

Technical Note on behalf of Oxfordshire County Council as Applicant

Didcot Garden Town HIF1 Scheme

NATTRAN/SE/HAO/286

APP/U3100/V/23/3346625

Project name Didcot HIF 1	Client Oxfordshire County Council	Subject POETS Request for Regulation 25 Letter Rebuttal	Date 14 December 2023
Prepared by Alex Maddox	Verified by Simon Wild		

1. INTRODUCTION

- 1.1 This Technical Note is produced on behalf of Oxfordshire County Council as Applicant in response to the Inspector's request at the Didcot Garden Town Housing Infrastructure Fund (HIF1) 'call in' and 'orders' Pre-Inquiry Meeting (PIM) held on 9 November 2023. The Inspector requested the following from the Applicant:
22. *The applicant is required to provide a Technical Note that sets out a response to POETS's letter to the Planning Inspectorate dated 4 November 2023. This asked for the Planning Inspectorate to issue a Regulation 25 request in relation to the adequacy of the Environmental Statement. The note will be helpful for all parties to understand the approach of the applicant and aid the preparation of evidence.*
- 1.2 POETS (Planning Oxfordshire's Environment and Transport Sustainably) in their letter dated 4 November 2023 requested that the Inspector under Regulation 25 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (hereafter referred to as the 'EIA Regulations 2017') require the Applicant to provide certain additional information¹. The POETS letter alleges "*the existing ES to be deficient*", stating two reasons (para. 2):
- i. *"it fails to assess the significant environmental effects of the development beyond the Scheme boundaries, especially its proposed western and eastern ends; and*
 - ii. *it fails to assess adequately reasonable alternatives to the proposal in the form and manner required by the Regulations."*
- 1.3 POETS also allege these two deficiencies in its Statement of Case (undated).
- 1.4 By way of background, an Environmental Statement was produced for the HIF1 Scheme which was submitted as part of the Scheme planning application on 4 October 2021. A request for further information under Regulation 25 was made by Oxfordshire County Council as Local Planning Authority (LPA) on 26 April 2022 and responded to on 26 October 2022. Following comments received from the Environment Agency on the Flood Risk Assessment and the Water Framework Directive Assessment the Applicant submitted further information under Regulation 25 on 9 December 2022. The LPA requested further information under Regulation 25 on 31 March 2023. The Applicant submitted amended plans and an addendum to the Environmental Statement on 25 April 2023. The Applicant submitted revised clarification plans on 28 June 2023 at the request of the LPA to remove any note relating to 'indicative' and/or 'do not scale'.

¹ The POETS letter of 4 November 2023 was not received by the Applicant until 28 November 2023.

2.0 Failure to assess significant environmental effects of the Scheme beyond the Scheme boundaries, especially at its western and eastern ends

Introduction and summary

2.1 The POETS letter refers to the following locations:

- 2.1.1 Abingdon and the A415 approach to Abingdon (paras. 5 – 7 and 9 of POETS' letter);
- 2.1.2 the B4017 Drayton Road northeast towards Abingdon (para. 8 of POETS' letter);
- 2.1.3 the A417 west of the Milton Interchange towards Wantage (para. 8 of POETS' letter);
- 2.1.4 the B4015 to the Golden Balls Roundabout on the A4130 Oxford to Reading Road (note that it is assumed POETS were referring to A4074 instead of A4130) (para. 8 of POETS' letter);
- 2.1.5 Berinsfield (para. 9 of POETS' letter);
- 2.1.6 Chalgrove (para. 9 of POETS' letter); and
- 2.1.7 settlements west and northwest of the A34 Milton Interchange (para. 9 of POETS' letter).

2.2 For clarity, the Applicant has created Figure 1 which is a summary plan of these locations referred to in the POETS' letter, in relation to the Scheme:

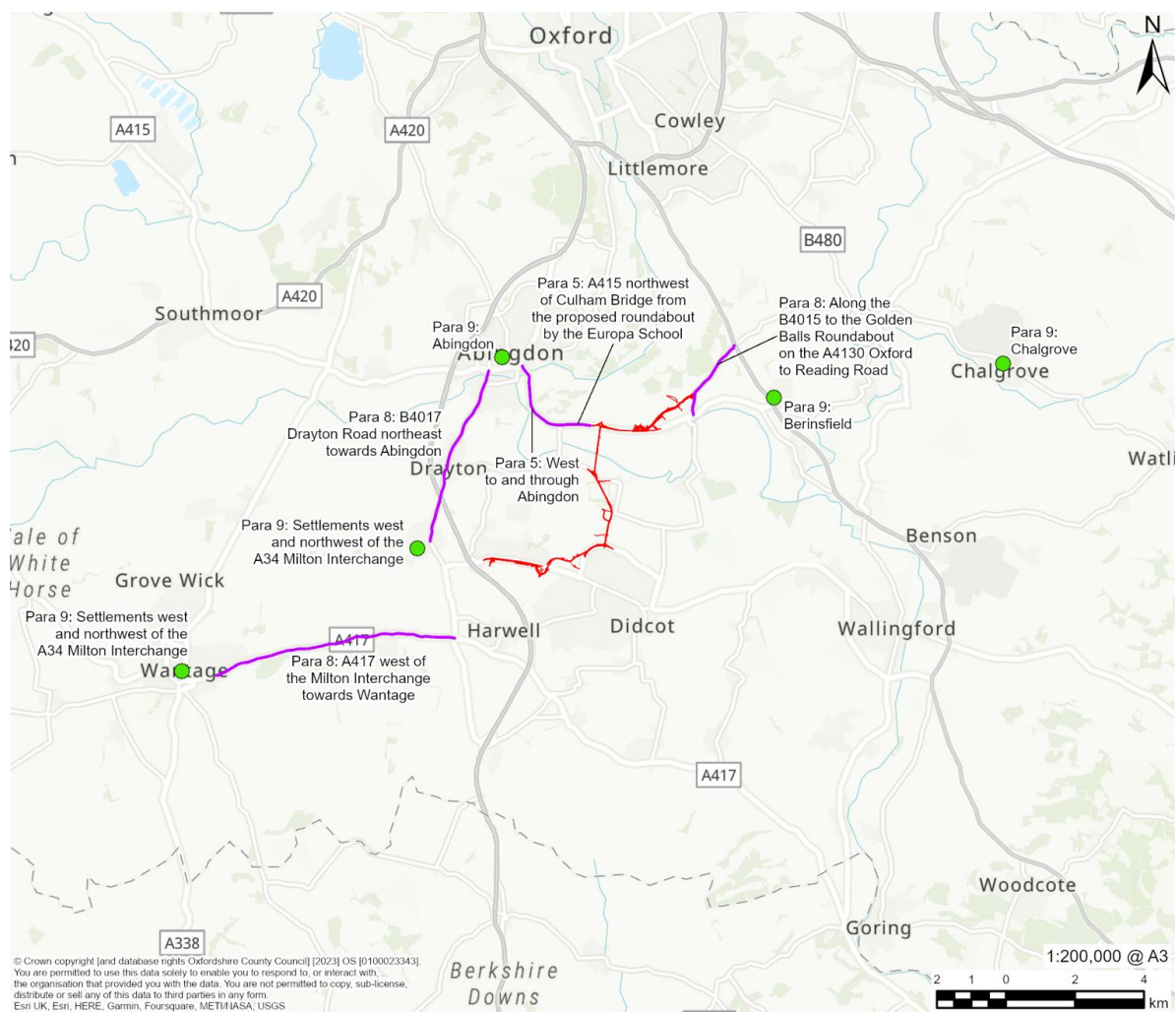


Figure 1: Summary plan of locations raised by POETS

2.3 This Technical Note addresses each of these locations raised in the POETS letter. Due to environmental assessments in the ES being informed by transport modelling, this note first summarises and discusses relevant elements of the transport modelling methodology, and then

discusses the environmental assessments in the ES. In summary, it shows that the scope and extent of the assessments are fully justified and agreed with the LPA.

Traffic Modelling - Strategic

2.4 The Oxfordshire Strategic Model (OSM) is a SATURN model that covers all of the county, with Didcot and surrounding areas being within OSM's Area of Detailed Modelling (ADM). It allows high-level assessments to be made across wide areas, taking account of allocated growth and transport mitigation strategies. It has been used multiple times to support the development and eventual adoption of the Local Plans that allocated the significant growth across this area, in particular:

- Vale of White Horse Local Plan 2031 Part 1 (2016);
- Vale of White Horse Local Plan 2031 Part 2 (2019); and
- South Oxfordshire Local Plan 2035 (2020).

2.5 This strategic modelling informed the three Local Plans as examined and found to be sound by each individual Planning Inspector. These multiple modelling exercises take account of the planned growth and proposed mitigation, including the Scheme. They provide cumulative assessments of future changes across the wider geographic area, including the locations stated by POETS such as Abingdon, A417 to Wantage, and the Golden Balls approaches. Note that in the Inspector's report for the Vale of White Horse Local Plan 2031: Part 1 (2016), it was accepted that the mitigation strategy (which this Scheme is part of) would not solve all congestion (emphasis added):

*"144. In relation to transport Oxfordshire County Council, as Highway Authority, commissioned the November 2014 Evaluation of Transport Impacts Study to Inform the Vale of White Horse District Council Local Plan 2031: Part 1. Following several earlier stages this report assessed the likely transport impacts of the plan's proposed 20,560 new homes and 23,000 additional jobs in the district, based on a range of different transport interventions and improvements (one of medium scale and two of large scale). **The report concludes that the Stage 5 ETI mitigation package (which in essence comprises those transport improvements identified in the plan) would largely mitigate the impacts of the proposed new development in the district, albeit that some congestion issues would remain.**"*

2.6 Similarly, the Inspector's Report on the Examination of the South Oxfordshire Local Plan 2011-2034 (2020) explains how the modelling work underpins the transport improvements required, as part of a wider strategy, to mitigate the impact of existing, approved and allocated developments (emphasis added):

"213. The set of documents comprising the Evaluation of Transport Impacts (documents TRA06 to TRA06.6.1) examined various development scenarios and their transport impacts, and the evaluation underpins the range of transport improvements required by the Plan in connection with the allocations.

*214. The success of the Housing Infrastructure Fund bid will bring about early delivery of **a new crossing of the River Thames between Culham and Didcot, a bypass of Clifton Hampden, capacity enhancements to the A4130, and a new 'Science Bridge', which will enable STRAT8, STRAT9 and STRAT10 to proceed. They are part of a wider highway strategy to support the delivery of housing growth in the wider Didcot Garden Town area and to mitigate the impact of existing, approved and allocated developments.**"*

2.7 Extracts from the Evaluation of Transport Impacts (ETI) evidence base which supported the most recent of these Local Plans shows the future year modelled volume / capacity plots for AM and PM peak hours, replicated in Figures 2 and 3 for ease. This is relevant here as it illustrates the wide geographic area that previous assessments have covered through the Local Plans, including all of the areas identified by POETS as shown in Figure 1.

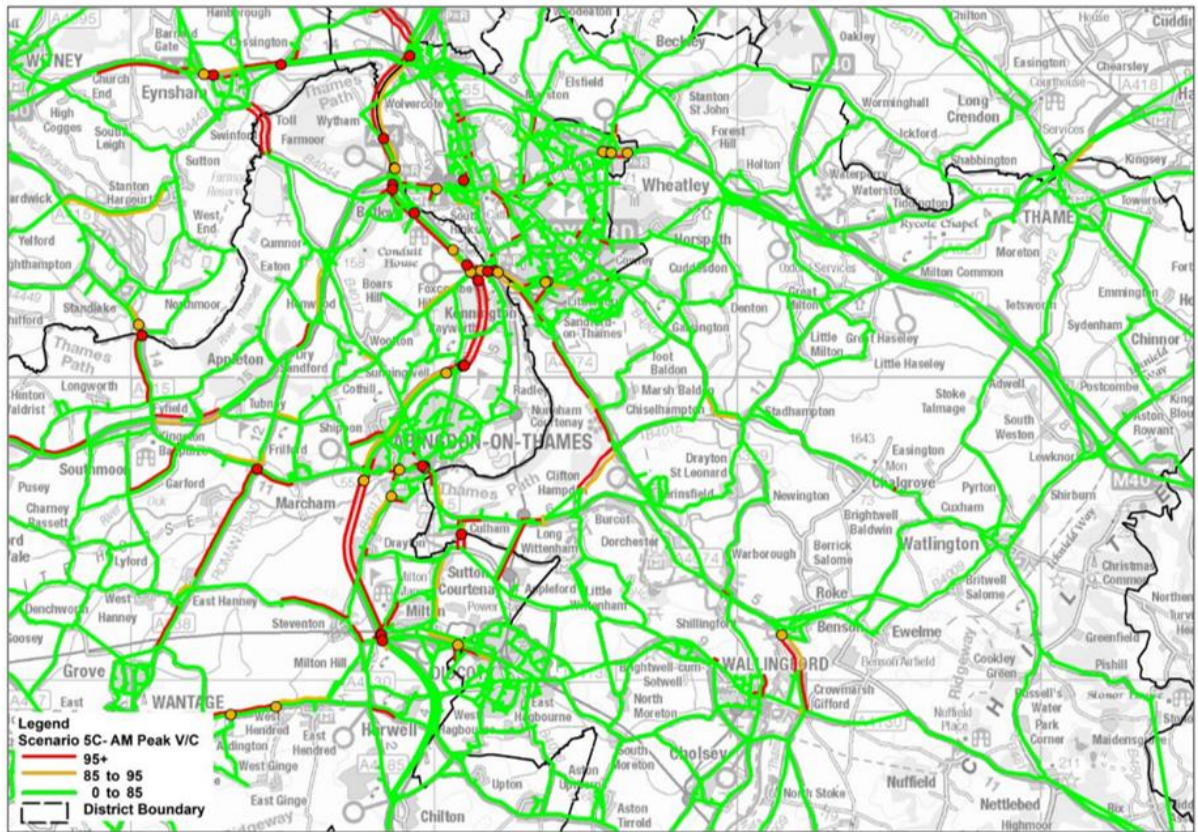


Figure 2: OSM Link and Junction V/C - AM Peak Hour

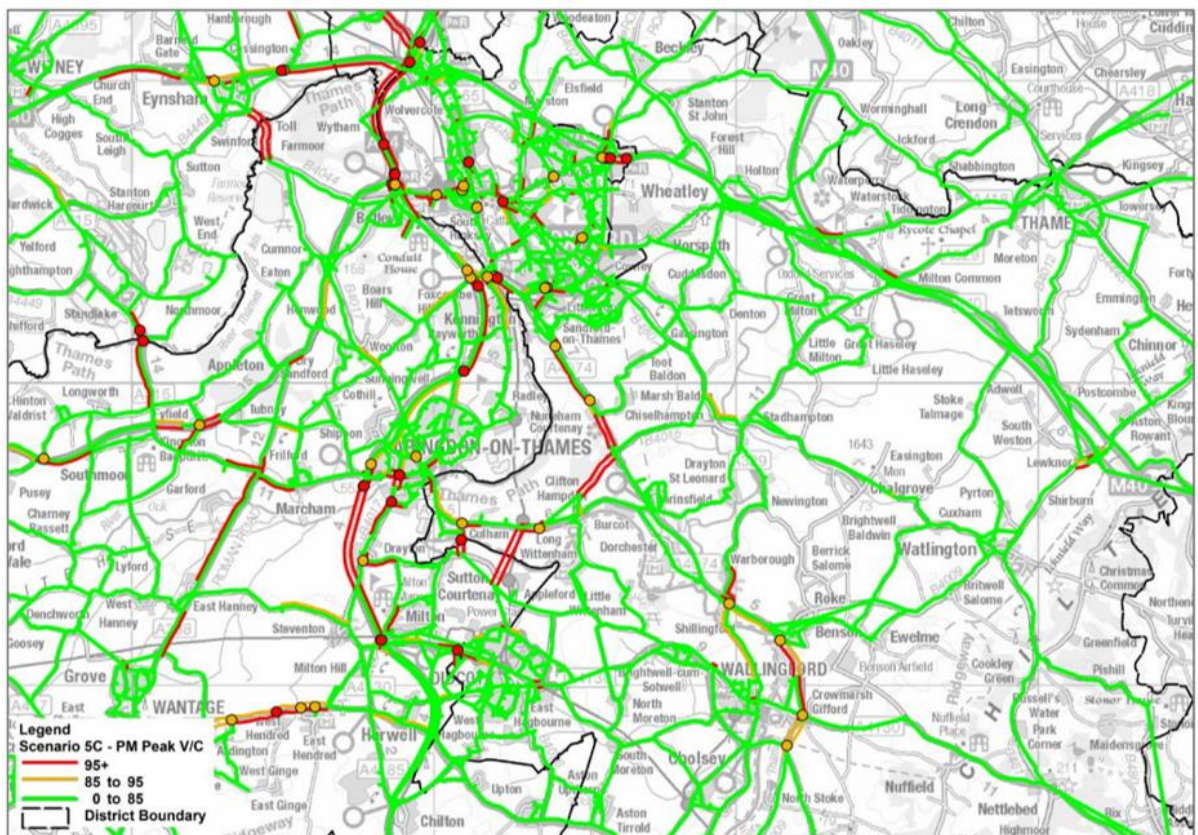


Figure 3: OSM Link and Junction V/C - PM Peak Hour

Traffic Modelling - Detailed

- 2.8 Through the scoping process for the Scheme planning application, it was agreed between the Applicant and the LPA that the Didcot Paramics Microsimulation Model, which is informed by the Oxfordshire Strategic Model (OSM), would be used as the basis of assessment for the Scheme. The Paramics model is significantly more detailed than OSM and provides higher granularity. The Paramics model extents are reported in the Transport Assessment under Figure 5.1: Paramics Model Extent, which is replicated in Figure 4 below for ease. The increased level of detail can be seen by comparing the links that represent the Scheme in Figure 4 and Figures 2 and 3 which shows the OSM images. In the above OSM images the Scheme is shown by straight lines, whereas the Paramics model was able to model the Scheme as per the evolving design:

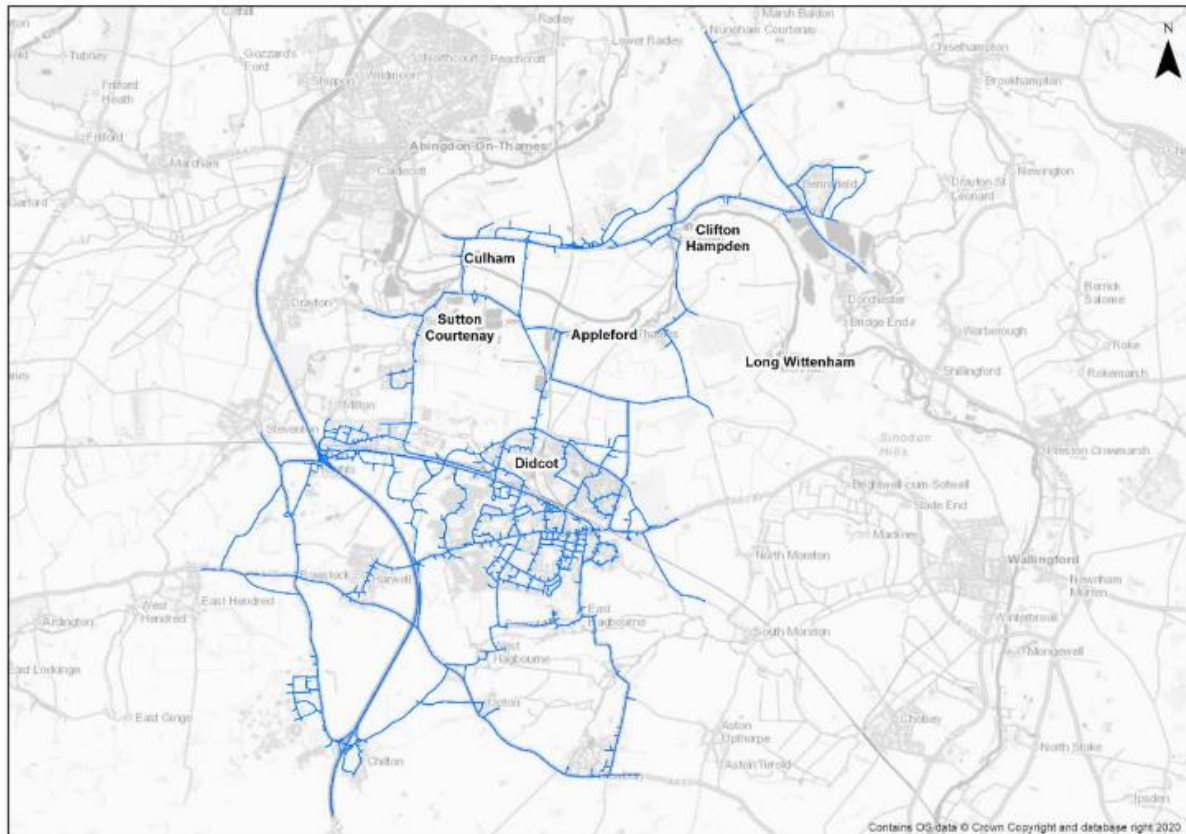


Figure 4: Paramics Model Extent

- 2.9 Outputs from the Paramics model were used to assess the impact of the scheme for both transport and environmental disciplines as reported in the ES.
- 2.10 It was agreed with the LPA that 29 junctions would be assessed, as reported in the Transport Assessment, replicated in Figure 5 below for ease. The junctions included both new ones that the Scheme would deliver, and existing junctions in the area:

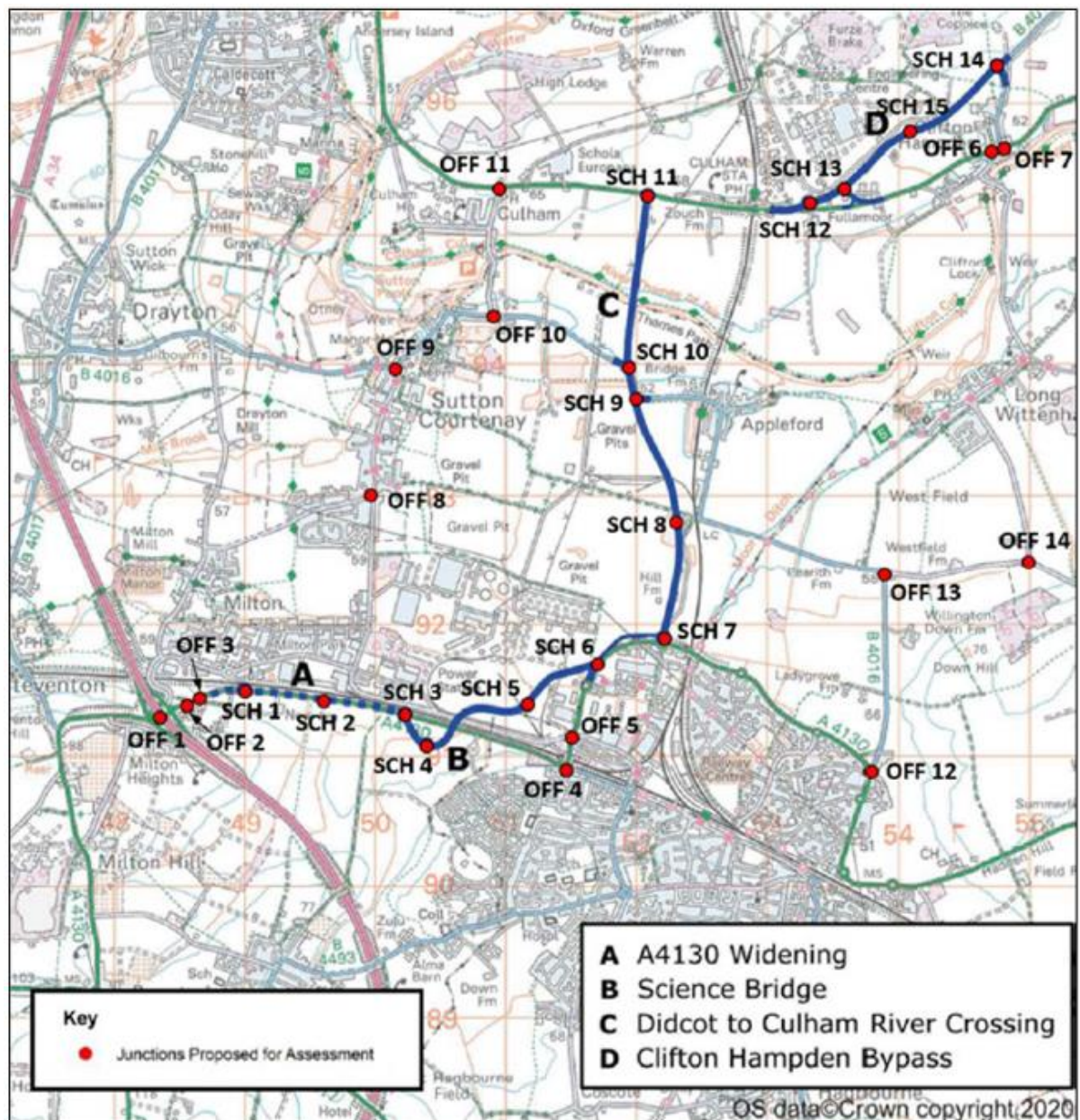


Figure 5: TA junction assessment locations

Geographic Scope of Transport Assessments

- 2.11 As per paragraph 2.1 of this note, the POETS letter refers to multiple locations. This note responds in respect of each location in turn below, with some of the locations combined as to not duplicate comments.
- 2.12 It is important to note that the methodology and study area as set out in paragraph 1.3.1 of the Transport Assessment and Section 16.3 of the ES Chapter 16: Transport was discussed and agreed with the Local Highway Authority (Oxfordshire County Council), and National Highways (with responsibility for the A34 through Oxfordshire) during pre-application scoping.

Abingdon and the A415 approach to Abingdon, and B4017 Drayton Road northeast towards Abingdon

- 2.13 The assessment of Abingdon was the subject of a Regulation 25 request letter dated 26 April 2022 from the Local Planning Authority (Oxfordshire County Council), which sought justification as to how the application assesses the impacts of the Scheme on the highway network in Abingdon. A detailed response on the HIF1 Scheme's impacts upon Abingdon was submitted as Appendix I of the Regulation 25 request response submitted by OCC as Applicant in October 2022 (see para. 4.8 of the response which sets out the request and refers to Appendix I), re-provided as **Appendix 1 of this**

Technical Note. The previous response on this matter provided multiple reasons for Abingdon not specifically being included the various assessments, summarised as follows:

- Growth in housing and employment in this area creates any increases into / out of Abingdon, not the Scheme;
- Walking and cycling – the scheme directly delivers and indirectly enables a significant number of new and/or improved walking and cycling routes in the area, engendering modal shift away from the private motor car;
- Public Transport – the Scheme improves journey time reliability for bus routes serving Abingdon;
- Air Quality Management Area (AQMA) – this in part causes queuing on the peripheral approaches to Abingdon, with little opportunity for change until the vehicle fleet moves away from petrol/diesel vehicles;
- A34 Lodge Hill South Facing Slip Roads – enables rerouting of trips in Abingdon;
- Local Cycling and Walking Infrastructure Plan (LCWIP) – Abingdon has an LCWIP setting out the aspiration for future walking and cycling routes;
- Science Vale Active Travel Network (SVATN) – an ongoing project looking at active travel routes in this area;
- Local Transport and Connectivity Plan (LTCP) – there will be a specific ‘Abingdon Travel Plan’ setting out the future transport strategy for Abingdon; and
- Development sites – future sites will be required to deliver/fund significantly improved active travel routes and pay towards improved bus services.

2.14 Not including Abingdon specifically in the assessments was subsequently agreed and accepted by Transport Development Management (TDM) officers, as evidenced at **Appendix 2 of this Technical Note**. The content of those Appendices remains correct. There are, however, two updates, as follows:

- The A34 Lodge Hill Interchange Scheme has now been granted planning permission by OCC as the LPA on 8 September 2023 (Ref: R3.0148/22).
- The Abingdon Local Cycling and Walking Infrastructure Plan (LCWIP) has been completed and was approved by the relevant cabinet member on 23 February 2023.

2.15 Abingdon is the principal focus of the first issue in POETS’ letter. Accordingly, it is important to note that the scope of the assessment in respect of Abingdon has already been the subject of a Regulation 25 request from the LPA and the LPA were satisfied with the Applicant’s response.

2.16 Paragraph 5 of POETS’ letter describes many of the existing traffic queues in Abingdon and highlights the lack of route choice into/out of and around the town from the Didcot direction:

“... with traffic queues of up to 2km or more at Abingdon Bridge, because it is the only route into/from the town to/from the south and south-east. This traffic then has no choice but to pass through the historic and commercial core of Abingdon on a gyratory system, covered by the AQMA ...”.

2.17 The Applicant agrees with these statements. The A415 being the only route into / out of Abingdon in this direction, due to the historic highway layout created by the River Thames, means that the Scheme would not influence route choice into / out of Abingdon. The allocated level of growth within the adopted Local Plans of both South Oxfordshire District Council (SODC) and Vale of White Horse District Council (VoWHDC) is the reason for the traffic growth in the area, not the Scheme. If a person lives to the south or southeast of Abingdon (in Didcot or one of the allocated future housing sites, for example) and wishes to drive into Abingdon, their route is along the A415 over Abingdon Bridge, with or without the Scheme, as the alternative routes are significant diversions due to the historic highway layout. See the below plan in Figure 6 for a visual representation of this, whereby the only potential rerouting that the Scheme creates is the dashed magenta lines. The following Table 1 of routes taken depending on a driver’s origin, with and without the Scheme, further explains the situation.

Table 1: Route options

From	Route without the Scheme	Route with the Scheme
Eastern extent of A415 e.g. Culham Science Centre, Clifton Hampden, Burcot	Along the A415 into Abingdon	Along the A415, passing over the new Scheme Didcot to Culham River Crossing northern roundabout, then west on A415 into Abingdon

From	Route without the Scheme	Route with the Scheme
Sutton Courtenay	Northbound over the existing Sutton Bridge and Culham Cut, then westbound on A415 into Abingdon	Through Sutton Courtenay and Culham Villages over the existing bridges, then west on A415 into Abingdon
N/E Didcot & Appleford	Northbound over the existing Sutton Bridge and Culham Cut, then westbound on A415 into Abingdon	Northbound on the new Scheme Didcot to Culham River, and then either: <ul style="list-style-type: none"> - Westbound on the A415 along the northern magenta dashed line, continuing west on A415 into Abingdon - Or westbound on B4016 Appleford Road along the southern magenta dashed line and then northbound over the existing Sutton Bridge and Culham Cut, then westbound on A415 into Abingdon.
Drayton	Northbound on B4017 into Abingdon (blue line)	Northbound on B4017 into Abingdon (blue line)

2.18 The same is true for the opposite direction, i.e. a person living in Abingdon and wishing to drive towards the south or southeast.

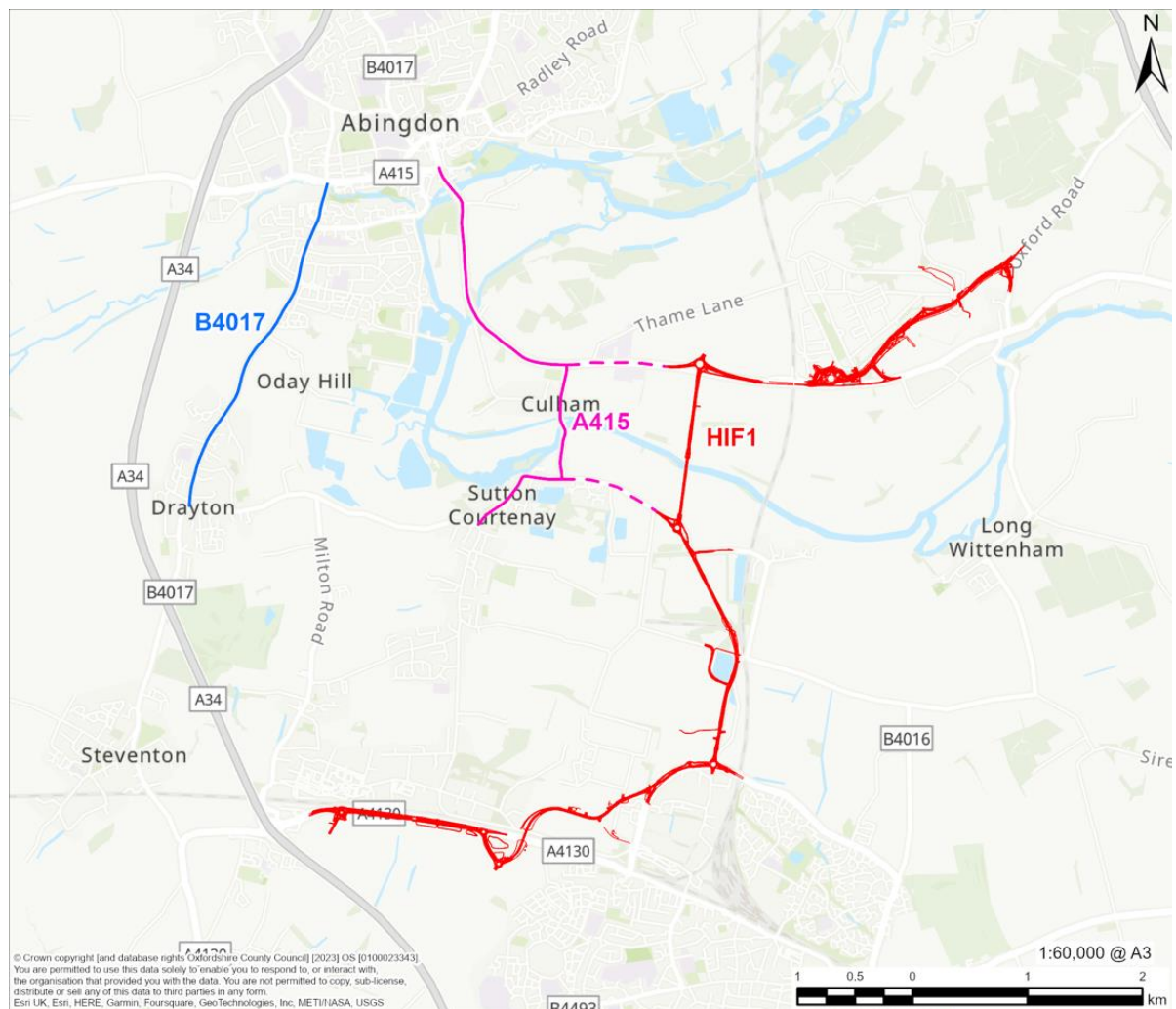


Figure 6: Route options map (Abingdon)

2.19 Therefore, it is the Applicant's view that the Scheme does not change people's route choice into or out of Abingdon along the A415; if they were going to drive then it would be along this same route regardless of the Scheme. However, the Scheme directly provides significantly improved walking and cycling infrastructure from many destinations to the south (Appleford, Didcot, future development at Valley Park etc) which currently have poor or no dedicated walking and cycling provision. There would

also be significantly improved bus journey time reliability making the bus a viable option. Therefore, the Scheme does not improve the attractiveness of driving to Abingdon, but does significantly improve the attractiveness of walking or cycling, helping to engender modal shift by providing real travel choices. This could be enhanced further as the Scheme acts as an enabler to other non-car modes. With the Scheme, there is a potential opportunity to close the current Sutton Bridge and Culham Cut bridges to all but pedestrians, cyclists and buses by routeing all other vehicular traffic to the new Didcot to Culham River Crossing. This would benefit not only those travelling to/from Abingdon but also for school children travelling to the Europa School (also enabling much safer travel across the Abingdon Road from Tollgate Road for active travel users).

- 2.20 It is important to note that future housing and employment growth sites in this area would be required to specifically undertake assessments of their impact on Abingdon, identifying and delivering suitable mitigation measures as appropriate, including but not limited to walking and cycling routes, public transport services and infrastructure, reduced car parking levels etc. Any future increases of flows into or out of Abingdon are a result of growth, not the Scheme.
- 2.21 In summary, Abingdon has existing network issues as outlined by POETS and shown through various Local Plan evidence bases. The previous Local Plan ETIs have provided high level assessments of Abingdon and the impact of growth in the area, and the future development sites will be required to study this in more detail through their planning applications, which will require scopes to be agreed with the LPAs. The Applicant considers that the Scheme does not have an impact on route choice into / out of Abingdon, and there are many other projects and strategies that focus on future changes in Abingdon, including requiring the development sites that are the cause of the traffic growth in the area to deliver and/or fund sustainable mitigation strategies. Therefore, Abingdon was not required to be scoped into the ES, as previously agreed by the LPA, which was the previous subject of a Regulation 25 request. It is not the purpose of this Scheme to fix all existing congestion issues in the area, including those due to the historic road network around Abingdon. The scheme would however help to engender modal shift towards walking, wheeling, cycling and public transport to and from Abingdon.

A417 west of the Milton Interchange towards Wantage

- 2.22 As with Abingdon, the Applicant considers that due to the existing highway layout in this rural area, the Scheme would not change a driver's route choice to use the A417 towards/from Wantage, and so the A417 is not required to be scoped into assessments, as agreed with the LPA. As shown in Figure 7 there are very few potential east-west routes in the rural area to the west of Didcot, towards Wantage. The distances between these different route options are large, therefore the Applicant considers that it would be extremely unlikely that a driver would change their route choice as a result of the Scheme (especially given the existing congestion around Abingdon and other areas as discussed above). Route choice is a function of a person's origin and destination. Additionally, the quality of road must be considered, in that the A417 is a higher standard road and significantly more direct between Wantage and Didcot compared to A415 (dark blue), Hanney Road (light blue) or Copperage Road (magenta), therefore significant changes would be required to impact a driver's route choice.

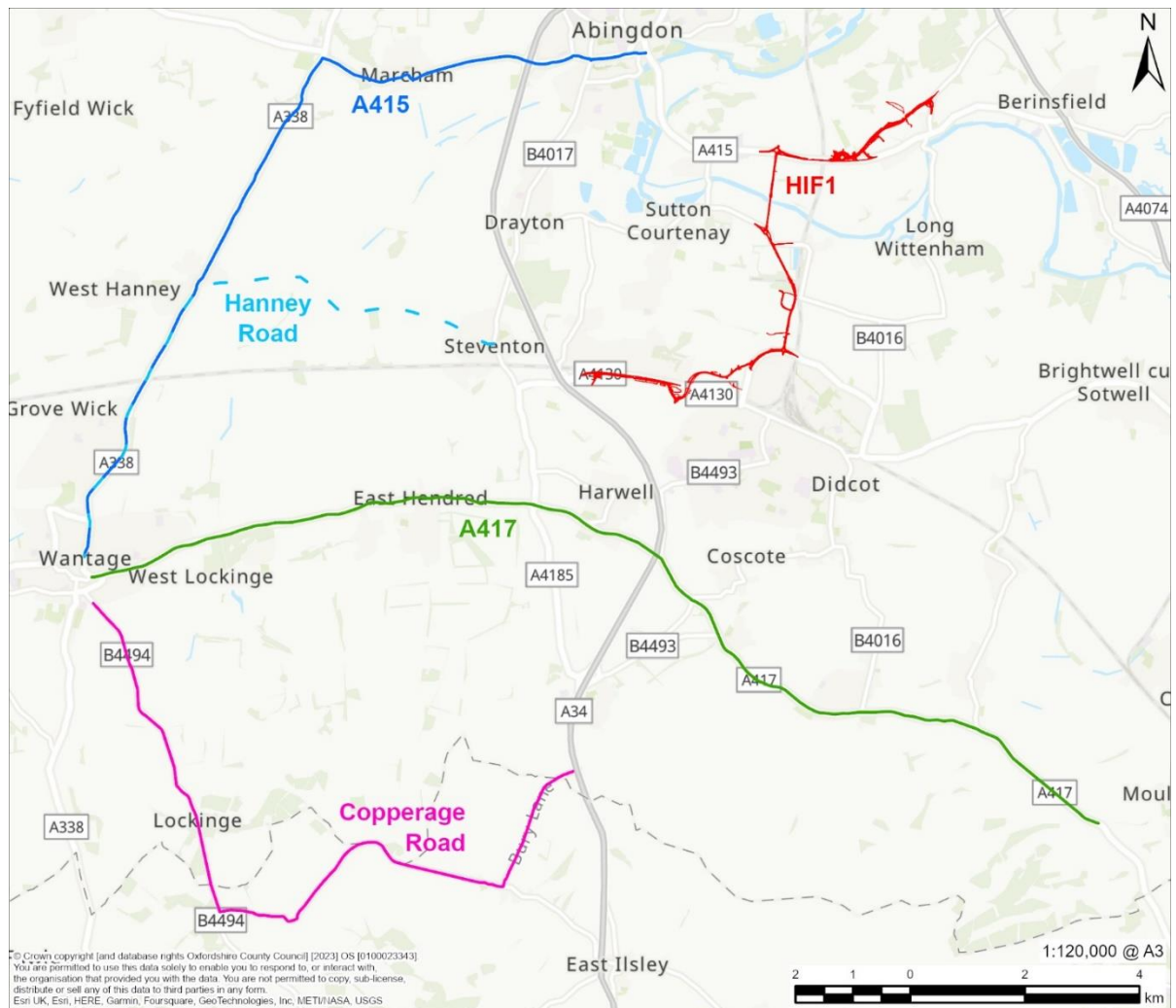


Figure 7: Route options map (Wantage)

- 2.23 Although not relevant to the scope of assessment for the present Scheme, it is relevant to note when considering POETS' remarks about the A417 west of the Milton Interchange that proposals are being considered for this area. As per policies SV 2.11 and 2.12 of the Local Transport and Connectivity Plan (LTCP) a brief to commission the second phase of the Relief to Rowstock optioneering study is currently being prepared by officers. This study will consider all modes of transport, taking appropriate account of the policies in LTCP, and is also supported by a study undertaken at A4130 Stevenston Lights as per policy SV 2.11 of the LTCP. The second phase of the Relief to Rowstock optioneering study is anticipated to start in early 2024 and a full Options Assessment Report (OAR) process will be undertaken, where the need and opportunities for improvements will be identified and assessed. This will include a wide range of options including but not limited to walking, cycling, wheeling, public transport improvements and junction layout changes. Engagement with stakeholders including East Hendred Parish Council (and other local parish councils, local employment sites, etc.) will help to inform the development of this study. A cordoned area of the Didcot Garden Town Paramics transport model is currently being updated and will be used to test options in the study. As such, outputs from these modelling exercises will be shared with stakeholders as appropriate during the engagement process.
- 2.24 Further, the Scheme delivers essential walking and cycling provisions required to help to form a cohesive active travel network in this area. The Scheme facilities would link with other projects such as the Milton Heights Active Travel Bridge, schemes in the Science Vale Active Travel Network, schemes in the Strategic Active Travel Network, and schemes in the Didcot LCWIP. Therefore, in delivering a significant piece of active mode infrastructure in this area, the Scheme is contributing to engendering modal shift, including along the A417.
- 2.25 The bus services which route along the A417 and also via Didcot benefit from the reductions of congestion in the Didcot area due to the Scheme, and therefore the Scheme helps to improve bus

journey time reliability and therefore the attractiveness of services as well as maintaining commerciality.

