

**THE OXFORDSHIRE COUNTY COUNCIL (DIDCOT GARDEN TOWN
HIGHWAYS INFRASTRUCTURE – A4130 IMPROVEMENT (MILTON GATE
TO COLLETT ROUNDABOUT), A4197 DIDCOT TO CULHAM LINK ROAD,
AND A415 CLIFTON HAMPDEN BYPASS) COMPULSORY PURCHASE
ORDER 2022**

**THE OXFORDSHIRE COUNTY COUNCIL (DIDCOT TO CULHAM THAMES
BRIDGE) SCHEME 2022**

**THE OXFORDSHIRE COUNTY COUNCIL (DIDCOT GARDEN TOWN
HIGHWAYS INFRASTRUCTURE – A4130 IMPROVEMENT (MILTON GATE
TO COLLETT ROUNDABOUT), A4197 DIDCOT TO CULHAM LINK ROAD,
AND A415 CLIFTON HAMPDEN BYPASS) (SIDE ROADS) ORDER 2022**

AND

**THE CALLED-IN PLANNING APPLICATION BY OXFORDSHIRE COUNTY
COUNCIL FOR THE DUALLING OF THE A4130 CARRIAGEWAY,
CONSTRUCTION OF THE DIDCOT SCIENCE BRIDGE, ROAD BRIDGE
OVER THE APPLEFORD RAILWAY SIDINGS AND ROAD BRIDGE OVER
THE RIVER THAMES, AND ASSOCIATED WORKS BETWEEN THE A34
MILTON INTERCHANGE AND THE B4015 NORTH OF CLIFTON HAMPDEN,
OXFORDSHIRE (APPLICATION NO: R3.0138/21)**

PLANNING INSPECTORATE REFERENCE:

APP/U3100/V/23/3326625 and NATTRAN/SE/HAO/286 (DPI/U3100/23/12)

Proof of evidence of

KARL CHAN

**(Technical Highways Engineering – Culham River Crossing and
Clifton Hampden Bypass)**

Note: This proof of evidence is of primary relevance to the Inquiries into the Orders, but also of relevance to the Inquiry in the called-in Planning Application in relation to the Scheme design process that informed the Planning Application (Section 2), and the response to representations made on the Planning Application (Section 3).

1 INTRODUCTION AND QUALIFICATIONS

- 1.1 I am Karl Chan and I am an Associate Director at AECOM and have been working for AECOM since April 2014. I hold a MEng in Civil Engineering from Imperial College London.
- 1.2 I have 21 years' experience in traffic and highways engineering. My current role is mainly on managing the delivery and technical design of multidisciplinary traffic and highways projects, including active travel, junction improvements and traffic management schemes. I also lead the AECOM's Streets Team in our Croydon office which consists of 10 members of staff.
- 1.3 My evidence relates to my involvement in the Scheme since September 2019 as Project Manager for the A4197 Culham to Didcot to Culham Link Road element of the Scheme, including the Didcot to Culham Thames Bridge. I was responsible for managing the delivery of the Feasibility Design, Preliminary Design and technical input to the Planning Application.
- 1.4 I will also be giving evidence for A415 Clifton Hampden Bypass. I was not involved in that element of the Scheme on a day-to-day basis during design development. However, the Scheme was developed and delivered in a coordinated manner, thus allowing me to have sufficient knowledge to provide evidence on the A415 Clifton Hampden Bypass Scheme.

Scope of Evidence

- 1.5 This proof of evidence has been prepared regarding highways engineering matters relating to:
 - 1.5.1 The called-in planning application by Oxfordshire County Council for the dualling of the A4130 carriageway, construction of the Didcot Science Bridge, road bridge over the Appleford Railway Sidings and road bridge over the River Thames, and associated works between the A34 Milton Interchange and the B4015 north of Clifton Hampden, Oxfordshire (Application No: R3.0138/21) (the **Planning Application**);
 - 1.5.2 The Oxfordshire County Council (Didcot Garden Town Highways Infrastructure – A4130 Improvement (Milton to Collett Roundabout), A4197 Didcot to Culham Link Road, and A415 Clifton Hampden Bypass) Compulsory Purchase Order 2022 (the **CPO**);
 - 1.5.3 The Oxfordshire County Council (Didcot to Culham Thames Bridge) Scheme 2022 (the **Bridge Scheme**); and
 - 1.5.4 The Oxfordshire County Council (Didcot Garden Town Highways Infrastructure– A4130 Improvement (Milton to Collett Roundabout), A4197 Didcot to Culham Link Road, and A415 Clifton Hampden Bypass) (Side Roads) Order 2022 (the **SRO**) (the CPO, Bridge Scheme and SRO taken together as referred to throughout as the Orders).
- 1.6 The Planning Application was submitted, and the Orders were made, to facilitate the delivery of the Access to Didcot Garden Town Highway Improvements (the **Scheme**) which consists of a highway scheme approximately 11km in length, including converting 1.8km of single carriageway to dual carriageway, 6.8km of new single carriageway and approximately 20km of new and/or improved off-carriageway cycling and pedestrian infrastructure. Connections into the existing public rights of way network will also be provided. The Scheme also includes three over bridges.
- 1.7 The Orders were made by Oxfordshire County Council in its capacity as acquiring authority (the **Acquiring Authority**) on 21 December 2022 and submitted to the Secretary of State for Transport on 26 January 2023.

- 1.8 The Planning Application was submitted by Oxfordshire County Council in its capacity as applicant (the **Applicant**) on 4 October 2021 and called-in by the Secretary of State for Levelling Up, Housing and Communities on 25 July 2023.
- 1.9 The Planning Application and the Orders are now due to be considered by an Inspector at conjoined Public Inquiries scheduled to open on 20 February 2024. This proof of evidence has been prepared in connection with those Inquiries.
- 1.10 The purpose of my evidence is to explain the process of Scheme design, the components of the Scheme, the design considerations for the Side Roads Order and to provide a response to design criticisms of the Scheme that have been raised in objections and representations. My evidence focuses on the Culham River Crossing and the Clifton Hampden Bypass elements of the Scheme, whilst my colleague Andy Blanchard's proof of evidence will focus on the Didcot Science Bridge and A4130 Widening elements of the Scheme.
- 1.11 My proof of evidence should be read in conjunction with other separate but interrelated proofs of evidence submitted on behalf of the Council, including:
 - 1.11.1 Strategic Need and Benefits, Highway Issues, Scheme Selection and Alternatives, prepared by Aron Wisdom of Oxfordshire County Council;
 - 1.11.2 Local Transport and Connectivity Plan, prepared by John Disley of Oxfordshire County Council;
 - 1.11.3 Technical Traffic and Highways Engineering - A4130 Widening and Didcot Science Bridge, prepared by Andrew Blanchard of AECOM;
 - 1.11.4 Traffic Modelling, prepared by Claudia Currie of AtkinsRéalis;
 - 1.11.5 Environmental Impact Assessment, prepared by Alex Maddox of AECOM;
 - 1.11.6 Noise and Vibration, prepared by Andrew Pagett of AECOM;
 - 1.11.7 Air Quality, prepared by Anna Savage of AECOM;
 - 1.11.8 Climate Change, prepared by Chris Landsburgh of AECOM;
 - 1.11.9 Landscape and Visual Impact, prepared by Jane Ash of AECOM;
 - 1.11.10 Planning, prepared by Bernard Greep of Stantec;
 - 1.11.11 Negotiations and Acquisition prepared by Steven Moon of Gateley Hamer; and
 - 1.11.12 Compulsory Purchase Justification prepared by Timothy Mann of Oxfordshire County Council.
- 1.12 I confirm that the evidence that I have prepared in respect of the Inquiries is given in accordance with the guidance of my professional institution and I can confirm that the opinions expressed are my true and professional opinions.

2 SCHEME DESIGN

- 2.1 This section introduces the design work completed to date, outlines the steps undertaken to complete the design, and the key standards and guidance followed in preparing it. It then details the important parts of the Didcot to Culham River Crossing and Clifton Hampden Bypass elements of the Scheme, and how and why they were developed, as shown in the General Arrangement drawings (CD D.7 to D19 Highway General Arrangement Plans Sheet 7 to Sheet 19).

Summary of the Design Process

- 2.2 For the design processes, the Scheme was separated into four elements:
- 2.2.1 A4130 Widening (**WID**), which duals the existing road between Milton Gate and the link to the new Science Bridge, with several new junctions into adjacent proposed developments;
 - 2.2.2 Science Bridge (**DSB**), a new bridge over the Great Western Railway Mainline and a new link road through the former Didcot A Power Station site, re-joining the A4130 Northern Perimeter Road north of the Purchas Road/Hawksworth Roundabout;
 - 2.2.3 Didcot to Culham River Crossing (**CRX**), providing a new road connecting the A4130 at Didcot with the A415 at Culham, including a bridge over the River Thames and another bridge over a private rail line, and connections to Appleford and Sutton Courtenay via the B4016 (the subject of this evidence);
 - 2.2.4 Clifton Hampden Bypass (**CHB**), a new relief road north of the village, between the A415 at Culham Science Centre and the B4015 Oxford Road, north of Clifton Hampden (the subject of this evidence).
- 2.3 Following identification of the need for the Scheme, assessment of alternatives and Scheme selection completed by others (see the proof of evidence of Aron Wisdom), a Feasibility Design of the Scheme had been initiated.
- 2.4 I managed the AECOM delivery team that took over the partially completed Feasibility Design in 2019, and completed it in late Spring 2020. This phase sought to deliver a Conceptual Design, where the key elements had been considered in sufficient detail to give a good degree of confidence that the proposed design would deliver on the objectives of the Scheme.
- 2.5 The Scheme was then advanced into the Preliminary Design Stage, with the design work moving onto a topographical survey, adding further details to the design and ensuring that it complied with the National and Local Standards and followed relevant guidance. I continued to lead and manage the preparation of the design for my element, coordinating input from multiple specialist disciplines until Autumn 2021.
- 2.6 The design was developed to its current form in a well thought through and thorough process, which was sufficient to allow the land and rights requirements to be clearly defined for the Scheme's construction and operation. This allowed for the necessary Statutory Orders (Side Road Order and Compulsory Purchase Order) to be prepared, with the justification for these orders documented in Section 14 of the Acquiring Authority's Statement of Case.
- 2.7 The next design phase is the preparation of the Detailed Design, which commenced in 2023 and is ongoing. During this phase, additional details will be added to the design, such as specification of materials, to allow a contractor to construct the Scheme.

Details of the Design Process

- 2.8 The geometric layout of the road has been prepared in accordance with the Design Manual for Roads and Bridges (DMRB) for the Scheme (A4197 Didcot to Culham Link

Road and A415 Clifton Hampden Bypass). Some of the key sections of DMRB included DMRB CD 109¹ Highway link design, DMRB CD 116 Geometric design of roundabouts, DMRB CD 123 Geometric design of at-grade and signal-controlled junctions and DMRB CD 143 Designing for walking, cycling and horse-riding. Although significant effort was undertaken to comply with these and other standards, a number of Departures from Standards were identified in the design. These Departures were discussed with the Local Highway Authority and accepted. The Manual for Streets (**MfS**) and Manual for Streets 2 (**MfS2**) were also used in the development of the whole design, main carriageway and sides streets/accesses.

- 2.9 As well as following Oxfordshire County Council's (as highway authority) Walking Design Standards (2017) and Oxfordshire County Council's (as highway authority) Cycling Design Standards (2017), which provide technical solutions to support walking and cycling use of the Scheme, a Walking, Cycling and Horse-Riding Assessment and Review (WCHAR) was completed for both elements (CD A.7, Appendix A to the Transport Assessment) as defined by DMRB GG² 142 . This process helped identify the walking and cycling networks, including the Public Rights of Way in the area, and the opportunities that the Scheme could bring to integrating and enhancing the attractiveness of walking and cycling for existing and future users.
- 2.10 During the initial phase of the Preliminary Design, a Local Transport Note (LTN 1/20) was published outlining the requirements for designing for cycling. At this point the design was reviewed to ensure that it complied with this LTN.
- 2.11 Stage 1 Road Safety Audit (RSA) (CD A.7 Transport Assessment, Appendix D) has been carried out as part of the design process, in accordance with DMRB GG 119 Road Safety Audit, to provide an independent review of the road safety implications of the Scheme. AECOM, (the Design Organisation), and Local Highway Authority (the Overseeing Organisation), reviewed the problems raised and recommendations before agreeing RSA actions and necessary amendments to the design. The agreed actions are recorded in the RSA Response Report.
- 2.12 A contractor, John Graham Construction Ltd, was engaged during the Preliminary Design stage to advise on the constructability of the designs and provide recommendations for design amendments. This process of Early Contractor Involvement (**ECI**) is common practice in the industry to minimise the risk of changes later in the design process or during construction, when changes can become more costly. The ECI also advised on the likely size and locations of site compounds required, as well as the land areas required, in order to construct the Scheme.

Traffic Regulation Orders

- 2.13 Traffic Regulation Orders (**TRO**) will be required for the Scheme in respect of prohibiting, restricting or regulating the use of a road by traffic. For the Scheme, this includes: new speed limits or amendments to existing speed limits; prohibiting and restricting the use of a road; prohibiting or restricting waiting of vehicles or the loading and unloading of vehicles; and restrictions on overtaking. TROs will be drafted, consulted and notices published in a local newspaper. The TROs will be made following due process.
- 2.14 The TROs for the Scheme are in the process of being drafted and are not considered to represent an impediment to the delivery of the Scheme. However, the TROs cannot be promoted until it is known that the Scheme is to go ahead and due to open.
- 2.15 The following speed limit changes proposed by the CRX and CHB elements of the Scheme will require TROs; additional TROs may be identified as the Scheme goes through the detailed design process.

¹ DMRB CD = Design Manual for Roads and Bridges: Civil engineering Design

² DMRB GG = Design Manual for Roads and Bridges: General principles and scheme governance General information

- 2.15.1 The enlarged Collett roundabout and associated arms will be reduced from 50mph to 30mph. The northern arm of the Collett Roundabout directly links into the proposed Didcot to Culham River crossing, this single carriageway will also be subject to a 30mph for 690m from the roundabout. This single carriageway will continue north to the A415 Abingdon Road over the River Thames and will be subject to a 50mph speed limit;
- 2.15.2 The existing 60mph speed limit on the B4016 Appleford Road west of the proposed Didcot to Culham River crossing will be reduced to 30mph;
- 2.15.3 The proposed A415 roundabout with the new Didcot to Culham River Crossing and associated arms will be subject to a 50mph speed limit;
- 2.15.4 The new A415 roundabout with Culham Science Centre and associated arms will have a designated speed limit of 40mph;
- 2.15.5 The proposed single carriageway Clifton Hampden Bypass will be subject to a 50mph speed limit;
- 2.15.6 The existing A415 between Culham Science Centre to Clifton Hampden Village will be reduced from 60mph to 30mph speed limit; and
- 2.15.7 The existing B4015 Oxford Road between Courtiers Garden and the new Clifton Hampden Bypass will be reduced to a 30mph speed limit.

Didcot to Culham River Crossing (CRX)

- 2.16 The Didcot to Culham River Crossing (**CRX**) is one of the four elements that make up the Scheme. This part of the Scheme comprises of a new single carriageway link between the A4130, to the north of Didcot, and the A415 Abingdon Road. The proposed location of the CRX element is shown in Figure 1.
- 2.17 For the general arrangement layout of the Didcot to Culham River Crossing, refer to CD D.7 to CD D.15.
- 2.18 Speed limits were determined for each link throughout CRX, typically 30mph for urban links and 50mph for rural sections. DMRB CD 109 was used to determine the corresponding design speeds for each section of road based on the proposed speed limits.



Figure 1 Didcot to Culham River Crossing Location Plan

- 2.19 The existing, at grade, four-arm roundabout (Collett roundabout) will be enlarged. It will include two lanes on its circulatory carriageway where currently there is only one. All approaches to the roundabout will flare out to two lanes and all exits off the roundabout will merge from two lanes into one lane. The proposed roundabout has an inscribed circle diameter, the largest circle that can be inscribed within the junction kerbs, of 58m and the size of the roundabout is required to safely accommodate the four arms and comply with the relevant section of CD 116 Geometric design of roundabouts. The proposed Collett Roundabout layout is shown in Figure 2.
- 2.20 Shared-use cyclist and pedestrian facilities are proposed at the Collett roundabout, with an inline Toucan crossing on the eastern arm, a raised parallel crossing on the southern arm, plus uncontrolled crossing points on the western and northern arms. An off-road segregated cyclist and pedestrian use cycle track will be provided to the north side of the A4130 west of Collett Roundabout to connect to the same provision in the adjacent Didcot Science Bridge element of the Scheme.

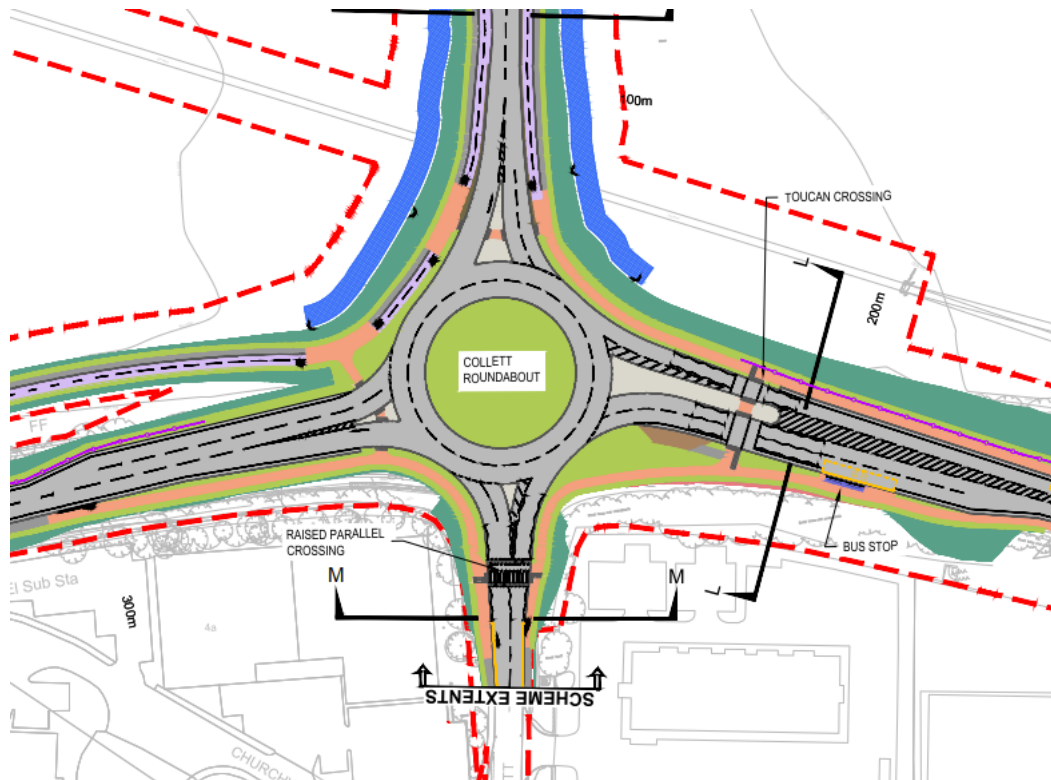


Figure 2 Proposed Collett Roundabout layout

- 2.21 The Scheme continues north along the current alignment of an access road to several private residential properties at present. The alignment will continue as a single carriageway with two accesses, one to land located to the east of the Scheme and one to land located west of the Scheme, both serving the proposed Didcot Technology Park (D-Tech) site (see Figure 3 for location). The D-Tech site will not be constructed in advance of the Scheme, therefore, access to the former J James Pallets and Wood Recycling site will be maintained, ensuring that any occupier of the site is able to operate during the construction of the Scheme. There will also be private accesses to Hartwright House and Hill Farm House.

