over) illustrates a potential rail route, flyover alignment and station location superimposed on Park and Ride plans within OCC's A40 project.

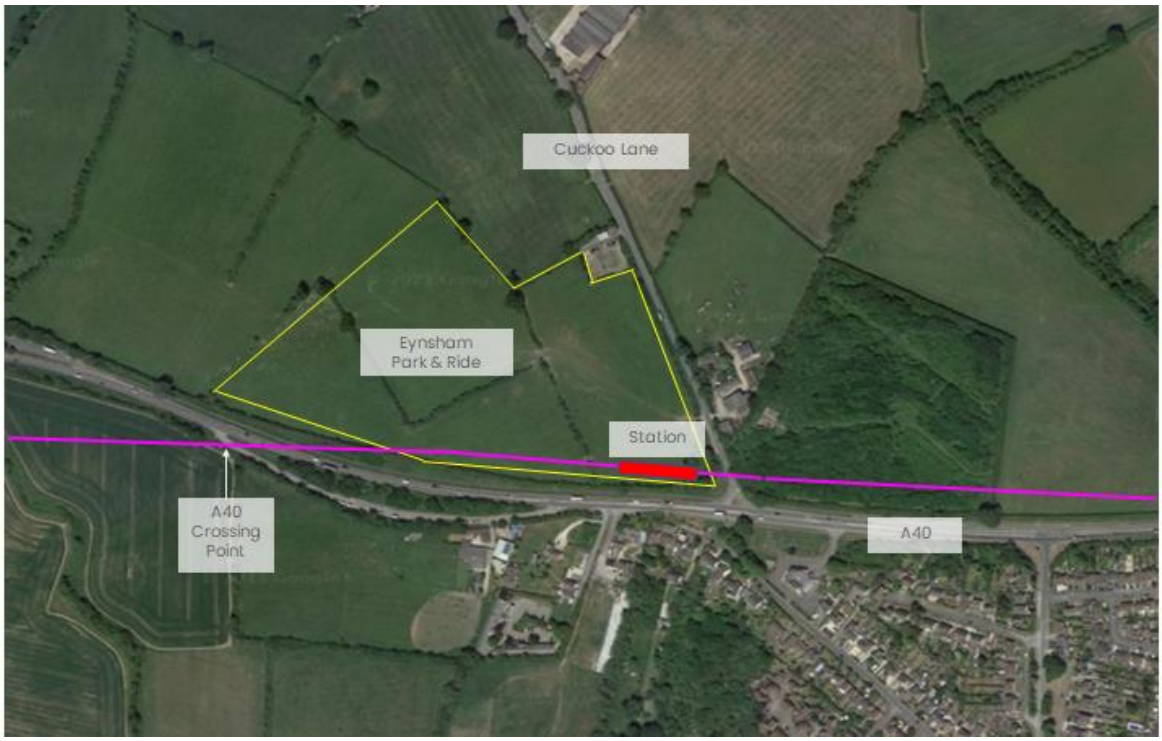

Figure 3 – Location of Eynsham Park and Ride and potential A40 rail crossover and station

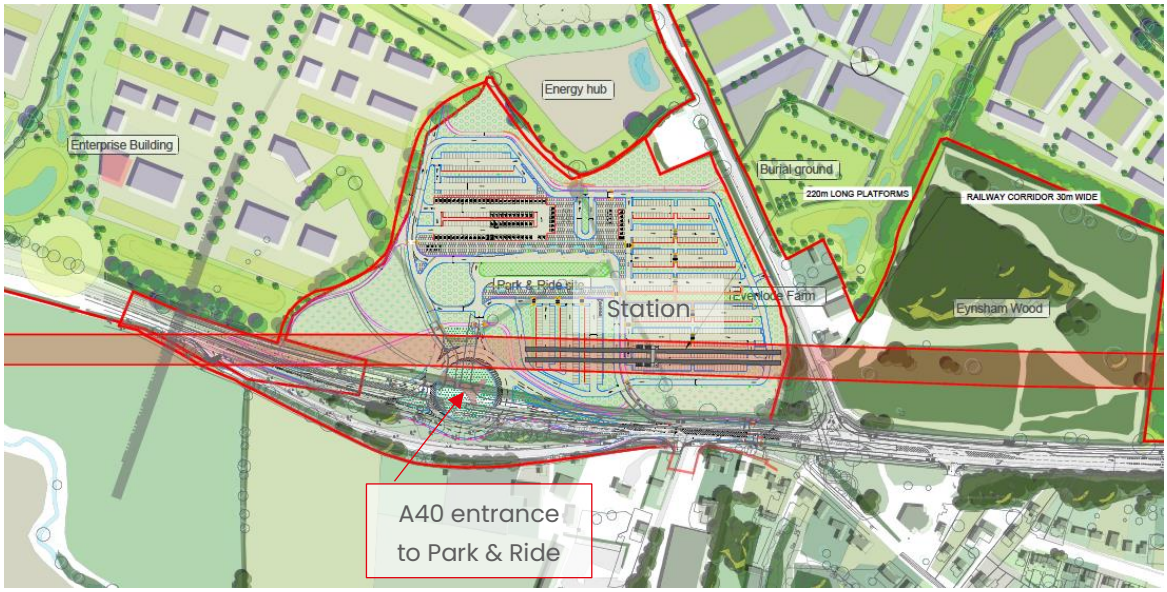

Figure 4 - Plan View of a potential A40 flyover and Park and Ride/Eynsham Station location

2.4.2 The proposed A40 bus Park and Ride is located to the northwest of Eynsham to the immediate west of Cuckoo Lane as indicated in Figure 3. The site is on high ground in comparison to the adjacent A40, which drops sharply towards the west. A potential rail flyover could take advantage of this topography to cross the A40 towards the south and thence to Witney as illustrated at Figure 5.

