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| Didcot Garden Town HIF 1 SchemeHabitats Regulations Assessment: No Likely Significant Effects Report October 2022 |
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Quality information

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Table of Contents

1. Introduction 5

1.1 Overview 5

1.2 Site Description 5

1.3 Legislative Context 5

2. Methods 6

2.1 Approach 6

2.2 HRA Stage 1: Screening for Likely Significant Effects 7

3. Baseline Evidence and Gathering 8

3.1 Overview 8

3.2 Designated Sites Scoped into HRA 8

4. Stage 1 – Screening for Likely Significant Effects 9

4.1 Overview 9

4.2 Identification of Potential Construction Impacts 9

4.3 Identification of Potential Operational Impacts 10

4.4 In Combination Effects with other Plans or Projects 10

5. Conclusions 11

6. References 12

7. Appendices 13

 37

# Introduction

## Overview

* + 1. This Habitat Regulations Assessment – No Significant Effects Report (NSER) has been prepared on behalf of Oxfordshire County Council (OCC) as promoter, who are seeking the development of the Didcot Housing Infrastructure Fund (HIF) 1 Scheme (hereafter referred to as the Scheme).
		2. The scope and extent of this report have been determined by reviewing those sites designated for their biodiversity value including those of European significance, namely Special Areas for Conservation (SACs) and Special Protection Areas (SPAs).
		3. This report should be read in conjunction with Chapter 9: Biodiversity, of the Environmental Statement submitted to OCC as the relevant Local Planning Authority (LPA) in relation to planning application ref: R3.0138/21, which provides further details of the Scheme and presents an assessment of impacts on Important Ecological Features.

## Site Description

* + 1. The Scheme is located between Didcot and Abingdon, Oxfordshire, within South Oxfordshire District Council and will substantially improve the county's transport infrastructure, including a new river crossing between Didcot and Culham. The improved infrastructure will enable the development of new housing and employment areas using good sustainable design, supporting improved conditions for cycling. The Scheme comprises:
* A4130 road widening from A34 Milton Interchange towards Didcot;
* a new "Science Bridge" over the A4130, Great Western Railway Line and Milton Road into the former Didcot A Power Station site, back to the A4130 near Purchas Road;
* a new Didcot to Culham River Crossing between the A4130 Northern Perimeter Road at Didcot and A415 near Culham Science Centre; and
* a new Clifton Hampden Bypass between A415 near Culham Science Centre and B4015 Oxford Road north of the village.
	+ 1. The Ordnance Survey (OS) grid reference for the centroid of the Scheme is SU 525 935.

## Legislative Context

* + 1. As part of the assessment of a proposed scheme it is necessary to consider whether the scheme is likely to have a significant effect on areas that have been internationally designated for nature conservation purposes (*i.e*. 'European Sites'). European sites are protected under the Conservation of Habitats and Species Regulations 2017 (as amended; relevant to England and Wales) (Ref 7-1). The UK left the EU on 31 January 2020 under the terms set out in the European Union (Withdrawal Agreement) Act 2020 (the Withdrawal Act). However, the most recent amendments to the Habitats Regulations, the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (Ref 7-2), make it clear that the need for HRA continues to apply. Whilst those 2019 Regulations make changes to the Habitats regime and terminology; much of the impact of those changes does not yet have a practical effect, particularly the introduction of the term ‘national site network’. As such, this document continues to use the term ‘European sites’ to refer to all Natura 2000 sites potentially affected by the Scheme.
		2. The 2017 Regulations also apply the precautionary principle to European Sites [[1]](#footnote-1).
		3. The legislative basis for Appropriate Assessment is the Conservation of Habitats and Species Regulation 2017 (as amended). Regulation 63 of the 2017 Regulations states that: “*A competent authority, before deciding to … give consent for a plan or project which is likely to have a significant effect on a European site … must make an appropriate assessment of the implications for the plan or project in view of that site’s conservation objectives … The competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site*”.
		4. Over the years, the phrase Habitats Regulations Assessment (HRA) has come into wide currency to describe the overall process set out in the 2017 Regulations, from the screening for Likely Significant Effects through to identification of IROPI. This has arisen in order to distinguish the overall process from the individual stage of Appropriate Assessment. Throughout this Report the term HRA is used for the overall process and restricts the use of Appropriate Assessment to the specific stage of that name.

# Methods

## Approach

* + 1. This HRA has been carried out with reference to the general EC guidance on HRA (Ref 7-3) and general guidance on HRA published by the UK government in July 2019 (Ref 7-4).
		2. The UK left the EU on 31 January 2020 under the terms set out in the European Union (Withdrawal Agreement) Act 2020 (the Withdrawal Act). The Withdrawal Act retains the body of existing EU-derived law within our domestic law. As such this assessment of Likely Significant Effects (LSEs) takes account of relevant EU case law (for instance, the Holohan (Ref 7-5) and People over Wind cases (Ref 7-6), discussed below).
		3. Figure 1 below outlines the stages of HRA according to PINS Advice Note 10. Note that while Figure 1 shows all the stages of the HRA process, this document only discusses Stage 1 (screening) in further detail (see below).
		4. Whilst the HRA decisions must be taken by the competent authority, the information needed to undertake the necessary assessments must be provided by the applicant. The information needed for the competent authority to establish whether there are any LSEs from the Proposed Development is therefore provided in this Report.



 Figure 1. Four Stage Approach to Habitats Regulations Assessments of Projects.

## HRA Stage 1: Screening for Likely Significant Effects

* + 1. The objective of the LSE test is to screen out those aspects of a project and / or the European sites that can, without any detailed appraisal, be said to be unlikely to result in significant adverse effects upon European sites, usually because there is no mechanism for an adverse interaction (*i.e*. a pathway) with European sites. Any remaining aspects are then taken forward to Appropriate Assessment. The assessment must consider the potential for effects in combination with other plans and projects.
		2. This report has been prepared having regard to all relevant case law relating to the 2017 Regulations, the Habitats Directive and Birds Directive. This includes the ruling by the Court of Justice of the European Union (CJEU) in the case of People Over Wind, Peter Sweetman v Coillte Teoranta (C-323/17) (Ref 7-6). This case held that: "*it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site"* (Paragraph 40). This establishes that mitigation measures cannot be taken into account at the screening stage, but they can be taken into account in an Appropriate Assessment.
		3. In 2018, the Holohan ruling[[2]](#footnote-2) was handed down by the European Court of Justice. Among other provisions Paragraph 40 of the ruling states that: ‘ ‘*Article 6(3) of the Habitats Directive* *must be interpreted as meaning that an ‘appropriate assessment’ must, on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site’*.