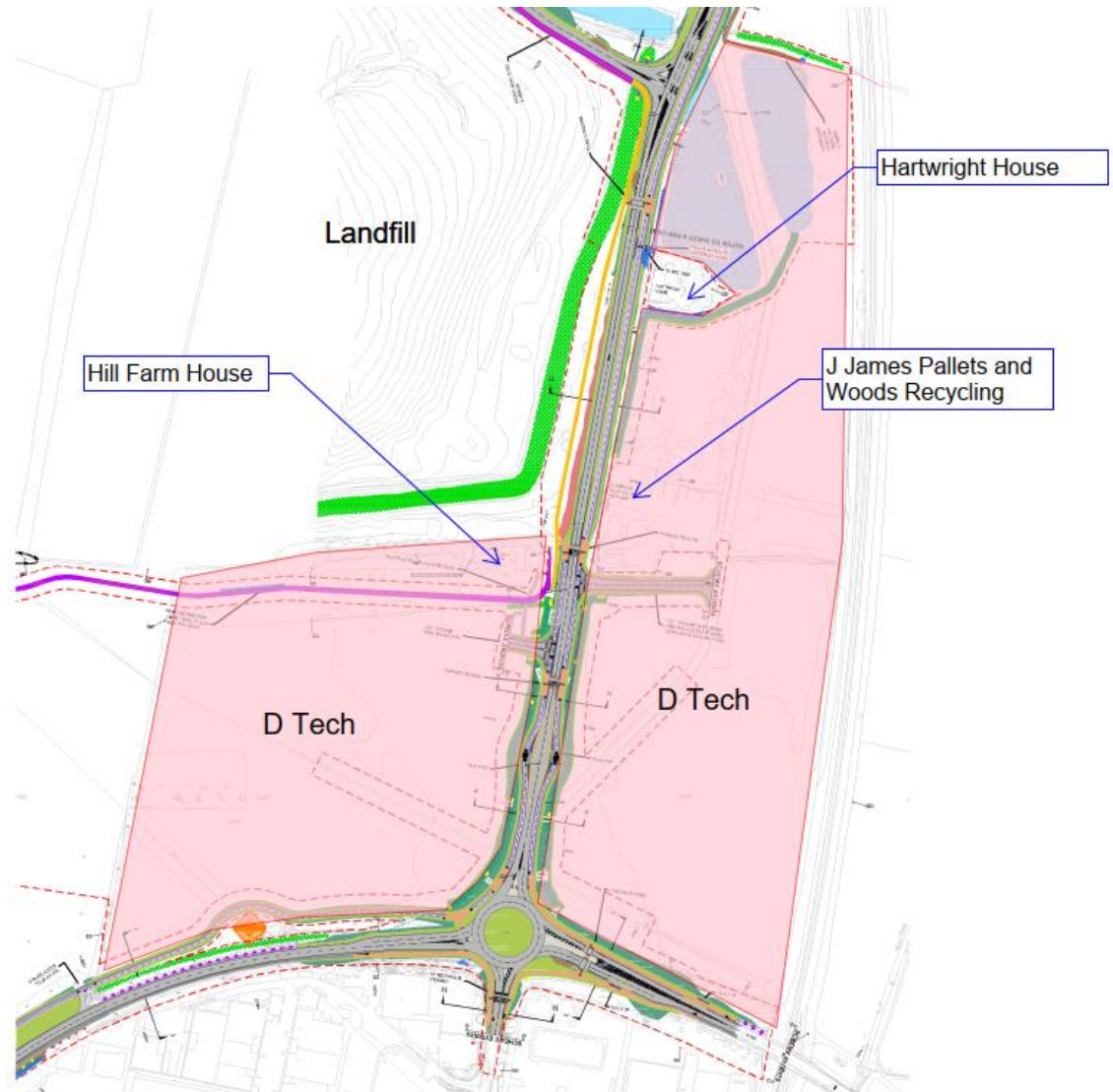


Figure 3 Didcot Technology Park and properties in the vicinity

- 2.22 North of the Collett roundabout, there will be dedicated, off-carriageway, segregated two-way cycle tracks and footways either side of the carriageway and integral to the new length of Classified Road. Two parallel crossings will be provided to facilitate the proposed D-Tech development site and bus stops. The facilities on the northbound side will cease at the parallel crossing located north of the accesses to the proposed D-Tech development site. These facilities will continue adjacent to the southbound carriageway leading up to the Abingdon roundabout at A415.
- 2.23 The typical cross section of the Scheme in the D-Tech area between the A4130 Collett Roundabout and the proposed parallel crossing at Hill Farm is as follows and shown in Figure 4.
- 7.3m wide carriageway (2 x 3.65m traffic lanes) with kerb edge treatment
 - 0.5m wide hard segregation strip each side of the carriageway
 - 3.0m wide bi-directional cycleway each side of the carriageway
 - 2.0m wide footway each side of the carriageway
 - 1.0m wide verges.

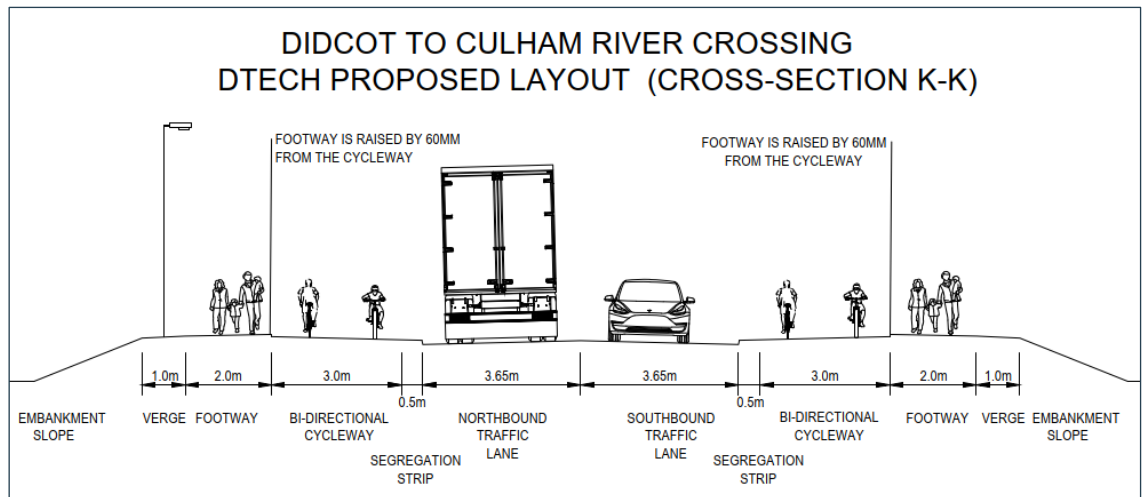


Figure 4 Typical cross section of the Scheme through D-Tech area

2.24 Footway and bi-directional cycleway are proposed on both sides of the carriageway to reflect the urban setting and encourage active travel modes of transport, by ensuring good connectivity for walking and cycling to both side of the development site. The 2m footway width proposed is the absolute minimum allowed for in DMRB and the 3m cycleway width is the desirable minimum set out in LTN 1/20. A 0.5m segregation strip is proposed to provide the desirable minimum horizontal separation between the carriageway and the cycle tracks.

2.25 Figure 5 sets out a typical cross section of the CRX element, north of the proposed parallel crossing at Hill Farm and north of the D-Tech area, from the parallel crossing to the A415 Abingdon Roundabout. This cross section shows pedestrian and cyclist facilities on the southbound side only, as per the description below and Figure 5.

- 7.3m wide carriageway (2 x 3.65m traffic lanes)
- 1.0m wide hard strip either side of the carriageway
- 2.5m wide grassed verge northbound
- 2.0m wide grassed segregation strip southbound
- 4.0m wide bi-directional cycleway southbound
- 2.0m wide footway southbound
- 1.0m wide verge southbound.

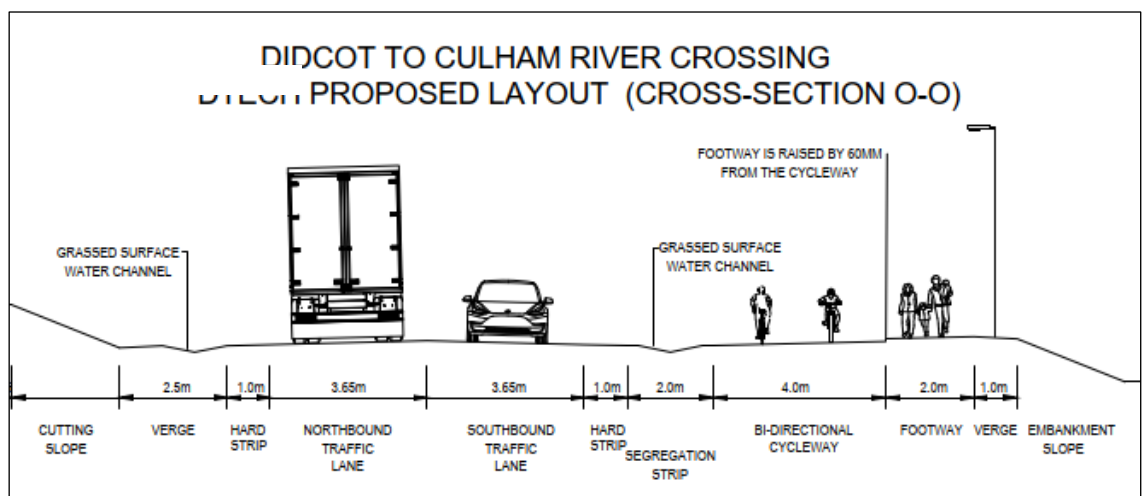


Figure 5 Typical cross section of the Scheme north of D-Tech area

2.26 North of Hartwright House, the Scheme is aligned between four ponds, located to the east and west of the proposed road alignment (see Figure 6 for illustration). The road

alignment curves east then west to minimise the impact on these ponds, however, small sections of two of the ponds will need to be infilled to accommodate the width of the road. At this location, to the west of the main carriageway, a priority T junction and a new access road will be constructed to replace the existing Portway Road access road further north. The priority junction will include a ghost island right turn lane for traffic travelling from the north. The minor arm will incorporate a widened exit so that traffic turning left to the north can filter past vehicles waiting to turn right. The severed section of the Portway Road will be retained as an access for maintenance and operational purposes for the ponds to the north and south. There will also be a priority T junction and an access road to replace the existing access for Level Crossing Cottage

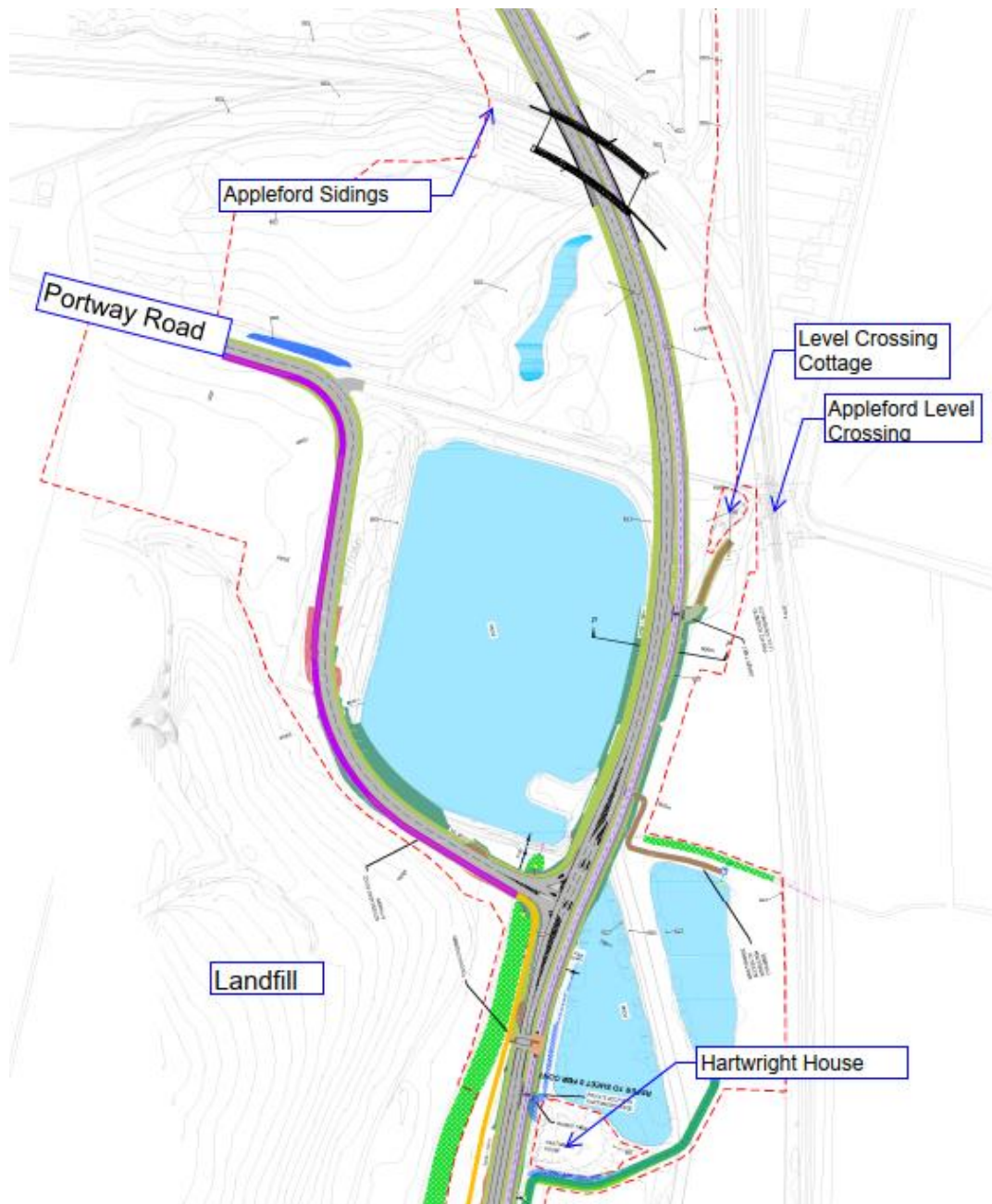


Figure 6 Location plan around Appleford Level Crossing

- 2.27 A Toucan crossing will be provided for pedestrians and cyclists to cross the Scheme immediately south of the FCC/Hanson access road junction. The crossing will connect to a shared-use restricted byway along the west side of the Scheme.

- 2.28 An additional bridleway link to connect with an existing National Cycle Network route 5 (**NCN5**) west of Hill Farm could be delivered by other parties, which would be secured as planning applications for development come forward. The restricted byway through the FCC landfill and Hanson quarries area will continue to be connected on the west side of the Scheme and by use of the new access road alignment, within which a new shared use facility will be provided (as shown by magenta line in Figure 6).
- 2.29 Bridleway 106/3/10 (see Figure 7 for location) will be stopped up as part of the Scheme, replaced by the Scheme's dedicated footway and bi-directional cycleway parallel to the carriageway. These are significant improvements to the existing condition where no NMU facilities are provided.
- 2.30 However, it has been brought to the attention of the Acquiring Authority that, in addition to this Bridleway 3, a consideration of an application to modify the Definitive Map and Statement has concluded that historically a highway route also extends across the railway line at the Appleford Level Crossing to the B4016 instead of stopping west of the level crossing. As a result Oxfordshire County Council, as highway authority, has made (on 13 December 2023) an Order which, if confirmed, proposes that the Definitive Map and Statement of Public Rights of Way for Oxfordshire shall be modified to add this route, across Appleford Crossing to its junction with the B4016, as a Bridleway to become a part of Bridleway 3 i (see Figure 7). This information is currently being reviewed.

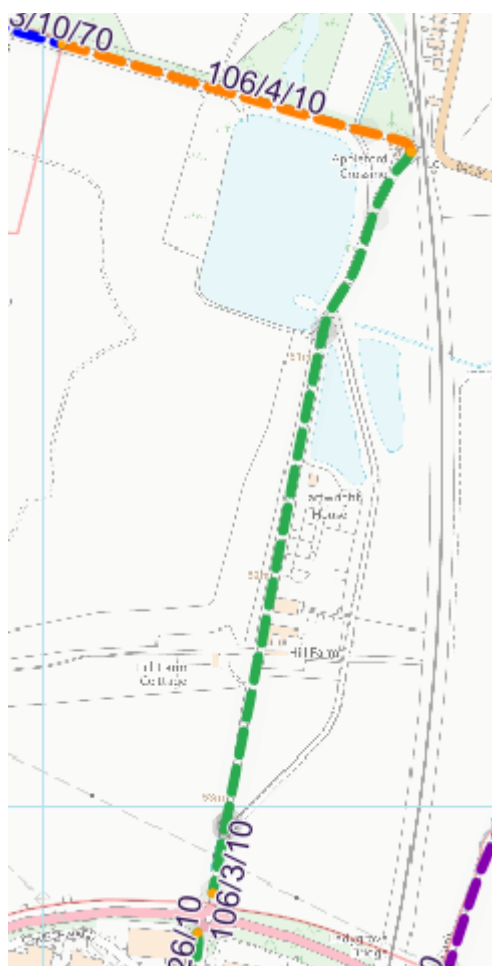


Figure 7 Bridleway 106/3/10 location

- 2.31 Further north, the Scheme will cross Appleford railway sidings, a private railway siding for the Hanson aggregate operations and FCC Environment (UK) Landfill Site. The road will start rising to a maximum gradient of 4.5% towards the historic landfill site. Due to the curvature of the road and the need for a Vehicle Restraint System (VRS) barrier on

the top of the embankment; the western verge would be approximately 4.3m along this section to maintain acceptable stopping sight distance.

2.32 The footway/cycleway provision on this part of the Scheme with the cycleway narrows to the desirable minimum 3.0m wide over the proposed Appleford Sidings Bridge, the details of which are set out below together with a cross section as shown in Figure 8:

- Paved width: 9.3m wide inclusive of 3.65m traffic lanes and 1.0m hard strips
- Raised verge: 2.0m wide on the east side and 0.6m on the west side
- Cycleway: 3.0m wide on the east side
- Footway: 2.0m wide on the east side

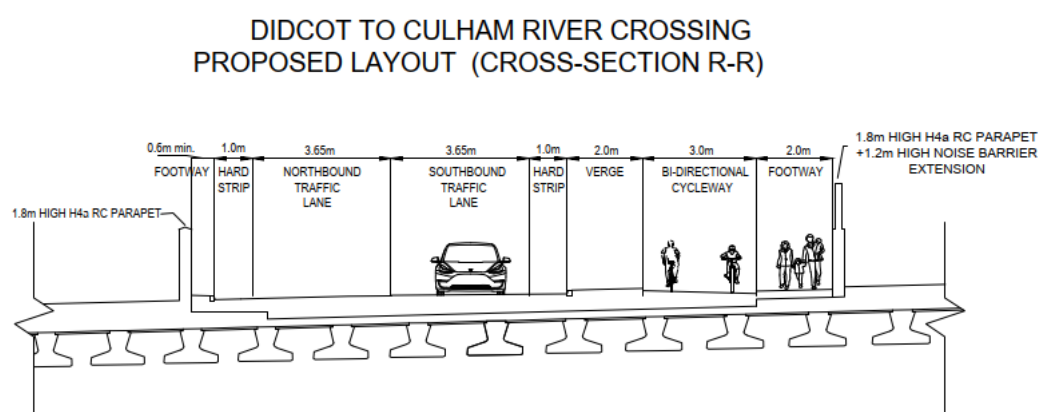


Figure 8 Typical highway cross sections over Appleford Siding Bridge

- 2.33 The 0.6m raised verge, 1.0m hard strip and 2.0m segregation compliant to DMRB CD 127 Cross-sections and headrooms and DMRB CD 143 Designing for walking, cycling and horse-riding. The Scheme will remain as a single carriageway and will continue through an area of historic restored landfill (known as the 90-Acre Field, see Figure 9 for illustration). There will be a priority junction on the B4016 to the north and west of Appleford, including a dedicated ghost island right turn lane for traffic travelling north. There will be an uncontrolled crossing of the Scheme immediately north of the junction with the B4016. This will connect with a shared-use pedestrian and cyclist facility, which will extend alongside the northbound lane of the Scheme and continue beside the westbound lane of the B4016 from the Sutton Courtenay roundabout. Further north, two bus stops located opposite each other will be provided offline from the main carriageway of the Scheme.
- 2.34 After the priority junction with the B4016 Appleford Road, the Scheme integral cycle track and footway will continue separately from the proposed carriageway by using a section of the existing B4016 carriageway alignment, which will be converted to the cyclist/pedestrian use facility as part of the B4016 improvement. A raised parallel crossing will be provided across the B4016 arm of the junction, and an integral cyclist/pedestrian use cycle track will be created within the northern side of the improved B4016, adjacent to the eastbound lane of the B4016, to connect the Scheme with the village of Appleford.
- 2.35 The proposed Sutton Courtenay roundabout will be an at grade, three-arm roundabout with two lanes on its circulatory carriageway. Two lanes will be included on all exits, which will merge to one lane once off the roundabout. This roundabout will provide access to the crossing over the River Thames and maintain links between Appleford and Sutton Courtenay and the surrounding areas. The proposed roundabout has an inscribed circle diameter of 66m and the size of the roundabout is required to safely accommodate the

three arms and comply with the relevant section of DMRB CD 116 Geometric design of roundabouts. The proposed Sutton Courtenay roundabout layout is shown in Figure 9.