- 2.26 In summary, the Applicant considers that the Scheme does not have an impact on route choice along the A417, and there are other projects and strategies that focus on future changes in this area. If a person is driving along the A417 with the HIF1 Scheme in place, then it would also have been their route choice without the HIF1 Scheme. Indeed, the Scheme may assist to prevent further ‘rat-running’, as a result of growth, through parishes such as Sutton Courtenay, Milton, Drayton, Steventon and Harwell by encouraging motorists to use the A-roads and Milton Interchange for which they were built. Therefore, the A417 was not required to be scoped into the ES, as previously agreed by the LPA.

B4015 to the Golden Balls Roundabout

- 2.27 As with Abingdon and the A417, the Applicant considers that due to the existing highway layout in this rural area near Golden Balls, the Scheme would not change a driver’s route choice to travel through the Golden Balls junction, and so it is not required to be scoped into assessments. As shown in Figure 8 there are very few potential north-south routes in this area between Didcot and Oxford. If a driver is currently travelling north from Didcot to Oxford, they will either travel through Sutton Courtenay and Culham or Long Wittenham and Clifton Hampden, and then northwards through Golden Balls on the A4074 via Nuneham Courtenay. With the Scheme in place, the driver would make the same journey via Nuneham Courtenay on the A4074, but would be able to use the HIF1 route rather than travelling through the villages of Culham and Sutton Courtenay or Long Wittenham and Clifton Hampden. The Scheme could create a routing change on the roads leading to Golden Balls, by persuading drivers to use the HIF1 Clifton Hampden Bypass and the approach Golden Balls from the southwest on B4015 (magenta dotted line), instead of from the southeast on the A4074 via the A415 travelling through the village of Burcot and the Berinsfield roundabout (magenta dashed line). The overall flows at Golden Balls are the same, but change which direction the junction is approached from. It is the same in the opposite direction, southbound from Oxford.

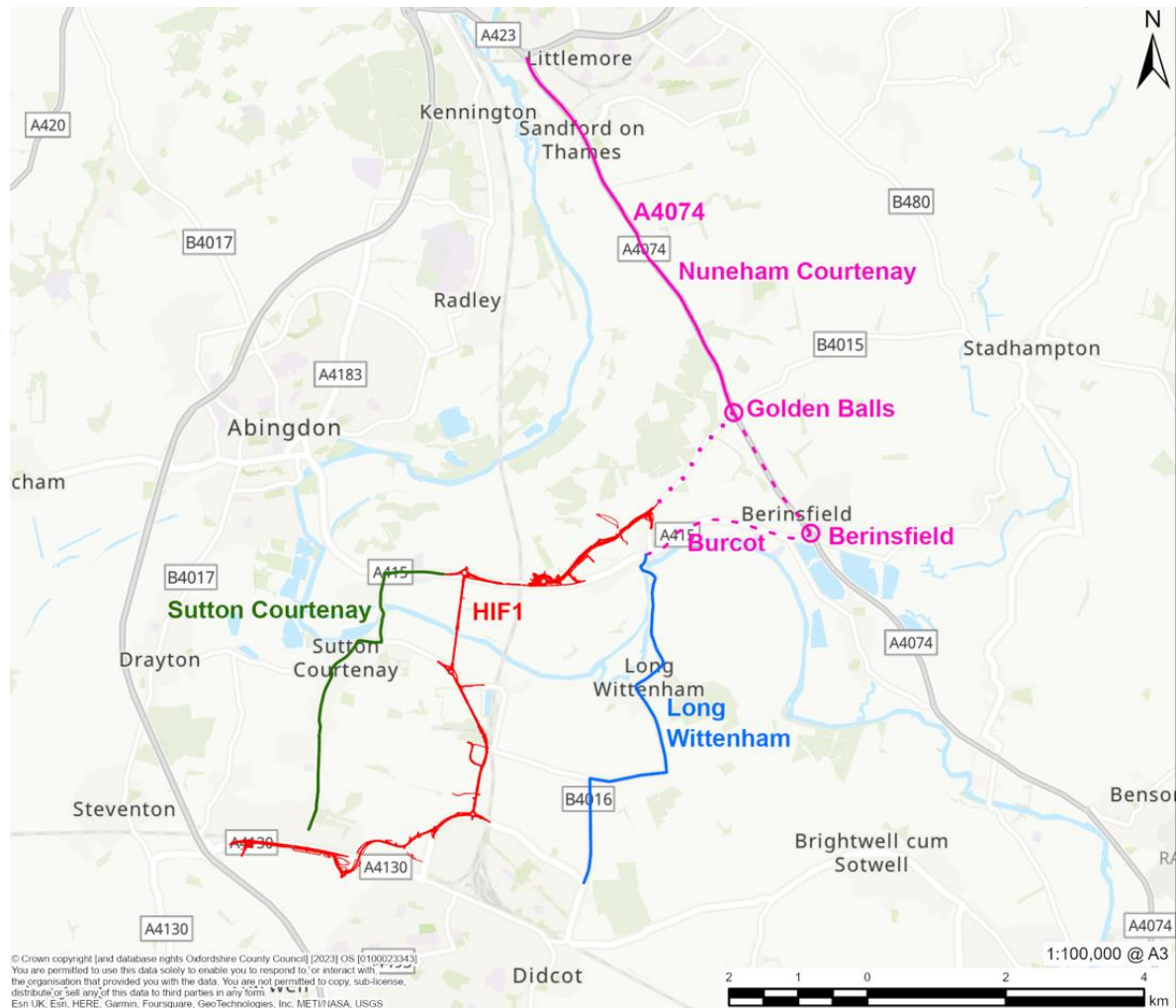


Figure 8: Route options map (Golden Balls)

- 2.28 Although not relevant to the scope of assessment for the present Scheme, it should be noted that work is ongoing to develop a future strategy for Golden Balls. The junction was identified in LTP4 as potentially requiring changes in the future, and through the Local Plan process it was included in the Infrastructure Delivery Plan for multiple allocated development sites, requiring them to pay towards future changes. An A4074 Corridor Strategy is currently underway, looking into future options for the entire route, as per Policy 53 of LTCP. This takes into consideration all modes of transport, and is also supported by an ongoing study investigating the feasibility of multiple options for walking and cycling routes between Oxford and Berinsfield, which would form part of the wider Strategic Active Travel Network (linking with HIF1). This walking and cycling route is also required to be funded or delivered by allocated development sites in the SODC Local Plan. A full Options Assessment Report process will be undertaken for Golden Balls, where the need and opportunities for changes will be assessed. This will include a wide range of options including walking and cycling, bus priority, mobility hub, the overall future bus strategy, and junction layout changes, amongst other options. Engagement with stakeholders will help to inform the project, including the surrounding villages such as Nuneham Courtenay, Berinsfield, Clifton Hampden, Burcot, the Baldons, and Chiselhampton, amongst others.

Berinsfield

- 2.29 POETS are incorrect to suggest that Berinsfield has been excluded from the assessments (para. 9 of their letter). As previously explained in this note, the Oxfordshire Strategic Model was used to undertake high level assessments of growth and mitigation strategies in support of the Local Plans in this area. Berinsfield is an allocation in the SODC Local Plan 2035 and was therefore included in that modelling. Additionally, as Berinsfield is within the Paramics model area (Figure 4 above), the allocated housing site is also specifically included in the detailed transport assessment (and therefore environmental assessments) for this Scheme. See Table 2 below which shows that Paramics assumes 1,600 residential units in the 2034 year (for “Land at Berinsfield”), as advised by the Local Planning Authority. It is important to note that future housing and employment growth sites in this area, such as Berinsfield, would be required to specifically undertake assessments of their impact on the area, identifying and delivering suitable mitigation measures as appropriate, including but not limited to walking and cycling routes, public transport services and infrastructure, reduced car parking levels etc.

Chalgrove

- 2.30 As previously explained in this note, the Oxfordshire Strategic Model was used to undertake high level assessments of growth and mitigation strategies in support of the Local Plans in this area. Chalgrove is an allocation in the SODC Local Plan 2035 and was therefore included in that modelling. For the same reasons given above in respect of the A417 not specifically being included in the ES, the same is true for Chalgrove. The allocated site is some distance away from the Scheme area, within a rural part of South Oxfordshire with very few roads travelling east-west between it and Didcot. Therefore, the Scheme would not impact route choice between Chalgrove and Didcot, and therefore it was not specifically assessed in the ES, as agreed by the LPA. It is important to note that future housing and employment growth sites in this area, such as Chalgrove, would be required to specifically undertake assessments of their impact on the area, identifying and delivering suitable mitigation measures as appropriate, including but not limited to walking and cycling routes, public transport services and infrastructure, reduced car parking levels etc.

Settlements west and northwest of A34 Milton Interchange

- 2.31 For the reasons given above in respect of the A417 and B4017, the Scheme would not impact route choice in the area to the north and northwest of A34 Milton Interchange so it was therefore not specifically included in the ES, as agreed by the LPA.

Developments included in the assessments

- 2.32 Paragraph 9 of the POETS letter suggests that the effects of the allocated housing site adjacent to Culham Science Centre, and the expansion of Culham Science Centre have not been assessed.
- 2.33 This is incorrect. As set out in the Transport Assessment paragraph 5.3.4 and Tables 5.1 and 5.2 (replicated below in tables 2 and 3, with relevant sections highlighted for ease of review), the transport modelling, which informs the environmental assessments, specifically included growth in the Paramics model area. The Paramics model was updated with up-to-date housing and employment trajectories from the Vale of White Horse and South Oxfordshire Local Planning Authorities in Summer 2020, totalling an additional 15,825 dwellings in the model area from 2017 Base Year to 2034, and 747,446 sqm additional Employment Floor Area (of different use classes as set out in Table 3 below) across

the same years. The transport modelling and subsequent environmental assessments specifically included 1,850 housing units at “Land adjacent to Culham Science Centre” in the 2034 assessment, and combined employment floor space at “Culham Science Centre” and “Land West of CSC Inc No.1 Site” of 18,738sqm in the 2024 assessment and 61,185sqm in the 2034 assessment, as advised by the relevant LPAs.

5.3.4 *The model includes housing and employment completion trajectories as supplied by the relevant LPAs (VOWHDC and SODC). These were updated in June-August 2020. In preparation for the work to support this planning application. Refer to the Systra reports in Appendix F and G for more information on the trajectories and site accesses in the model. Table 5.1 and Table 5.2 below show the additional residential units and employment floor area assumed to be complete over the 2017 base year for the 2020, 2024 and 2034 scenarios.*

Site Name	Units Additional to Base Year		
	2020	2024	2034
Ladygrove East - Land off A4130, Hadden Hill, Didcot	0	107	642
Land at Didcot Road, Great Western Park	514	514	514
Land to the south of Blenheim Hill Harwell	60	60	60
Land at Barnett Road Steventon OX13 6AJ	65	65	65
Land south of Appleford Road, Phase 1	85	101	101
Land south of Appleford Road, Phase 2	0	91	91
Land at Abingdon Road Steventon	15	15	15
Land to south of Hadden Hill Didcot	74	74	74
Land to the West of Great Western Park (Valley Park)	0	384	4,254
Land at Reading Road Harwell	3	16	16

Site Name	Units Additional to Base Year		
	2020	2024	2034
Land at former Didcot A	0	0	120
Land at former Didcot A	0	0	280
Land North of Grove Road Harwell	191	207	207
Land off Hanney Road Steventon OX13 6AS	44	44	44
Land to the north east of Didcot	27	548	1,880
Land north of Appleford Road	0	43	93
Land off Drayton Road, Milton	18	18	18
Land to north of Manor Close	18	18	18
Land to the South of A4130 Didcot	31	166	166
Milton Heights (Allocation - Site 9)	56	186	458
Land at Milton Hill, Milton Heights	32	53	53
East of Sutton Courtenay (Allocation - Site 5)	0	0	200
Chailey House Bessels Way	22	22	22
Land adjacent Culham Science centre	0	0	1,850
Great Western Park	818	1,155	1,155
Orchard Centre Phase 2	0	0	300
North West Valley Park (Allocation - Site 8)	0	0	800
Vauxhall Baracks	0	0	300
Land at Berinsfeld	0	0	1,600
Long Reach, Didcot Road	0	19	19
Didcot Gateway South	0	100	300
Land Adjacent to the Village Hall	0	70	74
Land off fieldside track	0	36	36
TOTAL	2,073	4,112	15,825

Table 2: Housing completion trajectories

Site Name	Use Class	Floor Area Additional to Base Year (sqm)		
		2020	2024	2034
Southmead Industrial Estate	B1	656	656	9,076
Culham Science Centre	B1	0	13,632	56,079
Land West of CSC Inc No.1 Site	B1	0	4,851	4,851
	B2	0	255	255
Berinsfield Regeneration	B1	0	0	9,671
	B2	0	0	10,768
	B8 (Storage)	0	0	11,350
Milton Park	B1	11,472	31,411	76,889
	C1	10,563	10,563	10,563
Harwell Campus	B1	11,723	75,427	103,434
	B2	0	6,993	35,000
Other Premises Adjacent to Didcot Power Station - Diageo	B8 (Storage)	0	28,907	28,907
	B8 (Data)	0	68,750	68,750

Site Name	Use Class	Floor Area Additional to Base Year (sqm)		
		2020	2024	2034
Didcot A	B1	0	2,502	25,000
	B2	0	5,505	55,000
	B8 (Storage)	22,483	27,988	77,483
	A1	0	1,351	13,500
Milton Hill Business and Technology Park	B8 (Storage)	0	0	11,338
D-Tech- EZ 2	B2	0	1,000	5,000
	B8 (Data)	0	22,000	110,000
Milton Interchange Site- EZ2	B1	0	0	9,380
	A1	0	0	2,704
	C1	0	0	1,294
Orchard Centre Expansion	A1	11,155	11,155	11,155
TOTAL		68,052	312,946	747,446

Table 3: Employment completion trajectories

Geographic scope of environmental assessments within the Environmental Statement

2.34 Technical chapters included in the ES that use generated traffic data include:

Chapter 6: Air Quality;

Chapter 10: Noise and Vibration;

Chapter 14: Road Drainage and the Water Environment;

Chapter 15: Climate; and

Chapter 16: Transport.

2.35 The traffic modelling study area of the traffic model has informed the study areas of traffic dependent assessments reported within the ES, most notably the air quality and noise and vibration assessments.

2.36 In accordance with Design Manual for Roads and Bridges (DMRB) requirements and advice, all technical assessments within the ES, either in full or in part, consider land beyond the Scheme boundary in relation to the assessment of effects. Settlements beyond the Scheme boundary were considered when defining the study areas with the relevant technical statutory consultees for each of the individual technical assessments as included within the ES.

Potential for significant effects beyond the assessed areas

- 2.37 In paragraph 7, POETS state that the ES does not consider the impact of traffic beyond the Scheme boundary. This statement is incorrect.
- 2.38 For example, in defining the study area for the detailed operational noise assessment, the initial study areas comprised the area within 600m of the Scheme and routes bypassed by the Scheme, as required by DMRB LA 111: Noise and Vibration². Further, all links in the Paramics traffic model (as shown in Figure 4) were considered as part of the assessment, initially using a spreadsheet calculation looking at the 'basic noise level' (BNL) to identify 'affected routes' (with at least a minor change in BNL). Two 'affected routes' were identified which extend outside of the initial 600m area, namely the A415 and B4015 to Golden Balls (A4074) east of the Scheme. The detailed assessment study area was therefore extended to include these locations: see Figure 9 for an extract from ES Chapter 10 Figure 10.1: Noise Location Plan below. When considering all links in the traffic model, no other 'affected routes' were identified. See Section 10.6 in Chapter 10: Noise and Vibration of the ES for further details. Whilst settlements such as Abingdon, Nuneham Courtenay or settlements east of the Golden Balls junction have not been subject to a detailed noise and vibration assessment, these settlements were considered when defining the study area and it is considered that these areas would not experience significant adverse effects given the negligible change in basic noise level along links located towards these areas.

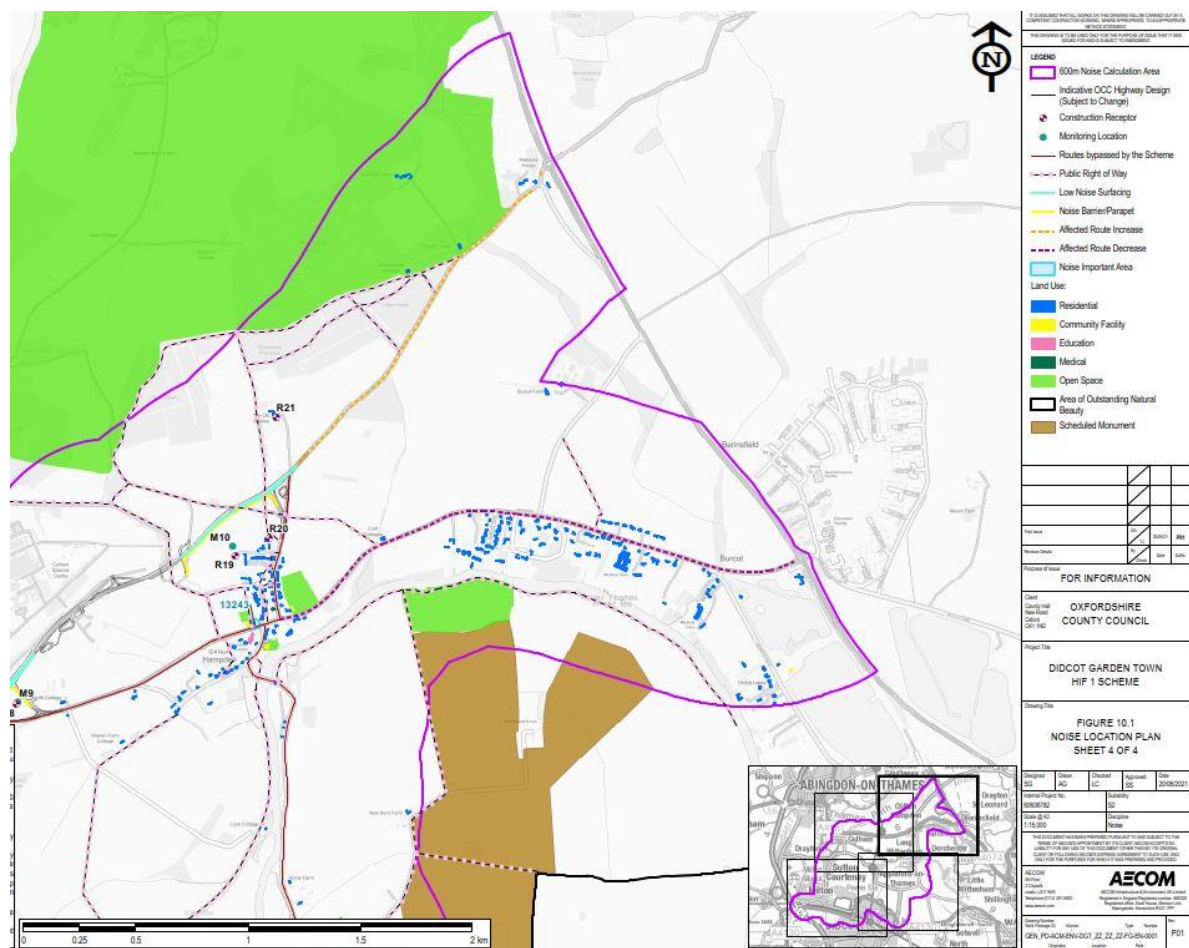


Figure 9: Extract from ES Chapter 10 Figure 10.1: Noise Location Plan

- 2.39 In addition, the study areas for the assessment of operational and construction traffic related air quality impacts focus on an area 200 m either side of road carriageway centrelines of the local air quality Affected Road Network as required by DMRB LA 105: Air Quality³ - see Figure 10 for an extract from Figure 6.2 of the ES overleaf. This is because the effect of pollutants from road traffic reduces with distance from the point of release, and beyond 200 m these pollutants are likely to have reduced to a concentration equivalent to background concentrations. Accordingly, the defined study area does not include settlements such as Abingdon, Nuneham Courtenay or settlements east of the Golden Balls

² See page 20, paragraph 3.44 and NOTE 1 and 2.

³ See page 10, paragraphs 2.1 to 2.10, including explanatory notes.

junction and therefore they have not been assessed. However, modelled changes in air quality pollutants (nitrogen dioxide (NO₂) concentrations) between the do-minimum and do-something scenarios, in the first year of Scheme operation, at receptors located west of the Scheme on the A415 towards Abingdon, range from less than 0.1 µg/m³ increase (R94) to a 0.3 µg/m³ decrease (R93) and are below the annual mean objective at 13.2 µg/m³ (R94) and 15.9 µg/m³ (R94). In addition, the VoWHDC Air Quality Annual Status Report (2022)⁴ outlines that air quality in Abingdon is improving, and evidence supporting the revocation of the Abingdon Air Quality Management Area will be submitted to Defra in 2023. It is unclear from the joint SODC and VoWHDC Air Quality Annual Status Report 2023 if this AQMA revocation has been considered by Defra. To the east of the Scheme, on the B4015 Oxford Road, modelled changes in air quality pollutants (NO₂ concentrations) at receptors, between the do-minimum and do-something scenarios, in the first year of Scheme operation, range from 2.4 µg/m³ (R103) and 1.6 µg/m³ (R109). Again, these would be below the annual mean objective at 18.5 µg/m³ (R103) and 16.7 µg/m³ (R109). The effects at these receptors, which are located on approaches to Abingdon, Nuneham Courtenay or settlements east of the Golden Balls junction, are not significant as levels of NO₂ are below the annual mean objective of 40 µg/m³.

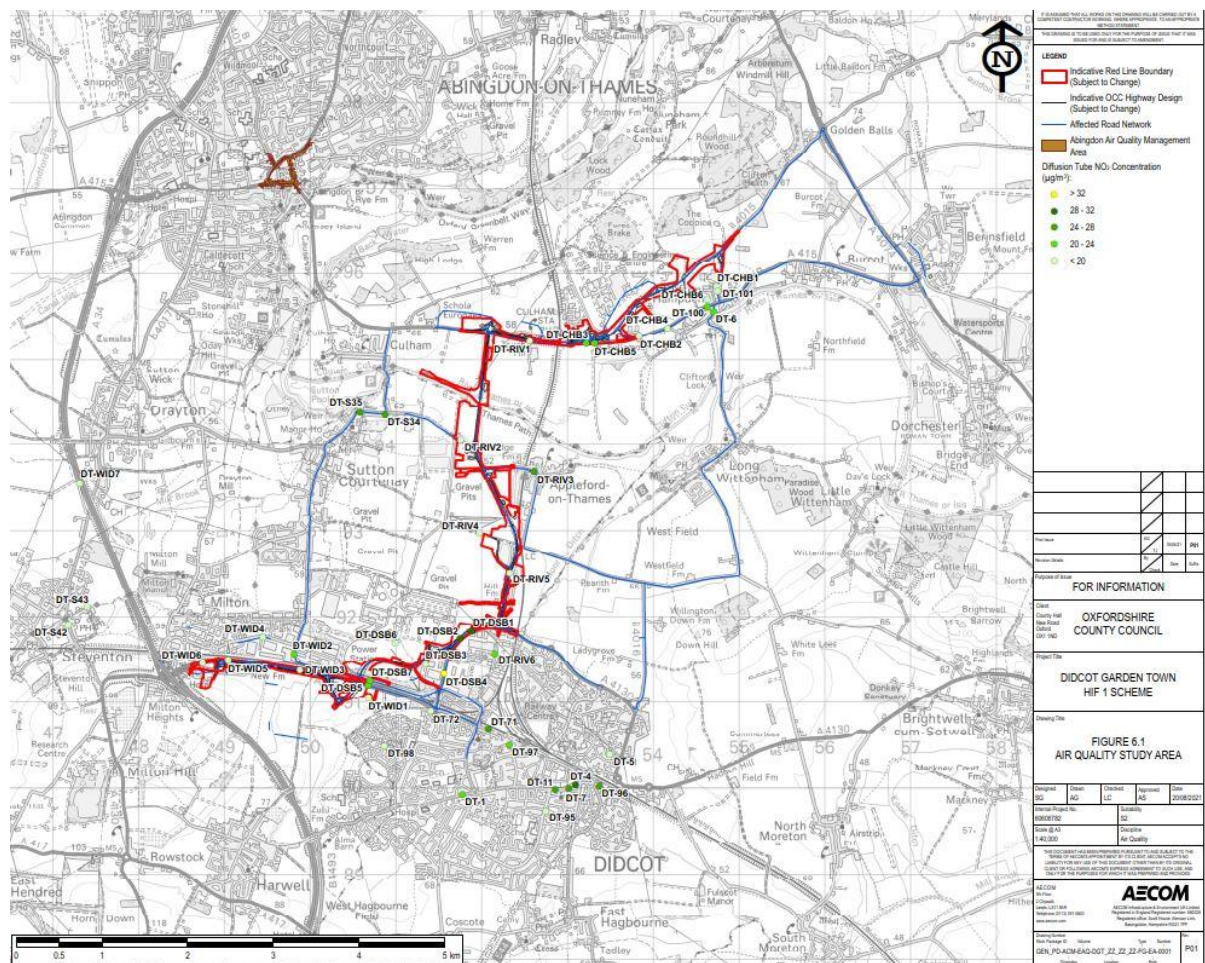


Figure 10: Extract from ES Figure 6.1: Air Quality Study Area

- 2.40 As outlined above, whilst the ES does not specifically present detailed assessments of the Scheme's effects upon settlements located further west and east of the Scheme, such as Abingdon, Nuneham Courtenay or settlements east of the Golden Balls junction, these areas have been considered as part of the EIA process, and it is indicated that significant environmental effects would be avoided in these locations.

⁴ https://www.whitehorsedc.gov.uk/wp-content/uploads/sites/3/2023/05/ASR_Vale-of-White-Horse_2022_Final2.pdf

3.0 Failure to assess adequately reasonable alternatives to the Scheme in the form and manner required by the EIA Regulations 2017

Introduction & summary

3.1 POETS state in paragraph 10 of their letter that *“that no reasonable alternatives, other than alternative routes for parts of the proposed scheme, are put forward in the ES as modified”* and that the ES fails to meet the requirements of the EIA Regulations 2017, specifically in relation to describing *“... the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment”* (Part 5, Regulation 18(3)(d)).

3.2 POETS consider that alternatives presented in the ES have only focused on road schemes and modifications to existing roads. In paragraph 10 they state:

“... the alternatives studied on behalf of the Applicant ... are based on a predisposition to conclude that the only viable option to deal with transport problems in and around Didcot is to propose the construction of yet another road and modify existing roads”.

3.3 OCC considers, in summary, that POETS’ allegation is unfounded and that the ES complies with the obligations in the EIA Regulations 2017 to provide *“a description of the reasonable alternatives studied by the developer”* (reg. 18; see also para. 2 of Sch. 4). Chapter 3 – Assessment of Alternatives of the ES describes these reasonable alternatives in full accordance with EIA Regulations 2017. Further, that assessment of alternatives includes alternatives which went well beyond alternatives routes; it included, for example, alternative modes of transport such as bus improvements, rail improvements, traffic management and cycle and pedestrian facilities. Therefore, there is no basis for further information to be required from the Applicant (under Regulation 25 of the EIA Regulations 2017), since the requirements of the EIA Regulations 2017 have been complied with.

The assessment of alternatives in Chapter 3 of the ES

3.4 Regulation 18(3)(d) of the EIA Regulations 2017 requires the ES to include:

“a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment”.

3.5 Schedule 4, paragraph 2 further requires:

“A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects”.

3.6 The ES complies with these requirements. Chapter 3 – Assessment of Alternatives of the ES provides the description as required by regulation 18 and Schedule 4, paragraph 2.

3.7 Further, it is incorrect for POETS to suggest that this assessment of alternatives excludes anything other than alternative routes. A wide range of alternatives have been considered to address the forecast economic and housing growth in the Science Vale area, across various assessments spanning a decade, including different transport modes, public transport, active travel and different highways schemes. Overall, 13 different reports were reviewed and summarised in ES Chapter 3: Assessment of Alternatives, as appropriate, as part of the assessment of alternatives including optioneering appraisals, feasibility reports and environmental assessment and appraisal reports.

3.8 In particular, ES Chapter 3, paragraphs 3.1.1 to 3.1.4, describes the Access to Science Vale: Options Assessment Report (2018, Part 1). This option assessment focused on the wider transport issues in this area and the options to improve the situation, in the context with existing development and future aspirations for economic growth in the area. This study had a strategic focus and considered strategic transport options that could address the transportation need of the area now and into the future, including:

- **Major road options**
 - MR1: Western approach (including A4130 dualling and Didcot Science Bridge)
 - MR2: Northern Approach (including Culham River crossing and Clifton Hampden Bypass)

- **Public transport options**

- PT1: Bus improvements (including bus priority lanes and a Park & Ride in vicinity of the A34)
- PT2: Rail Improvements (including improved rail services from Didcot to Oxford and Reading and Improved Stations at Didcot, Culham and a new station at Grove).
- PT3: Autonomous Vehicles (Garden Line network to connect to Harwell, Culham, Abingdon, Milton Park, rest of Didcot)

- **Low cost options**

- LC1: Traffic management (including junction realignments and signalisation and co-ordinated traffic signal control)
- LC2: Cycle and pedestrian facilities (including comprehensive cycle and walking networks within Didcot, Links to other parts of Science Vale and cycle priority in Didcot Town Centre).

3.9 It will be apparent that of those seven options, only the first two (MR1 and MR2) are major road options. The others involve sustainable modes of transport and traffic management measures.

3.10 As described in paragraph 3.3.3 of ES Chapter 3, these options were sifted using the Department for Transport (DfT), Early Assessment and Sifting Tool (EAST), which is a decision support tool used to provide evidence on options in a clear and consistent format. The options were measured against 20 factors, one of which is the local environment, including environmental factors such as air quality, noise, landscape and visual and the water environment. MR1, MR2 and PT2 scored the worst for impacts to the local environment given their size and scale. PT1, PT3 and LC1 scored better due to the limited nature of the construction required, such that impacts on the local environment will be minimised. LC2 scored the best, as this proved to have the least impact on the environment. However, it was also concluded in this OAR (2018) that only the major road schemes (MR1 and MR2) could address the transport issues and requirements of the area.

3.11 Following this, and as described in paragraphs 3.3.5 to 3.3.13 of ES Chapter 3, Part 2 of the Access to Science Vale: Options Assessment Report (2019) was produced which built on the conclusions of the previous OAR. Consequently, this OAR looked at major road improvements outlined in MR1 and MR2 above but also looked at the merits of walking and cycling improvements. These options included:

- Do minimum (DM) – walking and cycling improvements;
- Do something 1 (DS1) – A4130 Widening and Didcot Science Bridge;
- Do something 2 (DS2) – Didcot to Culham River Crossing and Clifton Hampden Bypass; and
- Do something 3 (DS3) – DM, DS1 and DS2 combined.

3.12 The options appraisal covered four overarching categories: i) strategic fit; ii) value for money; iii) financial case; and iv) delivery and commercial case. An environmental appraisal of these options was undertaken which focused on the following environmental factors:

- Air quality;
- Biodiversity;
- Greenhouse gases;
- Historic environment;
- Landscape;
- Noise;
- Townscape; and
- Water environment.

3.13 The DM scenario was not assessed due to its limited potential for environmental impacts. Overall, all remaining options were assessed to have very similar environmental impacts. It was concluded that option DS3 had the potential to fully deliver transportation benefits that align with the objectives of the Scheme and therefore, DS3 was chosen as the preferred option for delivering the objectives of the Scheme.

3.14 Furthermore, and in the interest of robustness, OCC produced another OAR in 2021 in-light of an updated evidence base as described in paragraphs 3.3.20 to 3.3.25 of ES Chapter 3. The OAR 2021 states in paragraph 1.1.3 that its purpose is as follows:

“Given OCC’s objective to set out a robust and evidence-based audit trail for the preferred options and scheme designs, OCC has commissioned AECOM to produce a new OAR, reflecting the updated evidence base and options developed more recently, including consideration of multi-modal transport options which have not been considered previously, which will replace the existing Part 1

and Part 2 OARs. The previous OARs nevertheless contain a wealth of information which will be referenced throughout this OAR; therefore this document does not fully replicate all content from the previous OARs but should be read as a standalone document.”

- 3.15 This OAR was included as Appendix A of the Design and Access Statement. As outlined in Table 3.2 of ES Chapter 3, the OAR 2021 looked at 16 options (including a ‘Do Minimum’ option). These included alternatives to private vehicle transport that were assessed in OAR 2018 (Part 1), such as bus improvements, park and ride, improved rail services, improved rail stations, cycling and walking facilities. It also looked at four new options (Options 12 to 15), including bus rapid transit, light rail links, demand responsive transport and small-scale bus improvements. These options were subject to Phase 1 of a 4-Phase sifting process, which assessed the options against eight scheme objectives. Environmental considerations were included under Objective 8 which looked to minimise carbon emissions and other pollution such as water, air, noise and light, and increase resilience to the likely impact of climate change, especially flooding. Overall, these options (Options 12 to 15) scored poorly when considered against other objectives related to supporting housing developments and economic growth, and other considerations such as deliverability and feasibility. They were therefore not taken forward.
- 3.16 The OAR 2021 then took five options through Phase 2 of the sifting process. Four of these options (Options 1 to 4) included the separate sections of the HIF 1 Scheme and the other, Option 8, considered improved stations at Didcot and Culham and a new station at Grove. As described in paragraph 3.3.23 of ES Chapter 3, *“Phase 2 demonstrated that of the five options assessed, only four options performed well against the five business case criteria laid out in the EAST tool (i.e. strategic case, economic case (environmental indicators are included in this criteria), management case, financial case and commercial case). This assessment identified the strengths and weaknesses of each option. As a result, option 8 was discounted at this stage and options 1-4 were taken forward for further assessment”*.
- 3.17 Accordingly and in summary, the ES has described the outcome of studies in which public transport options were considered alongside highway schemes. Paragraphs 3.3.1 to 3.3.4 of ES Chapter 3: Assessment of Alternatives summarise the Access to Science Vale: Options Assessment Report Part 1 which was produced in 2018; and paragraphs 3.3.5 to 3.3.13 of ES Chapter 3 summarise the resulting Part 2 of the Access to Science Vale: Options Assessment Report. The ES describes the environmental assessment undertaken as part of these options reports, which included a review of the options through use of the DfT EAST (OAR Part 1, see ES paragraph 3.3.3) and assessment against a seven-point scale (OAR Part 2, see ES paragraph 3.3.8). Additionally, the ES describes the environmental assessment undertaken as part of OAR 2021, which used EAST and assessment against an environmental objective. Whilst this does not constitute a full EIA (such as that presented in the ES), the assessment undertaken was appropriate for early-stage scheme development.
- 3.18 POETS state in paragraph 17:
- “17. The conclusion of the Part 1 appraisals was that, of three final options which were considered namely: ...*
- a. the increased cycling and walking option would be best able to resolve the transport issues.”*
- 3.19 However, it should be noted that ES Chapter 3 paragraph 3.3.4 actually states:
- “Cycle and pedestrian facilities (LC2) scored the best, as this proved to have the least impact on the environment. However, the report stated that “it is unlikely that increased cycling and walking alone will be able to resolve the problems associated with connections from the town to the wider national transport network””*.
- 3.20 It was concluded in these three options reports that only the major road schemes could address the transport issues and requirements of the area. These options were thus taken forward. Whilst the ES describes the environmental assessment undertaken at an early stage in the Scheme’s development, it does not provide any further assessment of bus, rail improvements, light rail, park and ride, or autonomous vehicle options, as there were no longer being considered by the Applicant given that they had already been discounted. Cycling and walking facilities were also taken forward and are included in the Scheme, measures for buses such as 18 bus stops are included in the Scheme, and, furthermore, the Applicant has committed to designing and implementing (through planning condition)

an Urban Traffic Control (UTC) based bus priority system⁵ (as detailed in paragraph 2.23 of the Statement of Case of the Local Planning Authority dated 3 November 2023).

- 3.21 POETS' concern is that alternative forms of transport are not considered such as cycling, walking and bus improvements. However, it is also recognised by POETS that alternatives including alternative transport modes have been described in the ES (see paragraphs 15 to 17 of their letter). Further, POETS at paragraph 23 of their letter rely on *Holohan and Others v An Bord Pleanála* [2018] Case C-461/17, but fail to recognise that the Court of Justice of the European Union stated in that case at paragraph 66 that:

"... it must be held that [the EIA Directive] does not require the main alternatives studied to be subject to an impact assessment equivalent to that of the approved project..."

- 3.22 This confirms that the alternatives (including for example those cited by POETS as cycling, walking, bus improvements) do not require the same level of assessment as the chosen proposal.

Consideration by the LPA

- 3.23 In their two successive Regulation 25 Requests, the Local Planning Authority (LPA) raised only one query in relation to the assessment of alternatives, namely, they asked the Applicant to confirm how the loss of Best and Most Versatile (BMV) land had been taken into account through embedded mitigation (design measures) and/or why alternatives that may result in a reduction in the loss of BMV land have been discounted (see Appendix A of Regulation 25 Request (November 2022)). A response was provided to the LPA, see paragraph 13.1 of Regulation 25 Response November 2022, and no further questions were raised. The LPA summarise the description of alternatives in the ES in their report to the Planning and Regulation committee held 17th and 18th July 2023, and state (at paragraph 91, page 36):

"The ES outlines the main alternatives that were studied by the applicant explains how they evolved over time as well as the reasons for selecting the proposed development as the preferred option, taking account of environmental effects. The alternatives outlined in the ES include other major road schemes, bus and rail improvements, and new technologies including autonomous vehicles. It also considered lower cost options such as traffic management measures, junction re-modelling, and investment in walking and cycling infrastructure. The conclusion was that, whilst some of the options would have lesser environmental effects, only a major road scheme would address the transport issues and requirements of the area".

- 3.24 It is therefore considered that the LPA is also content that the requirement of the EIA Regulations 2017 to describe the reasonable alternatives studied by the Applicant has been met through information provided in the ES and in the Regulation 25 Response submitted in November 2022.

⁵ This system has the ability to encourage modal shift by prioritising public transport over other modes such as private car. The detail for this proposal should be required to be submitted and approved prior to the commencement of development and maintain once completed in perpetuity.

