



Didcot Garden Town HIF 1 Scheme

Environmental Statement

Non-Technical Summary

September 2021

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Abbreviations

Air Quality Management Areas	AQMA
Compulsory Purchase Order	CPO
Conservation Target Area	CTA
Construction Environmental Management Plan	CEMP
Construction Traffic Management Plan	CTMP
Culham Science Centre	CSC
Design Manual for Roads and Bridges	DMRB
Environmental Impact Assessment	EIA
Environmental Statement	ES
Housing Infrastructure Fund	HIF
Local Landscape Character Area	LLCA
Local Wildlife Sites	LWS
Local Planning Authority	LPA
Noise Important Areas	NIA
Non-Technical Summary	NTS
Oxfordshire County Council	OCC
Public Rights of Way	PRoW
Site of Special Scientific Interest	SSSI
South Oxfordshire District Council	SODC
Vale of the White Horse District Council	VoWHDC
Water Framework Directive	WFD

1. Introduction

1.1 Overview

- 1.1.1 This Non-Technical Summary (NTS) has been prepared for the Didcot Garden Town Housing Infrastructure Fund (HIF 1) Scheme (hereafter referred to as the 'Scheme') and provides a summary, using non-technical language, of the Environmental Impact Assessment (EIA) that has been undertaken for the Scheme.
- 1.1.2 This NTS has been prepared in accordance with Schedule 4 of the Town and Country Planning (EIA) Regulations 2017, hereafter referred to as the EIA Regulations.
- 1.1.3 Anyone who wishes to review the detailed EIA undertaken for the Scheme can view the Environmental Statement (ES) that has been submitted alongside this NTS.
- 1.1.4 Planning permission for the Scheme is being sought by the Growth and Economy Directorate of Oxfordshire County Council (OCC). The decision to grant or refuse planning permission in this case rests with the planning department at OCC, who are also the relevant highways authority. The Scheme is located within the administrative area of South Oxfordshire District Council (SODC) and Vale of the White Horse District Council (VoWHDC).

1.2 Key Definitions

- 1.2.1 The following terms are referred to within the NTS and mean:
 - The Scheme – this refers to the design for the A4130 Widening; the Didcot Science Bridge; the Didcot to Culham River Crossing; and the Clifton Hampden Bypass including all highways; pedestrian, cycling and horse riding; drainage; lighting; landscaping; and ecological design features.
 - The Site or Scheme boundary – this refers to everything inside the boundary for which planning permission has been applied for. See Figure 2.5.
 - The study area – refers to the area of study applied to the assessments included within the EIA.
 - Mitigation – refers to measures that seek to avoid or prevent, reduce, or offset environmental effects due to the Scheme.
 - Significant effect – these can either be adverse (negative) or beneficial (positive) and indicate the environmental effects of greatest concern. Predictions regarding significant effects take into account the proposed mitigation and thus effects are those that are likely to occur once mitigation has been implemented. Significant environmental effects do not mean that a development cannot go-ahead, instead, the local planning authority must weigh the social and economic benefits of the Scheme against these significant environmental effects when deciding to approve or reject planning permission.

2. The Scheme

2.1 Overview

2.1.1 The Scheme consists of four separate but interdependent highways schemes:

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

2.1.2 Collectively these are referred to as the 'Scheme' and are described below.

2.2 The Scheme

2.2.1 The Scheme will directly unlock the potential for 20,000 new jobs and support the delivery of more than 20,000 new homes in the Didcot Garden Town area. The residential units are located across separate sites in and around Didcot in South Oxfordshire and Vale of White Horse districts.

2.2.2 The Scheme is also 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. Whilst the Scheme is based on future growth, it will also help to ameliorate the traffic issues resulting from historic housing and employment growth.

2.2.3 The Scheme includes the following:

A4130 Widening:

- A 1.6 km dual carriageway extending from the Milton Gate Junction eastwards to the proposed eastern roundabouts connecting into the future development at Valley Park and the Didcot Science Bridge.
- This part of the Scheme includes three roundabouts. The Backhill roundabout will be located at the western end of the Scheme and is proposed to serve commercial development and the Valley Park strategic housing allocation site. A new signalised junction is proposed east of the Backhill roundabout which will provide access to Valley Park.
- The Old A4130 roundabout will be located further east and will provide access to the Didcot Science Bridge roundabout and the old alignment of the A4130.
- The Didcot Science Bridge roundabout will provide access to the Didcot Science Bridge and Valley Park.
- The road corridor will also include a bi-directional segregated cycleway and a footway on the southern side of the dual carriageway, as well as several formal crossing points.

2.2.4 The A4130 Widening layout is shown in Figure 2.1.

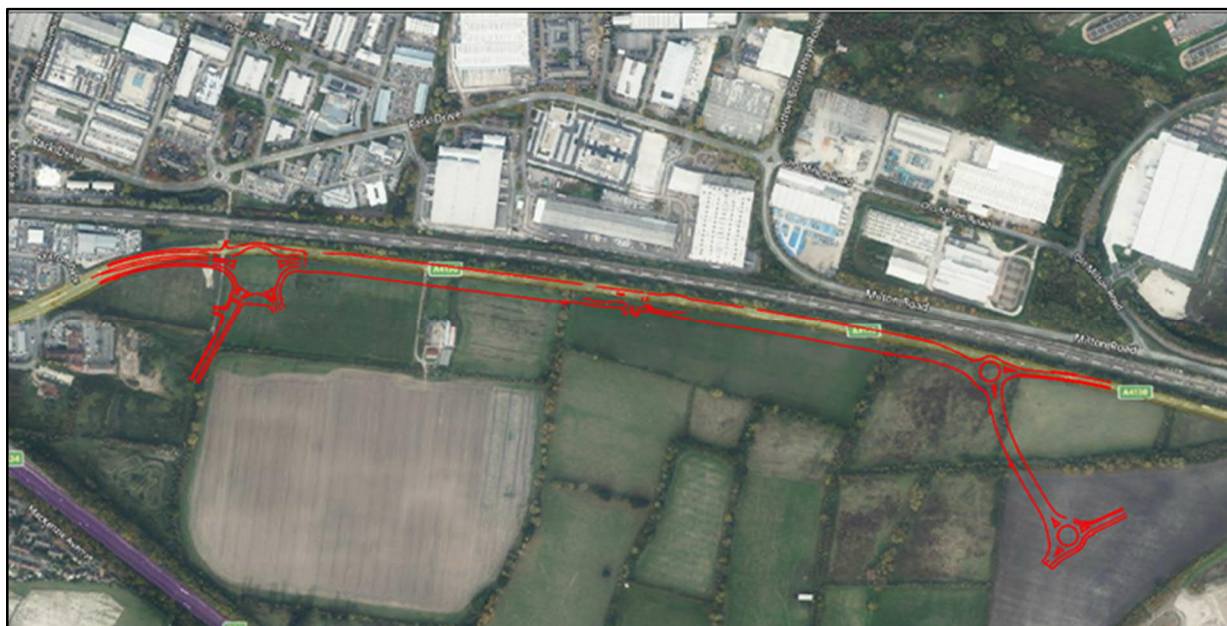


Figure 2.1: A4130 Widening Layout Plan

Didcot Science Bridge:

- This section of the Scheme is a new north-south bridge from the Didcot Science Bridge roundabout, over the Great Western Railway Mainline, the A4130 and Milton Road, into the former Didcot A Power Station site. This will include embankments that will vary in width. The road bridge will include a single carriageway, a bi-directional segregated cycleway and a footway on one side.
- The Didcot Science Bridge Link Road will connect the bridge to the A4130 north of the Purchas Road/ Hawksworth roundabout. The link road will be a single carriageway, with footways and bi-directional cycleways on both sides of the road for most of its length. Various accesses are planned off the road for proposed housing and industrial developments. Other works include the diversion of a watercourse which will cross beneath the new road in a culvert.

2.2.5 The Didcot Science Bridge layout is shown in Figure 2.2.



Figure 2.2: Didcot Science Bridge Layout Plan

Didcot to Culham River Crossing:

- This section of the Scheme will provide a new single carriageway link between the A4130, to the north of Didcot, and the A415 Abingdon Road to the west of the Culham Science Centre (CSC). The new link road will connect with the A4130 at the Collett roundabout, which will be enlarged as part of the Scheme. Two accesses are planned off the road alignment to support proposed development.
- The road continues north, east of an active landfill site where a new access road will be provided south and west of an existing balancing pond to provide access for the landfill and aggregates sites. The new link road will carry on north over an existing private rail siding and over a historic landfill site towards the B4016.
- The proposed road will connect with the B4016 to provide access towards Appleford via a priority right turn lane and to Sutton Courtenay by a new three-arm roundabout.
- The road continues north from the new roundabout on viaduct over a floodplain and restored wetland area. The viaduct will lead to the proposed bridge over the River Thames, with a total length of 155 m.
- This part of the Scheme includes a new a single carriageway link road, approximately 3.6 km in length, between the A4130 at the existing Collett roundabout junction (Didcot) and the A415 at Culham. It includes two new bridges: one over the River Thames and one over the Hanson private railway sidings near the Appleford level crossing.
- North of the river, the new link road will continue north through existing farmland towards the A415 where a new four-arm roundabout will be constructed to connect with both the A415 and a new development to the north.
- The link road will be a single carriageway with footways and bi-directional cycleways on the eastern side of the road for the whole of its length. A footway and bi-directional cycleway will also be provided on the western side.

