Cambridge Waste Water Treatment Plant Relocation Project
Anglian Water Services Limited

Appendix 8.15:Habitats Regulations Assessment Screening Report

Application Document Reference: 5.4.8.15
PINS Project Reference: WW010003
APFP Regulation No. 5(2)g

Revision No. 01
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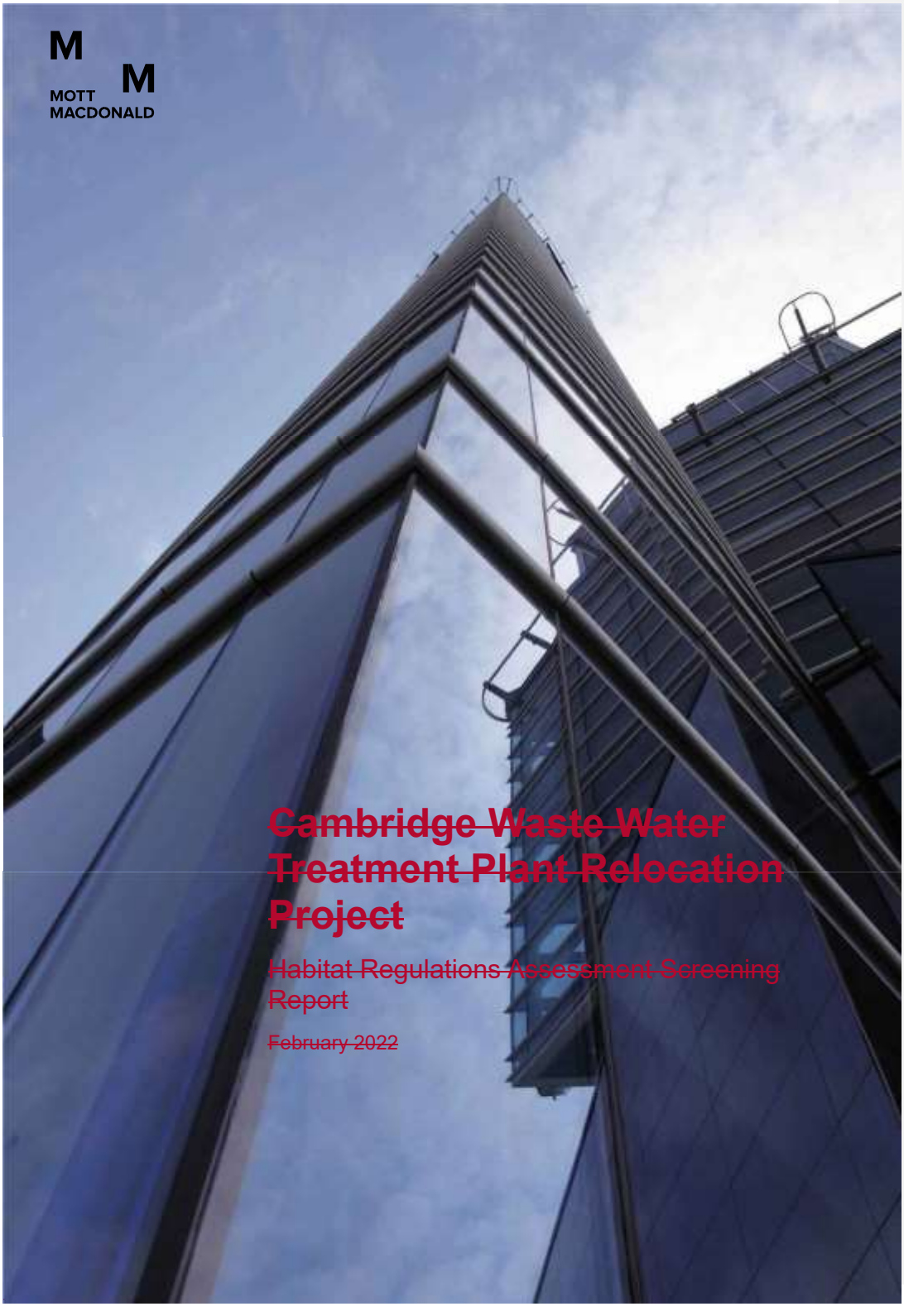
MOTT MACDONALD



~~Cambridge Waste Water Treatment Plant Relocation Project~~

~~Habitat Regulations Assessment Screening Report~~

~~February 2022~~

Mott MacDonald
22 Station Road
Cambridge CB1 2JD United
Kingdom

T +44 (0)1223 463500
mottmac.com

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Executive summary

A Habitats Regulations Assessment (HRA) screening has been completed as part of the EIA Phase 2 works in relation to the proposals for the relocation of the Cambridge Waste Water Treatment Plant (hereafter referred to as the 'Proposed Development' or CWWTP). A HRA refers to the several distinct stages of assessment undertaken in accordance with the Conservation of Habitats and Species Regulations 2017 (as amended). HRA refers to the whole process of assessment, including an Appropriate Assessment (where one is required).

The screening is carried out using the accepted steps (aligned to HRA stages), identifying all those Special Areas of Conservation (SAC), candidate SACs (cSACs), possible Special Areas of Conservation (pSAC), Special Protection Areas (SPA), possible Special Protection Areas

(pSPA), Ramsar sites and proposed Ramsar sites that could potentially be affected by the Proposed Development. The screening aligns with 'Advice note ten: Habitats Regulations

Assessment relevant to nationally significant infrastructure projects' published by the Planning Inspectorate (November 2017), both in terms of methodology and report structure. Key to this are the screening matrices in Appendix B, which summarise the screening exercise for likely significant effects (LSE) of the Proposed Development on the habitatNSN sites[1]and their qualifying features.

The Proposed Development involves the construction of a new Waste Water Treatment Plant (WWTP) together with associated waste water transfer infrastructure (comprising a waste water transfer tunnel, and treated effluent transfer pipelines) a new outfall to the River Cam, ,a transfer pipeline corridor connecting from from a pumping station off Bannold Drive (Waterbeach), and a new access road to the Proposed Development.

This document sets out the details of the HRA screening exercise undertaken for the Proposed Development. This screening assessment investigates the potential for significant effects arising from the relocation of the existing Cambridge WWTP on the qualifying interests of:

- Wicken Fen Ramsar site/ Fenland SAC,
- Eversden and Wimpole Woods SAC,
- Devil's Dyke SAC,
- The Wash and North Norfolk Coast SAC,
- The Wash SPA and
- The Wash Ramsar site.,
- Ouse Washes SAC, Ouse Washes SPA, Ouse Washes Ramsar site.

[1] EuropeanNSN sites identified under the Conservation of Habitats and Species Regulations 2017 (as amended) are referred to as 'habitatsNSN sites' in the National Planning Policy Framework.

The screening assessment considers whether the Proposed Development, either alone or in combination with other plans, policies or projects, will have a likely significant effect on the habitatNSN sites. A desk- based assessment has been completed to identify habitatNSN sites potentially affected by the Proposed Development. Identification of habitatNSN sites has been through definition of ana Ecological Zone of Influence (EZoI) based on proximity and connectivity to the Proposed Development.

Having regard to the precautionary principle, it is concluded that there is potential for significant effects on all of the above sites from the Proposed Development either alone or in-combination with other plans and/or projects, with the exception of Eversden and Wimpole Woods SAC. Likely significant effects may be due to changes in river water quality of the River Cam as a result of unplanned events in construction (for example a pollution event), change to water quality within the River Cam as a result of effluent quality and quantity (for example changes in nutrients) which could affect downstream SACs, pSACs, SPAs, pSPAs and Ramsar sites, or emissions from construction phase vehicles resulting in nitrogen deposition that may affect qualifying habitats and/or species of an adjacent SAC. The findings of this report are summarised in the Screening Statement set out in Chapter 5 of this document.

1 Introduction

1.1 Background

1.1.1 Anglian Water has commissioned a Habitats Regulations Assessment (HRA) screening report in relation to the relocation of the Cambridge Waste Water Treatment Plant (hereafter referred to as the 'Proposed Development' or CWWTP).

1.1.2 The Proposed Development involves construction of a new Waste Water Treatment Plant (WWTP) together with the associated waste water transfer infrastructure (comprising a waste water transfer tunnel, and treated effluent transfer pipelines) and outfall to the River Cam, a transfer pipeline corridor from a pumping station off Bannold Drive (Waterbeach), and a new access road.

1.1.3 This document sets out the details of the HRA screening exercise undertaken for this development.

1.2 The purpose of this Habitats Regulations Assessment Screening

1.2.1.4 This report contains all the HRA screening information necessary for the competent authority to identify all Likely Significant Effects (alone or in-combination with other projects or plans) in accordance with Part 6 of the Conservation of Habitats and Species Regulations 2017 (as amended) or Habs Regs.

1.3 The purpose of the Habitats Regulations Assessment

1.3.1.5 The Habs Regs are the UK government's pieces of legislation that originally transposed aspects of the Habitats Directive (Council Directive 92/43/EEC) and certain elements of the Wild Birds Directive (Directive 2009/147/EC) (both EU, Directives, known as the Nature Directives).

1.3.21.1.6 To account for the UK having left the European Union, the Habs Regs were amended in 2019, with only relatively minor changes coming into force on 31 December 2020[2]. The HRA regime set out in the Habs Regs will therefore continue to apply in largely the same way after the transition period ends. Examples of the relatively minor changes are that the European Commission's role in the HRA derogation test process will be replaced by the Secretary of State for the Environment, Food and Rural Affairs; and that there will be changes to the procedures for designation /

[2] A summary of the changes can be found on the following webpages:

Brexit changes to the Habitats Regulations for England and Wales (CIEEM) https://cieem.net/brexitchanges-to-the-habitats-regulations/

Habitats Regulations Assessment after 31 December | How will it look? (Freeths)

https://www.freeths.co.uk/2020/10/22/the-habitats-regulations-assessment-regime-after-31-december2020-how-will-it-look/ (both accessed 04.02.2021)

changes to the procedures for designation / classification of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

1.3.3 1.1.7 In England the government implements the protection afforded to habitats and species by the Habs Regs through a set of statutory instruments collectively referred to as the 'Habitats Regulations'. A cornerstone of the Habitats Regulations is the designation and conservation of sites to maintain the favourable conservation status of protected habitats and species listed in the Habs Regs. These sites make up the European Union-wide Natura 2000 network, within which the UK sites are referred to as the National Site Network (NSN) from January 2021.

1.3.4 1.1.8 For any plan or project that could affect one or more NSN sites, the provisions of Part 6 of the Habs Regs establish the procedure that a competent national authority must follow before agreeing to the implementation of a plan or project on land or at sea within the Ecological Zone of Influence (EZoI) of the baseline. The procedure, known as an 'appropriate assessment', requires such plans or projects to undergo a stepwise impact assessment against the NSN sites' conservation objectives (see Figure 1.1). In England the assessment process is known as a Habitats Regulations Assessment (HRA).

1.3.5 1.1.9 The competent authority can only agree to the plan or project if, based on the findings of the appropriate assessment, it has demonstrated the absence (rather than the presence) of an adverse effect on the integrity of the NSN site concerned.

1.3.6 1.1.10 In exceptional circumstances, a plan or project having an adverse effect on the integrity of

an NSN site can be approved under Part 6 of the Habs Regs if it can be demonstrated that there is an absence of less damaging alternatives and the plan or project is necessary for imperative reasons of overriding public interest (IROPI). In such cases, adequate compensation measures must be secured to ensure that the overall coherence of the NSN is maintained.

1.3.7 1.1.11 The Planning Inspectorate (PINS) Advice Note Ten 'Habitat Regulations Assessment relevant to nationally significant infrastructure projects' (online[3] version 8, November 2017), defines HRA as a step by step process which determines likely significant effect (LSE) and (where appropriate) assesses adverse impact on the integrity of a European site, examines alternative solutions, and provides justification of Imperative Reasons of Overriding Public Interest (IROPI). The advice note refers to the four stage process as summarised below and illustrated in Figure 1.1.

- HRA Stage 1 - Screening: Screening for LSE (alone or in-combination with other projects or plans);
- HRA Stage 2 - Appropriate Assessment: Assessment of implications of identified LSEs on the conservation objectives of a European site to ascertain if the proposal will adversely affect the integrity of a European site;

- HRA Stage 3 – Assessment of Alternative Solutions (where it cannot be ascertained that the proposal will not adversely affect the integrity of a European site); and
- HRA Stage 4 – Assessment of IROPI (where no alternative solutions are identified).

1.3.8 1.1.12 All four stages of the process are referred to as the Habitats Regulations Assessment (HRA) to clearly distinguish the whole process from the one step within it referred to as the "Appropriate Assessment" (AA).

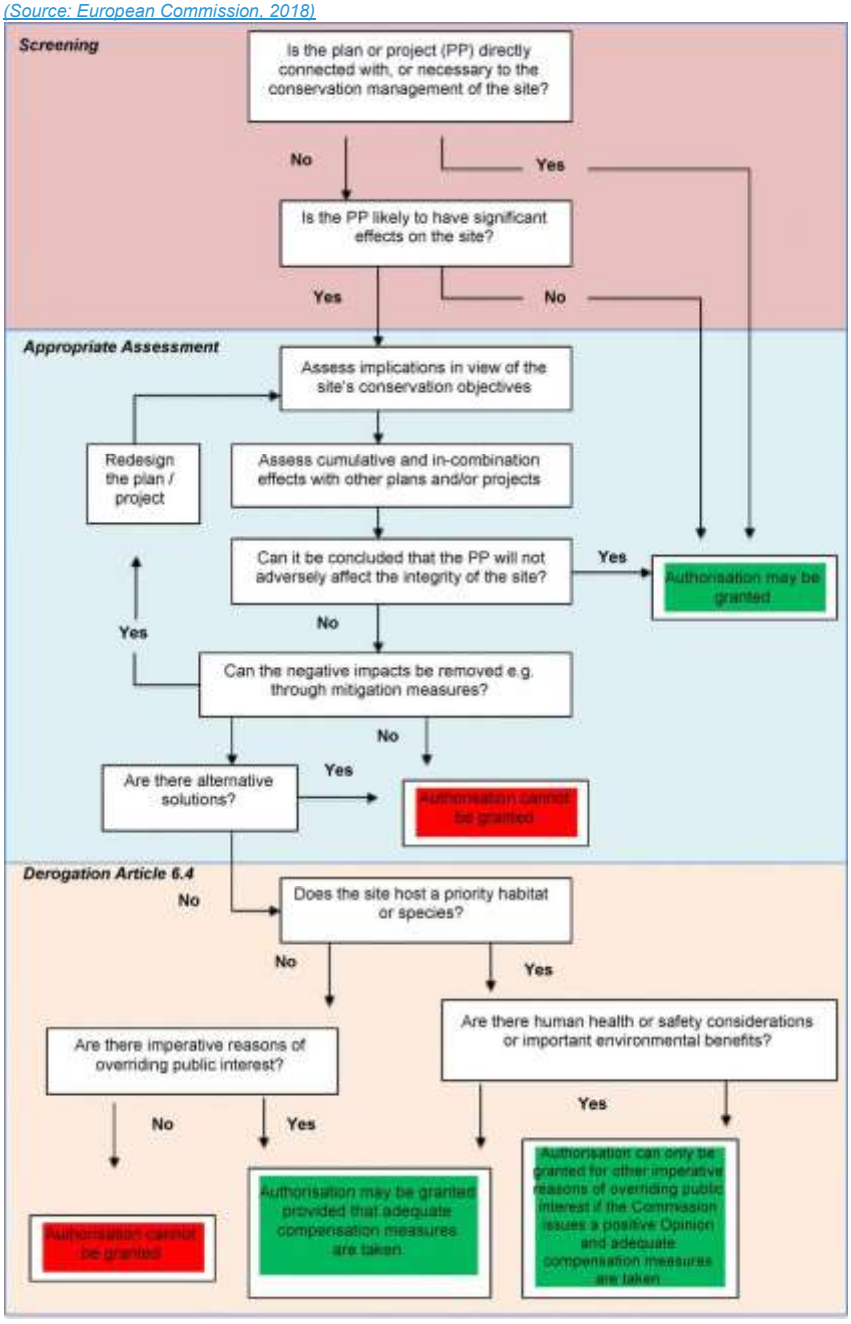
1.3.9 1.1.13 Note that not all four stages need be completed; if screening identifies that no LSE are predicted, then the process does not need to progress further. If LSE are identified, it may be that the Appropriate Assessment, exploring the LSE if more detail, can identify that there would be no adverse effects on integrity of the NSN sites, then as above, the process can stop on completion of this stage.

1.3.10 1.1.14 It is useful to note that more recent guidance has condensed the above into just three stages. The national guidance contained in 'Appropriate Assessment - Guidance on the use of Habitats Regulations Assessment. Published 22 July 2019' (GOV.UK (2019) includes the three stages below:

- Stage 1 Screening;
- Stage 2 Appropriate Assessment; and
- Stage 3 Derogation - to consider if proposals that would have an adverse effect on a European site qualify for an exemption

Figure 1- 1: The Habitats Regulations Assessment process

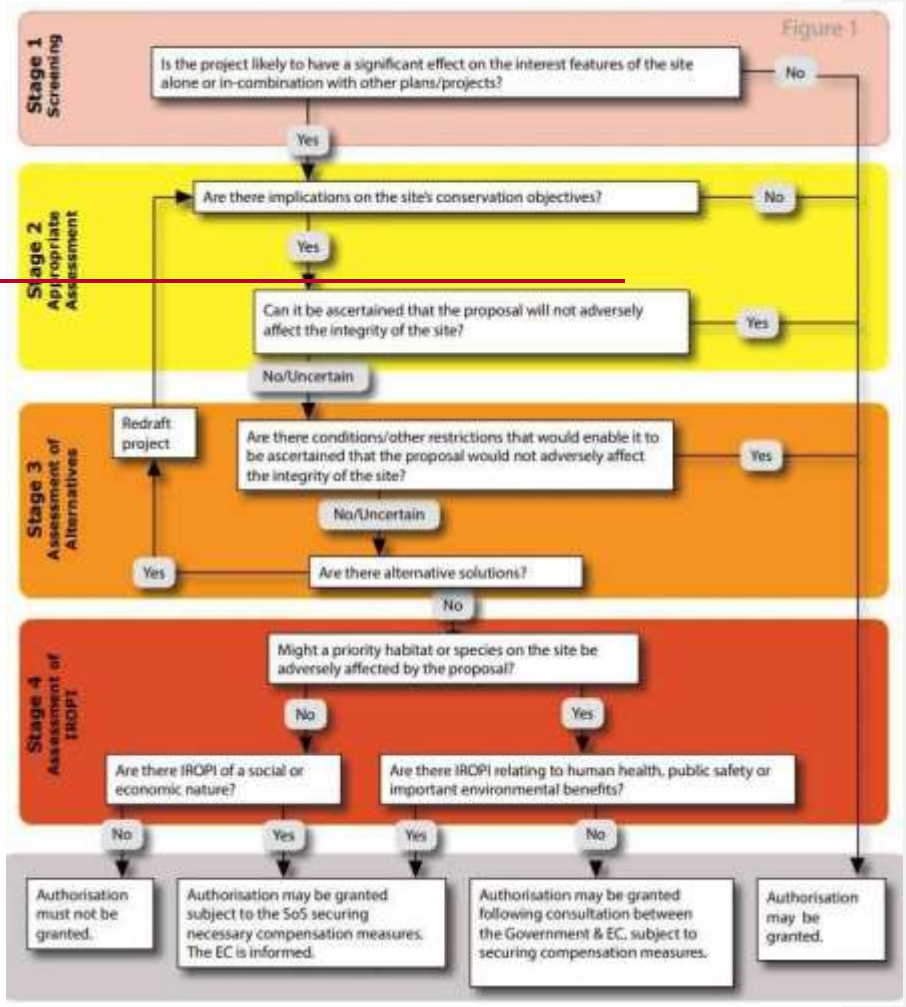
(Source: European Commission, 2018)



~~1.3.11~~ 1.1.15 Note that the reference, in the Appropriate Assessment section of the above figure includes the requirement to assess cumulative and in-combination effects with other plans and/or projects; Unlike in EIA, the terms cumulative and in-combination are used interchangeably, as a combined process. As such, this document simply refers to this stage of the assessment as an in-combination assessment.

~~Figure 1.1: The Habitats Regulations Assessment process~~

~~(Source: PINS Advice Note 10[2])~~



[2] PINS (2012) Figure 1 in Advice Note Ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-noteten/

1.4 Screening principles

1.4.1 The purpose of screening is to identify the likely significant effects that arise from the interaction between actions of the project and sensitive receptors through impact pathways. The following principles underpin this screening assessment:

1. NSN Ssites are referred to as 'habitatsNSN sites', in accordance with the government guidance on appropriate assessment. Habitatsand the National Planning Policy Framework (NPPF). NSN sites include the following designations:
   - 1. A Special Areas of Conservation (SAC);
   - A Sites of Community Importance (SCI);
   - A Special Protection Areas (SPA);
   - A potential SACs (pSAC);
   - A potential/proposed SPAs (pSPA);
   - A sites proposed to the European Community as an SCI, i.e., a candidate SAC (cSAC); and
   - Ramsar sites and proposed Ramsar sites are not within the NSN, but are nonetheless included in the assessment in accordance with government guidance[3]the NPPF.
2. The project is not directly connected with or necessary to the conservation management of any habitats site.
3. Screening is undertaken regardless of whether the project is located inside or outside the boundary of a habitats site.
4. The term impact means an action 'resulting in changes to an ecological feature', and effect means an 'outcome to an ecological feature from an impact'.
5. The term zone of influence means 'The area(s) over which ecological features may be affected by the biophysical changes caused by the proposed project and associated activities'.
6. The habitatsNSN sites for inclusion in the HRA screening will be identified where the project's zone(s) of influence intersect with any Sites of Special Scientific Interest (SSSI) impact risk zones (IRZ) associated with a habitats site. In this instance the selection of SSSI IRZs is based on those IRZs relevant to all planning applications and IRZs relevant to the Proposed Development. In addition, habitatsNSN sites will also be included for assessment where theyre are potentially affected by likely significant effects from the Proposed Development, irrespective of distance. The most pertinent examples of this isare alterations to the water quality or quantity on watercourses, where even distant downstream habitatNSN sites may be affected.

[3] Defra (2021) Guidance Habitats regulations assessments: protecting a European site. Available at: https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site

7. In the context of the precautionary principle a likely significant effect exists when it cannot be excluded on the basis of objective information that the project will have a significant effect on the habitats site concerned and where the risk of a significant effect is "real" as opposed to hypothetical.
8. The assessment of risk will be made in the light, inter alia, of the conservation objectives, characteristics and specific environmental conditions of the habitat site concerned.
9. Mitigation measures intended to avoid or reduce the harmful effects are not considered when determining if a likely significant effect exists.
10. Any likely significant effects identified through the application of the above principles will be taken forward and assessed in detail in an appropriate assessment.

1.5 Consultation with Natural England

1.5.1 The Statutory Nature Conservation Body (SNCB) is Natural England. The ongoing consultation and engagement programme includes specific focus on future permitting of the proposed WWTP. Through discussions with Natural England (and the Environment Agency) potential impacts of the Proposed Development on designated sites located downstream along the River Cam, the following sites have been identified as requiring assessment for impacts[4]:

- The Cam Washes Site of Special Scientific Interest
- The Wash SPA
- North Norfolk Coast SAC
- The Ouse Washes SPA, SAC, Ramsar and SSSI
- Any other legally protected ~~habitats~~ sites that are hydrologically connected to the flow from the water ~~proposed WWTP~~recycling centre.

1.5.2 Further to discussions related to permitting and downstream locations Natural England have also ~~undertook~~undertaken a review of a Hydrogeological Impact Assessment (HIA) report[5] completed to support the Stage 4 - Final Site Selection assessment for the Proposed Development. Advice within a response provided following their review of the HIA explicitly states that 'Natural England welcomes that all potential impacts on all surface water and groundwater dependant nature conservation sites will be considered in the water resources assessment of the Environmental Statement (ES),

[4] The Cam Washes Site of Special Scientific Interest (SSSI) also referred to by NE which will be assessed as part of the Environmental Impact Assessment (EIA).

[5] Mott MacDonald Ltd. (2021). Cambridge WWTP Relocation Project - Stage 4 Final Site Selection - Hydrogeological Impact Assessment https://cwwtpr.com/wp-content/uploads/2021/03/CWWTPR-Stage-4Final-Site-Selection-Hydrogeological-Impact-Assessment.pdf

and that a Habitat Regulations Assessment (HRA) screening will be undertaken in relation to Wicken Fen Ramsar, SAC, NNR and SSSI'.[6][3]

1.5.3 Consultation with Natural England will continue through the stakeholder consultation and engagement programme and this will include seeking feedback on HRA screening and subsequent HRA stages.

[3] Discretionary Advice reference 16690/36570 06 September 2021

1.6 Structure of this report

1.6.1 The structure of this screening report is as follows:

- Introduction
- Proposed development
- Identification of sites and features for screening assessment
- Assessment of Likely Significant Effects
  - Alone
  - In-Combination
- Screening Statement (Conclusions)
- Appendix A – Figures
- Appendix B – HRA Screening Matrices
- Appendix C – NSN Citations/Standard Data Forms

1.7 Assumptions, limitations, and uncertainties

1.7.1 This screening assessment is subject to the following assumptions, limitations and uncertainties:

- The design for the Proposed Development is still evolving. This screening has been completed on the basis of the design information available. It is considered sufficient as a basis for this HRA screening and where uncertainty exists a precautionary approach has been taken.
- Further information on the construction and operation of the Proposed Development will become available to inform the ongoing Environmental Impact Assessment (EIA) and the appropriate assessment which is assumed to be required as part of the HRA.

[6] Discretionary Advice reference 16690/36570 06 September 2021

2 Proposed Development

2.1 Need for the project

2.1.1 Anglian Water supplies water and water recycling services in the east of England. The east of England region faces particularly acute challenges from climate change, population and housing growth and the need to enhance the natural environment. Above and beyond the provision of fresh, clean water and the effective treatment of waste water, Anglian Water's purpose is to tackle these challenges, delivering wider benefits to society by serving their customers and communities and safeguarding the environment. Since 1895, the existing Cambridge WWTP has been serving the needs of Cambridge and Greater Cambridge by taking waste water from people's homes and businesses, cleaning it and returning it to the environment. The existing Cambridge WWTP also plays a vital role by receiving surface water during heavy rainfall.

2.1.2 The need to relocate the existing Cambridge WWTP arises principally from forecast population growth and urbanisation in Cambridge. Cambridge City Council (CCC) and South Cambridgeshire District Council (SCDC) are jointly preparing a North East Cambridge Area Action Plan (AAP). The AAP identifies the site of the existing Cambridge WWTP as an area where housing and other development is to be located to support the accommodation of population growth in a sustainable location. The relocation of the existing Cambridge WWTP is therefore required to deliver the objectives of the emerging AAP in close collaboration with CCC, Anglian Water and other stakeholders in the area.

2.1.3 The regeneration of this part of Cambridge ('Cambridge Northern Fringe East' - CNFE) is supported by Policy 15 'Cambridge Northern Fringe East and new railway station Area of Major Change' in the Cambridge City Local Plan (adopted 2018). Policy 15 states that the amount of development, site capacity, viability timescales and phasing of development will be established through the preparation of the AAP for the site.

2.1.4 The regeneration of CNFE commenced with the opening of the Cambridge North parkway station in 2017, followed by the award of forward funding from Homes England (HE) through a Housing Infrastructure Fund (HIF) to relocate the existing Cambridge WWTP, creating the potential to deliver over 8,600 housing units over 20 years and create up to 24,000 jobs.

2.1.5 The requirement to meet the housing needs of future population growth has been identified in the National Infrastructure Commission's 2017 report[7][4], which emphasised the prioritisation of the Cambridge –Milton Keynes –Oxford growth arc in the interests of advancing United Kingdom prosperity. Greater Cambridge is the

[7] NIC (2017) Partnering for Prosperity: A new deal for the Cambridge-Milton Keynes-Oxford Arc [ONLINE] Available at: Partnering for Prosperity: A new deal for the Cambridge-Milton Keynes-Oxford Arc (nic.org.uk)

fastest growing city economy in the United Kingdom and offers the potential to underpin this prioritisation. The

growth of the area is an acute challenge, with an

[4] NIC (2017) Partnering for Prosperity: A new deal for the Cambridge-Milton Keynes-Oxford Arc [ONLINE] Available at: Partnering for Prosperity: A new deal for the Cambridge-Milton Keynes-Oxford Arc (nic.org.uk)

undersupply of housing and house prices more than thirteen times the average salary.

2.1.6 The Proposed Development is being pursued in anticipation of the emerging policy position to provide additional housing to accommodate population growth in Cambridge.

2.2 Consenting the Proposed Development

2.2.1 The Proposed Development has been the subject of a direction made by the Secretary of State under section 35 is a nationally significant infrastructure project (NSIP) as defined by Section 14(1)(o) of the Planning Act 2008, and therefore is a development for which a development consent order is required: the construction or alteration of a waste water treatment plant, and Section 29(1) as it is expected to have a capacity of approximately 548,000 population equivalent. The waste water treatment element (i.e. the Water Recycling Centre not including the Sludge Treatment Centre) has an overall design capacity of 270,000 to 300,000 population equivalent. This would be expected to accommodate current forecasted housing growth to around 2050.

2.2.2 Anglian wWater intends to submit an application for a Development Consent Order (DCO) to the Planning Inspectorate for the Proposed Development. The Planning Inspectorate will examine the DCO application and will make a recommendation to the Secretary of State on whether development consent for the Proposed Development should be granted or refused.

2.3 Site location

2.3.1 The Proposed Development is located in Cambridgeshire in the east of England and does not overlap with devolved administrations or other European Economic Areas (EEA). The proposed WWTP is expected to require a total footprint of 22 hectares (ha). This extent has been identified as a suitable size in which the necessary facilities can be accommodated, allowing for perimeter landscape screening.

2.3.2 A site location plan, including the DCO scoping boundary, is shown in the Ffigure 2.1 below. It includes:

- Aa core area required forzone, including the proposed WWTP and all associated earth banks, landscaping, public access etc (blue area);

- the existing Cambridge WWTP, the underground transfer pipelines and the final effluent pipeline and outfall (orange area); and
- the Waterbeach transfer pipeline (green area).