4.0 Other matters raised in POETS' letter

Inclusion of cycling and walking facilities

- 4.1 At paragraph 19 of their letter POETS suggest that cycling/walking facilities were belatedly added in to appease people raising environmental concerns. That is incorrect. The design of the HIF 1 Scheme has always included walking and cycling facilities along its entire length. The 2018 public consultation, held when the Scheme was at a very early stage of design, specifically stated for each of the four scheme element proposals *"It will include pedestrian & cycle infrastructure along its length"*. Additionally, the consultation showed illustrative plans of the early scheme designs that show the walking and cycling provisions alongside, provided below for ease of reference (note that the River Crossing plan was at a zoomed-out scale as it was showing multiple alignment options, so the walking and cycling provisions are not visible, and therefore it has not been replicated here):

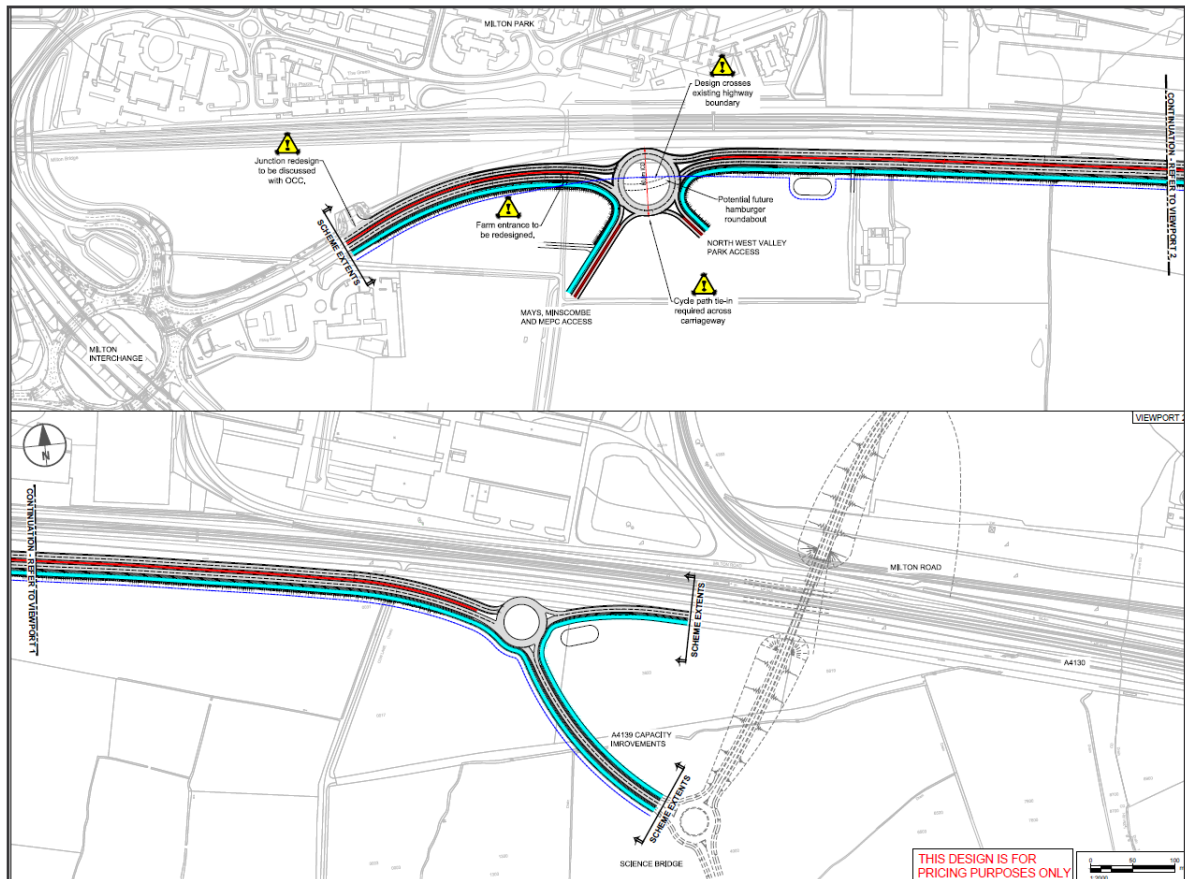


Figure 11: Illustrative plan of A4130 Capacity Improvements (this plan is for indicative purposes only)

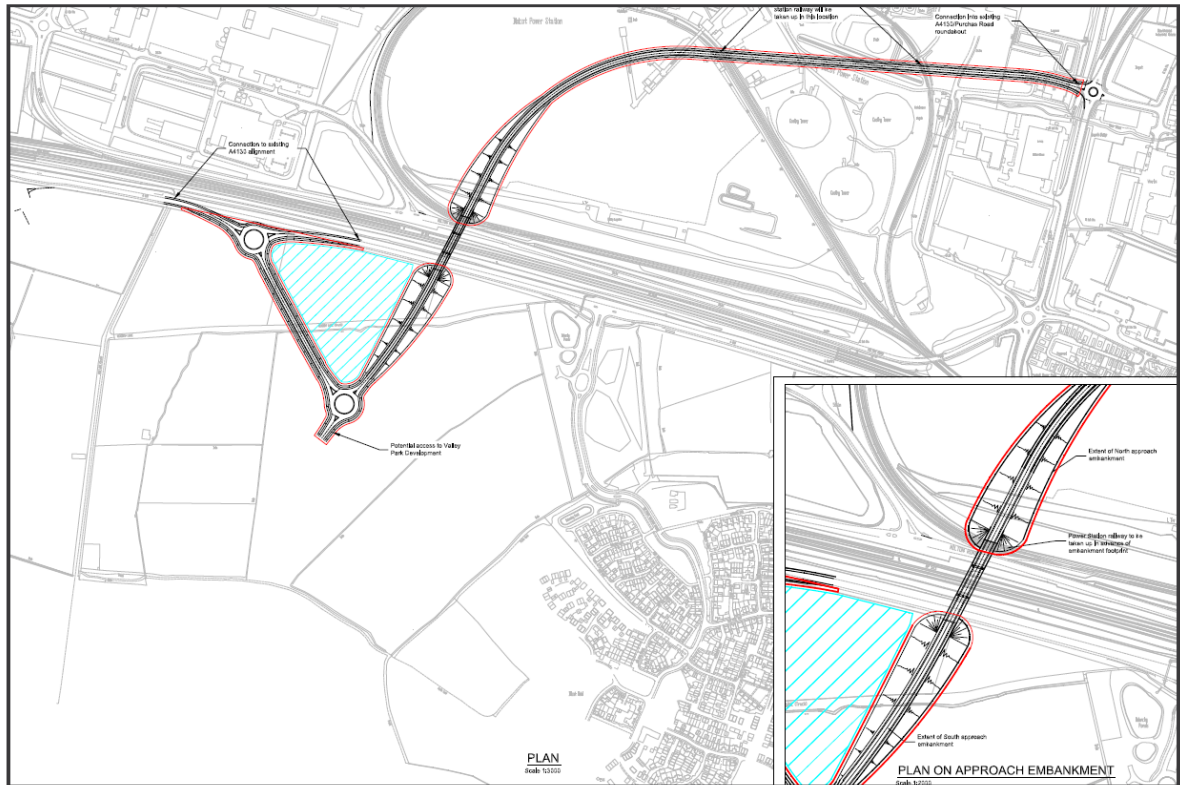


Figure 12: Illustrative plan of Science Bridge (this plan is for indicative purposes only)



Figure 13: Illustrative plan of Clifton Hampden Bypass (this plan is for indicative purposes only)

- 4.2 Cycling/walking facilities are key Scheme objectives and thus fundamental components of the Scheme. Accordingly, the following claim by POETS at paragraph 19 of their letter, which refers to outcomes of the 2019 OAR Part 2 (created after the aforementioned 2018 consultation), is unfounded:

“the belated inclusion of cycling and walking in this option was, in the view of POETS, no more than a sop to environmental concerns, in order to give it a cloak of respectability and responsibility so that the Scheme could be presented as a new approach to transport planning. But, as a matter of fact and degree, this inclusion of some elements of sustainable transport was nothing more than a fig leaf to try to deflect criticism from environmental groups.”

Relevance of the Design Manual for Roads and Bridges (DMRB)

- 4.3 POETS suggest in paragraph 13 of their letter that the DMRB is not relevant to the HIF Scheme and state that it has been:

“superseded by newer transport policies and advice”.

- 4.4 The requirements and advice set out in the DMRB, specifically LA 101 to LA 120 in relation to environmental assessment, has been used to guide the assessment of likely significant environmental effects as reported in the ES. GG 101: Introduction to the Design Manual for Roads and Bridges states in the Foreword, that it is *“a suite of documents which contains requirements and advice relating to works on motorway and all-purpose trunk roads for which one of the Overseeing Organisations is highway or road authority”*. The Overseeing Organisation for this application is Oxfordshire County Council who are the highway authority and the relevant LPA. Therefore, the DMRB is relevant to the assessment of environmental effects in relation to the HIF 1 Scheme. The DMRB was updated in 2020, and this latest version of the DMRB has been used for the assessment of environmental effects as reported in the ES, including the identification of significant effects.

- 4.5 With regard to transport policy, whilst policy is a consideration of any planning application, it does not provide requirements or methods, or advice on how to undertake specific environmental assessments. Accordingly, the ES has used methods as defined in the DMRB and it is considered that these are wholly appropriate.

Objectivity and impartiality

- 4.6 POETS at paragraph 22 of their letter contend that the ES has not been produced in an objective and impartial manner. They state:

“POETS maintain that the ES is not an objective and impartial assessment of the significant effects of the HIF1 Scheme”.

- 4.7 The EIA Regulations 2017 state, in Part 5, Regulation 18(5)(a and b):

“In order to ensure the completeness and quality of the environmental statement—

(a) the developer must ensure that the environmental statement is prepared by competent experts; and

(b) the environmental statement must be accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts.”

- 4.8 Appendix 1.1: Statement of Competence of the ES sets out why the AECOM environmental team working on behalf of OCC to produce the ES are competent experts, satisfying parts a) and b) above.

- 4.9 AECOM is a leading provider of environmental services to a wide range of clients and development sectors in the UK and has a large and highly experienced team of EIA practitioners. The EIA team is supported by more than 400 technical environmental specialists, covering a wide range of technical disciplines. AECOM is a registrant to the Institute of Environmental Management and Assessment (IEMA) EIA Quality Mark and undertakes all EIA work in line with the EIA Quality Mark Commitments. The EIA Quality Mark is a voluntary scheme through which EIA activity is independently reviewed on an annual basis to ensure registrants deliver excellence in EIA management, EIA team capabilities, EIA regulatory compliance, EIA context and influence, EIA content, EIA presentation and improving EIA practice. This demonstrates AECOM's commitment to excellence in their EIA activities. Many of AECOM's EIA coordinators hold Practitioner or Full (Chartered) Membership status with IEMA or are members of other appropriate professional institutions. A summary of expertise within each of the technical disciplines contributing to the ES (e.g. air quality, cultural heritage etc.) is provided within

Appendix 1.1, sub-section 1.4, as well as the expertise of the EIA lead approver and lead verifier, thus satisfying part a) and b) above. The EIA team and the technical discipline leads are bound by AECOM's membership of the EIA Quality Mark, by their own professional memberships of other professional bodies, and by AECOM's internal policies and practices, including the need to be impartial and objective when undertaking environmental assessments.

- 4.10 In addition to the above, all environmental documents were independently reviewed by a 'critical friend' who was employed by OCC as Applicant to act separately from AECOM and provide a technical review role, reviewing all pertinent environmental documentation.

Overarching approach to environmental assessment

- 4.11 In paragraph 23 of their letter, POETS suggest that the overarching approach to environmental assessment undertaken in production of the ES is incorrect and cite the Court of Appeal in the case of *Rao Sarah Finch v Surrey County Council and Others* [2022] EWCA Civ 187, paragraph 15. The Court of Appeal in that paragraph set out seven principles of general relevance to EIA. POETS do not refer to any in particular and it is therefore unclear what point(s) they are seeking to draw from the judgment. OCC however highlights point 4 from paragraph 15, which states that:

"(4) Crucially, an environmental impact assessment must address the particular development under consideration, not some further or different project"

- 4.12 That is relevant in supporting OCC's response in this Technical Note both in respect of the issues raised by POETS concerning the scope of the assessment, and the assessment of reasonable alternatives.

5.0 List of appendices

- 5.1 The following documents are appended to this Technical Note:
- 5.1.1 Appendix 1a: EIA Regulation 25 Response dated November 2022
 - 5.1.2 Appendix 1b: EIA Regulation 25 Response Appendix I
 - 5.1.3 Appendix 2: Transport Development Control Response dated July 2022

Didcot Garden Town HIF 1 Scheme

EIA Regulation 25 Response

Oxfordshire County Council

November 2022

Quality information

Prepared by	Checked by	Verified by	Approved by
AM	AB	JH/ KC/ AB	AB

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1. Introduction

- 1.1 Oxfordshire County Council (OCC) provided a formal request for further information (otherwise known as a Regulation 25 Request) under Part 5, Regulation 25(1) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 on the 26th of April 2022 in relation to the Environmental Statement submitted as part of planning application R3.0138/21. This request for further information is provided in Appendix A.
- 1.2 It is noted that in the forward of OCC's request for further information, the fourth paragraph states *"This letter should be read alongside the detailed responses received from statutory and non-statutory consultees, and other interested parties who have made comments on the application as this letter is not intended to repeat those in full. Many of the comments received have commented on and/or expressed concerns about the proposed development that may have implications for how it is assessed against development plan policies and other material considerations and you should seek to take this opportunity to address them accordingly through amendments and additional information to be submitted"*.
- 1.3 However, under Part 5, Regulation 25(1) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, local planning authorities may request further information in order to reach a reasoned conclusion on the likely significant effects of a development or in to ensure the Environmental Statement is consistent with Schedule 4 of the regulations (i.e., the Environmental Statement includes the relevant information as described in the Regulations). The Regulations state *"If a relevant planning authority... is dealing with an application or appeal, as the case may be, in relation to which the applicant ... has submitted an environmental statement, and are of the opinion that, in order to satisfy the requirements of regulation 18(2) and (3), it is necessary for the statement to be supplemented with additional information which is directly relevant to reaching a reasoned conclusion on the likely significant effects of the development described in the application in order to be an environmental statement"*. Requests for further information are not intended to be used as a mechanism to provide responses to all comments on an application. Therefore, this Regulation 25 Response will only address the matters set out within the formal request for further information, other comments on the application will be dealt with separately.
- 1.4 This Regulation 25 Response provides a response to each relevant line of the request for further information, from the sub-heading 'General Information'. Each detailed Regulation 25 comment is set out in *"green, italicised text"* in order to clearly identify comments from responses, which are provided below in black, non-italicised text.

ES Addendum

- 1.5 Where comments in the Regulation 25 Request have necessitated a change to the Environmental Statement (ES), this is presented within an ES Addendum. Where this is the case, a cross reference to the ES Addendum will be provided in the response below.

2. General Information

"Extended cross sections are required at key locations to show the scheme in context with surroundings. These cross sections should include, but not necessarily be limited to:

- *A4130 widening*
- *Science Bridge*
- *RWE site and relocated lagoon*
- *Appleford Level Crossing incorporating Level Crossing Cottage*

- *Properties to the north of Clifton Hampden, including Woodfield House and Home Farm House*
- *Culham Science Centre Roundabout, including its relationship with Culham Station House and Tobet on Station Road*
- *Fullamoor House and Barns*
- *The access to The Coppice House and The Old Stables at the junction between the proposed development and B4015*

2.1 Extended cross sections have been produced and are provided in Appendix B.

Please provide long sections of the scheme.

2.2 Long sections have been produced and are provided in Appendix C.

The General Arrangement (GA) drawings include a number of “indicative” and/or “future/delivered by 3rd party” elements to the scheme. Other drawings included within supporting documentation refer to the red line as being ‘indicative’. As the application seeks full permission, the drawings must clearly show what is being applied for and what isn’t. Text boxes can be used within the drawings to provide context where necessary, however junctions etc should only be shown as part the development where they are existing, permitted but not yet delivered (and labelled as such), or where they form part of the planning application being considered.

2.3 The General Arrangement (GA) drawings have been updated to remove any ambiguity, see Appendix D.

Similarly, there are a number of occasions throughout the application documents and ES where reference is made to additional information that would become available at the ‘detailed design stage’. Given the planning application is for full planning permission, please can it be clarified what is meant by the ‘detailed design stage’ and how this may affect any of the proposed development and any planning permission granted.

2.4 Detailed design is the stage where construction drawings are prepared in accordance with the planning drawings once a contractor has been appointed. If the detailed design varies from the approved planning drawings then the Local Planning Authority (LPA) will be notified to discuss the correct mechanism to seek approval for the variation. It is expected that any minor variations will be dealt with through applications submitted under Section 96a or Section 73 of the TCPA 1990.

2.5 As described in ES Chapter 4: EIA Methodology, the Rochdale Envelope (an established principle that allows a project description to be broadly defined within set parameters) has been adopted and has allowed an assessment of a ‘realistic worst case’ scenario that decision-makers can consider when determining the acceptability or otherwise of the environmental effects of a development project. The principle is founded on the assumption that as long as the technical and engineering parameters of a project fall within the defined limits of deviation (‘the envelope’), and the EIA has considered the likely significant effects of that envelope, then flexibility within those parameters is deemed to be permissible within the terms of any consent granted for the project.

2.6 To provide some flexibility in the design of the Scheme and accommodate minor design adjustments during the detailed design and construction phases of the Scheme, the EIA adopted a precautionary approach to identifying significant environmental effects. A series of maximum development parameters or ‘limits of deviation’ were established and are defined in ES Chapter 2: The Scheme.

There are a number of errors/inconsistencies in the drawings (including keys) and submitted documents, many of which have been referred to in comments from statutory and non-statutory consultees. Please ensure that all drawings are accurate and consistent to avoid any delays in the determination process.

- 2.7 All drawings have been revisited and amended where legibility issues have been identified. Some of these drawings are provided in appendices referred to within this response document, however revised versions of drawings relating to the following are available in Appendix E:

- Drainage;
- Catchment;
- Utilities;
- Utilities diversions;
- Lighting; and
- Visibility.

The application documents do not appear to include an elevational drawing showing the full length of the Appleford Sidings Bridge and the proposed noise barrier. Please provide this drawing.

- 2.8 Long sections of the Appleford Sidings Bridge, including proposed noise barrier, are provided in Appendix Y.

Clarification is sought about the impact on the RWE site. Specifically, it is not clear from the application documents what is and isn't included in the application and what the impact on the RWE operation would be from the proposed development in isolation (i.e. without third party developments that may or may not happen in the future) both during the construction period and during operations. Please provide detailed drawings of this part of the site, including drawings and cross sections to show the proposed new lagoon in context with the surrounding area along with information about the construction methodology including programme, roles/responsibilities for delivery, and details of the fill and restoration proposals for the existing lagoon.

- 2.9 OCC as applicant is working closely with RWE to deliver the Scheme and as such will ensure that the RWE site remains operational during construction of the Scheme. The construction phasing will be confirmed once a Principal Contractor has been appointed and RWE will be consulted during this process to ensure there are no adverse effects on the operation of the site. Critically, the new access road (to replace Purchas Road access into RWE site) will be built first, followed by construction of the new lagoon, that will then allow the demolition of the existing lagoon and construction of the Science Bridge link road part of the Scheme. With regard to the proposed lagoon, the detail of the lagoon will be prepared by RWE and it is envisaged that this detail can be secured by condition. However indicative extended cross sections of this area have been prepared in response to comment in row 5. The existing lagoon will be infilled with appropriate material to support the proposed road and associated landscaping that will replace the existing lagoon.

Clarification is also sought on the impact to ponds and settlement lagoons in the Didcot to Culham river crossing section of the scheme. The Design and Access Statement (DAS) indicates that some ponds/lagoons are to be partially infilled as part of the development but no details have been provided. Please provide drawings to show what is new, retained and removed with cross sections and details of infilling and restoration where appropriate.

- 2.10 Drawings of the FCC pond, Hanson Pond and Triangular Pond, including cross sections and overview plans have been provided to show what is existing and what is proposed. The existing ponds will be partially infilled with appropriate material to support the proposed road and new access road. Restoration is considered appropriate as the ponds being removed are man-made which have little to no biodiversity value. The drawings are provided in Appendix F.

"Paragraph 5.81 of Chapter 5 of the Environmental Statement states that public information events were planned for the first two weeks following submission of the planning application, which it is understood did not occur. Please amend and clarify the steps taken to inform interested parties about the application submission and details of the development."

- 2.11 The planning application, and therefore the ES, was advertised through the procedures set out within The Town and Country Planning (Development Management Procedure) (England)

Order 2015 (Part 3, 15 and 16), which should have been undertaken by OCC as the relevant planning authority. This should have included publicising the planning application through site display in at least one place on or near the land to which the application relates for no less than 21 days and by publication of a notice in a newspaper circulating in the locality in which the land to which the application relates is situated. This is the standard procedure for publicising an EIA development within England. Additionally, the Town and Country Planning (EIA) Regulations 2017 (as amended), include publication provisions under Part 19. These state that the applicant must submit a copy of the ES to the relevant planning authority. One hard copy was sent to OCC as the relevant planning authority for public viewing at OCC's Oxford offices.

- 2.12 Oxfordshire County Council, as the relevant planning authority, should confirm if these procedures were followed.
- 2.13 Chapter 5 has been amended to clarify the above, please see the ES Addendum.

3. Design

"Please review the comments received from South Oxfordshire District Council and the Vale of White Horse District Council regarding the Didcot Garden Town Delivery Plan (DGTDP), which is a material planning consideration. In particular, it is not obvious how the development responds to the aspiration to create a spectacular arrival experience to the Garden Town and for Science Bridge to be designed in such a way that it is a landmark scheme. Please review the design of this part of the scheme and the Science Bridge structure in response to those comments and provide commentary on how the final design responds to the DGTDP."

- 3.1 The 'Gateway Spine' section of DGTDP seeks to improve the arrival experience into Didcot, as well as accommodate multi modal infrastructure improvements to enhance this route as the town's east-west connector. People's first impressions on travelling down the widened A4130 will be enhanced, with the HIF1 delivering two of the three key projects: (1) infrastructure improvements to carriageways, cycle and footpaths, (2) a SuDS scheme along its length - seeking to retain as much as possible of the existing southern highway drainage ditch. The scheme has not included part of a public art programme to enhance neglected bridges and underpasses but see responses below.
- 3.2 In relation to the Milton Gateway Area, the proposed Backhill roundabout provides a clear arrival feature from the A34. Public art is beyond the scope of OCC's remit for this Scheme; however, a sculpture/ public art could be added to the Backhill roundabout in future. The Backhill Lane underpass was opened in the last 5 years and is a high quality facility providing NMU access to Milton Park.
- 3.3 Finally, with regard to the Science Bridge, a number of options were explored in relation to the design of the Science Bridge, and a utilitarian style structure was taken forward as the chosen option. Options to augment the structure with facades were identified through the architectural CD 351 study and could be incorporated into the detailed design. These could enrich the spans over the old A4130 and Milton Road, but the central span over the railway mainline cannot be altered as approval by Network Rail is unlikely to be forthcoming owing to stringent regulations particularly around the need to minimise maintenance. Given the recent plans for large monolithic data centres and warehousing immediately north of the Science Bridge the appropriateness of a 'spectacular' bridge structure may now be inappropriate.

"Many comments have been received which criticise the design of the Appleford Sidings Bridge. Specifically, there is concern that it is over-engineered and that it would have unnecessary landscape, visual and amenity effects as a result of its height, bulk and materials. Please review the design of this structure in response to those comments and provide commentary on how the final design is the best option in this location."

- 3.4 As part of the design process, AECOM undertook a Structural Options Study of the Appleford Sidings Bridge with the aim to recommend the most suitable option for the structure at this

location, based on the preferred road alignment and boundary constraints. This study considered the following 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 22 m.
- Option 2: A skewed bridge square to the carriageway with straight abutments set outside of the boundary constraints providing a clear span of 48 m at a skew of 63°.

- 3.5 Additionally, two discrete bridges; one carrying the carriageway and the other the footway/cycleway, over the railway were considered. This was discounted due to a lack of future-proofing, personal security concerns, and the options would not be less visually obtrusive than the chosen option.
- 3.6 Option 2, which provided a 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.
- 3.7 The current height of the proposed solution is primarily influenced by the requirement for an acoustic barrier 3 m in height along the east elevation of the structure. This would be required for all structural configurations with the preferred road alignment.
- 3.8 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 habitants of the neighbouring village will be shielded by the existing trees along the railway track. It has been proposed to install sedum blankets on these areas to green the appearance of the structure and provide biodiversity enhancements (see section 8 of this Regulation 25 Response document).
- 3.9 This form of structure is not uncommon, and an example of a similar form is provided in Appendix G.

4. Highways and Travel

“Please provide swept path analysis across the scheme for a coach measuring 15m in length.”

- 4.1 Drawings illustrating a 15 m coach Swept Path Analysis (SPA) have been prepared and are available in Appendix H.

“There is a risk of vehicle conflict on the Abingdon Roundabout because the three-lane layout is currently proposed on only part of the roundabout. This needs to be resolved through a revised layout of the roundabout (GA Plan 14), unless clarification is provided to resolve this concern. Please see comments from the Transport Development Control officer for detail on this point.”

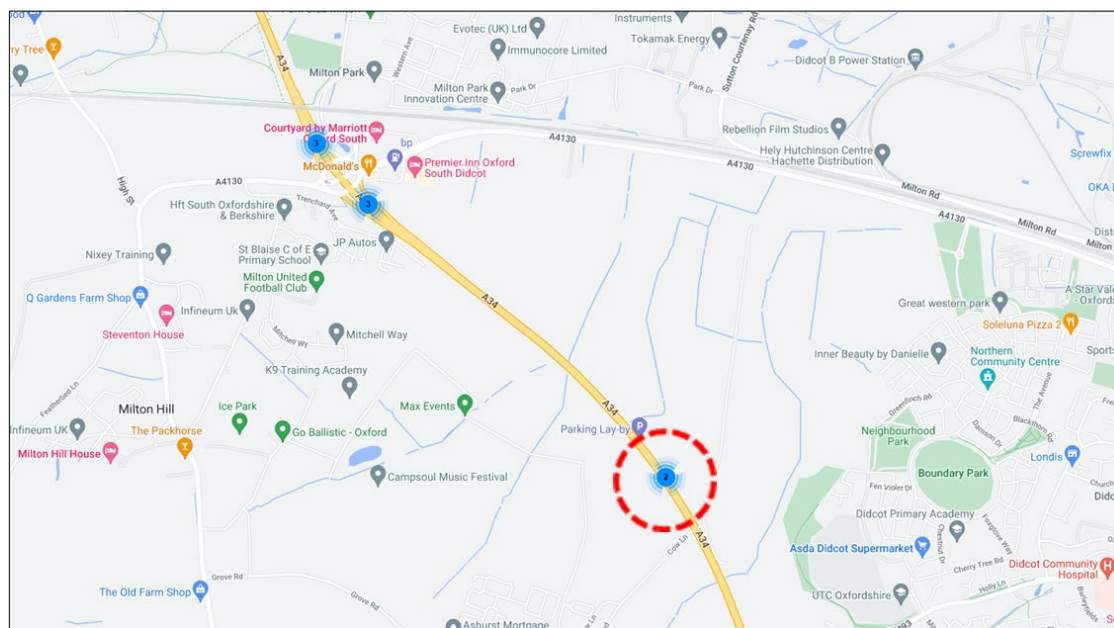
- 4.2 The three-lane layout proposed on part of the roundabout to cater for the predicted flow. Road markings within the roundabout have been amended to reduce chance of conflict. Destination road markings have also been added on the approaches to inform drivers of the most appropriate lane for their destinations. Advance directional signage will be developed in detailed design to further minimise risk of vehicle conflict. The revised layout is illustrated on the revised General Arrangement drawings, see Appendix D.

“The traffic modelling that has underpinned the ES, including the assessment of alternatives, climate change, air quality and noise chapters, concludes that the highway network would reach gridlock before the future assessment year of 2039. Please provide further information to justify that the modelling remains robust given the changes to work and travel patterns that have emerged during and are anticipated post the Covid-19 pandemic.”

- 4.3 National Highways maintains a system of permanent Automatic Traffic Counts (ATCs) on the Strategic Road Network, and the data is available on their WebTRIS website. Northbound and

southbound traffic count data is available for the A34 to the south of Milton Interchange for the periods February-April in 2019 and 2022, providing traffic flows before and after the impact of the Covid pandemic. The ATC locations are circled below.

Figure 4-1: ATC Locations



- 4.4 The other ATC sites at Milton Interchange do not have current data available.
- 4.5 Average weekday traffic flows during the morning and evening peak periods were compared for equivalent dates between February and May in 2019 and 2022. The dates were selected to avoid school holidays in the respective years. The data used was as follows:

Table 4-1: A34 Northbound - Site Ref 30360316

A34 Northbound

2019 Data	2022 Data
04/02/19 – 11/02/19	07/02/22 – 14/02/22
11/03/19 – 18/03/19	07/03/22 – 14/03/22
01/04/19 – 08/04/19	04/04/22 – 11/04/22

Table 4-2: A34 Southbound - Site Ref 30360316

A34 Southbound

2019 Data	2022 Data
11/03/19 – 18/03/19	07/03/22 – 14/03/22
01/04/19 – 08/04/19	04/04/22 – 11/04/22
13/05/19	09/05/22 – 16/05/22

- 4.6 The results of the comparison are shown in the following tables.

Table 4-3: Average Weekday Traffic Flows – A34 Northbound

A34 Northbound – Average Weekday Traffic Flow Comparison

Time Period		2019	2022	Abs Diff	% Diff
AM	0700-0800	2340	2124	-216	-9%
	0800-0900	2111	2000	-112	-5%
	0900-1000	1848	1656	-192	-10%
PM	1600-1700	2116	1907	-209	-10%
	1700-1800	2076	1735	-340	-16%
	1800-1900	1573	1368	-205	-13%

Table 4-4: Average Weekday Traffic Flows – A34 Southbound

A34 Southbound – Average Weekday Traffic Flow Comparison

Time Period		2019	2022	Abs Diff	% Diff
AM	0700-0800	2031	1911	-120	-6%
	0800-0900	2002	1820	-183	-9%
	0900-1000	1721	1522	-199	-12%
PM	1600-1700	2398	2177	-221	-9%
	1700-1800	2308	2097	-211	-9%
	1800-1900	1749	1561	-187	-11%

- 4.7 The results indicate that traffic flows in the morning and evening peaks appear to be returning to pre-Covid levels, although are still approximately 10% lower in 2022 compared to 2019. Even if the 10% reduction remained up to 2034, the conclusions within the Transport Assessment are still considered robust and valid and the HIF1 infrastructure would still be the required mitigation.

“Please provide further information to justify how the application assesses the impact of the scheme on the highway network within Abingdon Town Centre given that the Paramics Model stops just to the west of the existing Culham River Crossing and no further junction capacity modelling has been done for any of the junctions in the centre of Abingdon. Whilst the priority would be to encourage modal shift rather than increasing capacity for vehicles within Abingdon, justification is needed to explain why no assessment has been done on the impacts on Abingdon given that there are existing queues back onto the A415 into Abingdon. Further information is needed to explain if those queues would remain or change as a result of the proposed development and if there would be a net increase in vehicles travelling north along the A415 to Abingdon in the future year.”

- 4.8 A Technical Note that addresses this comment has been prepared and is provided in Appendix I.

“The submitted drawings appear to show that the existing central refuge island on the A415 to the east of Culham Station would be removed as part of the development. This island provides a valuable crossing point for pedestrians and cyclists accessing the railway station from dwellings and routes to the south of the A415. The loss of this island may discourage active travel options to the station, particularly given the alternative route would appear to be indirect and longer in length for the majority of users. Please consider reviewing this aspect of the proposal to ensure that active modes of travel are prioritised over the use of the private car.”

- 4.9 There is an existing crossing on the A415 adjacent to Fulamoor Cottages. Pedestrians wishing to access Culham Railway Station will be able gain access via a new route as shown on General Arrangement Sheet 16 of 19.

- 4.10 Alternative crossing facilities were reviewed and discounted due to the potential impact on the existing railway line bridge parapet or significantly impacting the proposed traffic flows on the A415.
- 4.11 The proposed crossing is considered acceptable given these constraints and the low number of properties within the vicinity of the crossing. Opportunities to include an island will be sought through value engineering on the Scheme at the detailed design stage.

“Further contextual information is required to explain the inter-relationship between the proposed development and other existing/planned highway developments in the local area, including but not necessarily limited to proposals at Golden Balls and in Sutton Courtenay. Reference should also be made to proposals for walking, cycling and public transport plans for the local area and the inter-relationship between these and the proposed development.”

- 4.12 The Local Transport and Connectivity Plan has been adopted, OCC is working towards producing the supporting area strategies (also known as Area Travel Plans). One of these Area Travel Plans will cover the Scheme and the wider area, and will help to further contextualise the inter-relationship between the Scheme, other schemes, emerging Local Cycling and Walking Infrastructure Plans, the Science Vale Active Travel Networks and future public transport proposals.

“Clarification is required to explain what/if any impact there would be to the functioning of Appleford Level Crossing as a result of the proposed development, along with details of any mitigation measures required to reduce and manage the impact as appropriate.”

- 4.13 The Appleford Level Crossing is outside of the red line boundary for the Scheme and there are no proposed changes to the level crossing itself. One access on the north side of Railway Cottages would be closed through the introduction of the new road on embankment, a noise barrier and vehicle restraint system. However, access will be maintained on the south side of Railway Cottages for the eight authorised users of the level crossing. As such there will be no impact on the function of the Appleford Level Crossing as a result of the Scheme.

“Network Rail has raised concerns that changes to traffic and pedestrian flows along the A415 may have impacts to the structural integrity of the Didcot to Oxford Mainline crossing and the adjoining minor road bridge to the south of Culham Station. Please respond to these concerns.”

- 4.14 The Didcot to Oxford Mainline crossing on the A415 is an OCC asset and will be maintained in accordance with OCC's maintenance regime. The crossing is adequate for carrying 40/44t vehicles, i.e., no weight restriction is required.

“Detailed stand-alone or inset drawings are required to demonstrate the proposed access arrangements to a number of properties and sites during the construction process and on completion of the development as this is not currently clear. These accesses are:

- Sutton Courtenay Minerals and Waste Complex (FCC & Hanson), including information about how the severance of the link between the site and Appleford Level Crossing would affect access and operations.*
- Hill Farm, noting that access arrangements on the plan are labelled as ‘to be confirmed’ on drawing GA8.*
- J James Ltd Pallets & Recycling, noting that drawing GA8 doesn’t appear to show an access to the property, but rather a link to a potential future development area from which access would be delivered by a third party.*
- Level Crossing Cottage.*
- Fullamoor Farmhouse and Barns, noting that no access from the ‘old A415’ into these properties is shown on drawing GA16.”*

Whilst it is understood that the access arrangements to some of these properties are likely to change as a result of third-party development, the application needs to demonstrate that it

would enable continued and uninterrupted access to these dwellings and businesses throughout the construction and operational periods without reliance on third parties.

- 4.15 Access to existing properties and businesses have been considered and advice sought from the ECI contractor. The following are current suggestions however the contractor of the scheme might decide other options are more appropriate depending on their methodology and equipment. As such it is suggested the access arrangement during construction should be conditioned.
- 4.16 Sutton Courtenay and waste complex (FCC & Hanson): The option will be agreed with FCC and Hanson to maintain access. A temporary access to the north arm of the Collett Roundabout could be provided by skirting the eastern side of the site boundary to keep their vehicles off the proposed northern arm. FCC and Hanson traffic will continue on the existing haul road until the mainline construction reach the new access road and that the new access road south and west of the FCC pond is built.
- 4.17 Hill Farm: as above with vehicles travelling north along the existing haul road before turning south onto the private road past Hartwright House.
- 4.18 The former J James Ltd Pallets & Recycling site: as above, temporary access to the north arm of the Collett Roundabout and continue on the existing haul road as existing.
- 4.19 Level crossing cottage: as above. During the construction of the southern access, potential diversion via new FCC/Hanson access road and travel around the rectangular pond to access from the northern side. The level crossing itself provide an option to access the cottage via B4016.
- 4.20 Fullamoor Farmhouse and Barnes: no change to access, the GA drawings have been updated to indicate this.
- 4.21 Permanent access arrangements are demonstrated in the revised GA drawings, see Appendix D.

"A revised GA3 drawing is required to show an additional maintenance bay at the Old A4130 Roundabout."

- 4.22 The GA drawings have been updated to include an additional maintenance bay, see Appendix D.

"A revised GA15 drawing is required to show a minimum of 6 metres between the give way line and the toe of the ramp to the raised crossing at Zouch Farm Bed & Breakfast."

- 4.23 The raised crossing at the Zouch Farm Bed & Breakfast access will be re-positioned by approximately 1 m to provide 6 m between the give way line and the ramp, and the shared use footway will be re-aligned accordingly. The proposed access tapers and radii will not be modified.

"Clarification is required to explain if and how the Transport Assessment (TA) has accounted for the permitted operations at the former Didcot A Power Station site in response to the concerns raised by RWE Generation UK. Please also review and respond to the comments made by RWE Generation UK with regard to the robustness of the assessment of the impact on the A4130/Science Bridge Junction." A separate response has been provided, see Appendix I for further details.

- 4.24 A separate response has been prepared and is provided in Appendix J.

5. Climate Change & Sustainability

“Please clarify if and how the Climate Assessment has taken into account the potential for greenhouse gas emissions arising from induced demand for car travel and justify the approach taken.”

- 5.1 The operational climate change assessment, presented in Chapter 15: Climate, has considered the influence of changes to traffic patterns under the Do-something scenario.
- 5.2 Traffic data used in the climate change operational assessment has used traffic data obtained from the Didcot Paramics microsimulation model. This model was jointly funded by OCC, Vale of the White Horse District Council (VoWHDC) and South Oxfordshire District Council (SODC). The model is maintained and run on behalf of OCC by Systra. OCC and Systra provided traffic data for the assessments presented in the ES.
- 5.3 Further information on the Paramics model is provided in Section 5.3 of the Transport Assessment submitted as part of the planning application.

“Please provide a Climate Change Position Statement which provides a summary of the measures embedded within the scheme to reduce climate effects as far as practicable along with details of additional measures that are proposed to be secured through condition if planning permission is granted in the interests of sustainable development. Reference should be made to the combined effects of travel behaviour, measures to reduce embodied carbon emissions and greenhouse gas emissions during the construction and operational phases, biodiversity enhancements and net gain, landscaping proposals, drainage and any other matters that affect the impact of the scheme on climate. The statement should also include the following:

- Further information setting out how the development seeks to minimise the climate impacts of the development as far as is practicable.*
- Further information setting out how the development would contribute to the aims and objectives of the draft Oxfordshire Local Transport and Connectivity Plan, which is a material planning consideration, including the overarching vision to deliver a zero-carbon transport network by 2040.*
- Whilst it is welcomed that the proposal includes a segregated footway and cycleway along its length, it also increases capacity for private vehicles. Further information is therefore required to set out the measures the applicant intends to take and/or relies upon to encourage a modal shift from car travel to active and sustainable modes, and how these measures could be secured or relied upon as part of the planning application.*
- Further information to demonstrate how active and sustainable travel modes (including bus) are prioritised over the use of the private vehicle, particularly given the absence of dedicated bus lanes or other bus priority measures.*
- Further information about how the climate effects of the development would be monitored in the long term, and the measures that would be available to be taken by the applicant should the climate effects need managing/reducing in future. This could include physical alterations to the scheme and/or details of other powers available to the applicant (e.g. to restrict the use of the road to specific users or specific times etc).”*

- 5.4 A Climate Change Position Statement has been produced and is provided as part of this Regulation 25 Response. This considers each of the above bullet points above, see Appendix K.

“Please provide clarification as to whether the scheme has been assessed using the County Council’s Climate Change Impact Assessment Tool and how the tool has informed the scheme development.”

- 5.5 A Climate Impact Assessment was produced in consultation with OCC’s Planning and Place team. The HIF 1 project team were approached to complete this tool late into the Scheme’s

design development, however, climate change was a guiding principle for the Scheme's design and therefore a score of +11 was achieved and agreed early in 2022. The output of this tool is available at Appendix L. Scores of -3 were given to 'Energy' and 'Buildings', as the impact criteria are generally outside of the Scheme's influence.

6. Flood Drainage and Water Quality

"Further information and amendments to the proposal are required to show additional flood compensation measures to mitigate increases in flood risk beyond the tolerance levels set out in the modelling that underpins the Flood Risk Assessment (FRA), to address the Environment Agency's objection and noting their preference for level for level flood compensation. Analysis should be presented in the FRA as a table showing the volumes lost to the development in approximately 100mm increments of level and the volumes gained by the mitigation proposed in the same level increments. It should be demonstrated that there is no loss of floodplain volume in any increment of level, and preferably a net gain. The FRA should consider whether level for level compensation is possible and if not explain why and detail how any associated risks from the chosen form of mitigation can be minimised. Flood compensation should be delivered within the red line area for the application. If this is not possible, further information will be required to demonstrate how the flood compensation will be secured and the mechanism and timetable for delivery."

- 6.1 A Flood Risk Technical Note has been produced to respond to this comment and objections made by the Environment Agency, please see Appendix M.

"The proposed flood compensation area on the northern bank of the River Thames is not included within the GA drawings. Please provide further information on the flood compensation scheme, including locational drawings and cross sections."

- 6.2 Plans showing the flood compensation area have been produced and are provided in Appendix N.

"The checklist included as Appendix D to the Drainage Strategy should be updated to respond to the comments made by the Lead Local Flood Authority (LLFA) and the District Councils' drainage teams."

- 6.3 A review of the checklist in Appendix D of the drainage strategy has been undertaken and it is considered that no updates are required as all the points raised in the drainage strategy review have been addressed, see information provided in response to the two queries below.

"The OCC Flows and Volumes Pro-Forma document must be completed for each catchment and submitted as additional application documents."

- 6.4 This has been completed, see Appendix O.

"The application to be reviewed and revised as appropriate to address the comments made by the LLFA and the District Councils' drainage teams."

- 6.5 A response to the LLFA's and District Councils' drainage teams has been prepared, see Appendix P.

Water Framework Directive Assessment

"A full Water Framework Directive Assessment is required to show considerations of all impacts of the development on water quality and provide comprehensive mitigation measures as necessary."

- 6.6 A Preliminary WFD assessment has been provided commensurate with the preliminary design and drainage strategy. A Full WFD assessment report has been provided as part of the ES Addendum.

7. Heritage

“The archaeological trench evaluation report referenced in paragraph 7.76 of the Planning Statement must be submitted and the application documents should be updated to reference its conclusions. The conclusions of the report must also be incorporated into the assessment of environmental effects on un-designated archaeological remains.”

- 7.1 The archaeological evaluation report has been submitted as additional information during the determination period. The sections below summarises the results in relation to previously known assets and those assets that were newly identified during evaluation.