2.2.6 The Didcot to Culham River Crossing layout is shown in Figure 2.3.

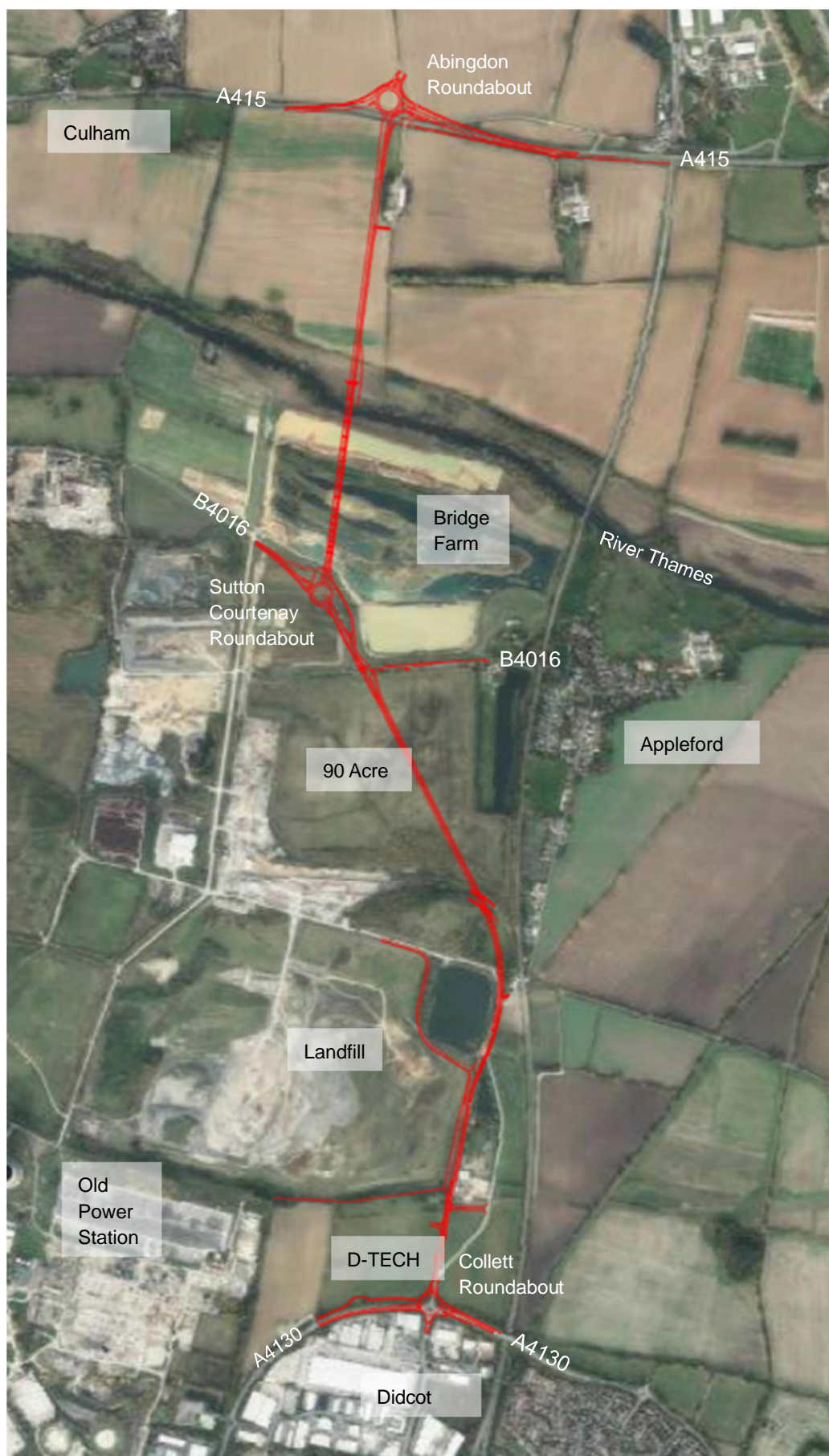


Figure 2.3: Didcot to Culham River Crossing Layout Plan

Clifton Hampden Bypass:

- The Clifton Hampden Bypass will re-route traffic on the A415 around the village of Clifton Hampden.
- The link road will provide a single carriageway bypass around Clifton Hampden village and will be approximately 2.2 km long and aligned in a south-west to north-east direction. The new road will provide a single carriageway with adjacent hard strips, grass verges, and a shared-use cycleway/ footway.
- The proposed works also include the construction of a large four-arm roundabout at the western end of the Scheme, providing access to the SODC Local Plan allocated housing site, the Culham railway station, other farmland and businesses and the CSC. A new junction with the existing B4015 Oxford Road is proposed at the eastern end of the Scheme.
- The current alignment of the A415 will be realigned north into the proposed bypass and the existing A415 alignment will be designated as a 'no through road'. All roundabout exits will include one lane, except the eastern bypass arm which will have two lanes.
- Station Road will be realigned and will join with a new entrance to the industrial properties located north-west of the roundabout. The existing main access into the CSC will be converted into a shared use footway/ cycleway. The north-east roundabout arm will provide access to CSC via the main gate, and a stub towards Perimeter Road for a potential future connection to be delivered by CSC.
- The A415 connection road east of the roundabout will provide access from the bypass to the existing A415 and Clifton Hampden.
- Along the bypass, four access points will be included on the south side of the road; one will link to the existing alignment of the A415 (as described); one to a Thames Water sewage treatment works; and one to an existing farm track. In addition, the bypass will tie-in with the current alignment of the B4015 Oxford Road (east) and a T-junction will be included to provide access to the current alignment of the B4015 Oxford Road (south-west). This will include a dedicated ghost island, right turn lane in the eastbound direction. On the north side of the road, two access will be created; one will be a new second access into the CSC, the other will link with an existing farm track.