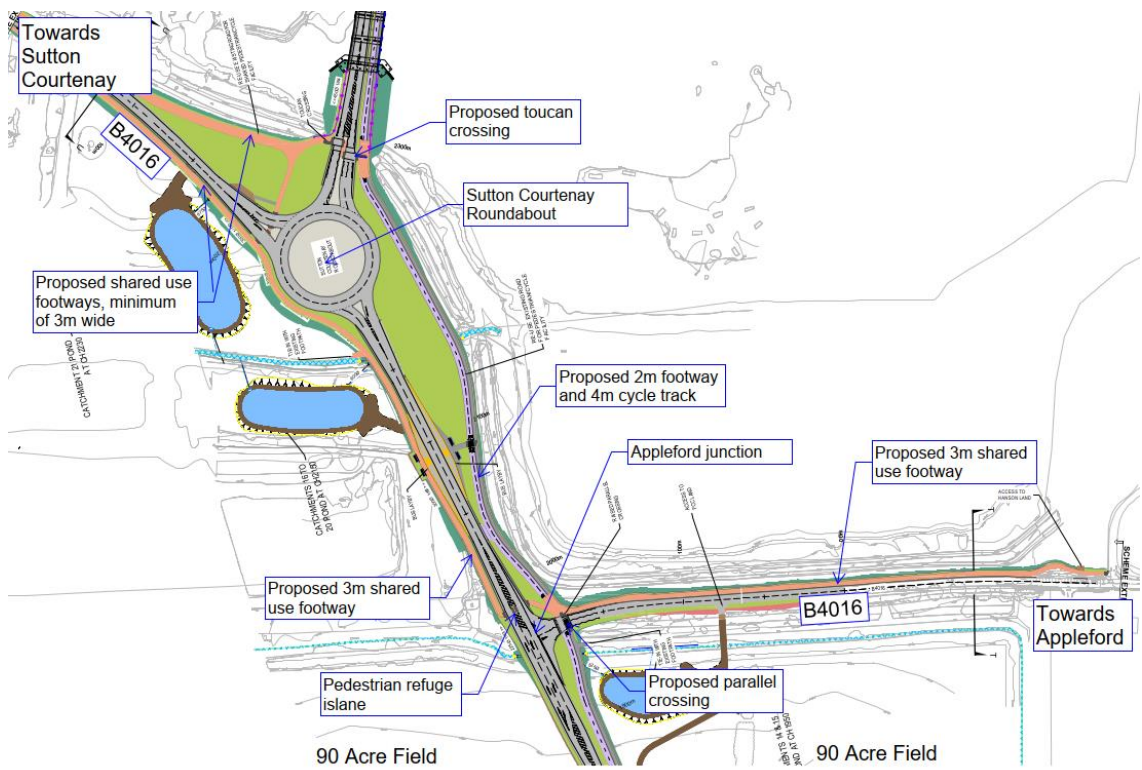


Figure 9 Proposed road layout and NMU facilities over 90 Acre field and Sutton Courtenay Roundabout

- 2.36 Extending north from Sutton Courtenay roundabout, a 336m viaduct is provided to cross the River Thames floodplain with a 65m single span bridge over the River Thames, south bank to north bank. There will be two 45-metre side spans, one on the south bank of the River Thames as the last viaduct span before the bridge, and one on the north bank of the River Thames, before the road continues on embankment northwards. There will be dedicated, off-carriageway, two-way cycle track and footway facilities located adjacent to the southbound lane on the bridge. The River Thames is navigable at this location so the bridge height above water level has been designed to accommodate river traffic.
- 2.37 The crossing over the River Thames will be a single carriageway and has a similar cross-section to the Appleford Sidings Bridge. The details are set out below and in the cross section shown in Figure 10:
- Paved width: 9.3m wide inclusive of 3.65m traffic lanes and 1.0m hard strips
 - Raised verge: 2.0m wide on the east side and 0.6m on the west side
 - Cycleway: 3.0m wide on the east side
 - Footway: 2.0m wide on the east side

DIDCOT TO CULHAM RIVER CROSSING PROPOSED LAYOUT (CROSS-SECTION V-V)

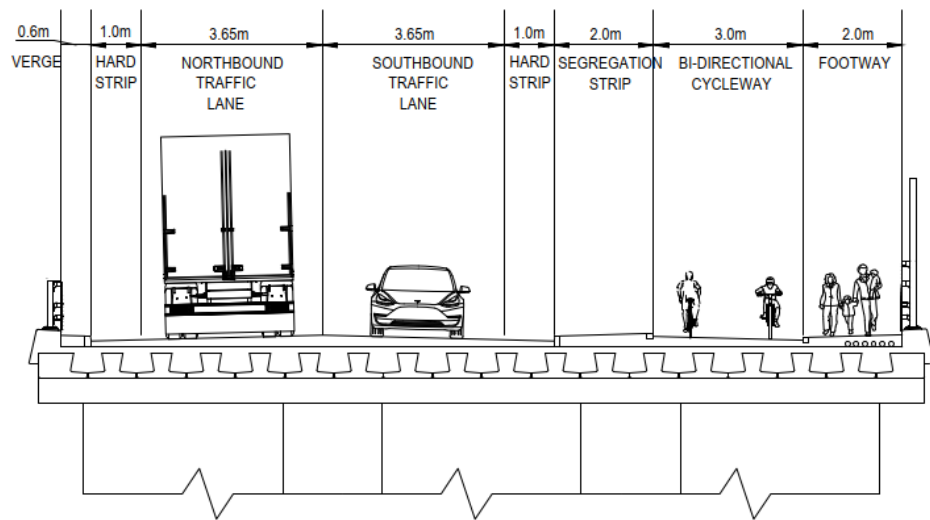


Figure 10 Typical highway cross sections over River Thames Bridge and viaduct

- 2.38 North of the River Thames, a footpath will be provided to connect from the eastern side of the new road to the Thames Path.
- 2.39 Further north, private accesses will be created to a farm property, Zouch Farm, located either side of the alignment. Where the Scheme interfaces with the A415 Abingdon Road, a new four-arm at grade roundabout will be constructed to the north of the existing carriageway alignment, as an improvement of the A415. This connects the A415 Abingdon Road, the new road and a new stub to the north for the South Oxfordshire District Council Local Plan allocated housing site at the Land Adjacent to Culham Science Centre.
- 2.40 The A415 Abingdon Roundabout has two lanes on its southern circulatory carriageway and three on its northern side. This will ensure three lanes are provided at the A415 eastbound access onto the roundabout. Two-lane approaches will be included on all other entries, except for the A415 westbound, which will also include a segregated left turn lane. To the east of the roundabout, the A415 will return to a single carriageway. The roundabout has an inscribed circle diameter of 84m and the size of the roundabout is required to safely accommodate the four arms and comply with the relevant section of DMRB CD 116 Geometric design of roundabouts. The proposed Abingdon roundabout layout is shown in Figure 11 below.



Figure 11 Proposed Abingdon Roundabout layout

- 2.41 The two-way cycle track and footway will continue to the Abingdon roundabout, where it will extend east adjacent to the westbound lane of the A415, linking back to the existing Non-Motorised User (NMU) facilities that lead into the Clifton Hampden Bypass. Access to a Toucan crossing across the eastern arm of Abingdon roundabout will be provided from the cycle track and footway. This will provide access to dedicated, off-carriageway, segregated two-way cycle track and footway facilities located adjacent to the eastbound lane of the A415. A raised parallel crossing will be provided across the northern arm of the roundabout.
- 2.42 The proposed NMU facilities on the northern arm will lead into land allocated for future development known as Land adjacent to Culham Science Centre. A 3.0m two-way cycle track and 2.0m footway will be provided on the western arm adjacent to the east bound carriageway.

Clifton Hampden Bypass (CHB)

- 2.43 The Clifton Hampden Bypass (CHB) is one of the four elements that makes up the Scheme. This part of the Scheme will provide a new single carriageway link between the A415 Abingdon Road to the west of Clifton Hampden, and B4016 Oxford Road, to the north of the village. The proposed location of the CHB element is shown in Figure 12.
- 2.44 For the general arrangement layout of Clifton Hampden Bypass, refer to CD D.16 to CD D.19.
- 2.45 Speed limits for each link throughout the CHB were determined as 40mph on the CHB west of A415 connection junction and 50mph to the east of the same junction. The speed limit on the section of A415 and B4015 that the CHB bypasses will be reduced to 30mph. Access roads proposed as part of the Scheme will be subjected to a 20mph speed limit. DMRB CD 109 and MfS were used to determine the corresponding design speeds for each section of road based on the proposed speed limits.

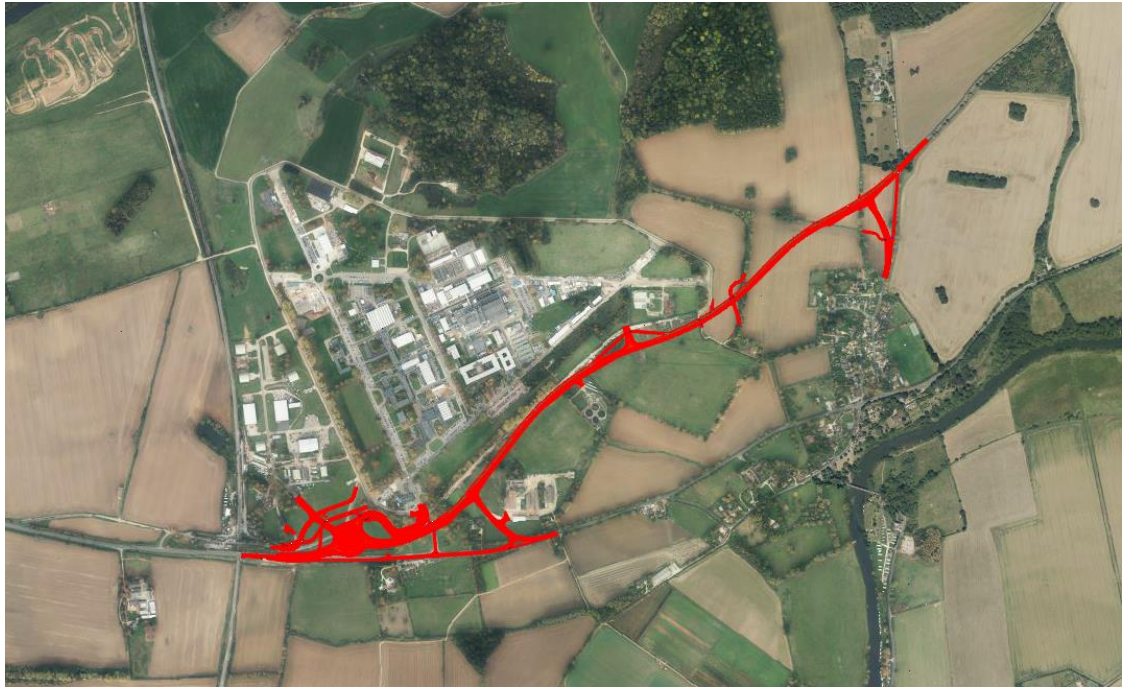


Figure 12 Clifton Hampden Bypass Location Plan

- 2.46 The CHB will re-route traffic on the A415 around the village of Clifton Hampden, which currently experiences a large amount of through traffic as people travel between the A415 to A4074. The existing A415 will be realigned south of the Culham Science Centre, connecting to the B4015 Oxford Road to the north of Clifton Hampden Village, and a bypass will be created.
- 2.47 The proposed works also include the construction of a four-arm roundabout at the western end of the Scheme, just east of Culham Station, providing access to the South Oxfordshire District Council Local Plan allocated housing site known as Land adjacent to Culham Science Centre, a railway station and Leda Properties Limited owned farmland/businesses north of Culham Science Centre (coming off the northern arm), and Culham Science Centre (on the north east arm). The proposed roundabout has an inscribed circle diameter of 86m and the size of the roundabout is required to safely accommodate the four arms and comply with the relevant section of CD 116 Geometric design of roundabouts. The proposed Culham Science Centre Roundabout layout is shown in Figure 13.

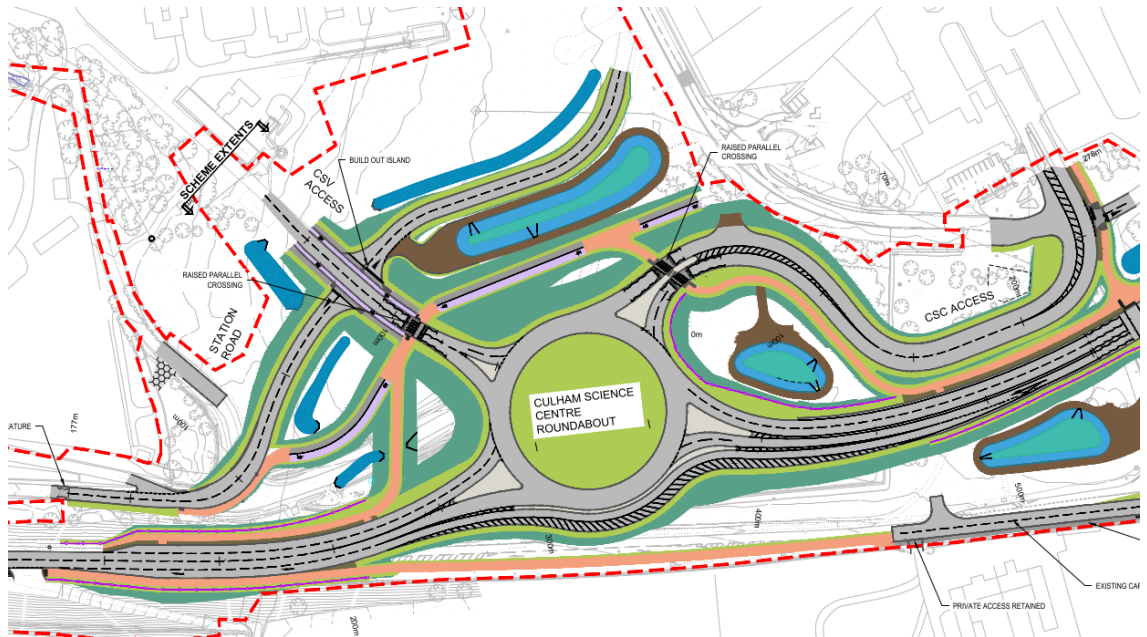


Figure 13 Proposed Culham Science Centre Roundabout layout

- 2.48 A dedicated, off-carriageway, cyclist and pedestrian shared use facility will be provided both sides of the A415 carriageway, integral to that highway, west of the roundabout. There will be several shared and segregated cyclist and pedestrian facilities, with crossings, created around the roundabout with the Culham Science Centre and Clifton Hampden Bypass. A new segregated cyclist and pedestrian facilities is proposed to link Culham Station and Culham Science Centre. This route is under 700m long and is designed wide enough in anticipation for large groups of pedestrians using it as they travel to/from train. Raised parallel crossings have been provided along this route to allow priority for NMUs over vehicular traffic.
- 2.49 The existing A415 that will no longer be required for vehicular traffic, lying to the south of the proposed roundabout, will be stopped up and become a new shared use facility, which links up to a new shared use integral cycle track of the A415 on its south side.
- 2.50 This new route extends west across the existing rail bridge and into the Didcot to Culham River Crossing. The existing main entrance to the Culham Science Centre will be repurposed as a cyclist and pedestrian shared use cycle track to connect the existing A415 and the new bypass. This will be shared with a private access road for the Acquiring Authority's use to access one of its attenuation ponds. A toucan crossing is proposed where this route meets the bypass.
- 2.51 Station Road will be realigned and will join with a new entrance to the industrial properties (Culham No 1 site) located north west of the roundabout. The alignment is governed by limiting the gradient between Station Road and the proposed roundabout to 2.5% due to level differences.
- 2.52 An existing access road into the Culham Science Centre will be terminated and converted into a cyclist/pedestrian use cycle track. The other exit from the roundabout into the Culham Science Centre will provide two access points to Culham Science Centre (main gate and perimeter road). The bypass will be aligned in a south west to north east direction and will be a single carriageway, approximately 11.3m in width, including segregation strip and hard strip, but this will increase in some cases, for example, where dedicated ghost island right turn lanes are provided.
- 2.53 The Scheme continues north-east, south of Culham Science Centre, roughly parallel to Thame Lane. The main characteristics of the Scheme along the CHB is as follows and a typical cross-section is shown in Figure 14.

- 7.3m wide carriageway (2 x 3.65m traffic lanes)
- 1m hard strip either side of the carriageway
- 2m grassed surface water channel eastbound
- 3.5m bi-directional shared use facility eastbound
- 1m verge eastbound
- 2.5m verge westbound

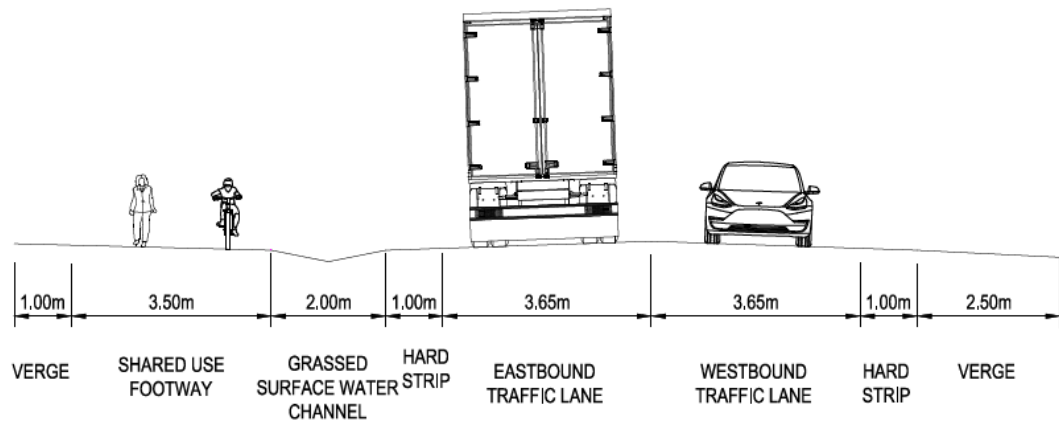


Figure 14 CHB typical cross-section

- 2.54 Along the bypass, an integral cyclist and pedestrian shared use facility will be provided along the north side of the road. Several crossings at adjoining roads will be provided and links to existing footpaths will be provided. Additionally, two uncontrolled crossings across the bypass will be provided to maintain the connectivity of local Public Rights of Way.
- 2.55 A new priority T-junction is proposed to connect the existing A415 with CHB. There will be a dedicated, ghost island, right turn lane that will connect with a new single carriageway, which will connect with the current alignment of the A415. This will provide access to the village of Clifton Hampden.

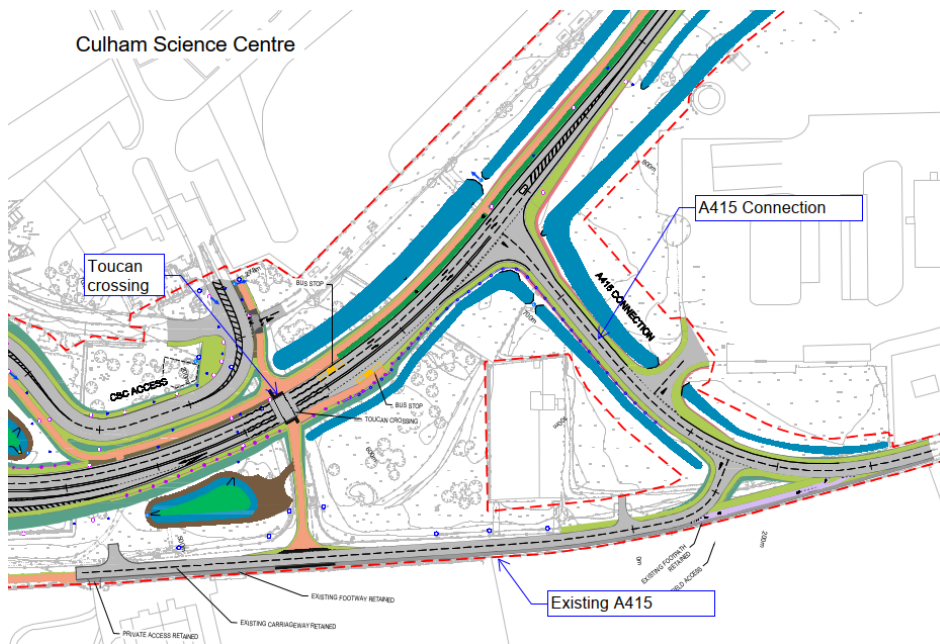


Figure 15 Proposed priority junction between CHB and A415 Connection

- 2.56 North of the A415 connection, due to space constraints between Culham Science Centre and the Treatment Works, the alignment veers northwest towards the Scheme boundary

to minimise impact on the Culham Treatment Works (see Figure 16). The shared use facility at this location will also be reduced to 3.0m to minimise impact.

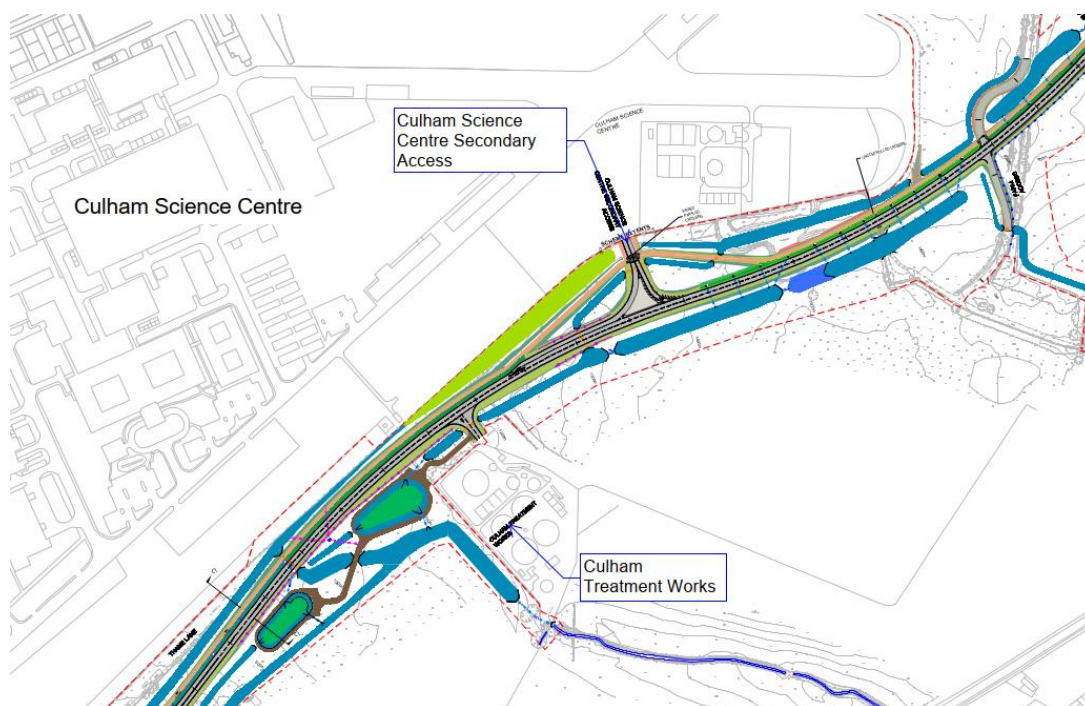


Figure 16 CHB alignment by Culham Treatment Works

- 2.57 The bypass continues northeast and will tie-in with the current alignment of the B4015 Oxford Road (east), and a T-junction will be included to provide access to the current alignment of the B4015 Oxford Road (south-west). This will include a dedicated, ghost island, right turn lane in the eastbound direction.
- 2.58 An integral cyclist and pedestrian use shared use facility will be provided along the west side of the realigned B4015, at the northern end of Clifton Hampden Village. The existing B4015 carriageway that will no longer be required for vehicular traffic, will be stopped up and provided as a new cyclist and pedestrian use cycle track, which links to the existing B4015 to the north.
- 2.59 Two bus stops are proposed on the bypass, outside Culham Science Centre, to link public transport to this employment centre. The westbound bus stop will be in a lay-by, while the eastbound bus stop will be on-carriageway. A second pair of bus stops are proposed near the B4015 connection junction, as a provision for future use by local bus companies to connect with Clifton Hampden Village. The westbound bus stop will be in a lay-by, while the eastbound bus stop will be on-carriageway. Both sets of bus stops will be equipped with a bus shelter and Sheffield stands.

Summary

- 2.60 The above section has outlined the designs for Didcot to Culham River Crossing and Clifton Hampden Bypass elements of the Scheme and set out the reasons for key design decisions along the route.

3 RESPONSE TO DESIGN REPRESENTATIONS AND OBJECTIONS RELEVANT TO THE DIDCOT TO CULHAM RIVER CROSSING AND CLIFTON HAMPDEN BYPASS

- 3.1 This section response to the criticisms submitted by parties making representations to the design under the called-in Planning Application and also in objections to the Orders prepared in support of the Scheme. As in the previous Section, the content below only applies to those representations and objections received relating to the design of the Didcot to Culham River Crossing and Clifton Hampden Bypass elements of the Scheme.