Known assets

- 7.2 The following identifies the outcome of the results of the trial trench evaluation in relation to known non-designated archaeological assets identified in the Environmental Statement, Chapter 7 Cultural Heritage:
- 7.3 **Asset 36** comprising a possible undated farmstead complex (probable Later Prehistoric to Roman date) indicated by cropmark evidence. The trial trench evaluation confirmed the presence of archaeology relating to this asset and identified a large Bronze Age ditch, together with other undated features in Plot ON196259 of the trial trench evaluation (Wessex Archaeology, 2021: p.12). Immediately to the north and east of in Plots ON198020.1 - .4 (Wessex Archaeology, 2021: p.14) Romano-British activity in the form of ditches and a trackway were identified.
- 7.4 The assumption in the ES chapter and resultant assessment of impact and significance of effect remains unchanged.
- 7.5 **Asset 54**, a large archaeological site encompassing prehistoric activity, Iron Age/Roman and Saxon settlement identified through trial trench evaluation as part of the Valley Park Project, lies within an area where trial trenching is still pending due to land access restrictions and the health and safety risk this entails. The assessment in the ES chapter stands.
- 7.6 **Asset 163** cropmark evidence of enclosures and pits, indicating possible settlement was confirmed in the trial trench evaluation within Plot ON216210 (Wessex Archaeology, 2021: p.18). The trenching revealed only modern disturbance and no archaeological features in adjacent Plots ON196259 and ON208645 (Wessex Archaeology, 2021: p.18).
- 7.7 The assumption in the ES chapter and resultant assessment of impact and significance of effect remains unchanged for this asset as a result of the trial trenching.

Additional assets identified by trial trenching

- 7.8 As had been anticipated and allowed for in the assessment of potential archaeology in the ES chapter, further archaeological remains were identified by the trial trenching. The report on trial trenching is structured by plot (Wessex Archaeology, 2021: Figure 1). Where trial trenching plots containing archaeological remains are adjacent and of a similar character these have been grouped together. From south to north along the Scheme these comprised:
- 7.9 **Plot ON237285** to the immediate south of Appleford Road (Wessex Archaeology, 2021: p. 15) contained a single sherd of prehistoric pottery recovered from north–south aligned ditch, this pottery is possibly residual as the shape of this feature is suggestive of a furrow. A further two small, abraded sherds of prehistoric pottery recovered from an east–west orientated ditch.
- 7.10 Individually this asset identified from trial trenching is considered to be of **low value**. The Scheme would have a **major impact** on this asset, resulting in a **slight adverse permanent effect**, and not significant. A slight effect has been selected as opposed to a moderate effect due to the minimal archaeological evidence revealed in the trial trenches across this plot.

- 7.11 **Plots ON288848, ON192891, ON288906** (Wessex Archaeology, 2021: p.17) between the Thames and the Abingdon Road revealed activity from the Neolithic (a single pit) and Romano-British ditches, along with undated ditches.
- 7.12 Individually this asset identified through trial trenching is considered to be of **medium value**. The Scheme would have a **major impact** on this asset, resulting in a **moderate adverse permanent effect** and significant. A moderate adverse effect has been selected as opposed to a large due to the generally dispersed and low frequency of archaeological remains across a relatively large area.
- 7.13 **Plots ON182569, ON225257, ON182468.1** (Wessex Archaeology, 2021: p.19 and 20). At the far northeast of the Scheme these three plots revealed a few dispersed archaeological features. Plot ON182569 contained a single Romano-British ditch and a single Romano-British pit and Plot ON225257 contained a single Late Bronze Age ditch. Plot ON182568.1 contained a ditch, a pit and two post holes, all undated.
- 7.14 Individually this asset is identified through trial trenching is considered to be of **low value**. The Scheme would have a **major impact** on this asset, resulting in a **slight adverse permanent effect**, and not significant. A slight effect has been selected as opposed to a moderate effect due to the minimal archaeological evidence revealed in the trial trenches across this plot.
- 7.15 The submitted Environmental Statement acknowledges the high value and sensitivity of the asset, being a Scheduled Monument.
- 7.16 The submitted Environmental Statement sets out the rationale for the impact and significance of effect presented. The heritage interest of the asset predominantly lies in its archaeological interest, with its relationship to the river being key to the understanding of the below ground archaeological evidence present. Although the immediate landscape to the west offers a quiet rural feel. This does not contribute substantially to the heritage setting of the asset and its understanding as a settlement related to the river, and therefore its heritage interest. Further, the wider landscape within which the monument sits does not have a strong rural character, with Culham 1.5km to the west and the railway to the east which severs it from the largely open landscape in that direction. Therefore, a slight significance of effect has been identified in this case, and the effect is not significant in EIA terms.
- 7.17 The assertion from Historic England that only neutral effects can be 'not significant' is incorrect. DMRB LA104, Page 15 NOTE 3 states that Significant effects typically comprise residual effects that are within the moderate, large or very large categories. In addition, DMRB LA106 Page 9 NOTE 1 states that the effect on the cultural heritage resource is not significant when the impact does not substantially diminish the heritage interest of the cultural heritage resource.

"A review and clarification of the significance of the impact of the development on the scheduled monument known as Settlement Site North of Thames (HA1006345; A117) with reference to the view of Historic England that the impact would be 'moderate adverse' rather than 'slight adverse not significant'."

"South Oxfordshire District Council's (SODC) Conservation Officer and representations received on behalf of the owner-occupier of the Grade II Listed Fullamoor Farmhouse state that it was inappropriate to scope-out a full assessment of the impacts on this property. Whilst it is accepted that the greatest contribution made to the building's significance by its setting is to the south, it does not follow that its setting to the north offers no contribution at all. The asset is likely to be affected by changes to layout of the A415 and Culham Science Centre entrance, the re-purposing of the access arrangements to the property, changes in landscape planting and vegetation, and lighting. Without assessment, it is not possible to ensure that the effects are fully understood, and appropriate mitigation is in place. Given the council's statutory responsibility under Section 66(1) of the Planning (Listed Buildings and Conservation Areas) Act 1990 to have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest it possesses in considering whether to grant planning permission, further information is required to enable the LPA to understand the impacts of the development on Fullamoor Farmhouse and to ensure that any mitigation measures that may be required are secured if planning permission is granted."

- 7.18 Fullamoor Farmhouse was scoped out of full assessment in the submitted ES due to a lack of potential for significant effects. Following receipt of the consultation response from the SODC Conservation Officer and the representations received on behalf of the owner-occupier of the Grade II listed Fullamoor Farmhouse a virtual consultation meeting was held on 29th April 2022 with the SODC Conservation Officer to discuss the significance and setting of Fullamoor Farmhouse, and to agree the approach for an assessment of the effects of the Proposed Development on that asset. The assessment of the effects of the Scheme on the Grade II listed Fullamoor Farmhouse is presented in a revised Chapter 7 Cultural Heritage as part of the ES addendum.
- 7.19 The revised assessment set out in Chapter 7: Cultural Heritage (see the ES Addendum) states that *"the construction of the Scheme is therefore viewed as having a negligible impact, resulting in a slight adverse and permanent effect, which is not significant" and "Therefore, in the opening year there will be a beneficial impact ranging from minor to major decrease in noise levels depending on the façade/floor. In the long term this impact ranges from negligible change to moderate decrease in noise levels. Whilst this is not considered to affect the heritage value of the asset, it demonstrates that the Scheme will not worsen noise levels within the asset's setting"*.

8. Landscape & Visual Impact

"Further information is required to determine the appropriateness of some of the sensitivity levels applied to visual receptors, particularly residential properties. Clarification is also required on how the visual assessment has differentiated between motorists and cyclists/pedestrians. There is concern that the sensitivity levels applied to some receptors may have underestimated the effects and therefore the overall conclusions of the assessment."

- 8.1 The methodology for the Landscape and Visual Impact assessment was previously agreed at the EIA Scoping stage. The LVIA chapter has been produced in accordance with DMRB LA 107 Landscape and Visual Impacts and the Landscape Institute's Guidelines for Landscape and Visual Impact Assessment 3rd Edition. Chapter 8.4 provides a comprehensive summary of the best practice guidance notes and documents considered in the methodology. For visual receptors, please refer to 8.4.11 and Table 8.5 which explain how the sensitivity of visual receptors has been assigned. This approach was included within the proposed methodology set out in the Scoping Report. This approach was agreed with OCC through receipt of their Scoping Opinion.

"Further information is required to confirm the following residential receptors have been considered in the Landscape Visual Impact Assessment (LVIA), and appropriate mitigation for them has been proposed:

- Hill Farm and Hartwright House;*
- Bridge House and Bridge Farm House; and*
- It is not clear exactly which residential properties are included in RV 33 and RV 36 at Clifton Hampden."*

- 8.2 The LVIA chapter has been reviewed against the Preliminary Landscape Masterplan to ensure residential receptor impacts have been considered. The representative viewpoints are a comprehensive list that was approved through consultation with OCC, SODC and VoWHDC. Mitigation measures have been re-evaluated to assess if additional mitigation measures are required for specific receptors, and these are now fully considered, within the constraints of redline boundary and other environmental factors, within the revised Preliminary Landscape Masterplan (see Appendix and LVIA Chapter of the ES (see the ES Addendum).
- 8.3 With regard to RV 33 and RV 36 viewpoints, please refer to the captions for those viewpoint figures. RV 33 is looking northwest and is taken from the western side of Clifton Hampden. RV 36 is looking north and west and is taken from the north-eastern side of Clifton Hampden. Both viewpoints are looking outwards from Clifton Hampden towards the Scheme.

“Clarification is required as to whether the mitigation included within the LVIA chapter of the ES accurately reflects the mitigation shown on the proposed landscape masterplan drawings. It is noted that some of the descriptions in the LVIA and associated photography do not reflect the mitigation proposed on the plans. Where discrepancies are identified, this should be amended in the ES and further/amended information provided to update the assessment. Please see the Landscape Advisor comments for further detail and example of potential discrepancies.”

- 8.4 The LVIA Chapter has been reviewed against the proposed mitigation measures. The chapter has been amended to ensure this is aligned with the mitigation measures illustrated in the Preliminary Landscape Masterplan.

“Viewpoint 10 needs adjusting to reflect the potential views of the raised road at that location, rather than eye level views.”

- 8.5 This has now been taken into consideration for Viewpoint 10. However, please note that this is in accordance with the Landscape Institute's Guidelines for Landscape and Visual Impact Assessment to ensure viewpoint photo consistency and industry best practice standards. Therefore, the format of the photography is restricted to within these guidelines and cannot reflect the potential views of the raised road at that location. The road is at its highest point, 1.44 m above existing ground level. To be at the proposed eye level the image would be taken approx. 3 m above the ground (i.e., eye level above the proposed road level, 1.6 m - eye level, + 1.44 m). As is the case where viewpoint photography has not been undertaken from private properties, professional judgement has been used to assess the potential effect to this receptor.

“Although covered in more detail in the arboricultural comments, clarification on the level of vegetation loss and retention is sought as this also has an effect on the level of landscape and visual impact. The landscape masterplan drawings show extensive areas of existing planting retained within the redline boundary. Clarification is needed on whether this is feasible and to explain what assumptions have been made.”

- 8.6 Please refer to response in relation to the comments in Section 9. The Preliminary Landscape Masterplan has been updated following the update of the Tree Protection Plans so that lost vegetation matches with tree and hedgerow loss.
- 8.7 In terms of the Arboricultural Impact Assessment, an interdisciplinary coordination process was utilised whereby the project team considered if proposed planting could be accommodated within the redline boundary, with construction methods and areas, and existing trees and woodland root protection areas taken into account. The emphasis being to retain as much existing vegetation where this is feasible.

“The landscape mitigation and enhancement proposals shown on the landscape drawings are generally lacking and need improvement. Greater levels of tree, woodland and hedgerow planting in line with landscape character guidelines throughout the scheme are required especially in locations where existing vegetation is being lost; for example more hedgerow and tree planting along new and widened sections of the road, intermittent trees and more woodland blocks for screening and integration into the landscape context, use of more species-rich grass rather than amenity grassland (using low growing variety where visibility is required) where areas are of sufficient width and size, and improving the visual amenity of noise barriers.”

- 8.8 A review of the landscape mitigation and enhancement proposals has been undertaken to identify where additional landscape mitigation and enhancement proposals could be provided alongside the current scheme. Note that due to numerous utilities or services constraints this has not been possible at all locations, but improvements to where landscaping could be added have been carefully considered. The following have been updated in the landscape masterplan to provide improvements:

- The majority of acoustic barriers will now incorporate the potential for climbing vegetation to provide a green screen between the road and adjacent land area or properties affected. Where the use of climbing vegetation alongside acoustic barriers is not feasible due to engineering constraints such as at the Thames Crossing, the use of dark green coloured

fencing will be considered to minimise the visual impact of the barriers towards the surrounding context.

- At Clifton Hampden, at the far north-east of the Scheme, the bat connection corridor has been enhanced across the existing watercourse, by providing additional woodland edge scrub to the south-west side of the existing woodland corridor, and additional native individual trees along the former watercourse to provide enhanced habitat connectivity north and south. The width of the proposed woodland buffer on the northwest side of the link road has also been increased.
- At Culham Science Centre (CSC) roundabout, the density of the native individual tree planting on the northern perimeter of the red line boundary has been increased to provide visual screen mitigation from the link road. Whilst this is not a woodland block, the spacings between individual trees combined with the trees further south, alongside planting adjacent to the carriageway, provide combined visual mitigation. For the woodland blocks to the east of the roundabout the area of the proposed woodland and woodland scrub has been increased to improve green connectivity.
- At the Abingdon Road roundabout (gateway to Culham), the quantity of native individual tree planting at the northern Scheme boundary has been increased to provide additional visual mitigation for the adjacent future housing development. Similarly, additional trees have been added to the western side of the roundabout to reinforce the gateway road exit to Culham. To the south of the roundabout, an additional line of individual trees has been included in the design to provide visual mitigation for farm buildings to the east.
- On the northern side of the River Thames the area of riparian vegetation for biodiversity has been increased and sedum blanket planting has been proposed on the bridge crossing itself on the central reservation to provide some degree of greening on the bridge. The acoustic barrier/ bridge parapet will also be a green screen in the form of a coloured dark green barrier which will soften the appearance of the structure.
- At the Appleford Sidings Bridge, a sedum blanket is proposed on either side of the crossing (to be located in areas of concrete which forms the roof of the structure, either side of the road), to provide greening on the bridge which will soften the appearance of the structure and provide intrinsic biodiversity value.
- Additional trees have been proposed at the Didcot Science Bridge to further reinforce visual mitigation on the south-west and south-east side of the structure.
- For all amenity grassland, we are proposing to use a low growing species rich grassland seed mix which has a maximum height of 0.5m to replace the amenity grassland, which will include flowering species. This will address any concerns regarding visibility splay lines and maintenance access requirements whilst providing enhanced planting and biodiversity in comparison. This will now apply for the whole scheme where this is indicated.
- All proposed woodland, woodland scrub and proposed hedge locations, where feasible, have been increased in size area and extents to provide additional improvements to the current landscape mitigation proposals.

“Further information is also required to demonstrate how the design of the scheme including bridges, roundabout structures, acoustic barriers and retaining structures throughout the development have been informed by relevant landscape and design guidance to minimise landscape and visual effects and to ensure a successful integration into the landscape and townscape context (e.g. through their design, mass, and choice of materials). For example, can the River Thames bridge be clad in a more sympathetic render/stone work rather than pale concrete which is more visible in views? Where further measures can reduce the landscape and visual effects further, the proposal should be amended to incorporate those measures.”

8.9 Please refer to the response provided in 8.8 which indicates how the landscape design has been amended.

8.10 An Aesthetic appraisal was undertaken to inform the design of the Scheme. The purpose of this was not to provide a final design for each bridge but highlight the design approaches that exist and can be taken forward. A number of designs were appraised and OCC (as promoter) adopted a simple aesthetic including concrete pillars, steel under structure and a noise barrier/

parapet on the eastern side of the bridge. It is now proposed to colour this parapet green to soften its appearance. As set out in paragraph 8.8, sedum blankets have been included along the bridge to create visual separation between non-motorised users and the highway users, and provide biodiversity enhancements.

“Further information is also required to show the design and visual appearance of acoustic fencing, including materials to be used. Details should be provided to explain how the design of the acoustic fencing has taken into account the need to reduce as far as possible the landscape and visual impact of the development.”

- 8.11 The majority of acoustic barriers will now incorporate the potential for climbing vegetation to provide a green screen between the road and adjacent land area or properties affected, this would help to assimilate acoustic barriers into the landscape. Please see Appendix Q which provides information pertaining to barriers that could be used as part of the Scheme.

9. Arboriculture

“There are a number of discrepancies identified between existing trees and hedges shown on the scheme drawings compared with onsite features and in some case aerial photography – some of these are identified in the comments from the Arboricultural Advisor which have been provided to you. Please ensure the submitted drawings accurately reflect the existing situation.”

- 9.1 The Arboricultural Impact Assessment, Tree Constraints Plan and Tree Protection Plan have been updated to address comments and any discrepancies identified, see Appendix W.

“There are also a number of inconsistencies between the Arboricultural Impact Assessment (AIA) and Tree Protection Plan (TPP) and other plans (such as drainage plans). These should be corrected throughout.”

- 9.2 The Arboricultural Impact Assessment and Tree Protection Plan have been updated to address inconsistencies identified and to reflect the fixed design, see Appendix W.

“Clarification is required as to whether the AIA has assessed impacts arising from works to utilities. If it has not, the AIA should be updated accordingly.”

- 9.3 Utility information available at this stage is indicative only. Indicative information has been considered and is addressed in Table 6 of the Arboricultural Impact Assessment. All impacts associated with utilities are considered to be feasible to be managed via detailed design amendments and specialist working methods. Mitigation measures are identified in Table 6 on a case by case basis for each conflict between proposed utility works and retained trees.

“Additionally, the TPPs state that the final extent of tree removals is to be determined. Please confirm whether the assessment is based on a worst-case scenario and, if not, provide further information to enable a reliable assessment of the impact of the development on trees to be made.”

- 9.4 This is based on the agreed approach which has been developed with the LPA. This approach is based on a reasonable worst case estimate of the level of clearance likely to be required but reflects the inherent uncertainty in the assessment which is unavoidable. In practice a number of trees shown to be removed within tree groups may be feasible to be retained, potentially with management such as coppicing or pollarding. This will be determined on site by an arboriculturist, prior to construction.

“Please respond to SODC’s comments that it is contrary to policy and guidance to construct a drainage swale in the Root Protection Area (RPA) of veteran tree T424 and amend the scheme accordingly.”

- 9.5 The RPA of this tree will be avoided. The drainage plans have been amended to take account of this.

“A summary of total tree losses in area compared to the area identified for replacement planting is required. A suggested table format for the supply of this information is included in Table 4-1 of the Arboriculture Advisor comments. Please also measure tree and tree group loss in square metreage and hedges in linear metres. This information is to enable an overall comparison between the current tree and hedge cover without the scheme, the existing planting lost as a result of the scheme, and the replanted built scheme and therefore to inform an assessment of arboriculture impacts.”

- 9.6 Approximately 70,081m² of new tree planting is proposed and 120,481 m² is to be removed (giving a shortfall at the time of planting of 50,400 m²). Table 9.1 and Table 9.2 demonstrate that the proposed replacement planting will result in an increase in canopy cover in m² (36,524m²) where a growth rate of 500 mm per year over a ten year period is assumed. Where a more modest growth rate of 250 mm per year is assumed, new planting will result in a 29.732m² decrease in canopy cover.

Table 9.1: Tree Canopy Cover

	Category A Quantity	Approximate total area (m ²)	Category B Quantity	Approximate total area (m ²)	Category C Quantity	Approximate total area (m ²)	Category U Quantity	Approximate total area (m ²)	Removals Quantity	Approximate total area (m ²)
Individual trees										
Proposed removals	1	334.58	90	7,756.96	73	2,516.57	8	276.49	172	10,884.6
Tree groups										
Proposed removals (including part tree removals)	0	0	46	61,026.133	54	48,570.67	0	0	100	109,596.803
Individual trees and groups combined										
Proposed removals (including part tree removals)	1	334.58	136	68,783.093	127	51,087.24	8	276.49	272	120481.403

Table 9.2: Total tree replacement

Approximate total area (Excluding Hedges (m ²)) year 10 (250 mm growth rates)	Approximate total area (Excluding Hedges (m ²)) year 10 (500 mm growth rates)	Tree loss – replacement planting (Excluding Hedges (m ²)) year 10 (250 mm growth rates)	Tree loss – replacement planting (Excluding Hedges (m ²)) year 10 (500 mm growth rates)
90,749	157,006	-29,732.40	36,524.60

“Clarification is required over the feasibility of retaining planting identified as ‘retained’ and the measures that will be taken to ensure retained trees are able to survive and flourish through the construction process and once the scheme is operational. Clarification should include the assumptions that have been made around the status of these trees, ownership and control, maintenance, and construction methods.”

- 9.7 Details of standard construction measures, designed to separate the works from retained trees is provided within the AIA. An arboricultural method statement will be produced as part of the Construction Environmental Management Plan (CEMP) and will further detail the methodology for ensuring trees remain healthy and separated from the construction works.

“The AIA and LVIA should cross-reference each other to conclude whether the new planting can adequately compensate for lost planting.”

- 9.8 The LVIA has been produced with reference to the AIA. A cross reference to the AIA will be included within Chapter 8 Landscape and Visual Impact. Reference should be made to the Biodiversity Net Gain (BNG) Assessment report which provides area figures for habitats lost and proposed.

10. Biodiversity

“Please review and revise the mitigation proposals and Landscape & Biodiversity Management Plan to show adequate compensation for the loss of riparian and in-channel semi-natural habitat and enhancements to local river habitats. Other concerns raised by the Environment Agency should also be addressed, including information to demonstrate how the ecological impacts arising from the modification of existing watercourses has been taken into account in the biodiversity assessment.”

- 10.1 The BNG Assessment Report (see Appendix R) has been amended and DEFRA Metric 3.1 has been utilised to revise the BNG calculations for the Scheme. Please see the revised BNG Assessment Report. Further changes to the scheme design and boundary are being taken into account in the BNG updates, including River Metric. Any changes to the LBMP will be considered and will inform whether further riparian and/or in-channel mitigation or enhancement is required or is feasible.
- 10.2 Proposed modifications to existing watercourses have been taken into account in the BNG River Metric assessment, including recommendations for appropriate enhancement to support net gain where this is achievable.

“Further information is required by way of a Habitat Regulations Assessment (HRA) screening note. The screening note should include consideration of groundwater, surface water, changes in groundwater links and pollution impacts on the European designated sites of Cothill Fen Special Area of Conservation (SAC) and Little Wittenham SAC to inform screening of likely significant effects from changes in hydrology or water quality.”

- 10.3 A Habitat Regulations Assessment – No Likely Significant Effects Report has been prepared and is provided in Appendix X.

“Further information is required to provide a clear comparison of habitats lost with habitats retained and/or replaced. This information is required to enable an assessment of the acceptability of the proposal in terms of its ability to compensate for and/or enhance biodiversity habitats. The information should be provided for both terrestrial and aquatic habitats.”

- 10.4 Please refer to the updated BNG Assessment report (and accompanying metric 3.1) (see Appendix R) for a clear comparison of habitats retained and/or replaced.

“Further information is required with regard to the location of proposed badger fencing and the standard to which badger tunnels would be designed.”

- 10.5 Further information in relation to the location of badger fencing and tunnels is provided in the revised Biodiversity chapter, see the ES Addendum.

“Further information is required to explain why some waterbodies were surveyed and others were scoped out in the Aquatic Ecology Survey Report.”

- 10.6 Dry ditches were scoped out of the assessment as per BNG guidance at the time. These were assessed as part of adjacent terrestrial habitats. Landscape plans have been reviewed and some dry ditches were labelled incorrectly as watercourses, this has been corrected on the revised landscape masterplans (see the ES Addendum).

“Further information is required to explain the mitigation measures proposed for impacts on breeding birds, including little ringed plover, gadwall, oystercatcher, and wintering lapwing and to enable an assessment of the effectiveness of these mitigation measures (see comments from BBOWT and Biodiversity Advisor).”

- 10.7 Further information on habitat creation is set out in the revised Outline Landscape and Biodiversity Management Plan (OLBMP), as well as detailed in the BNG Assessment report (see Appendix R). The Scheme has sought to minimise the loss of waterbodies within the Hanson restoration area, where the majority of bird species referred to were recorded. The loss of a section of the western area of this area will not significantly reduce the breeding numbers of Little Ringed Plover, Oystercatcher and Gadwall. Little Ringed Plover and Oystercatcher both require a reasonable amount of bare and open ground for nesting. Whilst, the restoration area currently provides these open conditions, in time the habitats will mature, including reedbed, marginal vegetation and scrub. This will reduce the suitability of the site for these species and in future baseline conditions these species may not be present. It is argued that the Scheme will have no long impact on Little Ringed Plover and Oystercatcher, as the nature of the restoration area may no longer provide suitable conditions. Gadwall require areas of standing, but reasonably shallow water, with abundant macrophytes for foraging and reedbed/lush marginal vegetation for nesting. As the restoration area matures, these conditions are likely to become more abundant. It is therefore argued that the loss of a section of the western section of the restoration area will not significantly affect Gadwall occurring in this area. Wider habitat creation along the River Thames to the west of the Scheme, with flood compensation areas being enhanced for wetland biodiversity, will also benefit waterbirds associated with the Hanson restoration area. Lapwing were recorded on a number of occasions using the Hanson restoration area in winter for roosting, but the loss of a small section to the Scheme will not significantly affect Lapwing. Lapwing are more frequently associated with arable farmland in region and the Scheme will only result in a small loss of this habitat, and no areas which were recorded as supporting Lapwing.

“Further information is required to explain how the ES has assessed the impact of the development on the Hanson Quarry Restoration Area, including Finger Lakes, and the biodiversity enhancements that would be delivered here without the proposed scheme. Further information is required to establish how the loss of these habitats would be reduced, mitigated and compensated for.”

- 10.8 Further details of habitat creation are set out in the revised OLBMP with an assessment of habitat gains, including requirements to meet trading rules, set out in the BNG Assessment report (see Appendix R).

"The following matters should be clarified/corrected in the ES and its appendices and other supporting information. Please note that should the clarifications indicate that the assessment is flawed, the ES should be updated to provide an accurate assessment of the environmental effects of the development."

10.9 Noted – please see below.

"The extent of peregrine territory needs to be updated on Figure 3C sheets 1 and 2 of the Breeding Birds Survey Report."

10.10 The extent of the Peregrine territory has been updated on Figure 3C sheets 1 and 2 of the Appendix 9.7 Breeding Birds Survey report (see the ES Addendum).

"Bird values assigned in Chapter 9 of the ES differ to those assigned in the breeding bird report which is understood to be because the scheme extent changed during the assessment process. Please amend the appendix to update the scheme extent and clarify whether this results in any material change to the assessment or findings."

10.11 Appendix 9.7 Breeding Birds Survey Report has been updated to reflect the value assigned in the ES Chapter 9: Biodiversity. This makes no material change to the assessment presented in the ES chapter.

"Please clarify why red kite is not mentioned in the ES despite being noted as of county importance in the wintering bird survey report."

10.12 Red Kite was predominantly recorded flying over the Site during wintering bird surveys and not utilising land within the Scheme boundary, so has not been taken forward for assessment. Further text has been added to ES Chapter 9: Biodiversity to clarify this.

"Please clarify how the values assigned in the bird reports have been interpreted."

10.13 Assigned values in Appendix 9.7 Breeding Birds Survey Report and Appendix 9.8 Wintering Birds Survey Report have been corrected to correspond to those presented in the ES chapter.

"Please clarify how the absence of impacts on bird species and assemblages of county importance is justified."

10.14 Potential impacts on bird species and assemblages of county importance are described in ES Chapter 9: Biodiversity, Section 9.11 and Table 9.13. An assessment of the significance of these impacts is detailed in ES Chapter 9: Biodiversity Section 9.12, along with the justifications for these conclusions. This includes measures to minimise habitat loss, e.g. hedgerows, woodland, riparian habitats and wetland areas south of the River Thames and reduce disturbance during construction. These are detailed in the OLBMP and will be secured through a full LBMP and CEMP. Habitat creation, including hedgerow planting, floristic diverse grasslands, wetland habitats/marshy grassland and native woodland planting, with offset any loss, as well achieve net gains in habitats and improve ecological connectivity across the landscape.

"In para 9.4.5 the reports stated that the assessment has been undertaken in accordance with Design Manual for Roads and Bridges (DMRB) LA 108, however, the geographical frames of reference set out in para 9.4.17 do not directly align with the guidance in LA 108. Please provide justification for the methodology used."

10.15 The assessment has primarily followed CIEEM guidance, but also considered DMRB LA 108. Para 9.4.17 states that the geographical terms of reference used in the assessment follows CIEEM guidelines. ES Chapter 9: Biodiversity has been amended to clarify this.

"Similarly, in para 9.4.1 it states that the assessment has been undertaken in accordance with DMRB LA 108. Whilst LA 108 does not set out the distances to be used for desk study searches other DMRB guidance (LA 115) does provide distances for searches of European sites, the distanced referenced in para 9.4.5 do not align with this. Please clarify the approach taken here."

- 10.16 Whilst some of the distances used do not directly align with DMRB LA 115 Habitats Regulations Assessment they are no less than those presented and therefore no changes are suggested. ES Chapter 9: Biodiversity has been amended to clarify this (see paragraph 10.14 above).

"The loss of a species rich established hedgerow habitat is not considered to be 'short term'. Please update the surveys and ES accordingly."

- 10.17 This has been updated in ES Chapter 9: Biodiversity.

"The limitations in the Reptile Survey Report should be amended to include reference to the impact of repeat/daily visits on levels of disturbance."

- 10.18 Appendix 9.5 Reptile Survey Report of the ES has been updated to include this limitation.

"Please provide clarification as to why ponds WB21 and WB22 were excluded from further survey work in the Great Crested Newt Report. NB. GCN are known to breed successfully in concrete lined waterbodies therefore this in itself would not be sufficient justification for the ponds being scoped out."

- 10.19 Appendix 9.6 Great Crested Newt Report of the ES has been updated to clarify why these ponds were excluded from further survey work.

"Similarly, quarry excavations are also known to support GCN. Further justification is therefore needed to explain why pond WB39 was excluded from further assessment in the GCN Report."

- 10.20 Appendix 9.6 Great Crested Newt Report of the ES has been updated to clarify why this pond was excluded from further survey work.

"Clarification is required to justify the spacings between survey visits for pond cluster 3 in the GCN report. Although the 2001 GCN mitigation guidance does not specify the duration of time to be left between survey visits, good practice would be to leave at least a week between survey visits. In this instance, all four survey visits took place within a six day period."

- 10.21 Appendix 9.6 Great Crested Newt Report of the ES has been updated to clarify this.

"Clarification is required as the methodology used to establish potential otter activity in the Otter Report whether this represents a 'worst-case scenario'."

- 10.22 Appendix 9.11 Otter and Water Vole Survey Report of the ES has been updated to clarify this.

"Clarification is required on the importance valuation of Hairlike pond weed and Nitella (stonewort so.), depressed river mussel and fish in Table 9.9."

- 10.23 As stated in Table 9.9 of Chapter 9: Biodiversity (third row), Hairlike pond weed and Nitella sp. are both uncommon species, but not LBAP or UK Priority species, and so are assessed of local importance only. Depressed River Mussel is a NERC Act (2006) species of principal importance, a UK BAP priority species, and listed globally as Vulnerable on the International Union for Conservation of Nature (IUCN) Global Red List, however the species was not recorded in surveys, but is present in the wider area of the River Thames and is therefore assessed as of local biodiversity importance.

Biodiversity Net Gain

"The Biodiversity Net Gain (BNG) Assessment must be reproduced, taking into account the issues raised by the County Council's Biodiversity Advisor, the Environment Agency, and BBOWT in their responses to the planning application consultation. In particular, the BNG Assessment must ensure it satisfies the trading rules of the Biodiversity Metric 3.0. Additionally, The Biodiversity Net Gain assessment must ensure the biodiversity enhancements to be delivered by the approved Hanson restoration scheme are not double-counted but are included as part of the future baseline for the BNG assessment as well as the ES. Please also note that 'strategic significance' within the metric should be based on whether the habitats are located within a Conservation Target Area."

- 10.24 An assessment was undertaken to determine that there was no trading down in habitat distinctiveness within the biodiversity net gain metric. All impacts related to the Scheme are compensated on a “like for better” basis as per the guidance.
- 10.25 Conservation Target Area Maps were checked for the presence of watercourses within the Proposed Scheme boundary, and none were present. Therefore, all habitats within the Rivers Metric will keep the same strategic significance.
- 10.26 The BNG calculation have been amended using the Department for Energy, Food and Rural Affairs (Defra) Metric 3.1. Please see the revised BNG Assessment report (see Appendix R).

“Clarification is sought as to why a Modular River Physical Survey (MoRPh) survey was not undertaken on some watercourses and River Habitat Survey (RHS) data has been used instead. Further justification is needed to explain this approach as it is non-standard.”

- 10.27 In the context of the River Thames and proposed impacts to the watercourse (i.e., being crossed by a clear-span viaduct), it was considered that sufficiently robust survey information was available from the accredited River Habitat Survey (RHS) surveys to translate into MoRPh survey outputs to inform the BNG assessment. The River Thames as a large watercourse of significant depth and naturally high turbidity was assessed in detail through RHS, and thus the level of detail obtained provided robust data to inform the River Condition Assessment, and to inform the suggested riparian enhancement measures on the northern riverbank. In the context of the River Thames, enhancements to the river channel itself would not be feasible or justified in the context of the proposed scheme, and therefore it is considered that the assessment undertaken is sufficiently detailed and robust.

“Further clarification (including photographs where appropriate) is needed to justify why some seasonal ditches were assessed within the rivers and streams assessment and others were not.”

- 10.28 It was assessed on professional judgement that the ditches were likely not to hold water for more than 4 months of the year, based off of scoping and macroinvertebrate surveys completed throughout the following dates: 18th & 19th Nov 2019, 9th, 10th & 11th Dec 2019, 16th, 17th & 18th March 2020, 26th & 27th May 2020, 3rd, 22nd, 23rd, 29th & 30th July 2020, 1st, 2nd, 4th, 7th, 9th & 10th September 2020.

“Metric 3.0 takes into account whether habitat creation/enhancement is created in advance or delayed from the timing of impact. Table 7 assumes the standard time to target condition is applied. Please clarify where the evidence is that compensation will be undertaken within a year of the impact the compensation is addressing.”

- 10.29 The client has committed to our recommendations in The Biodiversity Net Gain Assessment report.

“We recognise that the replacement culvert on the Moor Ditch being shorter in length is an improvement, in addition to areas of Otter and Badger fencing to reduce the risk of road casualties however, overall, there remains a net deficit in river habitat units as identified in the Biodiversity Net Gain assessment. There is insufficient assessment regarding the choice of the river Thames bank adjacent to the Hansons restoration site as a biodiversity enhancement site and there is a lack of assessment regarding the quality of the current habitat and reasoning as to why the site currently does not support the range of common marginal aquatic plants that are proposed here.”

- 10.30 The proposed enhancement along the northern bank of the Thames is based on the baseline established through RHS and the known presence of Invasive Non-Native Species (INNS). It is proposed to enhance the habitats and species that are already present along the River Thames to improve the overall condition of the watercourse. As described previously, the RHS provided robust and detailed assessment of the current condition of the River Thames, comparable with MoRPh survey that was interpreted from it. There is also not a net deficit in river habitat units, but a net gain of 1.26%.

“The proposed mitigation is currently inadequate as it ignores the likely impact and opportunities to make more localised improvements to watercourses being directly affected by

the scheme. This would remove the penalty applied by the net gain metric due to the impact and mitigation being on different waterbodies.”

- 10.31 The scheme design has maximised every opportunity to seek enhancements to watercourses and riparian habitats, and the resulting output of the River Metric is subject to the known limitations of the Metric, which are being resolved through changes we have seen in Metric 3.0, and into Metric 3.1.

11. Air Quality

“Please respond to the issues raised by Appleford Parish Council, specifically to clarify if and how the Air Quality Assessment complies with national legislation and up to date guidance from the World Health Organisation.”

- 11.1 Clarification on points raised by Appleford Parish Council have been collated within Appendix S. This Appendix contains the original responses from Appleford Parish Council in relation to the Air quality chapter within the ES, and the subsequent responses from AECOM Air Quality specialists.

12. Noise

“The ES concludes there would be residual moderate-major increases in noise at a number of dwellings across the development site as a result of the development during its operational phase. These noise increases would be significant yet no specific mitigation appears to have been considered above and beyond low road noise surfacing. Whilst it is acknowledged that the future use of some (but not most) of these properties may change as a result of third party development, there is currently no certainty over that and therefore very little weight is attached to that possibility. Further information is therefore required in respect of the potential for reducing noise effects at these properties through mitigation above and beyond the low road noise surfacing and noise barriers proposed. Where options for mitigation have been discounted, clear justification should be provided given the significance of the adverse residual effect.”

- 12.1 The Noise Policy Statement for England (NPSE) requires that the control of noise must be considered ‘within the context of Government policy on sustainable development’. Whilst measures should always be considered to mitigate adverse effects, the mitigation of noise effects cannot be considered in isolation. In addition to considering the absolute noise levels, and the change in noise levels due to the Scheme, various other factors must also be considered when identifying sustainable noise mitigation measures. These include the cost versus the benefit, engineering practicality, safety considerations, generation of knock-on impacts (such as access issues, vegetation clearance, ecological effects, landscape and visual effects), and consultation and stakeholder engagement responses regarding the Scheme.
- 12.2 As set out in the ES, low noise surfacing and the five proposed noise barriers are not the only mitigation measures included in the Scheme design. Two properties are identified as likely to qualify for noise insulation, mitigation is embedded in the design in terms of the choice of the final alignment and speed limit.
- 12.3 With regard to third party developments, it is noted that the traffic generated by such developments is included in the traffic data used in the traffic noise assessment. However, any potential benefits to existing properties due to the screening provided by new buildings within such developments is not included. The assessment has therefore adopted a worst case approach in this regard.
- 12.4 Each of the dwellings/groups of dwellings identified as likely to experience a residual significant adverse effect is discussed in the bullet points below, which demonstrate that the proposed approach is in accordance with national noise policy:

- a) **Hill Farm and Hartwright House** – These dwellings are located between Didcot and Appleford where the Scheme follows the alignment of the existing access route to the properties. A very large increase in traffic noise is predicted at these two properties as the Scheme introduces a new road in a location which is remote from existing roads. Mitigation in the form of low noise surfacing is included in the Scheme at this location. The sensitivity test to estimate the likely benefit of low noise surfacing indicates some reduction in traffic noise levels is likely, however, this will not be sufficient to remove the significant adverse effect. Both properties are identified in the ES as likely to qualify for noise insulation under the Noise Insulation Regulations 1975 (amended 1988), therefore they would benefit from this additional mitigation measure. However, as noise insulation can only reduce internal noise levels, a conservative approach has been adopted in the ES and qualification for noise insulation is not considered to remove a significant adverse effect.

As identified in the ES, further mitigation, such as noise barriers, is not considered to be practicable or sustainable in this location. In any situation a barrier to protect a single property will have a poor cost/benefit ratio. Any barrier must also allow for access to be maintained to the property. At Hartwright House the access is directly off the Scheme therefore the necessary gap in the barrier would compromise the benefit of a barrier. Two further factors are also considered relevant. As demonstrated by the baseline noise survey, the existing noise climate includes the Didcot-Oxford rail line (Cherwell Valley Line) - including trains to the Hanson site private rail sidings, the former Wood Recycling Business and the access route into the FCC and Hanson sites. Therefore, ambient noise levels in this location are higher than indicated by the predicted Do-Minimum traffic noise levels, and the change in overall noise levels due to the Scheme will be lower than indicated by the increase in traffic noise alone. It is also noted there is some uncertainty over whether these properties will remain residential in the future due to the proposed D-Tech commercial development. Hill Farm is within the development boundary and Hartwright House just outside the boundary. Taking into account all of these factors further mitigation such as noise barriers, in addition to low noise surfacing and qualification for noise insulation, is not considered to constitute sustainable mitigation.

- b) **Level Crossing Cottage, Appleford** - Large increases in traffic noise are predicted at the rear façade of the property, which faces the Scheme. Mitigation in the form of low noise surfacing is included on this section of the Scheme, the sensitivity test indicates potential reductions of up to around 2 dB. Additional mitigation in the form of a 3 m noise barrier along the Scheme to the west of Appleford is also included in the Scheme design and extends past this dwelling, the barrier provides up to around 8 dB reduction in traffic noise from the Scheme at the property. As set out in the ES, increasing the barrier height to 4 m was considered but 3 m was concluded to be an appropriate balance between noise and landscape/visual impacts. It is also noted that, as demonstrated by the baseline noise survey, the existing noise climate in this location includes the Didcot-Oxford rail line (Cherwell Valley Line) - including trains to the Hanson site private rail sidings to the east, the access route into the FCC and Hanson sites to the west and the operation of the FCC landfill and Hanson quarry site. Therefore, ambient noise levels at this property are higher than indicated by the predicted Do-Minimum traffic noise levels and the change in overall noise levels due to the Scheme will be lower than indicated by the increase in traffic noise alone.
- c) **B4016 Appleford 19 properties south of allotments** – A reduction in traffic on the B4016 through the centre of Appleford results in a major decrease on eastern facades in the short term, this reduces to a minor decrease in the long term. Increases on the western facades due to the introduction of the Scheme are predicted in both the short term (minor/moderate/major) and long term (minor/moderate). Low noise surfacing is included on this section of the Scheme, the sensitivity test indicates potential reductions of up to around 2 dB. Additional mitigation in the form of a 3 m noise barrier along the Scheme to the west of Appleford provides up to around 5 dB reduction in traffic noise from the Scheme, reducing the number of properties anticipated to experience a moderate or major increase. As set out in the ES, increasing the barrier height to 4 m was considered but 3 m was concluded to be an appropriate balance between noise and landscape/visual impacts. It is also noted that the existing noise climate in this area includes the Didcot-Oxford rail line (Cherwell Valley

Line) to the west, including the Hanson site private rail sidings, which may reduce residents perception of the increase in traffic noise at the rear facades.