2.2.7 The Clifton Hampden Bypass layout is shown in Figure 2.4.

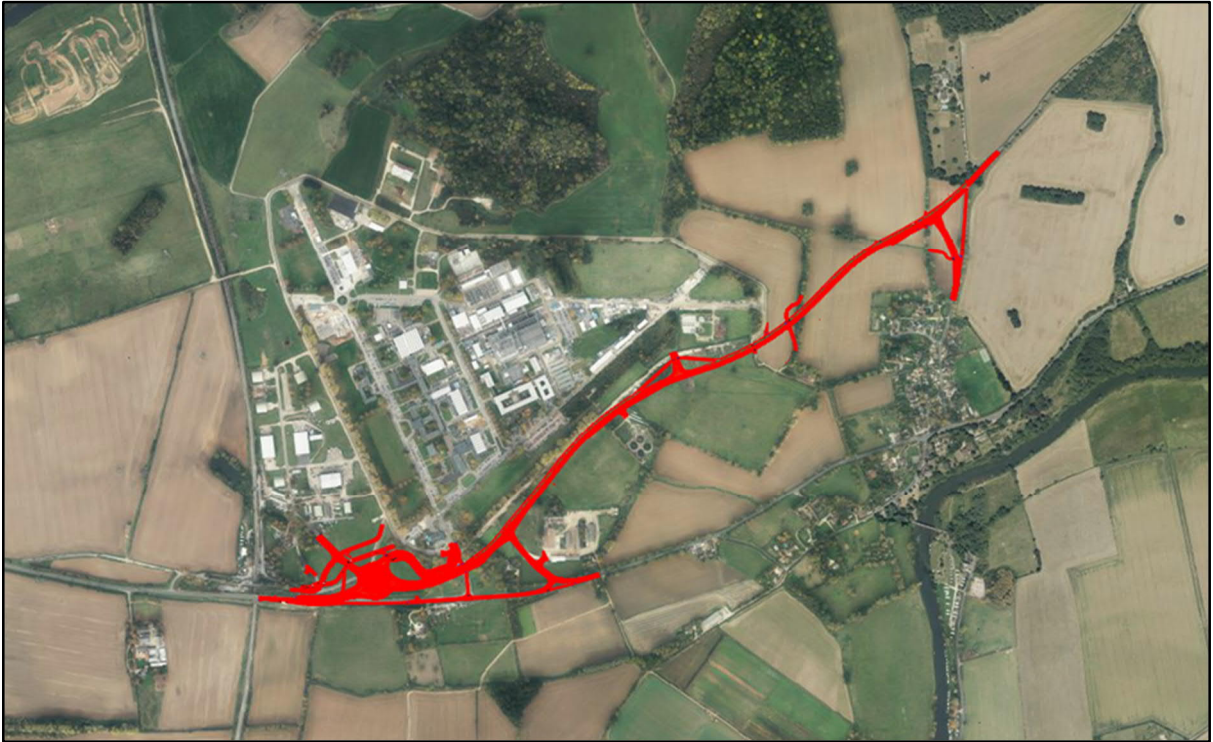


Figure 2.4: Clifton Hampden Bypass Layout Plan

2.2.8 The Scheme boundary for which planning permission is being applied for is shown in Figure 2.5.

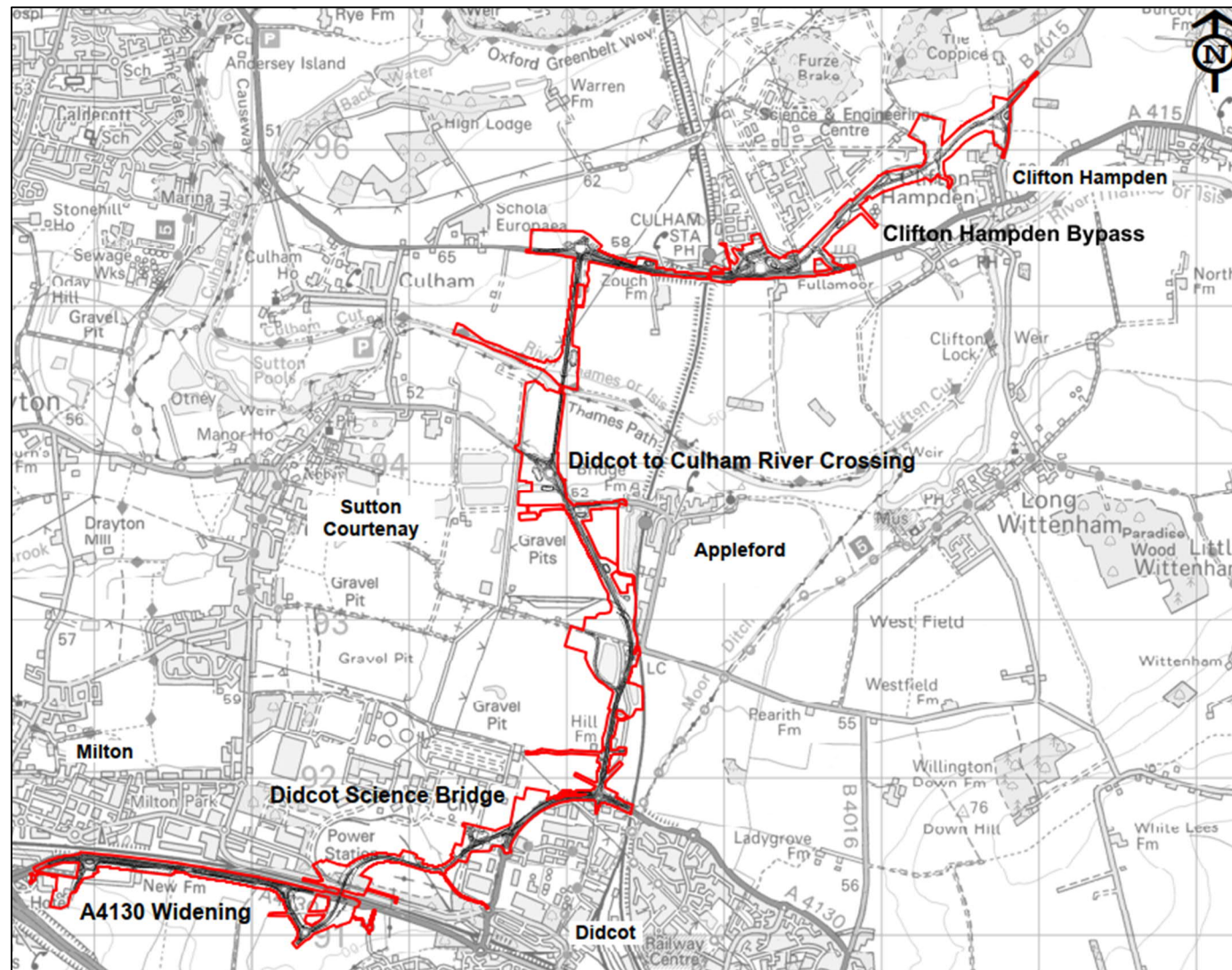


Figure 2.5: The Scheme

2.3 Construction and construction programme

- 2.3.1 Construction of the Scheme is anticipated to commence in 2023, subject to securing planning permission, land acquisition and the Compulsory Purchase Order (CPO). Construction is anticipated to last for approximately 28 months, ending in 2025 at which time, the Scheme will become operational.
- 2.3.2 Due to the length of the Scheme, there will be a need for at least nine construction compounds located throughout the Site. Various stockpile areas will be required for topsoil and other materials, so that they can be stored safely until they are required for re-use within the Site. These stockpile areas will be located close to the Scheme mainline and within the Scheme boundary. The height of stockpiles will be confirmed with the Principal Contractor (PC) prior to Scheme construction. Land used temporarily for material stockpiling will generally be returned to its former use.
- 2.3.3 Haul roads for earthmoving equipment such as dump trucks will be required for the entire length of the Scheme. These will follow the alignment of the mainline of the Scheme to avoid the need for additional site clearance. Haul road maintenance and dust control measures will be adopted.
- 2.3.4 Appropriate access routes to site compounds for people, plant and material will be evaluated and designated by the PC, in consultation with OCC as the relevant highway authority, to ensure that construction traffic is restricted to appropriate routes to minimise local disruption. A detailed Traffic Management Plan (TMP) will be prepared and implemented by the PC – this will define measures to be used by the PC to reduce the impacts associated with construction traffic. In addition, the contractor will prepare a Construction Environmental Management Plan (CEMP) which will detail a range of best practices that aim to manage and limit the potential for environmental impacts associated with Scheme construction activities.

Demolition

- 2.3.5 A lagoon, owned by RWE and known as the RWE Lagoon 1, will require decommissioning and removal. This will be replaced by RWE, in a different location close to the Scheme. The impact of the Scheme on the lagoon is considered in the EIA.
- 2.3.6 In addition, small areas of existing highway infrastructure will require modification where it joins with the Scheme, and where it is no longer required.

3. Assessment of Alternatives

3.1.1 Chapter 3 of the ES provides descriptions of the main alternatives studied and an indication of the main reasons for selecting the chosen option, including a comparison of environmental effects in accordance with the EIA Regulations. This section provides an overview of the alternatives considered.

3.1.2 The Scheme has been subject to an options appraisal process to identify the best way to deliver infrastructure for Didcot Garden Town. Optioneering has been undertaken by OCC between 2014 and 2021. It was ascertained in 2014 and 2017 by OCC in consultation with VoWHDC and SODC, that new highway infrastructure will be required to provide additional highway capacity between Didcot and Culham, in order to facilitate planned housing and employment growth as a number of important routes for the area will operate above capacity given the additional associated traffic volumes anticipated.

3.1.3 The alternatives considered include:

The Scheme as a whole:

Options Assessment Report Part 1 (2018)

- Western approach – A4130 dualling and Didcot Science Bridge.
- Northern approach – Didcot to Culham River Crossing and Clifton Hampden Bypass.
- Bus improvements – Bus priority including bus lanes and bus priority at traffic signals on main roads within Didcot and on routes between Didcot and Harwell, Wantage, Milton, Abingdon and the A34, including a Park & Ride in the vicinity of the A34.
- Rail improvements – Improved rail services from Didcot to Oxford.
- Autonomous vehicles – Garden Line network to connect to Harwell, Culham, Abingdon, Milton Park and the rest of Didcot.
- Traffic management – Junction realignments and signalisation and co-ordinated traffic signal control.
- Cycle and pedestrian facilities - Comprehensive cycle and walking networks, links to Science Vale, and cycle priority in the town centre.

Options Assessment Report Part 2 (2019)

- Do minimum – Walking and cycling improvements.
- Do something 1 – A4130 dualling and Didcot Science Bridge.
- Do something 2 – Culham to Didcot River Crossing and Clifton Hampden Bypass.
- Do something 3 – Above options combined.

Options Assessment Report (2021)

- All previously defined options and including Science Vale bus rapid transit, Science Vale light rail link, demand responsive transport and small-scale bus improvements across Science Vale.

Other alternatives:

- Alternative materials and programming will be considered prior to construction.

- Landscaping has been designed repeatedly, with input from highway designers, ecologists, landscape architects, arboriculture and noise specialists. The drainage design included as part of the Scheme, have been through a similar process and numerous solutions have been considered and discounted. Various alternatives have been identified for flood compensation, modelled and agreed with the Environment Agency. Different measures to mitigate noise effects have been considered, such as low noise surfacing, noise barriers and noise earth bunds.

A4130 Widening:

- Total removal of ditch, hedges and trees located to the south of the A4130 Widening and replacement planting.

Didcot Science Bridge:

- One roundabout connecting the Scheme to the A4130 with a large elevated curve structure leading towards a bridge over the Great Western Railway Mainline, with no access to planned developments to the south.
- No bridge over the Great Western Railway Mainline. Upgrading the existing A4130 to dual carriageway between Milton Interchange and Purchas Road roundabout and the improvement of all junctions within this stretch of the A4130.
- No gap between the footpaths and cycleways and the proposed road, where the Scheme joins to the A4130, north of Didcot.
- Different materials and bridge heights have been considered in consultation with Network Rail.

Didcot to Culham River Crossing:

- Six options for the Didcot to Culham River Crossing including three options to the east of the Didcot to Oxford railway line, including one that extends west of this railway line and crosses over it and continues on the east. A new road that links the A4130 near Brightwell-cum-Sotwell to the A4074 Shillingford. The sixth option included the widening of the A34.
- Two options located west of the Didcot to Oxford railway line (Cherwell Valley Line), one closer to the village of Appleford with a roundabout connecting the Scheme to the B4016 and one further west with a T-junction between the Scheme and the B4016.
- Pedestrian facilities located on the western side of the Scheme.
- Alternative bridge structures for the crossing over the Appleford sidings.
- Alternative bridge structures for the crossing over the River Thames.

Alignments suggested by Appleford Parish Council:

- Alignment further west of the Scheme alignment, extending through landfill and mineral areas.
- Two further alignments located further west than the previous options, again extending through landfill and mineral areas.
- Alignment over the waterbody located to the west of the Appleford level crossing.
- Alternative crossing over the Appleford sidings.
- A level crossing across the Appleford sidings, rather than a bridge.

Clifton Hampden Bypass

- Two alignments for the Clifton Hampden Bypass.
- 60 mph speed limit for the bypass.
- A roundabout linking the bypass and the B4015 Oxford Road.
- An underpass connecting a farm access track beneath the Scheme.
- An alignment for the connection between the B4015 Oxford Road and the Scheme that required the removal of a high-quality Oak Tree.

3.1.4 Through optioneering and an iterative design process, the current development solution is considered to be the most appropriate for addressing the aims of the Scheme, whilst aiming to provide a high-quality sustainable development, by avoiding and reducing environmental, social and economic impacts where possible.

4. Environmental Assessment Methodology

4.1 Overview

- 4.1.1 Under the EIA Regulations, the Scheme is defined as the type and scale of development that automatically requires an EIA. Accordingly, an EIA has been undertaken to identify the potential for the Scheme to have significant effects upon the environment. The results of the EIA are reported in the ES and summarised in this NTS.
- 4.1.2 The EIA considers impacts during construction and operation of the Scheme. The construction phase assessment addresses the temporary activities involved in building the Scheme and the permanent presence of the Scheme once constructed. The operational assessment considers the situation when the Scheme is being used by traffic.

4.2 Scope of the Environmental Impact Assessment

- 4.2.1 To determine the scope of the EIA, a Scoping Report was submitted to OCC as the Local Planning Authority (LPA) in April 2020. The Scoping Report set out how OCC, as the applicant, intended to undertake the EIA. The LPA consulted several statutory consultees, such as the Environment Agency, Historic England, SODC and VoWHDC; and non-statutory consultees and sought their opinion on the suggested scope of the ES. Considering the response of the consultees, the LPA issued their Scoping Opinion on the 30th of June 2020. This Scoping Opinion and the Scoping Report form the foundation on which the EIA has been based.
- 4.2.2 The only topics scoped-out of the EIA (i.e. the LPA agreed that certain topics do not require assessment given that significant effects will be avoided) – were the effects of heat and radiation from the Scheme, the demolition and decommissioning of the Scheme, and major accidents and disasters. Accordingly, these topics have not been assessed and not discussed further in this NTS.
- 4.2.3 Each of the environmental topic scoped into the EIA are summarised in Sections 6 to 17.