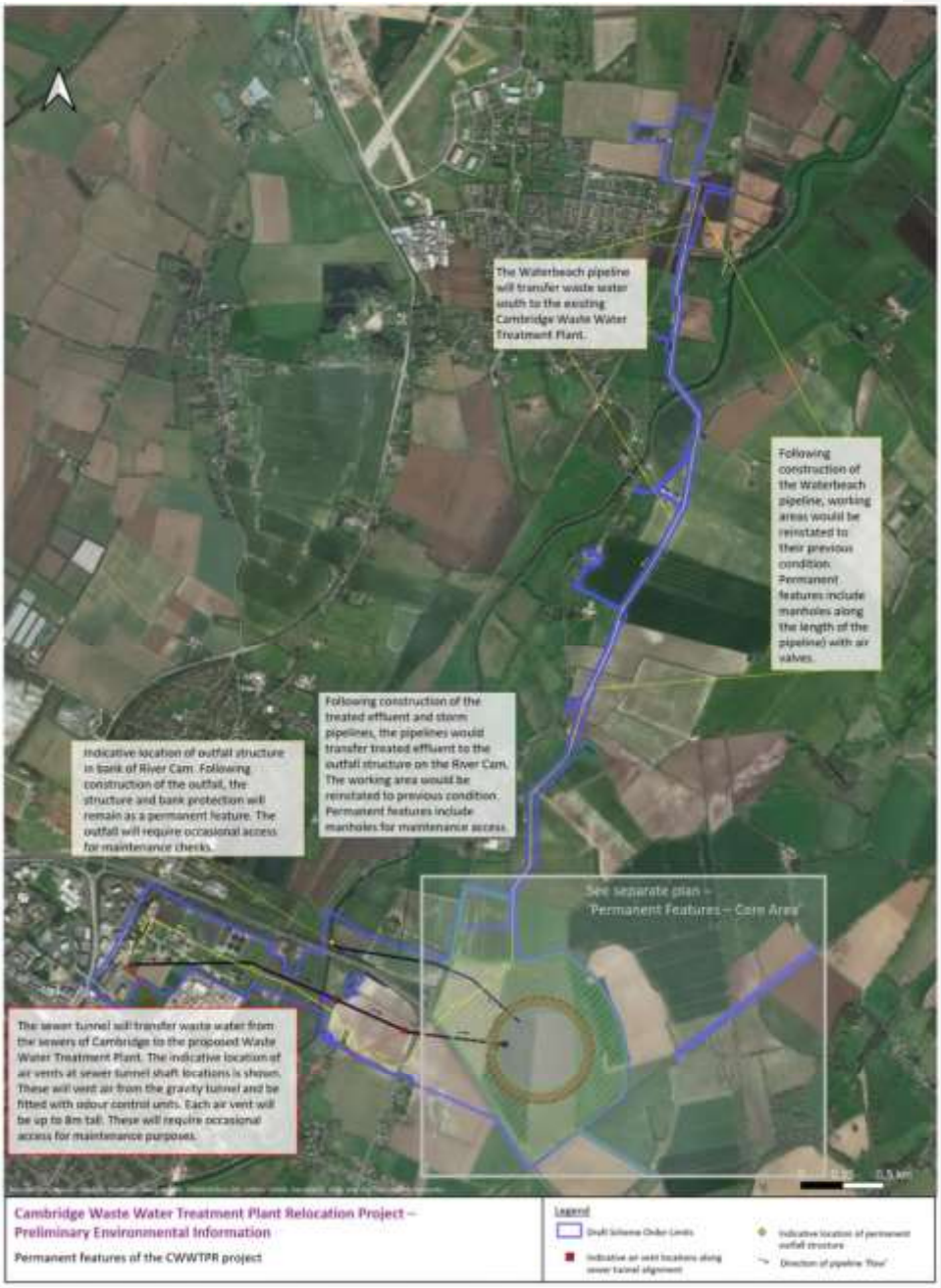
2.3.3 The proposed WWTP is located 2km to the east of the existing Cambridge WWTP, within the administrative boundary of South Cambridgeshire District. The site lies between the villages of Horningsea to the north, Stow- Cum- Quy to the east and Fen Ditton to the south east. The A14 extends along the south western boundary of the site and Low Fen Drove Way, an unclassified road and public byway follows parts of the eastern and north eastern boundary of the site area. Beyond Low Fen Drove Way, open farmland extends to the north east towards and beyond Stow- Cum- Quy

Fen, and to the east, towards Stow- Cum- Quy village. To the west of the site lies Junction 34 of the A14, a junction intersected by Horningsea Road which extends north, parallel to the western boundary of the site area. Horningsea Road connects Fen Ditton to the south with the village of Horningsea in the north.

2.3.4 The area of land for the proposed WWTP area is open farmland with large arable fields defined by boundary hedges and ditches. The topography is mostly level, at 5-10m above

Ordnance Datum (AOD), rising towards the west. A dismantled railway, also designated as County Wildlife Site (CWS), crosses the southern end of the site area and overhead powerlines are to the north and east of the site.

Figure 2-1: Overview of proposed development



Source: Anglian Water CWWTP PEI Introductory Paper, 2022

2.4 Development Overview

2.4.1 The existing Cambridge WWTP is an integrated WWTP, as would be the Proposed Development. Integrated WWTP incorporate a sludge treatment function, in the form of a Sludge Treatment Centre (STC), which treats the sludge derived from the waste water from the catchment, and the "wet sludge" produced by other satellite plants which do not have integrated STC.

2.4.2 Figure 2.2 provides an overview of the waste water and sludge treatment processes proposed for waste water and sludge. Alongside waste water treatment, all storm flows which are conveyed to the proposed WWTP following heavy rainfall would be partially treated. The sludge treatment process would produce sludge for use as bio-fertiliser for spreading on agricultural land and produce energy via anaerobic digestion as biogas is produced as a by-product.

2.4.3 The Proposed Development will also include the installation of photovoltaic panels to harness solar energy for conversion into electricity to service some of the site demand.

~~Figure 2.2: Treatment process overview~~

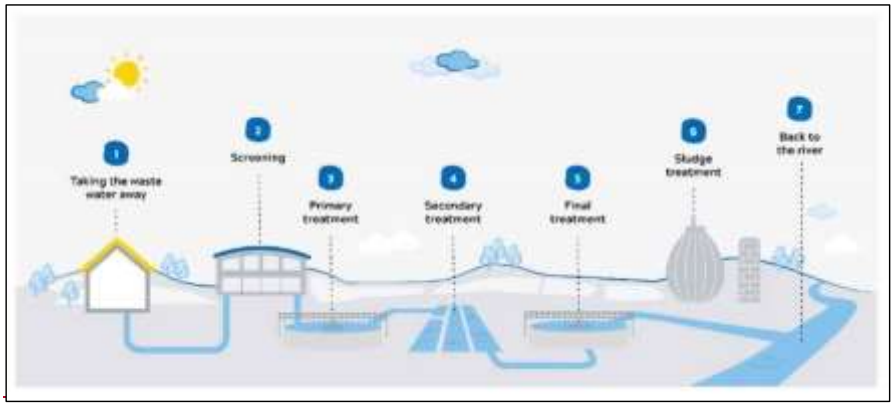
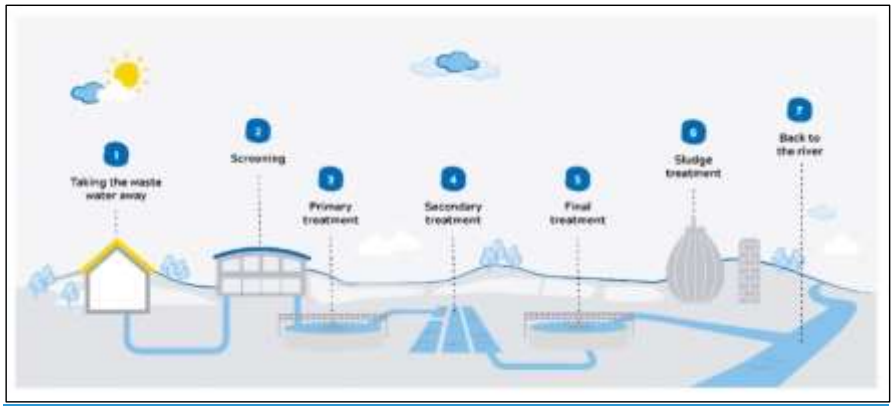


Figure 2~~.~~ 2: Treatment process overview



2.4.4 The Proposed Development comprises:

- a new integrated WWTP;
- a transfer tunnel from the existing Cambridge WWTP to the new location with ancillary infrastructure;
- a new pipeline to transfer waste water from Waterbeach to the ~~the existing waste water collection system at the existing Cambridge WWTP~~Proposed Development;
- a return tunnel to a new discharge point at the River Cam, including ancillary structures;
- a site access to the proposed WWTP;
- utilities connections
- offsite highway network alterations;
- delivery of a landscaping masterplan; and

- renewable energy generation and storage for use on-site and export; and
- ancillary on-site buildings (including a site office, amenities building, substation building, security kiosk and vehicle parking).

2.4.5 Integrated waste water treatment plants act as "hubs" dealing not only with the waste water treatment process for the catchment areas in which they, and their nearby population centres, are located but also completing the waste water treatment process for the "wet sludge" tankered in from the local satellite facilities. The "wet sludge" from these satellite plants is transported to the WWTP by tankers and deposited into the first stage of the STC process at the WWTP. The existing Cambridge WWTP acts as a "hub" for local satellite sites. The overall Cambridge catchment has around 45 such satellite sites which send wet sludge to the existing Cambridge WWTP. Other local catchments, Huntingdon and Ely also feed into the existing Cambridge WWTP.

2.4.6 Sludge treatment is undertaken to separate suspended solids from the waste water which are then digested anaerobically. The dewatered solids at the conclusion of the digestion process are reduced to methane (which is used to generate heat required to activate the water treatment process, and power in the form of electricity), and an agricultural product to be used as fertilizer. The waste water removed as a result of the digestion process is then returned to the start of the waste water treatment process.

2.5 Capacity

2.5.1 The design capacity of the proposed WWTP will be approximately 548,000 population
equivalent. The waste water treatment element (i.e. the Water Recycling Centre not including the Sludge Treatment Centre) has an overall design capacity of 270,000 to 300,000 population equivalent. This covers the duration of the Greater Cambridge Local Plan's anticipated growth to 2041. The Sludge Treatment Centre will be designed to treat sludge produced at the proposed WWTP plus imported liquid sludges arriving by road. The STC is designed to treat a total amount of up to 16,000 Tonnes Dry Solids (TDS) per year for both indigenous and imported sludge.

2.5.2 The design incorporates flexibility and extra space within the proposed WWTP, that will allow modification of the facility beyond 2040s. These measures include:

- flexibility within the treatment processes that would allow influent flow rates to be managed both through the process design, and within the choice of technologies;
- having flexibility within the footprint of the proposed WWTP for adaptation and change which will allow treatment processes changes in the future; and
- additional capacity within the storm tank storage and transfer tunnel which will serve to help attenuate future stormflows.

2.6 Biogas generation

2.6.1 At the existing Cambridge WWTP heat and electrical power are generated through burning biogas produced at the STC in combined heat and power (CHP) engines. Two options are under consideration for the proposed WWTP. These are:

- Biogas generated by the process will be firstly burned within onsite steam raising boilers to generate heat for use in the sludge treatment process and the surplus cleaned (concentration of methane increases as impurities are removed to create bio-methane) and exported to the national natural gas network; or
- The approach utilised at the existing Cambridge WWTP of burning biogas within CHP (no greater than 5MW) engines to generate electricity, will be used with the waste heat utilised within the process.

2.6.2 The biogas system also includes a waste-gas-burner, which burns the biogas during a failure event on site, to protect people and the environment from potential harmful impacts associated with high concentrations of methane and other gasses, in accordance with Environmental Permit requirements.

2.7 Connection with the River Cam

2.7.1 The Environment Agency regulates WWTP by assessing the quality of the treated effluent returned to the environment against set compliance limits. The required level of treatment and monitoring is based on the population that the WWTP serves and the characteristics of the receiving environment. The level of treatment that a WWTP must provide and monitoring by the operator depends on the PE of the 'agglomeration[8]' it serves.

2.7.2 During construction of the proposed WWTP the existing Cambridge WWTP would remain in operation under the current environmental permit (ref: AN/ASCNF1033/014). There would be a planned transition period between the two WWTPs.

2.7.3 Once fully operational the existing Cambridge WWTP permit will be rescinded to the standards required by the Environment Agency.

2.7.4 As per paragraph 3.7.3 of the National Policy Statement (NPS) on Waste Water, 'the Examining Authority and the decision maker should work on the assumption that the relevant pollution control regime will be properly applied and enforced[9]'. The main pollution control mechanism in the case of a WWTP is the Environment Agency environmental permit. The NPS goes on to say that the focus should rest on whether

[8] An agglomeration is an area where the population and economic activities are sufficiently concentrated for urban waste water collection. The waste water is then taken for treatment to a WWTP and to a final discharge point.

[9] Defra (2012) National Policy Statement for Waste Water [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69505/pb13709-wastewater-nps.pdf

the development itself is an acceptable use of the land, and on the impacts of that use, rather than the control of processes, emissions or discharges themselves.

2.7.5 Over its operational lifetime, the Proposed Development's final effluent discharges will remain subject to the Environmental Permitting regime. The Environment Agency is required through the River Basin Management Planning (RBMP) process to ensure that river

water quality is maintained, and will periodically review the relevant water quality components in the Environmental Permit. Permit conditions are, therefore, likely to vary over time in response to changes in flow, including those arising from population growth, changes in water usage, climatic or environmental factors. The plant has been designed to be flexible and accommodate changing regulatory requirements within the footprint of the landscaping bund.

Storm flow management

2.7.6 Due to the nature and design of the Cambridge sewer network all flow conditions (including storm) will be delivered via the terminal pumping station to the proposed WWTP. The provision of full treatment capacity for these larger diluted 'storm' flows is not required. Therefore, once the rate of flow into the terminal pump station exceeds the expected 'Flow to Full Treatment' (FFT) (2,000litres/second) storm pumps will start working and divert the excess incoming flows to the stormwater storage and treatment plant. This stormwater management solution will be in accordance with the agreement reached with the Environment Agency as part of the environmental permit for storm and emergency overflows which aims to minimise the risk of release of waste water to the environment.

2.7.7 The storm tanks will also have discharge overflow pipework that transfer flows to the River Cam only once the stormwater storage is full. These flows will be screened and partially settled. The Environment Agency's response to the environmental permit pre-application and other interactions indicates a "no detriment" impact to the River Cam approach between the existing Cambridge WWTP and proposed WWTP for storm water management.

2.7.8 The influent flows to the proposed WWTP are currently being refined by hydraulic models of the existing sewer network and include allowances to accommodate the planned development requirements and growth allowances. During a 1 in 100 year design storm in the catchment area the flow rates to the proposed WWTP, dependant on the storm intensity chosen, are expected to peak at 7,000litres/second. The storm flows will be influenced by the treatment plant, processes and attenuation capabilities in line with the environmental permit for storm and emergency overflows (storm storage in the permit). The estimated magnitude and frequency of the storm events are currently being developed through network modelling and storm storage and treatment options.

Landscaping

2.7.9 A Landscape, Ecology and Recreation Management Plan (LERMP) will be submitted as part of the DCO application, which will set out the principles for how the landscape and ecological features included within the DCO application would be delivered and how the land will be managed long term. The majority of management will be carried out in the operational phase, although landscape and habitat features will be created from the construction phase and onwards.

2.7.10 The delivery of elements of the landscape masterplan such as tree planting and grassland creation would start during the construction phase to ensure trees planted for visual screening can be effectively established.

Reinstatement

2.7.11 During the construction phase and once construction works are complete, for example after a certain construction compound has served its purpose, reinstatement will be undertaken. This would be done in a phased manner once certain areas are complete.

2.8 Construction of the Proposed Development

Construction staff and working hours

2.8.1 Proposed working hours are provided in Table 4.1.

Table 2-1: Proposed construction hours

Working Hours Categorisation	Description
Winter core working hours (October to March) 7am to 6pm Monday to Friday. 8am to 4pPPTm Saturday. Daily mobilisation activities- Plus up to one hour before and after for mobilisation/maintenance activities i.e., 6am to 7pm Monday to Friday and 7am to 5pm Saturday.	These are the core hours that will apply to the majority of work areas and activities. Daily mobilisation/maintenance activities These will include the following; - Aarrival and departure of the workforce to the construction compounds; - Mmovement from compounds to the working areas (if parked engines shall be turned off and shall be considerate toward neighbours with no loud music or raised voices); - Ssite meetings (briefings in compound buildings) and quiet walk overs or site inspections; - Rrefuelling; and - Ssite cleaning and maintenance (which does not requiringe the use of plant or hammering/banging).

Summer core hours (April to September) 6am to 7pm Monday to Friday 8am to 6pm Saturdays Daily mobilisation activities- Plus one hour before and after for mobilisation activities i.e., 5am to 8pm Monday to Friday and 7am to 7pm Saturday.	Longer working hours are proposed in the summer months in order to maximise the works which can be ~~completed~~undertake in better weather conditions ~~(~~albeit that they may not be used every day~~)~~. Daily mobilisation/maintenance activities These will include the following; - ~~A~~arrival and departure of the workforce to the construction compounds~~.~~; - ~~M~~movement from compounds to the working areas (if parked engines shall be turned off~~,~~ and shall be considerate toward neighbours with no loud music or raised voices)~~.~~; - site meetings (briefings in compound buildings) and quiet walk overs or site inspections;

Working Hours Categorisation	Description
	~~- Site meetings (briefings in compound buildings) and quiet walk overs or site inspections.~~ - ~~R~~refuelling~~.~~; and - ~~S~~site cleaning and maintenance (which does not requir~~ing~~e the use of plant or hammering/banging).
Very special circumstances extension for particular activities 6pm to 10pm Monday to Friday 6pm to 10pm on Saturdays 8am to 2pm on Sundays These are more likely to be required during the first two years of the Project.	Extended working hours will be ~~R~~required for specific activities which ~~are~~it will not be possible to ~~be~~ complete~~d~~ during the core working hours. ~~Limited~~The number of activities which will fall within this category will be limited and will not necessarily ~~taking~~take place on consecutive days. ~~I~~ The following activities falling within this category have been identified ~~as~~: - ~~M~~major concrete pours including base slabs; - ~~A~~abnormal load delivery including those escorted by the Police; and - ~~C~~contract lifts i.e., lifting of pieces of equipment on crane.

Continuous Working Hours 0.00 to 0.00 Monday to Sunday	Certain specific construction activities will need to take place on a continuous 24 -hour, 7 day a week basis. These have been identified as: - Ttunnelling and underground work including the maintenance of underground equipmentmachinery and plant. Essential surface support activities including the processing and handling of excavated material, shaft lifting operations, tunnel lining supply.; - Wwhere over pumping takes place 24 hour call out will be needed in order to respond to any issues should they arise.; - Network Rail and/or National Highways are expected to stipulate a requirement for 24 hour working in relation to works under or adjacent to their assets.; and - Cconstruction under the River Cam. - Horizontal Directional Drill under the River Cam will need to be a period of continuous working in order to complete the drill shots.
Out of hours working	It would be beneficial to carry out the following activities outside of the core working hours in order to minimise disruption to the local community. The following activities are proposed: - construction deliveries to utilise periods of low traffic flow -this will be set out in the CTMP; - works within the highway or footpaths; - Connections into Anglian Water's existing network so that these can be done during periods of low demand; and
Working Hours Categorisation	**Description**
	- ~~Construction deliveries to utilise periods of low traffic flow -this will be set out in the CTMP;~~ - ~~works within the highway or footpaths;~~ - ~~Connections into Anglian Water's existing network so that these can be done during periods of low demand;~~ - Utility connections as required by the relevant statutory undertaker so that these can be done during periods of low demand.

Short notice working for safety reasons	There may be Iisolated occasions where works need to be made safe. This requirement could arise due to adverse weather or climate conditions. Due to their nature, it is unlikely that it would be possible to notify the local community before any works falling within this category take place but the requirement for them will be explained to the local community as part of the regular liaison which the Principal Contractor(s) will be expected to undertake.
Over--running works	MinimalWhilst every effort will be made to ensure that this does not happen there may be some occasions when a construction activity over runs and cannot be paused until it has been completed and/or made safe. Due to their nature, it will not be possible to notify the local community before any works falling within this category take place but the requirement for them will be explained to the local community as part of the regular liaison which the Principal Contractor(s) will be expected to undertake.

Existing Cambridge WWTP staff and working hours

2.8.2- The number of staff on the existing Cambridge WWTP would remain as current during construction of the proposed WWTP:

- Eight office staff are expected to be on site each day, with normal working hours of 0730-1700;
- Six operations daytime staff are expected to be on site each day, with normal working hours of 0730-1700;
- One operations process controller is expected to be on site at any time working two 12hr shifts per day (0700-1900 & 1900-0700);
- One operation shifts technician is expected to be on site at any time working two 12hr shifts per day (0600-1800 & 1800-0600); and
- Four mechanical and electrical specialists are expected to be on site each day, with normal working hours of 0730-1700.

Construction access

2.8.3 In construction there are several points of access required from the public highway to land required for the construction of the Proposed Development. In operation there will be a new access from the proposed WWTP on to the B1047 Horningsea Road. The construction will be sequenced so the permanent access would be constructed and then used to support construction. Prior to its completion there will be a temporary construction access to the land required to build the proposed WWTP from Low Fen Drove Way. In operation there will be a new access from the proposed WWTP on to the B1047 Horningsea Road.

Construction vehicle movements

2.8.4 It is anticipated that during the peak construction period, particularly during the large concrete pour, construction-based traffic could equate to an additional 200 to 300 vehicle movements. When not carrying out large concrete pours this number would likely be between 100 and 200 vehicle movements. In addition, there will be light goods vehicles (LGV) delivery vehicle movements and construction worker arrival and departures.

Construction traffic predictions will be confirmed in the Environmental Statement (ES).

Construction compounds

2.8.5 The land identified in Figure 2.1 includes land for the proposed WWTP as well as land to accommodate the construction of the proposed WWTP and associated transfers and pipelines. Construction compounds will be required in implementing various components of the Proposed Development, such as construction of vent shafts and pipe laying. It currently understood that up to five construction compounds, two of which will be on the land of the existing Cambridge WWTP; one at the end of Green End Road adjacent to the River Cam; one on Horningsea Road and another one will be along the River Cam bank, with the exact location yet to be determined.

Construction programme and duration

2.8.6 During construction of the proposed WWTP the existing Cambridge WWTP and existing Waterbeach WRC would remain in operation under their current discharge permits. There would be a planned transition period between the existing Cambridge WWTP and proposed relocated WWTP.

2.8.7 The earliest construction is expected to start is 2024 with the Waterbeach pipeline works. The proposed WWTP is planned to be fully operational in 2028.

Table 2-2: Construction timeline

Construction Phase	Duration	Start	End
Waterbeach works including enabling works & mobilisation and decommissioning of the Waterbeach WRC	12 months	Apr-2024	Apr-2025
Enabling works & mobilisation for non-Waterbeach elements	3.5 months	Aug-2024	Nov-2024
Water Recycling Centre including water testing and dry commissioning	31 months	Oct-2024	Mar-2027
Sludge Treatment Centre including water testing and dry commissioning	19 months	Nov-2024	Jun-2026
Wet Commissioning	5.5 months	May-2027	Feb-2028
Construction Phase	Duration	Start	End

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Transfer Tunnel	18 months	Nov-2024	Jun-2026
Treated and storm Effluent Main and outfall	14 months	Jul-2025	Aug-2026
~~Construction Phase~~	~~Duration~~	~~Start~~	~~End~~
De-Commissioning existing Cambridge WWTP	8 months	Oct-2027	Mar-2028

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Source: PEI Introductory Paper, 2022

~~2.9~~ Operation of the Proposed Development

Operational staff and hours

2.9.1 ~~—~~The proposed WWTP would be operated by the following staff with the following operational hours.

- ~~E~~eight office staff are expected to be on site each day, with normal working hours of 07:30-17:00~~-~~;
- ~~S~~six operations daytime staff are expected to be on site each day, with normal working hours of 07:30-17:00;
- ~~O~~one operations process controller is expected to be on site at any time working two 12~~-~~hour shifts per day (07:00-19:00 & 19:00-07:00);
- ~~O~~one operation shifts technician is expected to be on site at any time working two 12~~-~~hour shifts per day (06:00-18:00 & 18:00-06:00); and
- ~~F~~four mechanical and electrical specialists are expected to be on site each day, with normal working hours of 07:30-17:00.

Operational traffic

2.9.2 Once the existing Cambridge WWTP ceases to operate this would result in a reassignment of all operational vehicles across the strategic and local road network. Vehicle trips, including the 129 two-way operational HGV trips that currently travel to and from the existing WWTP would reassign on the highway network to routes to and from the proposed WWTP.

2.10 Decommissioning activities

2.10.1 ~~-~~Once the proposed WWTP is fully operational and the Waterbeach transfer pipeline works

are complete, the existing Cambridge WWTP and existing water recycling centre (WRC) at Waterbeach will be decommissioned. Decommissioning is expected to include activities such as the draining down and cleaning of existing tanks (including the disposal/treatment of any waste), making the plant mechanically and electrically safe.

2.10.2 As part of the relocation process the existing Cambridge WWTP will be decommissioned once the proposed WWTP is fully operational and taking all the flows that would have previously been treated at the existing Cambridge WWTP. The scope of the

decommissioning will be aligned with the requirements set out by the Environment Agency in respect of the anticipated rescinding of the current operational permits, specifically the final effluent and storm discharge consents, and

sludge treatment operation permit. Whilst the detail of these requirements is not yet defined but would include the draining down and cleaning of existing tanks (including the disposal/treatment of any waste), making the plant mechanical and electrically safe, preventing heat generating equipment from being operated and prevention of rainwater storage in open top tanks.

2.10.3 Other decommissioning activities, including the demolition of structures and site preparation for the site's redevelopment are outside of the scope of the relocation project DCO and will be carried out by the site developer in accordance with a separate planning permission. The connection shaft for the new waste water transfer tunnel will be retained as a permanent surface feature to allow access for future maintenance activities.

2.10.4 The existing Waterbeach Water Recycling Centre (WRC) would cease to operate once the Waterbeach transfer pipeline is fully operational taking all Waterbeach flows to treatment.

Waterbeach WRC currently discharges final effluent (up to 1350m3/day) into the adjacent

Bannold Drain which runs parallel to Bannold Drove and is maintained by the Internal

Drainage Board (IDB). Once the new pipeline is operational and the existing Waterbeach WRC decommissioned, the existing final effluent flow into Bannold Drain will cease.

2.11 Maintenance activities

2.11.1 The type and frequency of maintenance activities will be defined as the design evolves.

3 Identification of HabitatNSN Ssites and Features Potentially Affected by the Proposed Development

3.1 Zones of influence and impact pathways

3.1.1 The identification of habitatsNSN sites and their associated qualifying features that could potentially be affected by the Proposed Development has been undertaken by a two-stage approach:

- The first screening step based on proximity of the Proposed Development to habitatsNSN sites. These were identified using the MAGiC website – the Multi Agency Geographic Information for the Countryside at www.magic.gov.uk. The various layers showing all SACs and possible SACs, SPAs and potential SPAs, Ramsar sites and proposed Ramsar sites were identified, as werewas the SSSI Impact Zones layer. All habitatNSN sites within 10km of the Proposed Development (or 30km for SAC sites designated for bat species) were identified, and the various Impact Zones considered, in relation to the various aspects of the Proposed Development.
- Following this, all habitats' sites potentially connected by other, non-distance constrained pathways, were identified. This stage focussed on potential hydrological pathways, given the interface between the Proposed Development and the River Cam, and catchment-based pathways for example where there may be the potential for changes to groundwater that could affect habitatsNSN sites elsewhere in the catchment or where changes to air quality from emissions may affect habitats within the affected airshed.

3.2 Data sources

3.2.1 The principal data sources used for the HRA screening are provided in Table 3.1. The full reference list is provided in Section 6References.

Table 3-1: Principal data sources collected to inform the HRA screening

Baseline item	Data source	Available at:
Designated sites	Extent and location of habitats site. The Multi Agency Geographic Information for the Countryside	www.magic.gov.uk
	Natural England Designated Sites View	https://designatedsites.natural eng land.org.uk/SiteSearch.aspx

Proposed designations	Extent and location of habitats site. The Multi Agency Geographic Information for the Countryside	www.magic.gov.uk

~~Baseline item~~	~~Data source~~	~~Available at:~~

Impact risk zones	Extent and location of zone. The Multi Agency Geographic Information for the Countryside	www.magic.gov.uk

Baseline item	Data source	Available at:
Ramsar sites	Ramsar Sites Information Services	https://rsis.ramsar.org/ris/752
Hydrogeology	CWWTP Hydrogeological Impact Assessment March 2021	https://cwwtpr.com/wpcontent/uploads/2021/03/CWWT PR-Stage-4-Final-Site-Selection-Hydrogeological-Impact-Assessment.pdf
~~Habitats~~NSN ~~S~~sites - SAC	SACs in the United Kingdom Standard Data Forms for designations	https://sac.jncc.gov.uk/
Threats and pressures	Improvement programme for England's Natura 2000 sites (IPENS)	https://www.gov.uk/governme nt/ publications/improvementprogramme-for-englands-natura-2000-sites-ipens/improvementprogramme-for-englands-natura-2000-sites-ipens
Conservation objectives	Natural England Conservation objectives for ~~European~~NSN ~~S~~sites: East of England	http://publications.naturalengl and .org.uk/category/65815477 967912-96

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3.3 List of potentially affected sites

Habitat sites potentially affected by proximity to the Proposed Development

3.3.1A map showing locations of HabitatsNSN Ssites is located within Appendix A.

3.3.2 The ecological zones of influence (EZoI) (the 10km and 30km Proposed Development buffers) intersect a number of SSSI IRZs, although in the absence of cross-referencing in the Natural England spatial data it is not always clear which IRZ is related to which habitats site.

Taking a precautionary approach, the sites which are scoped in at this stage and which have SSSI IRZs (all NSN/ Ramsar sites are also SSSIs) overlapping with the project's zones of influence are considered to be associated with the following habitatsNSN sites:

- Wicken Fen Ramsar site and Fenland SAC occupy the same land area/ location
- (Wicken

  Fen Ramsar site is a component site within the larger SAC designation), approximately 4.72km from the closest point withinof the Proposed Development site,. and Tthe site details are as follows:
  - Wicken Fen Ramsar site - reference UK11077, area 254.49 hectares – see https://rsis.ramsar.org/RISapp/files/RISrep/GB752RIS.pdf
  - Fenland SAC - reference UK0014782, area 619.41 hectares – see http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?eucode=UK0014782
- Devil's Dyke SAC which lies 8.97km from the closest point withinof the Proposed Development site - reference UK0030037, area 8.25 hectares – see
- http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?eucode=UK003 0037
- 3.3.3 There is also one SAC within 30km of the Proposed Development for which bats are the reason for designation:
  - Eversden and Wimpole Woods SAC – this site lies 14.97km from the closest point withinof the Proposed Development site, and the site details are as follows – reference UK0030331, area 66.22 hectares – see https://sac.jncc.gov.uk/site/UK0030331.

Habitat sites potentially affected due to hydrological connectivity

3.3.43 The following habitatsNSN sites are located downstream of the Proposed Development, and hence are, or are likely to be, connected hydrologically through the River Cam. This pathway means that there is the potential for effects at the downstream sites.

3.3.54 The Wash and North Norfolk Coast SAC, The Wash SPA and The Wash Ramsar site all overlap at the location where the River Great Ouse meets the sea, approximate 59.57km to the north of the Proposed Development. The individual site details are as follows:

- The Wash and North Norfolk Coast SAC – reference UK17075, area 107718 hectares – see https://sac.jncc.gov.uk/site/UK0017075
- The Wash SPA- reference UK9008021, area 62044 hectares – see https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9008021.pdf
- The Wash Ramsar site – reference UK11072, area 62212 hectares – see https://rsis.ramsar.org/RISapp/files/RISrep/GB395RIS.pdf
- Ouse Washes SAC – reference UK0013011, area 338 hectares – see Ouse Washes - Special Areas of Conservation (jncc.gov.uk)
- Ouse Washes SPA – reference UK9008041, area 2499 hectares – see UK9008041.pdf (jncc.gov.uk)
- Ouse Washes Ramsar site – reference UK11051 – area 2469 hectares – see https://jncc.gov.uk/jncc-assets/RIS/

3.3.65 Plans showing the Proposed Development in relation to the above habitatsNSN sites can be found in Appendix A.

3.4 Reasons for designation of the habitat sites

3.4.1 The following sections set out the reasons for the designation of NSN/ Ramsar sites identified within the EZoI for the Proposed Development.