Design Criticisms

- 3.2 The following provides a response to criticisms raised by a number of interested parties on design matters within the Didcot to Culham River Crossing and Clifton Hampden Bypass elements. These parties include:

Planning Application Representations

- Andrew P Jones
- Victoria Shepherd
- Jacqueline Mason
- Graham Smith

Objectors

- Network Rail
- Mr and Mrs Alan Aries
- Stephen Smith
- CPRE
- Sutton Courtenay Parish Council
- Thames Water
- Appleford Parish Council
- UKAEA
- Caudwell and Sons Ltd
- Morrells Farming Ltd
- Emmet of Drayton
- Morrells Holdings Limited
- CEG
- Leda Properties Limited

Andrew P Jones, 3 October 2023 (CD N.19)

- 3.3 Andrew P Jones comments in his representation to the Planning Application (CD N.19) that the design of the proposed route close to Appleford on a flyover is, in his view, a bad design for any cyclists wanting to use the route towards Culham and Oxford. Mr Jones suggested that it should be possible to create a level, less expensive, alternative route.
- 3.4 Mr Jones suggests that the Appleford bypass should go along the north side of the Power Station 400kv switch site then follow the existing roadway to the River Thames.

Response

- 3.5 In relation to the cycle design, the cycle facilities are integral part of the design and are proposed along the whole length of the Scheme. The proposed cycle facilities meet the standard set out in the current Local Transport Note (LTN) 1/20 Cycle Infrastructure Design Guidance, except the maximum length of gradients are exceeded as the Scheme alignment rises over the historic landfill site north of the private rail siding. For details of the walking and cycling facilities, refer to Paragraph 2.16 to 2.59 in Section 2.
- 3.6 In relation to the alternative route suggested by Andrew P Jones, the section around Appleford would extend north from Collett Roundabout and steer west towards the

southern edge of the landfill site. The suggested route would then turn north in between two landfill areas and follow the existing roadway towards the River Thames. This alternative route would increase the length of the route by approximately 1km, which is significant for walking and, to a lesser extent, cycling and would truncate the proposed Didcot Technology Park site (see Figure 17 for illustration). The suggested route would then follow the southern end of the landfill site where a drainage ditch is located. The ditch forms part of a site-wide drainage system around the perimeter of the live landfill site, which will likely be impacted.

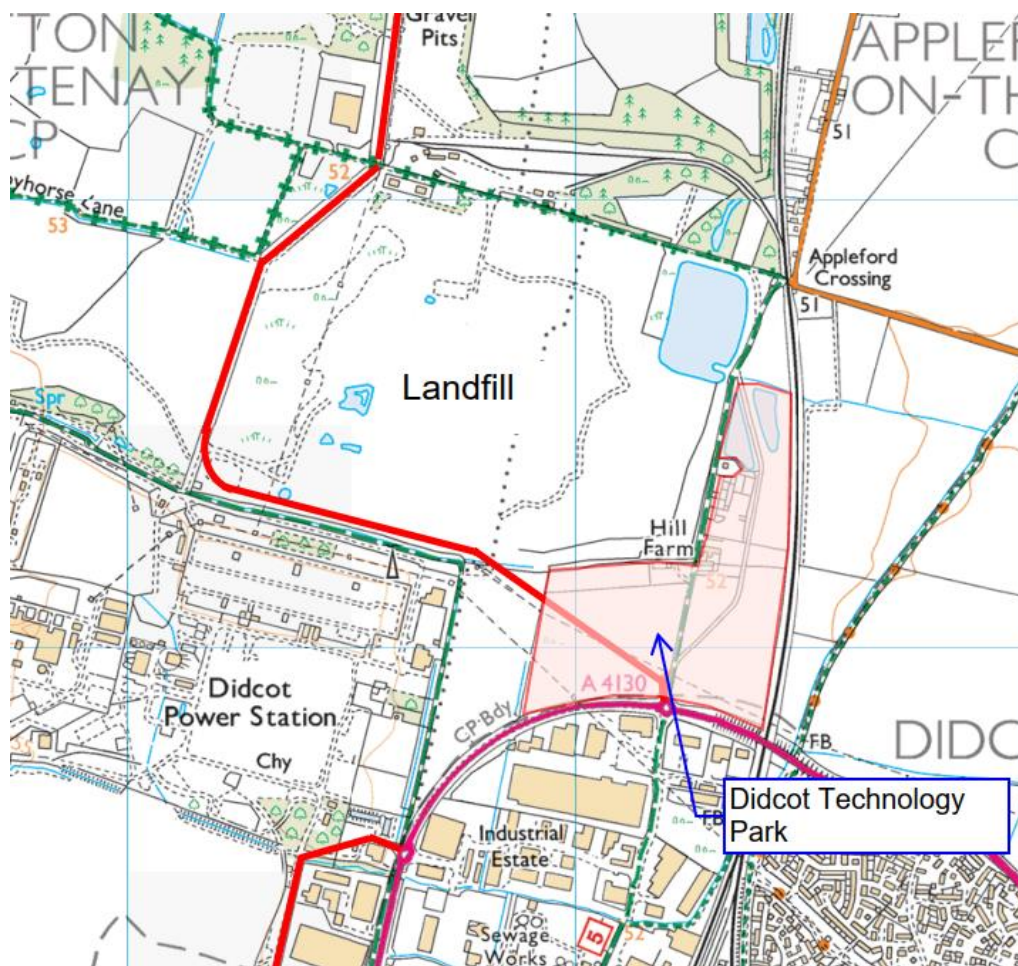


Figure 17 Alternative alignment suggestion provided by Mr. Jones with indicative area for the Didcot Technology Park Local Development Order

- 3.7 The route would then turn north around the south western corner of the landfill site. At the intended speed limit of 50mph (design speed of 85 kph), a desirable minimum horizontal curvature of 510m would be needed, which would encroach the live landfill site. Due to the above reasons, the suggested alignment is not considered to be viable.
- 3.8 A number of alternative alignment similar to Mr Jones suggested alignment have been assessed and deemed not suitable. For further details refer to Aron Wisdom's proof of evidence.

Victoria Shepherd, 3 October 2023 (CD N.23)

- 3.9 Ms Shepherd comments in her representation to the Planning Application (CD N.23) that the Science Bridge and Appleford Sidings Bridge should be improved. It is her view that the Appleford Sidings Bridge should be improved and moved west, so that it perpendicularly crosses the sidings rather than at the current angle. She claims that the Appleford Sidings Bridge will magnify noise back to local residents, at great cost.

Response

- 3.10 The perpendicular crossing of the sidings would require the Scheme in this location to be larger and longer. As a result, this would increase the cost but would also have the impact of being more noise reflective than would be necessary with the alignment that the Scheme proposes.
- 3.11 The location of the Appleford Sidings Bridge is determined by the alignment of the Scheme. The road alignment north of Collett Roundabout is constrained by the Local Development Order (LDO) site for Didcot Technology Park, the operational landfill site to the west and the three ponds which form part of the drainage network for the area. The Scheme alignment minimises the impact to the above features in the area, in particular the landfill site where any impact would be both financially and environmentally costly (see Figure 18 for illustration).

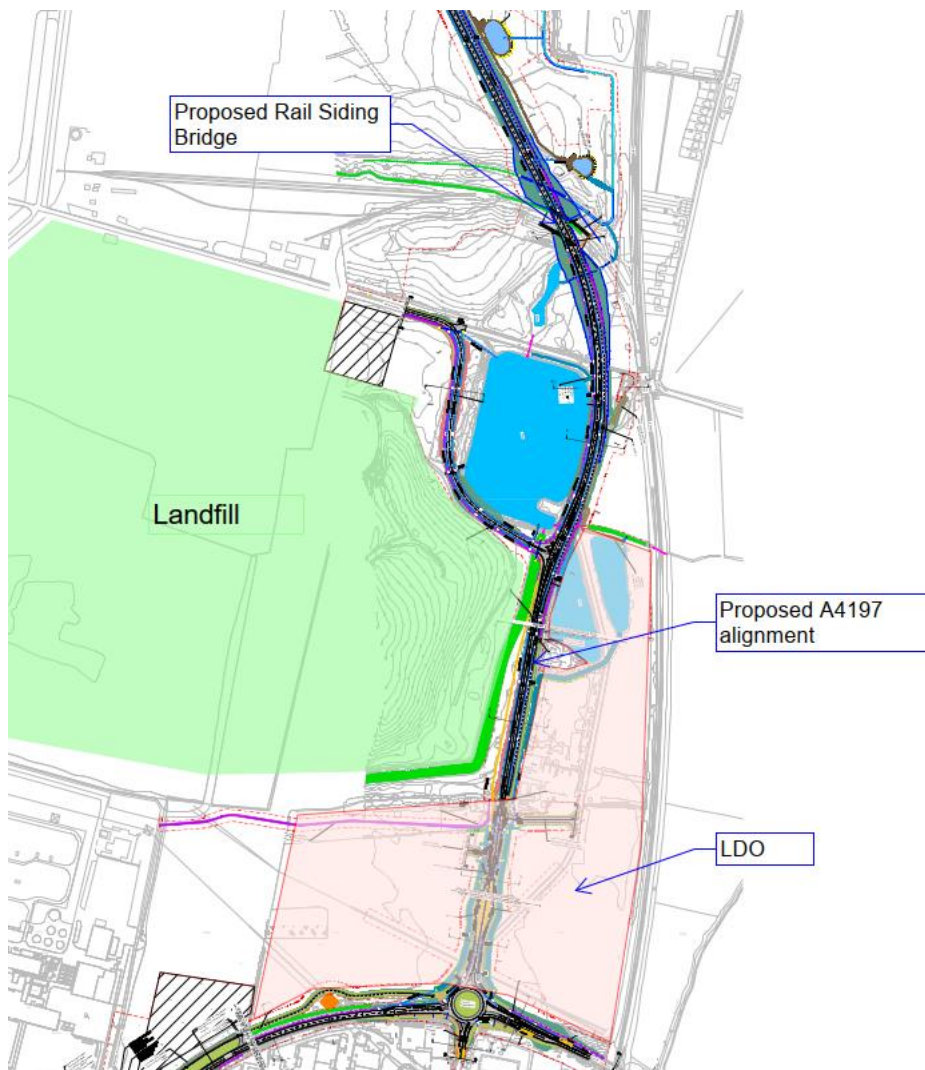


Figure 18 Proposed A4197 alignment

- 3.12 In relation to moving the road alignment and bridge west, a review was undertaken during engagement with Appleford Parish Council to assess the feasibility of moving the road alignment west. The assessment of alternatives is contained in Chapter 3 Assessment of Alternatives of the Environmental Statement (CD A.15) and also refer to Aron Wisdom's proof of evidence. The alignment would cut through recent landfill cells, with ground settlement likely to occur for circa 10 years; therefore, it is likely the Scheme would need to be built as a structure using piles through the landfill, or that the landfill

waste would need to be excavated. In addition, the bridge structure over the rail sidings would likely be longer as it is crossing the sidings at a wider point.

- 3.13 Alternative routes west of the proposed alignment such as cutting through the rectangular pond have also been reviewed (CD A.15 ES Chapter 3 Assessment of Alternatives) but that would require either filling large proportion of the pond to support the road or a bridge structure would be needed. Given the technical challenges alongside delivery timescales and budgets, these options have not been pursued.
- 3.14 The Rail Siding Bridge is designed in accordance with DMRB. In determining the form of the structure proposed at the location; key design parameters, constraints, geology, environment and ecology were established. The span length was one of the primary factors in establishing the superstructure form; allowing for options to be developed suitable for the span length(s). The substructure options were then developed cognisant of the preferred superstructure form and articulation arrangement.
- 3.15 An option study was carried out in 2020 (see Appendix KC2.1 for Option Study report) prior to the preliminary design commencement to assess the form of structure most suitable for the Rail Siding Bridge. A non-technical summary of this study was also prepare as part of the planning application (CD C.2 – Appendix M). The Option Study considered the following span arrangement options:
 - Option 1: A bridge which spans square to the railway below, with curved abutments set almost parallel to the boundary constraints providing a clear span of approximately 22m.
 - Option 2: A skewed bridge square to the carriageway with straight abutments set outside of the boundary constraints providing a clear span of 48m at a skew of 63°.

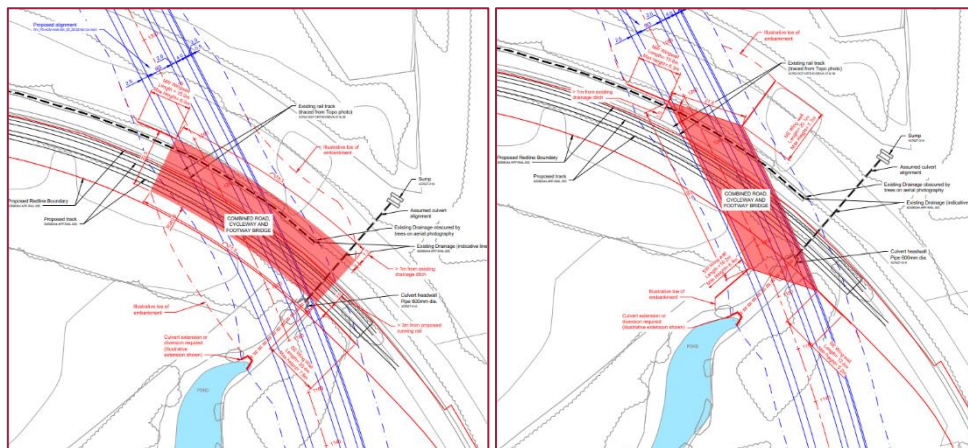


Figure 19 Rail Siding Bridge options, Option 1 on the left and Option 2 on the right

- 3.16 Additionally, two discrete bridges, one carrying the carriageway and the other the footway/cycleway over the railway, were considered. This was discounted due to future-proofing and the added complexity on maintaining two separate structures. There was also concern regarding perceived personal security concerns for pedestrians and cyclists and that the arrangement would not be less visually obtrusive than the current option.
- 3.17 Option 2, which provides the smaller footprint, was not recommended as a solution as the large span requires a deep construction depth. The approach embankments would need to be raised to accommodate the structural clearance requirements below the bridge. Option 1 provides the smallest construction depth due to a shorter span, providing the shallowest profile of the structural options considered.
- 3.18 The redundant areas of the proposed structure will not be visible to road users as it will be shielded by the acoustic barriers from the carriageway and footway/cycleway, and the inhabitants of the neighbouring village will be screened by the existing trees along the railway track. This form of structure is not uncommon, and an example of a similar form

has been submitted as part of the Planning Application (CD B.2 Appendix G Oversized Bridge Examples).

- 3.19 Regarding the design of Science Bridge, refer to Andrew Blanchard's proof of evidence.
- 3.20 Regarding noise impacts on Appleford, refer to Andrew Pagett's proof of evidence.

Jacqueline Mason, 20 September 2023 (CD N.3)

- 3.21 Mrs Mason raises concerns in her representation to the Planning Application (CD N.3) that the downgrading of the existing A415 to an accessway would provide opportunities for uncontrolled parking and the ability for gypsies and travellers to use it as a layby for period of time.
- 3.22 Mrs Mason is also concerned that retention of a footpath and cycle way will ostensibly link Clifton Hampden with the railway station and that there is no proposed safe crossing point between the existing A415 and Culham Station.

Response

- 3.23 Regarding the downgrading of the existing A415, the existing road will be connected with CHB via a new connection road (see Figure 20 for layout). There is no further access requirement or operational need for the existing A415 road to extend beyond Fullamoor Farmhouse to maintain private mean of access. The section of existing A415 south of the proposed roundabout will be stopped up and become a new shared use facility. The feasibility of retaining the existing A415 and connecting to the Culham Science Centre roundabout has been reviewed. This would require an additional fifth arm and would require planning permission and the acquisition of third-party land outside of the Order Land (as defined further in the proof of evidence of Steven Moon). It would also be likely to have other negative impacts, such as in relation to the impacts on cultural heritage relating to the Fullamoor Farmhouse (Refer to Bernard Greep's proof of evidence Appendix BG2.4: Heritage Note for further detail).

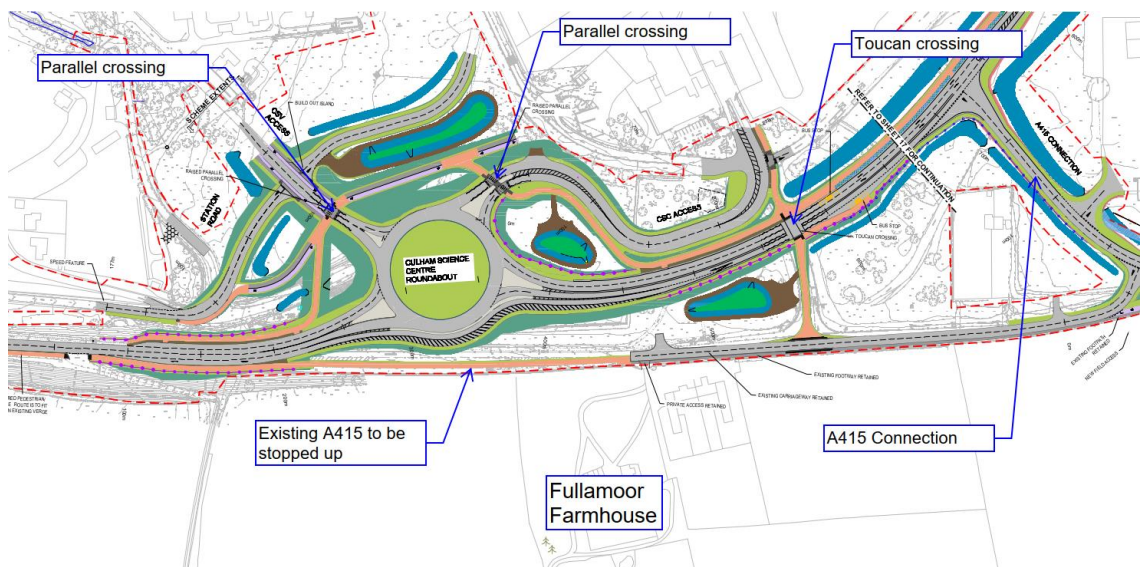


Figure 20 Existing A415 and new connection road

- 3.24 In addition, the Page 121 of the Acquiring Authority Statement of Case (CDM.10) references a SYSTRA modelling report (included as Appendix 12 of CDM.10) which specifically considers a fifth arm being included on the proposed Culham Science Centre roundabout. The traffic modelling report concluded "that though the alternative arrangement has little overall impact on traffic conditions in the AM, in the PM there are significant increases in queuing at both the Culham Science Centre/Site No.1 access

roundabout and the Clifton Hampden signalised junction. In addition to the increases that these queues would make to journey times, there is also likely to be an impact on noise and air quality in the area caused by changes to the queuing patterns. Due to the above reasons, the existing A415 would need to be closed off east of the Culham Science Centre roundabout but would have to be retained in order to provide access to the properties along the road.

- 3.25 Waiting and loading restrictions can be introduced by implementing traffic regulation order in order to deter uncontrolled parking should that be an issue.
- 3.26 In response to Mrs Mason's suggestion that there is no safe crossing point between the existing A415 and Culham Station, while it is acknowledged that there is no direct crossing point between the existing A415 and Culham Station, the Scheme provides high-quality, coherent, connected and safer walking and cycling infrastructure, with controlled crossings proposed on each crossing point.
- 3.27 Mrs Mason suggests the pedestrian route ignores all rational desire lines between the Station and Clifton Hampden. This is incorrect, as the new pedestrian / cycle routes are in the general desire line for users traveling east-west between Culham Station and Clifton Hampden. From Clifton Hampden, users would follow the existing A415, turning north on a dedicated pedestrian and cycle link before travelling west towards Culham Station north of the Culham Science Centre (CSC) roundabout away from the fast moving main traffic. It is acknowledged that this route is not on the desire line for occupiers at Fullamoor Cottage and adjacent properties; however, the new route would provide a safer and higher quality route for all.

Graham Smith, 6 October 2023 (CD N.29)

- 3.28 Mr Smith suggests in his representation to the Planning Application (CD N.29) that the wrong design guidance has been used in the preparation of the Scheme. Mr Smith proposes that Manual for Streets (**MfS**) guidance should have been used to encourage reduced car use, better public transport and enable active travel.

Response

- 3.29 MfS is intended for application on lightly-trafficked residential streets, but many of its key principles may be applicable to other types of streets, for example high streets and lightly-trafficked lanes in rural areas (MfS, Status and application, page 5). The Scheme does not fall into these road types so MfS is not considered appropriate.
- 3.30 However, the later MfS2, which seeks to apply the principles from MfS to busier streets and non-trunk roads, is more relevant to the Scheme. These principles were used in preparing the Scheme design, alongside the more traditional Design Manual for Roads and Bridges Standard. For example:
- Footways and cycle facilities were at the forefront of the design, and are proposed to be safe, well connected, direct, comfortable and with priority at crossing points, and straight signalised two-stage crossings are proposed over the dual carriageway links. The Scheme is in compliance with the latest cycling standards (LTN 1/20) except the CRX where maximum length of gradients are exceeded due to topography.
 - Bus facilities were considered in collaboration with the main local bus operator, with new bus stops provided throughout the Scheme.
 - Bus priority will be possible at the signalised crossings through selective vehicle detection – allowing changes to the traffic signal timings when buses are detected, giving priority to the approach where a bus is detected.
 - A low design speed was used in the preparing of the new roads throughout the Scheme, more in line with the principles of MfS2 than DMRB for some sections: 30mph between Collett Roundabout and the FCC/Hanson access junction; 40mph on CHB west of the A415 Connection priority junction; and 20mph speed limits on the access roads off the Culham Science Centre roundabout.

Network Rail, 3 February 2023 (CD J.1)

- 3.31 Network Rail objects to the Orders on the grounds that operational railway land is adversely affected.