4.3 Methods used in the assessment

- 4.3.1 The approach to the EIA comprised gathering information to establish the current environmental setting or baseline; considering the potential impacts of the Scheme; developing measures to avoid, prevent or reduce adverse impacts; and then assessing the resultant likely significant effects of the Scheme on local communities and the environment. The EIA followed industry standard methods, including for establishing significance, set out in Highways England's Design Manual for Roads and Bridges (DMRB) along with topic-specific guidance as appropriate.
- 4.3.2 For each environmental topic, a prediction (based on either professional judgements or computer modelling, all undertaken in accordance with industry guidance and methodologies) regarding significant effects has been provided, taking account of mitigation measures (for example, noise barriers and landscape planting such as woodland and grassland).
- 4.3.3 The following sections provide a summary of the assessment of likely significant environmental effects as a result of the Scheme as reported in the ES.

5. General Consultation

5.1.1 The HIF 1 Schemes, that together form the Scheme, have been subject to consultation during the production of Local Plans including:

- The OCC Local Transport Plan was subject to public consultation in 2015;
- The VoWHDC Local Plan 2031 (Part 1 and 2), Part 1 was subject to public consultation in 2014 and Part 2 was subject to public consultation in 2017; and
- The SODC Local Plan (2011-2035) was subject to public consultation in 2019.

5.1.2 Public consultation events in relation to the Scheme have included:

- Consultation was held on the 2nd and 25th of November 2018 to explain options being considered, and to show early indicative plans which will support the bid for funding from the Government's Housing Infrastructure Fund.
- Public consultation was held from the 20th of March to the 30th of April 2020 on the feasibility design of the Scheme. Due to COVID-19 restrictions this included online consultation with a live chat function; whilst printed versions of the consultation materials were sent to those who requested them. The consultation period was extended to 6 weeks from 4 weeks to allow people more time to respond.

5.1.3 Other consultation has included:

- Consultation has been undertaken with elected representatives relevant to the Scheme including non-motorised user groups (e.g. pedestrian, cycling and horse-riding groups). Online meetings took place with these groups on the 13th of May 2021 and the 10th of June 2021.
- Letters were sent to land/ property owners located immediately adjacent to the Scheme to offer a meeting to explain the Scheme and answer questions.
- Consultation with statutory consultees to agree the methodology for certain elements of the EIA, for example consultation has been undertaken with Natural England, the Environment Agency and OCC ecologist to agree the scope for the surveys and the ecological assessment, share the findings of the surveys and discuss opportunities for mitigation, compensation, and enhancement.

6. Air Quality

6.1 Baseline

- 6.1.1 Air quality in the area around the Scheme is currently affected by traffic in and around Didcot. There are no Air Quality Management Areas (AQMA) (an area where air quality objectives are not likely or are not being achieved) within the study area.
- 6.1.2 Baseline air quality information has been informed through use of Annual Status Reports for SODC and VoWHDC, using 2019 monitoring data, whilst specific Scheme monitoring has been undertaken over a period between 2019 and 2020. This data indicates that in 2023 (the year of Scheme construction) and 2024 (the first year of Scheme operation), all air quality concentrations are predicted to comply with their respective air quality objectives.
- 6.1.3 Public exposure receptors include residential properties located close to the Scheme and surrounding road network which could be affected by changes in air quality in and around the town of Didcot. This includes villages such as Appleford, Milton, Long Wittenham and Clifton Hampden, as well as isolated properties close to roads in the study area. There are also numerous schools within the study area, including Culham Science Nursery & Preschool, Culham Primary School, Europa School UK, Clifton Hampden Church of England Primary School, Sutton Courtenay Pre-School and Primary School and Long Wittenham Primary School.
- 6.1.4 Selected public exposure receptors, representative of worst-case conditions, were chosen at 122 existing locations. 34 public exposure receptors are located at the boundary of proposed development sites.

6.2 Construction

Construction dust

- 6.2.1 Without mitigation, construction of the Scheme could temporarily impact air quality due to dust generated by construction activities, such as earth moving, demolition and excavations, as well as emissions from construction traffic and equipment. Mitigation measures to be included in the CEMP will include preparing and maintaining the site such as using screens, vegetating stockpiles, specifying the type of machinery used, surfacing of haul routes and wheel washing. These measures, and others, will minimise the potential for temporary dust impacts during Scheme construction activities.

Summary of construction dust assessment:

- No significant air quality effects in relation to dust are likely to occur.

Construction traffic

- 6.2.2 Air quality impacts as a result of construction traffic have been modelled and assessed. No receptors within the study area are predicted to experience an exceedance of the objective for nitrogen dioxide – the largest changes in nitrogen dioxide concentrations are predicted to be imperceptible.

Summary of construction traffic assessment:

- No significant air quality effects in relation to construction traffic are likely to occur.

6.3 Operation

- 6.3.1 During Scheme operation there is a need to assess air quality impacts as a result of changes in vehicle flows along the Scheme and in the wider road network once the Scheme is open to traffic. The Scheme is anticipated to result in both increases and decreases in annual mean nitrogen dioxide concentrations across the study area during operation, however, no receptors (properties and schools) are predicted to experience an exceedance of the objective for nitrogen dioxide.

Summary of operation assessment:

- No significant air quality effects in relation to operational traffic are likely to occur.

7. Cultural Heritage

7.1 Baseline

- 7.1.1 Cultural heritage includes archaeology, historic buildings, structures and historic landscapes including parks and gardens. There are no designated assets that are crossed by the Scheme. There are no World Heritage Sites or Registered Battlefields within the study area, although a total of 232 previously recorded heritage assets are located within the study area, as identified on the Oxfordshire Historic Environment Records and the National Heritage List for England. There are also five Scheduled Monuments, one registered park and garden, six conservation areas (Milton, Sutton Courtenay, Culham, Didcot (Old) Town, Clifton Hampden and Nuneham Courtney) and 66 listed buildings in the study area. Additionally, there is one non-designated building within the Scheme boundary (Hill Farm, south of Appleford) and 13 non-designated buildings within the study area. The Scheme also crosses 15 historic landscape character types.

7.2 Construction

- 7.2.1 Cultural heritage assets have the potential to be impacted by the presence and movement of construction plant and equipment; the siting of construction compounds; activities within working areas that create associated noise and light; increased volumes of construction vehicle derived traffic; and physical impacts, including historic landscapes and removal of previously known and unknown archaeological heritage assets.
- 7.2.2 In addition to adopting best practice construction methods (to be included within the CEMP), a staged programme of archaeological mitigation will be undertaken which will comprise measures to protect archaeological remains. In addition, the landscaping included as part of the Scheme includes mitigation in the form of planting and placemaking aimed at reducing impacts on the landscape, thereby reducing impacts on conservation areas and the setting of heritage assets.

Summary of construction assessment:

- No significant effects on known archaeological assets; historic landscape character; and designated and non-designated built heritage assets are likely to occur.
- The Scheme is assessed to have the potential to have a significant adverse effect on as yet unknown archaeological remains which may be present at the Site. The programme of archaeological investigation and mitigation will aim to ensure that such resources are identified and appropriately managed.

7.3 Operation

- 7.3.1 During Scheme operation, cultural heritage impacts are restricted to those associated with the setting of heritage assets, principally due to changes in lighting and traffic noise levels. No archaeological assets will be impacted during Scheme operation, given that such assets will be removed during construction.

Summary of operation traffic assessment:

- No significant effects on heritage assets are likely to occur during Scheme operation.

8. Landscape and Visual

8.1 Baseline

- 8.1.1 The Scheme traverses a range of urban, industrial and rural landscapes. Rural locations are highly sensitive to change, whereas some more urban and industrial areas are less sensitive to change. The Site is not located within the North Wessex Downs Area of Outstanding Natural Beauty.

8.2 Construction

- 8.2.1 Construction activities have the potential to temporarily impact on local landscapes and on the views of people using public rights of way and local roads, and views from residential properties close to the Scheme. The CEMP will include a range of measures to mitigate potential landscape and visual impacts, including the sensitive design of construction compounds; sympathetic lighting to minimise disturbance to nearby receptors.

Summary of construction landscape assessment:

- Scheme construction is likely to have temporary significant adverse effects on the Site, Local Landscape Character Area (LLCA) 12 Thames Floodplain (an area of land located north of the River Thames, and which generally extends from Culham to Clifton Lock) and LLCA 16 Clifton Hampden Farmland (an area of land that generally extends from the eastern edge of the CSC, north of Clifton Hampden, eastwards towards the A4074).

Summary of construction visual assessment:

The Scheme will likely have temporary significant effects during the construction phase for the following visual receptors:

Residential receptors

- Views from Didcot;
- Views from south Appleford;
- Views from the entrance to CSC; and
- Views from around Clifton Hampden.

Recreational users

- Views from around the former Didcot A Power Station and Didcot B Power Station;
- Views from Public Rights of Way (PRoW) south of Appleford;
- Views from Thames Path National Trail; and
- Views from PRoW around Clifton Hampden.

Road users

- Users of the B4016;
- Users of roads located west of the CSC; and
- Users of roads located near the entrance of the CSC.

8.3 Operation

- 8.3.1 Due to the nature of the Scheme within the wider landscape, operational activities could have permanent adverse impacts on the local landscape and views. Measures to mitigate landscape and visual impacts include sensitive highway lighting and landscape planting that will include a mixture of woodland blocks, hedgerows, individual trees and ornamental planting.

Summary of operational landscape assessment (in winter, the year of Scheme opening):

- The Scheme is likely to have temporary significant adverse effects on the Site, LLCA 12 Thames Floodplain and LLCA 16 Clifton Hampden Farmland.