# Baseline Evidence and Gathering

## Overview

* + 1. There is no guidance that dictates the general physical scope of an HRA document. Therefore, in considering the physical scope of the assessment of the Scheme, we were guided primarily by the identified impact pathways (called the source-pathway-receptor model).
		2. Briefly defined, impact pathways are routes by which the implementation of a project can lead to an effect upon a European designated site. For some impact pathways (notably air pollution), there is guidance that sets out distance-based zones required for assessment. For others, a professional judgment must be made based on the best available evidence.

## Designated Sites Scoped into HRA

* + 1. The screening stage of this HRA included the identification of all European sites where the Scheme and its route corridor:
* were within 10 km of a European site or functionally linked land;
* were within 30 km of any SAC where bats are noted as one of the qualifying interests;
* crossed or lay adjacent to, upstream of, or downstream of, a watercourse which is designated in part or wholly as a European site;
* had a potential hydrological or hydrogeological linkage to a European site containing a groundwater dependent terrestrial ecosystem (GWDTE) which triggers the assessment of European sites; and, or
* had an affected road network which triggers the criteria for assessment of European sites.
	+ 1. Two European Sites were present within 10 km of the Scheme. Little Wittenham Special Area of Conservation (SAC) (and Site of Special Scientific Interest (SSSI) and Cothill Fen SAC (and SSSI) which are located 3.1 km (centroid grid reference SU 572 929) to the south-east and 6.7 km to the north-west (centroid grid reference SU 463 999) of the Scheme, respectively.
		2. No SACs with bats as a qualifying feature were identified within 30 km of the Scheme.
		3. Whilst both Little Wittenham SAC and Cothill Fen SAC are beyond any direct impacts from aerial emissions from traffic on the Scheme, changes in traffic flows in the immediate vicinity (200m) of either site could have an indirect effect.
		4. The Scheme boundary does not overlap with areas of devolved administrations or with those of other EEA States. It is also the case that no parallel consents are required for the Scheme which would require additional Habitats Regulations Assessment to be carried out.

# Stage 1 – Screening for Likely Significant Effects

## Overview

* + 1. This section examines the Likely Significant Effects of the Scheme. It is structured by development phase (*i.e*. first by construction period, then by operational period).
		2. Table 1 presents the European Sites which were identified as requiring screening for LSE (along with respective Impact Risk Zones (IRZ)). The screening matrices for the Little Wittenham SAC and Cothill Fen SAC is provided in Appendix 1 and the citations for these SACs are in Appendix 2 (Little Wittenham SAC) and Appendix 3 (Cothill Fen SAC).

Table 1: Identification of European Sites potentially requiring screening for LSE

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| European site | Direction from Scheme | Distance from Scheme | Qualifying features and interests | Review of geographical relationships and potential impact pathways to European Site(s) |
| Little Wittenham SAC *Site includes Little Wittenham SSSI* | South-east | 3.1 km | SAC species: Great Crested Newt (*Triturus cristatus*) | The impact risk zone (IRZ) does not overlap with the Scheme.See Appendix 1 Table 2 for details of potential impact pathways. |
| Cothill Fen SAC*Site includes the Cothill Fen SSSI* | North-west | 6.7 km | SAC habitat: Lowland hay meadows | The impact risk zone (IRZ) does not overlap with the Scheme).See Appendix 1 Table 3 for details of potential impact pathways. |

## Identification of Potential Construction Impacts

Scoping of Source-Receptor Pathways

* + 1. There are no source-receptor pathways by which the Scheme could impact a European Site during construction of the Scheme.
		2. Little Wittenham SAC and Cothill Fen SAC are located 3.1 km and 6.7 km, respectively from the Scheme and there are no ecological pathways or connections between the designated site and the Scheme.

## Identification of Potential Operational Impacts

Source-Receptor Pathways

* + 1. There are no source-receptor pathways by which the Scheme could impact a European Site during operation of the Scheme.
		2. Little Wittenham SAC and Cothill Fen SAC are located 3.1 km and 6.7 km, respectively from the Scheme and there are no ecological pathways or connections between the designated site and the Scheme.

## In Combination Effects with other Plans or Projects

* + 1. In assessing in combination effects the following projects should be considered
* projects that are under construction.
* permitted application(s) not yet implemented.
* submitted application(s) not yet determined.
* all refusals subject to appeal procedures not yet determined.
* projects on the National Infrastructure’s programme of projects.
* projects identified in emerging development plans, recognising that much information on relevant proposals will be limited and the degree of uncertainty which may be present.
	+ 1. As there are no source-receptor pathways by which the Scheme could impact Little Wittenham SAC or Cothill Fen SAC during the construction and operation of the Scheme and hence no likely effects. Consequently, there is no basis for undertaking an in combination effects assessment.

# Conclusions

* + 1. There are no source-receptor pathways by which the Scheme could impact a European Site during the construction and operation of the Scheme. Consequently, this report has concluded that as there are no Likely Significant Effects the Scheme will not result in adverse effects on the integrity of European Sites either alone or in combination with other plans or projects.

#  References

1. Anon. (2018). Conservation of Habitats and Species Regulations 2017 (as amended). HMSO, London.
2. HMSO. (2019). The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. HMSO, London.
3. European Commission. (2001). Assessment of plans and projects significantly affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and 6(4) of the Habitats Directive.
4. Ministry of Housing, Communities & Local Government. (2019). Appropriate Assessment. Available at: https://www.gov.uk/guidance/appropriate-assessment
5. Holohan ruling (C-461/17).
6. People Over Wind and Sweetman v Coillte Teoranta (C-323/17).
7. Department for Business, Energy and Industrial Strategy. (2021). Guidelines on the assessment of transboundary impacts of energy developments on Natura 2000 sites outside the UK <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/408465/transboundary_guidelines.pdf>