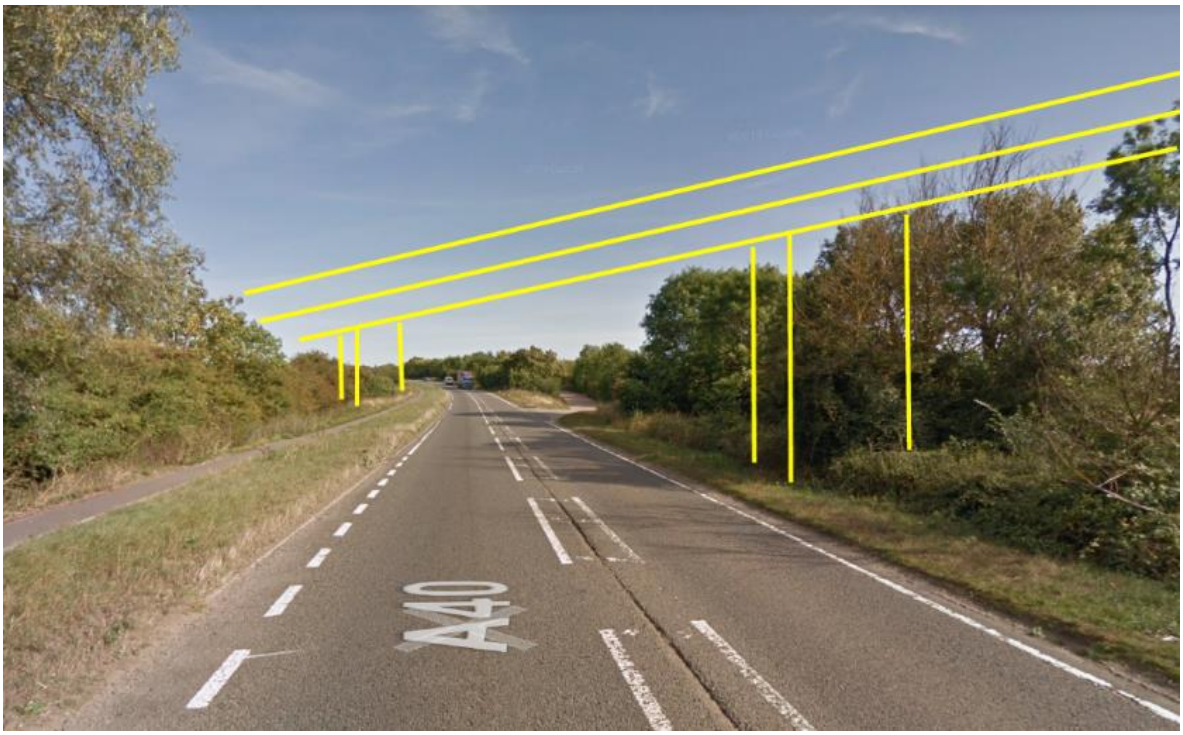

Figure 5 - Potential view of Flyover from A40

2.4.3 Figures 6 and 7 below illustrate both this elevated option and an alternative subterranean option.

- The red dashed line depicts the existing ground level.
- The solid red line depicts an elevated rail route over Cuckoo Lane and eastwards towards Cassington.
- The solid blue line depicts a route underneath Cuckoo Lane, and eastwards towards Cassington.
- The vertical axis is at 1 metre intervals above mean sea level.
- The horizontal access is at 50 metre intervals.
- Track gradients shown are the approximate worst-case gradients that may be required.

Figure 8 shows these 2 drawings together. The full drawings are shown at Appendices A and B.

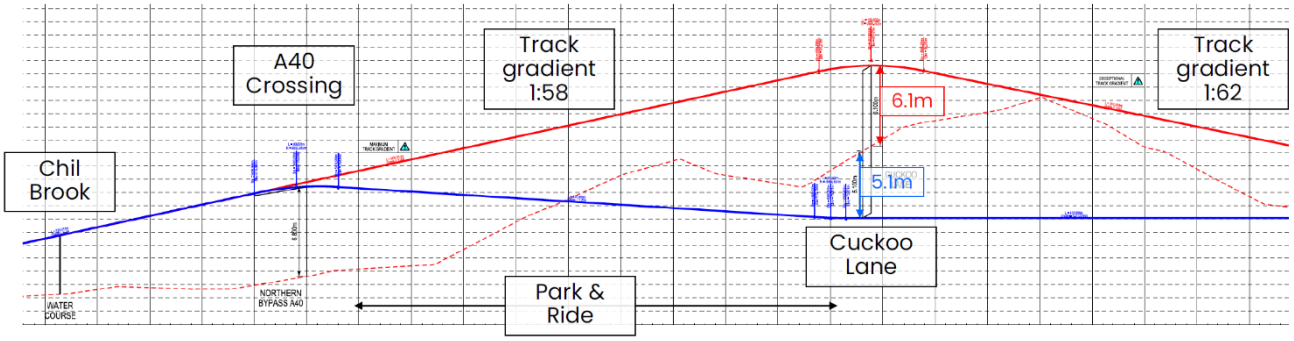

Figure 6 - Sectional drawing: Chil Brook (watercourse), A40, Park & Ride to east of Cuckoo Lane

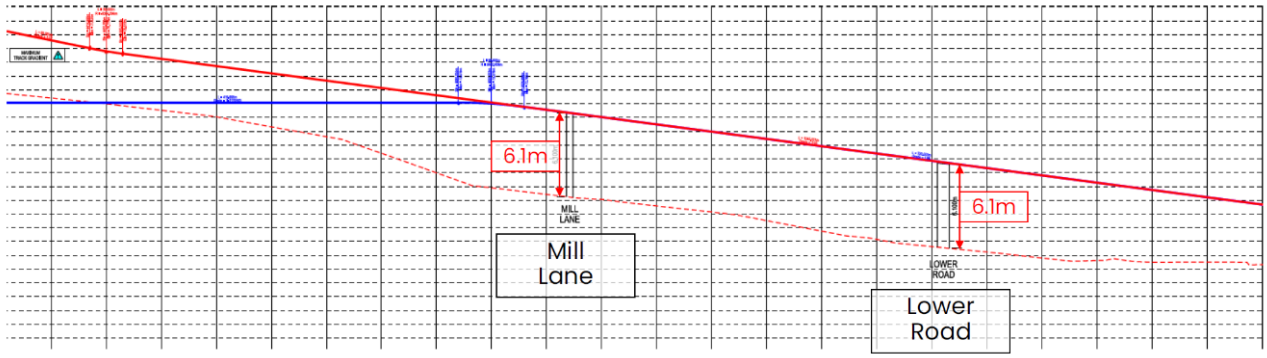

Figure 7 - Sectional drawing: East of Cuckoo Lane to Lower Road

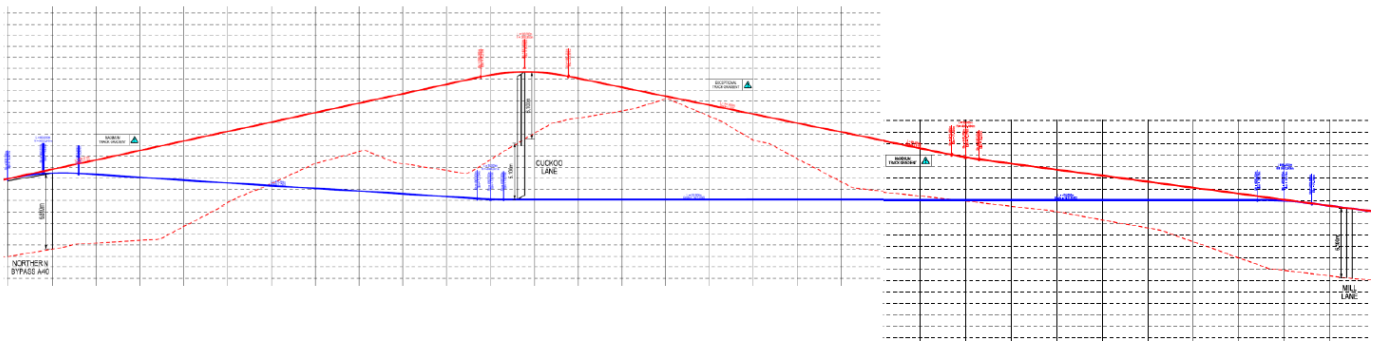

Figure 8 – Figures 6-7 amalgamated from A40 Crossing to Mill Lane

2.4.4 Elevated or subterranean options generate differing issues, challenges and opportunities. An elevated route is the preferred of the two for the following comparative reasons.