- d) **Warren Cottage, Thame Lane north of A415** – This individual property is located a considerable distance north of the proposed new roundabout on the A415 at the north-west edge of the Scheme (over 450 m). Major/moderate increases are predicted in both the short and long term, however the absolute traffic noise levels are low, $L_{A10,18h}$ traffic noise levels are below the Lowest Observed Adverse Effect Level (LOAEL) both with and without the Scheme. In any situation a barrier to protect a single property will have a poor cost/benefit ratio, and given the large distance between the A415 and the property any barrier would need to be a considerable length and would provide limited benefit. The property is located within a new development site west of Culham Science Centre, therefore new buildings will be constructed to the south between the property and the Scheme/A415. Future development roads and traffic are included in the traffic noise predictions but no building layout was available, therefore the shielding provided by new buildings located between the Scheme and the property is not included in the predictions, therefore the predictions are very much a worst-case approach. On the basis of the above factors additional noise mitigation is not considered to be sustainable at this location.
- e) **Fullamoor Cottages, A415 (two properties)** – A large reduction in traffic on the A415 to the south of the properties is anticipated, as it is bypassed by the Scheme, resulting in major decreases on the southern façades in the short term and moderate decreases in the long term. The introduction of the Scheme to the north results in minor/moderate increases on northern facades in both the short and long term. Mitigation in the form of low noise surfacing is included on this section of the Scheme, the sensitivity test indicates potential reductions of around 1 dB which would reduce the short term change on the northern facades to minor at both properties, the moderate increase would remain in the long term. Additional mitigation in the form of a 3 m noise barrier to the north is also included in the Scheme and provides around 5 dB reduction in traffic noise from the Scheme, reducing the magnitude of the short term impact from major with no mitigation in place. As set out in the ES, increasing the barrier height to 4 m was considered but 3 m was concluded to be an appropriate balance between noise and landscape/visual impacts.
- f) **Clifton Hampden northern edge seven properties** – The introduction of the Scheme to the north west of the edge of the village results in moderate/major increases at some facades facing the Scheme in the short term, and moderate increases in the long term. Major/moderate/minor reductions are anticipated on facades facing the B4015 to the east as this section of road is bypassed by the Scheme. Mitigation in the form of low noise surfacing is included on this section of the Scheme, the sensitivity test indicates potential reductions of up to around 2 dB. Additional mitigation in the form of a 3 m noise barrier to the north provides up to around 5 dB reduction in traffic noise from the Scheme and reduces the number of major/moderate increases in the short term. As set out in the ES, increasing the barrier height to 4 m was considered but 3 m was concluded to be an appropriate balance between noise and landscape/visual impacts.
- g) **Two properties north of Clifton Hampden at north-east end of Scheme** – The introduction of the Scheme to the north west of the edge of the village results in moderate increases at some facades of these two properties (The Coppice and The Old Stables) in the short term and long term. Minor increases are anticipated at other facades. Mitigation in the form of low noise surfacing is included on this section of the Scheme, the sensitivity test indicates potential reductions of around 1.5 dB in traffic noise from the Scheme which would reduce the magnitude of impact to minor in the short and long term. As set out in the ES, an additional barrier on the north side of the Scheme at Clifton Hampden was considered but discounted as due to the distance to the two properties to the north, and the location of the properties at the end of the Scheme, a barrier would have very limited effect.
- h) **Four individual properties on B4015 between Clifton Hampden and A4074** – A minor increase in the short term is anticipated at two properties at Rough Lodge and two properties at Golden Balls, but increases to moderate in the long term. The properties are remote from the Scheme, the moderate increase in the long term is due to anticipated traffic growth on the B4015 from other developments in the area, not the Scheme directly,

therefore no noise mitigation within the Scheme design would change the impact at these properties.

“Clarification is sought over the impact of the development, during the operational stage, on the Premier Inn Hotel at the A4130 Milton Interchange. The ES concludes there would be a significant adverse effect resulting from operational traffic however goes on to conclude that mitigation is not necessary as the noise effect would arise from third party development rather than the scheme itself. Further justification for this conclusion is required along with further information about the full range of mitigation measures that could reduce the noise effects from the development, either in isolation or in cumulation with other developments. Where options for mitigation have been discounted, clear justification should be provided given the significance of the adverse residual effect.”

- 12.5 The traffic modelling used in the ES assumed that the access road to the south of the hotel had no traffic on it in the 2024 opening year Do-Minimum scenario (2024 DM) i.e., without the Scheme. With the scheme in operation, a flow of approximately 900 vehicles (18 hr annual average weekday traffic (AAWT)) was assumed in the 2024 opening year Do-Something scenario (2024 DS) i.e., with the Scheme.
- 12.6 This increase in traffic flow from zero to approximately 900 vehicles on the access road between the 2024 DM and 2024 DS scenarios resulted in a predicted increase in traffic noise levels at some sections of the closest part of the southern façade of the hotel of just over 3 dB, defined as a moderate increase (3.0 to 4.9 dB). The remaining sections of the closest part of the southern facade were predicted to experience an increase of just under 3 dB, classed as a minor increase (1.0 to 2.9 dB). The majority of the other facades of the various parts of the hotel buildings were predicted to experience a negligible (0.1 to 0.9 dB) increase in traffic noise. The *Design Manual for Roads and Bridges LA 111 Noise and Vibration* (DMRB), advises that moderate increases in traffic noise levels are normally classed as a likely significant adverse effect. Therefore, although only a limited part of the hotel was predicted to experience such an increase the ES adopted a conservative approach and identified a significant adverse effect at the hotel. It was however noted that the impact was due to traffic on an access road associated with another development and not due to traffic on the Didcot HIF 1 Scheme itself.
- 12.7 Following receipt of correspondence from the Premier Inn Hotel regarding the predicted traffic noise impact on the south side of the hotel with the Scheme in operation, further investigation into the planning status of the adjacent commercial development, and the assumptions in the traffic modelling used in the ES have been carried out. It is understood that the access road has been granted full planning permission and associated buildings have been granted outline planning permission. Therefore, these could be constructed and in use regardless of whether the Didcot HIF 1 Scheme goes ahead or not. The construction and use of the access road to the south of the hotel and associated commercial buildings is not linked to or dependent on the Didcot HIF 1 Scheme. The assumption in the traffic modelling used in the ES that no traffic would be on the access road in the 2024 DM scenario, compared to 900 vehicles in the 2024 DS scenario, was therefore unrealistic. The traffic modelling team have refined the traffic model in this location, and have identified that approximately 50% of the traffic flow on the access road in the 2024 DS scenario is likely to occur in the 2024 DM scenario.
- 12.8 Further traffic noise modelling has therefore been carried out, assuming a flow of approximately 450 vehicles (18hr AAWT) on the access road to the south of the hotel in the 2024 DM scenario. The results of this modelling indicate that the increase in traffic noise levels in the opening year at the closest part of the southern façade of the hotel to the access road are reduced to around 1.8 dB, a minor increase. Such an increase would not be identified as a significant adverse effect.
- 12.9 It is also worth noting that the absolute traffic noise levels on the southern façade of the hotel are not high with or without the Scheme. Traffic noise levels at the southern façade are predicted to be in the high 50 to low 60 dB $L_{A10,18h}$ range. Other parts of the hotel experience higher traffic noise levels, both with and without the Didcot HIF 1 Scheme.
- 12.10 To conclude, further investigation into the planning status of the access road to the south of the hotel and the associated commercial development, and the assumptions in the traffic modelling

used in the ES, has resulted in the traffic noise predictions being refined and a significant adverse effect is no longer predicted at the hotel.

Appleford Parish Council

- 12.11 Although not raised within the formal Regulation 25 letter, OCC (as planning authority) has requested that the following comment be addressed as part of this submission.

“Appleford Parish Council has provided comments regarding other developments in the Appleford area with regard to a mapped Noise Special Area at or around the Appleford Level Crossing. The PPG advises that these areas are a material considerations at Para 006, Ref ID 30-006-20190722:

Noise Action Plans (where these exist), and, in particular the Important Areas identified through the process associated with the Environmental Noise Directive and corresponding regulations should be taken into account. Defra’s website has information on Noise Action Plans and Important Areas. Local authority environmental health departments will also be able to provide information about Important Areas.

Please confirm if this was included within the baseline for the noise assessment for HIF 1.”

- 12.12 As set out in the ES, under the Environmental Noise Directive (END) Defra has completed strategic noise mapping of major roads, railways, airports and agglomerations across England. The mapping includes the A34, the A4130 between the A34 and the B4493, the A415 between Abingdon and Clifton Hampden, the Great Western mainline railway and the Didcot-Oxford rail line (Cherwell Valley Line). In the study area a single ‘Noise Important Area’ (NIA) (those areas most exposed to noise) for rail noise and two for road noise were identified in round three of the Defra noise mapping. NIAs are a material consideration in the planning process.
- 12.13 The rail NIA (ID 564) encompasses two houses at the southern end of Appleford. Responsibility for assessing the potential for implementing cost effective noise mitigation measures within rail NIAs is the responsibility of the DfT and the rail operator. The number of trains operating on the railway through the rail noise NIA (ID 564) which encompasses two houses at the southern end of Appleford is unrelated to the Scheme.
- 12.14 The two road noise NIAs are located on the A415 in Clifton Hampden to the west of the junction with Watery Lane (ID 13243) and on the A34 to the south of the junction with the A4130 at Milton Interchange (ID 4187). Responsibility for assessing the potential for implementing cost effective noise mitigation measures within road NIAs rests with either National Highways or the local Highways Authority, depending on who is responsible for the road. The NIA on the A415 (ID 13243) is the responsibility of OCC. The ES identifies that this NIA is anticipated to experience a major reduction in traffic noise in both the short and long term as this section of the A415 is bypassed by the Scheme. Responsibility for the NIA on the A34 (ID 4187) lies with National Highways. This NIA is anticipated to experience a negligible change in the short and long term, as traffic on the A34 is not significantly affected by the Scheme.

13. Agriculture & Soils

“Please clarify how the proposal has minimised as far as possible the loss of Best and Most Versatile (BMV) land through embedded mitigation and/or why alternatives that may result in a reduction in the loss of BMV land have been discounted. Chapter 3 of the ES and the DAS set out alternatives considered, however there is very limited reference made to agricultural land quality.”

- 13.1 As part of the iterative design process, a wide range of environmental constraints and opportunities have been considered during the Scheme’s development. Best and Most Versatile (BMV) land has been considered but, as part of the iterative design process, some environmental receptors are traded against one another. For example, one alignment may have noise impacts on residents at one location, and another may have lesser noise impacts but

may have greater heritage impacts. The design of the Scheme has struck a balance between different environmental impacts and effects, and the ability of the Scheme to achieve its objectives. This is acknowledged in Chapter 3: Assessment of Alternatives, paragraph 3.6.19 which states:

“Amendments to the new western alignment (pink alignment)”

The new western alignment featured a priority T-junction for Sutton Courtenay (see Figure 3.8), however traffic modelling showed that this resulted in queues and delays back towards the village, reducing the benefits of the Scheme on the existing river crossing at Sutton Bridge and Culham Cut, therefore a roundabout was included. In the first iteration of this design the roundabout was on-line on the existing B4016. This was subsequently moved off-line to reduce construction waste material, improve buildability, and reduce the requirement for traffic management during construction. This change to the alignment marginally increases agricultural land take on best and most versatile land as the new highway utilises more greenfield land rather than utilising the alignment of the B4016. However, the Scheme’s design incorporates the current B4016 road surface as a dedicated, two-way, cycle path, dedicated pedestrian footpath and shared pedestrian footpath and cycle way.”

“Please correct the Agricultural Land Classification colours on figure 11.2.”

- 13.2 A revised figure is provided in the ES Addendum.

“Please clarify whether the effects to existing farm holdings at Zouch Farm and Fullamoor Farm are reasonably likely outcomes or a worst-case scenario with reasoned explanation.”

- 13.3 Chapter 13 Population and Human Health assesses the impact of the Scheme on land holdings, including agricultural land holdings. Paragraph 13.10.30 and 13.10.31 state:

“The Scheme will result in the permanent loss of approximately 33.74 ha of agricultural land. As shown in Table 13.30, Zouch Farm, Fullamoor Farm and The Grange will all experience permanent significant adverse effects during the construction of the Scheme.

Although compensation is anticipated to be available, there can be no certainty that this will be used to reduce the adverse agricultural effects. Therefore, this assessment represents the worst case, which could be reduced if the owner and/or occupier is able, and chooses, to use compensation payments to replace assets.”

14. Minerals & Waste

“It is not clear from the application documents how restoration of the Sutton Courtenay Minerals and Waste Complex would be achieved given the fact the development would prevent the approved restoration schemes at the site from being implemented in full. Please provide further information about how it is anticipated the restoration of the affected parts of the complex would be secured, and details of any agreements in place with the landowners and operators of the complex on this matter.”

- 14.1 OCC as the applicant is working closely with the owners of the Sutton Courtenay Minerals and Waste Complex to deliver the Scheme. The applicant acknowledges that the Scheme will prevent the owners of the Minerals and Waste Complex from completing their approved restoration plans. The applicant has agreed with the owners of the Minerals and Waste Complex that they will submit Section 73 Applications to vary the restoration schemes to ensure the owners can fully comply with the approved restoration schemes.

“It is also not clear how the existing operations at the Sutton Courtenay Minerals and Waste Complex would be affected during the construction period for the development, including during the construction of Appleford Sidings Bridge. Please provide further information on this point.”

- 14.2 OCC as the applicant is working closely with the owners of the Sutton Courtenay Minerals and Waste Complex to deliver the Scheme and as such will ensure that the Complex remains

operational during construction of the Scheme. The construction phasing will be confirmed once a contractor has been appointed and the owners will be consulted during this process to ensure there are no adverse effects on the operation of the site.

“Further information is sought regarding how the impacts of the development on the settlement of 90-acre field have been assessed and taken into account in the ES and planning application. Details should be provided to enable the LPA to establish if mitigation measures are required to address any impacts on settlement, in the event that planning permission is granted.”

- 14.3 The EIA has been carried out in accordance with DMRB guidance and settlement is not a topic included within the guidance.
- 14.4 However, settlement has been considered as part of the design of the Scheme and the vertical alignment was optimised to limit the height of earthworks required over the landfill footprint and to ensure the associated impact due to settlements is minimal. See section 7.3.2 of the submitted Ground Investigation Report for further information.

15. Recreation

“Further information to describe the status of the playing field shown on drawing GEN_PD ACM ELS DGT_ZZ_ZZ_ZZ DR LV 0006 rev P03, including its current condition and use(s) and details of when the site was most recently used as a playing field.”

- 15.1 A separate response has been provided to address this comment, see Appendix T.

“Further information to enable an assessment of the application against paragraph 99 of the NPPF and Sport England’s playing fields policy. This should include details of any mitigation proposed to compensate for the loss of playing field. Please note that if no mitigation is proposed, information is required to explain the reasons for this and its justification with respect to national and local planning policy.”

- 15.2 The old RWE football pitch does not form part of the Vale of White District Council's baseline within the Playing Pitch Study (October 2015). As such, it is considered that there is no football pitch to replace, and no mitigation is proposed. Furthermore, the Playing Pitch Study confirms that football pitches will be provided by planning applications that come forward on the allocated housing sites within the Vale of White Horse Local Plan.

“Please clarify whether bridleway crossing points would be Pegasus crossings, rather than Toucan crossings as currently marked on the drawings.”

- 15.3 During Scheme development, a Pegasus crossing was originally proposed where the rerouted bridleway 373/24/40 (NCN 5) crosses the proposed new road within DSB. However, on further study of the surrounding equestrian network (there are no facilities suitable for horses south of the nearby Hawksworth roundabout) it was concluded that there would be no demand for a Pegasus crossing at this location. This conclusion was confirmed through discussions with the British Horse Society in 2021. As a result, the final design incorporates a toucan crossing.
- 15.4 Bridleway 106/3/10 will be positioned to the west of the carriageway. A new access road (Portway) is proposed south and west of the rectangular pond south of the level crossing where 106/3/10 will follow this new alignment. The restricted byway 106/4/10 will be shortened to the northwest corner of the rectangular pond. As the bridleway and restricted byway will be continuous on the western side of the proposed carriageway and access road. It was concluded that the proposed crossing by Hartwright House would have no demand for a Pegasus crossing, hence a toucan crossing is proposed. This conclusion was confirmed through discussions with the British Horse Society in 2021.

“Clarification is required over the proposed use of materials for multi-use routes, particularly those that are proposed for use by equestrians. The details of such materials can be secured through condition if planning permission is granted, however it is helpful at this stage to understand your intentions.”

- 15.5 It is proposed that a bound rubber/aggregate material will be used for the multi-use routes, with the specific material subject to a condition.

“Detailed drawings and/or inset drawings are required to illustrate those parts of the existing designated Public Rights of Way (PRoW) network that would be directly affected by the development, with details for proposed stopping up, diversions and other changes to the designated routes. The details should include but not be limited to the following affected PRoW:

- Footpath 243/3/10 at Stert Brook;*
- Bridleway 243/1/10 at Cow Lane;*
- Bridleway 373/24/40 (National Cycle Network 5);*
- Bridleway 106/3/10 between Collett Roundabout and Appleford Level Crossing;*
- Restricted Byway 106/4/10 to the west of Appleford Level Crossing;*
- Byway Open to All Traffic (BOAT) 373/10/70 along The Portway;*
- Footpaths 106/8/10, 373/31/10, 373/12/40 and 373/12/50 to the north west of Appleford; and*
- Footpaths 171/10/10, 171/6/10, 171/3/20, 171/3/30 and 171/5/10 to the north of Clifton Hampden.”*

- 15.6 A set of drawings have been produced to illustrate those sections of the PRoW network that will be affected by the Scheme. These are available in Appendix U. However, 373/10/70, 373/12/40, 373/12/50 and 171/3/30 are unaffected by the scheme.

“It is noted that a new bridleway link is proposed between National Cycle Network 5 and the Portway which would compensate for the loss of the existing route between Collett Roundabout and Appleford Level Crossing (Bridleway 106/3/10). However, paragraph 6.2.10 of the Transport Assessment (TA) states that the new bridleway link may be delivered by third parties. Please provide further details about the delivery of this link, the timetable for delivery, and the level of confidence that can be assumed over its delivery. Please also provide information about how bridleway provision from Collett Road northwards will be maintained if this element of the scheme is not delivered.”

- 15.7 As set out in the planning application material, planning permission is sought for a new bridleway connection between National Cycle Network 5 (NCN5) and the Portway. It is the Applicant's position that this bridleway will be delivered by a third party related to development in the area. The timetable for delivery is still to be confirmed. Provision for pedestrians, cyclists and horse riders is also proposed north-south adjacent to the new road, as shown on GA drawing Sheet 8. This provision will be provided by the Applicant and mirrors the existing bridleway provision (with the exception of a small section of bridleway which is not re-provided between Gravel Hill Farm and the Collett Roundabout). Where horse riders would like to travel south of Gravel Hill Farm and before the delivery of bridleway connection between NCN5 and Portway, horse riders will be able to utilise the proposed pedestrian/cycleways which will be a bound rubber/aggregate material as set out in paragraph 15.5, or utilise the existing highway network, which is standard practice where bridleways do not exist (as is currently the case in the vicinity of the Site). The Applicant has liaised with the British Horse Society and they are comfortable with the proposed materials set out in paragraph 15.5 which will enable horse riders to use multi-use routes where required. As such, there will be no adverse impact on NMUs within this part of the Site.

Please also review and respond to the detailed comments made by the Public Rights of Way Officer, summarised as:

- 1. Walk, Cycle, horse-ride assessment & review (WCHAR). The comprehensive nature of this is noted, but there are two points that need to be considered. Firstly the assessment is based on use-count surveys for one week in November. This could have been expanded to a set of survey periods that included spring and summer bank/public holidays and for a greater number of weeks. I am satisfied that the results of the survey are broadly sufficient. Secondly, the WCHAR extends to only 1km from the centreline of*

the development. Whilst the reasoning behind this is understood, sometimes there may be paths or users that could be affected by the development away from that boundary but are not included. I am satisfied that on balance there is no need to extend the survey distance.

2. *Route alterations. No changes to the public right of way's legally recorded direction or width must be made without first securing appropriate temporary or permanent diversion through separate legal process. For permanent diversions this is normally s257 TCPA 1990 but it may also be achieved through Side Roads Order. If the SRO forms part of the application then diversion proposals need to be shown. Temporary changes have their own lead times. PRow that will be unchanged still require protection and mitigation throughout the build processes. This either means the current line needs fencing off along with adequate stand-offs and surfacing, or additional mitigation identified in the CTEMP is employed.*
3. *Offsite mitigation s106. It is noted that there is consideration of public rights of way uses and that overall, access for NMUs will increase. Both these provisions are welcomed as addressing localised direct impacts of the scheme. It is considered likely that the roads network in the wider locality may experience an increase in traffic volumes as a result of this infrastructure scheme as well as the additional housing linked to it. Despite the mitigation in the scheme there may be additional demand for access away from traffic for recreational and leisure users. OCC Countryside Access will therefore monitor the impact of the scheme on the area access network and NMUs and will seek to secure funds from all sources for necessary improvement, extension and upgrades on highways and with 3rd party landowners in line with the aims of the adopted OCC Rights of Way Management Plan aims.*

15.8 (1) Noted, no action is considered to be required.

15.9 (2) Noted, the Public Rights of Way will be legally diverted under the correct mechanism. Retained PRowS will be fenced off as necessary, with the details of the fencing set out in the Construction Traffic Management Plan (CTMP) or CEMP.

15.10 (3) Noted, no action is considered to be required.

"Highways GA/Landscape Sheet 1: The proposed raised parallel NMU crossings on the two minor road arms appear to be very close to the new A4130 roundabout. I would ask that this is assessed under RSA 1/2."

15.11 The proposed parallel NMU crossings were part of the Road Safety Audit Stage 1. The Audit Team has examined and reported on the road safety implications of the Scheme and how it impacts on all road users, and there were no safety issues that were raised or identified at these crossings.

"Highways GA/Landscape Sheet 2: Footpath 243/3 needs to have access provided through the VRS/hedging to connect with the shared use footway/cycleway. A replacement sign needs to be installed, possibly indicating that the route is a cul-de-sac at the A34."

15.12 As part of the Scheme, footpath 243/3 would provide access to connect with proposed footway and cycleway. Replacement signs will be provided as required.

"Highways GA/Landscape Sheet 3: Although use of Cow Lane bridleway and routes onwards towards Didcot are not used by equestrians, the proposals shouldn't do anything to make access worse for them. From the plan it is clear that access is not being made worse."

15.13 Noted.

"Highways GA/Landscape Sheet 4: The Science Bridge might benefit from some kind of physical separation measures between vehicle traffic and NMUs to give confidence to users. As the shared foot/cycle path will be bi-directional there needs to be enough width in each lane to enable use by less confident users. There may also need to be headlight glare reduction so that NMUs are not dazzled by oncoming vehicle headlights. Speed management in the form of average speed cameras may be considered here given the close proximity to

NMUs and the presence of the drop the other side of the parapet. Please give consideration to this in detailed design or RSA. These are not grounds for objection just suggestions to consider."

- 15.14 Full height kerbs with 125 mm upstand have been proposed between vehicles and NMUs, which should deter an incursion into the cycleway by an errant vehicle. Additionally, a 0.5 m separation buffer is proposed between vehicle traffic and the cycleway, alongside this road with a 30mph speed limit.

"4. Highways GA/Landscape Sheet 5 (image extract below): It is assumed that the indicated parallel crossings' for NMUs are either signalised or NMu-priority? How will the left hand turn for road users prevent harm to NMUs? The overrun strip will extend the hazard area for NMUs and they will have to monitor traffic on the main road the junction. This may need reviewing."

- 15.15 In line with the principles of LTN1/20 (section 10.4.13), parallel crossings provide a legal priority to pedestrians and cyclists.

- 15.16 It is proposed that a coloured surfacing be applied across the mouth of the side road junction to highlight the cycleway and the potential presence of cyclists at this location. Also proposed raised table should provide sufficient mitigation.

- 15.17 The overrun strip is for the abnormal load vehicles only, which are only likely to be needed once every year and therefore not be an every-day hazard to the NMUs crossing. In addition to the above, based on the new Highway Code, the pedestrians and cyclist crossing at a junction have priority and traffic should give way.

"Highways GA/Landscape Sheet 6: The new bridleway/NCN 5 alignment seems to provide reasonable access for NMUs and ties in with other NMu route options."

- 15.18 Noted.

"Highways GA/Landscape Sheet 7: The Collett Roundabout and connecting routes seem to provide reasonable access for NMUs and ties in with other NMu route options."

- 15.19 Noted.

"Highways GA/Landscape Sheet 8: The proposed bridleway link is welcomed. A diversion/stopping up process is likely to be needed to remove or move bridleway rights from the access road/haul road onto the new route. The new bridleway's width, surface, fencing, furniture and signing should all be agreed with OCC Countryside Access. If agreement cannot be reached under s25 Highways Act 1980 then its creation should be achieved through s26Highways Act1990 Creation Order or inclusion in the Side Roads Order."

- 15.20 Draft orders are being prepared for the changes proposed to PRow under the Scheme.

- 15.21 OCC's Countryside Access team will be consulted on the bridleway features at the detailed design stage of the project.

"Highways GA/Landscape Sheet 9: The proposed bridleway link is welcomed. A diversion/stopping up process is likely to be needed to remove or move public rights currently running along the access road/haul road onto the new route. A TRO or stopping up process will be needed for the 'stub' PRow's running to Appleford railway crossing. In addition a legal process will be required to divert/stop up byway 373/10/restricted byway 106/4 rights along the haul road and replace these with a bridleway on a separate margin. The new bridleway's width, surface, fencing, furniture and signing should all be agreed with OCC Countryside Access. Given the presence of the haul road there needs to be physical separation measures between the shared use bridleway and the road (a combination of verge, vegetation and barrier is recommended) along with vehicle speed restraint measures."

Note that there is an aspiration for a grade-separated NMu crossing at Appleford railway line to provide access along the B4016 to the NCN and PRow network. This scheme could make provision for this facility to be included in the new highway so that access could be easily

retrofitted and activated. It is noted that the proposed Toucan crossing to the south of the new haul road junction could provide this future connectivity.”

- 15.22 Draft orders are being prepared for the changes proposed to Public Rights of Way under the Scheme. OCC's Countryside Access team will be consulted on the bridleway features at the detailed design stage of the project.
- 15.23 The preliminary design incorporates a verge between the bridleway and the access road to FCC and Hanson. Details can be discussed further with OCC's Countryside Access team once these aspects are being designed.
- 15.24 It is understood that OCC has identified a location east of Hill Farm for a potential footway/cycleway bridge over the railway. This would be compatible to connect with the parallel crossing proposed under the scheme adjacent to the Hill Farmhouse, but would not form part of this Scheme.

“Highways GA/Landscape Sheet 12 (image extract below): Access for cyclists between Sutton Courtenay and Appleford Station should be made easy as a result of this road development. I am concerned that a shared used cycleway is provided the whole way – this could use suitable PRow if there was not the space on the B4016 road, subject to permissions. There needs to be user controlled crossings at all points so that NMUs have priority.”

- 15.25 The proposed NMU routes between Sutton Courtenay and Appleford include a section of segregated footway and cycleway on the north side of the mainline between the River Crossing bridge and B4016 Appleford Road along the route of the existing road.
- 15.26 Controlled crossings are also proposed to enable NMU priority: a parallel crossing across B4016 Appleford Road junction which will assist pedestrians accessing footpath 106/8/10; and a toucan crossing across the mainline immediately north of the proposed Sutton Courtenay roundabout.

“16. The new Thames Bridge would benefit from physical separation measures between vehicle traffic and NMUs – possibly in the form of VRS or raised kerbing to give confidence to users. As the shared foot/cycle path will be bi-directional there needs to be enough width in each lane to enable use by less confident users. There may also need to be headlight glare reduction so that NMUs are not dazzled by oncoming vehicle headlights. Speed management in the form of average speed cameras should be considered here given the close proximity to NMUs and the presence of the drop the other side of the parapet. Note that there are likely to be many NMUs using this bridge as a destination so careful consideration should be made of providing a viewing area/refuge area so that these people stopping to not impact on moving NMUs. A personal example from a French Voie Verte alongside the River Loire is shown below where the road employs two types of physical separation barriers on different road types along the same route. I am not objecting to the proposal, just suggesting using an example from France where access for less confident users including accompanied young children can be made better.”

- 15.27 The cycleway on the River Crossing bridge would be separated from the carriageway by a 2.0 m wide, raised verge. It is now proposed to include a linear sedum blanket along this feature to soften the appearance of the bridge.
- 15.28 The bridge parapet adjacent to the footway will be 1.5 m high.
- 15.29 The incorporation of a viewing/refuge areas on the bridge could be considered further at the detailed design stage of the project, however there are complications in that creating a discontinuity in the parapet line could create an 'end on' collision hazard to errant vehicles.

“Highways GA/Landscape Sheet 13: See above for ‘refuge/viewing area’ comment. The proposed footpath access to the Thames is welcomed. This should be provided as a maintenance and emergency vehicle access route (with public footpath rights) – suitably surfaced to 2.5m+ width and with lockable anti-vehicle gates installed. Signage and other measures should give access for walkers and prevent cyclists and other types of user gaining access. The restriction area should have a facility for maintenance vehicles with/out plant trailers to pull in safely off the carriageway whilst gates are being unlocked.”

- 15.30 The proposed footpath access to the Thames Path will be combined with a vehicle route for maintenance access to the River Crossing bridge and the flood compensation area proposed upstream.
- 15.31 The details of access control measures will be discussed with OCC at the detailed design stage of the project.
- 15.32 The vehicle access can be combined with the access to the adjacent proposed drainage pond and the gate suitably positioned so the footway is not impeded by waiting vehicles.

“Highways GA/Landscape Sheet 16: This is a complex layout affecting a substantial area and I hope this can be rendered in 3d so that landscape, amenity and biodiversity benefits can be optimised. The layout needs to be logical and coherent for NMUs as well as road users. At this stage I am not asking for changes – merely to be able to see the layout please.”

- 15.33 See Photomontages, Viewpoints 26 and 27 submitted with ES Chapter 8: Landscape and Visual Impact.

“Highways GA/Landscape Sheet 19 (image extract below): The road arrangements necessitates a partial diversion of footpath 171/5 and its resurfacing. Part of the route of 171/3 is affected by a new road crossing it and the offline uncontrolled crossing point is noted. If it is within scope provision of a replacement footbridge between 171/5 and 171/6 could be considered along with surface and other improvements to the footpaths within the road corridor – 171/3, 171/5 and 171/6.”

- 15.34 It is confirmed that the scheme will result in a small diversion of footpath 171/5, and the stopping up of footpath 171/3 where it is crossed by the new road, pedestrians will use the new footways as part of the road and the offline uncontrolled crossing point. A replacement footbridge and other resurfacing of footpaths in the immediate area is not included within the scheme, as pedestrians will be able to use the new western footway along the new Clifton Hampden link road and the southern footway of the new Clifton Bypass road which will provide a shorter and more convenient route.

16. Utilities

“Further information to address the holding objection issued by National Grid in relation to the risks associated with the high pressure gas pipeline that would be affected by the development.”

- 16.1 AECOM met with National Grid 21st March 2022 and 3rd May 2022 to discuss their objection. During the call it was agreed that the objection could be removed. National Grid formally responded 10th October 2022 confirming no objection.

17. Cumulative

“Please provide clarification and justification for how sites allocated in the development plan have been considered within the ES assessment of cumulative effects and, similarly, how the future baseline for the scheme has been established. Please explain in your clarification how you consider this meets the requirements of the EIA Regulations.”

- 17.1 The assessment of cumulative effects has used guidance set out in Design Manual for Roads and Bridges (DMRB) LA 104, supplemented with the Planning Inspectorate Advice Note 17 (Cumulative Effects Assessment), to define zones of influence, and professional judgement. Paragraphs 17.4.19 and 17.4.20 of Chapter 17 Assessment of Cumulative Effects states:

“The following criteria is described within DMRB LA 104 guidance and has been used to identify those developments that are of sufficient scale to have the potential to result in cumulative effects in association with the Scheme:

- *Road projects which have been confirmed for delivery over a similar time-frame;*
- *Other development projects with valid planning permissions or consent orders, and for which EIA is a requirement; and*
- *Proposals in adopted development plans with a clear identified programme for delivery.*

17.2 In addition to the guidance in DMRB LA 104 listed above, any planning applications older than 3 years at the commencement date of the study have not been considered (i.e., 3 years prior to 2020 when the study started - thus only applications from 2017 onwards). The only exception is where a reserved matter or subsequent planning application has been submitted."

17.3 The DMRB also allows for the use of professional judgement, which is set out in LA 104, NOTE 2, page 18, that states *"There are no defined limits or criteria for selecting the list of projects for cumulative assessment. Professional judgement using Annex III of the EIA Directive 2014/52/EU [Ref 1.N] can be applied and justification provided for developments selected (and excluded)"*.

17.4 The Town and Country Planning Regulations (Environmental Impact Assessment) 2017 as amended in relation to cumulative effects state that assessment of cumulative effects should include existing and/or approved projects, and does not necessarily require consideration of allocations; *"A description of the likely significant effects of the development on the environment resulting from, inter alia: (e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;"* (Schedule 4, Part 5(e)).

17.5 Notwithstanding this, numerous allocations have been considered as part of the cumulative impact assessment, as detailed in Table 17.1.1 of Appendix 17.1 Cumulative Assessment of Other Developments. However, these have generally only been assessed within the ES where there is a clear identified programme for delivery, or where a planning application has been submitted for the site. Where an application has been submitted for a site and validated, this allows for an estimate of delivery based on known response times to applications set out by the Town and Country Planning Act (1990) and through professional experience of real world response times to applications. However, where an allocated site has no valid planning application and there is no indication of delivery within the Local Development Framework, such as Local Plans, then there is no clear identified programme for delivery associated with that site. There is also no guarantee that an allocated site will ever be delivered even after the Local Plan period has expired as a number of factors, such as economic depression, global security changes, global pandemics, consumer behaviour changes, could require business to re-consider investment in a site. Therefore, given this uncertainty such sites have not been considered within the cumulative assessment. Moreover, it would be disproportional to assess sites that do not have such basic information available as with a site area as large as the Scheme's, cumulative allocated sites could be numerous. Assessing all such sites without a clear identified delivery would not be proportional.

17.6 It should be noted that the long list (see Table 17.1.1 in Appendix 17.1) was reviewed by the HIF 1 project team at OCC and by the LPA (see Paragraph 17.4.22 of the Chapter 17). Moreover, the short-list was sent to the LPA and the HIF 1 project team at OCC to provide additional clarity on temporal scope of delivery programmes (the short-list did not include allocations without an application), this is documented in the Chapter 17 – paragraphs 17.4.25 and 17.4.26 state:

"For many developments, particularly site allocations, there is limited information available regarding the delivery programmes to understand temporal interactions with the Scheme. Both the LPA and OCC HIF 1 Project Team were consulted to provide clarity on temporal programmes of the developments included on the shortlist. Where uncertainty remained, a worst-case assumption of overlapping construction programmes (with the Scheme) and the development being fully operational by the Scheme Opening Year has been applied.

The shortlisted developments were determined in consultation with the LPA and the OCC HIF 1 Project Team and this took place at the same time as the review of the long list. The LPA responded via a formal pre-application advice note dated 7th May 2021...

- 17.7 The shortlisted developments were agreed with the Development Management Team Leader for the LPA (OCC), this is documented in the pre-application advice provided on the 7th of May 2021, which states *“All the schemes proposed for inclusion are agreed as ones which should be assessed for potential cumulative impacts”*. The LPA also provided additional commentary on two schemes that should be considered for inclusion in the short list of cumulative schemes. These are discussed within Table 17.3 of Chapter 17¹, in consideration of the LPA's advice and upon further review of the available information for this scheme, this scheme was included in the cumulative assessment, and it is shown on Figure 17.1 as ID 3.
- 17.8 Overall, it is clear that the cumulative assessment is in accordance with the EIA Regulations, specifically Schedule 4, Part 5(e). Moreover, it is clear that the short list of cumulative schemes has been considered thoroughly and that consultation was sought, and considered, from others, such as the LPA.
- 17.9 Similarly, the future baseline for the scheme has been outlined within each technical chapter where sufficient environmental information is available. Technical disciplines air quality and noise and vibration would normally outline the future environment, with respect to these disciplines, 15 years into the future without the scheme in place. However, SYSTRA, who operate the Paramics traffic model on behalf of OCC, have advised that due to the large number of developments in the area the traffic model reaches gridlock before the future assessment year in 2039, when the scheme is not included. Therefore, it is not possible to provide meaningful traffic data for the Do-Minimum future assessment year scenario (i.e., future year baseline without the scheme). Given this, other technical disciplines have only considered a future year of 2024 (operational year) where possible, for example, Chapter 9: Biodiversity.
- 17.10 With regard to providing an outline of future baseline, the EIA Regulations state, in Schedule 4, Part 3, *“A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge”*. Where possible, the future year baseline has been outlined within the technical chapters. All technical chapters have considered the impact of the Scheme's operation in 2024 and some have considered long-term effects, such as Chapter 8: Landscape and Visual Impact which has considered the impact of the Scheme 15 years after the Scheme becomes operational.

¹ Note the IDs have changed between the pre application advice and Table 17.3, as at this latter point, the short list had been further defined and a number of schemes removed, as agreed with Mr Periam. ID 8 as mentioned in the pre application advice letter is noted as ID 3 in Table 17.3 and in Figure 17.1. ID 134 as mentioned in the pre application advice letter is noted as ID 10 in Table 17.3 but not in Figure 17.1, as this scheme was discounted (the rationale for this is provided in Table 17.3)

Appendix A Regulation 25 Request

Appendix B Extended Cross Sections

Appendix C Long Sections

Appendix D Revised General Arrangement Drawings

Appendix E Revised drawing package; Drainage; Catchment; Utilities; Lighting; and Visibility

Appendix F Waterbody drawings

Appendix G Oversized Bridge Examples

Appendix H Swept Path Analysis drawings

Appendix I Impact Upon Abingdon Technical Note

Appendix J RWE Transport Assessment response

Appendix K Climate Change Position Statement

Appendix L OCC Climate Impact Assessment

Appendix M Flood Risk Technical Note

Appendix N Flood Compensation Area drawings

Appendix O OCC flows and volumes pro-formas

Appendix P Response to LLFA and District Council Comments

Appendix Q Acoustic barrier information

Appendix R Revised Biodiversity Net Gain assessment

Appendix S Air quality technical note

Appendix T Playing field response

Appendix U Public rights of way plans

Appendix V Revised Landscape Masterplans

Appendix W Revised Arboricultural Impact Assessment

Appendix X Habitats Regulation Assessment – No Likely Significant Effects Report

Appendix Y Appleford Sidings Road Bridge GA and Eastern Elevation

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Question from TDC:

"Impact upon Abingdon

There have been several representations made (and there is likely to be more from Members/TC's/PC's etc) about the impacts on Abingdon town centre, as a result of the HIF1 schemes and this is something I will have to address in my response. Obviously the Paramics Model stops just to the west of the existing Culham River Crossing and no further junction capacity modelling has been done for any of the junctions in the centre of Abingdon. I know that the County approach is very much looking towards decide and provide and therefore, would not expect larger capacity to be provided in this area, but for people to look towards the cycle infrastructure that is being provided as part of the scheme, however, for the purposes of transparency it would be helpful if you were to provide some clarification/justification about why no assessment has been done here, given that there are existing queues back along the A415 into Abingdon. Members may want to understand if the queues will remain/change as a result of the HIF1 schemes/if there is a net increase of vehicles travelling north along the A415 to Abingdon."

HIF1 Project Team Response:

Changes in flow to/from Abingdon

Any increase into/out of Abingdon is due to the growth in housing and employment in Didcot and surrounding areas, not due to HIF. The traffic impact on Abingdon from those housing and employment sites will be scrutinised by OCC TDC through the Transport Assessment in the planning application for each site. If mitigation is deemed necessary, which could include sustainable travel infrastructure and/or services, then TDC would secure this from each housing site. HIF1 is part of wider strategy to mitigate the impact of growth across a wide area which can only be delivered incrementally as funding becomes available, either through government grants or developer funding.

Walking and Cycling

The Scheme both directly delivers and indirectly enables a significant number of new and/or improved walking and cycling routes in the area. The provision of additional and improved NMU routes and crossing points will help to reduce the existing severance caused by the Great Western Mainline and River Thames. Connections to public rights of way will be provided, and safe access to and from new bus stops. This will help to engender modal shift away from the private motor car, particularly for commuting purposes for employment and education, but also for important access to amenities such as retail and healthcare, and for leisure trips. As explained below under 'Housing Sites', development sites in the area will be required to deliver additional NMU links which will connect with the HIF NMU infrastructure, in turn linking Didcot (and surrounding areas) to Abingdon with high quality NMU routes.

Public Transport

The HIF1 project relieves queueing at Sutton Bridge and Culham Cut, which in turn improves the journey time reliability for public transport using this route to/from Abingdon e.g. bus route 33. This makes using public transport to/from Abingdon more attractive, reducing the number of people choosing to drive into Abingdon. HIF1 also provides a new route for public transport to link areas of employment with existing and new homes improving bus services and journey time reliability to increase passenger numbers.