# Appendices

Appendix 1 Screening matrices for Little Wittenham SAC and Cothill Fen SAC

Table 1: Screening matrix – Little Wittenham SAC

| Project name: | Didcot HIF 1 |
| --- | --- |
| European Site under consideration: | Little Wittenham SAC |
| **Description of project** |
| Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European Site by virtue of: |
| Size, scale and nature  | Chapter 9 of the Environmental Statement presents a description of the Scheme, its main features, and details of how it would be constructed.The Scheme is located between Didcot and Abingdon, Oxfordshire, within South Oxfordshire District Council. The Scheme will substantially improve the county's transport infrastructure, including a new river crossing of the River Thames between Didcot and Culham. The improved infrastructure will enable the development of new housing and employment areas using good sustainable design, supporting improved conditions for cycling. The Annex II species that is the primary reason for selection of this site is [Great Crested Newt](https://sac.jncc.gov.uk/species/S1166/) (*Triturus cristatus*). One of the best-studied Great Crested Newt sites in the UK, Little Wittenham (68.65 ha) comprises two main ponds (1% of the SAC area) set in a predominantly woodland context (broad-leaved and conifer woodland is present (77% of SAC area)). There are also areas of improved grassland (22% of the SAC area), with sheep grazing and arable bordering the woodland to the south and west. The River Thames is just to the north of the site and a hill fort to the south. Large numbers of Great Crested Newt have been recorded in the two main ponds, and research has revealed that they range several hundred metres into the woodland blocks. Although not specifically identified as special features of the SAC, the site also supports an outstanding breeding assemblage of other amphibians (which includes Smooth Newt (*Lissotriton vulgaris*), Common Frog (*Rana temporaria*) and Common Toad (*Bufo bufo*) and of dragonflies and damselflies including breeding populations of the Brown Hawker (*Aeshna grandis*), Migrant Hawker (*Aeshna mixta*) and Emperor Dragonfly (*Anax imperator*).The SAC has no Annex I habitats included as special features. |
| Landtake | The Scheme is located outside the boundary of the SAC, the Scheme and the SAC being separated by 3.1 km and significant barriers such as the River Thames and the road and rail networks. Accordingly, no direct or indirect impacts upon Great Crested Newt would arise during the Scheme’s construction, operational or maintenance stages as a result of landtake. |
| Distance from the European Site or key features of the site (from edge of the project assessment corridor) | At its closest point, the Scheme is located 3.1 km to the south-east of the SAC site boundary. |
| Resource requirements (from the European Site or from areas in proximity to the site, where of relevance to consideration of impacts) | No resources would be taken from, or in close proximity to, the boundary of the SAC or land with which it has a functional linkage to, and no area or landtake in proximity to the site is required for access, storage or laydown areas during the Scheme’s construction phase. Great Crested Newt is dependent primarily on the woodland and improved grassland around the two ponds. The landtake resulting from the Scheme would not impact such habitats due to the distance between the Scheme and the SAC.Accordingly, no impacts are predicted on the SAC as a result of resource requirements. |
| Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution) | Construction activities within the Scheme are likely to cause localised and temporary reductions in air quality associated with emissions from construction vehicles, plant and machinery, and from localised, temporary congestion on the road network within and surrounding the Scheme when routes are under traffic management controls.Taking into account the distance between the Scheme and the SAC, no impacts are predicted on Great Crested Newt and associated habitat as a result of any short-term localised impacts relating to air quality (including atmospheric pollution from particulate matter and nitrogen deposition) resulting from construction of the Scheme.Reductions in air quality due to pollutants from operational and maintenance vehicles would be confined to routes within the Scheme and outward to a distance of up to 200 m. As the SAC does not coincide with any routes, no impacts on any of the qualifying features of the SAC is predicted in relation to air quality impacts during the Scheme’s operational and maintenance phases.As European Sites can be affected by changes in air quality if they are within 200m of a potentially affected road, a review was undertaken to determine if the SAC would be negatively impacted by predicted increases in annual mean NOx concentrations and nitrogen deposition rates due to increased traffic load on any roads adjacent to the SAC during operation of the Scheme. This would be just Little Wittenham Road, a minor road which is within 200 m of the SAC boundary in two locations.The SAC was scoped out of this exercise at the first stage due to there being no increase in traffic along Little Wittenham Road due to the Scheme. This also applied to potential impacts from alterations in traffic during construction, for example through traffic diversions or construction traffic. The Scheme has no potential hydrological linkage to the SAC given the distance from the Scheme and pattern of drainage in between the Scheme and the SAC. |
| Excavation requirements (e.g. impacts of local hydrogeology) | Excavations would be undertaken as part of general earthworks operations carried out during construction of the Scheme. These excavations would be undertaken to accommodate sections of the new carriageway where these are proposed to be positioned within cuttings, and to obtain material to form embankments and noise bunds. These would be managed in accordance with standard best practice management methods and techniques to protect local hydrology (i.e. surface water and groundwater) from potential pollution sources.No excavations would be undertaken on land within the SAC or land which has a functional link to the SAC.No indirect or indirect impacts are predicted to arise from excavations during the construction stage because the potential for these operations to generate contaminants capable of reaching the site in significant concentrations is unlikely due to the intervening distance between the Scheme and the SAC. |
| Transportation requirements | The transportation of materials, site operatives and machinery would be required to facilitate construction of the Scheme.During the works, there is potential for increased congestion on routes within and surrounding the Scheme as a result of additional vehicles on the network moving materials, equipment and machinery to and from working areas, and from the deployment of traffic management.To manage potential impacts, construction traffic would arrive at, and depart from, working areas within the Scheme via agreed haul routes and access points. Traffic management including temporary lane closures and diversions would be required throughout construction of the Scheme on roads within and surrounding the Scheme. Where full road closures are required, traffic affected by construction would be diverted onto alternative routes with advanced information and signage provided to assist road users making journeys. The geographical location of the SAC in relation to the Scheme is such that any diverted traffic and construction traffic are very unlikely to be routed past the SAC as no road closures or diversions would be required on roads in proximity to them.No transportation requirements would be necessary during the Scheme’s operational and maintenance phases.Accordingly, no impacts on the SAC are predicted as a result of the Scheme’s transportation requirements during its construction, operation and maintenance. |
| Duration of construction, operation, etc. | Subject to consent for the Scheme being granted, construction of the Scheme is planned to commence in 2024 and would continue until the Scheme is opened, planned for 2028.As the Scheme would form an integral part of the strategic road network, it would remain in long-term operation and is therefore unlikely to be decommissioned in the future.During its operational phase, the Scheme would be subjected to periodic maintenance, repair and management activities.No impacts are predicted on the SAC because of the duration associated with Scheme construction, operation and maintenance. |
| Other | A review was undertaken of the SAC to determine if it might be negatively impacted by predicted increases in noise associated with the use of construction plant, equipment, machinery and vehicles within the Scheme or due to increased traffic load on any roads adjacent to the site during the operation of the Scheme.The SAC was scoped out of this exercise at the first stage due to there being no increase in traffic along any roads adjacent to the SAC nor any functionally linked habitat. This also applied to potential impacts from alterations in traffic during construction, for example through traffic diversions or construction traffic.Sources of temporary and permanent lighting would be introduced within the Scheme during the construction and operational phases, and potentially when undertaking maintenance activities. These sources would not impact the SAC nor any functionally linked habitat.New activity and infrastructure would be introduced within the Scheme during construction, operation and maintenance of the Scheme. Given the intervening distance between the Scheme and the SAC, no visual disturbance from these impact sources is predicted on species nor on any functionally linked habitat. |
| **Description of avoidance and / or mitigation measures** |
| Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on: |
| Nature of proposals | A range of embedded and essential mitigation measures have been identified through the EIA process to mitigate the environmental impacts and effects of the Scheme. These are presented in the Schedule of Mitigation and include: 1. Embedded measures incorporated into the design of the Scheme to prevent, avoid and reduce its environment effects, the details of which are presented in **Chapter 3, The Scheme** of the Environmental Statement.
2. Best practice management and control measures that would be employed during construction of the Scheme, the details of which are presented in the Environmental Management Plan.