Elevated route

- An elevated route may require a mix of flyover, bridge and embankment construction; this would have a significant visual impact but high-quality design as a 'greenway' could mitigate this (see reference to Worcestershire Parkway below/over), and also offer benefits as an A40 noise barrier to the Salt Cross Garden Village north of the A40, together with north-south 'active travel' crossings.
- An elevated route could be constructed above the new A40 features in the Oxfordshire County Council A40 upgrade scheme including the revised A40 junction with Cuckoo Lane, the new A40 access junction to the Park and Ride site, and the revised breadth of the A40.
- It would require revision of the Park and Ride site, but this could be minimised in the nature of embankment and bridging design.
- An elevated route may require significant gradients on the approaches both from the A40 crossing and the east, and these would need to be assessed further in design and operational terms, and in their relationship for placement of the station platforms, where minimising the gradient would be a clear objective. However, these issues are outweighed by the challenges of a subterranean option.

Subterranean route

- The construction process of a subterranean route would have a significant and major impact on the design and operation of the delivered A40 upgrade facilities and the Park and Ride. It is likely that the A40 Cuckoo Lane junction and the A40 Park and Ride access junction would need to be re-modelled and re-delivered, involving significant operational disruption.
- A subterranean route would require significantly greater drainage and earthworks interventions across its extent and within the Park and Ride site.
- Gradients for a subterranean route would, however, be lower than those for the elevated option.

2.4.5 Both options illustrated at Figures 6 to 8 show a rail flyover at the A40. The difference in levels is such that taking the route underneath the A40 at this point – and thence the Chil Brook watercourse - would be very challenging due to the scale of the civil engineering required in respect of earthworks, and the complexity of immediately transitioning from a subterranean route to an elevated structure.

2.4.6 Both options have been compared to OCC's A40 design drawings. Discussions with OCC highways engineers indicate that the A40 upgrade scheme does not preclude the possibility of a railway station. There would need to be post-completion amendment of the Park and Ride site in either option; however the subterranean option would require extensive re-modelling of the site.

2.4.7 Worcestershire Parkway, opened in 2020, whilst being a major station interchange on two strategic rail routes, illustrates the potential scale and mass of an elevated embankment that could be required at an Eynsham Station.

2.4.8 Figure 9 (over) shows the Oxford-direction line on the Worcestershire Parkway embankment from right to left.

Figure 9 – Worcestershire Parkway approaching construction completion in 2019

2.5 Rail route east of Eynsham Park and Ride

2.5.1 In an easterly direction between the Eynsham Park and Ride and the A40/Lower Road junction a rail route north of the A40 would impact upon a number of other facilities and proposals. These include:

- Bridging the Hanborough-A40 Lower Road
- Aligning with proposed layouts of Salt Cross Garden Village
- Potential land-use conflict between the route and the existing Tesco Express supermarket/filling station and two adjacent motor traders
- Eynsham Wood (Woodland Trust)

Figure 10 – Potential rail route east of Park and Ride and south of Salt Cross Garden Village

2.5.2 Each of these would require mitigation measures to re-configure and/or relocate sites, to replace lost areas of ecological value such as impacted portions of Eynsham Wood, and to develop sensitive planting and noise barriers to lessen the impact of the railway being present. A number of mitigation options for these and a proposed route towards the North Cotswold Line are included at Table 1 on page 12.

2.6 Station and rail route south of Eynsham

2.6.1 Alternative locations for a route to the south of Eynsham would not offer the opportunities to create a modern widely accessible multi-modal transport interchange at the Park and Ride site as described at 2.2. above.

2.6.2 The former Fairford-Witney-Oxford branch line was located to the south of Eynsham, but its formation is now partially used by the B4449. A station could be considered adjacent to the B4449 but would be located in the Thames/Evenlode flood plain (Figure 11) and prospectively need significant flood alleviation works.

2.6.3 More particularly the overall route between Witney, Eynsham and Oxford would need to be amended significantly to facilitate a south of Eynsham station location.

2.6.4 This option has thus not been assessed further at this stage.

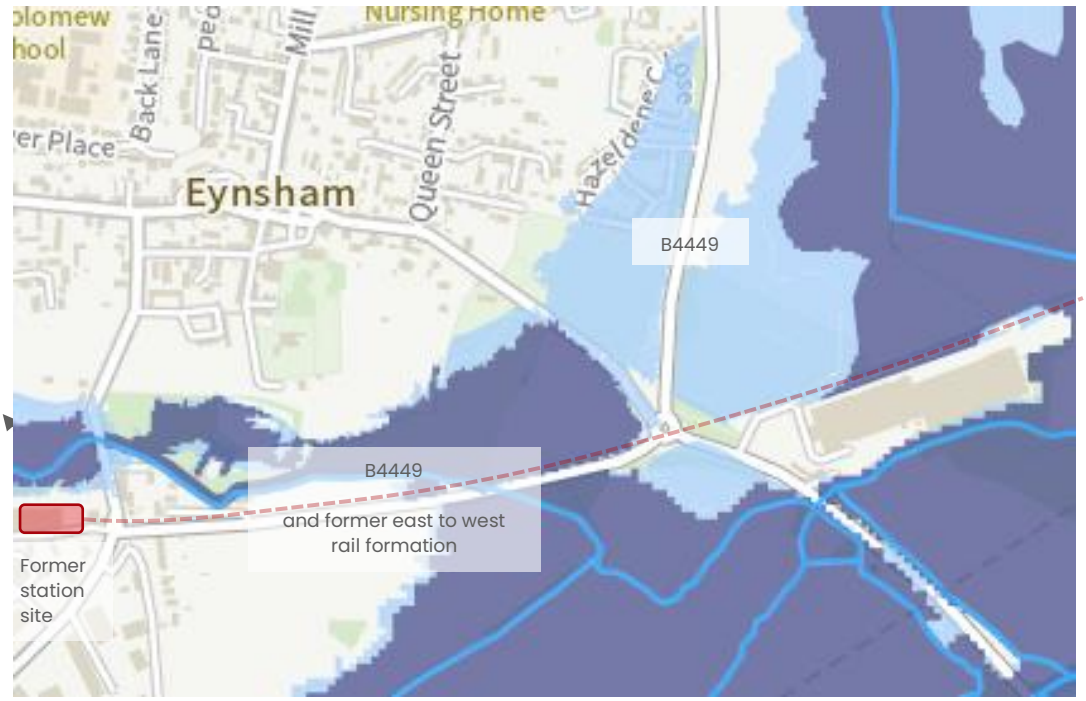

Figure 11 – Thames/Evenlode flood plain south of Eynsham

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3. National Rail connection to the North Cotswold Line

3.1 This study has considered 2 principal connections between the proposed Carterton-Witney-Eynsham rail route and the National Rail network, with the preferred option for further investigation being to the Oxford-Worcester 'North Cotswold Line' near Worton, to the north or Cassington and west of Yarnton. This and 2 sub-options at Yarnton are discussed in this section 3.

3.2 Alternative options at Wolvercote Junction, to the north of Oxford, have been assessed and rejected and are discussed at section 4.

3.3 It is of relevance that both the Network Rail 2021 Oxfordshire Rail Corridor Study and the North Cotswold Line Task Force 2020 Transformation proposition envisage re-doubling of the Wolvercote Junction to Hanborough route (web links shown below). If this upgrade progresses WOTG could promote the concept of passive provision for an Eynsham junction to be made in its design.