Response

- 3.32 In relation to Network Rail's objections, the Acquiring Authority is in the process of negotiating a framework agreement with Network Rail, which will address Network Rail's concerns and govern a series of other legal documents pertaining to access and protection of Network Rail's operational assets. The framework agreement will detail modifications that the Acquiring Authority will request that the Inspector, and Secretary of State for Transport, consider when looking to confirm the CPO. These modifications are set out below but will be dealt with in more detail in the modifications session of the Inquiries, in advance of which a full table of modifications requested will be provided to the Inspector.
- 3.33 There are a number of plots in the CHB element where Network Rail has an interest in the land, whether that be ownership or the benefit of rights over the land (see Figure 21 for location).

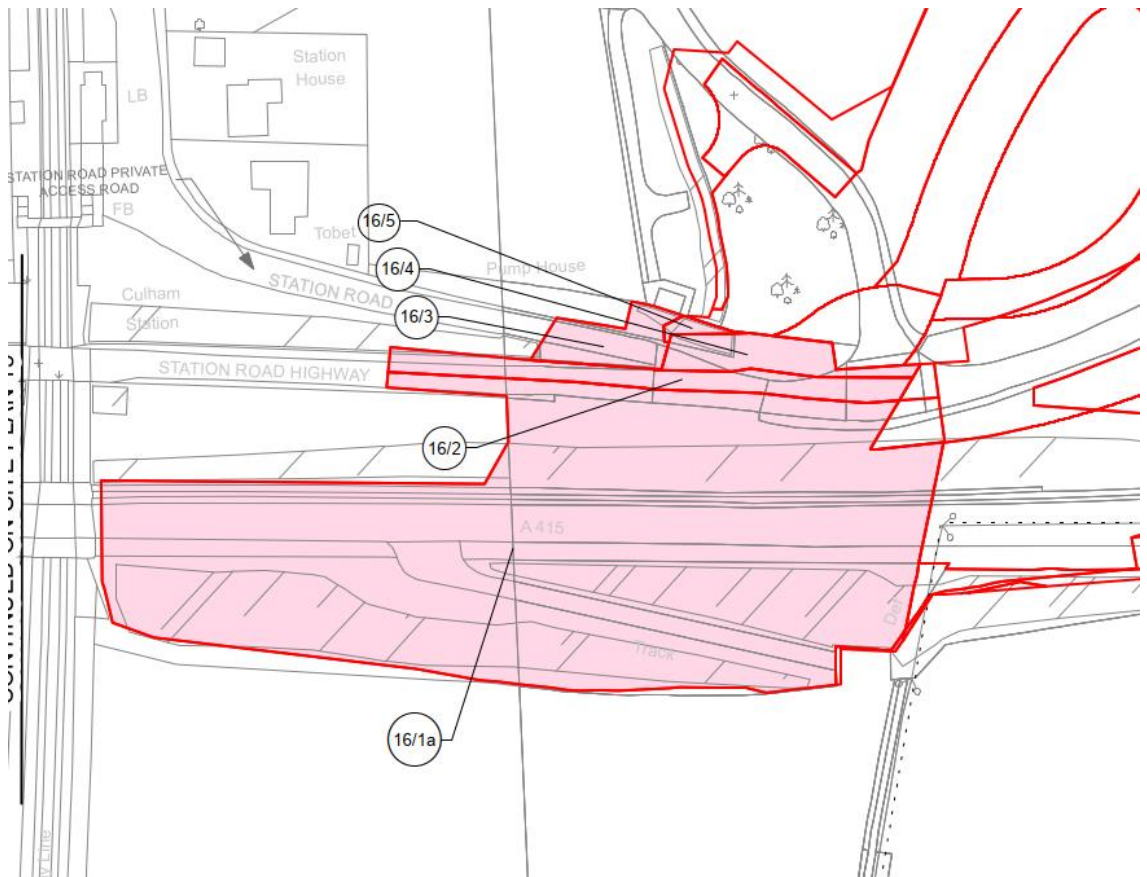


Figure 21 Network Rail land currently subject to CPO

- 3.34 For Plot 16/1a, the area is proposed to be reduced and amended in the CPO, as set out in the Acquiring Authority's Statement of Case in relation to the Orders (CD M.10).
- 3.35 For Plots 16/2, 16/3, 16/4, 16/5, the design has been amended in the revised planning application submission (June 2023) to reduce the area required from these plots. The pedestrian and cyclist shared use facility was to be provided on the northern side of Station Road in the original design. This will now be moved to within the southern side of the Station Road and connect with the segregated facilities to the east (see Figure 22 for detail). The driver for the modification at Culham Station was to respond to the LPA

Reg25 March 2023 letter, in which LPA officers requested changes to remove/minimise impacts on any TPO trees or trees in conservation areas. The benefits (i.e no loss of trees) and disbenefits (i.e. reduction on pedestrian / cycle facilities) was discussed with the LPA and Officers at numerous meetings between March and April submission in which the LPA concluded in the planning balance the reduction on trees impacts outweighed the proposed walking/cycling facilities. Network Rail has been informed of these proposed changes and negotiation is ongoing.

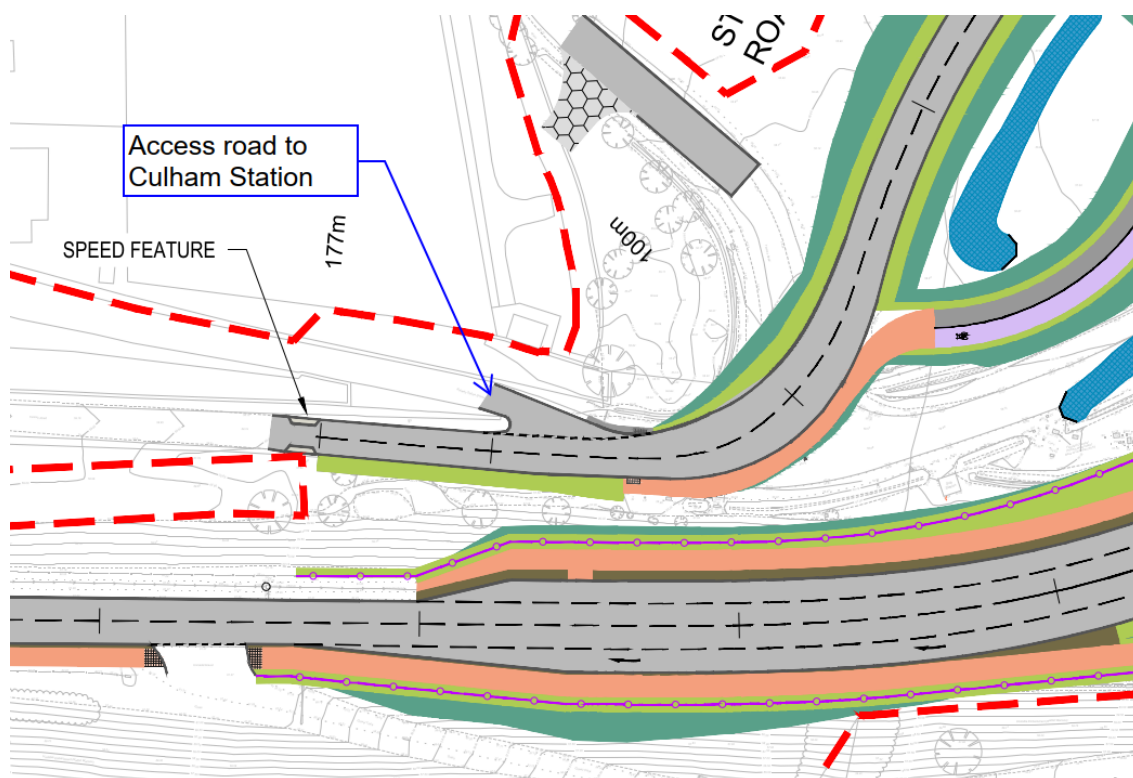


Figure 22 Revised layout at Culham Station access road

Mr and Mrs Aries, 17 February 2023 (CD J.2)

- 3.36 Mr and Mrs Aries object to Orders (CD J.2) on the basis that the existing A415 is being closed and blocked off just before the proposed new roundabout at Culham Science Centre.
- 3.37 Mr and Mrs Aries further object to this existing road branching off at North Cottage to form the proposed A415 connection, in order to join the proposed Clifton Hampden bypass.

Response

- 3.38 The purpose of this element of the Scheme is to provide a new connection between the A415 and the B4015, bypassing Clifton Hampden. While the existing A415 will provide access to Clifton Hampden to the east; there is no further access requirement or operational need for the existing A415 road to extend beyond Fullamoor Farmhouse to maintain private mean of access (see Figure 23 for illustration). The existing A415 that will no longer be required for vehicular traffic, lying to the south of the proposed roundabout, will be stopped up and become a new shared use facility, which links up to a new shared use integral cycle track of the A415 on its south side.

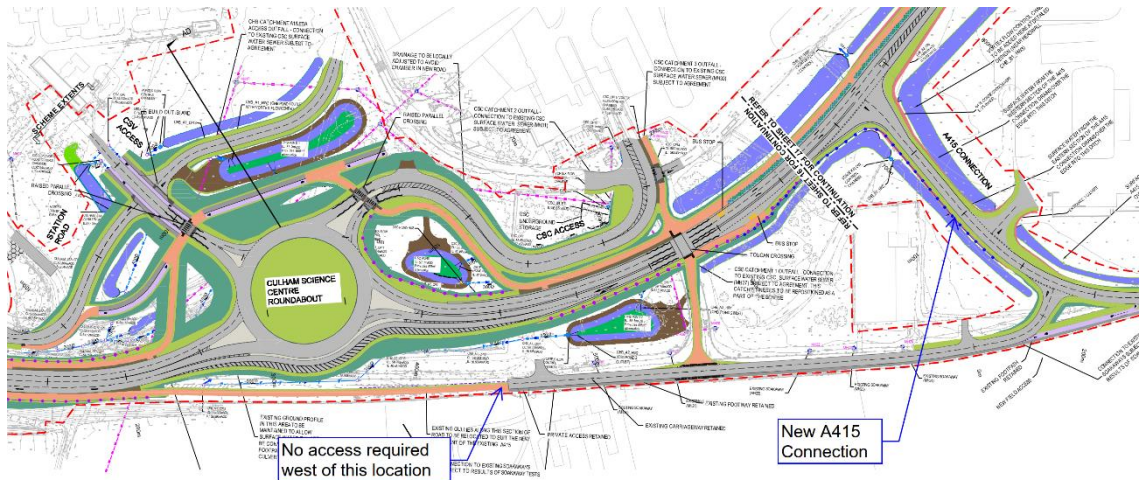


Figure 23 Existing A415 stopped up location and connection with CHB

- 3.39 As the existing A415 would be stopped up, a new connection (refer to Link 17/A in CD H.4 SRO plans for CHB) is needed to provide a connection between the existing A415 and CHB. The new link road utilises the alignment of an existing private access. The new link road will connect with CHB via a priority junction. The proposed location of this junction aims to provide sufficient right turn queuing capacity for vehicles wishing to access the existing A415. The new link road has been designed in accordance with Manual for Streets with the junction with CHB in accordance with DMRB CD 123 Geometric Design of at-grade priority and signal-controlled junctions.
- 3.40 Mr and Mrs Aries have suggested that an alternative is to provide a fifth arm onto the proposed Culham Science Centre roundabout. The alternative would require a link road from the southern side of the roundabout that connects with the existing A415 via a curved alignment (see Figure 24 below). This would require the acquisition of third-party land outside of the Scheme boundary. It would also be likely to have other negative impacts, such as in relation to the impacts on cultural heritage relating to the Grade II listed Fullamoor Farmhouse as the fifth arm would require land from the property (Refer to Bernard Greep's proof of evidence Appendix BG2.4: Heritage Note for further detail on Fullamoor Farmhouse). Traffic modelling was also carried out to assess the this layout, refer to Paragraph 3.24. For the above reasons, connecting the existing A415 directly with the proposed Culham Science Centre Roundabout would not be feasible.

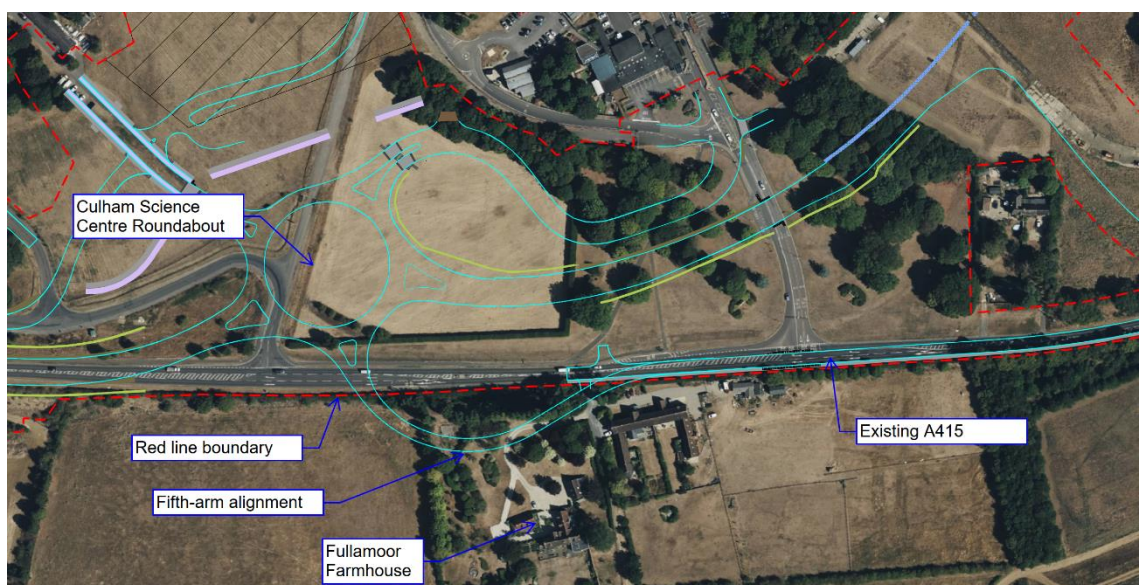


Figure 24 Testing of five-arm roundabout connecting with existing A415

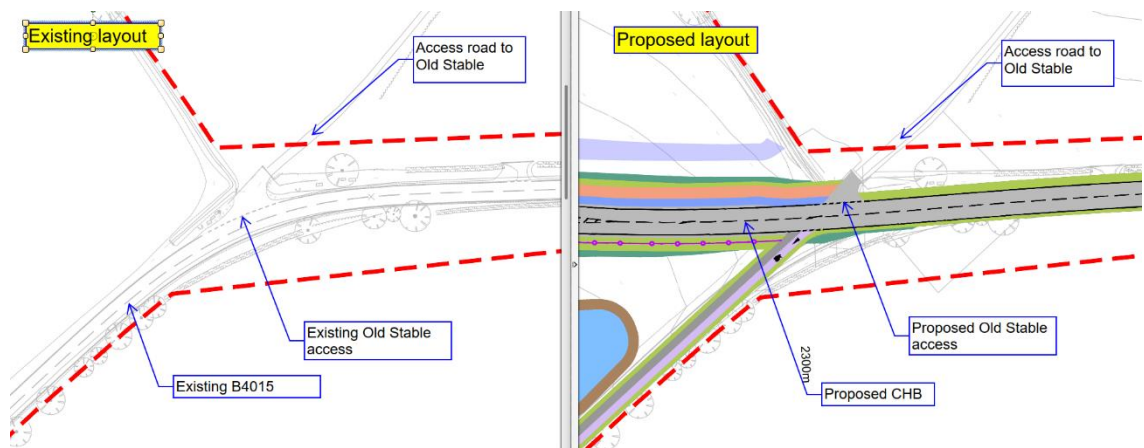


Figure 26 Existing and proposed layout at the Old Stable access to B4015

CPRE, 1 March 2023 (CD J.8)

- 3.45 CPRE object to the Orders (CD J.8) as a result of the proposed extinguishment of Appleford BR3. In its view, the extinguishment would deprive riders, cyclists and walkers of a segregated route between Didcot and Appleford. CPRE suggests that a diversion of Appleford BR3 to follow the railway fence would provide an alternative route.
- 3.46 CPRE further objects to the proposed extinguishment of Clifton Hampden FP6 between its crossing of the proposed bypass and Clifton Hampden FP3. CPRE says that walkers wishing to turn south onto FP3 or join FP4 would have to cross the proposed bypass anyway, whether at FP6 or FP3, whereas those turning north onto FP3 would be unlikely to cross and recross the bypass. On that basis, CPRE considers that the detour for walkers turning south along the roadside footway is unnecessary. CPRE further suggests an alternative would be to divert FP6 along the north side of the bypass fence to meet FP3, so that the detour would follow a field headland rather than a roadside footway and so be more pleasant as part of a recreational walk.

Response

- 3.47 Regarding Appleford BR3 (106/3/10 (Appleford)) (see Figure 27 and the lengths marked "7/S1", "8/S1" and "9S/1" in the SRO plans (CD H.4)), the majority of this Bridleway consists of a 3.2m wide single track road, except the northern and southern end where it is approximately 6.6m wide. CPRE's suggestion that the extinguishment would deprive riders, cyclists and walkers of a segregated route is incorrect. There is currently no segregation between NMUs and vehicles, as they use the same carriageway, and the majority of the vehicles are HGVs for the landfill site and operational aggregate plant. The existing Bridleway will be subsumed by the new length of A4197 classified road and its 3.0m cycle tracks, 2.0m footways and 1m verge will provide a complete replacement route for NMUs from the Collett Roundabout (refer to 2.23 and 2.25 for typical cross-sections). The proposed facilities represent much improved conditions for walking and cycling, as they are segregated from vehicular traffic. A walking, cycling and horse-riding survey was carried out for a 7-day period in November 2019, which evidenced that, on average, there are 20 pedestrians / cyclists using the bridleway per day. No equestrian was recorded during the entire survey period. In response to the alternative route suggested by CPRE, please refer to Aron Wisdom's proof of evidence.

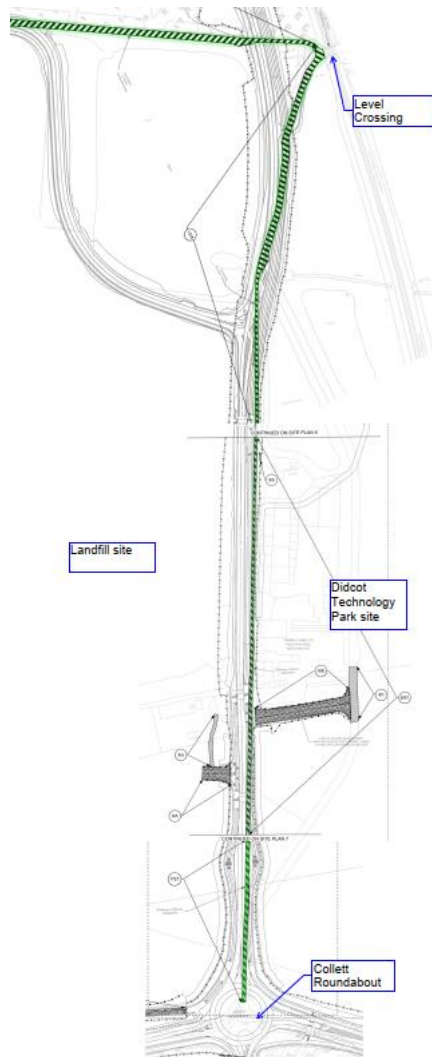


Figure 27 Bridleway 106/3/10 (BR3) location

- 3.48 In relation to Footpath No.6, short sections of FP3 and FP6 will be stopped up and users rerouted to 3.5m shared use facility provided as part of the Scheme. An uncontrolled crossing will be provided on the bypass, which will serve users of both FP3 and FP6. Regarding the CPRE suggestion on Clifton Hampden Footpath No. 6, please refer to Aron Wisdom's proof of evidence.

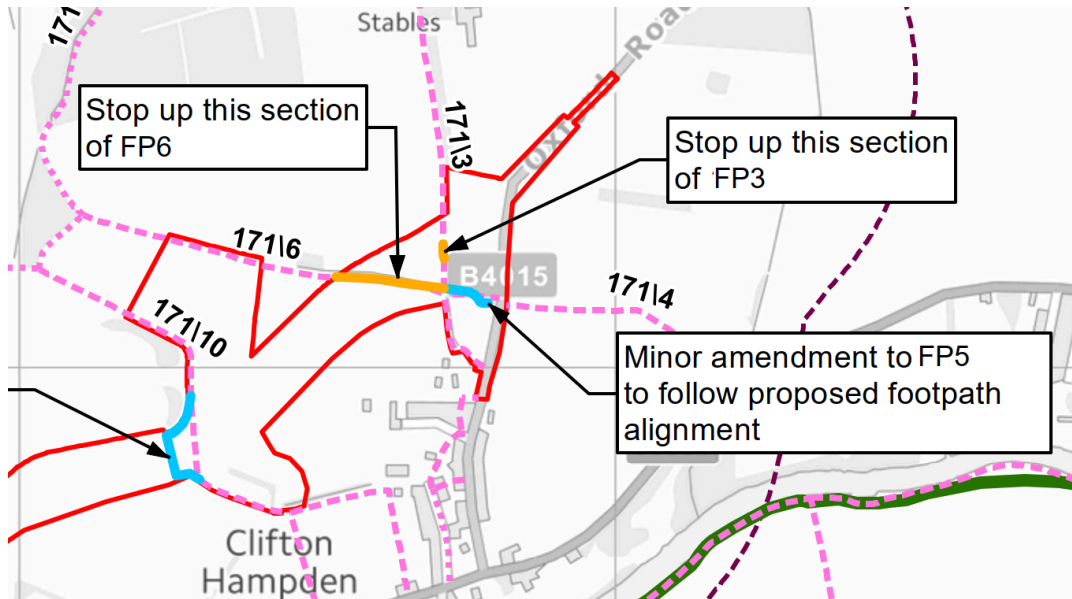


Figure 28 Proposed FP3 and FP6 stop up locations

Sutton Courtenay Parish Council, 7 March 2023 (CD J.9)

- 3.49 Sutton Courtenay Parish Council (SCPC) objects to the Orders (CD J.9) due to concerns about what it perceived to be the belated addition of a junction on the B4016 (Sutton Courtenay to Appleford Road stretch) included in the SRO (see CD H.4, SRO plan12). SCPC explain that it has sought assurance from the Acquiring Authority that the addition of this junction would reduce traffic through the village rather than attracting more through traffic to access the Scheme at SRO plan 12.
- 3.50 SCPC also raise concerns that the design of the River Thames Bridge and the flyover requirements over the current gravel extraction pits within SCPC's parish boundary, will have an adverse impact on the landscape of the area as well as posing considerable engineering and financial challenges.