None of the measures have been identified to specifically mitigate effects on the qualifying features of the SAC as no impacts on this site are predicted to result from construction, operation and maintenance of the Scheme. |
| Location | Mitigation is proposed throughout the extents of the Scheme to mitigate the environmental impacts and effects of the Scheme’s construction, operation and maintenance. |
| Evidence for effectiveness | The measures proposed are plainly established, uncontroversial and are commonly implemented on road projects similar to the Scheme, where their effectiveness has been proven. |
| Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations) | The measures would be secured and delivered through the powers and requirements contained within the planning consent. |
| **Characteristics of European Site** |
| A brief description of the European Site to be produced, including information on: |
| Name of European Site and its EU code | Little Wittenham SAC (UK0030184). Designated on 1 April 2005. |
| Location and distance of the European Site from the proposed works | Centroid grid reference: SU572929. The Scheme is located 3.1 k south-east of the SAC boundary at its closest point. The boundary of the SAC does not overlap with that of the Scheme. |
| European Site size | 68.65 hectares |
| Key features of the European Site including the primary reasons for selection and any other qualifying interests | Little Wittenham SAC comprises two main ponds set in a predominantly woodland context (broadleaved and conifer woodland is present). There are also areas of grassland, with sheep grazing and arable bordering the woodland to the south and west. The River Thames is just to the north of the site, and a hill fort to the south. Large numbers of Great Crested Newt (*Triturus cristatus*) have been recorded in the two main ponds, and research has revealed that they range several hundred metres into the woodland blocks. The site is designated under article 4(4) of the Directive (92/43/EEC) as it hosts the listed Annex II species Great Crested Newt. |
| Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways | Natural England’s Site Improvement Plan for Little Wittenham SAC records the following threat and pressure on the site:1. Inappropriate water levels.
2. Water pollution.
3. Priority measures within SIP160 (**Error! Reference source not found.**) that seek to respond to these threats and pressures comprise:
4. Habitat creation to offset historical decline of wintering and breeding birds and other strategies to alleviate flooding.
5. Implementation of a diffuse water pollution plan to tackle inappropriate levels of nutrients from flooding.

There is one threat and pressure identified with respect to the SAC. This is invasive non-native species, rated as High. |
| European Site conservation objectives – where these are readily available | With regard to the SAC and the species for which the site has been (**Error! Reference source not found.**) designated and subject to natural change, objectives for the SAC are to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:* the extent and distribution of habitats of qualifying species;
* the structure and function of the habitats of qualifying species;
* the supporting processes on which the habitats of qualifying species rely;
* the populations of qualifying species, and
* the distribution of qualifying species within the site.

This includes the modification of cultivation practices and the maintaining or restoring of grazing.At the local level, River of Life wetland habitat enhancements are being carried out by the Earth Trust on wetland close to the Little Wittenham SAC and SSSI. This wetland is directly connected to the River Thames and located downstream from the Scheme. |
| **Assessment criteria** |
| Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European Site. |
| The Scheme comprises a linear corridor of land from Milton along the existing A4130 and then being joining up with the A4 and B4015 by new road running to the north with improvements to the A4 and B4105 to the east. It is within this corridor that the Scheme would be constructed, operated and maintained.The Scheme is located 3.1 km from the SAC. There is no functional linked habitat within the Scheme and impact pathways are absent, and given the role and effectiveness of best practice measures to be delivered, no direct or indirect impacts on the qualifying features of the site are predicted in relation to the following impact sources associated with construction, operation and maintenance of the Scheme:* landtake;
* distance;
* resource requirements;
* emissions to air;
* emissions to water (surface water);
* excavation requirements;
* transportation requirements;
* duration (of the Scheme’s construction, operation and maintenance phases);
* noise and vibration;
* lighting; and
* visual.

As no direct or indirect impacts on the SAC have been recorded for the Scheme when considered alone, no potential therefore exists for in-combination effects between the Scheme and other plans and projects to occur on the site’s qualifying features. |
| **Initial assessment** |
| The key characteristics of the site and the details of the European Site to be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of: |
| Reduction of habitat area | No impact.The Scheme does not require any landtake within the SAC and would therefore not result in any loss of areas of habitat associated with the site. No reduction in habitat would occur as a result of the Scheme. |
| Disturbance to key species | No impact.Due to the distance of the SAC from the Scheme being 3.1 km, the key species within the SAC would not be subject to any direct or indirect disturbance impacts. |
| Habitat or species fragmentation | No impact.The Scheme does not require any landtake within the SAC and would therefore not result in any fragmentation of habitat areas or species within the site.  |
| Reduction in species density | No impact.Due to the distance between the Scheme and the SAC, there would be no reduction in species density as a result of the Scheme. |
| Changes in key indicators of conservation value (water quality etc.) | No impact.Due to the distance between the Scheme and the SAC, the Scheme would not result in changes to key indicators of conservation value that could adversely affect the conservation value of the site or cause habitats to become less favourable.The drainage system has been designed and would be constructed in accordance with DMRB water quality standards (using the HEWRAT) and discharge restricted to mimic existing greenfield rates. This includes passing the outfall through an attenuation basin compliant with HEWRAT pollution control.  Because of the substantial distance between the Scheme and the SAC in the unlikely event that pollutants did enter a watercourse, this would be downstream of the SAC. |
| Climate change | No impact.Although the Scheme is expected to temporarily generate emissions from vehicles, plant, equipment and machinery, these are expected to be a very limited contributor to climate change. The Scheme incorporates flood compensation measures and has been designed to accommodate future climate change predictions, meaning it is not expected to change the hydraulic regime in the catchment.Although the Scheme would result in changes to traffic volumes during its operation and maintenance phases, which would result in increases in greenhouse gas emissions (which are contributors to climate change), it would reduce congestion and enable more consistent traffic speeds and smoother journey conditions to be achieved, thereby reducing pollution levels and facilitating their dispersion). Accordingly, the contribution of these sources of pollutants that can contribute to climate change is expected to be very small at the national scale.Climate change is therefore unlikely to impact the qualifying features within the SAC. |
| Describe any likely impacts on the European Site as a whole in terms of: |
| Interference with the key relationships that define the structure of the site | Structure is taken to correspond to the distribution and abundance of habitats that support the qualifying feature of the SAC.Due to the intervening distance between the SAC and the Scheme, and the absence of impact pathways, no interference with the structure of the SAC is predicted. |
| Interference with key relationships that define the function of the site | Function is taken to mean the capacity of the SAC to support the species for which it is designated.Due to the intervening distance between the SAC and the Scheme, and the absence of impact pathways, no interference with the function of the SAC is predicted. |
| **Indicate the significance as a result of the identification of impacts set out above in terms of:** |
| Reduction of habitat area | No LSE.There would be no landtake (or associated habitat loss) within the SAC as a result of construction, operation and maintenance of the Scheme. Accordingly, no impacts are predicted. |
| Disturbance to key species | No LSE.There would be no disturbance or displacement of key species within the SAC as a result of construction, operation and maintenance of the Scheme. Accordingly, no impacts are predicted. |
| Habitat or species fragmentation | No LSE.There would be no landtake, severance or fragmentation of habitats or species within the SAC as a result of construction, operation and maintenance of the Scheme. Accordingly, no impacts are predicted. |
| Loss of species | No LSE.There would be no loss of species within the SAC as a result of construction, operation and maintenance of the Scheme. Accordingly, no impacts are predicted. |
| Fragmentation | No LSE.There would be no fragmentation of the SAC as a result of construction, operation and maintenance of the Scheme. Accordingly, no impacts are predicted. |
| Disruption | No LSE.There would be no disruption to the structure or function of the key relationships within the SAC as a result of construction, operation and maintenance of the Scheme. Accordingly, no impacts are predicted. |
| Disturbance | No LSE.There would be no disturbance to key species within the SAC as a result of construction, operation and maintenance of the Scheme. Accordingly, no impacts are predicted. |
| Change to key elements of the site (e.g. water quality, hydrological regime etc.) | No LSE.With respect to the River Thames and groundwater, dewatering of the borrow pits and cuttings adjacent to the River Thames would intercept groundwater in the river terrace deposits which provide baseflow discharge to the river.  The intercepted water would be discharged to the River Thames and its tributaries and hence there will be no reduction in the groundwater contribution to the river flow.   Prior to discharge, the water would be settled to reduce the suspended solids content to an acceptable level. There would be no impact on the hydrology or water quality within the SAC as a result of construction, operation and maintenance of the Scheme. Accordingly, no impacts are predicted. |
| Describe from the above those elements of the project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known: |
| Based on the above elements, there would be no changes to the SAC as a result of construction, operation and maintenance of the Scheme when acting alone.As the assessment identified that construction, operation and maintenance of the Scheme would not result in any impacts on the SAC, the assessment concluded there to be no potential for in-combination effects to occur as a result of the Scheme interacting with other plans and projects. |
| Outcome of screening stage. | No LSE would occur on the SAC as a result of construction, operation or maintenance of the Scheme.Further assessment of the site is therefore not required. |