- https://www.networkrail.co.uk/wp-content/uploads/2021/06/Oxfordshire-Rail-Corridor-Study-.pdf
- https://researchbriefings.files.parliament.uk/documents/CDP-2020-0004/NORTH-COTSWOLD-LINE-TASK-FORCE-STRATEGIC-BUSINESS-CASE-DEC-2019_ISSUE_110120-(002).pdf

3.4 It is also of note that both proposals envisage a future 4 tph service between Hanborough and Oxford, made up a Worcester-Oxford-Paddington 2 tph and 2 tph local Hanborough-Oxford/beyond services. It is highly unlikely that an upgraded Hanborough-Wolvercote-Oxford Corridor could accommodate 6 tph if 2 tph from Carterton and Witney were assumed. WOTG and Oxfordshire stakeholders would thus have to consider the relative merits and deliverability in the long-term of Hanborough *or* Carterton/Witney route use of the proposed further 2 local paths per hour.

3.5 **Preferred connection: Worton/north of Cassington**

3.5.1 The proposed route to connect to the North Cotswold Line to the north of Cassington and Worton, is illustrated at Figure 12. This takes direct account of the preferred A40-north location of Eynsham Station discussed at section 2.

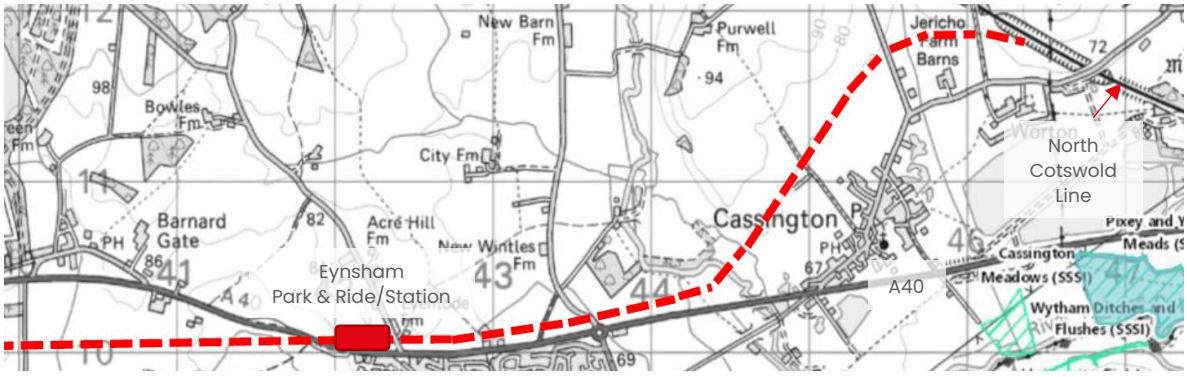


Figure 12 – Cassington/Worton route and connection option

3.5.2 The range of issues associated with creating a rail line in this alignment are discussed overleaf.

3.5.3 The route requires a crossing over the River Evenlode, with the railway raised on a mix of embankment and bridges/viaducts to rise above the Evenlode flood plain. Additional mitigation measures would need to be agreed and negotiated with the Local Lead Flood Authority as a railway is likely both to impact the flood plain and the wider area through which the Evenlode flows.

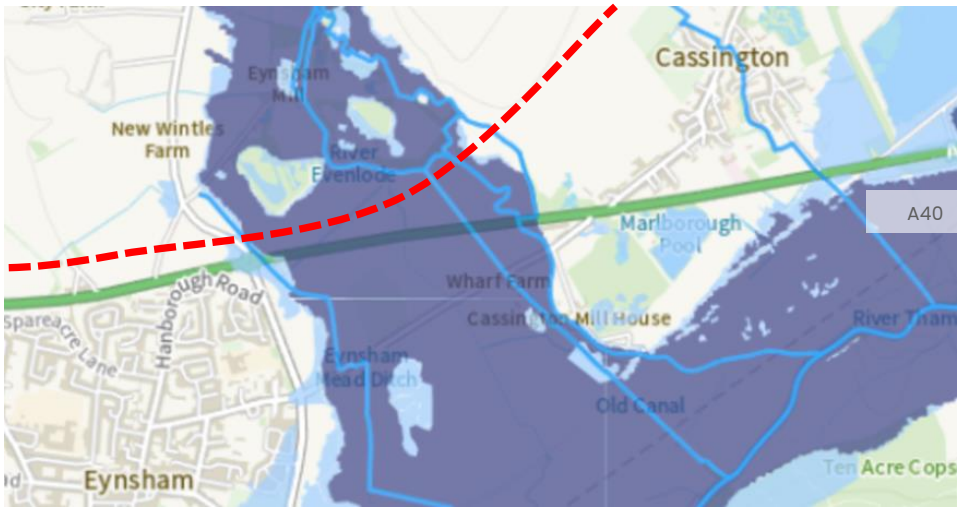


Figure 13 - Flood plain between Cassington and Eynsham and proposed rail route

3.5.4 The proposed route is located in Green Belt designated by the 2015 Oxford Green Belt Study for Oxfordshire County Council, shown at Figure 14. Its current and future Green Belt status would need to be defined and understood, and planning and ecological implications addressed.

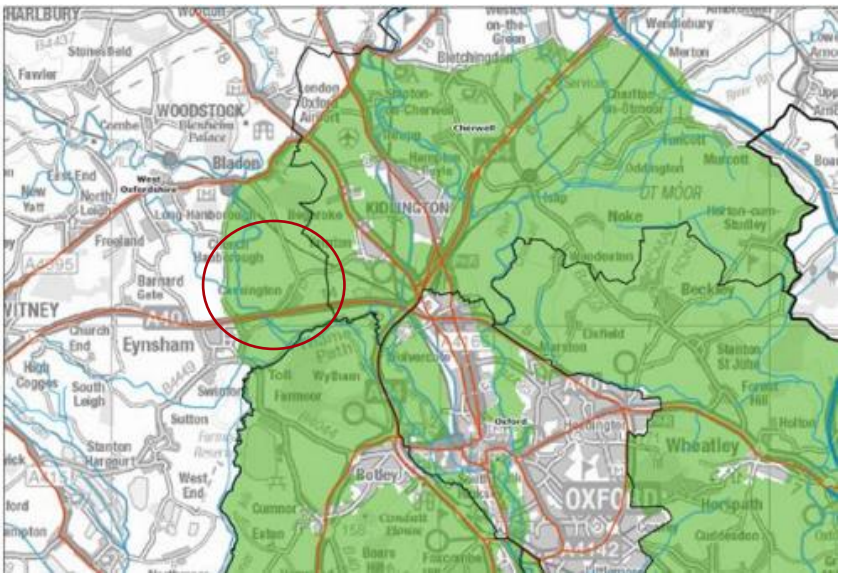


Figure 14 - Extract from Oxford Green Belt Study Final Report Prepared by LUC October 2015

3.5.5 As noted at 2.5.1 and 2.5.2 above there are several interfaces at Eynsham that will need careful consideration, including existing land uses north of the A40, (e.g. Tesco supermarket; Eynsham Wood; Salt Cross Garden Village). In addition, the railway would need to cross existing roads, including Lower Road between Hanborough and the A40 and the Cassington-Burleigh-Bladon Road.