Fenland SAC

3.4.2 Annex I habitats that are a primary reason for selection of this site[10]:

- 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*). Fenland contains, particularly at Chippenham Fen, one of the most extensive examples of the tall herb-rich East Anglian type of M24 *Molinia caerulea – Cirsium dissectum* fen-meadow. It is important for the conservation of the geographical and ecological range of the habitat type, as this type of fen-meadow is rare and ecologically distinctive in East Anglia.
- 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* (priority feature). The individual sites within Fenland cSAC each hold large areas of calcareous fens, with a long and well-documented history of regular management. There is a full range from species-poor *Cladium*-dominated fen to species-rich fen with a lower proportion of *Cladium* and

[10] JNCC (2015) Fenland Standard Data Form [online]. Available at: https://jncc.gov.uk/jncc-assets/SACN2K/UK0014782.pdf

containing such species as black bog-rush *Schoenus nigricans,* tormentil *Potentilla erecta* and meadow thistle *Cirsium dissectum*. There are good transitions to purple moor-grass *Molinia caerulea* and rush pastures, all set within a mosaic of reedbeds and wet pastures.

3.4.3 Annex II species present as a qualifying feature, but not a primary reason for site selection

- 1149 Spined loach *Cobitis taenia*
- 1166 Great crested newt *Triturus cristatus*

Wicken Fen Ramsar site

3.4.4 Qualifying features for which the Wicken Fen Ramsar has been designated:

- Ramsar criterion 1 - one of the most outstanding and representative remnants of the East Anglian peat fens. The area is one of the few which has not been drained. Traditional management has created a mosaic of habitats from open water to sedge and litter fields.
- Ramsar criterion 2 - the site supports one endangered species of Red Data Book plant, the fen violet *Viola persicifolia*, which survives at only two other sites in Britain. It also contains eight nationally scarce plants and 121 Red Data Book invertebrates.

Devil's Dyke SAC

3.4.5 Annex I habitats that are a primary reason for selection of this Devil's Dyke SAC[11]:

- 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (important orchid sites). This site hosts the priority habitat type "orchid rich sites". Devil's Dyke consists of a mosaic of CG3 *Bromus erectus* and CG5 *Bromus erectus – Brachypodium pinnatum* calcareous grasslands. It is the only known UK semi-natural dry grassland site for lizard orchid *Himantoglossum hircinum*.

Eversden and Wimpole Woods SAC

3.4.6 Annex II species as reason for selection of this site are 1308 Barbastelle bat *Barbastella barbastellus*:

- The site comprises a colony of barbastelle bats *Barbastella barbastellus* which is associated with a mixture of ancient coppice woodland (Eversden Wood) and high forest woods likely to be of more recent origin (Wimpole Woods)~~13~~[12].

[11] JNCC (2015 Devils Dyke SAC Standard Information Form [online]. Available at: https://jncc.gov.uk/jnccassets/SAC-N2K/UK0030037.pdf

[12] JNCC (2015) Eversden and Wimpole Woods Standard Data Form [online]. Available at: https://sac.jncc.gov.uk/site/UK0030331

The Wash and North Norfolk Coast SAC

3.4.7 Annex I habitats that are a primary reason for selection of this site[14][13]:

- 1110 Sandbanks which are slightly covered by sea water all the time. On this site sandy sediments occupy most of the subtidal area, resulting in one of the largest expanses of sublittoral sandbanks in the UK. It provides a representative example of this habitat type on the more sheltered east coast of England. The subtidal sandbanks vary in composition and include coarse sand through to mixed sediment at the mouth of the embayment. Sublittoral communities present include large dense beds of brittlestars *Ophiothrix fragilis*. Species include the sand-mason worm *Lanice conchilega* and the tellin *Angulus tenuis*. Benthic communities on sandflats in the deeper, central part of the Wash are particularly diverse. The subtidal sandbanks provide important nursery grounds for young commercial fish species, including plaice *Pleuronectes platessa*, cod *Gadus morhua* and sole *Solea solea*.
- 1140 Mudflats and sandflats not covered by seawater at low tide. The Wash, on the east coast of England, is the second-largest area of intertidal flats in the UK. The sandflats in the embayment of the Wash include extensive fine sands and drying banks of coarse sand, and this diversity of substrates, coupled with variety in degree of exposure, means that there is a high diversity relative to other east coast sites. Sandy intertidal flats predominate, with some soft mudflats in the areas sheltered by barrier beaches and islands along the north Norfolk coast. The biota includes large numbers of polychaetes, bivalves and crustaceans. Salinity ranges from that of the open coast in most of the area (supporting rich invertebrate communities) to estuarine close to the rivers. Smaller, sheltered and diverse areas of intertidal sediment, with a rich variety of communities, including some eelgrass *Zostera* spp. beds and large shallow pools, are protected by the north Norfolk barrier islands and sand spits.
- 1160 Large shallow inlets and bays. The Wash is the largest embayment in the UK, and represents Large shallow inlets and bays on the east coast of England. It is connected via sediment transfer systems to the north Norfolk coast. Together, the Wash and North Norfolk Coast form one of the most important marine areas in the UK and European North Sea coast, and include extensive areas of varying, but predominantly sandy, sediments subject to a range of conditions. Communities in the intertidal include those characterised by large numbers of polychaetes, bivalve and crustaceans. Sublittoral communities cover a diverse range from the shallow to the deeper parts of the embayments and include dense brittlestar beds and areas of an abundant reef-building

[13] JNCC (2015) The Wash and North Norfolk Coast SAC Standard Data Form [online]. Available at: https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0017075.pdf

[13] JNCC (2015) Eversden and Wimpole Woods Standard Data Form [online]. Available at: https://sac.jncc.gov.uk/site/UK0030331
[14] JNCC (2015) The Wash and North Norfolk Coast SAC Standard Data Form [online]. Available at: https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0017075.pdf

worm ('ross worm') *Sabellaria spinulosa*. The embayment supports a variety of mobile species, including a range of fish and 1365 Common seal *Phoca vitulina*.

1170 Reefs. The Wash is the largest embayment in the UK with extensive areas of subtidal mixed sediment. In the tide-swept approaches to the Wash, with a high loading of suspended sand, the relatively common tube-dwelling polychaete worm *Sabellaria spinulosa* forms areas of biogenic reef. These structures are varied in nature, and include reefs which stand up to 30 cm proud of the seabed and which extend for hundreds of metres (Foster-Smith & Sotheran 1999). The reefs are thought to extend into The Wash where super-abundant *S. spinulosa* occurs and where reef-like structures such as concretions and crusts have been recorded. The site and its surrounding waters are considered particularly important as this is the only currently known location of well-developed stable *Sabellaria* reef in the UK. The reefs are particularly important components of the sublittoral as they are diverse and productive habitats which support many associated species (including epibenthos and crevice fauna) that would not otherwise be found in predominantly sedimentary areas. As such, the fauna is quite distinct from other biotopes found in the site. Associated motile species include large numbers of polychaetes, mysid shrimps, the pink shrimp *Pandalus montagui*, and crabs.

S. spinulosa is considered to be an important food source for the commercially important pink shrimp *P. montagui* (see overview in Holt et al. 1998).

1310 Salicornia and other annuals colonizing mud and sand. The largest single area of this vegetation in the UK occurs at this site on the east coast of England, which is one of the few areas in the UK where saltmarshes are generally accreting. The proportion of the total saltmarsh vegetation represented by *Salicornia* and other annuals colonising mud and sand is high because of the extensive enclosure of marsh in this site. The vegetation is also unusual in that it forms a pioneer community with common cord-grass *Spartina anglica* in which it is an equal component. The inter-relationship with other habitats is significant, forming a transition to important dune, saltmeadow and halophytic scrub communities.

1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*). This site on the east coast of England is selected both for the extensive ungrazed saltmarshes of the North Norfolk Coast and for the contrasting, traditionally grazed saltmarshes around the Wash.

- The Wash saltmarshes represent the largest single area of the habitat type in the UK. The Atlantic salt meadows form part of a sequence of vegetation types that are unparalleled among coastal sites in the UK for their diversity and are amongst the most important in Europe. Saltmarsh swards dominated by sea-lavenders *Limonium* spp. are particularly well-represented on this site. In addition to typical lower and middle saltmarsh communities, in North Norfolk there are transitions from upper marsh to freshwater reedswamp, sand dunes, shingle beaches and mud/sandflats.
- 1420 Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*). The Wash and North Norfolk Coast, together with the North Norfolk Coast, comprises the only area in the UK where all the more typically Mediterranean species that characterise Mediterranean and thermo-Atlantic halophilous scrubs occur together. The vegetation is dominated by a shrubby cover up to 40 cm high of scattered bushes of shrubby sea-blite *Suaeda vera* and sea-purslane *Atriplex portulacoides*, with a patchy cover of herbaceous plants and bryophytes. This scrub vegetation often forms an important feature of the upper saltmarshes, and extensive examples occur where the drift-line slopes gradually and provides a transition to dune, shingle or reclaimed sections of the coast. At a number of locations on this coast perennial glasswort *Sarcocornia perennis* forms an open mosaic with other species at the lower limit of the sea-purslane community.

3.4.8 Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- 1150 Coastal lagoons * Priority feature

3.4.9 Annex II species that are a primary reason for selection of this site:

- 1365 Harbour seal *Phoca vitulina*. The Wash, on the east coast of England, is the largest embayment in the UK. The extensive intertidal flats here and on the North Norfolk Coast provide ideal conditions for Harbour seal *Phoca vitulina* breeding and hauling- out. This site is the largest colony of common seals in the UK, with some 7% of the total UK population.

3.4.10 Annex II species present as a qualifying feature, but not a primary reason for site selection:

- 1355 Otter *Lutra lutra*

The Wash SPA

- Article 4.1 Qualification (79/409/EEC)

– During the breeding season the area regularly supports:

- Little tern, *Sterna albifrons*
- Common tern, *Sterna hirundo*

- Over winter the area regularly supports:
  - Bewick's swan, *Cygnus columbianus bewickii*
  - Bar-tailed godwit, *Limosa lapponica*
- Article 4.2 Qualification (79/409/EEC)
- Over winter the area regularly supports:
  - Pintail, *Anas acuta*
  - Wigeon, *Anas penelope*
  - Gadwall, *Anas strepera*
  - Pink-footed goose, *Anser brachyrhynchus*
  - Turnstone, *Arenaria interpres*
  - Brent goose, *Branta bernicla bernicla*
  - Goldeneye, *Bucephala clangula*
  - Sanderling, *Calidris alba*
  - Dunlin, *Calidris alpina alpina*
  - Knot, *Calidris canutus*
  - Eurasian oystercatcher, *Haematopus ostralegus*
  - Black-tailed godwit, *Limosa limosa islandica*
  - Common scoter, *Melanitta nigra*
  - Curlew, *Numenius arquata*
  - Grey plover, *Pluvialis squatarola*
  - Shelduck, *Tadorna tadorna*
  - Redshank, *Tringa totanus*
- Article 4.2 Qualification (79/409/EEC): An Internationally Important Assemblage of Birds
  - Over winter the area regularly supports 400367 waterfowl (5-year peak mean 1991/92-1995/96) Including:
    - Bewick's swan, *Cygnus columbianus bewickii*
    - Pink-footed goose, *Anser brachyrhynchus*
    - Brent goose, *Branta bernicla bernicla*
    - Shelduck, *Tadorna tadorna*
    - Wigeon, *Anas penelope*
    - Gadwall, *Anas strepera*

- Pintail, *Anas acuta*
- Common scoter, *Melanitta nigra*
- Goldeneye, *Bucephala clangula*
- Eurasean oystercatcher, *Haematopus ostralegus*
- Grey plover, *Pluvialis squatarola*
- Knot, *Calidris canutus*
- Sanderling, *Calidris alba*
- Dunlin, *Calidris alpina alpina*
- Black-tailed godwit, *Limosa limosa islandica*
- Bar-tailed godwit, *Limosa lapponica*
- Curlew, *Numenius arquata*
- Redshank, *Tringa totanus*
- Turnstone, *Arenaria interpres*

The Wash Ramsar site

3.4.11 Qualifying features for which the site has been designated[14]:

- Ramsar criterion 1 - The Wash is a large shallow bay comprising very extensive saltmarshes, major intertidal banks of sand and mud, shallow water and deep channels.
- Ramsar criterion 3 - Qualifies because of the inter-relationship between its various components including saltmarshes, intertidal sand and mud flats and the estuarine waters. The saltmarshes and the plankton in the estuarine water provide a primary source of organic material which, together with other organic matter, forms the basis for the high productivity of the estuary.
- Ramsar criterion 5 – Assemblages of international importance:
  - Species with peak counts in winter:
    - 292541 waterfowl (5-year peak mean 1998/99-2002/2003)
- Ramsar criterion 6 – Species/populations occurring at levels of international importance.
  - Species with peak counts in spring/autumn:
    - Eurasian oystercatcher, *Haematopus ostralegus ostralegus*
    - Grey plover, *Pluvialis squatarola*
    - Red knot, *Calidris canutus islandica*

[14] JNCC (2008) The Wash Information Sheet on Ramsar Wetlands Version 3.0, 13/06/2008 [online] Available at: https://jncc.gov.uk/jncc-assets/RIS/UK11072.pdf

- Sanderling, *Calidris alba*

- Species with peak counts in winter:

- Black-headed gull, *Larus ridibundus*
- Common eider, *Somateria mollissima mollissima*
- Bar-tailed godwit, *Limosa lapponica lapponica*
- Common shelduck, *Tadorna tadorna*
- Dark-bellied brent goose, *Branta bernicla bernicla*
- Dunlin, *Calidris alpina alpina*

- Pink-footed goose, *Anser brachyrhynchus*

– Species/populations identified subsequent to designation for possible future consideration under criterion 6:

– Species with peak counts in spring/autumn:

- Black-tailed godwit, *Limosa limosa islandica*
- Ringed plover, *Charadrius hiaticula* –

Species with peak counts in winter:

- European golden plover, *Pluvialis apricaria altifrons*
- Northern lapwing, *Vanellus vanellus* **Ouse Washes SAC**

3.4.12 Annex II habitats that are a primary reason for selection of this site:

~~3.4.12~~ • 1149 Spined Loach *Cobitis taenia*

Ouse Washes SPA

- Ouse Washes qualifies under Article 4.1 (79/409/EEC) because over winter the area regularly supports
  - Northern harrier *Circus cyaneus*
  - Tundra swan Cygnus columbianus bewickii
  - Whooper swan *Cygnus cygnus*
  - Ruff Philomachus pugnax
- Ouse Washes qualifies under Article 4.2 qualification (79/409/EEC) because during the breeding season the area regularly supports:
  - Northern shoveler *Anas clypeata*
  - Mallard Anas platyrhynchos
  - Garganey Anas querquedula
  - Gadwall Anas strepera
  - Black-tailed Godwit *Limosa limosa*
  - Over winter the area regularly supports:
    - Northern pintail *Anas acuta*
    - Northern shoveler *Anas clypeata*
    - Eurasian teal *Anas crecca*
    - Eurasian wigeon *Anas penelope*
    - Gadwall *Anas strepera*

- Common pochard *Aythya farina*
- Tufted duck *Aythya fuligula*
- Mute swan *Cygnus olor*
- Eurasian coot *Fulica atra*
- Great cormorant *Phalacrocorax carbo*

- Ouse Washes qualifies under Article 4.2 qualification (79/409/EEC): an internationally important assemblage of birds because over winter the area regularly supports 64428 waterfowl including:
  - Great cormorant Phalacrocorax carbo
  - Tundra swan Cygnus columbianus bewickii
  - Whooper swan *Cygnus cygnus*
  - Eurasian wigeon *Anas penelope*
  - Gadwall Anas strepera
  - Eurasian teal *Anas crecca*
  - Northern pintail *Anas acuta*
  - Northern shoveler *Anas clypeata*
  - Common pochard *Aythya farina*
  - Tufted duck Aythya fuligula
  - Eurasian coot *Fulica atra*
  - Ruff Philomachus pugnax **Ouse Washes Ramsar site**

3.4.13 Qualifying features for which the site has been designated:

- Ramsar criterion 1: The site is one of the most extensive areas of seasonallyflooding washland of its type in Britain.
- Ramsar Criterion 2: The site supports several nationally scarce plants, including small water pepper *Polygonum minus*, whorled water-milfoil *Myriophyllum verticillatum*, greater water parsnip *Sium latifolium*, river water dropwort *Oenanthe fluviatilis*, fringed water-lily *Nymphoides peltata*, longstalked pondweed *Potamogeton praelongus*, hair-like pondweed *Potamogeton trichoides*, grass-wrack pondweed *Potamogeton compressus*, tasteless water-pepper *Polygonum mite* and marsh dock *Rumex palustris*. Invertebrate records indicate that the site holds relict fenland fauna, including the British Red Data Book species large darter dragonfly *Libellula fulva* and the rifle beetle *Oulimnius major*. The site also supports a diverse assemblage of nationally rare breeding waterfowl associated with seasonallyflooding wet grassland.

- Ramsar criterion 5: Assemblages of international importance: Species with peak counts in winter: 59133 waterfowl (5 year peak mean 1998/99-2002/2003)
  - Qualifying Species/populations (as identified at designation):
  - Species with peak counts in winter:
    - Tundra swan *Cygnus columbianus bewickii*
    - Whooper swan *Cygnus cygnus,*
    - Eurasian wigeon *Anas penelope*
    - Gadwall *Anas strepera strepera*
    - Eurasian teal *Anas crecca*
    - Northern pintail *Anas acuta*
    - Northern shoveler *Anas clypeata*
  - Species/populations identified subsequent to designation for possible future consideration under criterion 6.
  - Species with peak counts in winter:
    - Mute swan *Cygnus olor*
    - Common pochard *Aythya ferina*
    - Black-tailed godwit *Limosa limosa*

3.4.14 Table 3.2 below sets out the details of the above referenced sites and environmental pathways between the identified site and the Proposed Development.

Table 3-2: Details of ~~habitats~~NSN sites considered to be connected by a pathway

Site Name	Designation	Distance and direction from DCO scoping boundary	Reason for designation	Pathways to Draft DCO Limits boundary	SSSI impact risk zone

Wicken Fen	Ramsar site	4.72km northeast of the Waterbeach pipeline. 8.9km north-east of the new WWTP site area. 9.61km north-east of treated effluent transfer tunnel or pipeline and associated potential discharge location. 10.14km north-east of the wastewater transfer tunnel.	Supports one of the most outstanding remnants of the East Anglian peat fens. The area is one of the few which has not been drained. Traditional management has created a mosaic of habitats from open water to sedge and litter fields. Also designated as the site supports one species of British Red Data Book (RDB) plant, fen violet *Viola persicifolia*, which survives at only two other sites in Britain. It also contains eight nationally scarce plants and 121 British RDB invertebrates	No hydrological impact expected. The Cambridge Water Cycle Strategy 2011 (add reference) states that analysis of hydrology indicates that Wicken Fen is topographically higher than the Cam and drains via Wicken Lode then Burwell Lode towards it. As the Cam does not feed it, there are no associated risks, which could arise from additional sewage effluent discharge at Cambridge irrespective of any changes in effluent flow or quality from that site and no ecological impact is expected to occur. Therefore, Wicken Fen Ramsar site and Fenland SAC will not be considered further within this Stage 1 screening assessment and will not progress to Stage 2: AA. Policies are included in the Local Plan to ensure that developments protect water quality, and ensure that the appropriate waste water infrastructure is confirmed as being available prior to development being given consent. Policies also require that appropriate pollution control measures are included on sites. Development at all the proposed new communities must exceed the Building Regulations and meet Code for	N/A

Site Name	Designation	Distance and direction from IDA scoping boundary	Reason for designation	Pathways to Draft DCO Limits boundary	SSSI Impact risk zone

				Sustainable Homes Level 4 for water efficiency. This will ensure that stringent water efficiency measures are implemented as an integral part of development. The Council is working with Anglian Water and Cambridge water to explore infrastructure requirements of site allocations and ensure developments can be appropriately serviced. For these reasons the Local Plan is not likely to have any significant effects alone or in combination with other plans. For similar reasons the screening of the East Cambridgeshire Local Plan where the site is located, also concluded there would be no likely significant effects alone or in combination with other plans.	
Fenland	SAC	4.72km northeast of the Waterbeach pipeline. 8.9km north-east of the new WWTP site area. 9.61km north-east of treated effluent transfer tunnel or pipeline and associated potential discharge location.	Designated primarily for presence of Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae)* and Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* habitats, with spined loach *Cobitis taenia* and great crested newt also present as qualifying features.	No located, is topographically higher than the Cam and drains via Wicken Lode then Burwell Lode towards it. As the Cam does not feed it, there are no associated risks, which could arise from additional sewage effluent discharge at Cambridge irrespective of any changes in effluent flow or quality from that site and no ecological impact is expected to occur. Therefore, Wicken Fen Ramsar site and Fenland SAC will not be considered	N/A

Site Name	Designation	Distance and direction from RIA scoping boundary	Reason for designation	Pathway to Draft DCO Limits boundary	SSSI impact risk zone
		10.14km north-east of the wastewater transfer tunnel.		further within this Stage 1 screening assessment and will not progress to Stage 2: AA. Policies are included in the Local Plan to ensure that developments protect water quality, and ensure that the appropriate waste water infrastructure is confirmed as being available prior to development being given consent. Policies also require that appropriate pollution control measures are included on sites. Development at all the proposed new communities must exceed the Building Regulations and meet Code for Sustainable Homes Level 4 for water efficiency. This hydrological impact expected. The Cambridge Water Cycle Strategy 2011 (add reference) states that analysis of hydrology indicates that Wicken Fen, in which Fenland SAC is will ensure that stringent water efficiency measures are implemented as an integral part of development. The Council is working with Anglian Water and Cambridge water to explore infrastructure requirements of site allocations and ensure developments can be appropriately serviced. For these	

Site Name	Designation	Distance and direction from HIA scoping boundary	Reason for designation	Pathways to Draft DCO (limits boundary	SSSI impact risk zone
				reasons the Local Plan is not likely to have any significant effects alone or in combination with other plans. For similar reasons the screening of the East Cambridgeshire Local Plan where the site is located, also concluded there would be no likely significant effects alone or in combination with other plans.	
Devil's Dyke	SAC	9.76km east of the Waterbeach pipeline 9.86km east of the new WWTP site area. 10.95km east of the wastewater transfer tunnel. 10.95km east of the treated effluent transfer tunnel or pipeline	Designated for the presence of seminatural dry grasslands and scrubland on calcareous substrates. The site consists of a mosaic of CG3 *Bromus erectus* and CG5 *Bromus erectus – Brachypodium pinnatum* calcareous grasslands. Devil's Dyke is classified as priority habitat "orchid rich sites". It is the only known UK semi-natural dry grassland site for lizard orchid *Himantoglossum hircinum*.	No hydrological impact expected. Potential for air quality impact on designated site qualifying features, due to the vehicular emissions of construction vehicles using the road network adjacent to the SAC.	N/A

Eversden and Wimpole Woods	SAC	16.90km northeast of the Waterbeach pipeline 16.46km south-west of the new WWTP site area 15.2km south-west of the wastewater transfer tunnel	The site comprises a mixture of ancient coppice woodland (Eversden Wood) and high forest woods likely to be of more recent origin (Wimpole Woods). A colony of barbastelle bats *Barbastella barbastellus* (Annex II species 1308 Barbastelle) is associated with the trees in Wimpole Woods. These trees are used as a summer maternity roost where the female bats gather to give birth and rear their young. Most of the roost sites are	Ecological connectivity considered via any potential corridors providing ecological connectivity for dispersing and/or foraging bats, such as hedge networks of tracts of suitable habitat joining the SAC and the EZoI, and none were identified. As the site lies on the opposite side of Cambridge, with no obvious dispersal corridors no ecological impact is expected to occur.	N/A

Site Name	Designation	Distance and direction from EIA scoping boundary	Reason for designation	Pathways to Draft DCO Limits boundary	SSSI impact risk zone
		16.0km east of the treated effluent transfer tunnel or pipeline	within tree crevices. The bats also use the site as a foraging area. Some of the woodland is also used as a flight path when bats forage outside the site.		

The Wash and North Norfolk Coast	SAC	70.3km downstream of the treated effluent transfer tunnel or pipeline	The Wash and North Norfolk Coast Special Area of Conservation (SAC) encompasses the largest embayment in the UK, as well as extensive intertidal sand and mudflats, subtidal sandbanks, biogenic and geogenic reef, saltmarsh and a barrier beach system unique in the UK. Under Article 4(4) of the Directive (92/43/EEC) the Annex I habitats that are a primary reason for selection of this site include: Sandbanks which are slightly covered by sea water all the time; Mudflats and sandflats not covered by seawater at low tide; Large shallow inlets and bays; Reefs; Salicornia and other annuals colonizing mud and sand; Atlantic salt meadows (*GlaucoPuccinellietalia maritimae*); Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*). Coastal lagoons form a Priority feature within this SAC. Annex II species that are a primary reason for selection of this site is the Harbour seal (*Phoca*	Potential for hydrological/water quality effects as the site is downstream in the catchment of the River Cam.	N/A

Site Name	Designation	Distance and direction from EIA scoping boundary	Reason for designation	Pathways to Draft DCO Limits boundary	SSSI impact risk zone
			vitulina) with the Otter (*Lutra lutra*) present but not as a primary reason for site selection.		

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Wicken Fen The Wash	Ramsar site SPA	4.72km northeast of the Waterbeach pipeline. 8.9km north-east of the new WWTP site area. 9.61km north-east of 70.3km downstream of the treated effluent transfer tunnel or pipeline and associated potential discharge location. 10.14km north-east of the wastewater transfer tunnel.	The Wash is numerically the most important area in Britain for wintering waterfowl, taking waders and wildfowl together. It is also the most important area in Britain in early autumn for moulting waders. The Wash is important also to certain wintering passerines, to breeding waders and terns, and to certain seabirds. The Wash qualifies under Article 4(1) because it supports 30 breeding pairs of little terns *Sterna albifrons* (2% of the British population) and 220 pairs of common terns *Sterna hirundo* (2%); and because it supports 130 Bewick's swans *Cygnus cygnus* (3%) in winter. The Wash qualifies under Article 4(2) as an internationally important wetland by supporting in winter an average of Supports one of the most outstanding remnants of the East Anglian peat fens. The area is one of the few which has not been drained. Traditional management has created a mosaic of habitats from open water to sedge and litter fields. Also designated as the site supports one species of British Red Data Book (RDB) plant, fen violet *Viola persicifolia*, which survives at only two other sites in Britain. It also contains eight nationally scarce plants and 121 British RDB invertebrates 163,000 waders and also 51,000 wildfowl.	Potential for hydrological-/-water chemistry impact quality effects as the site is downstream in the catchment of the River Cam. The site is highly dependent on surface water and is subject to winter flooding, potentially connected to the River Cam. The site is also highly sensitive to water quality, so alterations to water chemistry may also have effects. Unlikely to be ecologically linked other than by this means.	Discharge to Cam catchment N/A

~~Fenland~~ The Wash	~~SAC~~Ramsar	~~4.72km northeast of the Waterbeach pipeline.~~ ~~8.9km north-east of the new WWTP site area.~~ ~~9.61km north-east of~~70.3km downstream of the treated effluent transfer tunnel or pipeline~~ and associated potential discharge location.~~	~~Designated primarily for presence of Molinia meadows on calcareous, peaty or~~ ~~clayey-silt-laden soils (*Molinion caeruleae)* and Calcareous fens with~~ A vast intertidal embayment incorporating one of the largest and most important areas of estuarine mudflats, sandbanks and saltmarsh in Britain. Counts of wintering waterbirds reach ~~*Cladium mariscus* and species of the *Caricion davallianae* habitats, with spined loach *Cobitis taenia* and great crested newt also present as qualifying features.~~ 320,673 individuals and include nationally	Potential for hydrological ~~impact~~/water quality effects as the site is downstream in the catchment of the River Cam. ~~The site is highly dependent on surface water and is subject to winter flooding, potentially connected to the River Cam. The site is also highly sensitive to water quality changes, so alterations to water chemistry may also have effects.~~	~~Discharge to Cam catchment~~N/A

Site Name	Designation	Distance and direction from EIA scoping boundary	Reason for designation	Pathways to Draft DCO Limits boundary	SSSI impact risk zone
		~~10.14km north-east of the wastewater transfer tunnel.~~	and internationally important numbers of numerous species, notably up to 17,000 passerines (perching songbirds). The site is also of outstanding international importance for passage birds, notable waders, and supports various breeding birds, an important shell fishery, and the largest breeding colony in Europe of the seal *Phoca vitulina*.	~~Unlikely to be ecologically linked other than by this means.~~	

Devil's DykeOuse Washes	SAC	9.76km east of the Waterbeach pipeline 9.86km east of the new WWTP site area. 10.95km east of the wastewater transfer tunnel. 10.95km east14.1 km downstream of the treated effluent transfer tunnel or pipeline	Designated for the presence of seminatural dry grasslands and scrubland on calcareous substrates. The site consists of a mosaic of CG3 *Bromus erectus* and CG5 *Bromus erectus – Brachypodium pinnatum* calcareous grasslands. Devil's Dyke is classified as priority habitat "orchid rich sites".The Ouse Washes incorporates inland water bodies, of both running and standing water, bogs, marshes water fringed vegetation, fens and improved grassland and is designated for Annex II species spined loach Cobitis taenia populations within the River Ouse catchment. It is the only known UK semi-natural dry grassland site for lizard orchid *Himantoglossum hircinum*The Counter Drain, with its clear water and abundant macrophytes, is particularly important, and a healthy population of spined loach is known to occur.	No hydrological impact expected. Potential for air quality impact on designated site qualifying features, due to the vehicular emissions of construction vehicles using the road network adjacent to the SAChydrological/water quality effects as the site is downstream in the catchment of the River Cam.	River Great Ouse Catchment, connected to the river Cam.N/A
Eversden and Wimpole WoodsOuse Washes	SPAC	16.90km northeast of the Waterbeach pipeline 16.46km south-west of the new WWTP site area	The site comprises a mixture of ancient coppice woodland (Eversden Wood) and high forest woods likely to be of more recent origin (Wimpole Woods). A colony of barbastelle bats *Barbastella barbastellus* (Annex II species 1308 Barbastelle) is associated with the trees in Wimpole Woods. These trees are used	Ecological connectivity considered via any potential corridors providing ecological connectivity for dispersing and/or foraging bats, such as hedge networks of tracts of suitable habitat joining the SAC and the EZoI, and none were identified. As the site lies on the opposite side of Cambridge, with no obvious dispersal corridors no ecological	River Great Ouse Catchment, N/Aconnected to the

		15.2km south west of the wastewater14.1 km downstream of the treated effluent transfer tunnel or pipeline	as a summer maternity roost where the female bats gather to give birth and rear their young. Most of the roost sites areOuse Washes qualifies under Article 4.1 (79/409/EEC) because over winter the area regularly supports 1.6% of the GB population of Northern harrier (*Circus cyaneus*), 64.4% of the GB population of Tundra Swan (*Cygnus columbianus bewickii*), 17.2% of the GB population of Whooper swan (*Cygnus cygnus*) and	impact is expected to occurPotential for hydrological/water quality effects as the site is downstream in the catchment of the River Cam.	