Table 3: Screening matrix – Cothill Fen SAC

| Project name: | Didcot HIF 1 |
| --- | --- |
| European Site under consideration: | Cothill Fen SAC  |
| **Description of project** |
| Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European Site by virtue of: |
| Size, scale and nature  | Chapter 9 of the Environmental Statement presents a description of the Scheme, its main features, and details of how it would be constructed.The Scheme is located in between Didcot and Abingdon, Oxfordshire, within South Oxfordshire District Council. The Scheme will substantially improve the county's transport infrastructure, including a new river crossing of the River thames between Didcot and Culham. The improved infrastructure will enable the development of new housing and employment areas using good sustainable design, supporting improved conditions for cycling. The Annex I habitat that is a primary reason for selection of this SAC is H7230 [Alkaline fens](https://sac.jncc.gov.uk/habitat/H7230/). This lowland valley mire contains one of the largest surviving examples of alkaline fen vegetation in central England, a region where fen vegetation is rare. The M13 *Schoenus nigricans* – *Juncus subnodulosus* vegetation found here occurs under a wide range of hydrological conditions, with frequent bottle sedge (*Carex rostrata*), grass-of-Parnassus (*Parnassia palustris*), common butterwort (*Pinguicula vulgaris*) and marsh helleborine (*Epipactis palustris*). The alkaline fen vegetation forms transitions to other vegetation types that are similar to M24 *Molinia caerulea* – *Cirsium dissectum* fen-meadow and S25 *Phragmites australis* – *Eupatorium cannabinum* tall-herb fen and wet alder (*Alnus*) wood.Additionally, there is an Annex I habitat present as a qualifying feature, but not a primary reason for selection of this site. This is 91E0 [Alluvial forests with alder (*Alnus glutinosa*) and ash (*Fraxinus excelsior*) (Alno-Padion, Alnion incanae, Salicion albae)](https://sac.jncc.gov.uk/habitat/H91E0/).The SAC has no Annex II species that are a primary reason for selection of this site, nor any Annex II species present as a qualifying feature, but not a primary reason for site selection. |
| Landtake | The Scheme is located outside the boundary of the SAC, the Scheme and the SAC being separated by 6.7 km and significant barriers such as the conurbation of Abingdon, the Rivers Thames and Ock, the road and rail networks and Radley Gravel PitsAccordingly, no direct or indirect impacts upon Great Crested Newt would arise during the Scheme’s construction, operational or maintenance stages as a result of landtake. |
| Distance from the European Site or key features of the site (from edge of the project assessment corridor) | At its closest point, the Scheme is located 6.7 km to the south-east of the SAC site boundary. |
| Resource requirements (from the European Site or from areas in proximity to the site, where of relevance to consideration of impacts) | No resources would be taken from, or in close proximity to, the boundary of the SAC and land which it has a functional linkage to, and no area or landtake in proximity to the site is required for access, storage or laydown areas during the Scheme’s construction phase. The landtake resulting from the Scheme would not impact the Annex 1 habitat H7230 [Alkaline fens](https://sac.jncc.gov.uk/habitat/H7230/) or 91E0 [Alluvial forests with alder (*Alnus glutinosa*) and ash (*Fraxinus excelsior*) (Alno-Padion, Alnion incanae, Salicion albae)](https://sac.jncc.gov.uk/habitat/H91E0/) due to the distance between the Scheme and the SAC.Accordingly, no impacts are predicted on the SAC as a result of resource requirements. |
| Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution) | Construction activities within the Scheme are likely to cause localised and temporary reductions in air quality associated with emissions from construction vehicles, plant and machinery, and from localised, temporary congestion on the road network within and surrounding the Scheme when routes are under traffic management controls.Taking into account the distance between the Scheme and the SAC, no impacts are predicted on the Annex 1 habitat H7230 [Alkaline fens](https://sac.jncc.gov.uk/habitat/H7230/) or 91E0 [Alluvial forests with alder (*Alnus glutinosa*) and ash (*Fraxinus excelsior*) (Alno-Padion, Alnion incanae, Salicion albae)](https://sac.jncc.gov.uk/habitat/H91E0/) as a result of any short-term localised impacts relating to air quality (including atmospheric pollution from particulate matter and nitrogen deposition) resulting from construction of the Scheme.Reductions in air quality due to pollutants from operational and maintenance vehicles would be confined to routes within the Scheme and outward to a distance of up to 200m (**Error! Reference source not found.**). As the SAC does not coincide with any such routes, no impacts on any of the qualifying features of the SAC are predicted in relation to air quality impacts during the Scheme’s operational and maintenance phases.As European Sites can be affected by changes in air quality if they are within 200 m of a potentially affected road, a review was undertaken to determine if the SAC would be negatively impacted by predicted increases in annual mean NOx concentrations and nitrogen deposition rates due to increased traffic load on any roads adjacent to the SAC during operation of the Scheme. There are no roads within 200 m of the SAC except for a few tens of metres at the northern Wooton end and the southern part at Cothill. Lachford Lane and Church Lane in between Cothill and Wootton, are minor roads and buffered from the SAC by >200 m of houses and their gardens.The SAC was scoped out of this exercise at the first stage due to there being no increase in traffic along Lachford Lane and Church Lane due to the Scheme. This also applied to potential impacts from alterations in traffic during construction, for example through traffic diversions or construction traffic. The Scheme has no potential hydrological linkage to the SAC given the distance from the Scheme and pattern of drainage in between the Scheme and the SAC. |
| Excavation requirements (e.g. impacts of local hydrogeology) | Excavations would be undertaken as part of general earthworks operations carried out during construction of the Scheme. These excavations would be undertaken to accommodate sections of the new carriageway where these are proposed to be positioned within cuttings, and to obtain material to form embankments and noise bunds. These would be managed in accordance with standard best practice management methods and techniques to protect local hydrology (i.e. surface water and groundwater) from potential pollution sources.No excavations would be undertaken on land within the SAC or land which has a functional link to the SAC.No indirect or indirect impacts are predicted to arise from excavations during the construction stage because the potential for these operations to generate contaminants capable of reaching the site in significant concentrations is unlikely due to the intervening distance between the Scheme and the SAC. |