AQMA

Abingdon is subject to an Air Quality Management Area (AQMA), which uses traffic signals to control the centre to prevent excessive emissions. The signals hold vehicles outside the centre of town to enable it to operate without gridlock. This, in part, creates queuing on the peripheral approaches to Abingdon, for example the A415 from Culham. Until the vehicle fleet change away from petrol/diesel vehicles is sufficient to not require the AQMA, there is little that can be done to remove the vehicle queuing on the approaches to Abingdon Town Centre.

https://www.laqmportal.co.uk/aqma_maps/511_AQMA%20Abingdon.JPG



A34 Lodge Hill

The A34 Lodge Hill scheme at North Abingdon will enable rerouting of trips in Abingdon, particularly those with an origin in North Abingdon wishing to head south on A34, and those from the A34 with a destination in North Abingdon. This rerouting of trips and subsequent relieving of traffic could enable OCC to investigate options for the road system in the town in the future, once the AQMA falls away due to fleet change.

<https://www.oxfordshire.gov.uk/residents/roads-and-transport/roadworks/future-transport-projects/a34-lodge-hill-interchange>

<https://a34lodgehill.exhibition.app/>



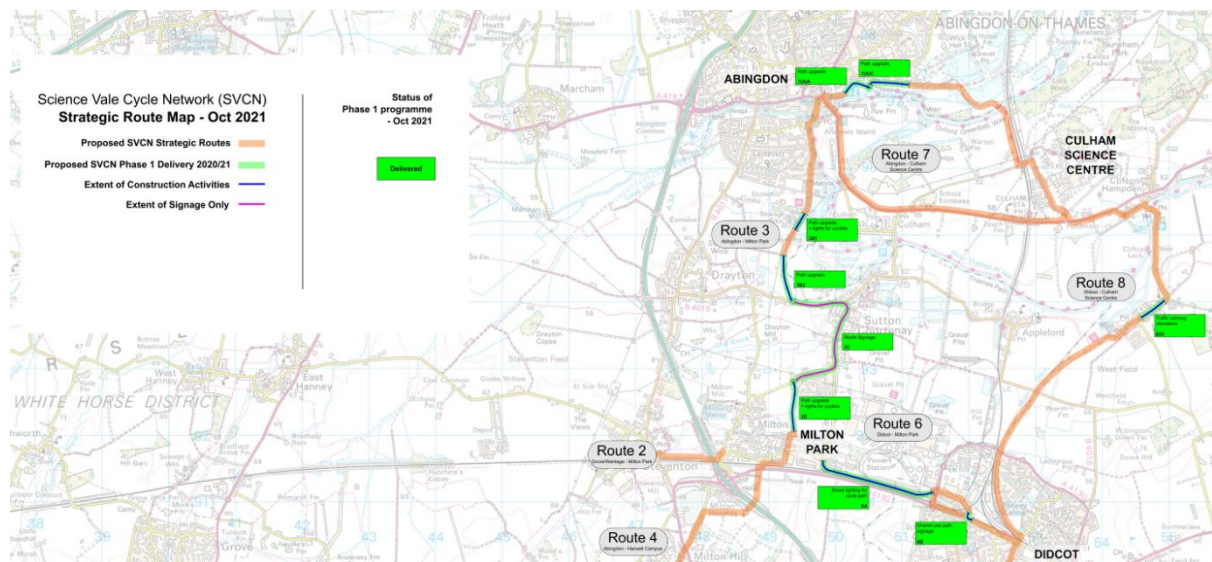
LCWIP

OCC is currently creating a Local Cycling and Walking Infrastructure Plan (LCWIP) for Abingdon alongside key stakeholders, which will identify the infrastructure improvements required in the town, which may include reprioritisation of road space.

SVATN

OCC has recently completed improvements to cycle routes in / near Abingdon through the Science Vale Cycle Network programme. A new study, Science Vale Active Travel Network (SVATN) will soon begin to further this, with the route between Abingdon and Culham (between HIF1 and Abingdon – called route 7 in the SVCN map below) being one of the routes to be studied.

<https://www.oxfordshire.gov.uk/residents/roads-and-transport/roadworks/major-current-roadworks/science-vale-cycle-network>



LTCP

OCC is currently working on updating the county's transport strategy in a new Local Transport and Connectivity Plan (LTCP). This will include a strategy covering Abingdon.

<https://letstalk.oxfordshire.gov.uk/LTCP>

Housing Sites

The housing sites allocated in/around Abingdon as part of Vale of White Horse Local Plan Part 1 are currently building out, and in different stages of delivering their offsite mitigation measures,

including pedestrian and cycle routes. These sites are also obligated to pay towards improvements to bus services in Abingdon.

The Dalton Barracks housing site, allocated in Vale of White Horse Local Plan Part 2, will also have to deliver sustainable transport improvements in Abingdon including pedestrian and cycle infrastructure, and improved/new bus services.

The land adjacent to Culham housing site, allocated in South Oxfordshire District Council Local Plan, will have to assess its impact on Abingdon and mitigate as appropriate. This will include sustainable transport improvements in/around Abingdon including pedestrian and cycle infrastructure, and improved/new bus services. The local plan policy states for that site:

“All necessary infrastructure, referring to the Infrastructure Delivery Plan, which is likely to include [...] provision for excellent sustainable transport facilities including, but not limited to [...] provision of a new cycle bridge and associated connectivity and paths across the River Thames to connect appropriately with Abingdon on Thames to the north of the site.”

- vi) all necessary infrastructure, referring to the Infrastructure Delivery Plan, which is likely to include:
 - a. new junctions onto the A415 and significant contributions towards the Clifton Hampden Bypass, the Didcot to Culham River Crossing, and upgrading the A4074/B4015 junction at Golden Balls;
 - b. provision for excellent sustainable transport facilities including, but not limited to, new and improvements to existing cycle and footpaths including contributions towards a 'Cycle Premium Route' that is proposed between Didcot and Culham; provision of a new cycle bridge and associated connectivity and paths across the River Thames to connect appropriately with Abingdon on Thames to the north of the site; bus improvements including provision of a scheduled bus service, with a minimum of two buses per hour between Berinsfield, Culham and Abingdon, with options to extend or vary services to locations such as Cowley, Chalgrove and Didcot;

The South Oxfordshire Local Plan 2034 Infrastructure Delivery Plan April 2020 update states:

CUL23	Transport	Culham-Abingdon cycle bridge	OCC / Developer	Direct Delivery	£6,580,000	Cost estimate identified by OCC from Science Vale cycle route feasibility work 2018.
CUL25	Transport	Bus service provision	OCC / Operators	Developer Contributions	£3,880,000	Cost identified by OCC based on pump priming three buses on a service Science Vale – Oxford Eastern Arc; one bus on service Abingdon – Culham – Berinsfield; and £1m to improve connections to the railway station (these possible services and the £720,000 per bus are subject to change).

<https://www.southoxon.gov.uk/wp-content/uploads/sites/2/2020/09/South-PSD27-Infrastructure-Delivery-Plan-April-2020-update.pdf>

Application no: R3.0138/21

Location: A linear site comprising a corridor between the A34 Milton Interchange and the B4015 north of Clifton Hampden including part of the A4130 east of the A34 Milton Interchange, land between Didcot and the former Didcot A Power Station and the Great Western Mainline, land to the north of Didcot where it crosses a private railway sidings and the River Thames to the west of Appleford-on-Thames before joining the A415 west of Culham Station, land to the south of Culham Science Centre through to a connection with the B4015 north of Clifton Hampden.

Transport Development Control

Recommendation:

Oxfordshire County Council (OCC), as the Local Highway Authority is currently recommending a holding objection to this planning application subject to the following:

- Receipt and review of additional requested technical information, prior to providing our final comments.
- The JCT audit highlighted a discrepancy in the modelling at the Ladygrove / Sires Hill junction (OFF13). The Arm names inputted by the modeller, indicate that Arm A was the WESTERN arm and Arm C was the EASTERN arm. However, as PICADY will assume Arm A is to the east and Arm C to the west, and thus the traffic flow assignment will be incorrect. OCC assume this is a labelling error and requires confirmation.

OCC Highways does not object to the principle of the HIF1 Scheme, which is supported by local, regional and national policy.

Once the further information detailed below has been received, this position will be reviewed and up-dated accordingly.

Conditions:

A list of recommended planning conditions to be imposed, will be provided with our final comments.

Comments:

1. Previous Response

1.1 In OCC Transport Development Control's first response, dated 28th February 2022, further technical information was requested.

1.2 This information remains outstanding and is required to ensure that the scheme not only is compliant with The Equality Act 2010, but that it meets the necessary design standards set down in the Design Manual for Roads and

Bridges (DMRB). Therefore, to undertake a full assessment of the HIF1 Scheme, OCC Highways requires the following additional information to be submitted:

- Long sections of all the schemes within HIF1, to ensure that they are compliant with The Equality Act 2010 and where they are not, ensure there are acceptable justifications for any departures from standard.
- Swept path analysis for a coach measuring 15m in length across the scheme.
- A revised drawing of the Abingdon Roundabout, shown on GA Plan 14. The three-lane layout on only part of the roundabout, as shown below, will increase the risk of vehicle conflict at the two locations circled red. This must be resolved and/or operational clarification is required as to why only 3 lanes have been provided for part of the roundabout.



- 1.3 Once this additional information is received, it will be reviewed to enable our final Transport Development Control response to be issued.
- 1.4 The comments that follow, detail OCC Highways opinion on a range of transport related matters pertaining to this planning application.

2. Scheme Background

- 2.1 This planning application is seeking full planning permission for the dualling of the A4130 carriageway (A4130 Widening) from the Milton Gate Junction eastwards; a road bridge over the Great Western Mainline (Didcot Science Bridge); realignment of the A4130 north east of the proposed road bridge; construction of a new road between Didcot and Culham (Didcot to Culham River Crossing) including a road bridge over the River Thames; construction of a new road between the B4015 and A415 (Clifton Hampden bypass); and

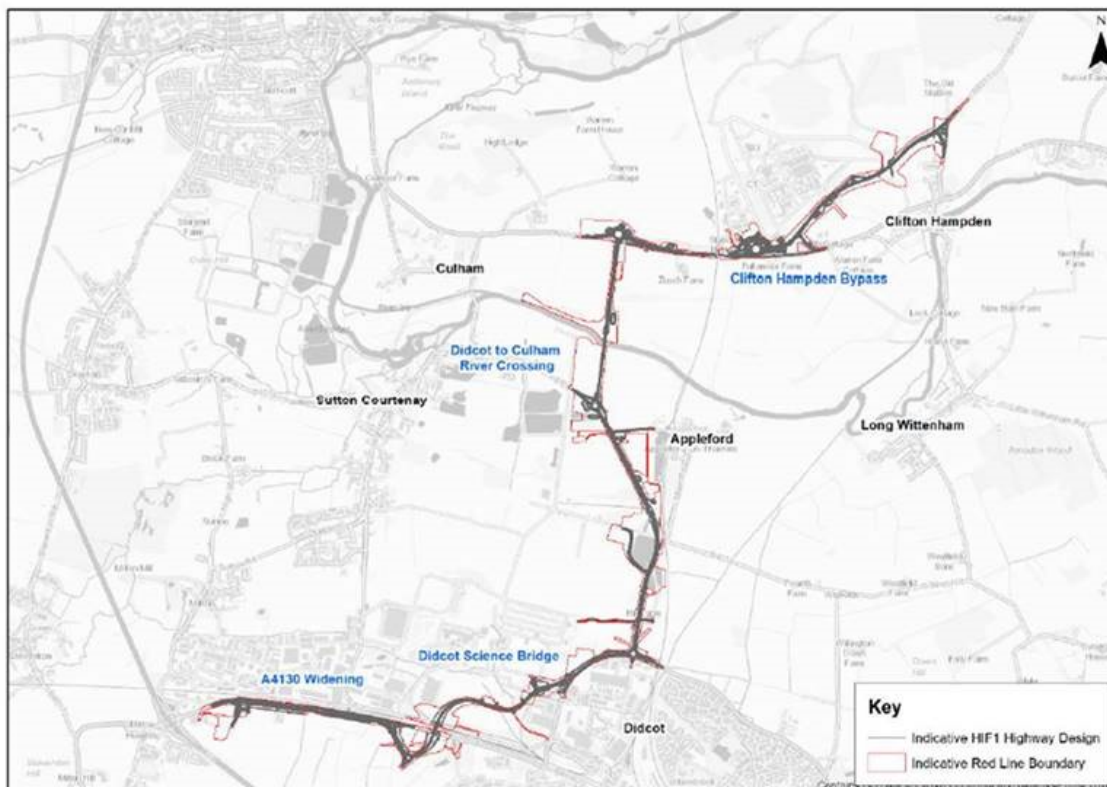
controlled crossings, footways and cycleways, landscaping, lighting, noise barriers and sustainable drainage systems.

2.2 The scheme package known as 'HIF1', is designed to improve access to and between future housing and employment growth in the local area, including enabling improved connectivity by walking, cycling and public transport. The scheme package is policy backed within Local Plans for both South Oxfordshire District Council (SODC) and the Vale of White Horse District Council (VoWHDC). The scheme package is also identified in OCC's Local Transport and Connectivity Plan 2022 - 2050 and is the cornerstone of mitigation for the planned growth in the area.

2.3 The HIF1 scheme package is essential for the economic and social prosperity of Science Vale UK, one of the first Enterprise Zones, in addition to other newer Enterprise Zones in the area. The HIF1 infrastructure will help to ameliorate the transport network issues resulting from historic housing and employment growth, as well as the future planned growth.

2.4 The proposed HIF1 scheme package is located in the Didcot area and runs between Milton Gate (in the west) and Clifton Hampden (to the north east) as shown in the below figure, extracted from the Transport Assessment (TA). The HIF1 scheme package is made up of four components:

- A4130 Widening;
- Didcot Science Bridge;
- Didcot to Culham River Crossing; and
- Clifton Hampden Bypass.



2.5 The HIF1 Scheme aims to address the following issues and opportunities:

- 1.1.1. Local and regional economy: The historic road network in Didcot and the surrounding areas is not currently fit for purpose and network pressure will be exacerbated with planned growth. There is severe congestion at key points, including where new and planned developments access the road network. The Scheme will unlock and support the delivery of circa 18,000 (including the circa 3,300 built out at Great Western Park) new homes in the area including affordable homes;
- 1.1.2. Local traffic issues: Didcot is a centre for distribution meaning there are more Heavy Goods Vehicles (HGVs) on the transport network than in other areas, adding to congestion and delay. There is also a need to plan now for all forms of travel, including modes that are only just starting to be tested (e.g. autonomous vehicles). Transport connectivity is poor in the area with limited and geographically constrained links making it difficult to travel between existing/ planned housing and employment sites;
- 1.1.3. Environment: To uphold its “Garden Town” status, developments within Didcot should positively protect and enhance the natural, built and historic environment; including making effective use of land including using brownfield sites, helping to improve biodiversity, using natural resources prudently, providing green infrastructure, addressing issues such as flood risk, climate change and minimising waste and pollution; and
- 1.1.4. People and local communities: There have been increasing traffic impacts on Didcot and the surrounding villages and their historic cores due to congestion, noise and air quality. The location of railway lines creates physical barriers between some housing and employment sites, including areas proposed for new development because of limited crossings, which are already reaching capacity. The River Thames is also a barrier with limited bridge/constrained historic crossings. The HIF1 Scheme will facilitate new movements across the Science Vale area. The Scheme will provide direct, safe and convenient walking cycling infrastructure across its full length and opens up opportunities for new and improved bus routes and for further improved peripheral walking and cycling connectivity.

3. ***Policy background***

- 3.1 The application is supported by South Oxfordshire District Council (SODC), the Vale of the White Horse District Council (VoWHDC), and Oxfordshire County Council (OCC) policies, including:
 - 1.1.5. VoWHDC Local Plan 2031 (Part 1 and Part 2) (Core Policy 17 and 18)
 - 1.1.6. SODC Local Plan 2035 (Policies TRANS1b and TRANS3, and the South Oxfordshire Infrastructure Delivery Plan)
 - 1.1.7. OCC’s Local Transport and Connectivity Plan (LTCP) – Science Vale Area Strategy policy proposals SV 2.6 (Science Bridge and A4130

Widening), SV 2.13 (Clifton Hampden Bypass), and SV 2.16 (Didcot to Culham River Crossing).

3.2. The Transport Assessment (TA) also refers to a range of other policies at the local, regional and national level which further support the application.

4. Housing and employment growth

4.1. The Scheme is essential to support housing and employment growth in the area that is both already consented and planned future growth. The new infrastructure will help to alleviate both existing and forecast transport network problems in the area.

4.2. As described in the TA (paragraph 8.1.3), the railway and the River Thames create severance to effective travel movement and barriers to connectivity between homes, jobs and amenities. That coupled with existing congestion has already resulted in OCC objecting to the applications of even single dwellings. These objections have led to Local Planning Authority (LPA) refusals which have been upheld at appeal by the Planning Inspectorate. A further example is given of a VoWHDC Local Plan strategic allocation for 200 new homes that was refused planning permission on similar grounds. This demonstrates that the constrained highway network has therefore already negatively affected growth in the area and indeed new planned growth will exacerbate this.

4.3. Didcot and the surrounding area will deliver around 15,000 new homes up to 2040 in addition to circa 3,300 already built out at Great Western Park. The delivery of planned strategic residential sites will be enabled by the schemes, as well as helping to mitigate the resultant traffic generated by these new developments. The delivery of planned employment growth within Science Vale of circa 20,000 new jobs by 2031 will also be facilitated by the proposed new infrastructure.

4.4. It should also be noted that it is not appropriate that HIF1 schemes aim to address every problem on the transport network in Didcot. HIF1 is part of a wider strategy in the town and wider Science Vale area. This wider strategy also includes Didcot Northern Perimeter Road phase 3 (NPR3), Didcot Central Corridor, Golden Balls junction improvements, the Didcot Local Cycling and Walking Infrastructure Plan (LCWIP), the Science Vale Active Travel Network as well as strategic public transport enhancements, which will work together to alleviate the impacts of increased traffic generated by the large amount of growth in the area. It will also allow for more active travel focussed and public transport schemes to be delivered within Didcot itself and the wider area.

5. Evaluation of Transport Impacts

5.1. The Evaluation of Transport Impacts (ETI) undertaken by OCC as part of the evidence base for the VoWHDC Local Plan 2031 (Parts 1 and 2) and the SODC LP 2035 all assume that the HIF1 schemes have been delivered by the end of the applicable plan periods. As such, they are identified as a

fundamental part of the mitigation strategy to address both existing and forecast transport network congestion and to facilitate the delivery of the growth allocated in these local plans. These ETIs were undertaken using the Oxfordshire Strategic (transport) Model (OSM).

- 5.2. Lending further weight to this, in the Inspector's Report (dated 30th November 2016) on the Examination into the VoWHDC Local Plan 2031 (Part 1), it was recognised that the package of mitigation to support the plan, which includes the HIF1 schemes, identified in the ETI (para. 144, p.39), "...would largely mitigate the impacts of the proposed new development in the district, albeit that some congestion issues would remain." This assessment was undertaken before the production of the SODC LP 2035, the subsequent identification of this additional growth helped to inform a review and update/upgrade to the HIF1 schemes as previously modelled in order to address the resultant impacts. In the Inspector's Report (dated 27th November 2020) on the Examination of the SODC LP 2035, it was recognised that the package of mitigation to support the plan, which also includes the HIF1 schemes, identified in the updated ETI (para. 214, p.214), would:

"...enable STRAT8 [Culham Science Centre], STRAT9 [Land Adjacent to Culham Science Centre] and STRAT10 [Berinsfield Garden Village] to proceed. They are part of a wider highway strategy to support the delivery of housing growth in the wider Didcot Garden Town area and to mitigate the impact of existing, approved and allocated developments."

6. Local Plans and Five-Year Housing Land Supply

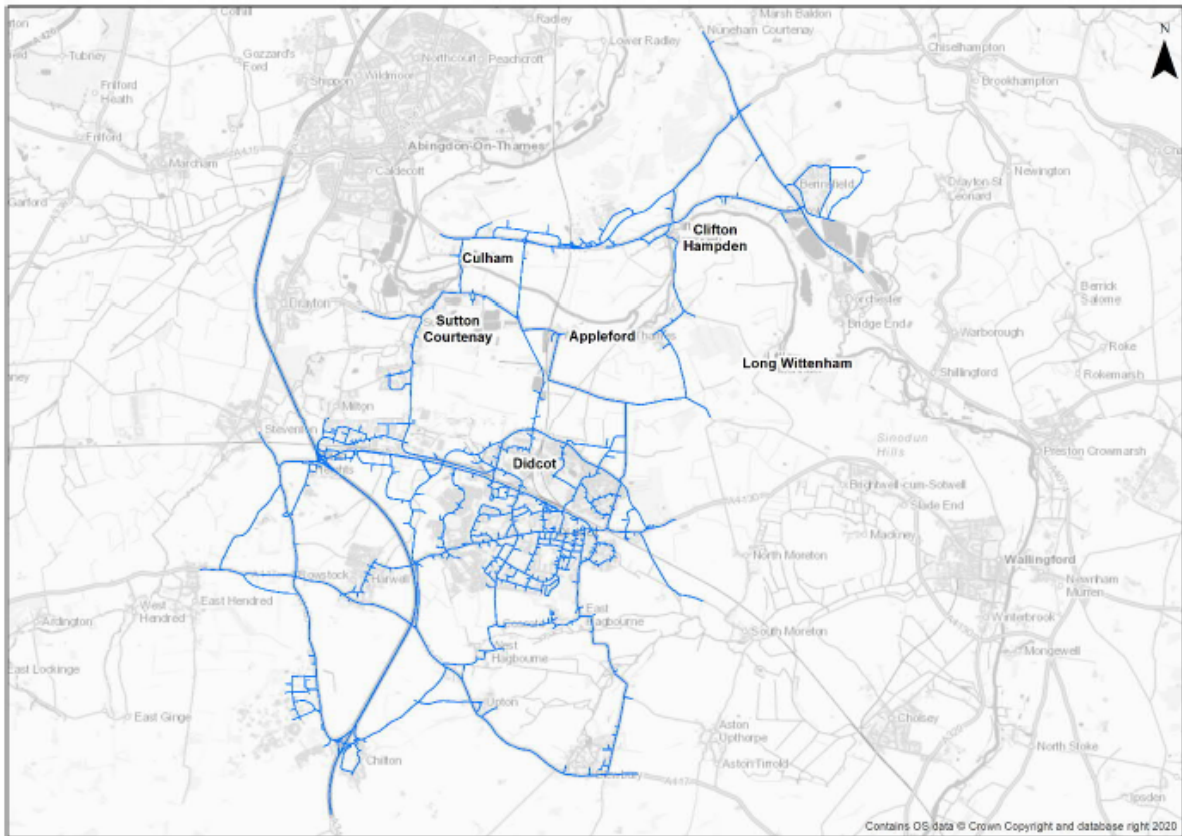
- 6.1. Given the commentary provided above on the ETIs, the County Council's view of the soundness of the Local Plans is, in this respect, predicated on the assumption that the HIF1 schemes are delivered. If the progress of allocated and permitted residential developments in the area, such as 'Land Adjacent to Culham Science Centre' (3,500 dwellings) and 'Land at Berinsfield Garden Village' (1,700 dwellings), is stymied by a delay to the delivery of the HIF1 schemes or in a scenario in which they are not delivered at all, this will fundamentally undermine the delivery of the locally planned growth; five-year housing land supply will be affected.
- 6.2. According to the latest Housing Land Supply Statement for the VoWHDC (dated June 2021), the district council can demonstrate a 5.04 years' supply of housing land. The Housing Land Supply Statement for SODC (dated June 2021) states that the council can demonstrate a 5.33 years' supply of housing land. In both cases, this includes an assumption that developments affected by the delivery of HIF1 are delivered according to an anticipated trajectory. With this in mind, the current housing land supply position is sensitive to any delays in housing delivery and could be undermined by issues stemming from delivery of the HIF1 schemes.
- 6.3. It is possible that, without HIF1 schemes, other potential strategic sites that were not included in either Local Plans will present themselves as viable alternatives, or that there will be an increase in planning appeals.

7. *Housing and Growth Deal and Oxfordshire Plan 2050*

- 7.1. As stated in the Outline Agreement for the Oxfordshire Housing and Growth Deal, Government's commitment to provide funding to help facilitate the ambitious growth targets is contingent on Oxfordshire (i.e. the four district councils, Oxford city council, and the County Council) planning for 100,000 new homes between 2011 and 2031 and submitting and adopting a joint statutory spatial plan.
- 7.2. As the delivery of this housing target is dependent on the growth allocated in the adopted Local Plans across the county (plus more to be planned in the Oxfordshire Plan 2050), if the HIF1 schemes are not delivered this will render much of the growth allocated in the VoWHDC Local Plan 2031 and SODC LP 2035 undeliverable.

8. *Modelling Assessment Methodology*

- 8.1. In order to undertake the junction assessments, traffic data has been obtained from the Didcot Paramics microsimulation model (sometimes referred to as the Didcot Garden Town Model or DGT Model). This model is run on behalf of OCC by Systra.
- 8.2. Data extracted from the Didcot Paramics microsimulation model was provided to AECOM by OCC/Systra for the assessment of transport impacts on the road network.
- 8.3. The model area extends from the A417 east of East Hendred in the west, through to A4130 Hadden Hill in the east. The network includes the A34 (Chilton Through to Milton Interchange), and up to A4074 Golden Balls Roundabout in the North. The Paramics model extent is shown in Figure 5.1 in TA and is provided below.



- 8.4. OCC are satisfied that the development of the base model is robust and meets the necessary compliance, as detailed in the Systra report 'Didcot Microsimulation Base Model Development Report' (2018). Traffic demands were informed by data from OSM to ensure that the traffic patterns within the study area were as consistent as possible with those in the strategic model. Journey time data was utilised to validate the model against WebTAG criteria.
- 8.5. The model includes housing and employment completion trajectories as supplied by the relevant LPAs (VoWHDC and SODC). These were updated in June-August 2020, in preparation for the work to support this planning application. Table 5.1 and Table 5.2 in the TA show the additional residential units and employment floor area assumed to be complete over the 2017 base year for the 2020, 2024 and 2034 scenarios, all of which were agreed with OCC.
- 8.6. In addition to the Proposed Scheme infrastructure in the 'with HIF scheme' modelling, the infrastructure outlined in Table 5.3 of the TA has been included in the Paramics modelling. The infrastructure outlined in the table is cumulative and therefore once present in the modelling is also present for any future year scenarios, as agreed with OCC.
- 8.7. The AM and PM peak hours identified from the flow turning counts are 08:00-09:00 and 17:00-18:00. Systra provided these flows, which have been used to inform the individual junction modelling presented in the TA.

8.8. Figure 5.2 provides a modelling approach overview. It shows how the model has been run for each of the future years and is a useful diagram, which clearly articulates the modelling steps/decisions that have been made during this assessment process.

8.9. It should be noted that the model for the 2034 scenario assumes 100% demand of existing trips present in the 2017 base (it assumes existing residents in the model area do not change travel patterns) and 80% of demand for new growth (associated with new developments). The justification for this approach was agreed with OCC for the following reasons:

8.9.1. As the model uses a generic trip rate across all development in the area, a demand reduction was required to align the trip generation with trip rates that have been recently accepted by OCC for planning applications in Didcot (as shown in table 5.4 on the TA). As shown in table 5.4, the Paramics Model trip rates for the AM and PM peak hours, is higher than those agreed for Didcot North East (P15/S2902/O), Valley Park (P14/V2873/O) and South of the A4130 (P16/S3609/O).

8.9.2. It is assumed that the Didcot Garden Town principles will continue to be enacted in this area over the next 14 years, increasing the usage of sustainable modes of travel. Modal shift from these developments later in the plan period (over a decade away) is more likely as they are coming alongside significantly improved pedestrian / cycle / public transport provisions. The Paramics model is not multi-modal so cannot automatically account for improved Non-Motorised User (NMU) infrastructure, therefore a demand reduction is used as a proxy.

8.9.3. The largest new development sites follow good spatial strategies and are in more sustainable locations near public transport hubs and / or are located nearer the growing employment areas which will have significantly improved NMU routes.

8.10. When the model was initially run, it exhibited significant congestion in 2034 with the full development demand in place. To enable results to be extracted for comparisons, in the 2034 'without HIF' scenarios, the model has been run at 70% total demand (70% of everything, after the demand reduction explained in paragraph 8.9), as this value enabled the model to run without gridlock. Modelled journeys were able to be completed, and therefore data could be extracted. This data has then been factored back up to 100% to calculate the 'factored' flow e.g. how many vehicles would have wanted to go through that junction, if the network had not been gridlocked. As shown in Figure 5.2 of the TA, the 70% factoring exercise was not undertaken for the 2034 without HIF journey time and speed data presented in the TA. This approach was agreed by OCC.

8.11. This emphasises the fact that OCC cannot plan for 100% of demand at residential development sites; it is essential to plan for growth in active travel modes such as walking and cycling, as well as increased public transport use, to help to reduce the demand on the highway network and therefore traffic

levels. The information above also demonstrates the critical situation that the highways network in and around Didcot would be in without the HIF1 schemes, but with the existing and planned residential and employment growth in the area.

8.12. All major new and existing junctions along the route of the scheme have been included in the modelling assessment. For the purposes of the modelling assessment, any junctions forming part of the new scheme have been given the prefix 'SCH' and those that are off site to the scheme have been given the prefix 'OFF'.

8.13. The junctions that were agreed with OCC to be included in the junction modelling are:

Scheme Junctions:

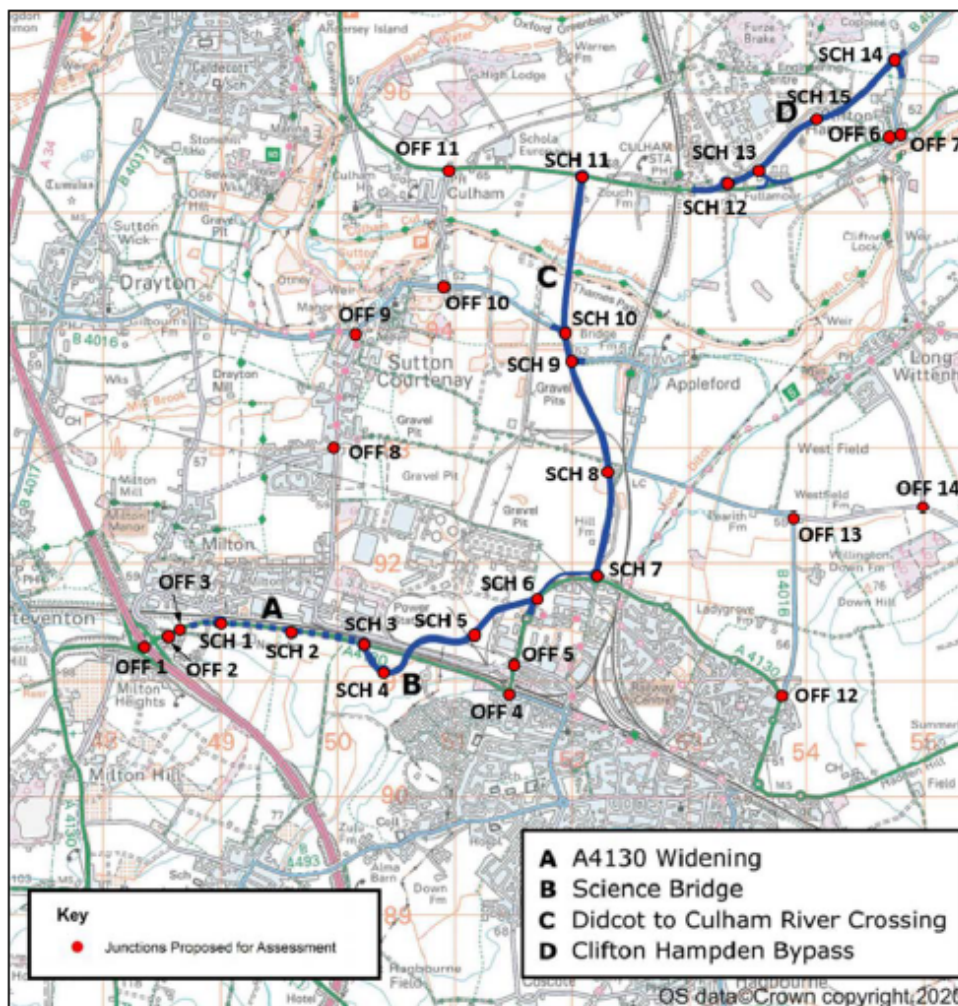
- SCH 1 A4130 / Service Area / North West Valley Park roundabout
- SCH 2 A4130 / Valley Park access signalised junction
- SCH 3 A4130 / Science Bridge Link roundabout
- SCH 4 Valley Park Spine Road / Science Bridge Link roundabout
- SCH 5 Science Bridge Link Road and New Purchas Road priority junction
- SCH 6 A4130 / Science Bridge priority junction
- SCH 7 A4130 / New Thames River Crossing / Collett roundabout
- SCH 8 New Thames River Crossing / Hanson and FCC Access Road priority junction
- SCH 9 New Thames River Crossing / B4016 priority junction
- SCH 10 New Thames River Crossing / B4016 roundabout
- SCH 11 New Thames River Crossing / A415 roundabout
- SCH 12 A415 / Clifton Hampden Bypass / Culham Science Centre roundabout
- SCH 13 Clifton Hampden Bypass / realigned A415 priority junction
- SCH 14 Clifton Hampden Bypass / B4015 priority junction
- SCH 15 Clifton Hampden Bypass / Culham Science Centre Access

Off-site Junctions:

- OFF 1 A34 / A4130 Milton interchange
- OFF 2 A4130 / Service Area priority junction
- OFF 3 A4130 / Milton Gate signalised junction
- OFF 4 A4130 / B4493 / Mendip Heights roundabout
- OFF 5 A4130 / Basil Hill Road / Milton Road (Power Station) roundabout
- OFF 6 A415 / High Street signalised junction (Clifton Hampden)
- OFF 7 A415 / B4015 Oxford Road signalised junction (Clifton Hampden)
- OFF 8 Harwell Road / Milton Road / High Street mini roundabout junction
- OFF 9 High Street / Church Street / Brook Street priority junction
- OFF 10 B4016 Appleford Road / Abingdon Road priority junction
- OFF 11 A415 / Tollgate Road signalised junction

- OFF 12 A4130 / Lady Grove priority junction / roundabout
- OFF 13 Lady Grove / Sires Hill priority junction
- OFF 14 Sires Hill / Didcot Road priority junction

8.14. The below map shows the location of the junctions:



9. Existing Highway Network

9.1. Junction Capacity Modelling

9.1.1. The performance of the priority junctions and roundabouts has been assessed by considering the Ratio to Flow Capacity (RFC) for each of the approach arms. An RFC value of 0.85 or below indicates that the arm is operating within design capacity. An RFC value of 0.85 to 1.00 indicates that the approach is operating above design capacity but within theoretical capacity, while an RFC value of 1.00 or more indicates that the arm is operating above theoretical capacity and significant queuing and delays may occur.

9.1.2. The performance of the signalised junctions has been assessed by considering the Degree of Saturation (DoS) for each of the approach arms.

A DoS value of 90% or below indicates that the arm is operating within design capacity. A DoS value of 90% to 100% indicates that the approach is operating above design capacity but within theoretical capacity, while a DoS value of 100% or more indicates that the arm is operating above theoretical capacity where significant queuing and delays may occur. The results for the LinSig models also present the Mean Max Queue (MMQ) in passenger car units (PCUs). The Practical Reserve Capacity (PRC) of the signalised junctions is also presented in the modelling results tables along with the cycle time for the AM and PM peak hours.

9.1.3. For the signalised junctions, information was obtained from OCC, as the local highway authority, regarding the existing signal timings including phasing, staging and intergreens. Junction operation has been optimised in LinSig, and cycle times have been set such that maximum green times for each phase as identified in the controller specification for the relevant time period are not exceeded. The input parameters for the junctions (cycle time, phase maximum, intergreens, etc) have been replicated for the 2024 and 2034 modelling without and with the Scheme, in order to provide a like-for-like comparison.

9.1.4. As stated in paragraph 8.5, the 2020 modelled flows were calculated by adding housing and employment completions from 2017 to 2020, as advised by the Local Planning Authorities, to the Paramics 2017 base model. These flows were then inputted into the junction capacity modelling software to inform the 2020 base year existing junction performances of all 'OFF' and 'SCH' junctions.

9.1.5. For the purposes of this report, each 'OFF' junction will be discussed in turn. As the 'SCH' junctions do not exist, they will be discussed in the future year modelling analysis.

9.2. OFF Junctions

9.2.1. OFF 1 Milton Interchange

9.2.1.1. This junction will be discussed separately in Section 11.

9.2.2. OFF 2 A4130 / Service Area

9.2.2.1. Table 3.5 in the TA, indicates that this junction has AM and PM RFCs at their highest of 0.60 and 0.55, meaning that the junction is operating within capacity.

9.2.3. OFF 3 A4130 / Milton Gate Signalised Junction

9.2.3.1. Table 3.6 in the TA, indicates that the junction operates within capacity in the AM peak hour with a PRC of 7.4% and a maximum DoS of 88% on the A4130 East ahead and right movement. The junction operates within theoretical capacity in the PM peak hour with

a PRC of -2.0% and a maximum DoS of 92% on the A4130 ahead and east movement.

9.2.4. OFF 4 A4130 / B4493 / Mendip Heights

9.2.4.1. The ARCADY model outputs, shown in table 3.7 of the TA, indicate that the junction operates within capacity with an RFC of less than 0.85 in both peaks.

9.2.5. OFF 5 A4130 / Basil Hill Road / Milton Road (Power Station)

9.2.5.1. The results shown in table 3.8 of the TA, indicate that the A4130 (South) operates within capacity in the AM peak, with an RFC of less than 0.85. In the PM peak junction capacity is exceeded, with the RFC on the Milton Road approach at 1.16 and a queue of 77 vehicles. This results from the difficulty in turning out from Milton Road due to the high flows in the PM peak, which makes the model very sensitive to the levels of flow for this arm and the reported queue lengths become less reliable.

9.2.6. OFF 6 A415 / High Street (Clifton Hampden) and OFF 7 A415 / B4015 Oxford Road (Clifton Hampden)

9.2.6.1. These two signalised junctions have been considered together, as they operate as part of a signalised staggered junction.

9.2.6.2. The results shown in table 3.9 of the TA, indicate that the junction operates above capacity in both the AM and PM peak hours, with PRCs of -241% and 273% respectively and significant queues reported on the A415 and High Street. The maximum DoS reported is 335.8% on the A415 Dorchester East approach in the PM peak hour.

9.2.7. OFF 8 Harwell Road / Milton Road / High Street

9.2.7.1. The results shown in table 3.10 of the TA, indicate that the junction operates within capacity with a maximum RFC below 0.85 in both peaks.

9.2.8. OFF 9 High Street / Church Street / Brook Street Junction

9.2.8.1. This junction is formed out of three small priority junctions forming a triangle, and each junction has been assessed separately.

9.2.8.2. The results in table 3.11 of the TA, indicate that the junction operates within capacity with a maximum RFC of less than 0.85 in the AM peak hour. In the PM peak, the junction operates above absolute capacity with a maximum RFC of 1.19 and right turn queue of 47 vehicles. This is a result of the difficulty in turning out of the junction due to the high flows on Brook Street / Church Street and makes the

model very sensitive to the levels of flow for this movement. The reported queue lengths therefore become less reliable.

9.2.9. OFF 10 B4016 Appleford Road / Abingdon Road and OFF 11 A415 / Tollgate Road Signalised junction

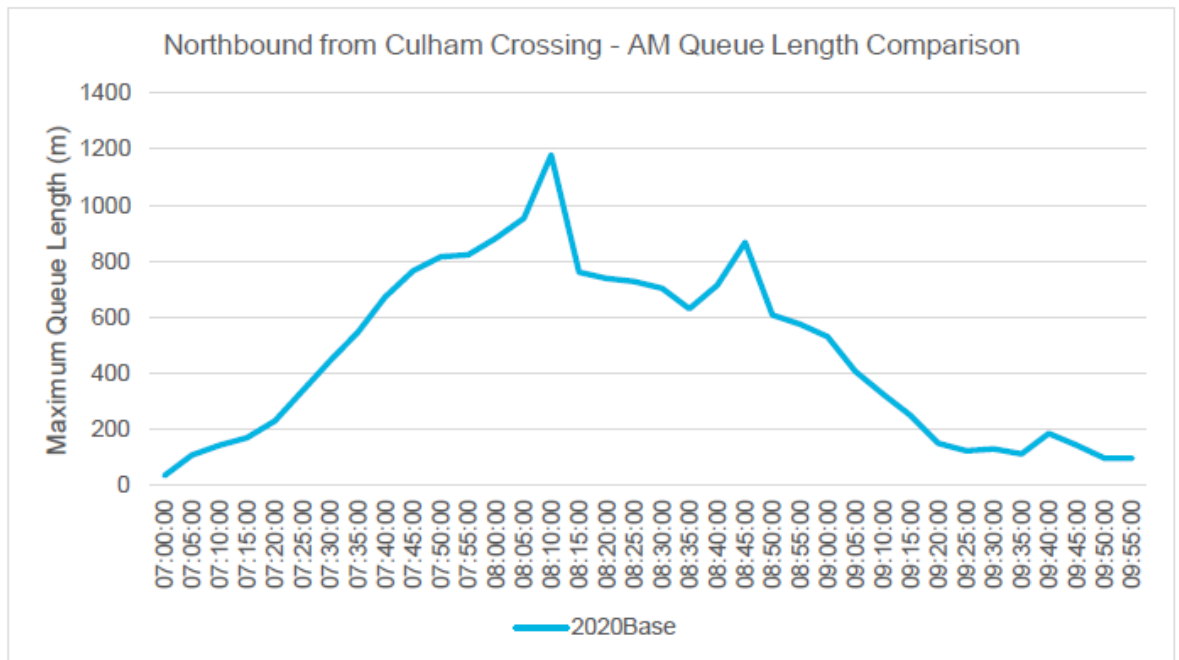
9.2.9.1. The operation of the B4016 Appleford Road/Abingdon Road junction (OFF 10) and A415 / Tollgate Road junction (OFF 11) have been assessed based on a LinSig network provided by OCC that includes both junctions, as well as the traffic signals that control single lane running across the Culham Bridges located between the two junctions.