Site Name	Designation	Distance and direction from EIA scoping boundary	Reason for designation	Pathways to Draft DCO Limits boundary	SSSI impact risk zone
		16.0km east of the treated effluent transfer tunnel or pipeline	within tree crevices. The bats also use the site as a foraging area. Some of the woodland is also used as a flight path when bats forage outside the site.		

The Wash and North Norfolk Coast	SAC	70.3km downstream of the treated effluent transfer tunnel or pipeline	The Wash and North Norfolk Coast Special Area of Conservation (SAC) encompasses the largest embayment in the UK, as well as extensive intertidal sand and mudflats, subtidal sandbanks, biogenic and geogenic reef, saltmarsh and a barrier beach system unique in the UK. Under Article 4(4) of the Directive (92/43/EEC) the Annex I habitats that are a primary reason for selection of this site include: Sandbanks which are slightly covered by sea water all the time; Mudflats and sandflats not covered by seawater at low tide; Large shallow inlets and bays; Reefs; Salicornia and other annuals colonizing mud and sand; Atlantic salt meadows (*GlaucoPuccinellietalia maritimae*); Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea*	Potential for hydrological/water quality effects as the site is downstream in the catchment of the River Cam.	N/A
Site Name	Designation	Distance and direction from DA scoping boundary	Reason for designation	Pathways to Draft DCO Limits boundary	SSSI impact risk zone

			19.6% of the GB population of Ruff (*Philomachus pugnax*). Ouse Washes qualifies under Article 4.2 qualification (79/409/EEC) because during the breeding season the area regularly supports 15.5% of the GB population of Northern shoveler (*Anas clypeata*), 0.9% of the GB population of Mallard (*Anas platyrhynchos*), 93.3% of the GB population of Garganey (*Anas querquedula*), 14.4% of the GB population of Gadwall (*Anas strepera*) and 89.7% of the GB population of Blacktailed Godwit (*Limosa limosa*). Over winter the area regularly supports 2.9% of the total population of Northern pintail (*Anas acuta*), 1.7% of the total population of Northern shoveler (*Anas clypeata*), 0.8% of the total population of Eurasian teal (*Anas crecca*), 2.4% of the total population of Eurasian wigeon (*Anas Penelope*), 4.2% of the GB population of Gadwall (*Anas strepera*), 7.2% of the GB population of Common pochard (*Aythya farina*), 1.6% of the GB population of Tufted duck (*Aythya fuligula*), 2.4% of the GB population of Mute swan (*Cygnus olor*), 1.9% of the GB population of Eurasian coot (*Fulica atra*) and 2% of the		river Cam.

Site Name	Designation	Distance and direction from EIA scoping boundary	Reason for designation	Pathways to Draft DCO Limits boundary	SSSI impact risk zone
			GB population of Great cormorant (*Phalacrocorax carbo*). Ouse Washes qualifies under Article 4.2 qualification (79/409/EEC): an internationally important assemblage of birds because over winter the area regularly supports 64428 waterfowl including Great cormorant (*Phalacrocorax carbo*), Tundra swan (*Cygnus columbianus bewickii*), Whooper swan (*Cygnus cygnus*), Eurasian wigeon (*Anas ~~fruticosi~~). ~~Coastal lagoons form a Priority feature within this SAC. Annex II species that are a primary reason for selection of this site is the Harbour seal (*Phoca vitulina*) with the Otter (*Lutra lutra*) present but not as a primary reason for site selection~~*Penelope*) , Gadwall (*Anas strepera*), Eurasian teal (*Anas crecca*), Northern pintail (*Anas acuta*), Northern shoveler (*Anas clypeata*), Common pochard (*Aythya farina*), Tufted duck (*Aythya fuligula*), Eurasian coot (*Fulica atra*) and Ruff (*Philomachus pugnax*).		

The Ouse Washes	SPA Ramsar	70.3km 14.1 km downstream of the treated effluent transfer tunnel or pipeline	This site is an area of seasonally flooded washland habitat managed in a traditional agricultural manner. The Wash is numerically the most The washlands support nationally and internationally important area in Britain for numbers of wintering waterfowl, taking waders and wildfowl together. regularly exceeding 20,000 individuals including wintering swans and duck species and It is also the most important area in Britain in early autumn for moulting waders. The Wash is important also to certain wintering passerines, to breeding waders and terns, and to certain seabirds. The Wash qualifies under Article 4(1) because it supports 30 breeding pairs of little terns *Sterna albifrons* (2% of the British population) and 220 pairs of common terns *Sterna hirundo* (2%); and because it supports 130 Bewick's swans *Cygnus cygnus* (3%) in winter. The Wash qualifies under Article 4(2) as an international nationally important wetland by numbers of breeding waterfowl. The site is also of note for the	Potential for hydrological/water quality effects as the site is downstream in the catchment of the River Cam.	River Great Ouse Catchment, connected to the river Cam. N/A

Site Name	Designation	Distance and direction from EIA scoping boundary	Reason for designation	Pathways to Draft DCO Limits boundary	SSSI impact risk zone

			supporting in winter an average of 163,000 waders and also 51,000 wildfowl.		
The Wash	Ramsar	70.3km downstream of the treated effluent transfer tunnel or pipeline	A vast intertidal embayment incorporating one of the largest and most important areas of estuarine mudflats, sandbanks and saltmarsh in Britain. Counts of wintering waterbirds reach 320,673 individuals and include nationally and internationally important numbers of numerous species, notably up to 17,000 passerines (perching songbirds). The site is also of outstanding international importance for passage birds, notable waders, and supports various breeding birds, an important shell fishery, and the largest breeding colony in Europe of the seal *Phoca vituling*. large area of unimproved neutral grassland communities which it holds, and for the richness of the aquatic flora within the associated watercourses.	Potential for hydrological/water quality effects as the site is downstream in the catchment of the River Cam.	N/A

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3.5 Conservation objectives, site sensitivities and vulnerabilities

3.5.1 Relevant conservation objectives and management targets for the sites within the EZoI are subject to an initial assessment below in order to establish potential site sensitivities further and identify vulnerability to any effects from the Proposed Development.

3.5.2 Threats and pressures on the SACs have been identified as part of the Improvement Programme for England's Natura 2000 Sites (IPENS)[15], and are summarised in the sections below.

Fenland SAC

3.5.32 Fenland is a multi-site SAC in and was designated to protect three wetland sites:

- Chippenham Fen (52.298°N 0.415°E)
- Wicken Fen (52.307°N 0.278°E)
- Woodwalton Fen (52.445°N 0.193°W)

3.5.43 The conservation objectives of the Fenland SAC site are stated to be:

- Ensure that the integrity of the site is maintained or restored as appropriate and ensure that the site contributes to achieving the aims of the Wild Birds Directive by maintaining or restoring:
  - The extent and distribution of the habitats of the qualifying features;
  - The structure and function of the habitats of the qualifying features;
  - The supporting processes on which the habitats of the qualifying features rely;
  - The population of each of the qualifying features; and
  - The distribution of the qualifying features within the site.

3.5.5 The Wicken Fen SSSI also underlies the Wicken Fen SAC site, and so this information also applies to their sections below.

- ***Threats, pressures and activities with impacts on Fenland SAC***

3.5.6 3.5.4 The most important impacts and activities with high effect on the Fenland SAC are indicated as:

- Air pollution, air-borne pollutants – high rank

[15] Natural England (2015) IPENS Plan Summary [online] Available at: http://publications.naturalengland.org.uk/file/6208723374571520)

- Pollution to groundwater (point sources and diffuse sources) – high rank
- Human induced changes in hydraulic conditions – high rank ~~3.5.7~~

~~•~~3.5.5 Table 3.3 provides a summary of Fenland SAC pressures and threats.

Table 3~~-~~3: Fenland SAC pressures/ threats

Priority and issue	Feature affected	Pressure or Threat	Measure
Air Pollution: risk of atmospheric nitrogen deposition	H6410 Purple moorgrass meadows, H7210 Calcium-rich fen dominated by great fen sedge (saw sedge)	Pressure/ Threat	Further investigate potential atmospheric nitrogen impact on the site

(Source: Natural England, 2015 IPENS site improvement plan)

~~3.5.8~~3.5.6 [16] Consequently, nitrogen oxide emissions and potential groundwater quality impacts related to the Proposed Development are of relevance to the assessment for Fenland SAC.

Wicken Fen SSSI unit information (Natural England, 2020~~[17]~~11)

~~3.5.9~~3.5.7 The condition assessment for units 1 and 2 are both listed as 'Unfavourable recovering' and that 'the general consensus regarding management is that areas of Sedge Fen and Verrall's Fen are gradually becoming too dry and an input of calcareous, low nutrient status water is needed to maintain the notified botanical communities and invertebrate habitat'. The site is the subject of a Water Level Management Plan (WLMP) and work to implement this has commenced.

~~3.5.10~~3.5.8 The condition assessment for units 3, 4 and 5 are all listed as 'Favourable condition'. The assessment states that 'the breadth of surveys completed indicate general good health in all constituent habitats, and for individual species e.g. spined loach'.

Wicken Fen Ramsar site

3.5.~~11~~9 Information for Wicken Fen Ramsar[18] lists only flooding as the factor adversely affecting the ecological character. This factor includes changes in land/ water use and development projects (reservoir/barrage/dam).

[16] Natural England (2020) Condition of SSSI Units for Site Wicken Fen SSSI [online] Available at: https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1003251&ReportTitle=Wicken Fen SSSI

~~[17] Natural England (2020) Condition of SSSI Units for Site Wicken Fen SSSI [online] Available at: https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1003251&ReportTitle=Wi cken Fen SSSI~~

[18] Ramsar (2005) Information Sheet on Ramsar Wetlands (RIS) for Wicken Fen [online] Available at: https://rsis.ramsar.org/RISapp/files/RISrep/GB752RIS.pdf

3.5.12[0] The overlap between Wicken Fen Ramsar site and the related part of the Fenland SAC means that the information in section 3.4.13.5.3 can be taken to apply to this habitats site.

Devil's Dyke SAC

3.5.13[1] Devils Dyke SAC is a 7.68ha site designated in 2005. It contains semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) for which this is

considered to be one of the best areas in the United Kingdom. It is considered to be the priority sub-type of important orchid site[19].

3.5.14[2] The Devils Dyke SAC is within the extent of the Devils Dyke SSSI site, and so this information also applies to their sections below.

3.5.15 Conservation objectives[20] for this SAC are:

- 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.

Threats, pressures and activities with impacts on Devil's Dyke SAC

3.5.16[3] The most important impacts and activities with high effect on Devil's Dyke SAC16:

- Aair pollution, air-borne pollutant (atmospheric nitrogen) – high rank; and
- Bbiocenotic evolution, succession – high rank

3.5.17 3.5.14 The first of these is considered to be relevant to the current assessment. Table 3.4 provides a summary of Devil's Dyke SAC pressures and threats.

Table 3-4: Devil's Dyke SAC pressures/ threats

Priority and issue	Feature affected	Pressure or Threat	Measure

[19] JNCC (2015) Natura 2000 Standard data Form [online] Available at: https://jncc.gov.uk/jncc-assets/SACN2K/UK0030037.pdf

[20] Natural England (2014) European Site Conservation Objectives for Devils Dyke SAC (UK0030037) [online] Available at: http://publications.naturalengland.org.uk/publication/5870018029944832?category=6581547796791296

Air Pollution: risk of atmospheric nitrogen deposition	H6210 Dry grasslands and scrublands on chalk or limestone (important orchid sites)	Threat	Investigate potential air pollution impacts

(Source: Natural England, 2015 IPENS site improvement plan)

Devil's Dyke SSSI unit information (Natural England, 2020[21][15])

3.5.18 3.5.15 The SSSI condition assessment for units 1 (broadleaved, mixed and yew woodland – lowland) and 3 (calcareous grassland – lowland) is listed as 'favourable'. Unit 1 passed assessment criteria related to 'extent of the important plant communities (woodland and scrub), maintenance of mature/near veteran trees, presence of young trees to replace these in time, presence of large roots covered in mosses, some open scrub and plentiful dead wood'. Criteria concerned with open space and domination of trees and shrubs local to the area were less clear. Unit 3 met all site-specific standards defining favourable condition which included 'extent of important plant communities, proportion of herbs in the sward, frequency of the characteristic plant species, limited coverage by trees and scrub, limited agricultural weeds and other coarse species as well as having an appropriate sward height and a lack of plant litter'.

3.5.19 3.5.16 The SSSI condition assessment for units 2, 4, 5, 6 and 7 (all calcareous grassland – lowland) is recorded as 'Unfavourable - recovering'. A Higher--Level Stewardship (HLS) agreement is now in place for units 6 and 7 which allows for grazing, cutting and scrub management.

3.5.20 3.5.17 The IPENS information is not considered to be relevant to the current assessment, but in
conclusion air pollution, air-borne pollutants/ air pollution (risk of atmospheric nitrogen deposition) is considered to be of relevance to this screening assessment in relation to Devil's Dyke SAC.

[15] Natural England (2020) Condition of SSSI Units for Devil'sDyke SSSI [online] Available at: https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1000404&ReportTitle=Devil%27s Dyke SSSI

[21] Natural England (2020) Condition of SSSI Units for Devil'sDyke SSSI [online] Available at: https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1000404&ReportTitle =Devil%27s Dyke SSSI

Eversden and Wimpole Woods SAC

3.5.18 This SAC covers a total area of approximately 66 ha, located in the lowland plateau of the Bedfordshire and Cambridgeshire Claylands National Character Area close to Wimpole, approximately 8 miles south-west of Cambridge. It comprises a mixture of

ancient coppice woodland (Eversden Wood) and high forest woodland, likely to be of more recent origin, now being part of the formal designed parkland around Wimpole Hall (Wimpole Wood)[22].

3.5.19 Conservation objectives are:

- 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[23];
- The extent and distribution of the 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. ***Threats, pressures and activities with impacts on the site***

3.5.20 The most important impacts and activities with high effect on SAC are listed as (JNCC, 2015):

- Unknown (toxic organic chemicals) - high rank
- Change in biotic condition – high rank
- Air pollution, air borne pollutants – high rank
- Forest and Plantation management & use - high rank

3.5.21 Table 3.5provides a summary of Fenland SAC pressures and threats.

Table 3.5: Eversden and Wimpole SAC pressures/ threats

Priority and issue	Feature affected	Pressure or Threat	Measure
Feature location/extent/conditions unknown	S1308:Barbastelle bat	Pressure/ Threat	Further investigate potential atmospheric nitrogen impact on the site

Priority and issue	Feature affected	Pressure or Threat	Measure

[22] Natural England (2015) European Site Conservation Objectives: supplementary advice on conserving and restoring site features Eversden and Wimpole Woods Special Area of Conservation (SAC) Site code: UK0030331[online] available at: http://publications.naturalengland.org.uk/file/6307779568730112.
[23] Natural England (2015) European Site Conservation Objectives for Eversden and Wimpole Woods SAC [ONLINE] Available at: http://publications.naturalengland.org.uk/file/6307779568730112

Offsite habitat availability/managemetn	S1308:Barbastelle bat	Pressure/ Threat	Research to identify areas and habitats used by the bats off the SAC, and secure suitable management in order to maintain, enhance and increase the supporting habitat
Forestry and woodland management	S1308:Barbastelle bat	Threat	Manage the woodland appropriately
Air Pollution: risk of atmospheric nitrogen deposition	S1308:Barbastelle bat	Pressure/ Threat	Further investigate potential atmospheric nitrogen impact on the site

(Source: (Natural England, 2015)IPENS site improvement plan)

The Wash and North Norfolk Coast SAC

3.5.21~~1~~2 ~~—~~The Wash and North Norfolk Coast SAC is a marine site designated in 2005. It encompasses the largest embayment in the UK, as well as extensive intertidal sand and mudflats, subtidal sandbanks, biogenic and geogenic reef, saltmarsh and a barrier beach system unique in the UK. It includes the following overlapping protected areas[24]:

- The Wash Special Protection Area (SPA)~~,~~;
- North Norfolk Coast SAC and SPA~~,~~;
- Gibraltar Point SPA and Inner Dowsing~~,~~; and
- Race Bank and North Ridge SAC

3.5.22~~2~~3 ~~—~~The conservation objectives of The Wash and North Norfolk Coast SAC site are [25]:

- 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:
  - ~~T~~the extent and distribution of qualifying natural habitats and habitats of qualifying species;

[24] The Wash & North Norfolk Coast SAC Factsheet [online]. Available at: MMO Report Style and GIS Guide (publishing.service.gov.uk)

[25] Natural England (2014) European Site Conservation Objectives for The Wash & North Norfolk Coast SAC (UK0017075) [online] Available at: European Site Conservation Objectives for The Wash & North Norfolk Coast SAC - UK0017075 (naturalengland.org.uk)

- Tthe structure and function (including typical species) of qualifying natural habitats;
- Tthe structure and function of the habitats of qualifying species;
- Tthe supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;
- Tthe populations of qualifying species,; and,
- Tthe distribution of qualifying species within the site.
- ***Threats, pressures and activities with impacts on the site***

3.5.234 The most important impacts and activities with high effect on The Wash and North Norfolk Coast SAC are listed as (Natural England, 2015):

- Cchanges in abiotic conditions – high rank;
- Ffishing and harvesting aquatic resources – high rank;
- Ooutdoor sports and leisure activities, recreational activities – high rank;
- Mmodification of cultivation practices – high rank; and
- Human induced changes in hydraulic conditions – high rank
- ***The Wash SSSI unit information (Natural England, 2020)***

3.5.243.5.25 There are 60 units in the Wash SSSI. Close to 68% is recorded as being in Favourable condition, 32% is Unfavourable – Recovering and 0.5% is Unfavourable – Declining. The most recent assessment of the majority of the units was 2009. condition assessment for units 1 (broadleaved, mixed and yew woodland – lowland) and 3.

3.5.253.5.26 The units that comprise the SSSI are made up of a range of intertidal, subtidal and coastal habitats. Reasons for the condition assessments are often not provided; those assessments that are given tend to be more easily accessed (i.e. coastal) units, and not those marine areas where access is more difficult. Those coastal areas where the condition is unfavourable are subject to overly heavy grazing.

3.5.263.5.27 Note that information for the North Norfolk Coast SSSI have not been included here as it is several tens of km from the mouth of the Ouse, and hence well beyond the influence of this project.

3.5.273.5.28 The Wash SSSI also underlies the Wash SPA and Ramsar site, and so this information also applies to their sections below.

The Wash SPA

3.5.289 The conservation objectives for the Wash SPA are listed as[26]:

[26] Natural England (2014) European Site Conservation Objectives for The Wash SPA [online] Available at:

- Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
  - ~~T~~the extent and distribution of the habitats of the qualifying features;
  - ~~T~~the structure and function of the habitats of the qualifying features;
  - ~~T~~the supporting processes on which the habitats of the qualifying features rely;
  - ~~T~~the population of each of the qualifying features~~,~~; and,
  - ~~T~~the distribution of the qualifying features within the site.

3.5.~~29~~30 The most important impacts and activities with high effect on the site (Natural England, 2015):

- ~~H~~human induced changes in hydraulic conditions – high rank;
- ~~I~~invasive non-native species – high rank;
- ~~M~~modification of cultivation practices – high rank; and
- ~~O~~outdoor sports and leisure activities, recreational activities – high rank

The Wash Ramsar site

3.5.3~~0~~1 No specific conservation objectives, or information threats, pressures and activities with impacts on site is available for this Ramsar site. It is therefore assumed that the related information for The Wash SPA also relates at least indirectly~~,~~ to the site.

~~3.6~~ Ouse Washes SAC

3.5.32 The conservation objectives of Ouse Washes SAC site are[27]:

- 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 and habitats of qualifying species;
  - the structure and function (including typical species) of qualifying natural habitats;
  - the structure and function of the habitats of qualifying species;

https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9008021&SiteName=Wash%20SPA&SiteNameDisplay=The%20Wash%20SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=21&HasCA=1#hlco

[27] Natural England (2015) European Site Conservation Objectives: Supplementary advice on conserving and restoring site features Ouse Washes Special Area of Conservation (SAC) (UK0013011) Online Available at (naturalengland.org.uk)

- the supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;
- the populations of qualifying species; and
- the distribution of qualifying species within the site. ***Threats, pressures and activities with impacts on the site***

3.5.33 The most important impacts and activities with high effect on Ouse Washes SAC are listed as (Natural England, 2015):

- inappropriate water levels – high rank; and
- water pollution – high rank

Ouse Washes SSSI unit information (Natural England, 2020)

3.5.34 There are 21 units in the Ouse Washes SSSI. Close to 16% is recorded as being in Favourable condition and close to 85% is Unfavourable – no change. The most recent assessment of the majority of the units was 2009.

3.5.35 The assessment of SSSI units for this site is based largely on the decline of the majority of breeding bird features, some wintering bird features and the loss of extent and quality of MG11/MG13 neutral grassland feature. Adverse condition reasons are listed as freshwater - inappropriate water levels, freshwater pollution and water pollution - agriculture/run off.

3.5.36 The Ouse Washes SSSI also underlies the Wash SPA and Ramsar site, and so this information also applies to their sections below.

Ouse Washes SPA

3.5.37 The conservation objectives for Ouse Washes SPA are listed as[28]:

- Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
  - the extent and distribution of the habitats of the qualifying features;
  - the structure and function of the habitats of the qualifying features;
  - the supporting processes on which the habitats of the qualifying features rely;
  - the population of each of the qualifying features; and,
  - the distribution of the qualifying features within the site.

3.5.38 The most important impacts and activities with high effect on the site (Natural England, 2015):

[28] Natural England (2014) European Site Conservation Objectives for Ouse Washes SAC [online] Available at: European Site Conservation Objectives for Ouse Washes SPA - UK9008041 (naturalengland.org.uk)

- inappropriate water levels – high rank; and
- water pollution – high rank **Ouse Washes Ramsar site**

3.5.39 No specific conservation objectives, or information threats, pressures and activities with impacts on site is available for this Ramsar site. It is therefore assumed that the related information for Ouse Washes SPA also relates at least indirectly to the site.

3.6 Summary

3.6.1 Having considered the likely presence and absence of impact pathways, Wicken Fen Ramsar site / Fenland SAC, Devil's Dyke SAC, The Wash and North Norfolk Coast SAC, The Wash SPA and, the Wash Ramsar site, Ouse Washes SAC, Ouse Washes SPA and Ouse Washes Ramsar site have potential for LSEs to occur and need to be considered further in this screening assessment so are taken forward into the next chapter.

4 Assessment of Likely Significant Effects

4.1 Initial assessment of indicated potential impact pathways

4.1.1 Based on the description of the Proposed Development, the impacts listed in Table 4.1 below are considered likely to occur. The zone of influence for each impact is also stated in this table together with the relevant evidence to support the defined distance.

Table 4-1: Project impacts and their zones of influence

Impact	Zone of Influence	Evidence
Construction		
Permanent removal of habitat in relation to the footprint of the proposed WWTP plus any other above-ground assets such as vent shafts, access roads and new outfall structure.	Permanent above ground footprint.	Change in baseline conditions will be measurable only within the footprint.
Temporary removal or covering of habitat in relation to the footprint of any construction related to the Proposed Development such as associated pipeline easements, construction access routes, construction compounds and laydown areas, temporary water storage lagoons for commissioning.	Temporary above ground footprint.	Change in baseline conditions will be measurable only within this footprint.
Generation of airborne dust such as from earthworks, materials handling and vehicle trackways.	Permanent and temporary above ground footprint plus 50m to account for dust deposition.	Good industry practice states that an assessment will normally be required where there is an 'ecological receptor' within 50m of the boundary of the site (Holman *et al*, 2014)
Changes in water quality and/or quantity from unplanned events including but not limited to spills or leaks from machinery operating close to waterways, deep excavations, surface water run off for areas under construction, dewatering activities, and flood events washing substances into waterways.	Varies.	Where watercourses are, or may be affected during construction, then effects may be felt downstream over any distance. For pathways other than surface water and/or groundwater pathways, a precautionary 500m zone of influence is applied on the basis of good industry practice recommendations. Activities related to operating any vehicle, plant or other equipment (machinery) in or near (≤10m) any surface water or wetland, would require measures to avoid or minimise adverse effects (SEPA, 2019). Furthermore, groundwater must not be abstracted from any excavations, wells or boreholes that are within 250m of a wetland.

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Introduction of invasive non-native species (INNS) such as **the movement of equipment from one location to another** **physical disturbance during earthworks / riverbanks work** **may result in distribution of INNS.**	Aquatic - varies	
Impact	Zone of Influence	Evidence
		Other pathways associated with the movement of vehicle and/or materials should also be considered.
Noise from construction activities such as vehicle movements, operation of machinery, materials movements and piling.	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	A precautionary 750m zone of influence is applied based on expert opinion (Whitfield, D.P., Ruddock, M. & Bullman, R., 2008). The maximum sensitivity to disturbance for species likely to be present is in this range (Voight *et al*, 2018).
Presence of construction personnel and vehicle movements within the construction footprint of the Proposed Development/ to and from the Proposed Development-during construction	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species. ~~A~~	A precautionary 750m zone of influence is applied based on expert opinion. The maximum sensitivity to disturbance for species likely to be present is in this range (Voight *et al*, 2018). ~~Use~~
Temporary use of artificial lighting during construction	Permanent and temporary above ground footprint plus an area within 500m to account for the sensitivity of various ecological receptors.	The zone of influence is applied based on the recommended survey area for assessing the impacts of lighting projects in relation to bats (100m) (Voight *et al*, 2018) and evidence that unshielded lights can attract invertebrates from at least 500m. (Bruce-White and Shardlow, 2011)
Air quality emissions from the operation of construction plant (which may include a batching plant), vehicle movements and associated dry deposition of atmospheric nitrogen and other possible pollutants	Varies – likely to be dependent on prevailing wind conditions etc	Where emissions may be generated in construction, designations may be affected effects may be felt within the airshed over any distance.
Operation		

Noise from operating and maintenance activities within the proposed WWTP	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	A precautionary 750m zone of influence is applied based on expert opinion. The maximum sensitivity to disturbance for species likely to be present is in this range (Voight *et al*, 2018).
Production of air emissions associated with on-site combustion from the potential CHP plant, intermittent venting, fugitive emissions and from operational vehicle movements.	Varies – likely to be dependent on prevailing wind conditions etc	Where emissions may be generated in operation, designations may be affected effects may be felt within the airshed over any distance.

Impact	Zone of Influence	Evidence
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any excavations, wells or boreholes that are within 250m of a wetland.

Introduction of invasive non-native species (INNS) such as from the movement of equipment from one location to another or from physical disturbance during earthworks / riverbanks works that may result in distribution of INNS.	Permanent and temporary above ground footprint (terrestrial) Aquatic - varies	Good industry practice recommends that measures to avoid or minimise adverse effects may be required with respect to the risk of INNS being introduced, spread within, or moved off site (SEPA, 2016). Other pathways associated with the movement of vehicle and/or materials should also be considered.
Noise from construction activities such as vehicle movements, operation of machinery, materials movements and piling.	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	A precautionary 750m zone of influence is applied based on expert opinion (Whitfield, D.P., Ruddock, M. & Bullman, R., 2008). The maximum sensitivity to disturbance for species likely to be present is in this range (Voight *et al*, 2018).
Presence of construction operational and maintenance personnel and vehicles movements within the construction footprint of the Proposed proposed WWTP Development/ to and from the Proposed Development during construction	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	A precautionary 750m zone of influence is applied based on expert opinion. The maximum sensitivity to disturbance for species likely to be present is in this range (Voight *et al*, 2018).

Temporary u Use of artificial lighting **during construction**at operational above ground assets (proposed WWTP and its access).	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird/bat species.	The zone of influence is applied based on the recommended survey area for assessing the impacts of lighting projects in relation to bats (100m) (Voight *et al*, 2018)evidence that unshielded lights can attract invertebrates from at least 500m (Bruce-White and Shardlow, 2011).
Changes in final effluent quality and/or quantity discharged to the River Cam from the Proposed Development		

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Impact	Zone of Influence	Evidence
	ground footprint plus an area within 500m to account for the sensitivity of various ecological receptors.	recommended survey area for assessing the impacts of lighting projects in relation to bats (100m) (Voight *et al*, 2018) and evidence that unshielded lights can attract invertebrates from at least 500m. (Bruce-White and Shardlow, 2011)
Air quality emissions from the operation of construction plant (which may include a batching plant), vehicle movements and associated dry deposition of atmospheric nitrogen and other possible pollutants	Varies – likely to be dependent on prevailing wind conditions etc	Where emissions may be generated in construction, designations may be affected effects may be felt within the airshed over any distance.

Operation		
Noise from operating and maintenance activities within the proposed WWTP	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	A precautionary 750m zone of influence is applied based on expert opinion. The maximum sensitivity to disturbance for species likely to be present is in this range (Voight *et al*, 2018).
Production of air emissions associated with on-site combustion from the potential CHP plant, intermittent venting, fugitive emissions and from operational vehicle movements.	Varies – likely to be dependent on prevailing wind conditions etc	Where emissions may be generated in operation, designations may be affected effects may be felt within the airshed over any distance.
Presence of operational and maintenance personnel and vehicles within the proposed WWTP	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	A precautionary 750m zone of influence is applied based on expert opinion. The maximum sensitivity to disturbance for species likely to be present is in this range (Voight *et al*, 2018).

Use of artificial lighting at operational above ground assets (proposed WWTP and its access).	Permanent and temporary above ground footprint plus an area within 750m to account for	The zone of influence is applied based on the recommended survey area for assessing the impacts of lighting projects in relation to bats (100m) (Voight *et al*,
Impact	**Zone of Influence**	**Evidence**
	the sensitivity of bird/bat species.	2018)evidence that unshielded lights can attract invertebrates from at least 500m (Bruce-White and Shardlow, 2011).
Changes in final effluent quality and/or quantity discharged to the River Cam from the Proposed Development	Varies	Where watercourses are, or may be, affected, then effects may be felt downstream over any distance; the zone of influence for changes to water quality and/or quality is based not on distance but on connectivity. Effects could feasibly be created many kilometres downstream.

4.1.2 Potential impact pathways have been identified on the basis of spatial overlap (a habitats site within one or more zone of influence) and environmental connectivity (e.g., a surface water feature within a habitats site and zone of influence) and can be summarised as follows:

- None of the habitat's sites identified overlap with the zone of influence in relation to noise from operating and maintenance activities and the presence of operational and maintenance personnel and vehicles.
- The River Cam provides a hydrological connection to the zone of influence with Wicken Fen Ramsar site/ Fenland SAC as this wetland site lies downstream of the proposed outfall, within the River Cam catchment. (It is noted that Wicken Fen Ramsar Site/Fenland SAC is on a tributary of the River Cam, a short distance upstream; however, given the exceptionally flat nature of the topography it is still considered that under some circumstances there is the scope for connectivity).
- The River Cam also permits a potential hydrological connection to The Wash and North Norfolk Coast SAC, The Wash SPA and, The Wash Ramsar site, Ouse Washes SAC, Ouse Washes SPA and Ouse Washes Ramsar site via the River Great Ouse.
- There are no surface water features which connect the zone of influence with Devil's Dyke SAC. However, there is the scope that combustion from a potential CHP or Gas to Grid within the proposed development could cause an elevation in emissions that could cause deposition on the qualifying feature habitats of the SAC. This SAC is also close to the A11/A14, which could potentially see an increase in traffic-related emissions due to construction traffic.
- Given the distance separating the zone of influence and the habitats site and considering the absence of hydrological connectivity, Fenland SAC, Wicken Fen Ramsar site and Eversden and Wimpole Woods SAC is are not considered further in subsequent chapters of this screening assessment, but Wicken Fen Ramsar site/Fenland SAC and Devil's Dyke SAC, The Wash and North Norfolk Coast SAC, Wash SPA, Wash Ramsar site, Ouse Washes SAC, Ouse Washes SPA and Ouse Washes Ramsar site are subjected to further assessment due to the air emissions and hydrological impacts.