3.5.6 Table 1 (over) summarises these interfaces together with potential solutions.

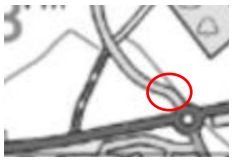
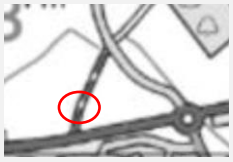
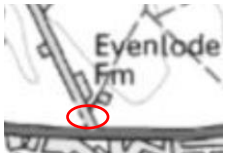
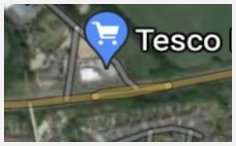
Route Interfaces	Plan	Potential Solution
Cassington Sewage Treatment Works Access Road		Raise STW access road over the railway - creating an overbridge.
Cassington-Burleigh-Bladon Road		Raise Burleigh Road over the railway - creating an overbridge.
Cassington private vehicle road		Lower the road and take the railway over it - creating an underbridge.
River Evenlode		Take the railway over the watercourses - creating an underbridge (s)
A40 Flood Relief Culverts		Raise the railway on an embankment clear of the flood plain and construct flood relief culverts.
Lower Road		Take the railway over Lower Road - creating an underbridge.
Mill Lane		Take the railway over Mill Lane Bridleway - creating an underbridge.
Cuckoo Lane		Take the railway over or under Cuckoo Lane -creating an underbridge or overbridge
Tesco		Land purchase/assembly

Table 1 – Worton/north of Cassington route interfaces and potential solutions

3.6 Alternative rejected options - Yarnton Junction/south of Cassington

3.6.1 As an alternative to the Worton connection, two options at Yarnton have been examined, starting around the former Yarnton Junction (67m 25c from Paddington) link between the GWR Fairford/ Witney branch and North Cotswold Lines until the former's closure (to passengers in 1962 and freight in 1970).

3.6.2 Both present the same issues as the Worton option around the flood plain and Green Belt land.

3.6.3 The long section plan at Appendix B indicates the two routes as shown in Figure 15. One route dissects the Waste Management Plant to the south of the former Fairford/Witney branch trackbed, and this is the key reason for its rejection. The other diverts away from it to the north.

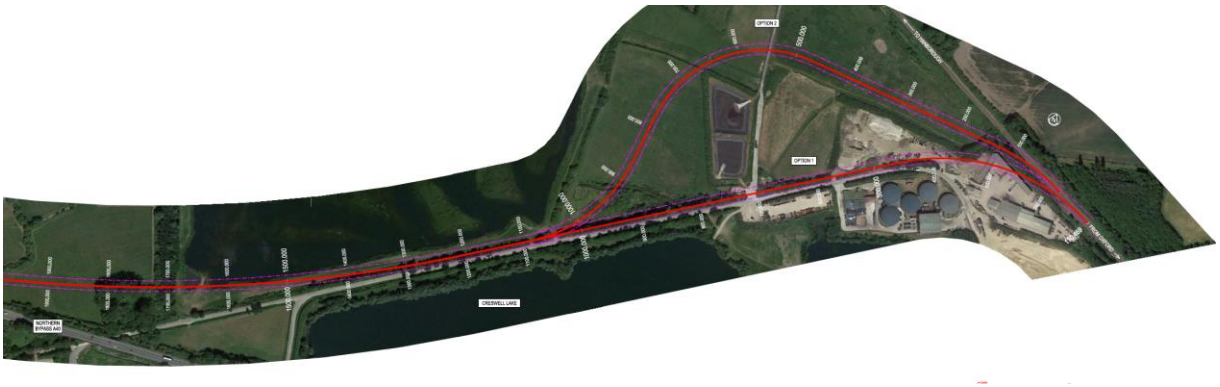


Figure 15 - Plan of both Yarnton Junction routes

3.6.4 The northern route avoiding the Waste Management Plant would have tight curves thus lowering the potential line speed which could render it inefficient. The southern route would offer a better track geometry.

3.6.5 Westwards towards Cassington and the A40 both options would run parallel to the current Waste Management Plant access road running between Cresswell Lake to the south-east and a dried lake area to the north-west, which uses the former Fairford Branch formation.

Figure 16 – Route from Yarnton Junction to A40 and Cassington

3.6.6 The proposed route is then parallel and to the north of the A40 through Cassington and to the west. The potential breadth of a required rail formation is shown at Figure 17 (purple-dotted lines), affecting up to 10 properties on the southern side of the village. In some cases, this would impact upon garden areas and in others directly on residential properties. For both Yarnton sub-options examined this is the overall reason for rejecting their further development.

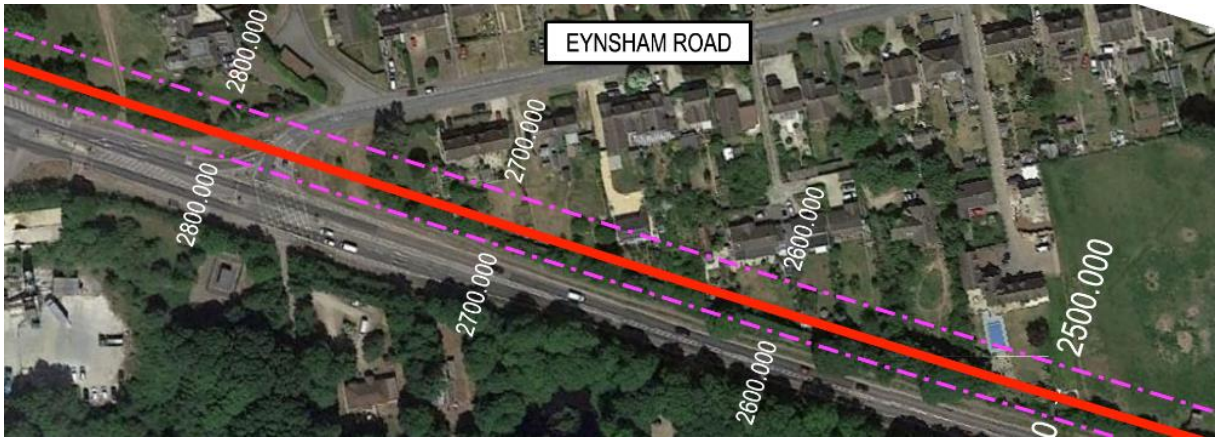


Figure 17 – Relationship to properties to the south of Cassington

4. National Rail connection at Wolvercote North Junction

4.1 Connecting the proposed Carterton-Witney-Eynsham-Oxford route to the National Rail network at Wolvercote North Junction where the Oxford-Birmingham and North Cotswold Lines diverge has been assessed and rejected as a further development option on the basis of the analysis in this section.