9.2.9.2. LinSig does not allow for the effect of queuing back from one junction to an adjacent junction and the impact this can have on junction capacity. This is known to occur at the B4016 Appleford Road/Abingdon Road and A415/Tollgate Road junctions. To account for this, the model utilises the Underutilised Green Time function within LinSig.

9.2.9.3. The results in table 3.12 of the TA, indicate that the network is operating over capacity in both the AM and PM peaks, with PRCs of -22% and -14% respectively. In the AM peak long northbound queues are shown to occur at the Abingdon Road/Tollgate Road junction and at the Culham Bridges. In the PM peak queues are indicated on Abingdon Road (E) arm of the Tollgate Road junction and at the Culham Bridges in both directions.

9.2.9.4. These junctions are complex to model due to the interaction of queuing back between them, particularly the uncontrolled priority junction at the south. For example, the Culham Bridges northbound AM predicted queue is 51 PCUs which would queue back to/through Appleford Road / Abingdon Road priority junction, however LinSig does not take account of this as shown by the predicted queue of 0 PCU on the Appleford Road (W) arm. There is a known queue on this arm in the AM peak. To further interrogate this, queue lengths have been extracted from the Paramics model to compare how the junction operates across different model platforms. Paramics takes account of the whole modelled network including interaction between adjacent junctions. In Paramics, a vehicle is determined to be in a queue when the speed drops below 4.47 mph and the distance to the vehicle in front is less than 10 metres.

Figure 3.25: Culham Crossing Queue Length



9.2.9.5. Figure 3.25 from the TA, (replicated above) shows that the Paramics model indicates queue in the AM peak extending from the northbound signals before the bridge, back for 500m to 1180m across the 0800-0900 AM peak. This is known locally, with queues often extending past the George & Dragon Public House. The queueing in this area is the subject of OCC's objections to applications of single dwellings on grounds of highway safety, convenience and sustainability. These objections have led to Local Planning Authority (LPA) refusals which have been upheld at appeal by the Planning Inspectorate.

9.2.10. OFF 12 A4130 / Lady Grove Priority junction

9.2.10.1. The results in table 3.13 of the TA, indicate that the junction operates within capacity in the AM peak. In the PM peak the junction operates within capacity, although the maximum RFC exceeds the desirable maximum of 0.85 on the Lady Grove (North) arm, indicating that the junction is operating at close to its capacity.

9.2.11. OFF 13 Lady Grove / Sires Hill Priority junction

9.2.11.1. The results in table 3.14 of the TA, indicate that the junction operates within capacity in both the AM and PM peak hours. However, the maximum RFC exceeds the desirable maximum of 0.85 in the AM peak hour on the Lady Grove arm, indicating that the junction is operating at close to its capacity. The maximum RFC reported is on the Lady Grove to Sires Hill (west) movement with a maximum RFC of 0.95.

9.2.12. OFF 14 Sires Hill / Didcot Road

9.2.12.1. The results in table 3.15, indicate that the junction operates within capacity in both the AM and PM peaks, with the maximum RFC value being just 0.29.

9.3. In summary, there is evidence of a high level of congestion through parts of the highway network, most notably on the A4130, on the existing river crossings between Didcot and Culham/Clifton Hampden and within Clifton Hampden itself. The River Thames and the railway line act as barriers to connectivity and the existing infrastructure cannot keep pace with the demands being placed upon it from development in the area. As stated in paragraph 4.2, this congestion has led OCC to objecting to planning applications, leading to LPA refusals, which in turn have been upheld at appeal by the Planning Inspectorate.

9.4. The additional queue length data from the Paramics model used to support the analysis of the existing river crossing at Culham and Sutton Courtenay shows queues almost 1.2km long in the AM peak through Sutton Courtenay.

9.5. The next section of this report assesses the modelling results from the future year scenarios of 2024 and 2034, both with and without the proposed HIF Scheme infrastructure. As well as looking at the traffic impacts, importantly, non-motorised users (NMU's), who currently have to share a congested network in many locations with vehicles, will also be considered in the coming sections.

10. ***Junction Capacity Analysis for 2024 and 2034.***

10.1. JCT were commissioned by OCC to audit the modelling undertaken for the purposes of the HIF1 planning application. The modelling input / output information, to be audited by JCT, was included within the appendices of the Transport Assessment. OCC also provided other related files, such as the models and junction layout drawings.

10.2. The report titled, '*Technical Note 21047: "HIF1 Scheme Package" Model Audits*' (28th January 2022) is found in Appendix A

10.3. Modelling evaluations were run for the AM / PM peak periods in 2020, 2024 (with and without scheme package) and 2034 (with and without scheme package).

10.4. Each 'OFF' junction will be considered in turn, as per Section 9 above.

10.4.1. OFF2 A4130 / Service Area

10.4.1.1. A comparison between the geometry used in the model versus the geometry measured independently by JCT, found that the kerbed reserve width used in the model was too short, as it incorrectly appeared to represent the kerbed section between westbound traffic

and the right-turn bay. However, this parameter is to account for the impact on capacity for the right-turn out of the minor road. This movement is not permitted, and therefore this parameter should have no significant impact on the results.

10.4.1.2. Without the scheme, the model indicated traffic flows out of the site decreased in 2024 compared to 2020 during the AM peak, as did the right-turn into the site and eastbound traffic. However, these were all higher by the year 2034. All traffic flows increased during the PM peak by the years 2024 and 2034.

10.4.1.3. With the scheme, eastbound traffic flows increased. Westbound traffic also increased with the scheme in the year 2024 (compared to without the scheme), although the westbound flows were lower with the scheme by the year 2034, significantly so during the AM peak. Traffic flows into and out of the Service Area were lower with the scheme in 2034, with the AM RFC value decreasing from 0.60 to 0.35 for right turners into the site and 1.07 to 0.71 for the service area to the A4130.

10.4.1.4. The planning application modelling indicated that the junction would operate within capacity for all flow groups, except for the 2034 AM Peak without the scheme, in which an RFC of 1.07 was predicted on the Service Area. This was because the opposing westbound traffic flow was significantly higher in the scenario without the scheme compared to with it.

10.4.2. OFF3 A4130 / Milton Gate

10.4.2.1. The results shown in table 6.20 and 6.21 of the TA, indicate that without the HIF1 Scheme, the design capacity of the junction would be exceeded in 2024 in both peaks with a PRC between -2.4% and -4.5%, although the junction would still be operating within theoretical capacity. By 2034 junction performance would deteriorate further, with theoretical capacity exceeded in both peaks and significant queuing on both the A4130(E) and A4130(W) approaches. The PRC for the junction would decrease significantly to between -51.7% and -25.2%.

10.4.2.2. With the HIF1 Scheme, the junction is predicted to operate within theoretical capacity in 2024 and 2034, although the DoS on the A4130(W) and A4130(E) approaches is predicted to exceed 90%, indicating that the junction is approaching its theoretical capacity and resulting in PRCs of -5% and -6% in the AM and PM peaks respectively. The HIF1 Scheme creates a significant improvement in junction operation in 2034, with performance and queues similar to those in the 2020 baseline assessment.

10.4.2.3. JCT have made some recommendations to the LinSig modelling for this junction, which they say if made, the results are likely to

change significantly, especially if it was assumed Stage 4 does not run each cycle and a higher cycle time is permitted.

10.4.2.4. The modelled sequence was 1-2-3-4. This would be the most robust sequence, as it assumed that Phase F (the pedestrian phase across the westbound A4130) is called every cycle (Stage 4). However, if Phase F demand was expected to be low, then the model would provide unrealistically pessimistic results due to a significant reduction to westbound traffic (i.e., if Stage 4 were not demanded, the junction would move to Stage 1 and provide green to Phase B – the westbound A4130).

10.4.2.5. The model assumes a cycle time of 66 seconds in every scenario. However, this cycle time is relatively short, especially when it is assumed Stage 4 is called every cycle. Furthermore, it is likely reasonable to assume that higher cycle times would be acceptable, especially as traffic flows increase. Therefore, it is recommended that a maximum cycle time is agreed upon, and then each scenario run using this (to provide a consistent comparison between each). A cycle time of at least 120 seconds is often considered acceptable in general.

10.4.2.6. Saturation flows were predicted using the lane geometry, as described in TRRLs (Transport and Road Research Laboratory) Research Report 67. Lanes 4/2 (Milton Gate Offside) and 6/3 (A4130 East Right-Turn) were set as offside lanes. Although geometrically correct, this provides a higher saturation flow. It can be argued that an offside lane provides a higher saturation flow as it provides an opportunity for faster vehicles to overtake slower vehicles, although this is only true if both are going to the same exit. In these cases, the offside lanes are exclusively for right-turn traffic, which could include slower moving vehicles. Therefore, a robust approach would be to set these lanes as nearside lanes in the model.

10.4.2.7. As per paragraph 10.4.2.3, these are recommendations to improve the model, which can be taken forward to the technical audit stage. Given that the modelling results indicate the junction operation in 2034, has a performance and queues similar to those in the 2020 baseline assessment, OCC are content with the outcome of the modelling for this junction and do not require anything further.

10.4.3. OFF4 A4130 / B4493 / Mendip Heights Roundabout

10.4.3.1. An improvement scheme, as shown in figure 6.15 of the TA, has been proposed for this junction, as S278 works related to a nearby housing site, which is currently undergoing review by OCC Road Agreements Team. The future year assessments have been based on the proposed scheme.

- 10.4.3.2. The modelling results shown in 6.22 and 6.23 of the TA, indicate that the junction would be over-capacity in all scenarios without the scheme, particularly by the year 2034 with RFCs between 1.27 to 1.47 on the A4130 (N) and the B4493. With the scheme in place, the junction was predicted to operate within capacity for all scenarios, with the highest RFC of 0.73 on the B4493 during the 2034 AM peak.
- 10.4.3.3. JCT have identified that the approach turning radii used in the model for the A4130(N), B4493 and the A3130(W) were significantly higher than measured by JCT. The ARCADY measurements used in the modelling were illustrated in a provided plan to JCT. It appears these did not include consideration of the radii extending beyond the give-way line. However, the Junctions 9 User Guide explains that the maximum radii should be measured, from a point 25m upstream of the give-way line to a point 10m downstream of the give-way line.
- 10.4.3.4. The approach road half-width and effective flare length for the A4130(W) used in the model were different to those measured by JCT. However, the drawing did not extend far enough upstream of the junction for JCT to measure these. However, JCT accept that the values used in the model are likely to be reasonable.
- 10.4.3.5. The model does not account for the impact of potential unequal lane usage (i.e., it assumes traffic can balance evenly across the lanes on each arm). However, unequal lane usage may need to be considered as follows:
- A4130 (N): In all scenarios, the left and ahead movements are significantly higher than the right-turn and U-turn movements. Although the layout indicates traffic may go ahead from both lanes, the southbound exit appears to only be wide enough to be considered a one lane exit. Therefore, it is likely that most ahead vehicles will use the nearside lane on the approach. If all ahead traffic were to use the nearside lane, unequal lane usage may result in 74-77% of the predicted capacity across all flow scenarios. A more efficient set of lane markings may be to make the nearside lane left turn only, the impact of which could be modelled using the above lane-usage methodology.
 - A4130 (W): Without the scheme, the model indicated that the left-turn was heavy in all flow groups and would therefore, be the busiest lane (with all other movements able to spread across both the middle and offside lanes). With the scheme, the ahead movement was significantly higher than all other movements from this arm, and therefore most traffic would use the middle and offside lanes. It was unlikely unequal lane usage would need to be considered during the AM peak with the scheme, although all other flow groups would likely see reductions to available capacity.

- B4493: During the AM peak scenarios, there was a heavy right-turn from this approach, resulting in a substantial proportion of traffic using the offside lane. JCT analysis of unequal lane usage indicated that a capacity drop would need to be considered during the 2034 AM peak, with the scheme, of around 92%. It was shown that capacity reductions were unlikely to need consideration in all other flow groups.

10.4.3.6. It is acknowledged that if tweaks were made to the modelling in line with the audit comments from JCT, the model results would likely get worse, however, it is also acknowledged that when the junction is modelled with the HIF schemes in place, the RFC values of 0.32, 0.73, 0.20 and 0.58 in the AM peak and 0.53, 0.54, 0.08 and 0.34 in the PM peak are still likely to remain within the threshold demonstrated by a junction that is operating within design capacity. The with scheme results are significantly better than the without scheme results for 2034 and this would remain the case if the junction was remodelled.

10.4.3.7. When comparing the 'without' and 'with' HIF scheme scenarios through the junction in 2034, the vehicle flows reduce by a significant 44% in the AM peak hour from 4409 to 2451, respectively. Of note is the fact that the vehicles through the junction in 2034 with HIF are in fact 19% lower than those for the 2024 without HIF scenario. This is despite ten years' worth of background traffic growth anticipated and shows that the HIF scheme has not only been able to mitigate this 10 years' worth of traffic growth through this junction, but it also provides a betterment to what would have otherwise been without any HIF intervention.

10.4.4. OFF 5 A4130 / Basil Hill Road / Milton Road (Power Station)

10.4.4.1. An improvement scheme, as shown in figure 6.16 of the TA, has been proposed for this junction as S278 works related to a nearby housing site, which is currently undergoing review by OCC Road Agreements Team. The future year assessments have been based on the proposed scheme.

10.4.4.2. The modelling results shown in tables 6.24 and 6.25 of the TA, indicate that the junction would be significantly over-capacity without the scheme by the year 2034, with the A4130(N), Basil Hill Rd and the A4130(S) congested during the AM peak (RFCs of 0.94, 38.01 and 1.10 respectively), and the A4130(S) and Milton Rd over-capacity during the PM peak (RFCs of 0.98 and 1.11 respectively). The junction was predicted to operate well within capacity with the scheme, with the worst RFC of 0.65 on Milton Rd during the 2034 PM peak.

10.4.4.3. As was the case with the OFF 4 junction above, JCT have noted where parts of the model could be revised.

10.4.4.4. The approach turning radii used in the model for the A4130(S), and the Milton Rd were higher than measured by JCT. Also, the approach road half-width for the A4130 (S) of 4.08m was higher than the 3.3m measured by JCT. Although the drawing shows a width of 4.08m upstream of the give-way line, this measurement extends beyond the nearside kerb and therefore longer than the value that would be required for ARCADY. Using this higher value for the approach road half-width may be the reason for the shorter effective flare length used in the model than measured by JCT.

10.4.4.5. The entry width used for the Access arm was significantly higher in the model than measured by JCT, with a width of 14.4m. JCT measured a much shorter entry width of 7m, which was taken from the proposed offside island to the proposed nearside kerb, perpendicular to the kerb. The entry width used in the model would have influenced the effective flare length, which was also different to that measured by JCT.

10.4.4.6. Unequal lane usage in the model has also been considered as follows:

§ A4130 (N): The nearside lane is for left-turning traffic only, although the left-turn flow is significantly lower than the total traffic flows going to all other arms. Therefore, most traffic will use the offside lane in all scenarios. This means that unequal lane usage may result in 66-67% and 79%-90% of the predicted capacity for the AM and PM peak periods respectively, with the scheme. Without the scheme, the available capacity would be 57% during the AM peak and 58% during the PM peak.

§ Milton Rd: If it were assumed that traffic going to the Power Station, A4130(N) or Basil Hill Rd used the nearside lane, then more traffic would use the nearside lane in most scenarios. Therefore, unequal lane usage may result in 76-93% of the available maximum capacity predicted by ARCADY with the scheme, and as low as 87% without the scheme.

10.4.4.7. It is acknowledged that if tweaks were made to the modelling in line with the audit comments from JCT, the model results would likely get worse, however, it is also acknowledged that when the junction is modelled with the HIF schemes in place, the 2034 RFC values of 0.26, 0.54, 0.37, 0.34 and 0.19 in the AM peak and 0.15, 0.37, 0.15, 0.65 and 0.18 in the PM peak are still likely to remain well within the threshold demonstrated by a junction that is operating within design capacity. The with scheme results are significantly better than the without scheme results for 2034 and this would remain the case if the junction was remodelled.

10.4.4.8. When comparing the 'without' and 'with' HIF scheme scenarios through the junction in 2034, the vehicle flows reduce by a significant

41% in the AM peak hour from 4222 to 2472, respectively. Of note is the fact that the vehicles through the junction in 2034 with HIF1 are in fact 18% lower than those for the 2024 without HIF scenario. This is despite ten years' worth of background traffic growth anticipated and shows that the HIF scheme has not only been able to mitigate this 10 years' worth of traffic growth through this junction, but it also provides a betterment to what would have otherwise been without any HIF1 intervention.

10.4.5. OFF6&7 Abingdon Rd / Oxford Rd / High St

10.4.5.1. The results shown in table 6.26 and 6.27 of the TA, indicate that this junction is forecast to operate above capacity in 2024 without the HIF1 Scheme, with significant queuing in both AM and PM peaks and a PRC of -270% in the AM peak. By 2034, without the HIF1 Scheme, the operation of the junction would deteriorate further, with a PRC of -606% in the AM peak and -348% in the PM peak.

10.4.5.2. With the HIF1 Scheme there is a significant improvement in the operation of the junction. It is forecast to operate within capacity in both 2024 and 2034 with significantly reduced queues in the village, particularly from Abingdon Road (E).

10.4.5.3. JCT have highlighted the non-blocking storage for Abingdon Rd (E), for the right-turn into Oxford Rd, which was set as zero pcus. It is true that there is no storage for the right-turn to store without blocking unopposed westbound traffic. However, as LinSig is not a microsimulation model and able to model individual vehicles, this can potentially create significantly pessimistic results. JCT suggest an approach that takes account of this observation, by providing a 0.5 pcu nonblocking storage area in the model for the right-turn.

10.4.5.4. The model assumed the sequence 1-2-3-4-5, which assumed all stages are called every cycle. This is likely to provide overly pessimistic results, unless it is expected that heavy pedestrian flows will create a demand for these stages. Stage 3 is only required when there is a demand for pedestrian Phase H, while Stage 5 is only required when there is a demand for pedestrian Phase I (or for Phase E, although the model indicates there is no traffic from Watery Lane).

10.4.5.5. All Phase minimums were set to 7 seconds in the model. However, the controller specification form indicated that Phase E should be 5 seconds, Phase H should be 8 seconds and Phase I should be 6 seconds.

10.4.5.6. The model includes many phase delays. Phase delays (in most cases) are used to allow a Phase to continue green for a specified number of seconds after the stage it runs in terminates. However, several of these do not match those within the controller specification.

Many of the intergreens used in the model were lower than those within the controller specification.

10.4.5.7. If the modelling were updated to account for the above observations, the results would likely improve compared to those shown in the TA in table 6.26 and 6.27. Given that with the HIF scheme in place the vehicle flows are shown to reduce significantly in both 2024 and 2034 future years, due to this junction serving local traffic only, OCC Highways do not believe further modelling of this junction is necessary. The presented results are robust and provide a worst-case scenario, in which the 2034 PRC's of the junction are at +12% and +3% in the AM and PM with HIF1, compared to a staggering -606% and -348% with HIF1.

10.4.6. OFF8 Harwell Rd / Milton Rd / High St Mini-Roundabout

10.4.6.1. The results shown in tables 6.28 and 6.29, indicate that without HIF1 the junction would operate within capacity in 2024 but would be reaching theoretical capacity in 2034, with RFCs exceeding the desirable maximum of 0.85 in both the AM and PM peaks and operating with an RFC of 1.00 in the PM peak without HIF1.

10.4.6.2. With the HIF1 Scheme there is a significant improvement in the operation of the junction, and it is forecast to operate well within capacity in both 2024 and 2034 with minimal queuing.

10.4.6.3. The geometric parameters measured by JCT were generally similar to those used in the model, although the entry width and effective flare length for Harwell Rd was longer than JCT could measure from Google Earth. Even if the model were updated with the slightly different geometries, it is unlikely that the change in result would be significant and the overall conclusions would remain the same for the junction.

10.4.7. OFF9 High St / Church St / Brook St

10.4.7.1. The junction was modelled in Junctions 9 using three separate files:

- The southern section with the southbound High St give-way line – MODEL A.
- The north-eastern section with the High St right-turn into Brook St – MODEL B.
- The north-western section with the High Street left-turn into Brook St was modelled – MODEL C.

10.4.7.2. The reason that this junction has been modelled using three separate files is to account for the fact that you have three priority T-junctions that make up the triangular shaped junction layout.

10.4.7.3. JCT have highlighted a few minor anomalies between the geometric parameters used in the modelling and their observations. In Model A and B, this is a discrepancy between the visibilities used, which if updated in a revised model run, would be unlikely to have any significant change in the modelling results.

10.4.7.4. In Model C, there were minor discrepancies found between the visibilities and the widths of both the minor and major lanes, however, again, if these new parameters were added to a revised model run, the impacts on the results would not be significant.

10.4.7.5. OCC Highways, therefore, is satisfied with the modelling that has been undertaken at this junction.

10.4.7.6. Without the HIF1 Scheme, the junction is forecast to operate above capacity in the AM peak and PM peak hours in 2024, and the performance of the junction deteriorates further by 2034.

10.4.7.7. With the HIF1 Scheme there is a significant improvement in junction performance. It is forecast to operate within capacity in 2024. In 2034, capacity is exceeded in the PM peak, with a maximum RFC of 1.06 on the High Street to Brook Street/Church Street movement and a maximum queue of 20 vehicles. This is low compared to the same without HIF1 scenario with a forecast RFC of 2.43 and a maximum queue of 577.

10.4.7.8. Junction performance in the 2034 With HIF1 scenario is predicted to be similar to 2020 in the AM, and better in the PM, with a maximum RFC of 1.06 and associated queue of 20 vehicles in 2034 compared to RFC of 1.19 and queue of 47 vehicles in 2020 as shown in Table 3.11 of the TA.

10.4.8. OFF10 Appleford Rd / Abingdon Rd and OFF11 Abingdon Rd / Tollgate Rd

As explained in paragraph 9.2.9.4, these junctions are complex to model due to the interaction of queuing back between them, particularly the uncontrolled priority junction at the south.

10.4.8.1. Unlike the other priority junctions included within this assessment, which were modelled using Junctions 9 (PICADY), this junction was modelled in LinSig3 as part of a network with signalled junction OFF11.

10.4.8.2. The results indicate that in 2024 without the HIF1 Scheme the junctions will operate above capacity in the AM peak and within capacity in the PM peak. Interrogation of the traffic flows for the 2024 PM peak scenario indicate that total traffic flows are lower than in the 2020 scenario. However, journey time data for the routes through this part of the network indicate higher journey times in 2024 compared to

2020. Congestion elsewhere on the network is therefore reducing the traffic flows through this part of the network, giving a false indication that network operation has improved when solely modelling this junction in a stand-alone manner.

10.4.8.3. In 2034 there is further deterioration in network performance in the AM peak. Network performance in the PM peak is indicated to be similar to the 2020 scenario, however this is related to congestion on the network elsewhere preventing traffic reaching these junctions, as for the 2024 scenario.

10.4.8.4. Unlike PICADY, the geometrical input information cannot be entered into LinSig to calculate suitable Slope and Intercept values for the give-way capacity calculations. Therefore, the user needs to enter Max Flow and Coefficients directly for each movement.

10.4.8.5. By updating the give-way parameters (or modelling within PICADY), it is likely to provide a significant difference to the modelling results. However, it would be expected that these would continue to indicate the junction to be over-capacity without the HIF1 scheme, and within capacity with the HIF1 scheme.

10.4.8.6. Of note again, is the significant reduction in traffic flows that are travelling through this junction when the HIF1 scheme is in place. When comparing the 'without' and 'with' HIF scheme scenarios through the junction in 2034, the pcus reduce by a significant 34% in the AM peak hour from 2051 to 1351, respectively. The fact that the pcus through the junction in 2034 with HIF1 are in fact 3% lower than those for the 2024 without HIF scenario. This is despite ten years' worth of background traffic growth anticipated and shows that the HIF scheme has been able to mitigate this 10 years' worth of traffic growth through this junction.

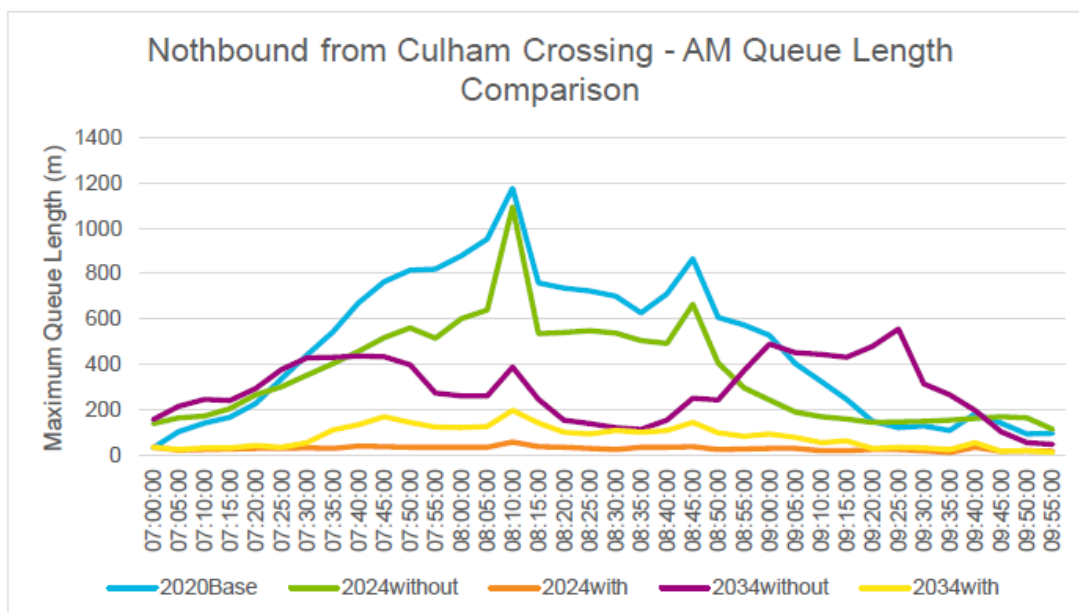
10.4.8.7. When assessing OFF11, the model also includes the shuttle junction on Tollgate Rd, which is located just over 400m south of Abingdon Rd, along with the Tollgate priority junction with Appleford Rd. Comments related to the shuttle junction are included in the below discussion about OFF11.

10.4.8.8. Saturation flows were input directly on to each lane. However, some of these values are much lower than expected, particularly on Abingdon Rd (E) and Tollgate Rd. It is unclear how these saturation flows were derived. However, it would be extremely difficult (likely impossible) to measure these on site, due to the short flares on these arms. This is because as a queue discharges during the green period, traffic will discharge across both lanes at the stop line, leaving gaps in traffic in the adjacent lane during saturation flow measurements. LinSig expects a saturation flow to represent the maximum discharging across the stop line, and it deals with the decrease in

capacity due to the flare, by using the flare length directly. Therefore, it is likely that saturation flows in the model are unrealistically low.

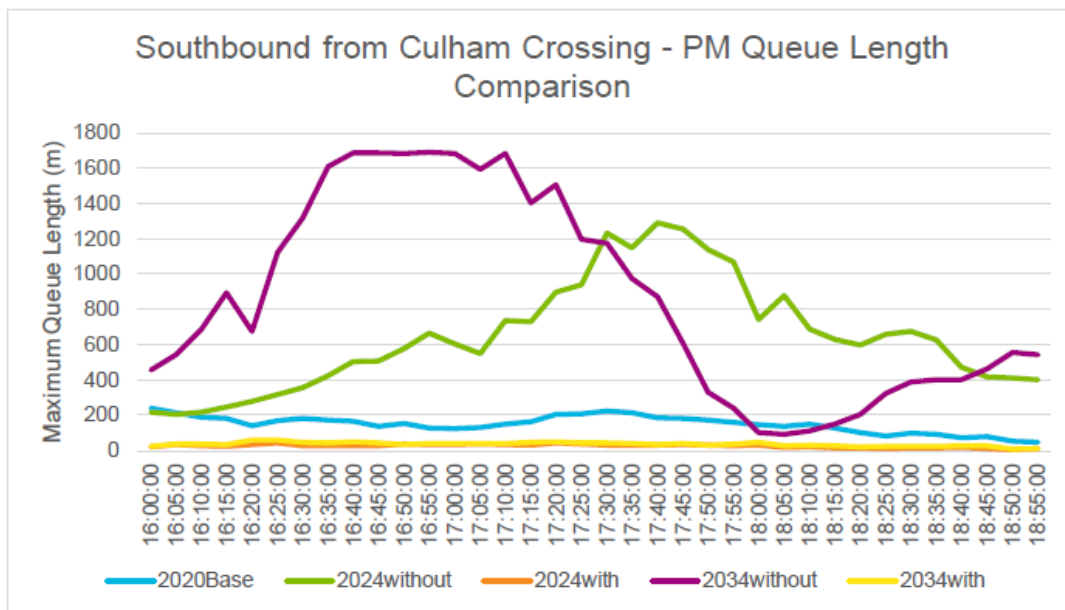
- 10.4.8.9. Several negative bonus greens were applied to the model in the “No Scheme” scenarios, which would significantly reduce capacity at the junction, particularly as some of these were large. It is not clear how these were derived.
- 10.4.8.10. If the model was updated without the negative bonus greens and higher saturation flows, the results are likely to improve significantly. High degrees of saturation during the AM Peak (without the scheme) are partly caused by the high minimum green for southbound traffic at the shuttle, resulting in significant congestion to northbound traffic. The negative bonus greens also reduce capacity significantly.
- 10.4.8.11. Given the above, it is clear that the way the model has been run for this junction, provides a worst-case set of results for analysis. Therefore, OCC Highways do not require any further modelling of this junction.
- 10.4.8.12. In the ‘with HIF1’ scenarios there is a significant improvement in network operation, with all junctions operating within capacity in both 2024 and 2034 and predicted queue lengths at a level that would not block back to adjacent junctions. The forecast PRC for all junctions in 2024 is between 24.7% and 46.5% and in 2034 it is forecast to be between 6.9% and 12.9% indicating that there will be spare capacity at these junctions with the HIF1 Scheme.
- 10.4.8.13. Queue length data has been extracted from the Paramics model to further understand the predicted operation of these junctions across future scenarios.

Figure 6.17: Culham Crossing Queue Comparison (Northbound)



10.4.8.14. Figure 6.17, extracted from the TA, above shows that the Paramics model indicates significant reductions in queue length from the northbound signals before the bridge as a result of the HIF1 Scheme in both 2024 and 2034 AM scenarios. There is no predicted queueing from the crossing signals that would block back to the southern Appleford Road / Abingdon Road priority junction (approximately 290m distance). This contrasts to the base, 2024 without HIF and 2034 without HIF where queueing is predicted to extend back to the junction (and further through Sutton Courtenay) for large portions of the AM peak. It should be noted that any of the shorter queue lengths in 2024 and 2034 without HIF when compared to base are not due to an improved performance at this junction, but are the result of vehicles being stuck in queues elsewhere in the model network preventing them from reaching the junction. Effectively, in the 2034 without HIF scenario, between the hours of 08:10 – 09:25, there is a queue ranging from approximately 170m to just under 600m. However, when compared to the 2034 with HIF scenario, that queue length has reduced to between approximately tens of metres to just 200m. Regardless of this, the model shows a significant improvement at this junction as a result of the HIF1 Scheme.

Figure 6.18: Culham Crossing Queue Comparison (Southbound)



10.4.8.15. Figure 6.18, also extracted from the TA, above shows that the Paramics model indicates significant reductions in queue length from the southbound signals before the bridge as a result of the HIF1 Scheme in both 2024 and 2034 PM scenarios. There is no predicted queueing from the crossing signals that would block back to the northern A415 / Tollgate Road signalised junction (approximately 430m distance). This contrasts to the base year which shows a queue approximately 200m long throughout the PM peak hour, and 2024

without HIF and 2034 without HIF where queuing is predicted to extend back to and through the northern junction (and further along the A415) for almost all of the PM peak hour. Therefore, the model shows a significant improvement at this junction as a result of the HIF1 Scheme.

10.4.8.16. It should also be noted that with the HIF1 scheme, the flow of traffic to and from Tollgate Road significantly decreases. For example, in 2034, the 609 pcus turning south onto Tollgate Lane reduce by 38% to 376 with the HIF1 scheme. Contrastingly, the pcus coming from Tollgate Road in the 2034 scenario reduce by a significant 75% from 435 to 109 pcus. This clearly demonstrates that the majority of the trips originating from the south of the River Thames wanting to travel north, are now routing along the HIF1 River Crossing scheme and not travelling through the villages of Sutton Courtenay and Appleford.

10.4.9. OFF12 A4130 / Lady Grove Roundabout

10.4.9.1. The capacity of the A4130 / Lady Grove roundabout has been assessed based on the proposed roundabout scheme for the junction, which is included in the Paramics model in 2024 and 2034.

10.4.9.2. Looking at the results shown in tables 6.34 and 6.35 of the TA, they indicate that without the HIF1 Scheme the junction will operate within capacity in 2024 and 2034.

10.4.9.3. With the HIF1 Scheme there are slight changes to results on each arm with some increasing and others decreasing, but it is forecast to operate within capacity in both 2024 and 2034.

10.4.9.4. Auditing of the model at this junction has highlighted an inaccuracy with the approach road half-width measurement for the Lady Grove arm and therefore, the effective flare length measurement.

10.4.9.5. The model does not account for the impact of potential unequal lane usage (i.e., it assumes traffic can balance evenly across the lanes on each arm). However, unequal lane usage may need considered as follows

§ Lady Grove: It would be expected that left-turning traffic would use the nearside lane and right-turning traffic the offside lane. The modelled traffic flows indicated that both lanes are well balanced, with no capacity reductions required for most scenarios.

§ Abingdon Rd: The dominant movement from this arm is the right-turn to Lady Grove in all scenarios, and therefore it would be expected most of the traffic would use the offside lane. Due to

the heavy right-turn, it is likely that capacity would need to be reduced to about 77-81% of the total available capacity that ARCADY would provide with the HIF1 scheme, and to about 76-89% without the HIF1 scheme.

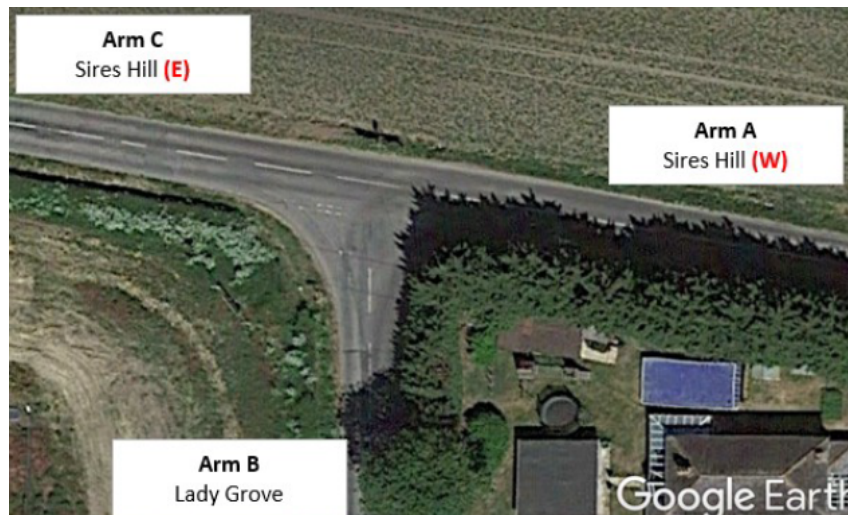
§ Most of the traffic from this arm goes ahead to Abingdon Rd in all scenarios. Although Abingdon Rd only provides a single lane exit, ahead vehicles might use both lanes on the approach to go ahead (as some ahead vehicles may use the offside lane if traffic in front of them are indicating left). Therefore, lane usage will be dependent on driver behaviour. If drivers going ahead only used the nearside lane, or only use the offside lane, then capacity reduction would need to be applied, as ARCADY would predict optimistic capacity. If all ahead traffic were to use the offside lane capacity reductions would be required in all flow groups, except for the year 2034 with the scheme.

10.4.9.6. If the model was updated, in particular the reduction of capacity due to unequal lane usage was addressed, then there would be a significant change to the results. Although the model is likely to continue to predict each arm to be within capacity for most scenarios, the heavy right-turn from Abingdon Rd may push this arm closer to capacity during the 2034 AM peak with the scheme.

10.4.9.7. It should be acknowledged however, that the Abingdon Road arm in the model will be the final section of the Northern Perimeter Road around Didcot and therefore, is expected to have a higher amount of trips along it, routing vehicles along the A4130 to the new River Crossing or west to the A34, along the NPR2 section of the A4130. The HIF1 package and NPR3 route, along with s106 requirements from developments in the area, are also providing significant improvements to the walking and cycling opportunities both through and in the vicinity of this junction, which also must be considered when assessing this junction. OCC Highways, do not therefore, require any further modelling of this junction.

10.4.10. OFF13 Lady Grove / Sires Hill

10.4.10.1. The JCT audit has highlighted a discrepancy in the modelling at this junction. The 'Arms' shown in the below figure are the assumption the model makes when assigning traffic flows. However, the modeller input Arm names, which indicate that Arm A was the WESTERN arm and Arm C was the EASTERN arm.



10.4.10.2. This may simply be a labelling error in which the modeller mixed up west and east. However, if the modeller intended Arm A to be the western arm, and Arm C to be the eastern arm, then all modelling results will be incorrect, as PICADY will not make the same assumption. This can be checked by referring to the traffic flow matrices used in the model and confirming whether the traffic flows to/from Arm A correctly represent traffic to/from the east, and traffic flows to/from Arm C correctly represent traffic to/from the west. The applicant is required to clarify the situation for this junction.

10.4.10.3. Assuming Arm A was intended to be the eastern arm, and Arm C the western arm, then the traffic flows should have assigned as expected. As such, if the model were updated to reflect the differences in lane lengths (also identified by JCT), between the original model and the JCT measurements, the results would likely become worse. Although, the general conclusions are likely to be similar, in that the junction is over-capacity in 2034 without the HIF1 scheme.

10.4.10.4. As shown in tables 6.36 and 6.37 in the TA, without the HIF1 Scheme, this junction is forecast to operate within capacity in both the AM and PM peak hour in 2024. The maximum RFC forecast of 0.79 on the Lady Grove to Sires Hill (west) movement. In 2034, junction capacity is forecast to be exceeded in both the AM and PM peaks, with long queues forming on all arms.

10.4.10.5. With the HIF1 Scheme there is a significant improvement in the operation of the junction, and it is forecast to operate within capacity in both 2024 and 2034. Junction performance in the 2034 With HIF1 scenario is better than that for 2020, where junction capacity is exceeded in the AM peak with an RFC of 0.95 as shown in Table 6.17 of the TA.