4.1.3 Table 4.2 provides further details of these pathways.

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Table 4-2: Impacts with connectivity to the wider environment

Impact	Zone of Influence	Impact Pathways
Construction		
Permanent removal of habitat in relation to the footprint of the proposed WWTP plus any other above ground assets such as pumping stations, access roads and water storage tanks.	Permanent above ground footprint of the Proposed Development.	No spatial overlap between zone of influence and any NSN/Ramsar sites.
Temporary removal or covering of habitat in relation to the footprint of any construction related to the Proposed Development such as associated pipeline easements, construction access routes, construction compounds and laydown areas, water storage lagoons for commissioning.	Temporary above ground footprint of the Proposed Development.	No spatial overlap between zone of influence and any NSN/Ramsar sites.
Generation of airborne dust such as from earthworks, materials handling and vehicle trackways.	Permanent and temporary above ground footprint plus 50m to account for dust deposition.	No spatial overlap between zone of influence and any NSN/Ramsar sites.

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Changes in water quality and/or quantity from unplanned events including but not limited to spills or leaks from machinery operating close to waterways, deep excavations, surface water run off for areas under construction, dewatering activities, and flood events washing substances into waterways.	Permanent and temporary above ground footprint plus 500m to account for changes in ground water as well as potential surface water and groundwater pathways to sensitive receptors.	No spatial overlap between zone of influence and Devil's Dyke SAC. The CWWTP discharges into the River Cam and is thus hydrologically connected downstream to • ~~Wicken Fen Ramsar site/ Fenland SAC, and to~~ The Wash and North Norfolk Coast SAC, • The Wash SPA, ~~and the~~ • Wash Ramsar site, • Ouse Washes SAC, Ouse Washes SPA and Ouse Washes Ramsar site. ~~Flooding of an active construction site could result in a pollution incident as a result of materials washed~~ • ~~from site (including silt) which are then passed downstream~~

Impact	Zone of Influence	Impact Pathways
		Flooding of an active construction site could result in a pollution incident as a result of materials washed from site (including silt) which are then passed downstream.

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Introduction of invasive non-native species (INNS) such as from the movement of equipment from one location to another or from physical disturbance during earthworks / riverbanks works that may result in distribution of INNS.	Permanent and temporary above ground footprint.	No spatial overlap between zone of influence and any NSN/Ramsar sites.
Noise from construction activities such as vehicle movements, operation of machinery, materials movements and piling.	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	No spatial overlap between zone of influence and any NSN/Ramsar sites.
Presence of construction personnel and vehicle movements within the construction footprint of the Proposed Development/ to and from the Proposed Development-during construction	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	No spatial overlap between zone of influence and any NSN/Ramsar sites.
Temporary use of artificial lighting during construction	Permanent and temporary above ground footprint plus an area within 500m to account for the sensitivity of various ecological receptors.	No spatial overlap between zone of influence and any NSN/Ramsar sites.
Air quality emissions from the operation of construction plant (which may include a batching plant), vehicle movements and associated dry deposition of atmospheric nitrogen and other possible pollutants	Receptors within 200m of an 'affected road' should be considered. Use the scoping criteria in DMRB to choose which roads are 'affected' (see Section 2.1 of DMRB LA 105 - Highways England, 2019) Change of 200 heavy duty vehicles or more	Possible impact pathway between construction vehicle emissions and Devil's Dyke SAC if using A14 at greater than the rates shown. No effects considered likely on the other sites.

~~Operation~~

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Noise from operating and maintenance activities at the proposed WWTP	Permanent and temporary above ground footprint plus an area within 750m to account for the	No spatial overlap between zone of influence and any NSN/ Ramsar sites.
Impact	**Zone of Influence**	**Impact Pathways**
	sensitivity of bird species.	
Presence of operational and maintenance personnel and vehicles within the proposed WWTP and moving to/from the proposed WWTP	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	No spatial overlap between zone of influence and any NSN/ Ramsar sites.
Use of artificial lighting at operational above ground assets within the proposed WWTP and its access road	Permanent and temporary above ground footprint plus an area within 500m to account for the sensitivity of various ecological receptors.	No spatial overlap between zone of influence and any NSN/ Ramsar sites.

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Changes in final effluent quality and/or quantity discharged to the River Cam from the Proposed Development	Permanent and temporary above ground footprint plus 500m to account for changes in ground water as well as potential surface water and groundwater pathways to sensitive receptors.	No spatial overlap between zone of influence and Devil's Dyke SAC. The CWWTP discharges into the River Cam and is thus hydrologically connected downstream to Wicken Fen Ramsar site/ Fenland SAC, and to The Wash and North Norfolk Coast SAC, The Wash SPA and the Wash Ramsar site. Winter flooding may also carry effluent downstream to potentially impact on these sites.

Impact	Zone of Influence	Impact Pathways
Testing and commissioning of the proposed WWTP may result in intermittent impacts to water quality as a result of effluent emissions to the river Cam.	River Cam downstream of discharge location	Changes to water quality during testing and commissioning could result in reduced water quality which may affect downstream reaches.
Operation		
Noise from operating and maintenance activities at the proposed WWTP	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	No spatial overlap between zone of influence and any NSN/ Ramsar sites.
Presence of operational and maintenance personnel and vehicles within the proposed WWTP and moving to/from the proposed WWTP	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	No spatial overlap between zone of influence and any NSN/ Ramsar sites.

Use of artificial lighting at operational above ground assets within the proposed WWTP and its access road	Permanent and temporary above ground footprint plus an area within 500m to account for the sensitivity of various ecological receptors.	No spatial overlap between zone of influence and any NSN/ Ramsar sites.
Changes in final effluent quality and/or quantity discharged to the River Cam from the Proposed Development	Permanent and temporary above ground footprint plus 500m to account for changes in ground water as well as potential surface water and groundwater pathways to sensitive receptors.	No spatial overlap between zone of influence and Devil's Dyke SAC. The CWWTP discharges into the River Cam and is thus hydrologically connected downstream to: • The Wash and North Norfolk Coast SAC, • The Wash SPA ~~and the~~ , • Wash Ramsar site, • Ouse Washes SAC, Ouse Washes SPA and • Ouse Washes Ramsar site.

Impact	Zone of Influence	Impact Pathways
		Winter flooding may also carry effluent downstream to potentially impact on these sites.

4.2 Assessment of likely significant effects alone

4.2.1 This part of the assessment considers whether the Proposed Development would have any LSE when considered in isolation. Each habitats site is assessed, in terms of potential effects on each of the qualifying features. Both the construction and operational phases are assessed.

4.2.2 The assessments in this section should be read alongside the Screening Matrices in

Appendix B, which present the results of the screening assessments in a format required for projects being submitted into the DCO application process.

Fenland SAC

4.1.6 The LSE on Fenland SAC are set out within Table 4.3.

Table 4-3: Fenland SAC LSEs

Interest Feature	Possible Likely Significant Effects	Possible Pathway for LSE
Annex I habitats - 6410 Molinia meadows on calcareous, peaty or clayeysilt-laden soils (Molinion caeruleae).	Yes	Construction effects: Potential for construction phase (including wet commissioning activities) to result in change to water quality (and possibly groundwater) and effects to sites downstream from the Proposed Development in the River Cam catchment. Operational phase: The final effluent quality standards are expected (as a minimum) to result in no detriment to the receiving environment as determined through the consenting process. The River Cam currently receives treated effluent and intermittent storm flows, depending on storage capacity and storm frequency in the future climate change is likely to increase this risk, as a precautionary basis an adverse operational phase LSE cannot be ruled out.
Annex I habitats - 7210 Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae (Priority feature).	Yes	
Annex II species present as a qualifying feature - 1149 Spined loach *Cobitis taenia*	Yes, as reliant on the wetland habitats detailed above	
Annex II species present as a qualifying feature - 1166 Great crested newt *Triturus cristatus*	Yes, as reliant on the wetland habitats detailed above	

Wicken Fen Ramsar site

4.1.7 The LSE on Wicken Fen Ramsar are set out within Table 4.4.

Table 4-4: Wicken Fen Ramsar site LSEs

Interest Feature	Possible Likely Significant Effects	Possible Pathway for LSE
Ramsar criterion 1 - one of the most outstanding and representative remnants of the East Anglian peat fens. The area is one of the few which has not been drained. Traditional management has created a mosaic of habitats	Yes	Construction Effects: Potential for construction phase (including wet commissioning activities) to cause hydrological (and possibly groundwater) impact as the site is downstream from the
Interest Feature	**Possible Likely Significant Effects**	**Possible Pathway for LSE**
from open water to sedge and litter fields.		Proposed Development in the River Cam catchment. Operational phase: Final effluent quality standards are expected to result in no detriment to the receiving environment, but as a precautionary basis operational phase LSE cannot be ruled out due to risk of impacts from storm discharges.
Ramsar criterion 2 - the site supports one endangered species of Red Data Book plant, the fen violet *Viola persicifolia*, which survives at only two other sites in Britain. It also contains eight nationally scarce plants and 121 Red Data Book invertebrates.	Yes	

Devil's Dyke SAC

4.1.84.2.3 The LSE on Devil's Dyke SAC are set out within Table 4.5.

Table 4-53: Devil's Dyke SAC LSEs

Interest Feature	Possible Likely Significant Effects	Possible Pathway for LSE

Annex I habitats - 6210 Seminatural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (important orchid sites).	Yes	**Construction Phase:** Emissions resulting in air-borne pollutants/ air pollution: risk of atmospheric nitrogen deposition – specifically from construction traffic passing within 200m on A14. **Operational Phase:** Emissions due to on-site combustion resulting in airborne pollution; risk of atmospheric nitrogen deposition.

The Wash and North Norfolk Coast SAC

~~4.1.9~~4.2.4 The LSE on The Wash and North Norfolk SAC are set out within Table 4-~~6~~4.

Table 4-~~6~~4: The Wash and North Norfolk Coast SAC LSEs

Interest Feature	Possible Likely Significant Effects	Possible Pathway for LSE
~~Annex I habitats – 1110 Sandbanks which are slightly~~	~~Yes~~	~~Construction Effects:~~
~~Interest Feature~~	~~Possible Likely Significant Effects~~	~~Possible Pathway for LSE~~
Annex I habitats – 1110 Sandbanks which are slightly **covered by sea water all the time**	Yes	Construction Effects: Potential for construction phase (including wet commissioning activities) to cause changes to water quality in surface and groundwater bodies (impact as site are downstream from the Proposed Development in the River Cam catchment). The extent to which dilution could act to dissipate or eliminate likely significant effects, over the ~~distance between development and site cannot be determined at this stage.~~ ~~**Operational phase:**~~ ~~Final effluent quality standards are expected to result in no detriment to the receiving environment, but as a precautionary basis operational phase LSE cannot be ruled out due to risk of impacts from storm discharges.~~
Annex I habitats – 1140 Mudflats and sandflats not covered by seawater at low tide	Yes	
Annex I habitats – 1160 Large shallow inlets and bays	Yes	
Annex I habitats – 1170 Reefs	Yes	

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~~Annex I habitats – 1310 Salicornia and other annuals colonizing mud and sand~~ Interest Feature	Possible Likely ~~Yes~~Significant Effects	Possible Pathway for LSE
Annex I habitats – 1310 Salicornia and other annuals colonizing mud and sand	Yes	distance between development and site cannot be determined at this stage. **Operational phase:** Final effluent quality standards are expected to result in no detriment to the receiving environment, but as a precautionary basis operational phase LSE cannot be ruled out due to risk of impacts from storm discharges.
Annex I habitats – 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Yes	
Annex I habitats – 1420 Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticose*)	Yes	
Annex I habitats – 1150 Coastal lagoons	Yes	
Annex II species – 1365 Harbour seal	Yes, as reliant on the coastal habitats detailed above	
Annex II species – 1355 Otter	Yes, as reliant on the coastal habitats detailed above	

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The Wash SPA

~~4.1.10~~4.2.5 The LSE on The Wash SPA are set out within Table 4-~~7~~5.

Table 4-~~7~~5: The Wash SPA LSEs

Interest Feature	Possible Likely Significant Effects	Possible Pathway for LSE
~~**Article 4.1 breeding bird species**~~	~~Yes, due to direct effects, and indirect effects on habitats and the prey species on which the~~	~~**Construction phase:** Potential for construction phase (including wet commissioning activities) to cause changes to water quality in~~
~~**Interest Feature**~~	~~**Possible Likely Significant Effects**~~	~~**Possible Pathway for LSE**~~
Article 4.1 breeding bird species	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	**Construction phase:** Potential for construction phase (including wet commissioning activities) to cause changes to water quality in surface and groundwater bodies (impact as the site is downstream from the Proposed

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Article 4.1 overwintering bird species	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	Development in the River Cam catchment). The extent to which dilution could act to dissipate or eliminate likely significant effects, over the distance between development and site cannot be determined at this stage. **Operational phase:** Final effluent quality standards are expected to result in no detriment to the receiving ~~environment, but as a precautionary basis operational phase LSE cannot be ruled out due to risk of impacts from storm discharges.~~
Article 4.2 overwintering bird species	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	
Interest Feature	Possible Likely Significant Effects	Possible Pathway for LSE
Article 4.2 An Internationally Important Assemblage of Birds	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	environment, but as a precautionary basis operational phase LSE cannot be ruled out due to risk of impacts from storm discharges.

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The Wash Ramsar site

~~4.1.11~~4.2.6 The LSE on The Wash Ramsar are set out within Table 4-~~8~~6.

Table 4-~~8~~6: The Wash Ramsar Site LSEs

Interest Feature	Possible Likely Significant Effects	Possible Pathway for LSE
Ramsar Criterion 1 - The Wash is a large shallow bay comprising very extensive saltmarshes, major intertidal banks of sand and mud, shallow water and deep channels.	Yes	**Construction Effects:** Potential for construction phase (including wet commissioning activities) to cause changes to water quality in surface and groundwater bodies (impact as the site is downstream from the Proposed Development in the River Cam catchment). The extent to which dilution could act to dissipate or eliminate likely significant effects, over the distance between development
Ramsar Criterion 3 – the interrelationship between its various components including saltmarshes, intertidal sand and mud flats and the estuarine waters.	Yes	

Ramsar Criterion 5 – a range of species with peak counts in spring/autumn, and with peak counts in winter.	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	and site cannot be determined at this stage. **Operational phase:** Final effluent quality standards are expected to result in no detriment to the receiving environment, but as a precautionary basis operational phase LSE cannot be ruled out due to risk of impacts from storm discharges.
Ramsar Criterion 6 – a range of species for possible future consideration, with peak counts in spring/autumn and in winter.	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	

Ouse Washes SAC

4.2.7 The LSE on Ouse Washes SAC are set out within Table 4.7.

Table 4.7: Ouse Washes SAC LSEs

Interest Feature	Possible Likely Significant Effects	Possible Pathway for LSE
Annex II species – Spined loach (*Cobitis taenia*)	Yes	**Construction ~~e~~Effects:** Potential for construction phase (including wet commissioning activities) to ~~result in~~cause changes to water quality ~~(and possibly~~ in surface and groundwater~~) and effects to~~ bodies (impact as site~~s~~ are downstream from the Proposed Development in the River Cam catchment). The extent to which dilution could act to dissipate or eliminate likely significant effects, over the distance between development and site cannot be determined at this stage. **Operational phase:** Final effluent quality standards are expected to result in no detriment to the receiving environment, but as a precautionary basis operational phase LSE cannot be ruled out due to risk of impacts from storm discharges.

Ouse Washes SPA

4.2.8 The LSE on Ouse Washes SPA are set out within Table 4.8.

Table 4.8: Ouse Washes SPA LSEs

Interest Feature	Possible Likely Significant Effects	Possible Pathway for LSE
Article 4.1 overwintering bird species **Article 4.2 overwintering bird species** **Article 4.2 An Internationally Important Assemblage of Birds**	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	**Construction phase:** Potential for construction phase (including wet commissioning activities) to cause changes to water quality in surface and groundwater bodies (impact as the site is downstream from the Proposed Development in the River Cam catchment). The extent to which dilution could act to dissipate or eliminate likely significant effects, over the distance between development and site cannot be determined at this stage. **Operational phase:** Final effluent quality standards are expected to result in no detriment to the receiving environment, but as a precautionary basis operational phase LSE cannot be ruled out due to risk of impacts from storm discharges.

Ouse Washes Ramsar site

4.2.9 The LSE on Ouse Washes SPA are set out within Table 4.9.

Table 4.9: Ouse Washes Ramsar LSEs

Interest Feature	Possible Likely Significant Effects	Possible Pathway for LSE
Ramsar ~~C~~criterion 1~~–~~: The ~~Wash~~site is ~~a large shallow bay comprising very extensive saltmarshes, major intertidal banks of sand and mud, shallow water and deep channels~~one of the most extensive areas of seasonally-flooding washland of its type in Britain.	Yes	**Construction Effects:** Potential for construction phase (including wet commissioning activities) to cause changes to water quality in surface and groundwater bodies (impact as the site is downstream from the Proposed Development in the River Cam catchment). The extent

Ramsar Criterion ~~3 – the interrelationship between its various components including saltmarshes, intertidal sand and mud flats and the estuarine waters.~~2: The site supports several nationally scarce plants, Invertebrate records indicate that the site holds relict fenland fauna, including the British Red Data Book species large darter dragonfly Libellula fulva and	Yes	to which dilution could act to dissipate or eliminate likely significant effects, over the distance between development
Interest Feature	**Possible Likely Significant Effects**	**Possible Pathway for LSE**
the rifle beetle Oulimnius major.~~Ramsar Criterion 5 – a range of species with peak counts in spring/autumn, and with peak counts in winter~~ The site also supports a diverse assemblage of nationally rare breeding waterfowl associated with seasonally-flooding wet grassland.	~~Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.~~	and site cannot be determined at this stage. **Operational phase:** Final effluent quality standards are expected to result in no detriment to the receiving environment, but as a precautionary basis operational phase LSE cannot be ruled out due to risk of impacts from storm discharges.
Ramsar Criterion 5 – a range of species with peak counts in winter.	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	
Ramsar Criterion 6 – Species/populations occurring at levels of international importance. Including a range of species for possible future consideration, with peak counts in ~~spring/autumn and in~~ winter.	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	

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4.3 In-Combination

4.~~2~~3.1 There is potential for other plans, policies and, most pertinently, projects, to act incombination with the proposed development. The primary means by which these incombination effects may be felt relates to:

- ~~-~~those developments that in operation may act to increase the demand on the proposed WWTP beyond the population equivalent growth projections, such that the alteration to water chemistry in the River Cam extends beyond the potential changes associated proposed development in isolation.

- the construction activities in the catchment that may change diffuse run-off characteristics in the catchment that contributes to adverse water quality
- changes in the catchment of the River Cam that are additive to the potential changes associated proposed development in isolation.
- the physical changes to the catchment as a result of completed developments that also change diffuse run-off characteristics in the catchment that contributes to adverse water quality changes in the catchment of the River Cam that are additive to the potential changes associated proposed development in isolation.

4.23.2 This would therefore have potential effects on all those habitatsNSN sites connected hydrologically to the proposed development.

4.23.3 In addition, there is the potential for airborne emissions sources to act in combination with those arising from the Proposed Development to give rise to a LSE sensitive habitats within the habitat sites described above.

4.23.4 In common with other project assessments, the plans policies and projects detailed in Table

4.9 below have been assessed for potential in combination effects.

Table 4-97: Plans and Projects for In Combination Assessment

Plan, Policy or Project	Application Reference	Status	Distance from EIA Scoping boundary
Tier 1. **1a. Development in construction**			
1. Up to 6,500 dwellings, business, retail, community, leisure and sports uses; a hotel; new primary and secondary schools; green open spaces including parks, ecological areas and woodlands; principal new accesses from the A10 and other points of access; associated infrastructure, groundworks and demolition; with all matters reserved except for the first primary junction from the A10 and construction access from Denny End Road. Waterbeach. CB25 9GU	SCDC ref. S/0559/17/OL	Permitted 27/9/19	4.5km
Tier 1. **1b. permitted but not likely to be implemented at the time when construction of CWWTPR commences**			

2. Railway station comprising platforms, pedestrian bridges, access road, pedestrian and cycle routes, car and cycle parking, with other associated facilities and infrastructure. Waterbeach. CB25 9NZ	SCDC ref. S/0791/18/FL	Permitted	5.5km
3. Construction and operation of a Waste Water Treatment Plant, and ancillary works, with a capacity of 75,000 tonnes per annum. Waterbeach. CB25 9PG	CCC ref. S/0202/16/CW	Permitted	4.3km
Tier 1. **1c. Applications in planning and under consideration**			
4. Up to 4,500 dwellings, business, retail, community, leisure and sports uses; new primary and secondary schools and sixth form centre; public open spaces including parks and ecological areas; points of access, associated drainage and other infrastructure, groundworks, landscaping, and highways works. Waterbeach. CB25 9LW	SCDC ref. S/2075/18/OL	Under consideratio n	5.5km
Plan, Policy or Project	Application Reference	Status	Distance from EIA Scoping boundary
5. Energy from Waste Facility to treat up to 250,000 tonnes of residual waste per annum. Waterbeach. CB25 9PQ	CCC ref. S/3372/17/CW	Appeal	6.2km
~~Plan, Policy or Project~~	~~Application Reference~~	~~Status~~	~~Distance from EIA Scoping boundary~~
Tier 2. **Projects for which an EIA scoping request has been submitted to PINS**			
6. A428 Black Cat to Caxton Gibbet Road Improvement proposed development. CB23 3AS		Preapplication	18km
7. Sunnica Energy Farm. IP28 8UQ		Preapplication	22km

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Tier 3. **3a. Projects on PINS programme but EIA scoping request not yet submitted**			
8. None			
Tier 3. **3b. Proposals identified in Development Plans and emerging Development Plans**			
9. Cambridge Local Plan		2018	
10. North West Cambridge Area Action Plan: University Quarter		Adopted 2009	
11. Cambridge East Area Action Plan 2020: New dwellings and employment space		Draft	
12. North East Cambridge Area Action Plan: New dwellings and employment space		Draft	
13. The Draft Cambridgeshire and Peterborough Local Transport Plan: A10 Ely to Cambridge Capacity Improvements (Dualling proposed development)		Published 2019	
Tier 3. **3c. Other plans or programmes / framework for likely future development** 14. None known at this stage			

4.23.5 The above plans policies and projects are considered in combination with the Proposed Development, to identify those projects that could act alongside this project to have likely significant effects on qualifying feature habitats or species at any of the sites.

Fenland SAC

4.2.6 The LSE on Fenland SAC in relation to in combination impacts on Fenland SAC are set out within Table 4-10.

Table 4-10: Fenland SAC LSEs

Interest Feature	**Possible Likely Significant Effects**	**Possible In-Combination Pathway, and likely trigger plans, policies and projects**
Annex I habitats - 6410 Molinia meadows on calcareous, peaty or clayeysilt-laden soils (Molinion caeruleae).	Yes	**Construction phase:** Unplanned events (spills/ leaks, site run off, flooding of site), dewatering and wet commissioning in construction could act in combination with similar effects from other

Annex I habitats - 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* (Priority feature).	Yes	plans, policies or projects to cause LSE on the site. (especially item 1 in Table 4.9 above). **Operational phase:** In-combination effects with those plans, policies and projects also likely to result in changes to the fluvial and water chemistry regimes at the SAC due to alterations in the volume of treated water entering the Cam: The majority of the items listed in Table 4.9 above (e.g. items 1, 4, 5, 9, 10, 11, 12 and 13) are likely to cause an increase in the volume of treated water, and hence the nutrients etc discharged into the Cam, which then potentially could affect this downstream habitats site.
Annex II species present as a qualifying feature - 1149 Spined loach *Cobitis taenia*	Yes, as reliant on the wetland habitats detailed above	
Annex II species present as a qualifying feature - 1166 Great crested newt *Triturus cristatus*	Yes, as reliant on the wetland habitats detailed above	

Wicken Fen Ramsar site

4.2.7 The LSE on Wicken Fen in relation to in-combination impacts are set out within Table 4-11.

Table 4-11: Wicken Fen Ramsar site LSEs

Interest Feature	**Possible Likely Significant Effects**	**Possible In-Combination Pathway, and likely trigger plans, policies and projects**
Ramsar criterion 1 - one of the most outstanding and representative remnants of the East Anglian peat fens. The area is one of the few which has not been drained. Traditional management has created a mosaic of habitats from open water to sedge and litter fields.	Yes	**Construction Phase:** Unplanned events (spills/ leaks, site run-off, flooding of site), dewatering and wet commissioning in construction could act in combination with similar effects from other plans, policies or projects to cause LSE on the site. (especially item 1 in Table 4.9 above). **Operational phase:**
Interest Feature	**Possible Likely Significant Effects**	**Possible In-Combination Pathway, and likely trigger plans, policies and projects**

Ramsar criterion 2 - the site supports one endangered species of Red Data Book plant, the fen violet *Viola persicifolia*, which survives at only two other sites in Britain. It also contains eight nationally scarce plants and 121 Red Data Book invertebrates.	Yes	In combination effects with those plans, policies and projects also likely to result in changes to the fluvial and water chemistry regimes at downstream habitat site due to alterations in the volume of treated water entering the Cam: the majority of the items listed in Table 4.9 above (e.g. items 1, 4, 5, 9, 10, 11, 12 and 13) are likely to cause an increase in the volume of treated water, and hence the nutrients etc discharged into the Cam, which then potential could affect this downstream habitats site.

Devil's Dyke SAC

4.2.8 4.3.6 The LSE on Devils Dyke SAC in relation to in combination impacts are set out within Table 4-128.

Table 4-128: Devil's Dyke SAC LSEs

Interest Feature	Possible Likely Significant Effects	Possible In-Combination Impact Pathway, and likely trigger plans, policies and projects
Annex I habitats - 6210 Seminatural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (important orchid sites).	Yes	**Construction Phase:** Air emissions, air-borne pollutants, risk of atmospheric nitrogen deposition – on qualifying habitats, specifically from construction traffic passing within 200m on A14. In-combination effects with those projects also likely to trigger increases in volume of traffic on A14: Several of the items listed in Table 12 above have the potential to cause an increase in traffic on the A14, which may act in combination with the construction phase effects due to construction traffic to cause LSE. **Operational phase:** Emissions due to on-site combustion resulting in airborne pollution; risk of atmospheric nitrogen deposition. In-combination effects with those projects likely to trigger increases in volume of traffic on A14: Several of the items listed in Table 4.9 above have the potential to cause an increase in traffic on the A14, which may act in combination with the operational phase effects due to combustion to cause LSE

~~Interest Feature~~ ~~Possible Likely Significant Effects~~ ~~Possible In-Combination Impact Pathway, and likely trigger plans, policies and projects~~

~~on A14: Several of the items listed in Table 4.9 above have the potential to cause an increase in traffic on the A14, which may act in combination with the operational phase effects due to combustion to cause LSE~~

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The Wash and North Norfolk Coast SAC

~~4.2.9~~4.3.7 The LSE on The Wash and North Norfolk Coast SAC in relation to in combination impacts are set out within Table 4.13.

Table 4-~~13~~9: The Wash and North Norfolk Coast SAC LSEs

Interest Feature	Possible Likely Significant Effects	Possible Impact Pathway
Annex I habitats – 1110 Sandbanks which are slightly covered by sea water all the time	Yes	**Construction ~~phase~~Effects:** Unplanned events (spills/ leaks, site run off, flooding of site), dewatering and wet commissioning in construction could act in combination with similar effects from other plans, policies or projects to cause LSE on the site~~.~~ (especially item 1 in Table 4.9 above). **Operational phase:**
Annex I habitats – 1140 Mudflats and sandflats not covered by seawater at low tide	Yes	
Annex I habitats – 1160 Large shallow inlets and bays	Yes	
Interest Feature	Possible Likely Significant Effects	Possible Impact Pathway
Annex I habitats – 11~~1~~70 ~~Sandbanks which are slightly covered by sea water all the time~~Reefs	Yes	~~**Construction Effects:** Unplanned events (spills/ leaks, site run off, flooding of site), dewatering and wet commissioning in construction could act in combination with similar effects from other plans, policies or projects to cause LSE on the site. (especially item 1 in Table 4.9 above). **Operational phase:**~~ In-combination effects with those plans, policies and

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		projects also likely to result in changes to the fluvial and water chemistry regimes (nitrates etc) at the SAC due to alterations in the volume of treated water entering the Cam: The majority of the items listed in Table 4.9 above (e.g. items 1, 4, 5, 9, 10, 11, 12 and 13) are likely to cause an increase in the volume of treated water, and hence the nutrients discharged into the Cam, which then potential could affect this downstream habitats site.

~~**Annex I habitats – 1140 Mudflats and sandflats not covered by seawater at low tide**~~ ~~Yes~~

~~**Annex I habitats – 1160 Large shallow inlets and bays**~~ ~~Yes~~

~~**Annex I habitats – 1170 Reefs**~~ ~~Yes~~

Annex I habitats – 1310 Salicornia and other annuals colonizing mud and sand	Yes
Annex I habitats – 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Yes
Annex I habitats – 1420 Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticose*)	Yes
Annex I habitats – 1150 Coastal lagoons	Yes

~~**Interest Feature**~~	~~**Possible Likely Significant Effects**~~	~~**Possible Impact Pathway**~~
Annex II species – 1365 Harbour seal	Yes, as reliant on the coastal habitats detailed above	

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Annex II species – 1355 Otter	Yes, as reliant on the coastal habitats detailed above	

The Wash SPA

4.2.104.3.8 The LSE on The Wash SPA in relation to in combination impacts are set out within Table 4.14.

Table 4-1410: The Wash SPA LSEs

Interest Feature	Possible Likely Significant Effects	Possible Impact Pathway
Article 4.1 breeding bird species	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	**Construction Effects:** Unplanned events (spills/ leaks, site run off, flooding of site), dewatering and wet commissioning in construction could act in combination with similar effects from other plans, policies or projects to cause LSE on the site. (especially item 1 in Table 4.9 above). **Operational phase:** In-combination effects with those plans, policies and projects also likely to result in changes to the fluvial and water chemistry regimes at the habitat site due to alterations in the volume of treated ~~water entering the Cam: The majority of the items listed in Table 4.9 above (e.g. items 1, 4, 5, 9, 10, 11, 12 and 13) are likely to cause an increase in the volume of treated water, and hence the nutrients etc discharged into the Cam, which then potential could affect this downstream habitats site.~~
Article 4.1 overwintering bird species	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	
~~**Article 4.2 overwintering bird species**~~Interest Feature	Possible Likely ~~Yes, due to direct effects, and indirect effects on habitats and the~~ Significant Effects	Possible Impact Pathway

Interest FeatureArticle 4.2 overwintering bird species	**Possible Likely Significant** Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.**Effects**	water entering the Cam: The majority of the items listed in Table 4.9 above (e.g. items 1, 4, 5, 9, 10, 11, 12 and 13) are likely to cause an increase in the volume of treated water, and hence the nutrients etc discharged into the Cam, which then potentially could affect this downstream habitats site.**Possible Impact Pathway**

prey species on which the qualifying bird species depend.