| Transportation requirements | The transportation of materials, site operatives and machinery would be required to facilitate construction of the Scheme.During the works, there is potential for increased congestion on routes within and surrounding the Scheme as a result of additional vehicles on the network moving materials, equipment and machinery to and from working areas, and from the deployment of traffic management.To manage potential impacts, construction traffic would arrive at, and depart from, working areas within the Scheme via agreed haul routes and access points. Traffic management including temporary lane closures and diversions would be required throughout construction of the Scheme on roads within and surrounding the Scheme. Where full road closures are required, traffic affected by construction would be diverted onto alternative routes with advanced information and signage provided to assist road users making journeys. The geographical location of the SAC in relation to the Scheme is such that any diverted traffic and construction traffic are very unlikely to be routed past the SAC as no road closures or diversions would be required on roads in proximity to them.No transportation requirements would be necessary during the Scheme’s operational and maintenance phases.Accordingly, no impacts on the SAC are predicted as a result of the Scheme’s transportation requirements during its construction, operation and maintenance. |
| Duration of construction, operation, etc. | Subject to consent for the Scheme being granted, construction of the Scheme is planned to commence in 2024 and would continue until the Scheme is opened, planned for 2028.As the Scheme would form an integral part of the strategic road network, it would remain in long-term operation and is therefore unlikely to be decommissioned in the future.During its operational phase, the Scheme would be subjected to periodic maintenance, repair and management activities.No impacts are predicted on the SAC because of the duration associated with Scheme construction, operation and maintenance. |
| Other | A review was undertaken of the SAC to determine if it might be negatively impacted by predicted increases in noise associated with the use of construction plant, equipment, machinery and vehicles within the Scheme or due to increased traffic load on any roads adjacent to the site during the operation of the Scheme.  The SAC was scoped out of this exercise at the first stage due to there being no increase in traffic along any roads adjacent to the SAC nor any functionally linked habitat. This also applied to potential impacts from alterations in traffic during construction, for example through traffic diversions or construction traffic.    Sources of temporary and permanent lighting would be introduced within the Scheme during the construction and operational phases, and potentially when undertaking maintenance activities. These sources would not impact the SAC nor any functionally linked habitat.New activity and infrastructure would be introduced within the Scheme during construction, operation and maintenance of the Scheme. Given the intervening distance between the Scheme and the SAC, no visual disturbance from these impact sources is predicted on any functionally linked habitat. |
| **Description of avoidance and / or mitigation measures** |
| Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on: |
| Nature of proposals | A range of embedded and essential mitigation measures has been identified through the EIA process to mitigate the environmental impacts and effects of the Scheme. These are presented in the Schedule of Mitigation and include: * embedded measures incorporated into the design of the Scheme to prevent, avoid and reduce its environment effects, the details of which are presented in Chapter 3, The Scheme of the Environmental Statement.
* best practice management and control measures that would be employed during construction of the Scheme, the details of which are presented in the Environmental Management Plan.

None of the measures have been identified to specifically mitigate effects on the qualifying features of the SAC as no impacts on this site are predicted to result from construction, operation and maintenance of the Scheme. |
| Location | Mitigation is proposed throughout the extents of the Scheme to mitigate the environmental impacts and effects of the Scheme’s construction, operation and maintenance. |
| Evidence for effectiveness | The measures proposed are plainly established, uncontroversial and are commonly implemented on road projects similar to the Scheme, where their effectiveness has been proven. |
| Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations) | The measures would be secured and delivered through the powers and requirements contained within the DCO. |
| **Characteristics of European Site** |
| A brief description of the European Site to be produced, including information on: |
| Name of European Site and its EU code | Cothill Fen SAC (UK0012889). Designated on 1 April 2005. |
| Location and distance of the European Site from the proposed works | Centroid grid reference: SU 463 999 The Scheme is located 6.7 km south-east of the SAC boundary at its closest point. The boundary of the SAC does not overlap with that of the Scheme. |
| European Site size | 43.55 hectares |
| Key features of the European Site including the primary reasons for selection and any other qualifying interests | Cothill Fen SAC lies in the Vale of the White Horse between the Berkshire Downs and the River Thames in Oxfordshire, forming part of the Mid Vale Ridge National Character Area. Although close to Oxford and Abingdon, the surrounding area is largely rural. The site is screened by woodland, giving it a secluded feel. The site includes the Cothill National Nature Reserve and is an exceptionally important site with an outstanding range of nationally rare habitats which support a large number of rare invertebrates and plants. The habitats consist of calcareous fen, calcareous grassland, woodland and scrub of varying degrees of wetness. The habitat supports over 330 species of vascular plant and over 120 nationally scarce or rare invertebrates.The site is designated under Article 4(4) of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:* alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae), *i.e.* Alder woodland on floodplains, and
* alkaline fens (calcium-rich springwater-fed fens).