10.4.11. OFF14 Sires Hill / Didcot Road Junction

- 10.4.11.1. Some discrepancies were found in the minor arm widths that were used in the model. The model also used some higher visibilities for drivers opposed by traffic from Didcot Rd. However, the visibility is likely to be sensitive to where drivers position themselves, due to the bend on the major arm.
- 10.4.11.2. The minor arm was modelled as a flared approach. This is reasonable as drivers can treat this arm as such (i.e., a left and a right-turning vehicle can queue side by side at the give-way line).
- 10.4.11.3. Without the HIF1 Scheme, the junction is forecast to operate within capacity in 2024. In 2034 the junction is forecast to operate at close to capacity in the AM peak, and capacity is exceeded in the PM peak with long queues forming on all arms.
- 10.4.11.4. With the HIF1 Scheme there is a significant improvement in the operation of the junction, and it is forecast to operate within capacity in both 2024 and 2034.
- 10.4.11.5. Even if the minor geometric discrepancies were amended, the general conclusions described above would still be made and therefore, no further modelling is required.
- 10.5. Each 'SCH' junction's performance in the future years, will now be considered below.
- 10.5.1. Backhill Roundabout (SCH1)
- 10.5.1.1. The traffic flows used in the modelling indicated that no traffic travelled to/from NW Valley Park in 2024, although this arm was utilised by traffic by 2034. Also, the modelled traffic flows indicate that the westbound traffic along the A4130 will drop between the years 2024 and 2034 in both the AM and PM peak periods.
- 10.5.1.2. The geometric input parameters used in the model closely reflected those measured by JCT and are therefore, likely to be considered representative of the junction layout.
- 10.5.1.3. The model indicated that the junction should operate significantly within capacity during all flow scenarios. The highest RFC of 0.79 was predicted on A4130 (E) during the AM 2024 flow period.
- 10.5.1.4. The audit identified no significant problems with the modelling input parameters. Therefore, even if slight changes were made to the modelling geometric input data to reflect subjectivity, this would unlikely have any significant impact on the modelling results.
- 10.5.2. A4130 / Valley Park Access (SCH2)

- 10.5.2.1. The traffic flows used in the modelling indicated the traffic flows to and from the Valley Park Access would increase by 2034, whilst there was a decrease in westbound traffic. Eastbound traffic flows increased by the year 2034.
- 10.5.2.2. A few issues have been highlighted in the JCT audit, the first of which relates to the pedestrian phase minimum times, which have been set at 6 seconds in the model. These will depend on the types of pedestrian facilities installed. If far-sided green man displays are used, then longer minimum times may be required on the longest crossings (up to 9 seconds across Valley Park), unless countdown timers are also used. If near-sided displays are used, then 6 seconds may be acceptable. It should be noted, however, that whatever timing is used, should not significantly make a difference to the modelling results and it will operate under capacity.
- 10.5.2.3. Many of the intergreens used in the model were significantly higher than those measured by JCT. This could result in the model predicting less capacity than would be expected. A comparison of the intergreens used in the model and those measured by JCT, is shown in Figure 2.15.4. of the JCT *'Technical Note 21047: "HIF1 Scheme Package" Model Audits' (28th January 2022)* found in Appendix A
- 10.5.2.4. As explained in the JCT audit in paragraph 2.15.8, the model contains some very long phase delays, likely to reduce lost time created by long pedestrian intergreens. However, the length of delay does not correspond with the long pedestrian intergreen. A significantly long phase delay of 11 seconds was given to Phase D from Stage 3 to 1, without any pedestrian intergreens running in that stage. These long phase delays result in significantly long interstage periods up to 24 seconds. These are likely to be undesirable, especially off peak, as they will result in much longer green times than necessary.
- 10.5.2.5. However, the use of phase delays can be revisited once the intergreens have been finalised. A decision should be made on whether intergreens after pedestrians will be fixed or variable using on-crossing detection. If they are fixed, phase delays can be used to reduce the lost time to traffic. If they are variable, then the expected average intergreen after pedestrians should be modelled and phase delays may not be necessary.
- 10.5.2.6. Bonus green time has been added to several lanes. It is assumed they were added to account for the fact that the sequence 1-2-3 was modelled, but that Stage 2 would not always be demanded, if Phase F (pedestrian phase) were not called, and Stage 4 could run instead. If that is the case, it is not clear what demand frequency was assumed, although the demand for Phase F might be expected to be low.

10.5.2.7. JCT state the model could be simplified by running scenarios in which Phase F is always called, and then repeat these for when Phase F is never called. This will provide the best and worst-case scenarios. However, JCT anticipate that if these changes were made, it would unlikely result in the model predicting the junction to be over-capacity.

10.5.2.8. Lastly, the saturation flows have been examined and some recommendations have been made in paragraph 2.15.10 of the JCT audit report.

10.5.2.9. The model indicated that all flow scenarios would operate within capacity, running a cycle time of 108 seconds. The lowest Practical Reserve Capacity (PRC) was 31.7% during the 2024 AM Peak.

10.5.2.10. Whilst the audit has raised areas that are likely to require attention, JCT anticipate that even if these recommendations are made, it would unlikely result in this junction operating over capacity and therefore, OCC Highways are satisfied that no further modelling is required at this time.

10.5.3. Old A4130 Roundabout (SCH3)

10.5.3.1. JCT have raised the issue of unequal lane usage and have made some recommendations for the Science Bridge Link and A4130(W) arms, in paragraph 2.16.5. The issue could be mitigated on the Science Bridge Link, if left turning traffic also used the offside lane. This could be encouraged by the use of lane marking.

10.5.3.2. The model indicated that the A4130(E) would be slightly over-capacity during the AM 2024 run (RFC = 0.95), although by 2034 the Science Bridge Link would be the only arm slightly over-capacity (RFC = 0.93). During the PM peak, the only arm over capacity was the A4130(W) in the year 2034 (RFC = 0.97).

10.5.3.3. Taking account of unequal lane usage, would worsen the modelled results, however, a consideration of appropriate lane markings would help to mitigate this issue.

10.5.3.4. OCC Highways accept that this junction will have some arms operating at or over capacity in the future years, however, HIF1 is part of wider strategy to mitigate the impact of growth across a wide area which can only be delivered incrementally as funding becomes available, either through government grants or developer funding. Journey times across the modelled network will be significantly reduced and the provision of new and improved pedestrian and cyclist facilities as part of the HIF1 package, will help to engender modal shift away from the private motor car, particularly for commuting purposes for employment and education, but also for important access to amenities such as retail and healthcare, and for leisure trips.

10.5.3.5. OCC Highways, therefore, do not require any further modelling of this junction.

10.5.4. Science Bridge Roundabout (SCH4)

10.5.4.1. The model indicated that all flow groups would operate within capacity. The highest RFC of 0.83 was on the Science Bridge Link during the 2034 PM peak.

10.5.4.2. The model has not accounted for unequal lane usage, as described in the JCT audit in paragraph 2.17.5.

10.5.4.3. Accounting for unequal lane usage is likely to increase some of the predicted RFC values. However, this is unlikely to result in the model predicting any arms to become overcapacity, as the largest capacity reductions would be during the year 2024, in which the model predicted significant spare capacity. The provided model used generous approach road half widths for Science Bridge and the Science Bridge Link Rd. If these values were reduced, the model may predict results approaching capacity in the 2034 PM peak.

10.5.4.4. As considered in paragraph 10.5.3.4, above, OCC Highways, do not see the justification for further modelling of this junction.

10.5.5. Science Bridge Link Rd / New Purchas Rd (SCH5)

10.5.5.1. The model was set up to assume that the right-turn into New Purchas Rd does not block ahead traffic. However, the drawing indicates that there would be no room for ahead traffic to pass stationary right-turning traffic.

10.5.5.2. The model indicated that all flow groups would operate within capacity. The highest RFC of 0.79 was reported for the right-turn from New Purchas Rd during the 2034 PM peak.

10.5.5.3. The results are likely to get worse when the lane widths are reduced on the minor arm. Furthermore, the capacity from the A4130(W) will decrease once the model accounts for the right-turn blocking the ahead traffic. It is uncertain whether this will result in the junction becoming over-capacity.

10.5.5.4. However, to mitigate any impacts from right turning vehicles, this junction could be subject to further mitigation work, if it is found that this is an issue, which causes congestion along this stretch of the A4130 in the future.

10.5.6. A4130 / Science Bridge (Old A4130) (SCH6)

10.5.6.1. The model indicated that the junction would be significantly over-capacity during all traffic flow periods modelled, particularly by the year 2034 with reported RFCs on the Old A4130 of 1.99 and 1.95 during the AM and PM peak periods respectively. However, the new Science Bridge link road operates within capacity with no queuing or delays.

10.5.6.2. Any changes made to the model based on the audit comments based on minor geometric inputs, are unlikely to have a significant impact on the modelling results.

10.5.6.3. OCC Highways accept the modelling undertaken at this junction and note the applicant's justifications for no further modelling in this location, as outlined in paragraph 6.6.15 of the TA.

10.5.7. A4130 / New Thames River Crossing / Collett (SCH7)

10.5.7.1. The model indicated that the junction should operate significantly within capacity during all flow scenarios. The highest RFC of 0.81 was predicted on A4130 (W) during the PM 2034 flow period.

10.5.7.2. The audit identified no significant problems with the modelling geometric input parameters. However, potential unequal lane usage on the A4130(W) could result in less capacity than the model predicts. If this were accounted for, this would likely result in the model predicting congestion on this arm during the PM peak. Although lane balancing could be improved by marking the approach so that ahead traffic had to use the offside lane, it would not eliminate the issue and therefore, the arm could remain over-capacity.

10.5.7.3. As stated above, OCC Highways accept that there will be parts of the network, which will be at or slightly over capacity in the 2034 future year, however, they are on parts of the network suitable to accommodate queuing.

10.5.7.4. The drivers from existing housing in Didcot are likely to be heading north over the new Didcot to Culham River Crossing. Without the HIF Scheme, their route north would have been through Long Wittenham / Clifton Hampden or Sutton Courtenay / Culham. Therefore, if they are queuing at SCH7 junction they are taking a different route to baseline conditions, where they would have been queuing through the villages, which is not acceptable to OCC.

10.5.8. New Thames River Crossing / Hanson & FCC Access Road

10.5.8.1. The model indicated that all flow groups would operate within capacity. The highest RFC of 0.75 was reported for the right-turn from the FCC Access during the 2034 AM peak.

10.5.8.2. The issues raised within JCT's audit are based on discrepancies with the lane widths at 5m intervals from the give way line on the minor arm. JCT has measured these as being wider than has been inputted into the original model. Also, the visibility to the left has also been increased in the audit, assuming that drivers can see over the grass verge.

10.5.8.3. Despite these issues, the model would produce more pessimistic capacity assessments and therefore, it would not be expected that the model would predict the junction to be over-capacity if changes were made to these parameters.

10.5.9. New Thames River Crossing / B4016 (SCH9)

10.5.9.1. The results in table 6.10 of the TA, indicate that the junction will operate within capacity in 2024. In 2034 the junction is predicted to operate at very close to capacity. Whilst RFC values are predicted to be between 0.92 and 1.00 in 2034, the maximum queue length on the B4016 is only seven vehicles.

10.5.9.2. As with the previous SCH8 junction, the audit has highlighted some minor discrepancies with the width and visibility parameters, which, if revised, would likely show a betterment within the model.

10.5.9.3. OCC do not require any further modelling at this junction and accept the justifications set down in the TA in paragraph 6.6.2. of the TA.

10.5.9.4. A priority junction in this location is justified, as it will not offer drivers leaving housing in northern and eastern Didcot too attractive a route through the village of Appleford. It will be much easier for them to access the new river crossing from Collett Roundabout, where the RFC value on the A4130 eastern arm is 0.77 with a queue length of just 3 cars in the 2034 AM peak.

10.5.10. New Thames River Crossing / B4016 Appleford Road Roundabout (SCH10)

10.5.10.1. The results in table 6.11 of the TA, indicate that the junction will operate within capacity in 2024 and 2034, although the desirable maximum RFC of 0.85 will be exceeded in the 2034 PM peak with a small queue of nine vehicles.

10.5.10.2. Unequal lane usage on the Appleford Rd (N) arm is unlikely to be a concern if the nearside lane is used by left-turning traffic and the offside lane for ahead traffic, as both movements are similar. It is recommended to provide lane marking to encourage drivers to do this.

10.5.10.3. Unequal lane usage on the New Culham Crossing arm (southbound) would result in less capacity than ARCADY predicts,

which would increase the worst RFC of 0.91. If so, there may be potential to encourage southbound traffic to use both lanes on the approach by improving the exit merge.

10.5.10.4. From the Appleford Rd (S) arm, most of the traffic turns right towards New Culham Crossing, which will result in most traffic using the offside lane of the approach. There may be potential to encourage traffic to use both lanes on the approach by improving the exit merge.

10.5.11. Abingdon Roundabout (SCH11)

10.5.11.1. This roundabout is subject to further detail, as per our request in our response dated 28th February 2022, outlined in Section 1.

10.5.11.2. In its current layout, the results in table 6.12, indicate that the junction will operate within capacity in 2024 and 2034.

10.5.11.3. The JCT audit has highlighted discrepancies between some of the geometric parameters entered into the model. By updating the model to take into account revised flare lengths on the A415 (W) arm, it was found that the Intercept (maximum Capacity if circulating traffic was zero), dropped by about 2%. Whilst not a significant drop, it is worth noting here. However, JCT expect that all arms would remain within capacity after any modelling updates.

10.5.11.4. Even when uneven lane usage is taken into account, If it were expected that all the right-turn traffic from New Culham Crossing would use the offside lane, the worst RFC of 0.61 on this arm would increase, although the arm may remain within capacity. Revising the road markings to allow for both lanes to be used for right turning traffic would mitigate the issue.

10.5.12. Culham Science Centre Roundabout (SCH12)

10.5.12.1. The results shown in table 6.13 of the TA, indicate that this junction will operate within capacity in 2024. In 2034, the junction is shown to be operating within capacity in both peaks, although the desirable maximum RFC of 0.85 is exceeded on the Clifton Hampden Bypass (W) arm in the AM peak.

10.5.12.2. Despite, the JCT audit highlighting potential issues with unequal lane usage at this junction, the conclusion is reached that it is unlikely that any updates to the model, based on the audit comments, would make the ARCADY results worse than the original files.

10.5.13. Clifton Hampden Bypass / Realigned A415 (SCH13)

10.5.13.1. The results shown in table 6.14 of the TA, indicate that the junction will operate within capacity in 2024. In 2034, capacity is exceeded in both peaks with queues and delays occurring on the

minor arm (realigned section of the A415). No delays are experienced on the Clifton Hampden Bypass.

10.5.13.2. The strategy for the HIF1 Scheme is to prioritise the mainline flow over side arm flows. The intention is for vehicles coming from the south of the River Thames and wishing to head north / east of SCH13 to make the journey from Collett Roundabout (SCH7). A different junction type in this location could be more attractive to drivers, reducing the rerouting benefits of the Scheme that remove trips through Long Wittenham and Clifton Hampden. Therefore, a level of queuing on the side arm in the peaks is deemed acceptable as it will operate as a village access whilst not being too attractive for through-trips.

10.5.13.3. Any drivers in a queue on this side arm are trying to travel east or west on the Clifton Hampden Bypass. Without the HIF1 Scheme, significantly more drivers would be travelling through the staggered signalised junction in Clifton Hampden Village (OFF6 and OFF7, see results in Table 6.26 and Table 6.27 of the TA). Delays at the signalised junction in the 'No HIF' scenario are significantly higher than those predicted at this junction in the 'With HIF' scenario.

10.5.13.4. Any changes made to the model based on the audit comments regarding minor lane width parameters, are unlikely to have a significant impact on the modelling results.

10.5.14. Clifton Hampden Bypass / B4015 (SCH14)

10.5.14.1. The results in table 6.15 of the TA, indicate that the junction will operate within capacity in 2024. In 2034 capacity is exceeded in both peaks with queues and delays occurring on the minor arm (B4015). No delays are experienced on the Clifton Hampden Bypass.

10.5.14.2. The geometric parameters used within the model were similar to those measured by JCT, although some of the visibilities used were shorter than indicated from the general arrangement plan sheet 19.

10.5.14.3. As stated above in paragraphs 10.5.13.3 and 10.5.13.4, OCC deem the delay on the minor arm to be acceptable, for the same reasons. There is also another existing alternative route via A415 through Burcot.

10.5.15. Clifton Hampden Bypass / Culham Science Centre Access (SCH15)

10.5.15.1. The results in table 6.16 of the TA, indicate that the junction will operate within capacity in 2024 and 2034. There is no right turn movement allowed from the bypass into this junction, resulting in 0 RFC values for that movement.

10.5.15.2. Any changes to the minor discrepancies in land widths found in the JCT audit, are unlikely to have any significant impact upon the modelling results.

10.6. After a thorough review of the HIF1 TA and the submitted audit *'Technical Note 21047: "HIF1 Scheme Package" Model Audits'* (28th January 2022) (found in Appendix A) the junction capacity modelling is accepted by OCC and no further modelling is required.

10.7. Milton Interchange and the Abingdon Road network will be discussed in the next sections.

11. The Milton Interchange (OFF1)

11.1. The impact of the HIF1 scheme on the Milton Interchange has been demonstrated by comparing journey times along the A34. This was discussed and agreed with National Highways.

11.2. These were extracted from the Paramics model along the full length of the A34 covered by the model (approximately 13km), for ten-minute intervals 07:00 to 10:00 and 16:00 to 19:00, northbound and southbound, without and with HIF across the scenario years.

11.3. As demonstrated from figure 6.19 to 6.22 of the TA, the 2034 average journey time increase without the HIF1 scheme for both the north and southbound carriageways in both the AM and PM peaks, is hugely significant.

Northbound

11.3.1.1. The 2034 without HIF scenario shows a significant increase in journey time particularly after 09:00, with vehicles taking over two hours to complete a journey of approximately 13km.

11.3.1.2. The 2034 without HIF scenario shows a significant increase in journey time particularly after 17:30, with vehicles taking over one hour to complete a journey of approximately 13km. After 17:50 the journey time drops to zero as the network is congested and vehicles are not able to complete the journey.

Southbound

11.3.1.3. The 2034 without HIF scenario shows a significant increase in journey time particularly after 09:00, with vehicles taking over two hours to complete a journey of approximately 13km.

11.3.1.4. The 2034 without HIF scenario shows a significant increase in journey time particularly after 17:20, with vehicles taking over 41 minutes to complete a journey of approximately 13km. After 17:30 the journey time drops to zero as the network is congested and vehicles are not able to complete the journey.

Eastbound along the A4130

11.3.1.5. The journey times are across the following distances: 2020 base is 786 metres, 2024 without HIF is 1,032 metres, 2024 with HIF is 724 metres, 2034 without HIF is 1,032 metres, and 2034 with HIF is 717 metres. To allow further comparisons across the scenarios, Figure 6.24 and Figure 6.26 of the TA, show the average speeds across the section in each scenario, which takes into account the different section lengths.

11.3.1.6. In the 2034 AM peak hour, without HIF the journey takes 276 seconds compared to 84 seconds with HIF. This equates to approximately 8.4 mph and 19.1 mph respectively. The Scheme is allowing vehicles to travel away from Milton Interchange approximately twice as fast, at a speed similar to the 2020 base. The effect of this is seen on the A34 as shown in Figure 6.19 and Figure 6.21 of the TA, where significantly increased journey times are seen without HIF, due to the blocking back to Milton Interchange.

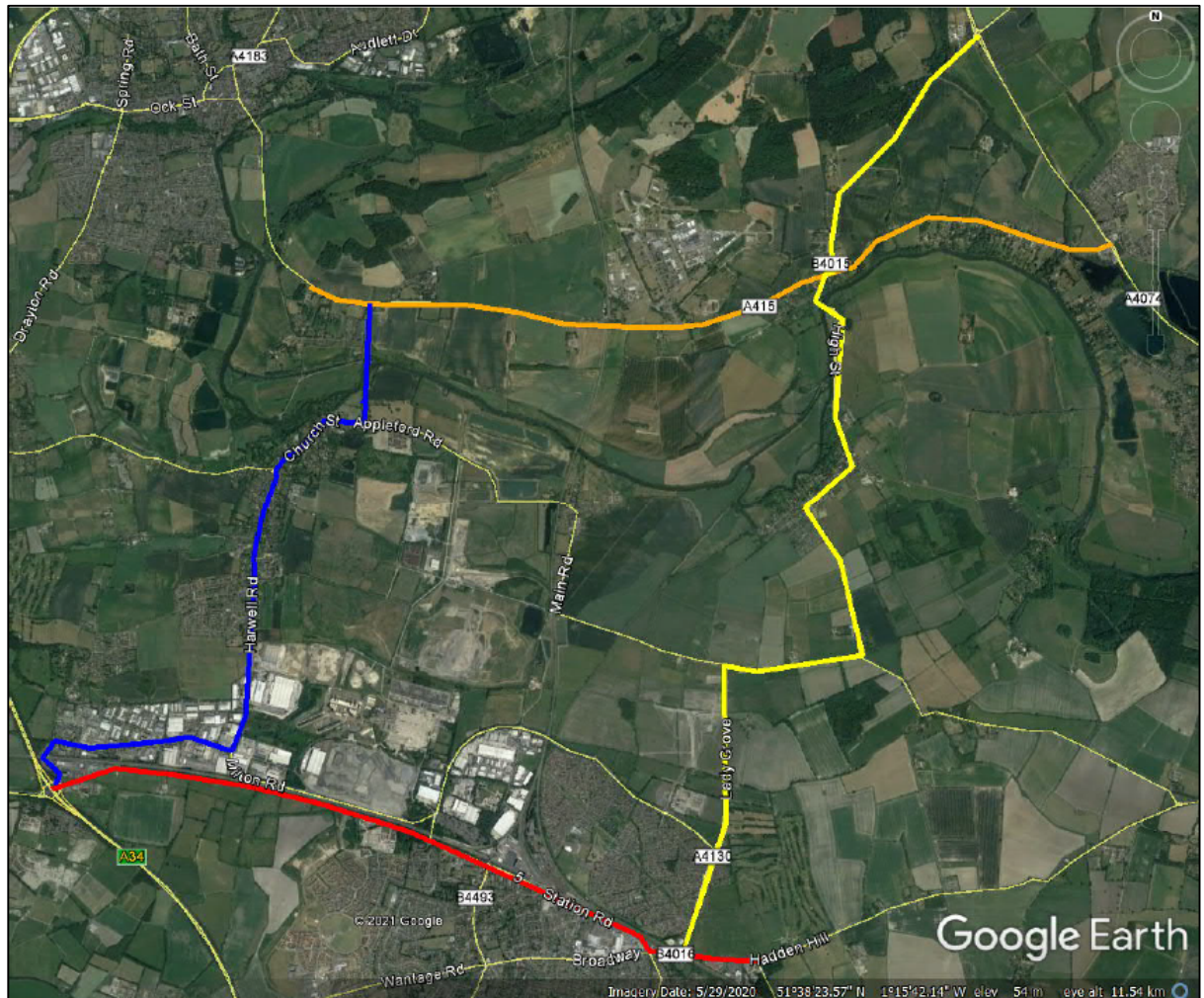
11.3.1.7. In the 2034 PM peak hour, without HIF the journey takes 684 seconds compared to 108 seconds with HIF. This equates to approximately 3.4 mph and 14.9 mph respectively. The Scheme is allowing vehicles to travel away from Milton Interchange approximately four times faster, at a speed similar to the 2020 base. The effect of this is seen on the A34 as shown in Figure 6.20 and Figure 6.22 of the TA, where significantly increased journey times are seen without HIF, due to the blocking back to Milton Interchange.

11.4. In summary, the HIF1 scheme allows the A4130 eastbound to operate more efficiently, meaning that there is a reduction in queuing back through the Milton Interchange. This in turn, reduces blocking back that causes the queuing on the A34 slip roads, thus improving A34 journey times.

12. Journey Times and Speeds Across the Network

12.1. Vehicle journey time data has been extracted from the Paramics model to enable comparisons of network operation across multiple routes on the highway network.

12.2. Four routes were selected across the modelled area (as shown in figure 6.27 of the TA and replicated below), to represent a good geographic spread across the scheme area. They also cover the significant areas of existing congestion and queuing, which the HIF1 scheme intends to relieve. They also cover the north/south sections of the existing bus routes over the River Thames, routes 33 and 95.



- 12.3. Journey times for the 2020, 2024 and 2034 scenarios without and with the HIF1 Scheme are presented in Table 6.40 (AM peak) and Table 6.41 (PM peak) of the TA. The journey times for the '2034 No HIF1' scenario are based on the model run using 100% demand rather than 70% demand (refer to paragraph 8.9), as factoring up from the 70% demand model run would not provide reliable results for journey times. The journey times reported for the '2034 No HIF1' scenario therefore reflect the widespread congestion seen on the network in this scenario rather than predicted journey times.
- 12.4. Figure 6.28 in the TA, demonstrates that the total car journey time for all routes is significantly reduced with the HIF1 Scheme in both 2024 and 2034. The yellow and blue routes are used by bus services to cross the River Thames, therefore the Scheme enables lower journey times / improved journey time reliability for bus services using these routes. The significant increase in journey times seen in 2034 without HIF is caused by increases across all routes, but predominantly the orange PM eastbound route. This is created by significant delays at the Clifton Hampden staggered signalised junction and Culham Science Centre entrance. Total journey times in 2034 with the HIF1 Scheme are also slightly lower than those in 2020, showing that the HIF1 Scheme helps to enable the planned growth whilst allowing the road network to operate similarly to the base scenario.

- 12.5. Average vehicle speeds across the entire modelled network were also extracted from the Paramics model to represent the overall performance of the network with and without the HIF1 Scheme. Results from 2020, 2024 and 2034 scenarios without and with the HIF1 Scheme for AM and PM peaks are presented in Figure 6.29 and Figure 6.30 of the TA.
- 12.6. Additional growth in the model area without the HIF1 Scheme results in a slower moving network, which can be considered as a proxy for congestion. For example, four years of growth from 2020 to 2024 results in a 3.7mph reduction in the AM and 4.8mph reduction in the PM. The HIF1 Scheme in 2024 enables the network to operate more efficiently than 2020, as shown by the higher average speeds. The 2034 without HIF scenario shows a significant reduction in average speed across the network, due to the gridlock situation that develops in the model. The HIF1 Scheme enables the 2034 network to operate similarly to 2024 without HIF.
- 12.7. At this juncture it is important to note that the highway elements of the HIF1 Scheme are intended to be one part of a balanced transport strategy. The high-quality walking and cycling infrastructure elements of the Scheme help to offer alternative options for many journey types and routes, meaning that cycling and walking journey times are also reduced.
- 12.8. It is also important to stress that with vehicles being able to flow more efficiently through the network, it reduces the emissions from vehicles sat idling in queuing traffic.
- 12.9. Figure 6.31 in the TA, shows that in the AM peak, four years of growth from the 2020 Base, without the HIF Scheme, is modelled to increase average journey times by over two minutes (139 secs). This is significantly worsened with an additional ten years of growth to 2034, with the average journey time increasing by over 24 minutes (1,460 secs) compared to the 2020 base.
- 12.10. In 2024, the HIF1 Scheme reduces average journey times compared to the 2020 base by over one minute (-73 secs). In 2034, the HIF1 Scheme has enabled 14 years of growth with an average journey time increase of just over four minutes (253 secs). The average journey time with the HIF1 Scheme in 2034 is less than half of that without HIF1 (937 to 2,143). The HIF1 Scheme enables the 2034 network to operate similarly to 2024 without HIF1.
- 12.11. Figure 6.32 in the TA, shows that in the PM peak, four years of growth from the 2020 Base, without the HIF1 Scheme, is modelled to increase average journey times by three and a half minutes (213 secs). This is significantly worsened with an additional ten years of growth to 2034, with the average journey time increasing by almost twelve and a half minutes (743 secs) compared to the 2020 Base.
- 12.12. In 2024, the HIF1 Scheme reduces average journey times compared to the 2020 base by almost one minute (-44 secs). In 2034, the HIF1 Scheme

has enabled 14 years of growth with an average journey time increase of just over three minutes (188 secs). The average journey time with the HIF1 Scheme in 2034 is less than two thirds of that without HIF1 (901 to 1,455). The HIF1 Scheme enables the 2034 network to operate similarly to 2024 without HIF.

13. *Impacts upon Abingdon*

13.1. For the purposes of the HIF1 Scheme package assessment, the Paramics Model covered the highway network just to the west of the existing Culham River Crossing.

13.2. In discussions with OCC Highways, Abingdon was not included within the modelling for this planning application, the justifications for which are expanded upon below.

Changes in traffic flow to/from Abingdon

13.2.1. Any increase in traffic flow into/out of Abingdon is due to the growth in housing and employment in Didcot and surrounding areas, not due to the HIF1 scheme itself. The traffic impact on Abingdon from those housing and employment sites will be scrutinised by OCC Highways through the Transport Assessment in the planning application for each site. If mitigation is deemed necessary, which could include sustainable travel infrastructure and/or services, then OCC will secure funding or direct delivery for this from each housing/employment site. HIF1 is part of a wider strategy to mitigate the impact of growth across a wide area, which can only be delivered incrementally as funding becomes available, either through government grants or developer funding.

Walking and Cycling

13.2.2. The Scheme both directly delivers and indirectly enables a significant number of new and/or improved walking and cycling routes in the area. The provision of additional and improved Non-Motorised User (NMU) routes and crossing points will help to reduce the existing severance caused by the Great Western Mainline and River Thames. Connections to public rights of way will be provided, together with safe access to and from new bus infrastructure. This will help to engender modal shift away from the private motor car, particularly for commuting purposes for employment and education, but also for important access to amenities such as retail and healthcare, and for leisure trips. As explained below under 'Housing Sites', development sites in the area will be required to deliver additional NMU links which will connect with the HIF scheme NMU infrastructure, in turn linking Didcot (and surrounding areas) to Abingdon with high quality NMU routes.

Public Transport

- 13.2.3. The HIF1 scheme relieves queueing at Sutton Bridge and Culham Cut, which in turn improves the journey time reliability for public transport using this route to/from Abingdon e.g. bus route 33. This makes using public transport to/from Abingdon more attractive, reducing the number of people choosing to drive into Abingdon. The HIF1 scheme also provides a new route for public transport to link areas of employment with existing and new homes improving bus services and journey time reliability to increase passenger numbers.

AQMA

- 13.2.4. Abingdon is subject to an Air Quality Management Area (AQMA). Traffic signals are used to manage traffic flows in the town centre to prevent excessive emissions. The signals hold vehicles outside the centre of town to enable it to operate without gridlock. This, in part, creates queuing on the peripheral approaches to Abingdon, for example the A415 from Culham. Until the vehicle fleet change away from petrol/diesel vehicles is sufficient to not require the AQMA, there is little that can be done to remove the vehicle queuing on the approaches to Abingdon Town Centre.

A34 Lodge Hill

- 13.2.5. The A34 Lodge Hill scheme at North Abingdon will enable rerouting of trips in Abingdon, particularly those with an origin in North Abingdon wishing to head south on A34, and those from the A34 with a destination in North Abingdon. This rerouting of trips and subsequent relieving of traffic could enable OCC to investigate options for the road system in the town in the future, once the AQMA falls away due to fleet change.

Local Cycling and Walking Infrastructure Plan (LCWIP)

- 13.2.6. OCC is currently creating a Local Cycling and Walking Infrastructure Plan (LCWIP) for Abingdon and Didcot alongside key stakeholders, which will identify walking and cycling infrastructure improvements.

Science Vale Active Travel Network (SVATN)

- 13.2.7. OCC has recently completed improvements to cycle routes in / near Abingdon, Didcot and Wantage through the Science Vale Cycle Network programme. A new study, Science Vale Active Travel Network (SVATN) will soon begin to further this, with the route between Abingdon and Culham (between HIF1 and Abingdon – called route 7 is one of the routes to be studied).

Local Transport and Connectivity Plan (LTCP)

- 13.2.8. OCC is in the final stages of adoption of its new Local Transport and Connectivity Plan (LTCP). As part 2 of LTCP an Abingdon Town Strategy will be written.

Housing Sites

- 13.2.9. The housing sites allocated in/around Abingdon as part of Vale of White Horse Local Plan Part 1 are currently building out, and in different stages of delivering their offsite mitigation measures, including pedestrian and cycle routes. These sites are also obligated to pay towards improvements to bus services in Abingdon.
- 13.2.10. The Dalton Barracks housing site, allocated in Vale of White Horse Local Plan Part 2, will also have to deliver sustainable transport improvements in Abingdon including pedestrian and cycle infrastructure, and improved/new bus services.
- 13.2.11. The land adjacent to Culham housing site, allocated in South Oxfordshire District Council Local Plan, will have to assess its impact on Abingdon and the wider network and mitigate as appropriate. This will include sustainable transport improvements, including pedestrian and cycle infrastructure, and improved/new bus services. The local plan policy states for that site:

“All necessary infrastructure, referring to the Infrastructure Delivery Plan, which is likely to include [...] provision for excellent sustainable transport facilities including, but not limited to [...] provision of a new cycle bridge and associated connectivity and paths across the River Thames to connect appropriately with Abingdon on Thames to the north of the site.”

14. Scheme Design

- 14.1. The scheme design and general layout is shown on the General arrangement plans (drawing numbers GEN_PD-ACM-GEN-DGT_ZZ_ZZ_ZZ-DR-T-0001 to 0019) and described in Sections 4.2 to 4.5 of the TA.

- 14.2. Each component of the scheme package, as per below:

- A4130 Widening;
- Didcot Science Bridge;
- Didcot to Culham River Crossing; and
- Clifton Hampden Bypass

has been has been considered with reference to the relevant national, regional and local policies and guidance, as outlined in paragraph 2.1.1 of the TA.

- 14.3. In terms of layout and geometry, accordance with the following is adhered to:

- Design Manual for Roads and Bridges (2020);
- LTN 1/20 Cycle Infrastructure Design (2020)

14.4. The Design and Access Statement (DAS) Part 1 – 6 detail all the departure from standards throughout the scheme; These have been agreed through discussion with OCC.

14.5. AECOM was commissioned by OCC to complete a Stage 1 Road Safety Audit (RSA) for the four sections of the Scheme. These were undertaken between December 2019 and May 2020. The RSA reports also include the Design Organisation Response logs. The RSA reports can be found in Appendix D of the TA.

14.6. As outlined in paragraphs 1.2.1 – 1.2.3 of this report, OCC Highways are still awaiting three elements with regards to layout, to review.

15. ***Walking and Cycling***

15.1. The HIF1 schemes include high-quality dedicated off-road pedestrian and cycle (LTN 1/20 compliant) facilities along their length, which will help to increase opportunities for active travel and help the County to move closer towards its carbon reduction aspirations.

15.2. The schemes will include the direct delivery of approximately 10km (6.5miles) of new or improved walking and cycling facilities, with the vast majority of this provision being new; whilst also enabling other walking and cycle improvements in the area which will be delivered by the planned allocated housing and employment growth.

15.3. This direct provision will make active modes more attractive between various settlements and key employment locations. For example, a direct and segregated cycle route between Didcot and Culham Science Centre and, at an approximate distance of 5km, this roughly equates to a 20-minute bike ride. In the current Science Vale Cycle Network strategy - Route 8, linking Didcot to Culham Science Centre, is proposed to go through Long Wittenham and over Clifton Hampden Bridge. Parts of this route would be on carriageway or along bridleways. The new river crossing would mean a shorter Route 8 scheme is deliverable and a much-improved offer is available to active travel that reduces the overall route for users by 20%, making it even more attractive.

15.4. This will help to realise the aspirations of the forthcoming Didcot Local Cycling and Walking Infrastructure Plan (LCWIP) and the updated Science Vale Active Travel Network (SVATN) (which will supersede the Science Vale Cycle Network Plan) by providing improvements to the existing network as well as new walking / cycling links. This will offer mode choice for work and recreation, helping to encourage modal shift away from the private car.

15.5. Further to this, the HIF1 schemes are fundamental to delivering the aims of the Didcot Garden Town. By reducing the impact of existing and forecast traffic within Didcot, and with a focus on improving active travel and public

transport facilities within Didcot, this will help to make walking and cycling more attractive as well as improving the placemaking potential of the town. Together with the Didcot Northern Perimeter Road 3 (NPR3), as part of an overall strategic approach in Didcot, the HIF1 Scheme will support the Didcot Central Corridor project, by helping to take through traffic out of the centre of the town, thereby making it a more attractive and appealing place to spend time as a community.

- 15.6. OCC Infrastructure Locality Team are undertaking a study to explore further opportunities that the HIF1 project unlocks, in relation to walking/cycling connectivity together with place making improvements to villages that benefit from reduced traffic flow as a result of the proposed HIF1 project. This project is in its early stages and will include full public engagement.
- 15.7. OCC note that pages 73 - 83 of the TA set out in detail the improvements for active travel that are brought about by the scheme.

16. Public Transport

- 16.1. As outlined in the TA, there are currently limited opportunities for bus routes to offer good journey time reliability north / south in this area due to the severance created by the River Thames, the Great Western Mainline and the historic road network.
- 16.2. The HIF1 scheme will create opportunities for better public transport access, for example across the river and railway line to Culham Science Centre, Didcot and Milton Park, which are currently constrained by congestion. It also will help to improve journey time reliability and attractiveness of bus services connecting Didcot with the local area as a result of the improvements to the existing and forecast congestion on the highway network.
- 16.3. At least twelve bus services connect Didcot with key destinations in the area (including Harwell Campus, Milton Park, and Culham Science Centre). The journey time reliability of all these services, and therefore their attractiveness and to some degree commercial viability, is impacted by congestion in the AM and PM peaks within the town and its surrounding area. The alleviation of these congestion issues that would result from the HIF1 Scheme would in turn bring about improvements to the journey time reliability of these bus services.
- 16.4. In addition, 18 new bus stops are being provided as part of the Scheme, which will increase the accessibility and catchment of the existing bus services in this area.
- 16.5. Further to this, the success of the new bus services that are to be introduced to serve development allocated in the SODC Local Plan 2035, and the development yet to come forward in the adopted VoWHDC Local Plan, is to a significant degree dependent on the delivery of the HIF1 schemes. For example, one of the new bus services, which is a fundamental part of the improved bus network as it would connect multiple strategic residential sites,

is expected to route via the Didcot to Culham River Crossing. Without this scheme in place, it would be reliant on the existing river crossings where the existing and forecast congestion may render the service untenable. Additionally, the network of new and improved bus services is predicated on all of the planned growth in the VoWHDC and SODC Local Plans coming forward. The HIF1 schemes help to facilitate this growth which in turn helps to make the new bus network deliverable and ensure improvements to connectivity.

- 16.6. The HIF1 schemes also help to support planned improvements to the frequency of rail services at Culham Station, as set out in Network Rail's Oxfordshire Rail Corridor Study, as they are predicated on the residential and employment growth planned at and adjacent to Culham Science Centre.

17. Construction

- 17.1. As alluded to in paragraph 7.1.2 of the TA, OCC Highways will require a pre-commencement condition to produce a Construction Environmental Management Plan (CEMP), with Construction Traffic Management Plans (CTMP) produced as relevant ahead of each phase of construction.
- 17.2. The role of the CTMP will be to consider the construction activity for that phase and identify appropriate measures to minimise or mitigate significant impacts.
- 17.3. All of the key principles set down in section 7.2 of the TA, are noted by OCC Highways and will be scrutinised where relevant.
- 17.4. A total of 14 construction site access points have been identified along the Scheme and are outlined in Table 7.1 of the TA. The ECI Contractor (Grahams) has provided an estimate of the monthly vehicle movements at each access point, for both cars/LGVs and HGVs. Car/LGV movements are predominantly related to staff travelling to and from the Site, and it has been assumed that the import and export of materials is by HGV.
- 17.5. Paragraphs 7.4.3 and 7.4.4 of the TA describe routes to be taken when reaching all the construction access points A – L. All these routes take into account existing weight restrictions and current HGV routes and are logical assumptions for construction traffic.
- 17.6. OCC Highways note the assessment of the impact of construction traffic, which has been included in the Environmental Statement (Chapter 16 'Traffic and Transport'). The conclusions are summarised in paragraph 7.4.5 of the TA.
- 17.7. Whilst there will inevitably be an increase in HGV movements in the short term for the construction of the HIF1 package, OCC do not view these impacts as significant and will restrict the use of construction traffic to the strategic highway network for as long as possible to reduce the impact upon rural roads.

18. **Summary**

- 18.1. There are outstanding matters resulting in a holding objection. Three relate to requests for further technical information and the other requires clarification over a modelling discrepancy at the Ladygrove / Sires Hill junction (OFF13).
- 18.2. The layout and geometry have been checked against all relevant standards and are acceptable in planning terms. Any departure from standard has been agreed with OCC and Stage 1 Road Safety Audits have been undertaken. Much of the fine detail will be captured, where required, at the detailed design stage.
- 18.3. The modelling methodology and approach was agreed with OCC and the model validates and has been used correctly. OCC are satisfied with the modelled years, data and growth figures used. The model does not identify any areas that will require further mitigation as a result of the HIF1 Schemes.
- 18.4. An independent model review has examined all the junctions in the scheme (Appendix A). The consistent issue which arose in the roundabout modelling, was the unequal lane balancing, however, it was concluded that even if this were refined in the modelling, the junctions in question would still operate to a level acceptable to OCC. It is also accepted that despite some junctions operating at overcapacity in the future years, HIF1 is part of wider strategy to mitigate the impact of growth across a wide area which can only be delivered incrementally as funding becomes available, either through government grants or developer funding. The report raised a discrepancy at the OFF13 junction, which must be clarified.
- 18.5. Journey times across the modelled network will be significantly reduced and the provision of new and improved pedestrian and cyclist facilities as part of the HIF1 package, will help to engender modal shift away from the private motor car, particularly for commuting purposes for employment and education, but also for important access to amenities such as retail and healthcare, and for leisure trips.
- 18.6. The walking and cycling improvements being delivered across the scheme are significant and comply with LTN 1/20, inclusive mobility and The Equalities Act 2010. OCC are satisfied that the HIF1 Scheme delivers exemplary walking and cycling connectivity and opens up further opportunities for sustainable travel across the Didcot area and beyond to key employment and leisure areas.
- 18.7. The HIF1 scheme will create opportunities for better public transport access, for example across the river and railway line to Culham Science Centre, Didcot and Milton Park, which are currently constrained by congestion. It also will help to improve journey time reliability and attractiveness of bus services connecting Didcot with the local area as a result of the improvements to the existing and forecast congestion on the highway network. In addition,

18 new bus stops are being provided as part of the Scheme, which will increase the accessibility and catchment of the existing bus services in this area.

18.8. The HIF1 schemes also help to support planned improvements to the frequency of rail services at Culham Station, as set out in Network Rail's Oxfordshire Rail Corridor Study, as they are predicated on the residential and employment growth planned at and adjacent to Culham Science Centre.

18.9. OCC Highways will require a pre-commencement condition to produce a Construction Environmental Management Plan (CEMP), with Construction Traffic Management Plans (CTMP) produced as relevant ahead of each phase of construction. OCC note the assessment of the impact of construction traffic and note that whilst there will inevitably be an increase in HGV movements in the short term for the construction of the HIF1 package, OCC do not view these impacts as significant and will restrict the use of construction traffic to the strategic highway network for as long as possible to reduce the impact upon rural roads.

Officer's Name: Kt Hamer

Officer's Title: Principal Development Management Engineer

Date: 27th July 2022