Response

- 3.51 In relation to the concern about the addition of a junction on the B4016, the two junctions to connect the B4016 with the new A4197 have always been part of the Scheme. A junction (or junctions) serving Sutton Courtenay and Appleford have been included since the concept design stage. The junctions are needed to provide access from the B4016 to the A4197 and also the two sections of B4016. Without the junctions the B4016 would be severed and there would be no direct connection between Appleford and Sutton Courtenay (see Figure 29 for proposed layout).

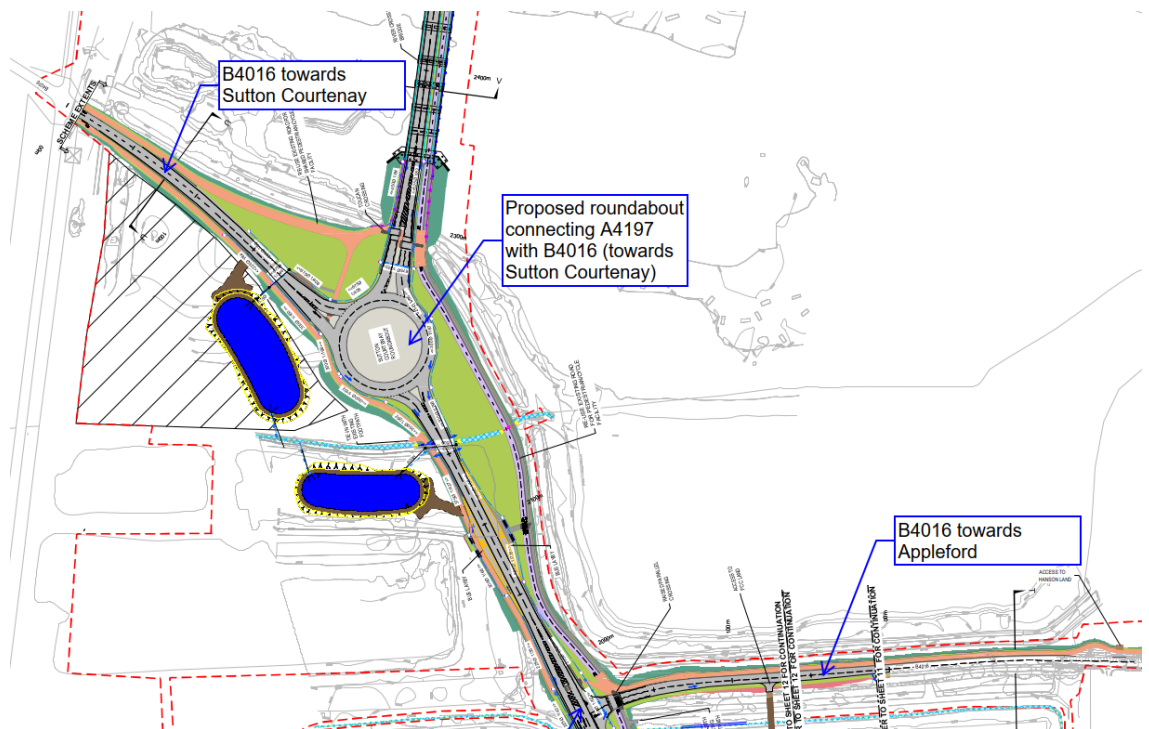


Figure 29 Proposed A4197 junctions with B4016

- 3.52 In relation to the River Thames Bridge and viaduct, the design has been developed in accordance with DMRB. Design considerations have been given to the design criteria, navigation requirement, geotechnical conditions, flood risk and constructability. From an engineering design point of view, there is no concern about the feasibility of the bridge structure and viaduct. For detail of the bridge design consideration, refer to Section 4 Bridge Scheme Design Considerations in this proof of evidence.
- 3.53 For SCPC's concerns about the traffic analysis, in particular on the subject of induced traffic, please refer to Claudia Currie's proof of evidence.
- 3.54 For SCPC's concern about the design of the Science Bridge, please refer to Andrew Blanchard's proof of evidence.
- 3.55 For SCPC's concern about funding and deliverability, please refer to Timothy Mann's proof of evidence.
- 3.56 For SCPC's concern about pollution and landscape, please refer to Anna Savage's and Jane Ash's proofs of evidence respectively.

Thames Water, 17 March 2023 (CD J.10)

- 3.57 Thames Water has objected to the CPO (CD J.10) on the basis that, in its view, other more suitable land can be provided to accommodate the Scheme (see Figure 30 for the Scheme layout and plots included in the CPO). Thames Water state that this Treatment Works is a strategic asset, and its operational performance is likely to increase in the near future, with the availability of existing land under its ownership helping to safeguard this requirement. Thames Water is of the view that with reconsideration and redesign the acquisition of its land is not necessary and that either the land is not required or more suitable land can be provided to accommodate the works.

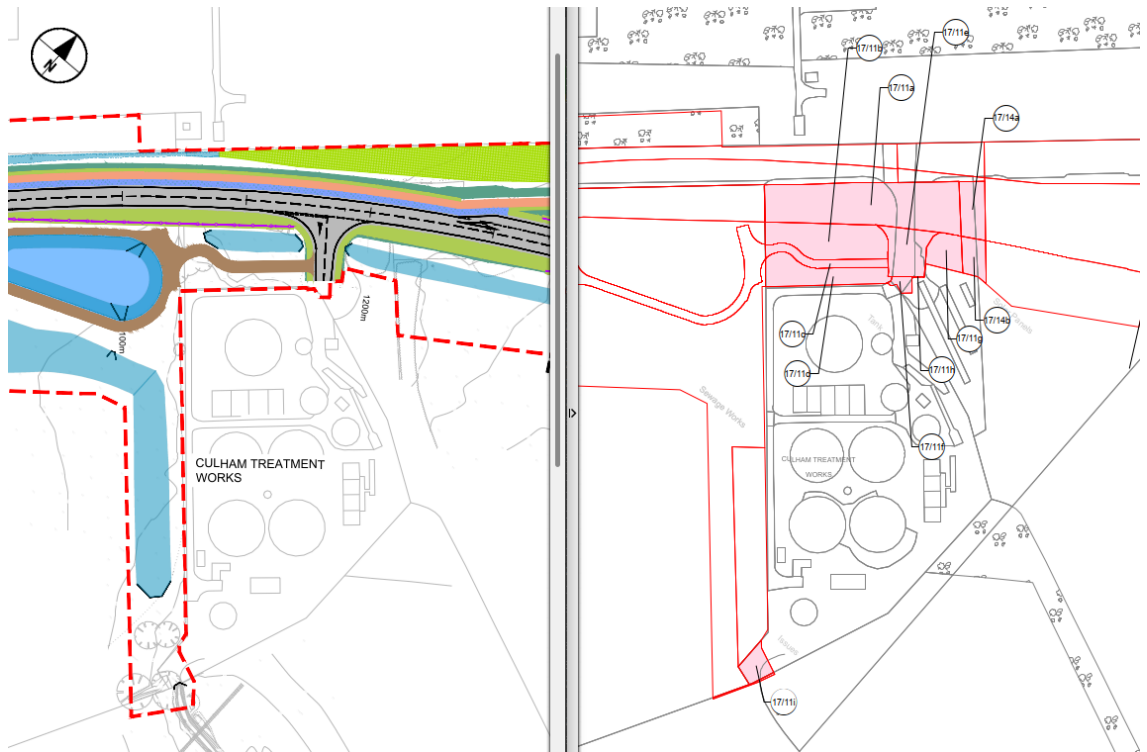


Figure 30 Proposed layout adjacent to Thames Water Treatment Works (on the left) and TW land plots subject to CPO (on the right)

Response

- 3.58 In relation to Thames Water's suggestion, the design team considered whether a realignment of the Scheme is possible in order to avoid the need to acquire land from the Treatment Works. As mentioned in Section 2, the available space at this location is limited to fit the CHB carriageway and associated drainage feature, hence the cross section at this location is 0.5m less than the 18.3m wide typical cross section on CHB (see Figure 14 of my proof of evidence). A 7m wide section of water bodies and proposed culvert will lie east of the proposed carriageway, along with a 5m wide access road which spur off a new access to the Culham Treatment Works.
- 3.59 However, in July 2023 following a further review of the Scheme design, an alternative proposal for a voluntary agreement was proposed to Thames Water. This alternative proposal (see Figure 31 for layout) would involve the redesign and relocation of a drainage culvert and result in an overall reduction in the area of land (diagonal hatched area in Figure 31, approximately 1,520m²) that would be required permanently from Thames Water. Under this alternative proposal, some of the land (zigzag hatched area in Figure 31, approximately 383m²) would only be required temporarily during the works and could be returned to Thames Water on completion of the Scheme, facilitating further expansion of the Treatment Works. Thames Water has since responded to confirm that this alternative proposal would not be suitable, as it would still conflict with its expansion proposals.
- 3.60 In addition to the above, the possibility of moving the alignment north-westward would require the Scheme to extend beyond the Scheme Boundary hence it is not deemed feasible. Further information on Thames Water's concerns is detailed in the proof of evidence of Steven Moon.

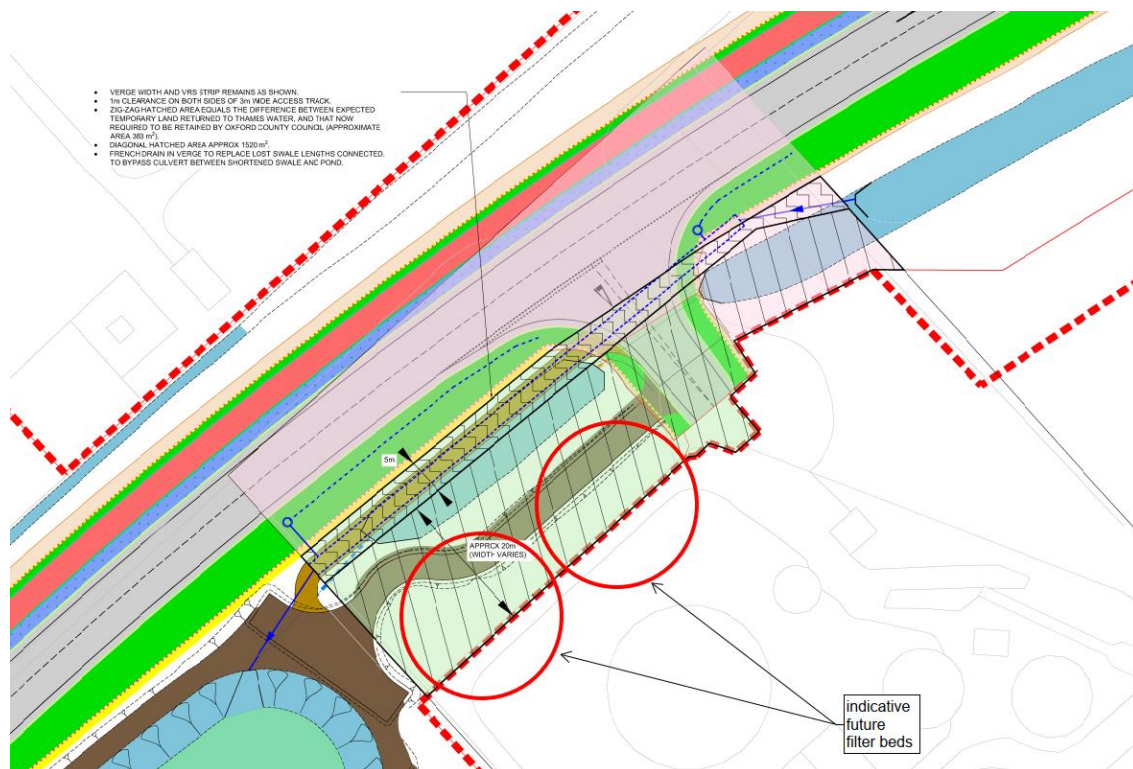


Figure 31 Revised design to reduce land required from Thames Water

Appleford Parish Council, 20 March 2023 (CD J.11)

- 3.61 Appleford Parish Council (**APC**) has objected to the Orders (CD J.11) and has a particular concern regarding the proximity of the elevated road and flyover over private rail sidings close to residences at lower Main Road. In APC's view, the 10m/30-foot high elevated road within 70m of the nearest residence is an unacceptable imposition on the local community.
- 3.62 APC also mention that justification for a roundabout and T junction has not been provided. APC further comment that the current plans mean that young children from Appleford attending school in Sutton Courtenay will have to cross a busy road at rush hour with traffic traveling at 50mph.

Response

- 3.63 In relation to the elevation of the Rail Siding Bridge, the height of the structure is governed by the surrounding ground level and the requirement to provide sufficient clearance to the three private gauge tracks. The bridge has been designed in accordance with DfT's DMRB.
- 3.64 From the topographical survey, the rail siding tracks are in a valley. The rail tracks are set at approximately 51.4m AOD with surrounding land reaching typically 56m AOD to the west of the alignment. A minimum clearance of 4.8m from the tracks to the underside of the structure is required for any future electrification of the private sidings, taken from Network Rail Track Design Handbook NR/L3/TRK/2049/MOD05. The longitudinal alignment of the new road has to tie in with the lower ground level (typical 51m AOD) near the level crossing in the south and the higher level (58m AOD) at the historic landfill site in the north. On the basis of the design parameters and constraints above, the Scheme provides a balanced solution, minimising the elevation of the road while providing sufficient clearance to the rail sidings.
- 3.65 In relation to the APC proposal of an alternative route circa 250m to the west and away from village residences, the Applicant has already undertaken assessment of this

alignment as part of the Planning Application. The assessment of alternatives is contained in the Environmental Statement Volume I, Chapter 3 (CD A.15). The alignment would cut through recent landfill cells with ground settlement likely to occur for circa 10 years; therefore, it is likely that the road would need to be built as a structure using piles through the landfill, or the waste would need to be excavated. In addition, the bridge structure over the rail sidings would likely be longer as it is crossing the sidings at a wider point.

- 3.66 Other alternative routes west of the proposed alignment that were suggested by APC have also been reviewed and were reported in the Statement of Community Involvement (CD A.5, Response to Appleford position paper, Appendix K) and also detailed in Aron Wisdom's proof of evidence. However, given the technical challenges, alongside delivery timescales and budgets, these options have been deemed unsuitable.
- 3.67 In relation to the justification of a T junction and roundabout, a response to this point is provided in paragraph 3.51 above as part of the response to SCPC.
- 3.68 Regarding APC's comment on children travelling from Appleford to Sutton Courtenay, there is currently no pedestrian facility on the B4016 between Appleford and Sutton Courtenay. Pedestrians in this location will be on carriageway in the present day scenario, which is, in part, subject to the national speed limit (60mph for single carriageway). The Scheme will significantly improve walking and cycling conditions, accessibility and safety between Appleford and Sutton Courtenay with new dedicated facilities (see Figure 32). A new 3m shared use facility is proposed on the north side of B4016 which will connect with the segregated facilities along the A4197. A parallel crossing will provide priority for pedestrians and cyclists over the traffic on B4016. North of B4016 Appleford Road, the integral cycle track and footway will continue separately from the proposed carriageway by using the existing B4016 carriageway alignment. At the Sutton Courtenay Roundabout, a signalised toucan crossing will be provided on the northern arm to provide a safe crossing point. Shared used facilities are proposed on both sides of the B4016 towards Sutton Courtenay west of the Scheme.
- 3.69 The speed limit is proposed to be lowered from the national speed limit to 50mph on B4016 towards Sutton Courtenay and to 30mph on the section of B4016 east of the mainline A4197 towards Appleford.

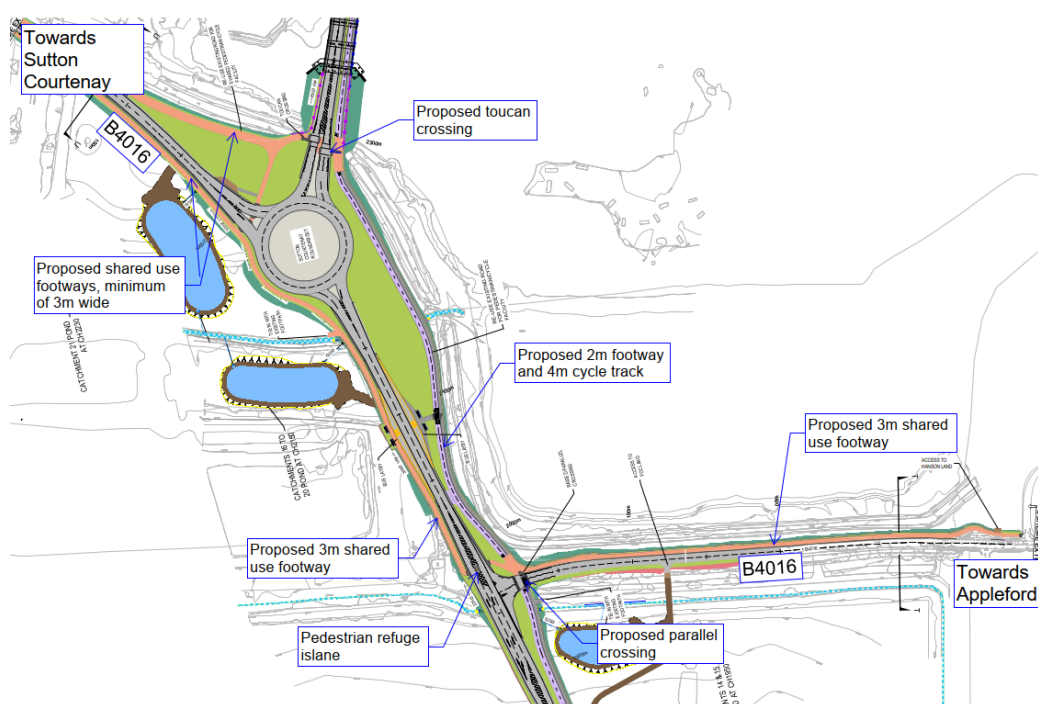


Figure 32 Proposed walking and cycling facilities between Appleford and Sutton Courtenay

UKAEA, 21 March 2023 (CD J.12)

- 3.70 In UKAEA's objection to the Orders (CD J.12), it states that any situation in which access will be prevented, even on a temporary basis will not be acceptable to UKAEA and it seeks a form of undertaking that access will be maintained at all times. UKAEA further states that it is willing to transfer the land that is permanently required for the Scheme subject to agreement of terms, including the maintenance of access to UKAEA property.
- 3.71 UKAEA further objects to of the compulsory purchase of land to provide for a new access to UKAEA's retained site, within land owned by UKAEA.
- 3.72 In its objection, UKAEA has raised concerns that the entrance and access to the estate is to be stopped up under the SRO and that land which comprises part of the estate is to be acquired under the CPO. UKAEA states that it is essential that the main access to the estate as well as access to the estate's perimeter road is maintained at all times.
- 3.73 In addition to the above, UKAEA also raises concerns that the proposals to create a new private means of access to the estate conflict, in part, with UKAEA's own development proposals to create a new car park.

Response

- 3.74 In considering the design, the Scheme proposals have been designed with a view to accommodating the future development proposals for the UKAEA estate.
- 3.75 Access to the perimeter road is understood to be vital to the security and servicing of the estate as well as for construction and emergency vehicle access. The Acquiring Authority has confirmed in its Statement of Case in relation to the Orders (CD M.10), that it is its intention that access to the estate and the perimeter road will be maintained at all times during the construction works. The Acquiring Authority has confirmed that its contractors will be required to prepare a Construction Traffic Management Plan (CTMP) to ensure that access is maintained during the works and will be instructed to liaise with UKAEA to agree and confirm details of how this will be achieved and what the arrangements will be during the detailed design stage, immediately prior to construction. On completion of the Scheme, a new private means of access to the estate will be provided which will also enable access to the estate's perimeter road.
- 3.76 In relation to 3.72 above, these concerns were discussed during a meeting in March 2023 and subsequently the Acquiring Authority and UKAEA exchanged digital copies of plans of their respective schemes in order to establish how they conflicted. The Acquiring Authority has since confirmed that Plot 16/13cc, which also comprises land which is part of UKAEA proposals to create a new car park, is required in order to provide an access road from the new road which creates a new private means of access to the estate to the perimeter road. This road is also required in order to re-provide existing private rights of access over the perimeter road for third party landowners. For this reason, it is essential that the land remains in the CPO. However, should UKAEA complete its proposed car park development before the Acquiring Authority's Scheme commences, then the Acquiring Authority has confirmed in its Statement of Case (CD M.10) that it would not look to construct the proposed road over plot 16/13cc to provide access to the perimeter road, providing that suitable access to the perimeter road and alternative private rights of access for all third-party landowners have been provided under UKAEA's own development proposals. This would also form the basis of any voluntary agreement that is agreed between the parties, as detailed further in the evidence of Steven Moon.

Caudwell and Sons Ltd, 17 March 2023 (CD J.13)

- 3.77 Caudwell and Sons Ltd objects to an area of land sought to be acquired (plots 13/3a and 13/4a) where there are no features or road elements shown on the General Arrangement drawing (CD D.13). They are not clear why this land has been included in the CPO and suggest that the design of the Scheme and proposed CPO red line acquisition boundary is excessive. Caudwell and Sons believe there is still confusion over whether this land is to be acquired permanently or temporarily.
- 3.78 Caudwell & Sons Ltd also raise concerns in relation to clearance heights underneath the proposed River Crossing Bridge structure for agricultural machinery and query whether existing access into its retained agricultural fields from Oxford Road will be affected by the Scheme.
- 3.79 Caudwell & Sons Ltd also raise a concern with regard to the replacement of concrete surfaced land, which forms part of a section of Thame Lane in its ownership.