Summary of operational landscape assessment (in summer, 15 years after Scheme opening):

- By operational year 15, the proposed landscape planting will have established, such that landscape effects will have reduced to a level that is not significant.

Summary of operational visual assessment (in winter, the year of Scheme opening):

The Scheme will likely have significant effects for the following visual receptors:

Residential receptors

- Views from Didcot;
- Views from south Appleford;
- Views from the entrance to CSC; and
- Views from around Clifton Hampden.

Recreational users

- Views from Public Rights of Way (PRoW) south of Appleford;
- Views from Thames Path National Trail; and
- Views from PRoW around Clifton Hampden.

Road users

- No significant effects.

Summary of operational visual assessment (in summer, 15 years after Scheme opening):

The Scheme will likely have significant effects for the following visual receptors:

Residential receptors

- Views from the entrance to CSC; and
- Views from around Clifton Hampden.

Recreational users

- Views from PRoW south of Appleford;
- Views from Thames Path National Trail; and
- Views from PRoW around Clifton Hampden.

Road users

- No significant effects.

9. Biodiversity

9.1 Baseline

- 9.1.1 The Culham Brake Site of Special Scientific Interest (SSSI) is located 1.2 km north-west of the Didcot to Culham River Crossing. There are no further statutorily or internationally designated nature conservation sites within 2 km of the Scheme. There are nine non-statutory designated sites (including Local Wildlife Sites (LWS), Conservation Target Areas (CTA) and possible LWS) within 2 km of the Site, the nearest located 0.4 km south and east of the Clifton Hampden Bypass (includes the Thames Clifton to Shillingford CTA; Clifton Hampden Wood LWS; and Clifton Hampden Meadows LWS). No ecological sites are located within the Site.
- 9.1.2 Vegetation and habitat surveys have been undertaken to understand the existing ecological conditions in the Site. A desk study and further ecological surveys have been undertaken to gather baseline information on protected and notable species in the vicinity of the Scheme, including surveys for badgers; barn owl; bats; breeding birds; wintering birds; otter, water vole; great crested newt; reptiles; terrestrial and aquatic invertebrates; and fish.

9.2 Construction

- 9.2.1 Construction activities have the potential to impact on ecological features due to habitat loss; fragmentation of populations or habitats; disturbance; habitat degradation; and species mortality. The Scheme has been designed, as far as possible, to avoid and minimise impacts and effects on important ecological features. In addition, the CEMP will ensure that construction activities comply with environmental legislation and mitigate construction-related effects on biodiversity – this includes methods to prevent the transfer of invasive non-native species, and measures to control dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration.

Summary of construction assessment:

- No significant effects on designated and non-designated sites are likely during Scheme construction.
- No significant effects on protected or notable habitats or species are likely during Scheme construction.

9.3 Operation

- 9.3.1 Impacts on ecological features during the Scheme operational phase include species mortality, habitat degradation and disturbance. As such, the Scheme design includes a range of measures to minimise the potential for such impacts – this includes the appropriate use of lighting, maintenance of the landscape planting, installation of badger fencing and a 'hop-over' to guide foraging bats across the road at a safe height above traffic.

Summary of operational assessment:

- No significant biodiversity effects are likely to occur during Scheme operation.

10. Noise and Vibration

10.1 Baseline

- 10.1.1 Two 'Noise Important Areas' (NIA) (designated by the Department for Energy, Food and Rural Affairs (Defra), these are areas considered to be most exposed to noise) for road noise and one for rail noise are located in the study area. One road noise NIA is located on the A415 in Clifton Hampden to the west of the junction with Watery Lane (ID 13243), the other is on the A34 to the south of the junction with the A4130 at Milton Interchange (ID 4187). The rail NIA (ID 564) encompasses two houses at the southern end of Appleford.
- 10.1.2 Sensitive noise and vibration receptors in the study area include residential properties, educational buildings, community facilities (including places of worship), accessible open spaces (as defined by local authority data), designated ecological sites (such as SSSIs), cultural heritage assets (such as Scheduled Monuments), the North Wessex Downs Area of Outstanding Natural Beauty and PRow.

10.2 Construction

- 10.2.1 The main construction activities that will take place during the Scheme construction phase include site clearance, earthworks, retaining wall construction, bridge construction and road construction (pavement) works, and use of construction traffic (Heavy Goods Vehicles). Such construction activities have the potential to result in temporary noise impacts at the receptors closest to the construction works.
- 10.2.2 Some construction activities also have the potential to generate vibration impacts - this includes works such as earthworks and road construction (pavement) works using vibratory rollers. Piling will be required at the new bridges, although a method of piling will be used for these works that generates minimal vibration.
- 10.2.3 In order to mitigate noise and vibration, the CEMP will include a range of best practice measures - including measures such as the use of quiet and low vibration equipment and methodologies; limiting working hours works; and establishment of a complaints management system and community engagement strategy.

Summary of construction assessment:

- Temporary significant adverse construction noise effects are anticipated at the Premier Inn (Milton Interchange); New Farm (A4130); new receptors at Valley Park; residents at Great Western Park; Hill Farm; Hartwright House and Level Crossing Cottage (between Didcot and Appleford), Appleford western edge (Main Road, south, and Chambray Close); a single property north-west of Appleford; residents in the eastern part of Sutton Courtenay; Zouch Farm near the A415; residents near Culham Station; Fullamoor Barns (off the A415); Fullamoor Cottages and two cottages to the east (off the A415); Culham Science Centre Nursery; Northern edge of Clifton Hampden and two properties north of Scheme north of Clifton Hampden.
- Temporary significant adverse construction vibration effects are anticipated at the Premier Inn (Milton Interchange); Hill Farm, Hartwright House and Level Crossing Cottage (between Didcot and Appleford); a single property north-west of Appleford; residents near Culham Station; Fullamoor Barns (off the A415); Fullamoor Cottages and two cottages to the east (off the A415); Culham Science Centre Nursery; properties on the northern edge of Clifton Hampden and two properties north of Scheme north of Clifton Hampden.

10.3 Operation

- 10.3.1 The operation of the Scheme has the potential to result in both beneficial and adverse permanent traffic noise impacts due to changes in traffic levels and patterns. The Scheme will alleviate traffic flow on some routes close to sensitive receptors but bring a new noise source closer to others. The magnitude of operational traffic noise impacts at a receptor is dependent on a range of factors, including the traffic flow, composition, speed, road surface, ground topography, the presence of intervening buildings and structures, and the distance to the road.
- 10.3.2 Mitigation measures have been included in the Scheme design to mitigate operational noise – this includes the use of noise barriers, low noise surfacing at key sections of the Scheme (including key parts of Culham Hampden Bypass and Didcot to Culham River Crossing), and aligning the Scheme away from receptors, where possible.

Summary of operational assessment:

- Significant adverse noise effects are predicted at the Premier Inn (Milton Interchange); Hill Farm, Hartwright House and Level Crossing Cottage (between Didcot and Appleford); 19 properties along the B4016 in Appleford (south of allotments); Warren Cottage north of A415; Culham Science Centre Nursery; Fullamoor Cottages (off the A415); seven properties located on the northern edge of Clifton Hampden; two properties located north of Clifton Hampden; and four properties located near to the Golden Balls roundabout.
- Significant beneficial noise effects are predicted at 57 properties along the existing A4130 in Didcot; 79 properties located close to the B4016 in Appleford; 228 properties and one educational building located in Sutton Courtenay and Culham; nine properties on the A415 east of Culham Station; 91 properties, three community facilities, one medical building and one school in Clifton Hampden; 207 properties in and close to Long Wittenham, and three community facilities and one school; and 75 properties in Burcot.

11. Geology and Soils

11.1 Baseline

- 11.1.1 The current land use along the Scheme alignment includes agricultural land, existing highways, a former power plant site, railways, industrial uses, existing and historic landfills and existing and restored quarries. The underlying geology generally consists of gravels, sand, mudstones and clays. Based on the current and historical land uses, the most substantial potential sources of land contamination at the Site include the former Didcot A Power Station, the active Didcot B Power Station, historic landfill sites, current landfill sites and Sutton Courtenay Quarry, an asphalt plant and railway sidings.
- 11.1.2 Soil surveys have been undertaken to which indicates that 65% of the agricultural land within Scheme boundary is considered to have soils that defined as being Best and Most Versatile.

11.2 Construction

- 11.2.1 During Scheme construction there is the potential for activities to generate contaminants that could enter groundwater or surface water. Other potential impacts may include compaction of soil and loss of agricultural soils. The CEMP will include measures that aim to prevent ground contamination, as well as methods for the identification, treatment, re-use and management of excavated materials.

Summary of construction assessment:

- Construction of the Scheme will result in a significant adverse effect on agricultural land due to the temporary loss of approximately 19.1 hectares of Best and Most Versatile agricultural land.
- Construction of the Scheme will result in a significant adverse effect on agricultural land due to the permanent loss of approximately 39.4 hectares of Best and Most Versatile agricultural land.

11.3 Operation

- 11.3.1 Following the opening of the Scheme, soils adjacent to the road may be affected by spray or airborne contaminants generated during routine maintenance and operation of the road or released during road accidents/ emergency situations.

Summary of operational assessment:

- No significant effects on geology and soils are likely during Scheme operation.

12. Material Assets and Waste

12.1 Baseline

- 12.1.1 Materials to construct the Scheme will be available from a wide range of suppliers. Regarding waste materials generated during the Scheme construction phase, there are a number of waste management facilities (including landfill sites) that will be available for use.