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Article 4.2 An Internationally Important Assemblage of Birds	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	

The Wash Ramsar site

4.2.114.3.9 The LSE on The Wash Ramsar in relation to in combination impacts are set out within Table 4.15.

Table 4-1511: The Wash Ramsar Site LSEs

Interest Feature	Possible Likely Significant Effects	Possible Impact Pathway
Ramsar Criterion 1 - The Wash is a large shallow bay comprising very extensive saltmarshes, major intertidal banks of sand and mud, shallow water and deep channels.	Yes	**Construction PhaseEffects:** Unplanned events (spills/ leaks, site run off, flooding of site), dewatering and wet commissioning in construction could act in combination with similar effects from other plans, policies or projects to cause LSE on the site. (especially item 1 in Table 4.9 above). **Operational phase:** In-combination effects with those plans, policies and projects also likely to result in changes to the fluvial and water chemistry regimes at downstream habitat
Ramsar Criterion 3 – the interrelationship between its various components including saltmarshes, intertidal sand and mud flats and the estuarine waters.	Yes	

Ramsar Criterion 5 – a range of species with peak counts in spring/autumn, and with peak counts in winter.	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	~~site~~(nitrates etc) at the SAC due to alterations in the volume of treated water entering the Cam: ~~the majority~~Many of the items listed in Table 4.9 ~~above~~ (e.g. items 1, 4, 5, 9, 10, 11, 12 and 13) above are likely to cause an increase in the volume of treated water, and hence the nutrients etc discharged into the Cam, which then potential could affect this downstream habitats site.
Ramsar Criterion 6 – a range of species for possible future	Yes, due to direct effects, and indirect effects on habitats	
Interest Feature	**Possible Likely Significant Effects**	**Possible Impact Pathway**
consideration, with peak counts in spring/autumn and in winter.	and the prey species on which the qualifying bird species depend.	

Ouse Washes SAC ~~4.2.6~~

4.3.10 The LSE on ~~Fenland~~Ouse Washes SAC in relation to in combination impacts ~~on Fenland SAC~~ are set out within Table 4-~~10~~12.

Table 4-~~10~~12: ~~Fenland~~Ouse Washes SAC LSEs

Interest Feature	Possible Likely Significant Effects	Possible In-Combination Pathway, and likely trigger plans, policies and projects

Annex II species – Spined loach (*Cobitis taenia*)	Yes	**Construction ~~Effects~~phase:** Unplanned events (spills/ leaks, site run off, flooding of site), dewatering and wet commissioning in construction could act in combination with similar effects from other plans, policies or projects to cause LSE on the site~~.~~ (especially item 1 in Table 4.9 above). **Operational phase:** In-combination effects with those plans, policies and projects also likely to result in changes to the fluvial and water chemistry regimes at the SAC due to alterations in the volume of treated water entering the Cam: The majority of the items listed in Table 4.9 above (e.g. items 1, 4, 5, 9, 10, 11, 12 and 13) are likely to cause an increase in the volume of treated water, and hence the nutrients etc discharged into the Cam, which then potentially could affect the feature of this downstream site.

Ouse Washes SPA

4.3.11 The LSE on Ouse Washes SPA in relation to in combination impacts are set out within Table 4-13.

Table 4-13: Ouse Washes SPA LSEs

Interest Feature	Possible Likely Significant Effects	Possible Pathway for LSE

Article 4.1 overwintering bird species **Article 4.2 overwintering bird species** **Article 4.2 An Internationally Important Assemblage of Birds**	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	**Construction Effects:** Unplanned events (spills/ leaks, site run off, flooding of site), dewatering and wet commissioning in construction could act in combination with similar effects from other plans, policies or projects to cause LSE on the site (especially item 1 in Table 4.9 above). **Operational phase:** In-combination effects with those plans, policies and projects also likely to result in changes to the fluvial and water chemistry regimes at the habitat site due to alterations in the volume of treated water entering the Cam: The majority of the items listed in Table 4.9 above (e.g. items 1, 4, 5, 9, 10, 11, 12 and 13) are likely to cause an increase in the volume of treated water, and hence the nutrients etc discharged into the Cam, which then potential could affect this downstream habitats site.

Ouse Washes Ramsar site

4.3.12 The LSE on Ouse Washes Ramsar in relation to in combination impacts are set out within Table 4-14.

Table 4-14: Ouse Washes Ramsar LSEs

Interest Feature	Possible Likely Significant Effects	Possible ~~Impact~~ Pathway for LSE
Ramsar ~~C~~criterion 1~~–~~: The ~~Wash~~site is ~~a large shallow bay comprising very extensive saltmarshes, major intertidal banks of sand and mud, shallow water and deep channels~~one of the most extensive areas of seasonally-flooding washland of its type in Britain.	Yes	**Construction Effects:** Unplanned events (spills/ leaks, site run off, flooding of site), dewatering and wet commissioning in construction could act in combination with similar effects from other plans, policies or projects to cause LSE on the site~~.~~ (especially item 1 in Table 4.9 above).

Ramsar Criterion 3 – the interrelationship between its various 2: The site supports several nationally scarce plants, Invertebrate records indicate that the site holds relict fenland fauna, including the British Red Datacomponents including saltmarshes, intertidal sand and mud flats and the estuarine waters.	Yes	Operational phase: In-combination effects with those plans, policies and projects also likely to result in changes to the fluvial and water chemistry regimes (nitrates etc) at the SAC due to alterations in the volume of treated water entering the Cam: Many of the items listed in Table 4.9 (e.g. items 1, 4, 5, 9, 10, 11, 12 and 13) above are likely to cause an
Ramsar Criterion 5 – a range of species with peak counts in spring/autumn, and with peak counts in winter. Interest Feature	Possible Likely Yes, due to direct effects, and indirect effects on habitats and theSignificant Effects	Possible Pathway for LSE
Interest Feature	Possible Likely Significant Effects	Possible Impact Pathway
Book species large darter dragonfly Libellula fulva and the rifle beetle Oulimnius major. The site also supports a diverse assemblage of nationally rare breeding waterfowl associated with seasonally-flooding wet grassland.	prey species on which the qualifying bird species depend.	Operational phase: In-combination effects with those plans, policies and projects also likely to result in changes to the fluvial and water chemistry regimes (nitrates etc) at the SAC due to alterations in the volume of treated water entering the Cam: Many of the items listed in Table 4.9 (e.g. items 1, 4, 5, 9, 10, 11, 12 and 13) above are likely to cause an increase in the volume of treated water, and hence the nutrients etc discharged into the Cam, which then potential could affect this downstream habitats site.
Ramsar Criterion 5 – a range of species with peak counts in winter.	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	
Ramsar Criterion 6 – Species/populations occurring at levels of international importance. Including a range of species for possible future consideration, with peak counts in spring/autumn and in winter.	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	

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4.4 Summary

4.34.1 It is concluded that the various habitat sites described above may be affected by:

- air emissions and changes to air quality/ air-borne pollutants; and
- changes to groundwater and surface water quality and quantity and hydrological impacts; both via normal discharges into River Cam and through possible impacts from intermittent storm discharges.

4.34.2 The impacts may be caused by the Proposed Development when considered alone and in combination with those cited plans, policies and projects.

4.34.3 This conclusion is made on a precautionary basis, and due to the distances involved between the Proposed Development and the habitatNSN sites the risk of likely significant effect is considered to be low, but cannot be ruled out based on the available information. Further details will be required before it will be possible to rule out likely significant effects occurring either, alone or in combination.

4.34.4 It is likely that further studies into the below pathways will demonstrate that no LSE are likely, or they can be used to identify mitigation measures to remove LSE:

- Air quality assessment – traffic modelling for the project should be analysed to gather information in relation to the possible impacts on ambient pollutant concentrations including at Devil's Dyke SAC from construction traffic passing nearby on the A14.
- Assessment of impacts to water resources (including WFD assessment) – analysis will be required of construction phase activities with the potential to result in surface and groundwater impacts, predicted effluent discharges into the River Cam (including during wet commissioning and operation) and assessment of possible risk of pollution downstream resulting from flood events, when storm water could feasibly bypass the Proposed Development and enter the river directly both within the construction and operational phases. For the operational phase, any controls to regulate discharges to be within permitted levels should be inspected to assess whether this provides adequate certainty that the Proposed Development will not release a greater volume of waste water as currently in the future.

5 Screening Statement

5.1.1 This screening assessment investigates the potential for significant effects on the qualifying interests of the following habitatsNSN sites arising from the Proposed Development:

- Devil's Dyke SAC
- Eversden and Wimpole Woods SAC
- Fenland SAC
- The Wash Ramsar
- The Wash and North Norfolk Coast SAC
- The Wash SPA
- Wicken Fen Ramsar site
- Ouse Washes SAC Ouse Washes SPA
- Ouse Washes Ramsar site

5.1.2 The screening assessment considers whether the Proposed Development, either alone or in

combination with other projects or plans, will have a significant effect on the habitat sites.

5.1.3 Having regard to the precautionary principle, it is concluded that there is potential for significant effects on all of these sites with the exception of Eversden and Wimpole Woods SACDevil's Dyke SAC, Wash and North Norfolk Coast SAC, Wash SPA, Wash Ramsar site, Ouse Washes SAC, Ouse Washes SPA and Ouse Washes Ramsar site as a result of the Proposed Development either alone or in-combination with other plans and/or projects. The findings of this report for screening for Appropriate Assessment are summarised in the Table 5.1 below, and the Screening Matrices in Appendix B.

Table 5-1: Screening Sstatement

Project Plan	
Description of the project or plan	The Proposed Development involves construction of a new waste water treatment plant (WWTP) together with the associated waste water transfer infrastructure (comprising a waste water transfer tunnel, and treated effluent transfer pipelines and new outfall to the River Cam), a transfer pipeline corridor from a pumping station off Bannold Droive (Waterbeach), and a new access road to the proposed WWTP. The Proposed Development is a nationally significant infrastructure project as defined by Section 14(1)(o) of the Planning Act 2008: the construction or alteration of a waste water treatment plant, and Section 29(1) as it is expected to have a PE capacity population 300,000 (in relation to capacity for sludge treatment and not wastewater treatment).

~~National Sites Network sites assessed~~	
~~Brief Description of the Natura 2000 Site(s)~~	~~Wicken Fen Ramsar site and Fenland SAC occupy the same land area/ location (Wicken Fen Ramsar site is a~~

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	300,000 (in relation to capacity for sludge treatment and not wastewater treatment).
National Sites Network sites assessed	
Brief Description of the Natura 2000 Site(s)	Wicken Fen Ramsar site and Fenland SAC occupy the same land area/ location (Wicken Fen Ramsar site is a component site within the larger SAC designation), approximately 5 km from the closest point within the Proposed Development site, and the site details are as follows: • Wicken Fen Ramsar site - reference UK11077/ area 254.49 hectares; • Fenland SAC - reference UK0014782/ area 619.41 hectares; • Devil's Dyke SAC lies c.8.6 km from the closest point within the Proposed Development site - reference UK0030037/ area 8.25 hectares; • Eversden and Wimpole Woods SAC – this site lies 15.2 km from the closest point within the Proposed Development site. • The Wash and North Norfolk Coast SAC – this site lies ~~59.57~~70.3 km north (downstream) of the Proposed Development • ~~The Wash SPA - this site lies 59.57~~70.3 km north • (downstream) of the Proposed Development • The Wash Ramsar site - this site lies ~~59.57~~70.3 km north (downstream) of the Proposed Development • Ouse Washes SAC – this site lies 14.1km downstream of the Proposed Development • Ouse Washes SPA – this site lies 14.1 km downstream of the Proposed Development • Ouse Washes Ramsar site – this site lies 14.1 km downstream of the Proposed Development
Assessment Criteria	

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Describe how the project or plan (alone or in combination) is likely to give rise to impacts on the Natura 2000 site.	Having considered the likely presence and absence of impact pathways, ~~Wicken Fen Ramsar site/ Fenland SAC,~~ Devil's Dyke SAC, The Wash and North Norfolk Coast SAC, ~~and~~ The Wash SPA/Ramsar site, Ouse Washes SAC, Ouse Washes SPA and Ouse Washes Ramsar site have potential for LSEs to occur.
Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the ~~Natura 2000 site by virtue of;~~ ~~• Size and scale:~~ ~~• Land take:~~ ~~• Distance from the Natura 2000 site or key features of the site;~~ ~~• Resource requirements (water abstraction etc);~~ ~~• Emissions (disposal to land, water or air);~~ ~~• Excavation requirements;~~ ~~• Transportation requirements;~~	There is the possibility of impacts arising to, ~~Wicken~~Devil's Dyke ~~Fen Ramsar site/ Fenland~~ SAC, The Wash and North Norfolk Coast SAC, The Wash SPA ~~and~~, The Wash Ramsar site, Ouse Washes SAC, Ouse Washes SPA and Ouse Washes Ramsar site due to: • Potential for water and groundwater changes and associated hydrological impacts as the site is downstream ~~from the Proposed Development in the River Cam/River Great Ouse. The pathway may occur due to consented discharges and/or effluent release caused by a flood event.~~ ~~There is the possibility of impacts arising to Devil's Dyke SAC due to:~~ ~~• Air pollution/ air-borne pollutants (risk of atmospheric nitrogen deposition) from the on-site CHP plant during operation from construction~~

Natura 2000 site by virtue of; • **Size and scale:** • **Land take:** • **Distance from the Natura 2000 site or key features of the site;** • **Resource requirements (water abstraction etc);** • **Emissions (disposal to land, water or air);** • **Excavation requirements;** • **Transportation requirements;** • ~~•~~ **Duration of construction, operation, decommissioning etc;** • **Other.**	from the Proposed Development in the River Cam/River Great Ouse. The pathway may occur due to consented discharges and/or effluent release caused by a flood event. There is the possibility of impacts arising to Devil's Dyke SAC due to: • Air pollution/ air-borne pollutants (risk of atmospheric nitrogen deposition) from the on-site CHP plant during operation from construction traffic passing within 200m on A14 and from a consented on-site CHP plant during operation.

Describe any likely changes to the Natura 2000 site arising as a result of: • **Reduction in habitat area;** • **Disturbance to key species;** • **Habitat or species fragmentation;** • **Reduction in species density;** • **Changes in key indicators of conservation value (water quality etc.);** • **Climate change.**	Degradation of habitat site due to changes in surface water quality as a result of construction activities and in combination with other projects. In-combination effects for incremental increase in final effluent volumes. Adverse effects on populations of qualifying species. Degradations of habitat due to emissions from vehicles.
Describe any likely impacts on the Natura 2000 site as a whole in terms of: • **Interference with the key relationships that define the structure of the site;** • **Interference with key relationships that define the function of the site.**	Not known at this stage, but LSE on the sites identified in this screening assessment is likely to add to existing pressures, jeopardising their condition/recovery, and putting additional strain on meeting the stated conservation objectives.
~~**Provide indicators of significance as a result of the identification of effects set out above in terms of:**~~ • ~~**Loss;**~~ • ~~**Fragmentation;**~~ • ~~**Disruption;**~~ • ~~**Disturbance;**~~ • ~~**Change to key elements of the site.**~~	~~Nutrient enrichment and consequential degradation of vegetation communities could occur which could reduce suitability for associated fauna species such as Annex II species listed in Fenland SAC citation.~~
Describe from the above those elements of the project or plan, or combination of elements, ~~where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.~~	Requires further study in the form of an air emissions risk assessment and use of traffic modelling study data as well as a hydrological study looking at likely future levels of discharge from the proposed WWTP.
~~**Data collected to carry out the assessment**~~	
~~**Who carried out the assessment?**~~	~~Ben Benatt CEnv MCIEEM and Simon Allen CEnv MCIEEM~~
~~**Sources of data?**~~	~~Please refer to the reference list at the end of this document.~~

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where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.	
Data collected to carry out the assessment	
Who carried out the assessment?	Ben Benatt CEnv MCIEEM and Simon Allen CEnv MCIEEM
Sources of data?	Please refer to the reference list at the end of this document.
Level of assessment?	Desktop.

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7 Abbreviations and Glossary

7.1 Acronyms and Abbreviations

Table 7-1: Acronyms and abbreviations

Acronym / Abbreviation	Detail
AA	Appropriate Assessment
AAP	Area Action Plan
AOD	Above Ordnance Datum
AWS	Anglian Water Services
BTO	British Trust for Ornithology
CSHR (HabsRegs)	Conservation of Habitats and Species Regulations 2017,
CWS	County Wildlife Site
CWWTP	Cambridge Waste Water Treatment Plant
CWWTPR	CWWTP Relocation
DCO	Development Consent Order
EZOI	Ecological Zone of Influence
HE	Homes England
HER	Historic Environment Record
HIF	Housing Infrastructure Fund
HLS	Higher Level Stewardship
HRA	Habitats Regulations Assessment
IROPI	imperative reasons of overriding public interest
IRZ	Impact risk zone
JNCC	Joint Nature Conservation Committee
NSIP	Nationally Significant Infrastructure Project
NSN	National Site Network
NPPF	National Planning Policy Framework

PE	Population Equivalent
SNCB	Statutory Nature Conservation Body
SSSI	Site Special Scientific Interest
Descriptor	Detail
Annex 1 Birds	Bird species listed under Annex 1 of the Birds Directive. These are in danger of extinction, are rare, or are considered vulnerable within the

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7.2 Definitions

Table 7-2: Definitions

Descriptor	Detail
Annex 1 Birds	Bird species listed under Annex 1 of the Birds Directive. These are in danger of extinction, are rare, or are considered vulnerable within the European Union. Those that regularly occur at levels over 1% of the national population meet the SPA qualifying criteria.
Annex I Habitats	A natural habitat listed under Annex I of the Habitats Directive for which Special Areas of Conservation can be selected
Annex II Species	A species under Annex II of the Habitats Directive for which Special Areas of Conservation can be selected
cSAC	Sites that have been submitted to the European Commission, but not yet formally adopted.
pRamsar	Sites proposed by the UK statutory nature conservation agencies for designation the Ramsar Convention on Wetlands.
pSAC	A site that has been approved for consultation by the Government but is not yet classified.
pSPA	An area identified by the JNCC and the other UK statutory nature conservation agencies and recommend to government for designation as an SPA.
Ramsar site	Wetlands of international importance that have been designated under the criteria of the Ramsar Convention on Wetlands for containing representative, rare or unique wetland types or for their importance in conserving biological diversity.
Special Area Conservation	Sites that have been adopted by the European Commission and formally designated by the government of each country in whose territory the site lies.
SCI	Sites that have been adopted by the European Commission but not yet formally designated by the government of each country in whose territory the site lies.

Special Protection Area	Sites that have been adopted by the European Commission and formally designated by the government of each country in whose territory the site lies.
Tetrad	A collection of four Ordnance Survey 1-km squares arranged into a 2km by 2km square.

8 Appendices

A. Figures

Figure 1: Map showing locations of NSN sites in relation to Scheme Area

(insert: Cambridge WWTP Relocation Project Statutory Designated Sites - Drawing number 100415458-MML-XX-00-DR-Z-0201001)

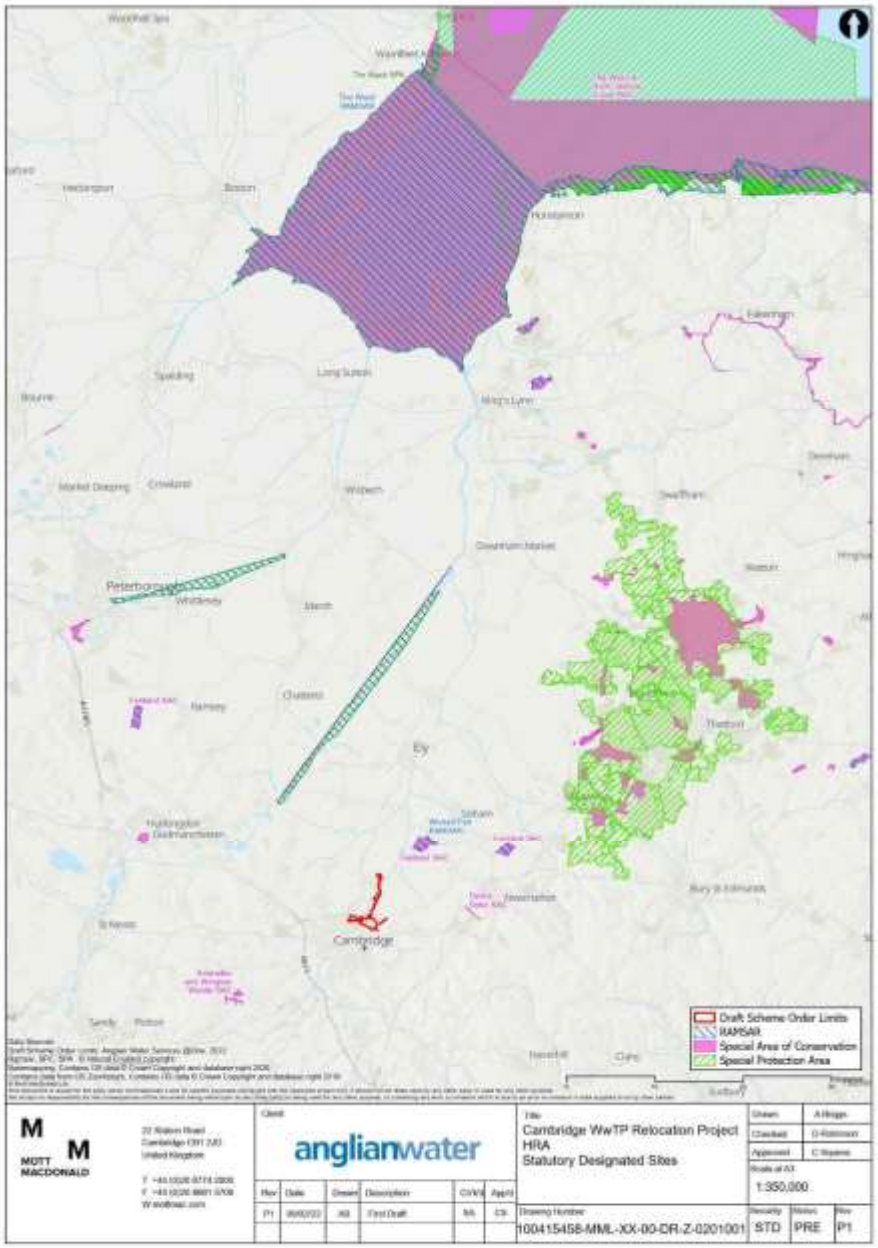
Draft Scheme Order Limits
RAMSAR
Special Area of Conservation
Special Protection Area
Peterborough
Ely
Cambridge
anglianwater
MOTT MACDONALD
Cambridge WwTP Relocation Project
HRA
Statutory Designated Sites
1:350,000
100415458-MML-XX-00-DR-Z-0201001
STD
PRE
P1

Figure 1: Map showing locations of Habitats Sites in relation to Proposed Development Area

B. Screening Matrices

 = Likely significant effect cannot be excluded

✕ = Likely significant effect can be excluded

Name of European site and designation: Fenland SAC												
EU Code: UK0014782												
Distance to Proposed Development: 4.72km												
European site features	**Likely effects of Proposed Development**											
Effect	*Alterations to water quality due to pollution events*			*Alterations to water quality due to changes in water chemistry*			*Alterations to water quantity*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	a✓ 4	b✓ 4		c✗ 4	d✓ 4		e✗ 4	f✗ x		g✓ 4	h✓ 4	
7210 Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae* Priority feature	a✓ 4	b✓ 4		c✗ 4	d✓ 4		e✗ 4	f✗ 4		g✓ 4	h✓ 4	

Name of European site and designation: Fenland SAC

EU Code: UK0014782

Distance to Proposed Development: 4.72km

European site features	Likely effects of Proposed Development											
Effect	*Alterations to water quality due to pollution events*			*Alterations to water quality due to changes in water chemistry*			*Alterations to water quantity*			*In combination effects*		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D
1149 Spined loach *Cobitis taenia*	a✓ 4	b✓ 4		c✗ 4	d✓ 4		e✗ 4	f✗ 4		g✓ 4	h✓ 4	
1166 Great crested newt *Triturus cristatus*	a✓ 4	b✓ 4		c✗ 4	d✓ 4		e✗ 4	f✗ 4		g✓ 4	h✓ 4	

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Evidence supporting conclusions:

a. Any pollution events during the construction of the new outfall and the decommissioning of the existing outfall have the potential to cause likely significant effects on the downstream qualifying habitats and species of the habitats site. It is noted that the habitats site is a short distance upstream from its convergence with the River Cam, but it is felt that the fenland landscape within which the site is located may, under certain circumstances, be subject to circumstances whereby pollutants in the Cam to come into contact with habitats site itself. Pollution could affect the qualifying habitats, and/or qualifying species, their food source/prey and/or their habitats. Therefore, LSE cannot be ruled out at this stage.

b. During operation, no changes to water quality due to pollution events are predicted. However the possibility of storm discharges causing periodic worsening of water quality/ pollution events; especially with increasing instability of climate and risk of extreme weather events due to climate change. Therefore LSE cannot be ruled out at this stage.

c. Aside from potential changes to water quality due to pollution events, no changes to water chemistry are predicted during the construction phase, that could affect the qualifying habitats or species.

d. During operation, no changes to water quality are predicted, as the Proposed Development will be dealing with the same volume of waste water as currently. However the mechanisms preventing this from exceeding predicted levels in the future are unknown, and so there is no certainty of this remaining the case. Therefore LSE cannot be ruled out at this stage.

e. During construction, no alterations to water quantity due to the Proposed Development are predicted.

f. During operation, no alterations to water quantity due to the Proposed Development are predicted.

g. During operation, the changes in water chemistry due to the pollution events may act in combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying species of the qualifying habitats, and/or qualifying species, their food source/prey and/or their habitats cannot be ruled out.

h. ● a. The Cambridge Water Cycle Strategy 2011 states that analysis of hydrology indicates that Wicken Fen, in which Fenland SAC is located, is topographically higher than the Cam and drains via Wicken Lode then Burwell Lode towards it. As the Cam does not feed it, there are no associated risks, which could arise from additional sewage effluent discharge at Cambridge irrespective of any changes in effluent flow or quality from that site and no LSE is expected to occur. During operation, the changes in water chemistry due to the discharge of waste water may act in combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying species of the qualifying habitats, and/or qualifying species, their food source/prey and/or their habitats cannot be ruled out until it is known how the plant will operate at predicted levels and control mechanisms if this is exceeded. For example, the increase in water discharged from the Proposed Development may increase due to plans such as the large development of housing etc at Waterbeach, which will feed into the Proposed Development Therefore, Fenland SAC will not be progressed to Stage 2: Appropriate Assessment.

Name of European site and designation: Wicken Fen Ramsar Site

EU Code: UK11077												
Distance to Proposed Development: 4.72km												
European site features	**Likely effects of Proposed Development**											
Effect	*Alterations to water quality due to pollution events*			*Alterations to water quality due to changes in water chemistry*			*Alterations to water quantity*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Ramsar Criterion 1 – peat fen habitats	a✓ 4	b✓ 4		c✗ 4	d✓ 4		e✗ 4	f✗ 4		g✓ 4	h✓ 4	
Ramsar Criterion 2 - Red Data book plant fen violet *Viola persicifolia*, eight nationally scarce plants and 121 British Red Data Book invertebrates	a✓ 4	b✓ 4		c✗ 4	d✓ 4		e✗ 4	f✗ 4		g✓ 4	h✓ 4	

a. Anya. pollution events during the construction of the new outfall and the decommissioning of the existing outfall have the potential to cause likely significant effects on the downstream qualifying habitats and species of the habitats site. It is noted that the habitats site is a short distance upstream from its convergence with the River Cam, but it is felt that the fenland landscape within which the site is located may, under certain circumstances, be subject to circumstances whereby pollutants in the Cam to come into contact with habitats site itself. Pollution could affect the qualifying habitats, and/or qualifying species, their food source/prey and/or their habitats. Therefore, LSE cannot be ruled out at this stage.

b. During operation, no changes to water quality due to pollution events are predicted. However the possibility of storm discharges causing periodic worsening of water quality/ pollution events; especially with increasing instability of climate and risk of extreme weather events due to climate change. Therefore LSE cannot be ruled out at this stage.

c. Aside from potential changes to water quality due to pollution events, no changes to water chemistry are predicted during the construction phase, that could affect the qualifying habitats or species.

d. During operation, no changes to water quality are predicted, as the Proposed Development will be dealing with the same volume of waste water as currently. However the mechanisms preventing this from exceeding predicted levels in the future are unknown, and so there is no certainty of this remaining the case. Therefore LSE cannot be ruled out at this stage.

e. During construction, no alterations to water quantity due to the Proposed Development are predicted.

f. During operation, no alterations to water quantity due to the Proposed Development are predicted.

g. During operation, the changes in water chemistry due to the pollution events may act in combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying species of the qualifying habitats, and/or qualifying species, their food source/prey and/or their habitats cannot be ruled out.

h. ● The Cambridge Water Cycle Strategy 2011 (Stantec, 2021) states that analysis of hydrology indicates that Wicken Fen, in which Fenland SAC is located, is topographically higher than the Cam and drains via Wicken Lode then Burwell Lode towards it. As the Cam does not feed it, there are no associated risks, which could arise from additional sewage effluent discharge at Cambridge irrespective of any changes in effluent flow or quality from that site and no LSE is expected to occur. During operation, the changes in water chemistry due to the discharge of waste water may act in combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying species of the qualifying habitats, and/or qualifying species, their food source/prey and/or their habitats cannot be ruled out. For example, the increase in water discharged from the Proposed Development may increase due to plans such as the large development of housing etc at Waterbeach, which will feed into the Proposed DevelopmentTherefore, Wicken Fen Ramsar site will not be progressed to Stage 2: Appropriate Assessment.

Name of European site and designation: Devil's Dyke SAC	

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EU Code: UK0030037														
Distance to Proposed Development: 8.97km														
European site features	**Likely effects of Proposed Development**													
Effect	*Deposition of nitrogen*				*Deposition of dust*			*In combination effects*						
Stage of Development	*C*	*O*	*D*	*C D*	*O C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	
6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	a ✓	b ✗ 4		c ✗	d ✗ c 4	d 4		e ✓	f ✗ 4					

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Evidence supporting conclusions:

a. The size of the fleet of vehicles to be used during construction, they type of vehicles, and their routes to the construction site, are as yet unknown. It is therefore not yet possible to screen out any LSE due to increases in nitrogen deposition during the construction phase. The adjacent A14 may experience an increase in vehicle numbers during construction that causes an unacceptable increase in rates of nitrogen deposition on the species/habitats within this habitats site.

b. During operation, production of nitrogen during any combustion process is not likely to cause any LSE, due to the distance between Proposed Development and the habitats site. The SSSI Impact Zone for combustion does not reach the Proposed Development.

c. During construction, dust creation is not likely to affect this habitats site; the construction site is nearly 9km away, significantly further than airborne dust would be expected to travel.

d. During operation, the Proposed Development is not predicted to produce any dust.

e. During construction, there may be an increase in vehicles on the adjacent A14 that could cause an unacceptable increase in rates of nitrogen deposition on the species/habitats within this habitats site in combination with other plans, policies and projects.

f. During operation, no in-combination effects are predicted that would cause LSE on this habitats site.