Response

- 3.80 The land comprising plots 13/3a and 13/4a (see Figure 33 for location) is required temporarily for the purposes of the construction of the River Crossing Bridge and modification to the restoration lakes and as such it is necessary for the purposes of delivering the Scheme. As part of the construction, the western end of the existing ponds will be filled in to existing ground level to enable construction access. After the construction of the bridge, the ground will be restored with modified landscape arrangement, as shown in the Landscape General Arrangement Plans Drawings GEN_PD-ACM-ELS-DGT_ZZ_ZZ_ZZ-DR-LV-0013 P06 (CD D.146).

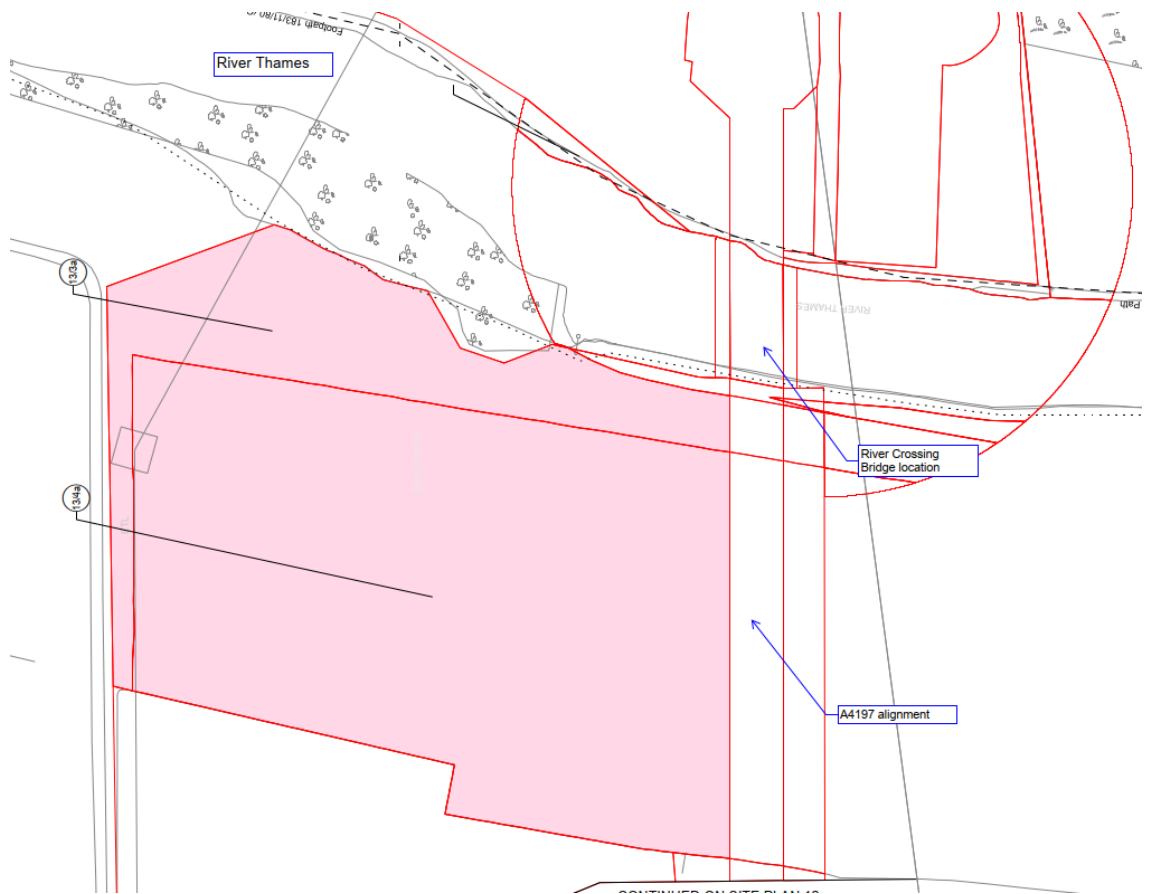


Figure 33 Land plots subject to CPO - 13/3a and 13/4a

- 3.81 The height clearance under the River Crossing Bridge would be 4m to allow access for vehicles and agricultural machinery. The existing access into the agricultural field off Oxford Road will not be affected by the Scheme.
- 3.82 In relation to the concrete surfaced land, the land is required for the main alignment of CHB and the flood attenuation area.

Morrells Farming Ltd, 17 March 2023 (CD J.17)

- 3.83 In objecting to the Orders, the landowner's agent has suggested that there is no clear purpose for why plot 14/1a is required and as such the Acquiring Authority has failed to demonstrate that it has sought to minimise the extent of land being sought for the Scheme.

Response

- 3.84 The land comprising plot 14/1a is required for the purposes of a construction compound, which is due to be sited in this location during construction and, as such, it is necessary for the purposes of delivering the Scheme.
- 3.85 The compound is required for the construction of the River Crossing Bridge. The main river bridge span will be lifted from the north, along with the construction of the bridge's north abutment, the proposed A415 Abingdon Roundabout and the A415 realignment. The location of the compound has been chosen as it is north of the River Thames and will have easy access to the wider road network via A415.

Emmet of Drayton Limited, 17 March 2023 (CD J.18)

- 3.86 Emmet of Drayton Ltd objects to the Orders (CD J.18) as it queries the extent of plots 17/3d and 17/3k and the purpose for which they are required (see *Figure 34* for location).
- 3.87 The landowner is also concerned about Plot 17/3e, which would be severed from other land in their ownership by the Scheme and left without an access.

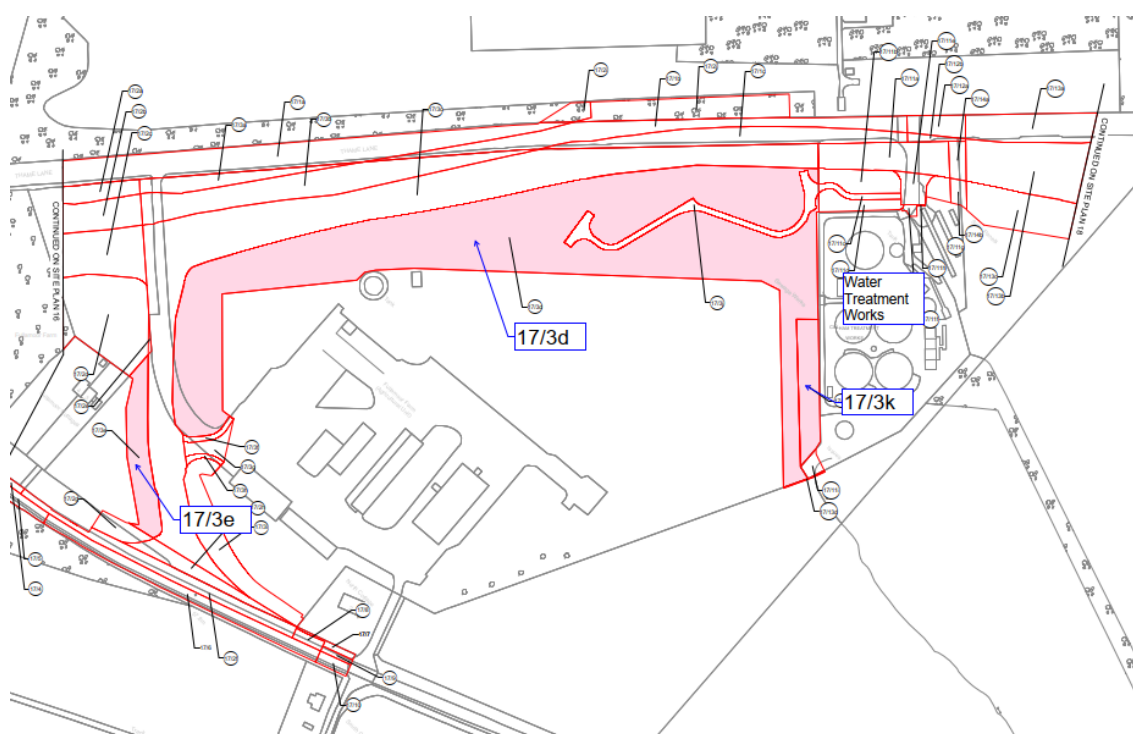


Figure 34 Emmet of Drayton Limited land plots subject to CPO

Response

- 3.88 Regarding the extent of plots 17/3d and 17/3k, the land is required permanently for the construction of two drainage ponds and ditches, and the construction of a drainage ditch and culvert to connect into an existing watercourse at this location.
- 3.89 In relation to the concerns about access to Plot 17/3e, the design has been amended to incorporate a new field access off the existing A415 road (see Figure 35).

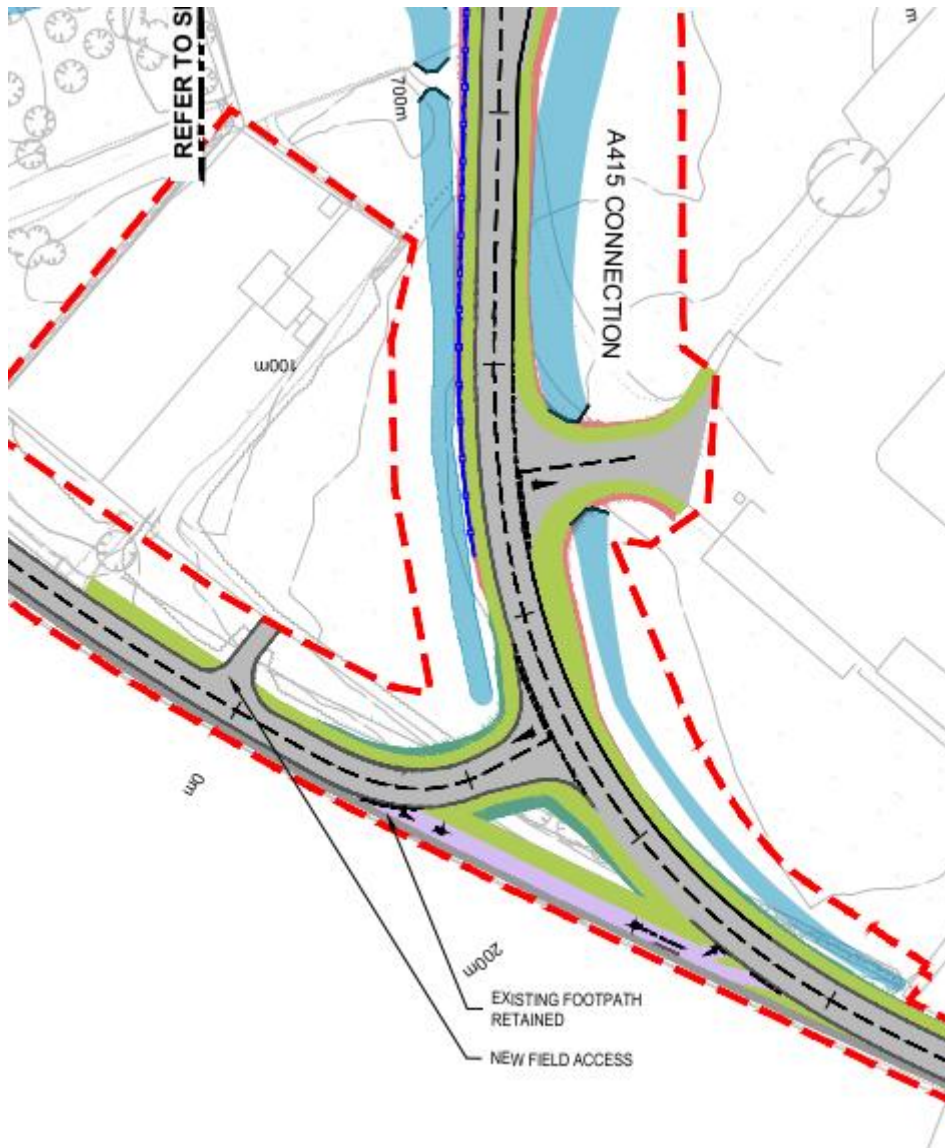


Figure 35 Proposed private mean of access west of A415 connection

Morrells Holdings Limited, 17 March 2023 (CD J.21)

- 3.90 Morrell Holdings Limited objected to the CPO (CD J.21) in relation to the area of land sought to be acquired (plot 13/1a, which extends across CPO Map Sheets 13 and 13a (CD H.2)) where there are no features or road elements shown on the General Arrangement Drawing (CD D.13) (see Figure 36 for location). It says that it is not clear why this land has been included in the CPO and suggests that the design of the Scheme and proposed CPO red line acquisition boundary is excessive.

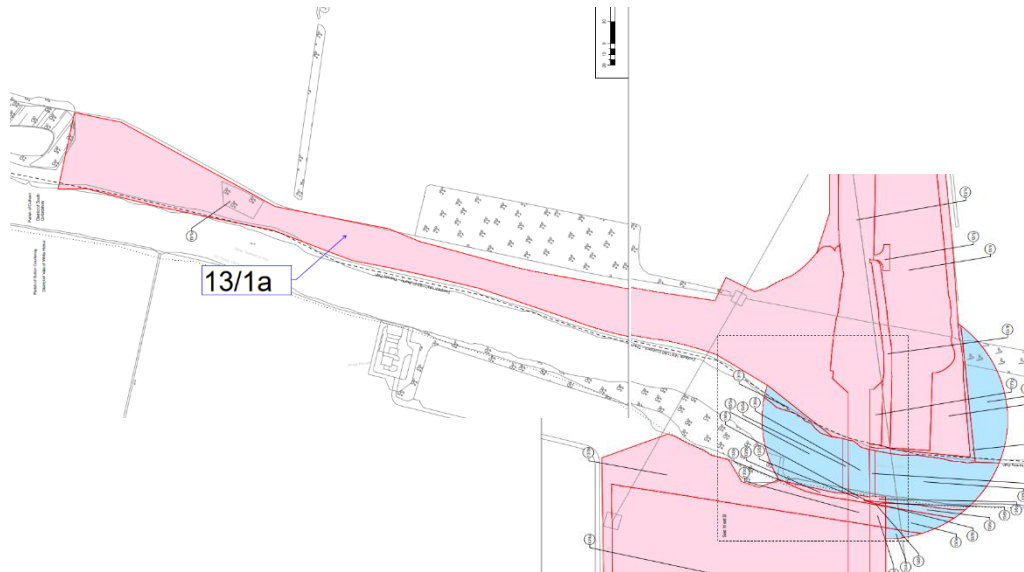


Figure 36 Land plot subject to CPO – 13/1a)

- 3.91 Morrells Holdings Ltd raise concerns about the access to fishing rights located on the north bank of River Thames and the access to a southern field enclosure adjacent to the northern bank of River Thames.

Response

- 3.92 The plot is required as a flood storage compensation area as part of the flood mitigation strategy for the Scheme, which has been agreed with the Environment Agency. Flood storage compensation volumes was calculated as part of the Flood Risk Assessment (CD A.17, Appendix 14.1). Flood storage needs to be compensated level by level as such suitable compensation area location is limited by its topography. A design of the flood compensation area, including the volume required level by level, is shown in Figure 37 and in the EIA Regulation 25 Response, Appendix N Floodplain Compensation Area Sheet 1 of 1 (RIV_PD ACM GEN SW_ZZ_ZZ_ZZ DR HF 0011) (CD B.2 Appendix N).

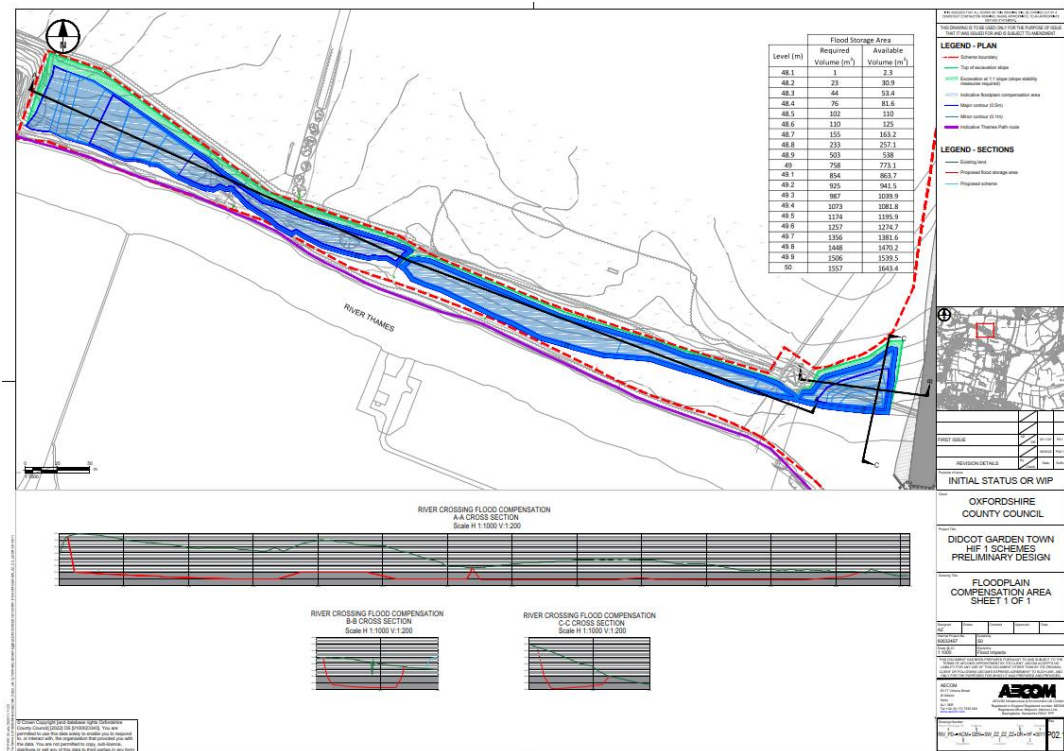


Figure 37 Flood storage compensation area north of River Thames

- 3.93 Regarding fishing rights located on the north bank of the Thames, there is no change along the north bank and access will not be affected. A new footpath is proposed connecting the Thames Path with the A4197 footway would also provide an alternative access. With regard to the southern field enclosure, access will be provided by extending an access track which is currently proposed to serve a balancing pond. By extending this access track, access can be provided into the field enclosure to the south-east.

Commercial Estates Group Limited and CEG Land Promotions II Limited (CEG), 21 March 2023 (CD J.22)

- 3.94 In its objection to the Orders (CD J.22), CEG questions the need for certain land included in the CPO – Plot 14/1a; Plots 16/6a, 16/6b, and 16/6z; 16/6c insofar as it is shown as intended to provide a turning head; and various areas within Plots 16/6aa to 16/6p that are intended to provide a new means of access to premises north eastwards towards Culham Science Centre. CEG claims that the CPO includes land in this area that would unnecessarily reduce the amount of developable land that could be comprised within the Culham No. 1 development (as the first phase of large scale strategic development at the site). CEG claims that the CPO includes land upon which either new employment buildings, or drainage infrastructure to support its development are to be provided, for which an outline planning permission is currently being prepared.
- 3.95 CEG questions why a length of the current access track off the Station Road highway, which is not stopped up as length 16/1 in the SRO (CD H.4), is shown at the north west termination point of the stopping up as being converted into a turning head, with there being no suggestion that any improvement works will be undertaken to the land or that it will become public highway.
- 3.96 CEG also objects to the SRO (lengths 16/2 to 16/8 and 16/S1-S2). CEG accepts that some of these highways will need to be stopped up as part of the Scheme and notes new means of access and highways are proposed. CEG state, however, that no information has been provided as to the sequencing of the proposed works, and how the Scheme will ensure that access to the existing public highway is properly maintained for vehicles accessing Culham No. 1 site during construction.

Response

- 3.97 The land is included in the CPO because Plots 14/1a, 16/6a, 16/6b and 16/6z, as well as Plot 16/6c, are required by the Acquiring Authority for temporary use for the period of the Scheme construction works. Regarding the need for Plot 14/1a, refer to Paragraph 3.84 and 3.85. In relation to Plot 16/6a, 16/6b, 16/6c and 16/6z (see Figure 38 for locations), Plot 16/6a and 16/6z are required for a site compound for the construction of the Culham Science Centre Roundabout and CHB. The size of the compound area must provide sufficient space to include elements such as a site office area, welfare facilities, stores, car parking for staff, material laydown and material storage. The compound location has been chosen as it is adjacent to the roundabout where the majority of the work on CHB will happen. The site will also have easy access to the A415, where all materials will be transported from. The proximity of the compound area to the roundabout would reduce transport distances, programme and cost for the construction.



Figure 38 Land plots subject to CPO – 16/6a, 16/6b, 16/6c and 16/6z

- 3.98 Plot 16/6b is required for the embankment and sufficient working space at the foot of the embankment. Plot 16/6c is required for a turning head for the use during construction of the realigned Station Road and adjacent landscape work.
- 3.99 With regard to the length of the current access track off the Station Road, this particular length, where the turning head is shown, is required as operational working space land to be able to implement Scheme works.
- 3.100 The turning head area shown as to be provided under the General Arrangement Drawing Scheme works (CD D.16), which will be a no dig feature so as not to threaten a nearby tree there which is subject of a Tree Preservation Order (TPO), will be used for the purpose of construction vehicles proceeding to and turning at the head, from the proposed junction side of the works and its associated landscaping lands, for the purpose of implementing those works. The turning head length is neither a proposed highway, nor private access feature, although it may facilitate the terminal point of the internal private

access of Culham No. 1 site, should the land be returned to the landowner after any afforded licensed use.

3.101 In response to maintaining existing accesses, refer to my response in paragraph 3.75.

Leda Properties Limited (Leda), 21 March 2023 (CD J.23)

3.102 Leda has objected to the Orders (CD J.23) on the grounds of the manner of the implementation of the Scheme. Leda has stated that the proposed new access road, see land comprising plot 16/6m, which provides access to the existing perimeter estate road and is situated to the north of the proposed new roundabout and access to the estate, could be delivered by alternative means and in a way that would further limit the amount of land which is required permanently. Leda has suggested that an alternative means of access that would serve the same purpose could be provided from a stub and turning area located on the north of the new private access road, to be created for the UKAEA estate on land comprising plot 16/13m. Figure 39 shows the relevant land.