Cothill SAC is a lowland valley mire containing one of the largest surviving examples of alkaline fen vegetation (Annex 1 habitat type) in central England, a region where fen vegetation is rare. The black bog-rush – blunt-flowered rush (*Schoenus nigricans – Juncus subnodulosus*) mire vegetation found here occurs under a wide range of hydrological conditions, with frequent bottle sedge (*Carex rostrata*), grass-of-Parnassus (*Parnassia palustris*), common butterwort (*Pinguicula vulgaris*) and marsh helleborine (*Epipactis palustris*). The alkaline fen vegetation forms transitions to other vegetation types that are similar to purple moor-grass – meadow thistle (*Molinia caerulea* – *Cirsium dissectum*) fen-meadow and common reed – hemp-agrimony (*Phragmites australis* – *Eupatorium cannabinum*) tall-herb fen, as well as wet alder (*Alnus glutinosa*) woodland. The SAC owes its existence to unusual hydrological conditions arising from changes in the underlying geology. At the edge of the Vale of the White Horse, a Corallian limestone ridge merges with the Kimmeridge clay of the Oxfordshire clay vales. The ridge is sandy and free draining while the clay is impermeable. As a result, at the boundary between the two, calcareous springs which form fens and flushes arise, the most significant of which is Cothill Fen. In places, where the site is waterlogged, layers of peat have built up, reaching a maximum depth of over 4 m. The pollen record contained within the peat is nationally significant for the information it provides about vegetation in southern England since the last Ice Age. The site shows succession through open water to fen and carr habitats. Historic management of the site by grazing, peat digging and creation of ponds has created a short fen blunt-flowered rush *Juncus subnodulosus*-black bog-rush *Schoenus nigricans* mire community that is botanically very rich. Another rare fen habitat, the purple moor-grass *Molinia caerulea*-meadow thistle *Cirsium dissectum* fen meadow is also present. In places, along the Sandford Brook and on areas of waterlogged peat the fen merges into areas of wet woodland. Most notable is an alder-greater tussock sedge (*Carex paniculata*) woodland community with a canopy dominated by alder and ash. The mosaic of fenland habitats supports a rich invertebrate fauna including the nationally rare Desmoulin’s whorl snail (*Vertigo moulinsiana*) and the damselflies: small red damselfly (*Ceriagrion tenellum*), variable damselfly (*Coenagrion pulchellum*) and the nationally rare southern damselfly (*Coenagrion mercuriale*). Clubbed general soldierfly (*Stratiomys chamaeleon*) is an uncommon species listed in the Red Data Book of Invertebrates and scarlet tiger moth (*Calliomorpha dominula*) are also found in the SAC, the latter species being the subject of a long-term study. However, the SAC has no Annex II species that are a primary reason for selection of this site, nor any Annex II species present as a qualifying feature, but not a primary reason for site selection. |
| Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways | Natural England’s Site Improvement Plan for Cothill Fen SAC has identified pressures on the H7230 Calcium-rich springwater-fed fens from:* water pollution and is seeking to investigate the impact pathways and sources of water pollution leading to a Diffuse Water Pollution Plan and its implementation, and
* air pollution, specifically the impact of atmospheric nitrogen deposition and has the objective of reducing the impacts of atmospheria nitrogen.

There is also a pressure/threat from hydrological change and the plan to investigate the hydrology of the site. For further details see: http://publications.naturalengland.org.uk/publication/6482436405854208 |
| European Site conservation objectives – where these are readily available | With regard to the SAC and the natural habitats and/or species for which the SAC has been designated and subject to natural change, the conservation objectives are to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:* the extent and distribution of qualifying natural habitats
* the structure and function (including typical species) of qualifying natural habitats, and
* the supporting processes on which qualifying natural habitats rely.
 |
| **Assessment criteria** |
| Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European Site. |
| The Scheme comprises a linear corridor of land from Milton along the existing A4130 and then being joining up with the A4 and B4015 by new road running to the north with improvements to the A4 and B4105 to the east. It is within this corridor that the Scheme would be constructed, operated and maintained.The Scheme is located 6.7 km from the SAC. There is no functional linked habitat within the Scheme and impact pathways are absent, and given the role and effectiveness of best practice measures to be delivered, no direct or indirect impacts on the qualifying features of the site are predicted in relation to the following impact sources associated with construction, operation and maintenance of the Scheme:* landtake;
* distance;
* resource requirements;
* emissions to air;
* emissions to water (surface water);
* excavation requirements;
* transportation requirements;
* duration (of the Scheme’s construction, operation and maintenance phases);
* noise and vibration;
* lighting; and
* visual.