12.2 Construction

- 12.2.1 A wide range of material resources will be required to construct the Scheme – this includes concrete, structural steel, cement and timber. Construction activities will inevitably generate waste. Waste material will also be generated by excavation works, demolition, and removal of existing carriageway.
- 12.2.2 Construction activities will be undertaken in accordance with the CEMP which will provide a framework for good practice in materials and waste management. The CEMP will require the contractor to employ suitable methods for the storage, handling and management of materials and waste (including hazardous waste) and set out their responsibilities in relation to ensuring compliance with applicable legal requirements. The CEMP will also specify targets for waste material recovery and the use of alternative aggregates.
- 12.2.3 With regards to re-use of materials, the baseline target for recycling of construction and demolition waste is 70%, as set out in the EU Waste Framework Directive and the Waste Plan for England, however, Highways England guidance states that projects should aim to achieve 90% recovery. Therefore, during the construction phase, the Scheme will achieve at least 70% waste recovery and aim to achieve 90% recovery. In addition, at least 26% of aggregates imported to Site for use within the Scheme should comprise alternative (reused, recycled or secondary) aggregates, where technically and economically feasible.

Summary of construction assessment:

- No significant materials and waste effects are likely during Scheme construction.

12.3 Operation

- 12.3.1 Material use and waste generation are expected to be very small during Scheme operation. Routine maintenance will include gully emptying and litter collection. Periodically, maintenance activities such as resurfacing will be required. Waste arising from these maintenance activities is expected to be similar in both type and quantity to that generated by the existing highways network; whilst any wastes will be managed using the established procedures and facilities. For these reasons, operational phase effects in relation to material assets and waste are not likely to be significant.

13. Population and Human Health

13.1 Baseline

- 13.1.1 The main residential areas located in the vicinity of the Scheme comprise: Appleford; Clifton Hampden; Culham; Didcot; Ladygrove (North Didcot); Milton Heights; and Sutton Courtenay. Eight areas of land have been allocated for strategic residential development within the study area by the SODC and VoWHDC. In total, housing sites allocated by SODC and VoWHDC within the study area could bring forward approximately 12,333 residential units. In addition, there are eight residential development sites with submitted planning applications within the study area. Should these residential developments be approved, 6,851 residential units could be delivered.
- 13.1.2 There are nine publicly accessible open spaces within the study area, including recreation grounds, woodlands and allotments. The River Thames is also used by private vessels for recreation. There are also 11 community facilities in the study area, including five education facilities (two schools, two nurseries and one other education facility), one health facility, two religious facilities, two village halls and one post office.
- 13.1.3 There are 15 areas of commercial activity within the study area, including sites for manufacturing, light or heavy industry, retail and other employment (such as offices). Additionally, three areas of land have been allocated for future development and employment and business purposes. There are 14 sites that are subject to private planning applications for commercial/ business use, some of which are located within the aforementioned strategic employment sites.
- 13.1.4 Agricultural land use within the study area is predominantly arable with a significant amount of pig rearing located close to the A415 (Abingdon Road). A small amount of cattle and sheep grazing occurs at Fullamoor Farm House.
- 13.1.5 In total, there are 31 PRoW routes in the study area, which are made up of 65 PRoW sections. These PRoW sections comprise of 45 footpaths, 10 bridleways, eight byways with restricted traffic and two byways open to all traffic. The Thames Path National Trail is located within the study area – this runs parallel to the course of the River Thames and along its north bank between Culham and Clifton Hampden, before crossing over the Clifton Hampden Bridge and running along the south bank of the river. Additionally, the National Cycling Network Route 5 (Hanson Way) runs from Sutton Courtenay along High Street in a south-easterly direction towards Didcot, where it reaches Didcot Parkway station. There are a further three non-designated shared paths within the study area.
- 13.1.6 Male and female life expectancy within the study area is higher than the national average for England; 82.6 and 85.3 years in VoWHDC and 82.2 and 85.6 years in SODC, compared to England's average of 79.8 years and 83.4 years, respectively. A full profile of the population's health within the study area is provided in ES Chapter 13: Population and Human Health.

13.2 Construction

- 13.2.1 No land from existing private residential properties will be required either temporarily or permanently by the Scheme, and no residential properties will need to be demolished. In addition, no accessibility or severance issues are anticipated to strategic housing sites or sites with planning permission for housing, whilst no

community land and assets will be permanently affected by Scheme construction. However, Scheme construction will result in the following impacts:

- Access arrangements to nine residential properties located off the A415 Abingdon Road will change as a result of the Scheme.
- Construction will have an impact on existing business through road closures and diversions, and temporary land take. There will also be permanent land take to some business, for example at former mineral areas.
- There will be a combination of adverse and beneficial impacts on land designated for employment uses as a result of Scheme construction.
- Temporary and permanent land take will be required from farm holdings. The Scheme design seeks to reduce this disruption and where appropriate and reasonably practicable, incorporate inaccessible severed land as part of environmental mitigation.
- Temporary diversions for PRoW are likely to be required, whilst some routes may be permanently altered.
- Construction activities are likely to have both positive and negative effects on a range of human health determinants. Negative effects relate to accessibility and physical activity, noise, air quality, recreational river usage, landscape amenity, noise and air quality.

Summary of construction assessment:

- There will be significant beneficial, permanent, effects to one designated employment site (known as EZ2: D-Tech).
- There will be significant adverse, temporary and permanent, effects to one site with a planning application for business or commercial use.
- There will be significant adverse, temporary and permanent, effects to one existing business (Appleford Sidings and associated minerals land).
- There will be significant adverse, temporary and permanent, effects to three agricultural land holdings.
- There will be significant adverse, temporary and permanent, effects to one PRoW (known as Route 24, National Cycle Network Route 5).

13.3 Operation

- 13.3.1 The operation of the Scheme will not result in any further land take, nor lead to any additional issues concerning severance or accessibility.
- 13.3.2 With regard to health, Scheme operation is likely to have both positive and negative effects on a range of human health determinants. Increased exposure to noise and vibration pollution can negatively impact health and wellbeing. However, the Scheme is likely to have a positive health impact in relation to physical activity, accessibility, and reduced accidents.

Summary of operational assessment:

- There will be significant beneficial effects on community facilities across the study area due to improved connectivity.
- There will be significant beneficial effects on two strategic housing development sites (known as North-West of Valley Park and Valley Park) due to improved connectivity across the study area.

- There will be significant beneficial effects on two walking and cycling routes (the route between the Valley Park development site and Southmead Industrial Estate and the route between Culham Station and CSC), due to the introduction of new pedestrian and cycling infrastructure.
- There will be a significant beneficial effect to one site with a planning application for business or commercial use due to improved access and connectivity.

14. Road Drainage and the Water Environment

14.1 Baseline

- 14.1.1 The study area falls wholly within the catchment of the River Thames, which broadly flows west to east through the area, crossing beneath the Scheme north-west of Appleford. A significant tributary of the River Thames, the Moor Ditch, also flows through the study area from the south-west towards the north-east, meeting the River Thames adjacent to Long Wittenham. There are also several tributaries and minor ditches of these watercourses within the study area. There are two Water Framework Directive (WFD) designated surface water bodies within the study area, the 'Thames (Evenlode to Thame)' and 'Moor Ditch and Ladygrove Ditch' (a tributary of Moor Ditch known as Stert Brook falls under the WFD classification for 'Moor Ditch and Ladygrove Ditch'). There are a number of key watercourses and ponds in close proximity to the Scheme – this includes the River Thames, Meadow Brook, Stert Brook, the Moor Ditch, a pond connected to a landfill (Waterbody 07 (WB07)), and the Hanson finger lakes. These watercourses will be directly impacted by the Scheme.
- 14.1.2 The area beneath the A4130 Widening and the Didcot Science Bridge is underlain by a principal aquifer which provides water supply on a strategic scale and river base flow and is thus of regional importance.
- 14.1.3 The Scheme is largely outside of a WFD groundwater body. However, the south-west corner of the Scheme, close to the Milton Interchange, overlaps marginally with the Vale of White Horse Chalk WFD groundwater waterbody.

14.2 Construction

- 14.2.1 Without mitigation, Scheme construction activities could impact upon surface water quality and flows, as well as impact upon groundwater quality and flows. Such impacts could result from accidental spillages, sediment-containing run-off causing pollution of surface water and groundwater, localised disruption to groundwater levels and worsening flood risk.
- 14.2.2 The CEMP will include a range of measures to mitigate potential adverse effects on surface watercourses and groundwater during construction. This will include measures to tackle emergency spillages, and appropriate procedures for managing storage areas and material stockpiles.

Summary of construction assessment:

- No significant effects on the water environment are likely to occur.

14.3 Operation

- 14.3.1 Runoff from the Scheme will be collected and treated using sustainable drainage solutions, prior to water being discharged to receiving watercourses. The drainage design will thus protect surface water and groundwater and mitigate against accidental spillages.
- 14.3.2 When temperatures are around 4°C or less, de-icing salts will likely be applied (when required) to the Scheme to maintain a safe driving surface. When these salts are

washed off the Scheme by rains and meltwater, they may increase the salinity of surrounding watercourse and waterbodies.

- 14.3.3 The Scheme will directly impact five watercourses through the introduction of culverts. In addition, a clear span bridge structure will be required over the River Thames. There will be direct works to infill small areas of four unnamed lakes and ponds - replacement aquatic marginal planting will be undertaken along the line of infilling. In addition, RWE Lagoon 1 (see ES Chapter 2) will be decommissioned to accommodate the Scheme.
- 14.3.4 The Scheme is predicted to have a negligible effect upon flooding, given that it has been designed to take account of flooding events and risks, with climate change also taken into account.

Summary of operational assessment:

- No significant effects on the water environment are likely to occur.

15. Climate

15.1 Baseline

- 15.1.1 An assessment has been undertaken of the effects on climate from greenhouse gas emissions associated with the Scheme. Consideration has also been given to the resilience of the Scheme to climate change.
- 15.1.2 Climatic evidence shows that the climate is changing beyond that of expected natural fluctuations. Throughout the Scheme's design life, mean annual air temperature is anticipated to rise by 4.3 °C (2080 to 2099), with both hotter summer and winter temperatures. Annual precipitation rate is anticipated to fall by 1.6% (2080 to 2099), with wetter winters and drier summers expected.