4.2 Three potential connection options have been examined:

- South of the A40 overbridge to the Oxford -Birmingham Line (DCL) – discussed at 4.5
- North of the A40 overbridge to the Oxford – Birmingham Line (DCL) – discussed at 4.6
- North of the A40 overbridge/north of Wolvercote Junction directly onto the North Cotswold line (OWW) – also discussed at 4.6

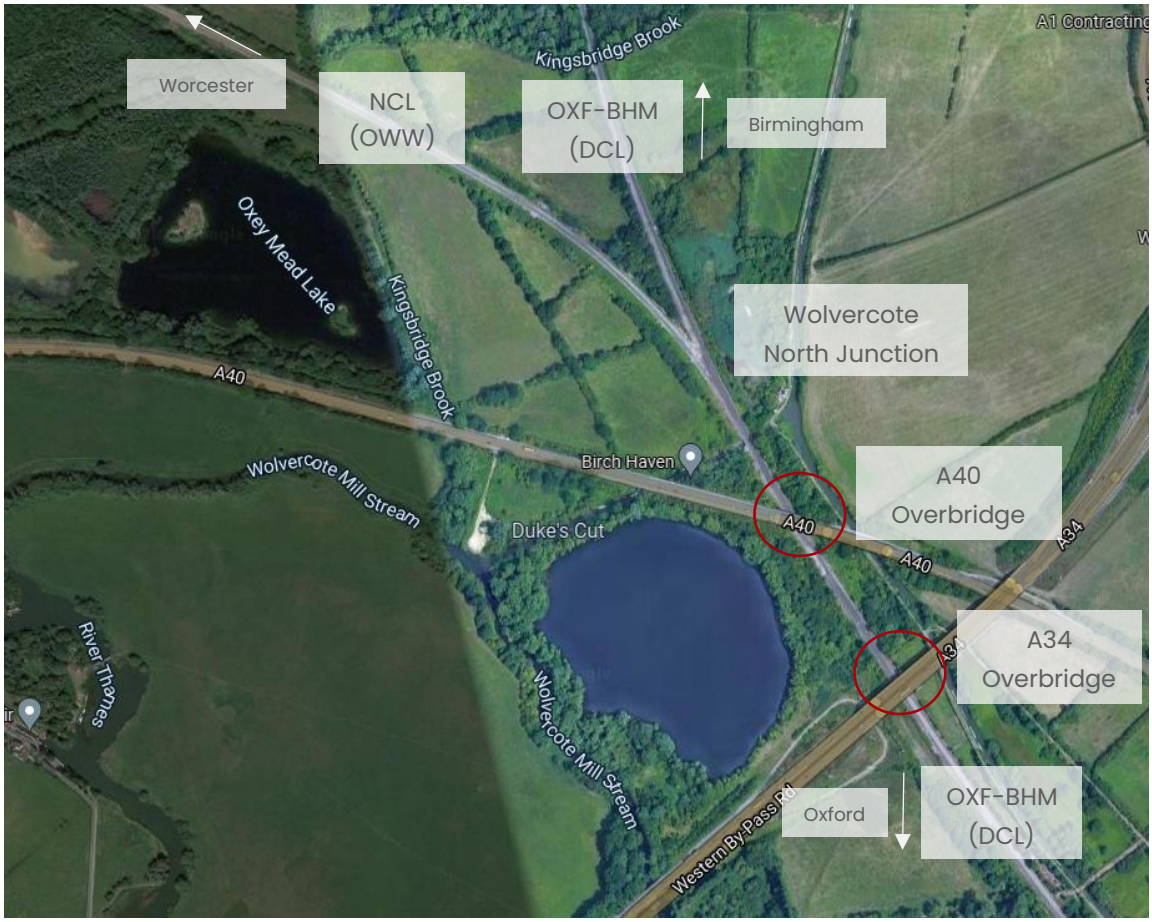


Figure 18 - Wolvercote North Junction, A40/A34 overbridges and Birmingham and Worcester rail routes

4.3 Rail infrastructure and operational issues common to all 3 options

4.3.1 Wolvercote North Junction is a key operational part of both the Oxford-Birmingham and Oxford-Worcester routes, supporting (pre-COVID) 2 passenger trains per hour (tph) in each direction between Oxford and Birmingham, 1 tph in each direction to Worcester (2 tph in the peaks), 1 local Oxford-Banbury train each 2 hours, plus extensive volumes of Southampton-West Midlands container freight and other freight movements.

4.3.2 Wolvercote North Junction is located at 66m 32c (chains) from Paddington; the A40 bridge is 66m 26c and the A34 bridge 66m 11c. (I chain is 20.1 metres or 22 yards – the length of cricket wicket). As such the area south of the A40 bridge and north of the A34 bridge is limited to a distance of between 80 and 420 metres from Wolvercote North Junction where it divides between the Birmingham line and the single-track North Cotswold Line.

4.3.4. To the south of Wolvercote North Junction the North Cotswold Line joins the 'Up'/London direction line under the A40 bridge and then the line divides at Wolvercote South Junction to provide a 'relief' line south of the A34 bridge. In the 'Down'/Birmingham-Worcester direction relief line from Oxford station joins the 'down' Birmingham line just before the A34 bridge. This is illustrated at Figures 19 to 23 on pages 17 to 19.

4.3.5 The prevailing line speed of the Birmingham lines is 90mph; the route westwards on the North Cotswold Line is 100mph. The junction speed towards Oxford over Wolvercote North Junction from the North Cotswold Line is 40mph (with industry aspirations to make this faster in future).

4.3.6 It is highly unlikely that Network Rail could or would accept a further junction for an Eynsham line being added to this tight existing layout on the approach to Wolvercote North Junction in terms of feasible track design, line speed implications of a sharp west-facing junction, line curve and cant (camber) which both lie eastwards against the Eynsham direction, signalling layouts and the necessary distances between signals.

4.3.7 It is outside of the scope of this report to assess the engineering issues in detail or set out the range of applicable Network Rail track, switches/crossings (points) and signalling design and operations standards. Clearly this could be done, but the range of challenges to the feasibility of a new Eynsham Junction in the immediate proximity of Wolvercote Junction suggests this would not be fruitful.

4.4 Network Rail and industry route expansion plans relevant to Wolvercote North Junction

4.4.1 Similarly Network Rail is unlikely to wish to add an Eynsham Junction given the wide importance of Wolvercote North Junction to the overall rail network underlined by its 2021 Oxfordshire Rail Corridor Study and the North Cotswold Line Task Force 2020 Transformation proposals which see a major increase in train services in the next 20 years, (see Figure 24, page 19) including: -

- An increase from 2 tph to 4 tph between Oxford and Birmingham
- An increase from 1 tph to 2 tph between Oxford and Worcester
- A new local 2 tph Oxford to Hanborough service
- A combined 2 tph London-Banbury and Oxford Banbury service

In total this would increase the pre-COVID 3.5 trains per hour crossing Wolvercote Junction in each direction to 10 tph.

4.4.2 These proposals will themselves require major investment at Wolvercote North Junction, and both studies assume re-doubling of the North Cotswold Line between Wolvercote North Junction and Hanborough (as noted at Section 3).