Name of European site and designation: Eversden and Wimpole Woods SAC												
EU Code: UK0030037												
Distance to Proposed Development: 14.97km												
European site features	**Likely effects of Proposed Development**											
Effect	*Disturbance/damage to roosts (summer and hibernation)*			*Disturbance/damage to commuting/foraging areas*			*In combination effects*					
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
1308 Barbastelle *Barbastella barbastellus*	**a** ~~X~~ x	**b** ~~X~~ 4		**c** ~~X~~ 4	**d** ~~X~~ x		—					

Evidence supporting conclusions:

~~a.~~ a. The Proposed Development is over 14km from the SAC site. Barbastelles are known to have large ranges, so the distance between the Proposed Development and the habitats site is does not rule out LSE. However, the connectivity between the two is impeded to a certain extent by the city of Cambridge, and the habitats affected by the project are generally of low suitability for barbastelles. The bat surveys to date have not identified any barbastelle roosts. No LSEs on bat roosts are therefore predicted.

~~b.~~ • b. The habitats within the Proposed Development are generally of limited value for bats; the area is largely arable, with larges fields and few hedgerows, tree lines, woodlands etc. A small number of barbastelle calls have been identified, in a small number of specific locations within the bat survey study area; it is not known whether these barbastelles are in any way connected with the population based at this

habitats site. However, the habitats where these bats have been identified are al due for retention during the project. No LSE on bat commuting/foraging areas are therefore predicted. Therefore, Eversden and Wimpole Woods SAC will not be progressed to Stage 2: Appropriate Assessment.

Name of European site and designation: The Wash and North Norfolk Coast SAC												
EU Code: UK17075												
Distance to Proposed Development: ~~59.57km~~70.3km												
European site features	**Likely effects of Proposed Development**											
Effect	*Alterations to water quality due to pollution events*			*Alterations to water quality due to changes in water chemistry*			*In combination effects*					
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
1110 Sandbanks which are slightly covered by sea water all the time	~~a~~ ~~✓~~ A ✓	~~b~~ ~~X~~ B ❹		~~c~~ ~~X~~ C ❹	~~d~~ ~~✓~~ D ✓		~~e~~ ~~✓~~ E ✓	~~f~~ ~~✓~~ F ✓				

Name of European site and designation: The Wash and North Norfolk Coast SAC	
EU Code: UK17075	
Distance to Proposed Development: ~~59.57km~~70.3km	
European site features	**Likely effects of Proposed Development**

Effect	*Alterations to water quality due to pollution events*			*Alterations to water quality due to changes in water chemistry*			*In combination effects*					
1140 Mudflats and sandflats not covered by seawater at low tide	a A ✓	b B 4		c C 4	d D ✓		e E ✓	f F ✓				
1160 Large shallow inlets and bays	a A ✓	b B 4		c C 4	d D ✓		e E ✓	f F ✓				
1170 Reefs	a A ✓	b B 4		c C 4	d D ✓		e E ✓	f F ✓				
1310 *Salicornia* and other annuals colonizing mud and sand	a A ✓	b B 4		c C 4	d D ✓		e E ✓	f F ✓				
1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	a A ✓	b B 4		c C 4	d D ✓		e E ✓	f F ✓				
1420 Mediterranean and thermo-Atlantic	a ✓	b ✗		c ✗	d ✓		e ✓	f ✓				

Name of European site and designation: The Wash and North Norfolk Coast SAC
EU Code: UK17075

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Distance to Proposed Development: ~~59.57km~~70.3km												
European site features	**Likely effects of Proposed Development**											
Effect	*Alterations to water quality due to pollution events*			*Alterations to water quality due to changes in water chemistry*			*In combination effects*					
1420 Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	A ✓	B 4		C 4	D ✓		E ✓	F ✓				
1150 Coastal lagoons	~~a~~ ~~✓~~ A ✓	~~b~~ ~~✓~~ B ✓		~~c~~ ~~✗~~ C 4	~~d~~ ~~✓~~ D ✓		~~e~~ ~~✓~~ E ✓	~~f~~ ~~✓~~ F ✓				
1365 Harbour seal *Phoca vitulina*	~~a~~ ~~✓~~ A ✓	~~b~~ ~~✓~~ B ✓		~~c~~ ~~✗~~ C 4	~~d~~ ~~✓~~ D ✓		~~e~~ ~~✓~~ E ✓	~~f~~ ~~✓~~ F ✓				
1355 Otter *Lutra lutra*	~~a~~ ~~✓~~ A ✓	~~b~~ ~~✓~~ B ✓		~~c~~ ~~✗~~ C 4	~~d~~ ~~✓~~ D ✓		~~e~~ ~~✓~~ E ✓	~~f~~ ~~✓~~ F ✓				

Evidence supporting conclusions:

a. Any pollution events during the construction of the new outfall and the decommissioning of the existing outfall have the potential to cause likely significant effects on the downstream qualifying habitats and species of the habitats site. It is noted that the distance between the Proposed Development and the habitats site is not insignificant, but at this stage, we cannot use distance to rule out any LSE. ~~It is noted that the distance between the Proposed Development and the habitats site is not insignificant, but at this stage, we cannot use distance to rule out any LSE.~~

b. During operation, no changes to water quality due to pollution events are predicted. However the possibility of storm discharges causing periodic worsening of water quality/ pollution events; especially with increasing instability of climate and risk of extreme weather events due to climate change. Therefore LSE cannot be ruled out at this stage.

c. During construction, no changes to water quality due to changes in water chemistry are predicted.

d. During operation, no changes to water quality are predicted, as the Proposed Development will be dealing with the same volume of waste water as currently. However the mechanisms preventing this from exceeding predicted levels in the future are unknown, and so there is no certainty of this remaining the case. Therefore LSE cannot be ruled out at this stage.

e. During construction, the effects of other plans, policies and projects acting in combination with the construction-phase effects of the Proposed Development to cause LSE cannot be ruled out.

f. During operation, the changes in water chemistry due to the discharge of waste water may act in-combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying habitats and species of the habitats site cannot be ruled out.

Name of European site and designation: The Wash SPA												
EU Code: UK9008021												
Distance to Proposed Development: ~~59.57km~~70.3km												
European site features	**Likely effects of Proposed Development**											
Effect	*Effects on bird species due to alterations to water quality due to pollution events*			*Effects on bird species due to alterations to water quality due to changes in water chemistry*			*In combination effect~~s~~*					
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Article 4.1 Breeding season bird species (1)	~~a~~A ✓	~~b~~B ✓		~~c~~C 4	~~d~~D ✓		~~e~~E ✓	~~f~~F ✓				
Article 4.1 Overwintering season bird species (2)	~~a~~A ✓	~~b~~B ✓		~~c~~C 4	~~d~~D ✓		~~e~~E ✓	~~f~~F ✓				
Article 4.2 Overwintering bird species (3)	~~a~~A ✓	~~b~~B ✓		~~c~~C 4	~~d~~D ✓		~~e~~E ✓	~~f~~F ✓				
Article 2.4 Assemblages of International Importance (Overwintering) (4)	~~a~~A ✓	~~b~~B ✓		~~c~~C 4	~~d~~D ✓		~~e~~E ✓	~~f~~F ✓				

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1. Article 4.1 Qualification: During the breeding season the area regularly supports: Little tern, *Sterna albifrons*, Common tern, *Sterna hirundo*

2. Article 4.1 Qualification: Over winter the area regularly supports: Bewick's swan, *Cygnus columbianus bewickii*, Bar-tailed godwit, *Limosa lapponica*

3. Article 4.2 Qualification: Over winter the area regularly supports: Pintail, *Anas acuta*, Wigeon, *Anas Penelope*, Gadwall, *Anas strepera*, Pinkfooted goose, *Anser brachyrhynchus*, Turnstone, *Arenaria interpres*, Brent goose, *Branta bernicla bernicla*, Goldeneye, *Bucephala clangula*, Sanderling, *Calidris alba*, Dunlin, *Calidris alpina alpine*, Knot, *Calidris canutus*, Eurasian oystercatcher, *Haematopus ostralegus*, Blacktailed godwit, *Limosa limosa islandica*, Common scoter, *Melanitta nigra*, Curlew, *Numenius arquata*, Grey plover, *Pluvialis squatarola*, Shelduck, *Tadorna tadorna*, Redshank, *Tringa tetanus*

4. Article 4.2 Qualification: An Internationally Important Assemblage of Birds: Over winter the area regularly supports 400367 waterfowl (5 year peak mean 1991/92-1995/96) Including Bewick's swan, *Cygnus columbianus bewickii*, Pink-footed goose, *Anser brachyrhynchus*, Brent goose, *Branta bernicla bernicla*, Shelduck, *Tadorna tadorna*, Wigeon, *Anas Penelope*, Gadwall, *Anas strepera*, Pintail, *Anas acuta*, Common scoter, *Melanitta nigra*, Goldeneye, *Bucephala clangula*, Eurasean oystercatcher, *Haematopus ostralegus*, Grey plover, *Pluvialis squatarola*, Knot, *Calidris canutus*, Sanderling, *Calidris alba*, Dunlin, *Calidris alpina alpine*, Black-tailed godwit, *Limosa limosa islandica*, Bar-tailed godwit, *Limosa lapponica*, Curlew, *Numenius arquata*, Redshank, *Tringa tetanus*, Turnstone, *Arenaria interpres*

Evidence supporting conclusions:

a. Any pollution events during the construction of the new outfall and the decommissioning of the existing outfall have the potential to cause likely significant effects on the downstream qualifying species of the habitats site. Pollution could affect the individuals themselves, their food source/prey and/or their habitats used for foraging, roosting etc. It is noted that the distance between the Proposed Development and the habitats site is not insignificant, but at this stage, we cannot use distance to rule out any LSE.

b. During operation, no changes to water quality due to pollution events are predicted. However, the possibility of storm discharges causing periodic worsening of water quality/ pollution events; especially with increasing instability of climate and risk of extreme weather events due to climate change. Therefore LSE cannot be ruled out at this stage.

c. During construction, no changes to water quality due to changes in water chemistry are predicted.

d. During operation, no changes to water quality are predicted, as the Proposed Development will be dealing with the same volume of waste-water as currently. However, the mechanisms preventing this from exceeding predicted levels in the future are unknown, and so there is no certainty of this remaining the case. Therefore, LSE cannot be ruled out at this stage.

e. During construction, the effects of other plans, policies and projects acting in combination with the construction-phase effects of the Proposed Development to cause LSE cannot be ruled out.

f. During operation, the changes in water chemistry due to the discharge of waste-water may act in-combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying habitats and species of the habitats site cannot be ruled out.

Name of European site and designation: The Wash Ramsar Site												
EU Code: UK11072												
Distance to Proposed Development: ~~59.57km~~70.3km												
European site features	**Likely effects of Proposed Development**											
Effect	*Effects on qualifying criteria due to alterations to water quality due to pollution events*			*Effects on qualifying criteria due to alterations to water quality due to changes in water chemistry*			*In combination effects*					
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Ramsar criterion 1 – habitats present	~~a~~✓A ✓	~~b~~✓B ✓		~~c~~✗C ❹	~~d~~✓D ✓		~~e~~✓E ✓	~~f~~✓F ✓				
Ramsar criterion 3 – ineter-relationships between habitats	~~a~~✓A ✓	~~b~~✓B ✓		~~c~~✗C ❹	~~d~~✓D ✓		~~e~~✓E ✓	~~f~~✓F ✓				
Ramsar criterion 5 – Species with peak ~~counts in winter, 292541 waterfowl~~	~~a~~✓A ✓	~~b~~✓B ✓		~~c~~✗C ❹	~~d~~✓D ✓		~~e~~✓E ✓	~~f~~✓F ✓				
~~Ramsar criterion 6 – Species with peak counts in spring/autumn~~	~~a~~✓	~~b~~✓		~~c~~✗	~~d~~✓		~~e~~✓	~~f~~✓				

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Name of European site and designation: The Wash Ramsar Site												
EU Code: UK11072												
Distance to Proposed Development: ~~59.57km~~70.3km												
European site features	**Likely effects of Proposed Development**											
Effect	*Effects on qualifying criteria due to alterations to water quality due to pollution events*			*Effects on qualifying criteria due to alterations to water quality due to changes in water chemistry*			*In combination effects*					
counts in winter, 292541 waterfowl												
Ramsar criterion 6 Species with peak counts in spring/autumn	A ✓	B ✓		C ❹	D ✓		E ✓	F ✓				
Ramsar criterion 6 - Species with peak counts in winter	~~a✓~~A ✓	~~b✓~~B ✓		~~c✗~~C ❹	~~d✓~~D ✓		~~e✓~~E ✓	~~f✓~~F ✓				

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Ramsar criterion 6 for future consideration - Species with peak counts in spring/autumn	a ✓ A ✓	b ✓ B ✓		c ✗ C 4	d ✓ D ✓		e ✓ E ✓	f ✓ F ✓				
Ramsar criterion 6 for future consideration - ~~Species with peak counts in winter~~	a ✓ A ✓	b ✓ B ✓		c ✗ C 4	d ✓ D ✓		e ✓ E ✓	f ✓ F ✓				
Name of European site and designation: The Wash Ramsar Site												
EU Code: UK11072												
Distance to Proposed Development: 70.3km												
European site features	Likely effects of Proposed Development											
Effect	*Effects on qualifying criteria due to alterations to water quality due to pollution events*			*Effects on qualifying criteria due to alterations to water quality due to changes in water chemistry*			*In combination effects*					
Species with peak counts in winter												

Evidence supporting conclusions:

a. Any pollution events during the construction of the new outfall and the decommissioning of the existing outfall have the potential to cause likely significant effects on the downstream qualifying species of the habitats site. Pollution could affect the individuals themselves, their

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food source/prey and/or their habitats used for foraging, roosting etc. It is noted that the distance between the Proposed Development and the habitats site is not insignificant, but at this stage, we cannot use distance to rule out any LSE.

b. During operation, no changes to water quality due to pollution events are predicted. However, the possibility of storm discharges causing periodic worsening of water quality/ pollution events; especially with increasing instability of climate and risk of extreme weather events due to climate change. Therefore, LSE cannot be ruled out at this stage.

c. During construction, no changes to water quality due to changes in water chemistry are predicted.

d. During operation, no changes to water quality are predicted, as the Proposed Development will be dealing with the same volume of waste-water as currently. However, the mechanisms preventing this from exceeding predicted levels in the future are unknown, and so there is no certainty of this remaining the case. Therefore, LSE cannot be ruled out at this stage.

e. During construction, the effects of other plans, policies and projects acting in combination with the construction-phase effects of the Proposed Development to cause LSE cannot be ruled out.

f. During operation, the changes in water chemistry due to the discharge of waste-water may act in-combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying habitats and species of the habitats site cannot be delete empty pages ruled out.

Name of European site and designation: Ouse Washes SAC	
EU Code: UK001~~4782~~3011	
Distance to Proposed Development: ~~4.72km~~14.1 km	
European site features	Likely effects of Proposed Development

Effect	*Alterations to water quality due to pollution events*			*Alterations to water quality due to changes in water chemistry*			*Alterations to water quantity*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Annex II species – Spined loach (*Cobitis taenia*)	**A** ✓	**B** ✓		**C** ❹	**D** ✓		**E** ❹	**F** ❹		**G** ✓	**H** ✓	

Evidence supporting conclusions:

a. Any pollution events during the construction of the new outfall and the decommissioning of the existing outfall have the potential to cause likely significant effects on the downstream qualifying habitats and species of the habitats site. It is noted that the distance between the Proposed Development and the habitats site is not insignificant, but at this stage, we cannot use distance to rule out any LSE.

b. During operation, no changes to water quality due to pollution events are predicted. However, the possibility of storm discharges causing periodic worsening of water quality/ pollution events; especially with increasing instability of climate and risk of extreme weather events due to climate change. Therefore, LSE cannot be ruled out at this stage.

c. Aside from potential changes to water quality due to pollution events, no changes to water chemistry are predicted during the construction phase, that could affect the qualifying habitats or species.

d. During operation, no changes to water quality are predicted, as the Proposed Development will be dealing with the same volume of waste-water as currently. However, the mechanisms preventing this from exceeding predicted levels in the future are unknown, and so there is no certainty of this remaining the case. Therefore, LSE cannot be ruled out at this stage.

e. During construction, no alterations to water quantity due to the Proposed Development are predicted.

f. During operation, no alterations to water quantity due to the Proposed Development are predicted.

g. During operation, the changes in water chemistry due to the pollution events may act in-combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying species of the qualifying habitats, and/or qualifying species, their food source/prey and/or their habitats cannot be ruled out.

h. During operation, the changes in water chemistry due to the discharge of waste water may act in-combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying species of the qualifying habitats, and/or qualifying species, their food source/prey and/or their habitats cannot be ruled out until it is known how the plant will operate

at predicted levels and control mechanisms if this is exceeded. For example, the increase in water discharged from the Proposed Development may increase due to plans such as the large development of housing etc at Waterbeach, which will feed into the Proposed Development.

Name of European site and designation: Ouse Washes SPA												
EU Code: UK9008041												
Distance to Proposed Development: 14.1 km												
European site features	**Likely effects of Proposed Development**											
Effect	*Effects on bird species due to alterations to water quality due to pollution events*			*Effects on bird species due to alterations to water quality due to changes in water chemistry*			*In combination effects*					
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Article 4.1 Breeding season bird species (1)	**A** ✓	**B** ✓		**C** ❹	**D** ✓		**E** ✓	**F** ✓				
Article 4.1 Overwintering season bird species (2)	**A** ✓	**B** ✓		**C** ❹	**D** ✓		**E** ✓	**F** ✓				
Article 4.2 Overwintering bird species (3)	**A** ✓	**B** ✓		**C** ❹	**D** ✓		**E** ✓	**F** ✓				

Article 4.2 Assemblages of International Importance (Overwintering) (4)	A ✓	B ✓		C ❹	D ✓		E ✓	F ✓				

Ouse Washes qualifies under Article 4.1 (79/409/EEC) because over winter the area regularly supports 1.6% of the GB population of Northern harrier (*Circus cyaneus*), 64.4% of the GB population of Tundra Swan (*Cygnus columbianus bewickii*), 17.2% of the GB population of Whooper swan (*Cygnus cygnus*) and 19.6% of the GB population of Ruff (*Philomachus pugnax*).

Ouse Washes qualifies under Article 4.2 qualification (79/409/EEC) because during the breeding season the area regularly supports 15.5% of the GB population of Northern shoveler (*Anas clypeata*), 0.9% of the GB population of Mallard (*Anas platyrhynchos*), 93.3% of the GB population of Garganey (*Anas querquedula*), 14.4% of the GB population of Gadwall (*Anas strepera*) and 89.7% of the GB population of Blacktailed Godwit (*Limosa limosa*).

Over winter the area regularly supports 2.9% of the total population of Northern pintail (*Anas acuta*), 1.7% of the total population of Northern shoveler (*Anas clypeata*), 0.8% of the total population of Eurasian teal (*Anas crecca*), 2.4% of the total population of Eurasian wigeon (*Anas Penelope*), 4.2% of the GB population of Gadwall (*Anas strepera*), 7.2% of the GB population of Common pochard (*Aythya farina*), 1.6% of the GB population of Tufted duck (*Aythya fuligula*), 2.4% of the GB population of Mute swan (*Cygnus olor*), 1.9% of the GB population of Eurasian coot (*Fulica atra*) and 2% of the GB population of Great cormorant (*Phalacrocorax carbo*).

Ouse Washes qualifies under Article 4.2 qualification (79/409/EEC): an internationally important assemblage of birds because over winter the area regularly supports 64428 waterfowl including Great cormorant (*Phalacrocorax carbo*), Tundra swan (*Cygnus columbianus bewickii*), Whooper swan (*Cygnus cygnus*), Eurasian wigeon (*Anas Penelope*) , Gadwall (*Anas strepera*), Eurasian teal (*Anas crecca*), Northern pintail (*Anas acuta*), Northern shoveler (*Anas clypeata*), Common pochard (*Aythya farina*), Tufted duck (*Aythya fuligula*), Eurasian coot (*Fulica atra*) and Ruff (*Philomachus pugnax*).

Evidence supporting conclusions:

a. Any pollution events during the construction of the new outfall and the decommissioning of the existing outfall have the potential to cause likely significant effects on the downstream qualifying ~~habitats and~~ species of the habitats site. Pollution could affect the individuals

themselves, their food source/prey and/or their habitats used for foraging, roosting etc. It is noted that the distance between the Proposed Development and the habitats site is not insignificant, but at this stage, we cannot use distance to rule out any LSE.

b. During operation, no changes to water quality due to pollution events are predicted. However, the possibility of storm discharges causing periodic worsening of water quality/ pollution events; especially with increasing instability of climate and risk of extreme weather events due to climate change. Therefore, LSE cannot be ruled out at this stage.

c. ~~Aside from potential~~During construction, no changes to water quality due to ~~pollution events, no~~ changes ~~to~~in water chemistry are predicted.

d. During operation, no changes to water quality are predicted, as the Proposed Development will be dealing with the same volume of waste ~~-~~water as currently. However, the mechanisms preventing this from exceeding predicted levels in the future are unknown, and so there is no certainty of this remaining the case. Therefore, LSE cannot be ruled out at this stage.

e. During construction, the effects of other plans, policies and projects acting in combination with the construction-phase effects of the Proposed Development to cause LSE cannot be ruled out.

f. During operation, the changes in water chemistry due to the ~~pollution events~~discharge of wastewater may act in-combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying habitats and species of the habitats site cannot be ruled out.

Name of European site and designation: Ouse Washes Ramsar Site												
EU Code: UK11051												
Distance to Proposed Development: 14.1 km												
European site features	**Likely effects of Proposed Development**											
Effect	*Effects on qualifying criteria due to alterations to water quality due to pollution events*			*Effects on qualifying criteria due to alterations to water quality due to changes in water chemistry*			*In combination effects*					
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Ramsar criterion 1: The site is one of the most extensive areas of seasonally-flooding washland of its type in Britain.	**A** ✓	**B** ✓		**C** 4	**D** ✓		**E** ✓	**F** ✓				

Ramsar Criterion 2: The site supports several nationally scarce plants. Invertebrate records indicate that the site holds relict fenland fauna, including the British Red Data Book species large darter dragonfly Libellula fulva and the rifle beetle Oulimnius major. The site also supports a diverse assemblage of nationally rare breeding waterfowl associated with seasonally-flooding wet grassland.	A ✓	B ✓		C ❹	D ✓		E ✓	F ✓				
Name of European site and designation: Ouse Washes Ramsar Site												
EU Code: UK11051												
Distance to Proposed Development: 14.1 km												
European site features	**Likely effects of Proposed Development**											
Effect	*Effects on qualifying criteria due to alterations to water quality due to pollution events*			*Effects on qualifying criteria due to alterations to water quality due to changes in water chemistry*			*In combination effects*					
Ramsar criterion 5: Assemblages of international importance: Species with peak counts in winter: 59133 waterfowl (5 year peak mean 1998/99-2002/2003)	A ✓	B ✓		C ❹	D ✓		E ✓	F ✓				

Ramsar criterion 6: Species/populations identified subsequent to designation for possible future consideration.	A ✓	B ✓		C ❹	D ✓		E ✓	F ✓				

Evidence supporting conclusions:

a. Any pollution events during the construction of the new outfall and the decommissioning of the existing outfall have the potential to cause likely significant effects on the downstream qualifying species of the habitats site. Pollution could affect the individuals themselves, their food source/prey and/or their habitats used for foraging, roosting etc. It is noted that the distance between the Proposed Development and the habitats site is not insignificant, but at this stage, we cannot use distance to rule out any LSE.

b. During operation, no changes to water quality due to pollution events are predicted. However, the possibility of storm discharges causing periodic worsening of water quality/ pollution events; especially with increasing instability of climate and risk of extreme weather events due to climate change. Therefore, LSE cannot be ruled out at this stage.

c. During construction, no changes to water quality due to changes in water chemistry are predicted.

d. During operation, no changes to water quality are predicted, as the Proposed Development will be dealing with the same volume of wastewater as currently. However, the mechanisms preventing this from exceeding predicted levels in the future are unknown, and so there is no certainty of this remaining the case. Therefore, LSE cannot be ruled out at this stage.

e. During construction, the effects of other plans, policies and projects acting in combination with the construction-phase effects of the Proposed Development to cause LSE cannot be ruled out.

f. During operation, the changes in water chemistry due to the discharge of waste-water may act in-combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying habitats and species of the habitats site cannot be ruled out.

~~Mott MacDonald Cambridge Waste Water Treatment Plant Relocation Project Habitat Regulations Assessment Screening Report~~

C. Habitats Sites Citations/Data Forms

STANDARD DATA FORM for sites within the 'UK national site network of European sites'

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the SPA homepage and SAC homepage on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

https://jncc.gov.uk/

NATURA 2000 - STANDARD DATA FORM

**For Special Protection Areas (SPA),
Proposed Sites for Community Importance
(pSCI), Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)**

SITE **UK0030037**

SITENAME **Devil`s Dyke**

TABLE OF CONTENTS

1. SITE IDENTIFICATION

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1.1 Type	1.2 Site code
B	UK0030037

1.3 Site name

Devil`s Dyke

1.4 First Compilation date	1.5 Update date
1998-03	2015-12

1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee

Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY **Email:**

Date site proposed as SCI:	1998-03
Date site confirmed as SCI:	2004-12
Date site designated as SAC:	2005-04

National legal reference of SAC designation:	Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010 (http://www.legislation.gov.uk/uksi/2010/490/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	**Latitude**
0.358888889	52.23361111

2.2 Area [ha]:
7.68

2.3 Marine area [%]
0.0

2.4 Sitelength [km]:
0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKH1	East Anglia

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
6210	X		7.68	0	G	A	C	A	A

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N09	100.0
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: basic,limestone 2 Terrestrial: Geomorphology and landscape: lowland

4.2 Quality and importance

Semi-natural dry grasslands and scrubland facies: on calcareous substrates (Festuco-Brometalia) for which this is considered to be one of the best areas in the United Kingdom. which is considered to be the priority sub-type: ?important orchid sites?.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts		
Rank	Threats and pressures [code]	Pollution (optional [code]
H	K02	
H	H04	

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	A02		I

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification, T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://publications.naturalengland.org.uk/category/6490068894089216

http://publications.naturalengland.org.uk/category/3212324
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0				

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

- [ ] Yes
- [ ] No, but in preparation
- [X] No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the official European Union guidelines for the Standard Data Form (also referencing the relevant page number).

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar)	53

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57

9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representatively	57
B	Good representatively	57
C	Significant representatively	57
D	Non-significant presence representatively	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code

BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65

C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65
CODE	**DESCRIPTION**	**PAGE NO**
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65

L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (GB)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area	67
IN09	Special Area of Conservation	67

STANDARD DATA FORM for sites within the 'UK national site network of European sites'

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the SPA homepage and SAC homepage on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

https://jncc.gov.uk/

NATURA 2000 - STANDARD DATA FORM

**For Special Protection Areas (SPA),
Proposed Sites for Community Importance
(pSCI), Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)**

SITE **UK0030331**

SITENAME **Eversden and Wimpole Woods**

TABLE OF CONTENTS

1. SITE IDENTIFICATION

1.1 Type	1.2 Site code Back to top
B	UK0030331

1.3 Site name

Eversden and Wimpole Woods

1.4 First Compilation date	1.5 Update date
2004-01	2015-12

1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee

Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY **Email:**

Date site proposed as SCI:	2004-01
Date site confirmed as SCI:	2004-12
Date site designated as SAC:	2005-04

National legal reference of SAC designation:	Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010 (http://www.legislation.gov.uk/uksi/2010/490/contents/made).

2. SITE LOCATION

Back to top

2.1 Site-centre location [decimal degrees]:

Longitude	**Latitude**
-0.034722222	52.15888889

2.2 Area [ha]:	**2.3 Marine area [%]**
66.22	0.0

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKH1	East Anglia

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

Back to top

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size Min	Size Max	Unit	Cat.	D.qual.	A|B|C|D Pop.	A|B|C Con.	A|B|C Iso.	A|B|C Glo.
M	1308	Barbastella barbastellus			p	11	50	i		M	C	B	B	B

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N16	100.0
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: clay,basic 2 Terrestrial: Geomorphology and landscape: lowland

4.2 Quality and importance

Barbastella barbastellus for which this is considered to be one of the best areas in the United Kingdom.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts		
Rank	Threats and pressures [code]	Pollution (optional [code]
H	U	
H	M02	
H	H04	
H	B02	

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification, T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://publications.naturalengland.org.uk/category/6490068894089216

http://publications.naturalengland.org.uk/category/3212324
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0				

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation: Natural England
Address:
Email:

6.2 Management Plan(s):

An actual management plan does exist:

- [ ] Yes
- [ ] No, but in preparation
- [X] No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the official European Union guidelines for the Standard Data Form (also referencing the relevant page number).

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar)	53

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57

9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representatively	57
B	Good representatively	57
C	Significant representatively	57
D	Non-significant presence representatively	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code
BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
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A02	Modification of cultivation practices	65
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A05	Livestock farming and animal breeding (without grazing)	65
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B03	Forest exploitation without replanting or natural regrowth	65
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B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
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C02	Exploration and extraction of oil or gas	65
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CODE	**DESCRIPTION**	**PAGE NO**
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F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
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L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
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XO	Threats and pressures from outside the Member State	65

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NATURA 2000 - STANDARD DATA FORM

**For Special Protection Areas (SPA),
Proposed Sites for Community Importance
(pSCI), Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)**

SITE **UK0014782**

SITENAME **Fenland**

TABLE OF CONTENTS

1. SITE IDENTIFICATION

1.1 Type	1.2 Site code Back to top
B	UK0014782

1.3 Site name

Fenland

1.4 First Compilation date	1.5 Update date
1995-06	2015-12

1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee

Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY **Email:**

Date site proposed as SCI:	1995-06
Date site confirmed as SCI:	2004-12
Date site designated as SAC:	2005-04

National legal reference of SAC designation:	Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010 (http://www.legislation.gov.uk/uksi/2010/490/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	**Latitude**
0.278888889	52.30638889

2.2 Area [ha]:	**2.3 Marine area [%]**
619.25	0.0

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKH1	East Anglia

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
6410			17.96	0	G	A	C	A	B
7210	X		24.15	0	G	A	B	A	B

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size Min	Size Max	Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
											Pop.	Con.	Iso.	Glo.
F		Cobitis 1149 C taenia			p					P	DD C		C	C
A	1166	Triturus cristatus			p	101	250	i		M	C	B	C	C

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N06	5.0
N15	5.0
N07	70.0
N16	20.0
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: basic,peat 2 Terrestrial: Geomorphology and landscape: lowland,floodplain

4.2 Quality and importance

Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) for which this is considered to be one of the best areas in the United Kingdom. Calcareous fens with Cladium mariscus and species of the Caricion davallianae for which this is considered to be one of the best areas in the United

Kingdom. which is considered to be rare as its total extent in the United Kingdom is estimated to be less than 1000 hectares. Cobitis taenia for which the area is considered to support a significant presence. Triturus cristatus for which the area is considered to support a significant presence.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	H02		B
H	H04		B
H	J02		B

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	A04		I
H	D05		I
H	A02		I

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification, T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://publications.naturalengland.org.uk/category/6490068894089216

http://publications.naturalengland.org.uk/category/3212324
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK01	93.0	UK04	100.0		

6. SITE MANAGEMENT

Back to top

6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

☐	Yes
☐	No, but in preparation
X	No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the official European Union guidelines for the Standard Data Form (also referencing the relevant page number).