15.2 Construction

- 15.2.1 During the construction of the Scheme, a number of processes will produce greenhouse gases, namely: emissions from fuel consumed by construction vehicles and construction machinery; emissions during the production of materials used to construct the Scheme; emissions from grid electricity to power auxiliary facilities; emissions arising from the fuel consumed for workers commuting to and from the construction site; and emissions arising from the transportation of the waste to treatment and disposal facilities. As part of their CEMP, the construction contractor will develop and implement a plan to reduce energy consumption and associated carbon emissions. This could include the consideration of renewable, or low or zero carbon energy sources and record percentage of savings implemented. Trees, shrubs and hedgerows planted as part of the landscape design will offset some of the carbon emissions associated with land use change and subsequent loss of carbon sink.
- 15.2.2 Severe weather events during the Scheme construction phase could impact upon working hours, increase worker health and safety risks and damage construction materials. The CEMP will include measures that aim to prevent or reduce the likelihood of climatic hazards affecting construction staff and assets.

Summary of construction assessment:

- No significant effects with regards to changes in greenhouse gas emissions are likely to occur.
- No significant effects with regards to flood risk, temperature extremes affecting workers and construction processes.

15.3 Operation

- 15.3.1 Greenhouse gas emissions will be emitted by road traffic using the operational Scheme as well as emissions due to the repair and maintenance of the road and the emissions associated with the electricity used to light the proposed carriageway. However, road user emissions are predicted to decrease with the Scheme as compared to the current network due to reductions in congestion and journey times resulting from the improvements to the road network.
- 15.3.2 During the Scheme operational phase, climate change could result in the Scheme having to cope with extreme weather events and storm damage to structures. However, mitigation measures have been included within the Scheme design, such as the use of appropriate construction materials, and the provision of a highway

drainage system and flood mitigation measures that take account of predicted increased rainfall.

Summary of operation assessment:

- No significant effects regarding changes in greenhouse gas emissions are likely to occur.
- No significant effects regarding the vulnerability of the Scheme to climate change are likely to occur.

16. Transport

16.1 Baseline

- 16.1.1 The study area for the Scheme includes several existing roads, including the A4130, the A415, the B4016 and the B4015, as well as 14 junctions. There are eight bus stops (four pairs) located along or close to the Scheme, with associated bus routes including the 33, 99C, X2, X32, X36, 45 and 95.
- 16.1.2 Between 2014 and 2019 there were a total of 150 collisions recorded within the Scheme extents resulting in 189 casualties. There was one fatal collision recorded which involved a car and a motorcycle rider at the A4130 Milton Interchange Roundabout junction with the A4130.

16.2 Construction

- 16.2.1 During Scheme construction there is the potential for traffic congestion caused by an increase in traffic flows and additional Heavy Goods Vehicles (HGVs) leading to driver delay; changes in potential collision rates and road safety; changes to parking and loading; transfer of mud and materials onto the highway network; disruption to traffic as a result of the movement of abnormal loads; impacts on pedestrians and cyclists and severance; and changes in air quality and noise levels as a result of additional vehicular traffic.
- 16.2.2 Mitigation to reduce the impacts of construction traffic will be included in the CEMP – this will include a detailed Construction Traffic Management Plan (CTMP) that will identify traffic management measures such as identifying routes for construction vehicles to and from the Site; appropriate pedestrian and cycling routes to be maintained; and measures to avoid/ limit and mitigate the deposition of mud and other debris on the highway.

Summary of construction assessment:

- No significant construction effects are likely to occur in relation to transport.

16.3 Operation

- 16.3.1 Traffic impacts during Scheme operation are likely to include increases in traffic flows along certain routes and reductions along others; improvements to driver delay within the study area; changes to accidents and road safety; and improved accessibility to public transport services, such as bus services.

Summary of operation assessment:

- The Scheme is likely to have a significant beneficial effect due to reductions to driver delay at several key junctions in the area.
- The Scheme is likely to have a significant beneficial, temporary, effect due to changes to accidents and road safety during the Scheme's opening year. In the future, as the traffic levels on the Scheme increases, this effect will reduce to a level that is not significant.
- The Scheme is likely to have a significant beneficial effect due to reductions in delay to bus services through the introduction of highways improvements.

17. Assessment of Cumulative Effects

17.1.1 An assessment has been undertaken of potential cumulative and combined effects for all the above environmental topics arising from the following:

- Cumulative effects – where effects associated with other developments combine with those of the Scheme, resulting in cumulative effects.
- Combined effects – where several impacts associated with the Scheme (for example noise, dust and traffic) affect a single receptor.

17.2 Cumulative effects with other developments

17.2.1 A review of the planning applications and development proposals within the area around the Scheme was undertaken to identify any other developments which have the potential to result in a cumulative effect together with the Scheme. The predicted traffic flows associated with area developments have been accounted for in the traffic data used for the noise, air quality, water, and population and human health assessments. As such, traffic from other developments is already taken account of in these assessments.

Summary of cumulative assessment:

- There is potential for short term significant cumulative effects on surface water and groundwater during construction as a result of the Scheme and development on the site of the former Didcot A Power Station.
- There is also potential for significant beneficial effects as a result of improvements to access and connectivity to the surrounding area.
- There is potential for significant adverse effects as a result of losses to best and most versatile land (i.e. the highest quality agricultural land) as a result of the Scheme and development at Valley Park.
- There is potential for significant beneficial effects as a result of Scheme and development at Valley Park through the introduction of new pedestrian routes and cycleways across the area located south of the A4130.

17.3 Combined effects on a single receptor

17.3.1 Several properties have the potential to experience combined impacts associated with visual intrusion, noise, vibration, air quality, dust and severance of communities during the Scheme construction phase. Such combined impacts are predicted where Scheme construction activities will be taking place close to such receptors. The construction contractor's CEMP will include a wide range of best practice construction measures that aim to minimise the potential for construction phase environmental impacts (e.g. impacts associated with visual intrusion, noise, dust, vibration and severance). Implementation of the measures as detailed in the CEMP will aim to minimise the occurrence of combined effects.

Summary of combined construction assessment:

- There is likely to be a temporary significant combined effect, as a result of construction noise and vibration at the Premier Inn (Milton Interchange) and Hill Farm.
- There is likely to be a temporary significant combined effect as a result of visual intrusion, construction noise and vibration at Hartwright House, Level Crossing Cottage; Culham Station; and a single residential receptor north of the A415 at

Culham Station; Fullamoor Barns; Culham Science Centre Nursery; Fullamoor Cottages and two properties east of Fullamoor Cottages; and two properties on the northern edge of the Clifton Hampden.

- There is likely to be a temporary significant combined effect, as a result of visual intrusion and construction noise at New Farm; residents at Great Western Park; residents in the eastern part of Sutton Courtenay; Zouch Farm; and two properties north of the Scheme, north of Clifton Hampden.

Summary of combined operational assessment:

- There is likely to be a temporary significant adverse effect, as a result of traffic derived noise and visual effects, on residential properties on the B4016, Appleford, south of the allotments; Level Crossing Cottage; and Hill Farm and Hartwright House (between Didcot and Appleford). This will reduce as proposed mitigation planting matures to provide screening. In the long term the level of visual effect is likely to reduce to a level that is not significant (neutral) and will not contribute to the combined effect. However, the noise effects are likely to remain significant on their own.
- There will be a permanent significant adverse effect, as a result of traffic derived noise and visual effects, on residential properties on the northern edge of Clifton Hampden and at Culham Science Centre Nursery. These effects will remain once landscape planting has matured.

18. Summary of Significant Effects

18.1.1 Table 18.1 below provides a summary of the significant environmental effects associated with Scheme construction and operation. Full details of these and non-significant environmental effects can be found within the ES.

Table 18.1: Summary of the significant environmental effects

Environmental discipline	Summary of significant environmental effects	
	Construction stage	Operational stage
Air Quality	<ul style="list-style-type: none"> No significant air quality effects in relation to dust are likely to occur. No significant air quality effects in relation to construction traffic are likely to occur. 	<ul style="list-style-type: none"> No significant air quality effects in relation to operational traffic are likely to occur.
Cultural Heritage	<ul style="list-style-type: none"> No significant effects on known archaeological assets; historic landscape character; and designated and non-designated built heritage assets are likely to occur. The Scheme is assessed to have the potential to have a significant adverse effect on as yet unknown archaeological remains which may be present at the Site. The programme of archaeological investigation and mitigation will aim to ensure that such resources are identified and appropriately managed. 	<ul style="list-style-type: none"> No significant effects on heritage assets are likely to occur during Scheme operation.
Landscape and Visual	<p>Landscape:</p> <ul style="list-style-type: none"> Scheme construction is likely to have temporary significant adverse effects on the Site, Local Landscape Character Area (LLCA) 12 Thames Floodplain (an area of land located north of the River Thames, and which generally extends from Culham to Clifton Lock) and LLCA 16 Clifton Hampden Farmland (an area of land that generally extends from the eastern edge of the CSC, north of Clifton Hampden, eastwards towards the A4074). <p>Visual: The Scheme will likely have significant effects for the following visual receptors:</p>	<p>Landscape, during years 1 and 15:</p> <ul style="list-style-type: none"> The Scheme is likely to have temporary significant adverse effects on the Site, LLCA 12 Thames Floodplain and LLCA 16 Clifton Hampden Farmland. By operational year 15, the proposed landscape planting will have established, and these effects will have reduced to a level that is not significant. <p>Visual, during year 1: The Scheme will likely have significant effects for the following visual receptors, during year 1: <u>Residential receptors</u></p> <ul style="list-style-type: none"> Views from Didcot;