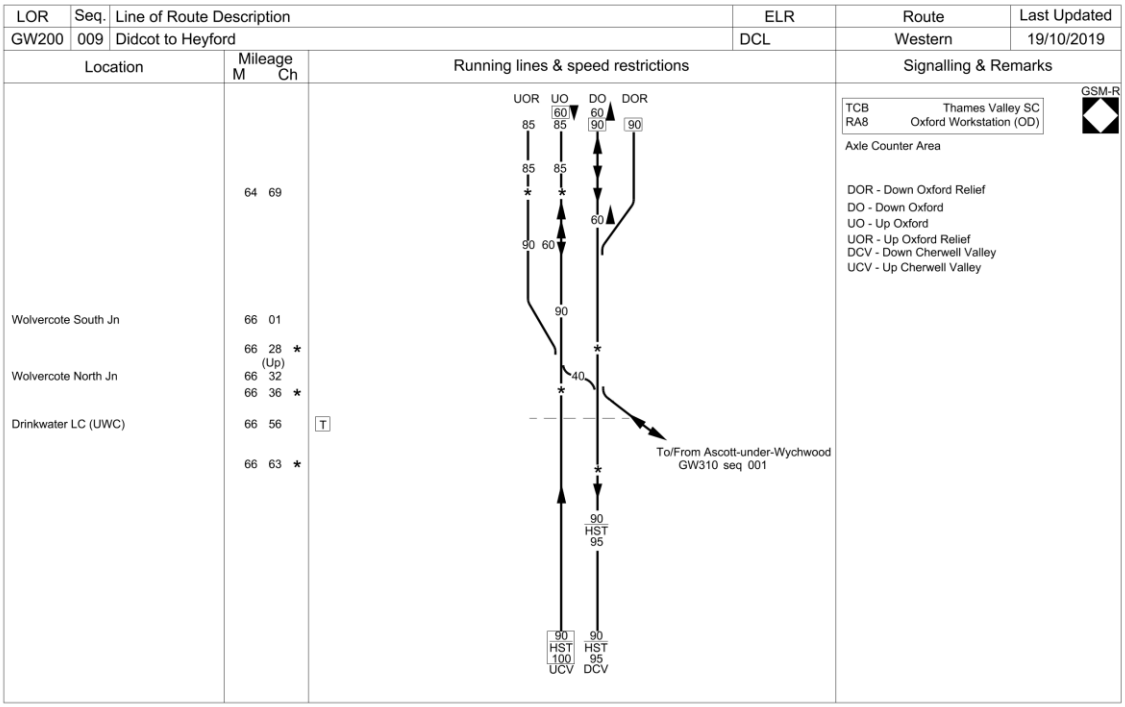


Figure 19 - Wolvercote North and South Junctions/Birmingham Line (Network Rail Western Sectional Appendix as at September 2021)

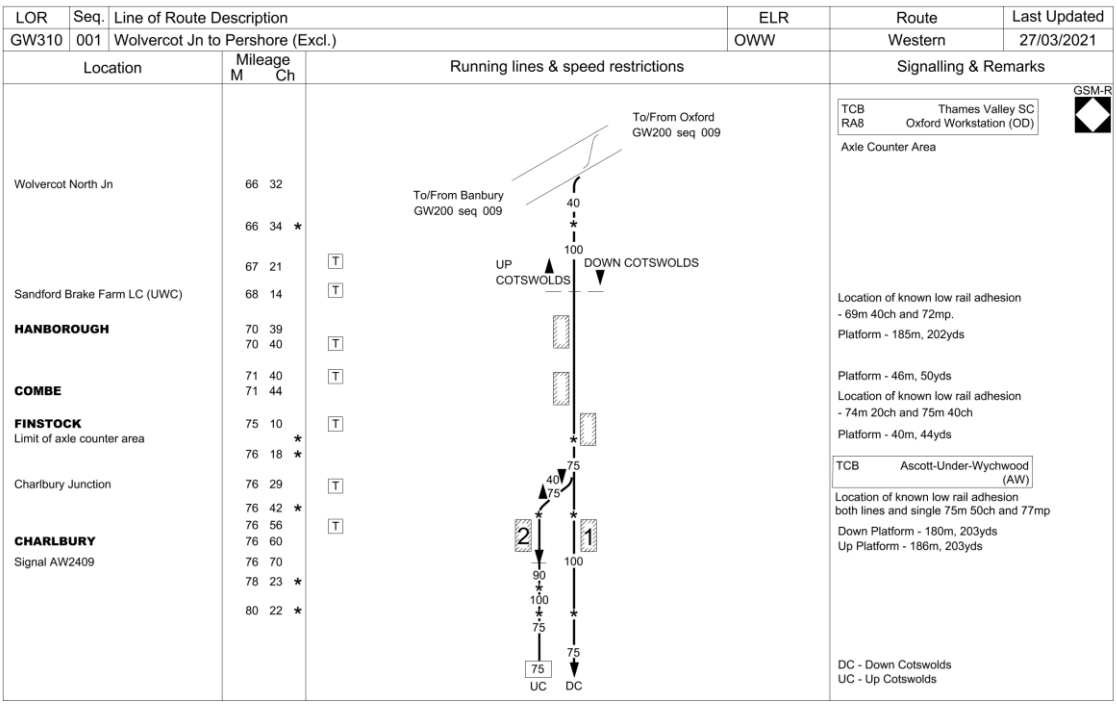


Figure 20 – North Cotswold Line from Wolvercote North Junction (Network Rail Western Sectional Appendix)

Figure 21 – Wolvercote North Junction looking north from A40 overbridge – Worcester Line diverging to left

Figure 22 – Oxford to Birmingham Line looking south towards A34 overbridge and Oxford from A40 overbridge. Additional 'Up'/southbound and 'down'/northbound relief lines join Birmingham line south of A34 overbridge at Wolvercote South Junction

Figure 23 – Oxford to Birmingham Line looking north towards Wolvercote South Junction and A34 bridge from Godstow Road overbridge

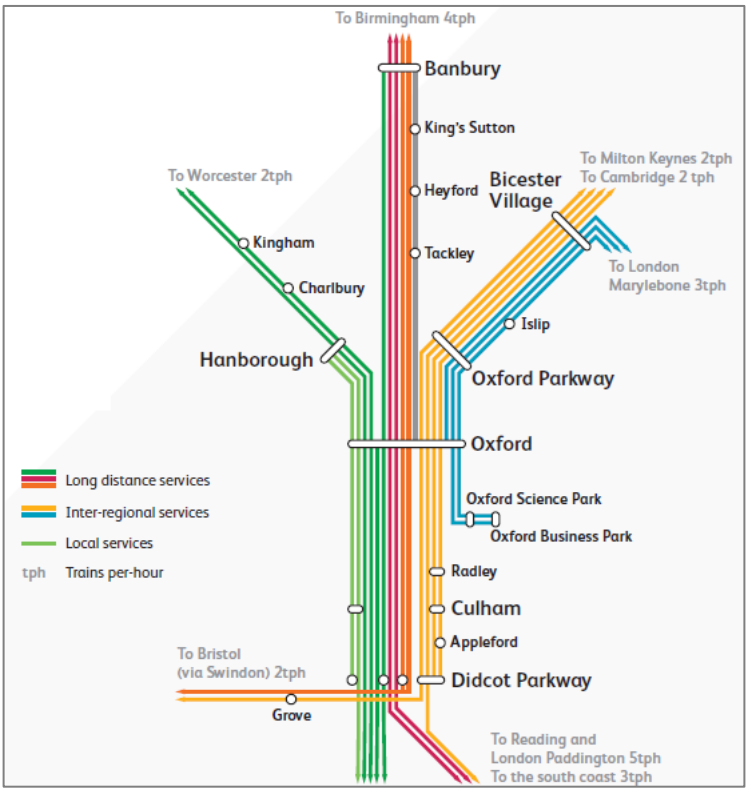


Figure 24 – Network Rail – Oxfordshire Rail Corridor Study: Indicative Peak Train Service Specification
All trains on the Birmingham and Worcester corridors will traverse Wolvercote North Junction

4.5 Connection south of the A40 overbridge to the Oxford -Birmingham Line (DCL)

4.5.1 In addition to the common issues at 4.2-4.3 an Eynsham route junction south of the A40 bridge, and thence south of the A40 itself, is significantly challenged by the proximity of Pixey, Oxey and Yarnton Meads, all Sites of Special Scientific Interest (SSSI), westwards along the meadows of the River Thames, together with the extensive lake between the A34 and A40 to the west of Wolvercote North Junction.