As no direct or indirect impacts on the SAC have been recorded for the Scheme when considered alone, no potential therefore exists for in-combination effects between the Scheme and other plans and projects to occur on the site’s qualifying features. |
| **Initial assessment** |
| The key characteristics of the site and the details of the European Site to be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of: |
| Reduction of habitat area | No impact.The Scheme does not require any landtake within the SAC and would therefore not result in any loss of areas of habitat associated with the site. No reduction in habitat would occur as a result of the Scheme. |
| Disturbance to key species | No impact.Due to the distance of the SAC from the Scheme being 6.7 km, the key habitats within the SAC would not be subject to any direct or indirect disturbance impacts. |
| Habitat or species fragmentation | No impact.The Scheme does not require any landtake within the SAC and would therefore not result in any fragmentation of habitat areas or species within the site.  |
| Reduction in species density | No impact.Due to the distance between the Scheme and the SAC, there would be no reduction in species density as a result of the Scheme. |
| Changes in key indicators of conservation value (water quality etc.) | No impact.Although the Scheme has potential hydrological linkage to the SAC as part of the River Thames catchment, the catchment is approximately 8 km (5 miles) downstream of the SAC and were there to be any spills or equivalent, they would be carried away from the SAC. The drainage system has been designed and would be constructed in accordance with DMRB water quality standards (using the HEWRAT) and discharge restricted to mimicking existing greenfield rates. Due to the distance between the Scheme and the SAC, there would be no impact on any key indicators of conservation value that could adversely affect the conservation value of the site or cause habitats to become less favourable. |
| Climate change | No impact.Although the Scheme is expected to temporarily generate emissions from vehicles, plant, equipment and machinery, these are expected to be a very limited contributor to climate change. The Scheme incorporates flood compensation measures and has been designed to accommodate future climate change predictions, meaning it is not expected to change the hydraulic regime in the catchment.Although the Scheme would result in changes to traffic volumes during its operation and maintenance phases, which would result in increases in greenhouse gas emissions (which are contributors to climate change), it would reduce congestion and enable more consistent traffic speeds and smoother journey conditions to be achieved, thereby reducing pollution levels and facilitating their dispersion.Accordingly, the contribution of these sources of pollutants that can contribute to climate change is expected to be very small at the national scale.Climate change is therefore unlikely to impact the qualifying features within the SAC. |
| Describe any likely impacts on the European Site as a whole in terms of: |
| Interference with the key relationships that define the structure of the site | Structure is taken to correspond to the distribution and abundance of habitats that support the qualifying feature of the SAC.Due to the intervening distance between the site and the Scheme, and the absence of impact pathways, no interference with the structure of the SAC is predicted. |
| Interference with key relationships that define the function of the site | Function is taken to mean the capacity of the SAC to support the habitats for which it is designated.Due to the intervening distance between the site and the Scheme, and the absence of impact pathways, no interference with the function of the SAC is predicted. |
| **Indicate the significance as a result of the identification of impacts set out above in terms of:** |
| Reduction of habitat area | No LSE.There would be no landtake (or associated habitat loss) within the SAC as a result of construction, operation and maintenance of the Scheme. Accordingly, no impacts are predicted. |
| Disturbance to key species | No LSE.There would be no disturbance or displacement of species within the SAC as a result of construction, operation and maintenance of the Scheme. Accordingly, no impacts are predicted. |
| Habitat or species fragmentation | No LSE.There would be no landtake, severance or fragmentation of habitats within the SAC as a result of construction, operation and maintenance of the Scheme. Accordingly, no impacts are predicted. |
| Loss of species | No LSE.There would be no loss of species within the SAC as a result of construction, operation and maintenance of the Scheme. Accordingly, no impacts are predicted. |
| Fragmentation | No LSE.There would be no fragmentation of the SAC as a result of construction, operation and maintenance of the Scheme. Accordingly, no impacts are predicted. |
| Disruption | No LSE.There would be no disruption to the structure or function of the key relationships within the SAC as a result of construction, operation and maintenance of the Scheme. Accordingly, no impacts are predicted. |
| Disturbance | No LSE.There would be no disturbance to key habitats within the SAC as a result of construction, operation and maintenance of the Scheme. Accordingly, no impacts are predicted. |
| Change to key elements of the site (e.g. water quality, hydrological regime etc.) | No LSE.The Scheme and the SAC are both within the River Thames catchment, i.e. there is hydrological linkage. However, the SAC is approximately 8 km (5 miles) upstream of the SAC and the drainage system has been designed and would be constructed in accordance with DMRB water quality standards (using the HEWRAT) and discharge restricted to mimicking existing greenfield rates. Taking a worst case situation, were there to be any changes in drainage or flow, or any spills or equivalent, they would be carried away from the SAC. With respect to groundwater, the Scheme and the SAC are separated by 6.7 km including significant barriers such as the conurbation of Abingdon, the Rivers Thames and Ock, the road and rail networks and Radley Gravel Pits.There would be no impact on the hydrology or water quality within the SAC as a result of construction, operation and maintenance of the Scheme. Accordingly, no impacts are predicted. |
| Describe from the above those elements of the project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known: |
| Based on the above elements, there would be no changes to the SAC as a result of construction, operation and maintenance of the Scheme when acting alone.As the assessment identified that construction, operation and maintenance of the Scheme would not result in any impacts on the SAC, the assessment concluded there to be no potential for in-combination effects to occur as a result of the Scheme interacting with other plans and projects. |
| Outcome of screening stage (delete as appropriate). | No LSE would occur on the SAC as a result of construction, operation or maintenance of the Scheme.Further assessment of the site is therefore not required. |

Appendix 2. Citation for Little Wittenham Special Area of Conservation



Appendix 3. Citation for Cothill Fen Special Area of Conservation



Appendix 4. Cothill Fen SAC – qualifying features

About the qualifying features of the SAC The following section gives you additional, site-specific information about this SAC’s qualifying features. These are the natural habitats and/or species for which this SAC has been designated.

Qualifying Habitats:

H7230 Alkaline fens Alkaline fens consist of a complex assemblage of wetland vegetation characteristic of sites where there is tufa and/or peat formation with a high water table and a calcareous base-rich water supply. The core vegetation is typically short sedge mire (mire with low-growing sedge vegetation). A significant proportion of the alkaline fens surviving in Europe are believed to occur in the UK. This lowland valley mire contains one of the largest surviving examples of alkaline fen vegetation in central England, a region where fen vegetation is rare. The M13 Schoenus nigricans – Juncus subnodulosus vegetation type found here occurs under a wide range of hydrological conditions, with frequent bottle sedge *Carex rostrata*, grass-of-Parnassus *Parnassia palustris*, common butterwort *Pinguicula vulgaris* and marsh helleborine *Epipactis palustris*. The alkaline fen vegetation forms transitions to other vegetation types that are similar to M24 Molinia caerulea – Cirsium dissectum fen-meadow and S25 Phragmites australis – Eupatorium cannabinum tall herb fen and wet alder wood.

H91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae). \*Priority feature (‘alder woodland on floodplains’) Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) comprises woods dominated by alder *Alnus glutinosa* and willow *Salix* species on floodplains in a range of situations from islands in river channels to low-lying wetlands alongside the channels. The habitat typically occurs on moderately base-rich, eutrophic soils subject to periodic inundation. Many such woods are dynamic, being part of a successional series of habitats. Their structure and function are best maintained within a larger unit that includes the open communities, mainly fen and swamp, of earlier successional stages. On the drier margins of these areas other tree species, notably ash Fraxinus excelsior and elm *Ulmus* species, may become abundant. In other situations, the alder woods occur as a stable component within transitions to surrounding dry-ground forest, sometimes including other Annex I woodland types. These transitions from wet to drier woodland and from open to more closed communities provide an important facet of ecological variation. Associated with the permanently waterlogged peat of the SAC is a base-rich spring-line alder-greater tussock sedge *Carex paniculata* NVC W5 woodland community with a canopy dominated by tall alder and ash. The ground flora is rich and reflects the transition from fen to woodland including five species of sedge including the thin-spiked wood sedge *Carex strigosa*. The herbs present include moschatel *Adoxa moschatellina*, common spotted-orchid *Dactylorhiza fuchsii*, yellow pimpernel *Lysimachia nemorum*, ladyfern *Athyrium filix-femina* and brooklime *Veronica beccabunga*.

References

Rodwell, J.S. (editor) 1991. British Plant Communities. Volume 1. Woodlands and scrub. Cambridge University Press.

Rodwell, J.S. (editor) 1991. British Plant Communities. Volume 2. Mires and heath. Cambridge University Press.

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1. The Precautionary Principle, which is referenced in Article 191 of the Treaty on the Functioning of the European Union, has been defined by the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2005) as: “When human activities may lead to morally unacceptable harm that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm”. [↑](#footnote-ref-1)
2. Case C-461/17 [↑](#footnote-ref-2)