Environmental discipline	Summary of significant environmental effects	
	Construction stage	Operational stage
	<p><u>Residential receptors</u></p> <ul style="list-style-type: none"> Views from Didcot; Views from south Appleford; Views from the entrance to CSC; and Views from around Clifton Hampden. <p><u>Recreational users</u></p> <ul style="list-style-type: none"> Views from around the former Didcot A Power Station and Didcot B Power Station; Views from Public Rights of Way (PRoW) south of Appleford; Views from Thames Path National Trail; and Views from PRoW around Clifton Hampden. <p><u>Road users</u></p> <ul style="list-style-type: none"> Users of the B4016; Users of roads located west of the CSC; and Users of roads located near the entrance of the CSC. 	<ul style="list-style-type: none"> Views from south Appleford; Views from the entrance to CSC; and Views from around Clifton Hampden. <p><u>Recreational users</u></p> <ul style="list-style-type: none"> Views from Public Rights of Way (PRoW) south of Appleford; Views from Thames Path National Trail; and Views from PRoW around Clifton Hampden. <p><u>Road users</u></p> <ul style="list-style-type: none"> No significant effects. <p>Visual, during year 15: The Scheme will likely have significant effects for the following visual receptors, during year 15:</p> <p><u>Residential receptors</u></p> <ul style="list-style-type: none"> Views from the entrance to CSC; and Views from around Clifton Hampden. <p><u>Recreational users</u></p> <ul style="list-style-type: none"> Views from PRoW south of Appleford; Views from Thames Path National Trail; and Views from PRoW around Clifton Hampden. <p><u>Road users</u></p> <ul style="list-style-type: none"> No significant effects.
Biodiversity	<ul style="list-style-type: none"> No significant effects on designated and non-designated sites are likely during Scheme construction. No significant effects on protected or notable habitats or species are likely during Scheme construction. 	<ul style="list-style-type: none"> No significant biodiversity effects are likely to occur during Scheme operation.
Noise and Vibration	<ul style="list-style-type: none"> Temporary significant adverse construction noise effects are anticipated at the Premier Inn (Milton Interchange); New Farm (A4130); new receptors at Valley Park; residents at Great Western Park; Hill Farm; Hartwright House and Level Crossing Cottage (between Didcot and Appleford), Appleford western edge (Main road, south, Chambray Close); a single property north-west 	<ul style="list-style-type: none"> Significant adverse noise effects are predicted at the Premier Inn (Milton Interchange); Hill Farm, Hartwright House and Level Crossing Cottage (between Didcot and Appleford); 19 properties along the B4016 in Appleford (south of allotments); Warren Cottage north of A415; Culham Science Centre Nursery; Fullamoor Cottages (off the A415); seven properties located on

Environmental discipline	Summary of significant environmental effects	
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	<p>of Appleford; residents in the eastern part of Sutton Courtenay; Zouch Farm near the A415; residents near Culham Station; Fullamoor Barns (off the A415); Fullamoor Cottages and two cottages to the east (off the A415); Culham Science Centre Nursery; Northern edge of Clifton Hampden and two properties north of Scheme north of Clifton Hampden.</p> <ul style="list-style-type: none"> Temporary significant adverse construction vibration effects are anticipated at the Premier Inn (Milton Interchange); Hill Farm, Hartwright House and Level Crossing Cottage (between Didcot and Appleford); a single property north-west of Appleford; residents near Culham Station; Fullamoor Barns (off the A415); Fullamoor Cottages and two cottages to the east (off the A415); Culham Science Centre Nursery; properties on the northern edge of Clifton Hampden and two properties north of Scheme north of Clifton Hampden. 	<p>the northern edge of Clifton Hampden; two properties located north of Clifton Hampden; and four properties located near to the Golden Balls roundabout.</p> <ul style="list-style-type: none"> Significant <u>beneficial</u> noise effects are predicted at 57 properties along the existing A4130 in Didcot; 79 properties located close to the B4016 in Appleford; 228 properties and one educational building located in Sutton Courtenay and Culham; nine properties on the A415 east of Culham Station; 91 properties, three community facilities, one medical building and one school in Clifton Hampden; 207 properties in and close to Long Wittenham, and three community facilities and one school; and 75 properties in Burcot.
Geology and Soils	<ul style="list-style-type: none"> Construction of the Scheme will result in a significant adverse effect on agricultural land due to the <u>temporary</u> loss of approximately 19.1 hectares of Best and Most Versatile agricultural land. Construction of the Scheme will result in a significant adverse effect on agricultural land due to the <u>permanent</u> loss of approximately 39.4 hectares of Best and Most Versatile agricultural land. 	<ul style="list-style-type: none"> No significant effects on geology and soils are likely during Scheme operation.
Material Assets and Waste	<ul style="list-style-type: none"> No significant materials and waste effects are likely during Scheme construction. 	<ul style="list-style-type: none"> Operational assessment scoped out.
Population and Human Health	<ul style="list-style-type: none"> There will be significant <u>beneficial</u>, permanent, effects to one designated employment site (known as EZ2: D-Tech). There will be significant adverse, temporary and permanent, effects to one site with a planning application for business or commercial use. There will be significant adverse, temporary and permanent, effects to one existing business (Appleford Sidings and associated minerals land). 	<ul style="list-style-type: none"> There will be significant <u>beneficial</u> effects on community facilities across the study area due to improved connectivity. There will be significant <u>beneficial</u> effects on two strategic housing development sites (known as North-West of Valley Park and Valley Park) due to improved connectivity across the study area. There will be significant <u>beneficial</u> effects on two walking and cycling routes (the route between the Valley Park development site and Southmead Industrial Estate and the route between

Environmental discipline	Summary of significant environmental effects	
	Construction stage	Operational stage
	<ul style="list-style-type: none"> There will be significant adverse, temporary and permanent, effects to three agricultural land holdings. There will be significant adverse, temporary and permanent, effects to one PRoW (known as Route 24, National Cycle Network Route 5). 	<p>Culham Station and CSC), due to the introduction of new pedestrian and cycling infrastructure.</p> <ul style="list-style-type: none"> There will be a significant <u>beneficial</u> effect to one site with a planning application for business or commercial use due to improved access and connectivity.
Road Drainage and the Water Environment	<ul style="list-style-type: none"> No significant effects on the water environment are likely to occur. 	<ul style="list-style-type: none"> No significant effects on the water environment are likely to occur.
Climate	<ul style="list-style-type: none"> No significant effects with regards to changes in greenhouse gas emissions are likely to occur. No significant effects with regards to flood risk, temperature extremes affecting workers and construction processes. 	<ul style="list-style-type: none"> No significant effects regarding changes in greenhouse gas emissions are likely to occur. No significant effects regarding the vulnerability of the Scheme to climate change are likely to occur.
Transport	<ul style="list-style-type: none"> No significant construction effects are likely to occur in relation to transport 	<ul style="list-style-type: none"> The Scheme is likely to have a significant <u>beneficial</u> effect as a result in reductions to driver delay at several key junctions in the area. The Scheme is likely to have a significant <u>beneficial</u>, temporary, effect as a result of changes to accidents and road safety during the Scheme's opening year. In the future, as the traffic levels on the Scheme increases, this effect will reduce to a level that is not significant. The Scheme is likely to have a significant <u>beneficial</u> effect as a result of reductions in delay to bus services through the introduction of highways improvements.
Assessment of Cumulative Effects	<p>Cumulative effects:</p> <ul style="list-style-type: none"> There is potential for short term significant cumulative effects on surface water and groundwater during construction as a result of the Scheme and development on the site of the former Didcot A Power Station. There is potential for significant adverse effects as a result of losses to best and most versatile land (i.e. the highest quality agricultural land) as a result of the Scheme and development at Valley Park. 	<p>Cumulative effects:</p> <ul style="list-style-type: none"> There is potential for significant <u>beneficial</u> effects as a result of Scheme and development at Valley Park through the introduction of new pedestrian routes and cycleways across the area located south of the A4130. There is also potential for significant <u>beneficial</u> effects as a result of improvements to access and connectivity to the surrounding area.

Environmental discipline	Summary of significant environmental effects	
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	<p>Combined effects:</p> <ul style="list-style-type: none"> • There is likely to be a temporary significant combined effect, as a result of construction noise and vibration at the Premier Inn (Milton Interchange) and Hill Farm. • There is likely to be a temporary significant combined effect as a result of visual intrusion, construction noise and vibration at Hartwright House, Level Crossing Cottage; Culham Station; and a single residential receptor north of the A415 at Culham Station; Fullamoor Barns; Culham Science Centre Nursery; Fullamoor Cottages and two properties east of Fullamoor Cottages; and two properties on the northern edge of the Clifton Hampden. • There is likely to be a temporary significant combined effect, as a result of visual intrusion and construction noise at New Farm; residents at Great Western Park; residents in the eastern part of Sutton Courtenay; Zouch Farm; and two properties north of the Scheme, north of Clifton Hampden. 	<p>Combined effects:</p> <ul style="list-style-type: none"> • There is likely to be a temporary significant adverse effect, as a result of traffic derived noise and visual effects, on residential properties on the B4016, Appleford, south of the allotments; Level Crossing Cottage; and Hill Farm and Hartwright House (between Didcot and Appleford). This will reduce as proposed mitigation planting matures to provide screening. In the long term the level of visual effect is likely to reduce to a level that is not significant (neutral) and will not contribute to the combined effect. However, the noise effects are likely to remain significant on their own. • There will be a permanent significant adverse effect, as a result of traffic derived noise and visual effects, on residential properties on the northern edge of Clifton Hampden and at Culham Science Centre Nursery. These effects will remain once landscape planting has matured.

19. Next Steps

- 19.1.1 This Non-Technical Summary has been submitted to OCC's planning department, along with other documents with the planning application for the Scheme. Once the planning application is validated, OCC's planning officers will have 16 weeks following the day of receipt of the application and the ES ([regulation 68\(2\)](#)) to consider these documents and to provide a planning decision. This period may be extended by written agreement between the LPA and the applicant. Where a planning application takes longer than the statutory period to decide, and an extended period has not been agreed with the applicant, the government's policy is that the decision should be made within 26 weeks at most in order to comply with the 'planning guarantee'.
- 19.1.2 During this period, a 28-day public consultation period will be provided so that public consultees can comment on the application. The planning application will be available to view on OCC's website - <https://myeplanning.oxfordshire.gov.uk/>. OCC's planning officers will also send relevant planning documents to statutory and non-statutory consultees, such as the Environment Agency, Historic England and Natural England, to gather opinions on whether the application should be refused or granted. The outcome of these consultations, and the Scheme's environmental, economic and social impacts (beneficial or adverse) will be taken into account by OCC's planning officers when deciding whether to grant or refuse planning permission.