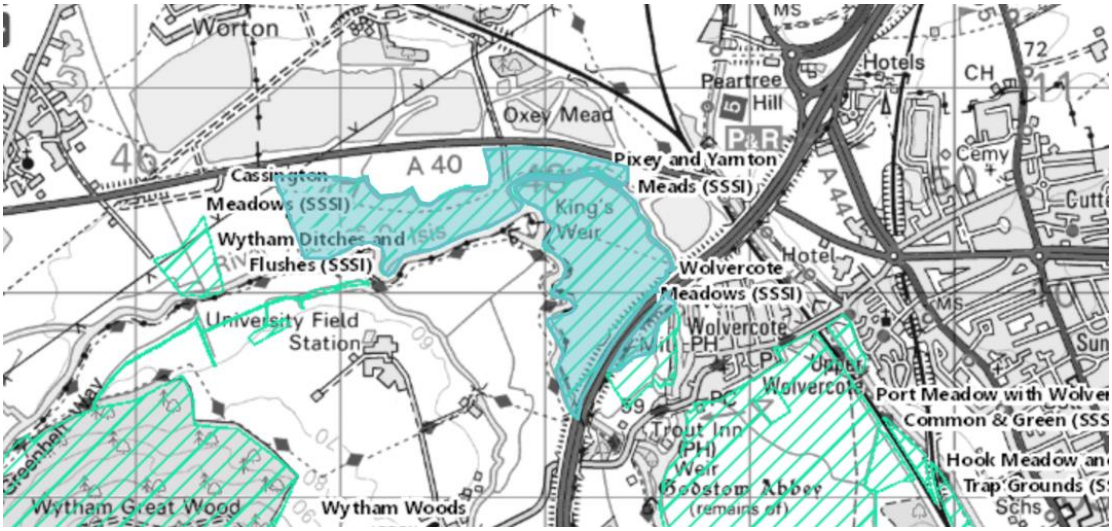


Figure 25 – Sites of Special Scientific Interest (magic.defra.gov.uk)
Note Oxey Mead SSSI is to the south of the A40; Oxey Mead north of the A40 on this map is the Lake (see 4.6)

4.5.2 The Pixey, Oxey and Yarnton Mead SSSIs are also part of Oxford Meadows Special Area of Conservation, defined as such by Natural England, and they create a direct block to an Eynsham rail route connecting from south of the A40 bridge. It is problematic to construct rail schemes through SSSIs and often involves significant work on reallocation of the land and costly mitigating actions.

4.5.3 It is likely embankments and/or bridges or viaducts would be required across these SSSIs that would significantly affect their ecological and visual value.

4.5.4 An extensive viaduct would be required across the lake between the A40 and A34.

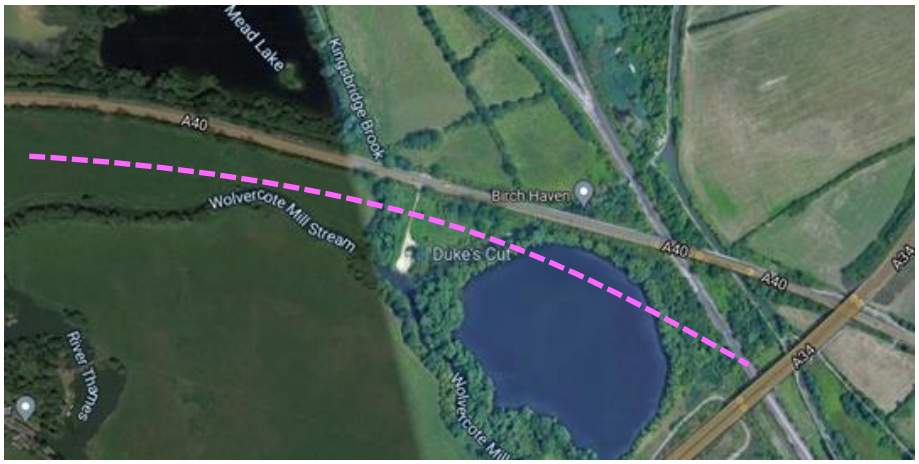


Figure 26 - Eynsham Junction route from south of A40 overbridge

4.5.5 Even if an approach could be agreed that could overcome the location of the SSSIs, it is highly likely that the track geometry of a sharp westward junction from the Oxford-Birmingham Line would create a very low line speed. This would mean the junction would work inefficiently and potentially would not support the train service required.

4.5.6 It is therefore felt this is highly complex as an option from engineering and ecological perspectives and would not be supported by stakeholders.

Figure 27 - Pixey Mead looking west from Wolvercote (Aerofilms/Historic England 1950)

Figure 28 – Oxey Mead Nature Reserve south of A40 (Berks Bucks Oxon Wildlife Trust)

4.6 Connection north of the A40 overbridge to the Oxford-Birmingham or North Cotswold lines

4.6.1 There are two routes considered to the north of the A40 overbridge, one diverging from the Oxford-Birmingham line immediately to the south of Wolvercote North Junction, and a second from the North Cotswold Line just to the west of Wolvercote North Junction.

Figure 29 - Eynsham Junction route options from north of A40 bridge

4.6.2 Two significant water features, Oxey Mead and Peninsula lakes, parts of Hanson Aggregates Cassington Quarry, are located just to the northwest of the A40 bridge, and on the northern side of the A40.

Figure 30 - Oxey Mead and Peninsula Lakes

4.6.3 The first option - a westward facing Eynsham route junction from the Oxford-Birmingham Line junction - would need to proceed over some or all of the lakes, representing significant engineering and ecological challenges.

4.6.4 The issues at 4.3 and 4.4 equally apply, most particularly the direct proximity of Wolvercote North Junction itself within less than 80 metres (4.3.2 above). Extensive junction remodelling and the immediate presence of the Oxford Canal, the Grade II-listed Duke's Cut Canal connection to the Thames, and the Duke's Lock House would set significant engineering and conservation challenges.

4.6.5 In effect this option would be forming Wolvercote North as a 3-way rather than 2-way junction, and thus also be a major operational proposition unlikely to gain rail industry support.

4.6.6 The second option could be a connection just north of Wolvercote North Junction directly from the North Cotswold Line (in purple at Figure 29). However, there is little to be gained because the new track would need to run parallel with the existing North Cotswold Line to a point where the route can turn west north of Oxey Mead Lake.

4.6.7 It would thus be more logical to diverge from the North Cotswold Line further west as per the Cassington and Yarnton Junction options discussed at section 3 above.

Appendix A
Appendix B

Attached as separate pdfs