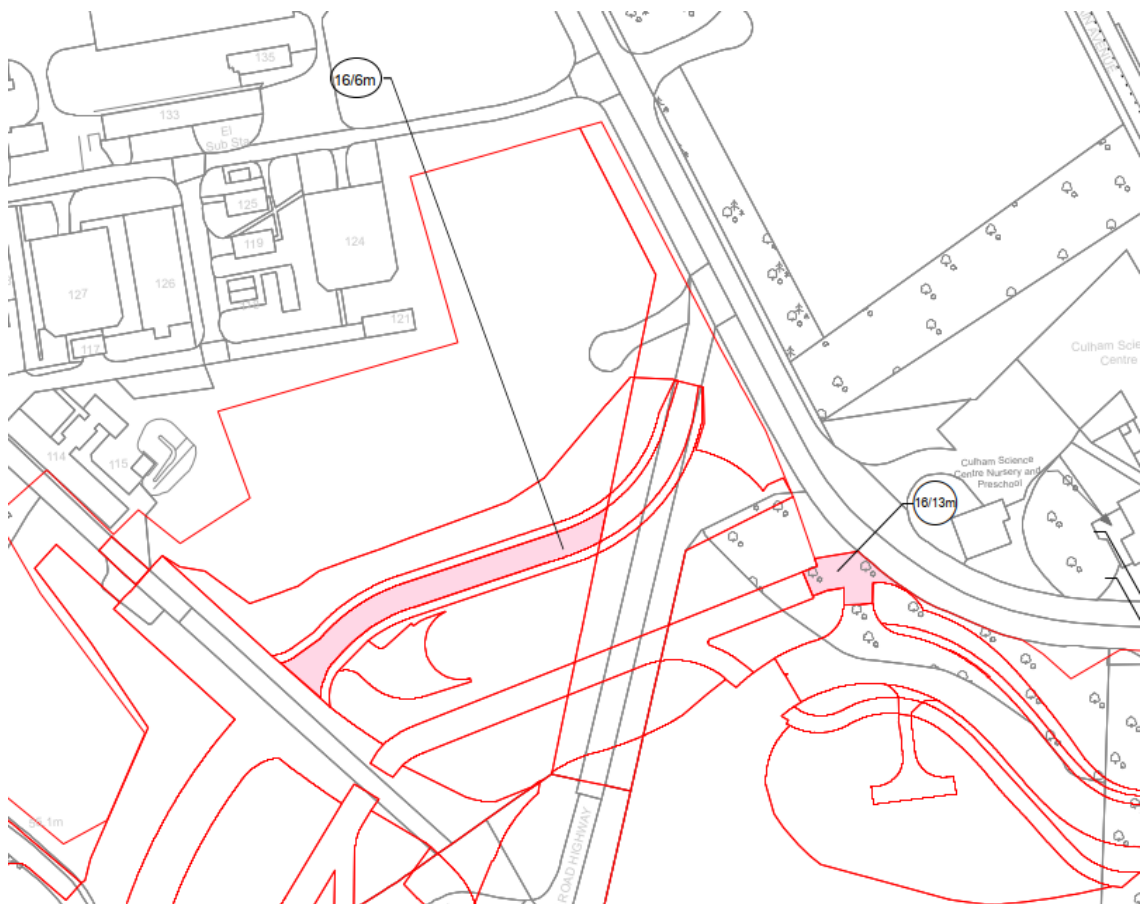


Figure 39 Land plots 16/6m and 16/13m

Response

3.103 In relation to the alternative access proposed, the proposed north-eastern access road at plot 16/6m is required to re-provide a new private means of access to the existing perimeter estate road for both Leda and third-party landowners in order to replace existing private means of access, which will be stopped up under the SRO. A review of the alternative access proposed by Leda (see Figure 40 for location) has been carried out and has concluded that the alternative access is not feasible due to the significant level differences (approximately 2m) between the elevation of the new roundabout and the new UKAEA access road, and the elevation of the existing perimeter road. In order to achieve a safe and acceptable gradient, a new access would require a much greater run-off in terms of the length of road than would be available and it would require

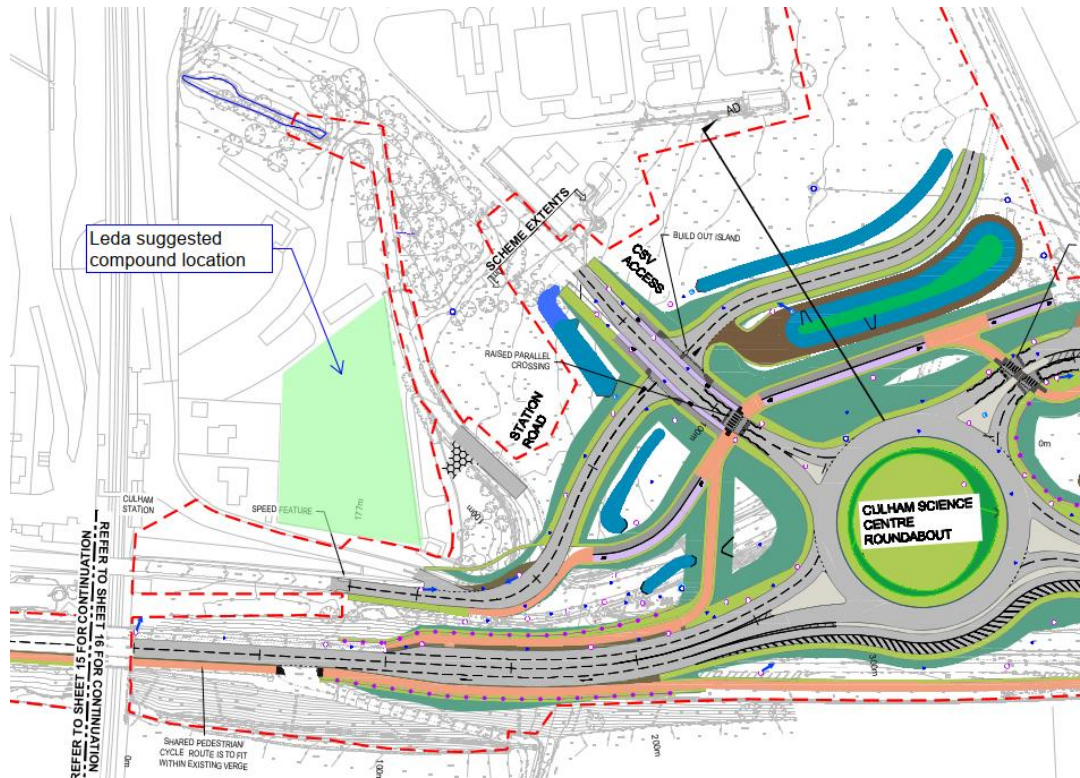


Figure 41 Indicative compound location suggested by Leda

Conclusion

- 3.105 The section above covers the criticisms to the design under the Planning Application and also the objections to the Orders prepared in support of the Scheme. I consider that the design concerns raised in relation to the two elements of the Scheme has been considered and appropriately addressed. I am satisfied that the Highways engineering design is appropriate for the Scheme.

4 BRIDGE SCHEME DESIGN CONSIDERATIONS

- 4.1 The Bridge Scheme is required to provide the Council with authority to construct a bridge, which is to carry a proposed highway, being the proposed link road from the B4016 across the Thames towards A415, over the navigable waters of the River Thames.
- 4.2 In this Scheme, the navigable waterway is the River Thames, for which the Environment Agency is the statutory Navigation Authority.
- 4.3 In its statutory remit of Navigation Authority, the Environment Agency (EA) is statutorily consulted on the Bridge Scheme, whose aims will be to ensure that there is no negative impact on rights of navigation. The Bridge Scheme sets out the necessary bridge design and clearances to show its affects upon the navigable waters.
- 4.4 The Acquiring Authority engaged with the EA throughout the development of the Scheme and also specifically in relation to the Bridge Scheme. The EA's Waterways team indicated three requirements for any new bridge over the River Thames:
- Any bridge would need to provide a clear span (over the river and towpath) with no obstruction to the towpath or impede flow;
 - The soffit of any bridge would need to have a minimum 4.1m (preferably 4.5m) above the average water level of 46.802m Above Ordnance Datum (**AOD**) over the central section of the river for a minimum one-third of the overall width of River Thames and/or should be no lower than other bridges in the area;
 - Pedestrian access from the bridge to the Thames Path would be a beneficial improvement to the local access network.
- 4.5 Based on the proposed road and structure, minimum clearances of 5.153m and 4.798m are achieved above the average water level of 46.802m AOD on the central one third width and the remaining two-thirds width of the river respectively. The clearance achieved exceeds the EA's requirement on navigation clearance.
- 4.6 A freeboard clearance of 0.6m is achieved above the 1 in 100-year flood level of 50.46m AOD for the entire length of the structure, in accordance with Clause 4.16 of DMRB CD 356 Design of highway structures for hydraulic action.
- 4.7 A minimum headroom of 2.7m will be provided over the towpath along the riverbanks, exceeding headroom requirements set out in DMRB CD 143 Designing for walking, cycling and horse-riding.
- 4.8 At the location of the crossing, the River Thames is between 45m to 50m wide between top of riverbanks. As a result, the minimum length of the structure required to cross the river, towpaths and proposed service tracks (6m wide) on each bank will be approximately 65m.
- 4.9 A three-span configuration has been chosen to minimise the height of the structure, and alleviate the risk of increase to existing flood level whilst providing a central span of 65m over the River Thames and towpath. A minimum of 30m approach spans on either side of the central span is required to clear the 1% Annual Exceedance Probability (**AEP**) flood level with 70% climate change. However, an approach span of less than 50% of the main span is not structurally efficient in minimising the sagging moment in the central span. For structural efficiency, a side span length of 70% the length of the central span is advisable. Hence, for the central span of 65m, side spans of 45m have been proposed. The General Arrangement and Proposed Elevations plans (CD D.234 – CD D.236) provide this detail, along with the Bridge Scheme (CD H.5).
- 4.10 Different types of foundations, such as isolated spread footings or caissons, are considered to be unfeasible based on the geology of the site. Based on the geotechnical information, it is considered that piled foundations are the only feasible solution for the proposed structure. Case in-situ reinforced concrete piles will support the bridge substructure and will help to minimise and control differential settlement between supports.

- 4.11 The north abutment will be a full height cantilevered abutment wall of reinforced concrete construction, supporting the vertical loads from the bridge and acting as a retaining wall for the embankment. A maintenance gallery will be provided at the rear of the bearing shelf. The embankment at the north abutment will be split into two sections with the top slope stopping at the maintenance access gallery and the second following up to the ground level. This will enable easy access into the bearing shelf and expansion joint from the embankment instead of from the front of the abutment. The inspection gallery access will be above flood level to remain clear of floodwater at all times.
- 4.12 N2 Metal parapet with mesh infill along the west edge of the deck in accordance with BS EN 1317 will be provided. Along the east edge of the deck, N2/W2 metal parapet with solid infill to act as a noise barrier is proposed. The heights of the parapets on both sides will be 1.5m. A noise barrier is needed along the eastern edge of the deck to minimise the noise impact to the properties in the northern part of Appleford. The parapets are specified in accordance with DMRB CD 377.

Summary

- 4.13 The proposed Bridge will have a single clear span of 65 metres, between the faces of the abutments on the north and south banks of the River Thames, which will clear both the River Thames and its towpath on the north bank of the River Thames, thereby retaining the current width of the River Thames of 39 metres nominal. The minimum headway of the bridge over the navigable waters is 4.7 metre over the top water level of the River Thames, and minimum of 2.7 metres over the towpath on the north bank of the River.
- 4.14 The Bridge will have an overall width of 17.9 metres and will, from its east to west side, carry a 0.5 metre wide parapet, 2 metres wide footway, 3 metres wide cycleway, 2 metres wide verge, 9.3 metres wide single carriageway, 0.6 metres wide verge and a 0.5 metre wide parapet. A cross-section of the Bridge is shown in Figure 10 of my proof of evidence.
- 4.15 On the basis of the above, statutory rights of navigation are not impacted and the Bridge Scheme should be confirmed.

5 MODIFICATIONS

- 5.1 This section sets out the modifications that the Acquiring Authority is seeking to the SRO and the CPO, should the Secretary of State for Transport see fit to confirm the Orders. The full detail of modifications continues to be finalised and will be discussed in the modifications session of the Inquiries, with a full table of modifications requested to be provided to the Inspector prior to this session, along with modified plans (i.e., CPO Maps), as necessary.

Modification 1 – Plots 7/4a and 74b

- 5.2 The extent of the tie in with Collett can be shortened without affecting the proposed improvement of a parallel crossing and improved footways. The Scheme will now be curtailed at the southern boundary of Plots 7/2b, 7/2c and 7/2e in the CPO. The cross hatching representing the southern extent of highway improvement of Collett will be curtailed on Site Plan 7 of the SRO, to the same point as the southern boundary of the aforementioned Plots
- 5.3 There is no longer a requirement to acquire Plots 7/4a and 7/4b (held by Bona Vacantia Division/crown land) which can be removed from the CPO.

Modification 2 – Plots 9/18, 9/25, 9/26 and 9/3aa

- 5.4 Small areas along the eastern edges of these plots, which areas are now known to be in the ownership of Network Rail, are not required for construction activities and do not need to be included. These areas of Network Rail land can be removed from the said plots, with the remaining areas of the plots, in unknown ownership, remaining in the CPO.
- 5.5 Network Rail has been informed of this proposed modification.

Modification 3 – Plot 16/1a

- 5.6 The plot is to be reduced in its area by removal of a small area in the north westernmost corner of the plot. The land is indicated in Network Rail plans as in Network Rail ownership, but is also indicated in the title ownership of Oxfordshire County Council, due to a title overlap. The Scheme does not propose any changes in the north-westernmost corner of the plot and this small area of land can be removed from the CPO.
- 5.7 Network Rail has been informed of this proposed modification.

Modification 4 – Plot 16/2

- 5.8 The plot is to be reduced in its area and by removal of a strip of land along the plots northern boundary. The land to be removed has been established as in the ownership of Network Rail and is part of the top of the grassed cutting slope of the Network Rail Culham Station land abutting the Station Road Private Access Road to Culham Station and is not part of the Station Road Highway, as first thought.
- 5.9 The Scheme has been modified to exclude a strip of land along Plot 16/2 northern boundary, as this particular area and which can be removed from the CPO.
- 5.10 Network Rail has been informed of this proposed modification.

Modification 5 – Plots 16/3, 16/4 and 16/5

- 5.11 The Scheme was to provide new footway and segregated cycle track on the northern side of the carriageway of Station Road highway, where it junctions with the private access road (also named Station Road) to Culham Station, as an improvement of Station Road (see Figure 42). This has now been moved to the south side of the carriageway in order to retain a tree on the northern side, which is protected by a Tree Preservation Order.



Figure 42 Previous proposed layout with segregated cycle track on northern side of Station Road



Figure 43 Proposed layout with shared use facility on the southern side of Station Road

- 5.12 The Scheme will now utilise the existing shared use facility on the south side of Station Road highway carriageway and connect with the proposed footway and segregated cycle track to the east (see Figure 43 above). The existing uncontrolled crossing point on Station Road will be retained.
- 5.13 Plots 16/3, 16/4 and part of Plot 16/2 in the CPO in this vicinity, previously identified as unknown ownership plots, have additionally now been identified as Network Rail land.
- 5.14 As a result of the above changes, the Acquiring Authority proposes to put forward to the Inquiries, a proposed modified SRO Site Plan 16A reflecting the curtailment of the area of highway improvement of Station Road on its northern side at the junction of the private access road (also named Station Road) to Culham Station; and to amend the Schedule to the CPO to show Network Rail as owners of Plots 16/3 and 16/4 and a reduced area Plot 16/2 (with a new plot created with the removed area of land).
- 5.15 However, the Acquiring Authority is in negotiation with Network Rail to reach agreement to undertake the necessary Scheme works on Network Rail land in this location, as well as on Network Rail land elsewhere, and which if successfully concluded might otherwise result in a requested modification to have the aforementioned Network Rail plots removed from the CPO.

Modification 6 – Plot 16/2 and New Highway 16D on SRO Site Plan 16A

- 5.16 New highway 16/D was previously shown at its north-western end of an anticipatory termination point from which any future continuity of the highway might continue associated with future development. The Acquiring Authority has determined that this length of proposed highway should now be foreshortened to a suitable point at which it will cease as a publicly maintainable highway, when first built under the Scheme, and for the remaining connecting length north westwards from that point to be substituted with a length of new Private Means of Access to Premises, tapered to provide a suitable tie in connection with the existing Access. The shortening of the proposed highway has no impact on the remainder of the Scheme.
- 5.17 The proposed modifications arising would be shortening of stopped up private means of access 16/2 on Site Plan 16 of the SRO and of its measurement in the SRO Schedule 16; shortening of new highway 16/D on Site Plan 16A of the SRO and extending the length of new private means of access 16/a on that Site Plan to meet the new terminal end of new highway 16/D; readjusting plots and areas of 16/5a, 16/5e, and 16/5g on the CPO Sheet 16 and in the CPO Schedule (overall land area remains the same).
- 5.18 Leda Properties Limited as owners of the land over which New Highway 16/D and New Private Means of Access 16/a are to be provided, together with the other interests in the land, including the beneficiary premises on Culham No 1 Site who are to be provided new Private Means of Access to Premises, will be informed of the proposed modifications which will be presented in detail to the Inquiries.

6 SUMMARY PROOF OF EVIDENCE AND CONCLUSION

- 6.1 This proof of evidence covers the technical design of the Didcot to Culham River Crossing and Clifton Hampden Bypass elements of the Scheme.
- 6.2 Following identification of the need for the Scheme, assessment of alternatives and scheme selection completed by others, a Feasibility Design of the Scheme had been initiated. The Scheme was then advanced into the Preliminary Design Stage, with the design work moving onto a topographical survey, adding details to the design and ensuring that it complied with the National and Local Standards and followed relevant guidance. The Preliminary Design Stage was completed in 2021.
- 6.3 The design was developed in accordance with the Design Manual for Roads and Bridges for the Scheme, and Manual for Streets (**MfS**) and Manual for Streets 2 (**MfS2**) were also used in the development of the design including side streets/accesses. A Walking, Cycling and Horse-Riding Assessment and Review (WCHAR) was undertaken to identify existing network and opportunities that the Scheme could bring to the integration and enhancement of the walking, cycling and horse-riding environment for users.
- 6.4 Representations were received for the called-in Planning Application and objections were received in relation to the Orders, a number of which contain criticisms on design matters. Responses have been provided to all representations and objections that raise design criticisms, including four from the called-in Planning Application and fourteen from the Objectors to the Orders.
- 6.5 The Appleford Sidings Bridge was one of the main criticisms, especially on the location of the crossing. The alignment of the road and location of the bridge structure was determined after extensive and robust assessment. Suggestions on alternative alignments have been assessed and ruled out due to deliverability issues.
- 6.6 Three Objectors from sites north of the Culham Science Centre roundabout object regarding maintaining access at all times and future private means of access. All three are principally supportive of the Scheme, with ongoing negotiation on voluntary agreement.
- 6.7 Two objections were made regarding the stopping up of the existing A415 south of the Culham Science Centre roundabout. The stopping up is necessary as that section of A415 is no longer required for through traffic or access purposes. The suggestion of connecting that section of the A415 with the Culham Science Centre roundabout has been assessed and ruled out due to traffic analyses, additional land take and impact on nearby listed property.
- 6.8 Several landowners objected to the Orders as the purpose of the land is unclear to them or they consider that the land take is excessive. The engineering reasons have been provided in this proof of evidence to justify the land required for the Scheme.
- 6.9 The Didcot to Culham Thames Bridge has been designed in accordance with DMRB and will span over the navigable waters of the River Thames. The proposed Bridge will have a single clear span of 65 metres, between the faces of the abutments on the north and south banks of the River Thames, and which will clear both the River Thames and its towpath on the north bank of the River, thereby retaining the current width of the River Thames of 39 metres nominal. The minimum headway of the bridge over the navigable waters is 4.7 metre over the top water level of the Thames meeting the requirement set out by EA, and minimum of 2.7 metres over the towpath on the north bank of the River Thames to allow pedestrian access.
- 6.10 The Bridge will have an overall width of 17.9 metres and will, from its east to west side, carry a 0.5 metre wide parapet, 2 metres wide footway, 3 metres wide cycleway, 2 metres wide verge, 9.3 metres wide single carriageway, 0.6 metres wide verge and a 0.5 metre wide parapet.
- 6.11 As such, statutory rights of navigation are not considered to be impacted and the EA has been consulted on design throughout.

- 6.12 Six modifications to the CPO have been requested, all of which reduce the land required for the CPO. Four of the modifications concern Network Rail land, where plots will be amended to remove land owned by Network Rail. Network Rail has been informed about the modifications.
- 6.13 The full detail of modifications continues to be finalised and will be discussed in the modifications session of the Inquiries, with a full table of modifications requested to be provided to the Inspector prior to this session, along with modified plans (i.e., CPO Maps), as necessary.
- 6.14 For the reasons set out in my proof of evidence, the design of the Scheme, and the requisite details that have translated through into the Planning Application and the Orders, is the most appropriate design in accordance with design standards including DMRB, MfS, MfS2 and LTN 1/20.

7 STATEMENT OF TRUTH AND DECLARATION

- 7.1 I confirm that, insofar, as the facts stated in my proof evidence are within my own knowledge, I have made clear what they are and I believe them to be true and that the opinion I have expressed represent my true and complete professional opinion.
- 7.2 I confirm that my proof of evidence includes all facts that I regard as being relevant to the opinions that I have expressed and that attention is to drawn to any matter which would affect the validity of those opinions
- 7.3 I confirm that my duty to the Inquiry as an expert witness overrides any duty to those instructing or paying me, and I have understood this duty and complied with it in giving my evidence impartially and objectively, and I will continue to comply with that duty as required.
- 7.4 I confirm that, in preparing this proof of evidence, I have assumed that same duty that would apply to me when giving my expert opinion in a court of law under oath or affirmation. I confirm that this duty overrides any duty to those instructing or pay me, and I have understood this duty and complied with it in giving my evidence impartially and objectively, and I will continue to comply with that duty as required.
- 7.5 I confirm that I have no conflicts of interest of any kind other than those already disclosed in this proof of evidence.

KARL CHAN

30 January 2024