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar)	53

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57

9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representatively	57
B	Good representatively	57
C	Significant representatively	57
D	Non-significant presence representatively	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code
BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65

C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65
CODE	**DESCRIPTION**	**PAGE NO**
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65

L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (GB)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area	67
IN09	Special Area of Conservation	67

STANDARD DATA FORM for sites within the 'UK national site network of European sites'

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the SPA homepage and SAC homepage on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

https://jncc.gov.uk/

NATURA 2000 - STANDARD DATA FORM

**For Special Protection Areas (SPA),
Proposed Sites for Community Importance
(pSCI), Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)**

SITE **UK0017075**

SITENAME **The Wash and North Norfolk Coast**

TABLE OF CONTENTS

1. SITE IDENTIFICATION

1.1 Type	1.2 Site code Back to top
B	UK0017075

1.3 Site name

The Wash and North Norfolk Coast

1.4 First Compilation date	1.5 Update date
1996-10	2015-12

1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee

Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY **Email:**

Date site proposed as SCI:	1996-10
Date site confirmed as SCI:	2004-12
Date site designated as SAC:	2005-04

National legal reference of SAC designation:	Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010 (http://www.legislation.gov.uk/uksi/2010/490/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	**Latitude**
0.318055556	52.93694444

2.2 Area [ha]:	**2.3 Marine area [%]**
107718.0	94.3

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKH1	East Anglia
UKF3	Lincolnshire

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
1110			44164.38	0	M	A	B	B	A
1140			18312.06	0	M	A	B	A	A
1150	X		21.54	0	G	C	C	B	C
1160			42010.02	0	M	A	B	B	A
1170				0		A	C	A	A
1310			430.87	0	P	A	A	A	A
1320				0		D			
1330			2800.67	0	P	A	B	A	A
1420			107.72	0	P	A	A	A	A

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
M	1364	Halichoerus grypus			p				P	DD	D			
M	1355	Lutra lutra			p				V	DD	C	C	C	C
M	1365	Phoca vitulina			p	1001	10000	i		M	B	B	C	A

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
-
-
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
  Abundance categories (Cat.): C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
  Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N01	51.0
N02	46.0
N03	3.0
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: sandstone,sand,nutrient-rich,alluvium,mud,clay,shingle 2 Terrestrial: Geomorphology and landscape: coastal 3 Marine: Geology: limestone/chalk,gravel,sand,chert/flint,mud,biogenic reef,peat,shingle 4 Marine: Geomorphology: barrier beach,enclosed coast (including embayment),estuary,subtidal sediments (including sandbank/mudbank),lagoon,intertidal sediments (including sandflat/mudflat),open coast (including bay),shingle bar

4.2 Quality and importance

Sandbanks which are slightly covered by sea water all the time for which this is considered to be one of the best areas in the United Kingdom. Mudflats and sandflats not covered by seawater at low tide for which this is considered to be one of the best areas in the United Kingdom. Coastal lagoons for which the area is considered to support a significant presence. Large shallow inlets and bays for which this is considered to be one of the best areas in the United Kingdom. Reefs for which this is considered to be one of the best areas in the United Kingdom. Salicornia and other annuals colonising mud and sand for which this is considered to be one of the best areas in the United Kingdom. Atlantic salt meadows (Glauco-Puccinellietalia maritimae) for which this is considered to be one of the best areas in the United Kingdom. Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi) for which this is one of only four known outstanding localities in the United Kingdom. which is considered to be rare as its total extent in the United Kingdom is estimated to be less than 1000 hectares. Lutra lutra for which the area is considered to support a significant presence. Phoca vitulina for which this is considered to be one of the best areas in the United Kingdom.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts		
Rank	Threats and pressures [code]	Pollution (optional [code]
H	M01	
H	F02	
H	G01	
H	A02	
H	J02	

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	A04		I
H	A02		I
H	D05		I
H	D05		I
H	G03		I

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification, T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions i = inside, o = outside, b = both

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Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://publications.naturalengland.org.uk/category/6490068894089216

http://publications.naturalengland.org.uk/category/3212324
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	61.4	UK01	2.8	UK00	38.7

6. SITE MANAGEMENT

Back to top

6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

- [ ] Yes
- [ ] No, but in preparation
- [X] No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

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3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
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D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
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B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
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3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
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C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

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WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code
BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65

C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65
CODE	**DESCRIPTION**	**PAGE NO**
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65

L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (GB)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area	67
IN09	Special Area of Conservation	67

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.

2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.

3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

FOR OFFICE USE ONLY.
DD MM YY
Designation date | Site Reference Number

Joint Nature Conservation Committee
Monkstone House
City Road
Peterborough
Cambridgeshire PE1 1JY
UK
Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948
Email: RIS@JNCC.gov.uk

2. Date this sheet was completed/updated: Designated: 30 March 1988

3. Country:
UK (England)

4. Name of the Ramsar site: The Wash

5. Designation of new Ramsar site or update of existing site:

This RIS is for: Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:
a) Site boundary and area:

** Important note: If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site included:
Refer to Annex III of the *Explanatory Notes and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

i) **hard copy** (required for inclusion of site in the Ramsar List): *yes* ☜ -or- *no* ;
ii) **an electronic format** (e.g. a JPEG or ArcView image) Yes
iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** *yes* ☜ -or- *no* ;

b) Describe briefly the type of boundary delineation applied:
e.g. the boundary is the same as an existing protected area (nature reserve, national park etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The site boundary is the same as, or falls within, an existing protected area.

For precise boundary details, please refer to paper map provided at designation

8. Geographical coordinates (latitude/longitude)**:**
52 56 16 N 00 17 12 E

9. General location:
Include in which part of the country and which large administrative region(s), and the location of the nearest large town.
Nearest town/city: King's Lynn

The Wash is located on the east coast of England between the coastal towns of Hunstanton in north Norfolk and Skegness in Lincolnshire.

Administrative region: Lincolnshire; Norfolk

10. Elevation (average and/or max. & min.) (metres)**:** **11. Area** (hectares)**:** 62211.66

Min. -3
Max. 4
Mean 0

12. General overview of the site:
Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The Wash is the largest estuarine system in Britain. It is fed by the rivers Witham, Welland, Nene and Great Ouse. There are extensive saltmarshes, intertidal banks of sand and mud, shallow waters and deep channels. It is the most important staging post and over-wintering site for migrant wildfowl and wading birds in eastern England. It supports a valuable commercial fishery for shellfish and also an important nursery area for flatfish. It holds one of the North Sea's largest breeding populations of common seal *Phoca vitulina* and some grey seals *Halichoerus grypus*. The sublittoral area supports a number of different marine communities including colonies of the reef-building polychaete worm *Sabellaria spinulosa*.

13. Ramsar Criteria:
Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

1, 3, 5, 6

14. Justification for the application of each Criterion listed in 13 above:
Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification). Ramsar criterion 1

The Wash is a large shallow bay comprising very extensive saltmarshes, major intertidal banks of sand and mud, shallow water and deep channels.

Ramsar criterion 3

Qualifies because of the inter-relationship between its various components including saltmarshes, intertidal sand and mud flats and the estuarine waters. The saltmarshes and the plankton in the estuarine water provide a primary source of organic material which, together with other organic matter, forms the basis for the high productivity of the estuary.

Ramsar criterion 5

Assemblages of international importance:

Species with peak counts in winter:

292541 waterfowl (5 year peak mean 1998/99-2002/2003)

Ramsar criterion 6 – species/populations occurring at levels of international importance.

Qualifying Species/populations (as identified at designation):
Species with peak counts in spring/autumn:

Eurasian oystercatcher , *Haematopus ostralegus ostralegus*, Europe & NW Africa -wintering	15616 individuals, representing an average of 1.5% of the population (5 year peak mean 1998/9-2002/3)
Grey plover , *Pluvialis squatarola*, E Atlantic/W Africa -wintering	13129 individuals, representing an average of 5.3% of the population (5 year peak mean 1998/9-2002/3 - spring peak)
Red knot , *Calidris canutus islandica*, W & Southern Africa (wintering)	68987 individuals, representing an average of 15.3% of the population (5 year peak mean 1998/9-2002/3)
Sanderling , *Calidris alba*, Eastern Atlantic	3505 individuals, representing an average of 2.8% of the population (5 year peak mean 1998/9-2002/3)
Eurasian curlew , *Numenius arquata arquata*, N. a. arquata Europe (breeding)	9438 individuals, representing an average of 2.2% of the population (5 year peak mean 1998/9-2002/3)
Common redshank , *Tringa totanus totanus*,	6373 individuals, representing an average of 2.5% of the population (5 year peak mean 1998/9-2002/3)
Ruddy turnstone , *Arenaria interpres interpres*, NE Canada, Greenland/W Europe & NW Africa	888 individuals, representing an average of 1.7% of the GB population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

Pink-footed goose , *Anser brachyrhynchus*, Greenland, Iceland/UK	29099 individuals, representing an average of 12.1% of the population (5 year peak mean 1998/9-2002/3)
Dark-bellied brent goose, *Branta bernicla bernicla*,	20861 individuals, representing an average of 9.7% of the population (5 year peak mean 1998/9-2002/3)
Common shelduck , *Tadorna tadorna*, NW Europe	9746 individuals, representing an average of 3.2% of the population (5 year peak mean 1998/9-2002/3)
Northern pintail , *Anas acuta*, NW Europe	431 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3)
Dunlin , *Calidris alpina alpina*, W Siberia/W Europe	36600 individuals, representing an average of 2.7% of the population (5 year peak mean 1998/9-2002/3)
Bar-tailed godwit , *Limosa lapponica lapponica*, W Palearctic	16546 individuals, representing an average of 13.7% of the population (5 year peak mean 1998/9-2002/3)

Species/populations identified subsequent to designation for possible future consideration under criterion 6.
Species with peak counts in spring/autumn:

Ringed plover , *Charadrius hiaticula*, Europe/Northwest Africa	1500 individuals, representing an average of 2% of the population (5 year peak mean 1998/9-2002/3)
Black-tailed godwit , *Limosa limosa islandica*, Iceland/W Europe	6849 individuals, representing an average of 19.5% of the population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

European golden plover , *Pluvialis apricaria apricaria*, P. a. altifrons Iceland & Faroes/E Atlantic	22033 individuals, representing an average of 2.3% of the population (5 year peak mean 1998/9-2002/3)
Northern lapwing , *Vanellus vanellus*, Europe breeding	46422 individuals, representing an average of 1.3% of the population (5 year peak mean 1998/9-2002/3)

Contemporary data and information on waterbird trends at this site and their regional (sub-national) and national contexts can be found in the Wetland Bird Survey report, which is updated annually. See www.bto.org/survey/webs/webs-alerts-index.htm. See Sections 21/22 for details of noteworthy species Details of bird species occuring at levels of National importance are given in Section 22

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region: Atlantic

b) biogeographic regionalisation scheme (include reference citation): Council Directive 92/43/EEC

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Soil & geology	cobble, gravel, biogenic reef, neutral, shingle, sand, mud, clay, nutrient-rich, sedimentary, limestone
Geomorphology and landscape	lowland, coastal, shingle bar, subtidal sediments (including sandbank/mudbank), intertidal sediments (including sandflat/mudflat), enclosed coast (including embayment), estuary, lagoon
Nutrient status	eutrophic
pH	circumneutral
Salinity	saline / euhaline
Soil	mainly mineral
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Marham, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/marham.html) Max. daily temperature: 13.8° C Min. daily temperature: 5.7° C Days of air frost: 51.9 Rainfall: 621.3 mm Hrs. of sunshine: 1536.6

General description of the Physical Features:

The Wash is the largest estuarine system in the UK. It is fed by the rivers Witham, Welland, Nene and Great Ouse that drain much of the east Midlands of England. The Wash comprises very extensive saltmarshes, major intertidal banks of sand and mud, shallow waters and deep channels. The eastern end of the site includes low chalk cliffs at Hunstanton.

To the north, the coastal habitats of The Wash are continuous with Gibraltar Point, whilst to the east The Wash adjoins the North Norfolk Coast.

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

The Wash is the largest estuarine system in the UK. It is fed by the rivers Witham, Welland, Nene and Great Ouse that drain much of the east Midlands of England. The Wash comprises very extensive saltmarshes, major intertidal banks of sand and mud, shallow waters and deep channels. The eastern end of the site includes low chalk cliffs at Hunstanton.
To the north, the coastal habitats of The Wash are continuous with Gibraltar Point, whilst to the east The Wash adjoins the North Norfolk Coast.

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

No special values known

19. Wetland types: Marine/coastal wetland

Code	Name	% Area
A	Shallow marine waters	51.7
G	Tidal flats	41
H	Salt marshes	7.2
E	Sand / shingle shores (including dune systems)	0.03
J	Coastal brackish / saline lagoons	0.03

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The intertidal flats of the Wash form one of the largest intertidal areas in Britain and these are predominantly sandy. The flats support high concentrations of marine worms and shellfish. There is an abundant growth of algae and high concentrations of marine invertebrates which provides a food source for over 300,000 wintering wildfowl and supports an important fishery and seal colony. Extensive saltmarshes fringe the bay but much of the older and botanically more diverse saltmarsh has been lost due to a long history of land-claim. Higher level marshes are characterised by *Elytrigia atherica*, *Atriplex portulacoides*, *Suaeda maritima* and *Limonium vulgare*. Where the saltmarsh has been grazed by cattle and wildfowl, there may be extensive lawns of *Puccinellia* spp. Abundant *Aster tripolium* occurs at lower levels whilst *Salicornia* spp. and *Spartina anglica* are the principal colonising species. Ecosystem services

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Nationally important species occurring on the site.

Higher plants.

Salicornia spp.

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22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Birds

Species currently occurring at levels of national importance:

Species regularly supported during the breeding season:

Lesser black-backed gull , *Larus fuscus graellsii*, W Europe/Mediterranean/W Africa	1378 apparently occupied nests, representing an average of 1.2% of the GB population (Seabird 2000 Census)
Common tern , *Sterna hirundo hirundo*, N & E Europe	152 pairs, representing an average of 1.4% of the GB population (Count as at 1993)
Little tern , *Sterna albifrons albifrons*, W Europe	33 pairs, representing an average of 1.6% of the GB population (5 year mean 1992-1996)

Species with peak counts in spring/autumn:

Great cormorant , *Phalacrocorax carbo carbo*, NW Europe	367 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3)
Pied avocet , *Recurvirostra avosetta*, Europe/Northwest Africa	422 individuals, representing an average of 12.4% of the GB population (5 year peak mean 1998/9-2002/3)
Ruff , *Philomachus pugnax*, Europe/W Africa	25 individuals, representing an average of 3.5% of the GB population (5 year peak mean 1998/9-2002/3)
Whimbrel , *Numenius phaeopus*, Europe/Western Africa	191 individuals, representing an average of 6.3% of the GB population (5 year peak mean 1998/9-2002/3)
Common greenshank , *Tringa nebularia*, Europe/W Africa	376 individuals, representing an average of 62.9% of the GB population (5 year peak mean 1998/9-2002/3)
Lesser black-backed gull , *Larus fuscus graellsii*,	1993 individuals, representing an average of 3.2% of the GB population (5 year peak mean 1998/92002/3)

Species with peak counts in winter:

Red-throated diver , *Gavia stellata*, NW Europe	55 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)
Bean goose , *Anser fabalis fabalis*, NW Europe wintering	7 individuals, representing an average of 1.7% of the GB population (Source period not collated)
Greater white-fronted goose , *Anser albifrons albifrons*, NW Europe	100 individuals, representing an average of 1.7% of the GB population (Source period not collated)
Common eider , *Somateria mollissima mollissima*, NW Europe	1109 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3)
Black (common) scoter , *Melanitta nigra nigra*,	1190 individuals, representing an average of 2.3% of the GB population (5 year peak mean 1998/9-2002/3)

Spotted redshank , *Tringa erythropus*, Europe/W Africa	54 individuals, representing an average of 39.7% of the GB population (5 year peak mean 1998/9-2002/3)
Black-headed gull , *Larus ridibundus*, N & C Europe	31403 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3)

Species Information

Species occurring at levels of international importance.

Mammals.

Phoca vitulina

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23. Social and cultural values:

Describe if the site has any general social and/or cultural values e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values. Fisheries production

Livestock grazing
Non-consumptive recreation
Scientific research
Sport hunting
Transportation/navigation

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? No

If Yes, describe this importance under one or more of the following categories:

i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:

ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:

iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:

iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

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24. Land tenure/ownership:

Ownership category	On-site	Off-site
Non-governmental organisation (NGO)	+	+
Local authority, municipality etc.	+	+
National/Crown Estate	+	+
Private	+	+
Public/communal	+	+
Other	+	+

25. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	
Recreation	+	
Current scientific research	+	
Fishing: (unspecified)	+	
Fishing: commercial	+	+
Marine/saltwater aquaculture	+	
Gathering of shellfish	+	
Bait collection	+	
Arable agriculture (unspecified)		+
Permanent arable agriculture		+
Grazing (unspecified)	+	
Rough or shifting grazing	+	
Hunting: recreational/sport	+	+
Harbour/port	+	+
Flood control	+	+
Irrigation (incl. agricultural water supply)		+
Transport route	+	
Domestic water supply		+
Urban development		+
Non-urbanised settlements		+
Military activities	+	

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

1. *Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.*
2. *Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.*

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
No factors reported	NA				

For category 2 factors only. What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?
Is the site subject to adverse ecological change? NO

27. Conservation measures taken:

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

Conservation measure	On-site	Off-site
Site/ Area of Special Scientific Interest (SSSI/ASSI)	+	
National Nature Reserve (NNR)	+	
Special Protection Area (SPA)	+	
Land owned by a non-governmental organisation for nature conservation	+	
Management agreement	+	
Site management statement/plan implemented	+	
Other	+	+
Special Area of Conservation (SAC)	+	

b) Describe any other current management practices:
The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes, and is overseen by the relevant statutory conservation agency. Details of the precise management practises are given in these documents.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

No information available

29. Current scientific research and facilities:

e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Fauna.
Numbers of migratory and wintering wildfowl and waders are monitored annually as part of the national Wetland Birds Survey (WeBS) organised by the British Trust for Ornithology, Wildfowl & Wetlands Trust, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.
Bird Studies by the Wash Wader Ringing Group.
Waterfowl and invertebrate ecology studies by the Centre for Ecology and Hydrology.
Seal population studies by the Sea Mammal Research Unit.
Annual monitoring of shellfish stocks by Eastern Sea Fisheries Joint Committee.

Environment.
Sediment types and distribution, processes, erosion, tides and currents have been studied by a variety of institutions and are expected to continue.
The shoreline and water quality is routinely monitored by the Environment Agency.
Land-Ocean Interaction Study by the Natural Environment Research Council (1992-98).

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

There are two field centres. Lincolnshire County Council run the Freiston field centre and Lincolnshire Wildlife Trust run the Gibraltar Point Field Station.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Activities, Facilities provided and Seasonality.

Land based recreation is chiefly limited to wildfowling, bird watching and walking along the sea banks around two-thirds of the site. The Peter Scott Walk between the outlets of the Rivers Nene and Great Ouse, has been promoted by the local authorities. Some access points to the shore have also been improved by local authorities. Snettisham Bird Reserve provides facilities for bird watching. Traditional beach recreational activities occur between Hunstanton and Snettisham.

Facilities for pleasure craft are limited to some mud berths and stage moorings on the tidal rivers and at the ports of Kings Lynn and Boston. The principal locations for sailing boats are found at the Skegness Yacht Club at Wainfleet and Snettisham Beach Sailing Club and Hunstanton.

Other water sports including windsurfing, water-skiing and power boats occur mainly at Hunstanton and Heacham on the Norfolk shore. Zoning of watercraft is managed by the local authority. Recreational activities are subject to the Wash Estuary Management Plan but are not generally seen as detrimental to the site.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.

Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs, European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6EB

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House, Northminster Road, Peterborough, PE1 1UA, UK

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see **15** above), list full reference citation for the scheme.

Site-relevant references

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Please return to: **Ramsar Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
Telephone**: +41 22 999 0170** • Fax: **+41 22 999 0169** • email: **ramsar@ramsar.org**

STANDARD DATA FORM for sites within the 'UK national site network of European sites'

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the SPA homepage and SAC homepage on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

https://jncc.gov.uk/

NATURA 2000 - STANDARD DATA FORM

**For Special Protection Areas (SPA),
Proposed Sites for Community Importance
(pSCI), Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)**

SITE **UK9008021**

SITENAME **The Wash**

TABLE OF CONTENTS

1. SITE IDENTIFICATION

1.1 Type	1.2 Site code Back to top
A	UK9008021

1.3 Site name

The Wash

1.4 First Compilation date	1.5 Update date
1988-03	2015-12

1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee

Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY **Email:**

1.7 Site indication and designation / classification dates

Date site classified as SPA:	1988-03
National legal reference of SPA designation	Regulations 12A and 13-15 of the Conservation Habitats and Species Regulations 2010, (http://www.legislation.gov.uk/uksi/2010/490/contents/made) as amended by The Conservation of Habitats and Species (Amendment) Regulations 2011 (http://www.legislation.gov.uk/uksi/2011/625/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
0.286666667	52.93777778

2.2 Area [ha]:	2.3 Marine area [%]
62044.14	90.9

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKF3	Lincolnshire
UKH1	East Anglia
UKZZ	Extra-Regio

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment		
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C	
						Min	Max				Pop.	Con.	Iso.
B	A054	Anas acuta			w	923	923	i		G	B		C
B	A050	Anas penelope			w	3241	3241	i		G	C		C
B	A051	Anas strepera			w	71	71	i		G	C		C
B	A040	Anser brachyrhynchus			w	33265	33265	i		G	A		B
B	A169	Arenaria interpres			w	717	717	i		G	C		C
B	A675	Branta bernicla bernicla			w	22248	22248	i		G	A		C
B	A067	Bucephala clangula			w	114	114	i		G	C		C
B	A144	Calidris alba			w	355	355	i		G	C		C
B	A672	Calidris alpina alpina			w	35620	35620	i		G	B		C

B	A143	Calidris canutus			w	186892	186892	i		G	A		C
B	A037	Cygnus columbianus bewickii			w	68	68	i		G	C		C
B	A130	Haematopus ostralegus			w	25651	25651	i		G	B		C
B	A157	Limosa lapponica			w	11250	11250	i		G	A		C
B	A616	Limosa limosa islandica			w	859	859	i		G	B		C
B	A065	Melanitta nigra			w	68	68	i		G	C		C
B	A160	Numenius arquata			w	3835	3835	i		G	B		C
B	A141	Pluvialis squatarola			w	9708	9708	i		G	A		C
B	A195	Sterna albifrons			r	33	33	p		G	C		C
B	A193	Sterna hirundo			r	152	152	p		G	C		C
B	A048	Tadorna tadorna			w	15981	15981	i		G	A		C
B	A162	Tringa totanus			w	2953	2953	i		G	B		C

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
-
-
-

Unit: i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
Abundance categories (Cat.): C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

Species					Population in the site				Motivation					
Group	CODE	Scientific Name	S	NP	Size		Unit	Cat.	Species Annex		Other categories			
					Min	Max		C|R|V|P	IV	V	A	B	C	D
B	WATR	Waterbird assemblage			400367	400367	i						X	

- **Group:** A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M = Mammals, P = Plants, R = Reptiles
- **CODE:** for Birds, Annex IV and V species the code as provided in the reference portal should be used in addition to the scientific name
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
-
-

NP: in case that a species is no longer present in the site enter: x (optional)

Unit: i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Article 12 and 17 reporting, (see reference portal)

-
- **Cat.:** Abundance categories: C = common, R = rare, V = very rare, P = present

Motivation categories: IV, V: Annex Species (Habitats Directive), **A:** National Red List data; **B:** Endemics; **C:** International Conventions; **D:** other reasons

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N03	6.0
N01	55.0
N02	39.0
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: sedimentary,sand,shingle,mud,neutral,clay 2 Terrestrial: Geomorphology and landscape: lowland,coastal 3 Marine: Geology: mud,sand,sedimentary 4 Marine: Geomorphology: estuary,subtidal sediments (including sandbank/mudbank),enclosed coast (including embayment),intertidal sediments (including sandflat/mudflat)

4.2 Quality and importance

ARTICLE 4.1 QUALIFICATION (79/409/EEC) During the breeding season the area regularly supports: Sterna albifrons (Eastern Atlantic - breeding) at least 1.4% of the GB breeding population 5 year mean, 1992-1996 Sterna hirundo (Northern/Eastern Europe - breeding) 1.2% of the GB breeding population Count, as at 1993 Over winter the area regularly supports: Cygnus columbianus bewickii (Western Siberia/North-eastern & North-western Europe) 0.9% of the GB population 5 year peak mean 1991/92-1995/96 Limosa lapponica (Western Palearctic - wintering) 21.4% of the GB population 5 year peak mean 1991/92-1995/96 ARTICLE 4.2 QUALIFICATION (79/409/EEC) Over winter the area regularly supports: Anas acuta (North-western Europe) 1.5% of the population 5 year peak mean 1991/92-1995/96 Anas penelope (Western

Siberia/North-western/North-eastern Europe) 1.2% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Anas strepera (North-western Europe) 0.9% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Anser brachyrhynchus (Eastern Greenland/Iceland/UK) 14.8% of the population 5 year peak mean 1991/92-1995/96 Arenaria interpres (Western Palearctic - wintering) 1.1% of the population 5 year peak mean 1991/92-1995/96 Branta bernicla bernicla (Western Siberia/Western Europe) 7.4% of the population 5 year peak mean 1991/92-1995/96 Bucephala clangula (North-western/Central Europe) 0.7% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Calidris alba (Eastern Atlantic/Western & Southern Africa - wintering) 0.3% of the population 5 year peak mean 1991/92-1995/96 Calidris alpina alpina (Northern Siberia/Europe/Western Africa) 2.6% of the population 5 year peak mean 1991/92-1995/96 Calidris canutus (North-eastern Canada/Greenland/Iceland/North-western Europe) 54.2% of the population 5 year peak mean 1991/92-1995/96 Haematopus ostralegus (Europe & Northern/Western Africa) 2.9% of the population 5 year peak mean 1991/92-1995/96 Limosa limosa islandica (Iceland - breeding) 11.6% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Melanitta nigra (Western Siberia/Western & Northern Europe/North-western Africa) 0.2% of the population in Great Britain 5 year peak mean 1991/92-1995/96 Numenius arquata (Europe - breeding) 1.1% of the population 5 year peak mean 1991/92-1995/96 Pluvialis squatarola (Eastern Atlantic - wintering) 5.8% of the population 5 year peak mean 1991/92-1995/96 Tadorna tadorna (North-western Europe) 5.3% of the population 5 year peak mean 1991/92-1995/96 Tringa totanus (Eastern Atlantic - wintering) 1.7% of the population 5 year peak mean 1991/92-1995/96 ARTICLE 4.2 QUALIFICATION (79/409/EEC): AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF BIRDS Over winter the area regularly supports: 400367 waterfowl (5 year peak mean 1991/92-1995/96) Including: Cygnus columbianus bewickii , Anser brachyrhynchus , Branta bernicla bernicla , Tadorna tadorna , Anas penelope , Anas strepera , Anas acuta , Melanitta nigra , Bucephala clangula , Haematopus ostralegus , Pluvialis squatarola , Calidris canutus , Calidris alba , Calidris alpina alpina , Limosa limosa islandica , Limosa lapponica , Numenius arquata , Tringa totanus , Arenaria interpres

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts				Positive Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]	Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	J02		B	H	A02		I
H	I01		B	H	A04		I
H	A02		I	H	D05		I
H	G01		I	H	D05		I
				H	G03		I

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification, T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://publications.naturalengland.org.uk/category/6490068894089216

http://publications.naturalengland.org.uk/category/3212324
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0	UK01	13.5		

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

- [ ] Yes
- [ ] No, but in preparation
- [X] No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the official European Union guidelines for the Standard Data Form (also referencing the relevant page number).

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar)	53

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57

9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representatively	57
B	Good representatively	57
C	Significant representatively	57
D	Non-significant presence representatively	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code
BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65

C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65
CODE	**DESCRIPTION**	**PAGE NO**
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
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H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
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K03	Interspecific faunal relations	65
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K05	Reduced fecundity/ genetic depression	65

L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (GB)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area	67
IN09	Special Area of Conservation	67

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.

2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.

3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

FOR OFFICE USE ONLY.
DD MM YY
Designation date | Site Reference Number

Joint Nature Conservation Committee
Monkstone House
City Road
Peterborough
Cambridgeshire PE1 1JY
UK
Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948
Email: RIS@JNCC.gov.uk

2. Date this sheet was completed/updated: Designated: 12 September 1995

3. Country:
UK (England)

4. Name of the Ramsar site: Wicken Fen

5. Designation of new Ramsar site or update of existing site:

This RIS is for: Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:
a) Site boundary and area:

** Important note: If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site included:
Refer to Annex III of the *Explanatory Notes and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

i) **hard copy** (required for inclusion of site in the Ramsar List): *yes* ☜ -or- *no* ;
ii) **an electronic format** (e.g. a JPEG or ArcView image) Yes
iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** *yes* ☜ -or- *no* ;

b) Describe briefly the type of boundary delineation applied:
e.g. the boundary is the same as an existing protected area (nature reserve, national park etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The site boundary is the same as, or falls within, an existing protected area.

Ramsar Information Sheet: UK11077 Page 1 of 8 **Wicken Fen**

Produced by JNCC: Version 3.0, 13/06/2008

For precise boundary details, please refer to paper map provided at designation

8. Geographical coordinates (latitude/longitude)**:**
52 18 27 N 00 16 42 E

9. General location:
Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

Nearest town/city: Newmarket

The site lies 10 km north-east of Cambridge, east of the River Cam.

Administrative region: Cambridgeshire

10. Elevation (average and/or max. & min.) (metres)**:** **11. Area** (hectares)**:** 254.39

Min. 0
Max. 1
Mean 1

12. General overview of the site:
Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

This site is a marginal remnant of the original peat fenland of the East Anglian basin. It has been preserved as a flood catchment area and its water level is controlled by sluice gates. The vegetation has a strongly mosaic character due to extensive peat-cutting and different systems of crop exploitation. Areas of the site subjected to frequent cutting have a greater species diversity including many sedges, rushes, spike rushes and marsh orchids with corresponding insect associations. Vegetation invasion by bushes resulting in closed *Frangula* carr, has occurred in the absence of mowing. The dykes, abandoned clay pits and the main lode support many aquatic angiosperms. Wildfowl interests include, mallard, teal, wigeon, shoveler, pochards and tufted duck.

13. Ramsar Criteria:
Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

1, 2

14. Justification for the application of each Criterion listed in 13 above:
Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification). Ramsar criterion 1

One of the most outstanding remnants of the East Anglian peat fens. The area is one of the few which has not been drained. Traditional management has created a mosaic of habitats from open water to sedge and litter fields.

Ramsar criterion 2

The site supports one species of British Red Data Book plant, fen violet *Viola persicifolia*, which survives at only two other sites in Britain. It also contains eight nationally scarce plants and 121 British Red Data Book invertebrates.

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation)**:**

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region: Atlantic

b) biogeographic regionalisation scheme (include reference citation): Council Directive 92/43/EEC

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Soil & geology	neutral, clay, peat
Geomorphology and landscape	lowland
Nutrient status	no information
pH	acidic, alkaline
Salinity	fresh
Soil	mainly organic
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Cambridge, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/cambridge.html) Max. daily temperature: 14.1° C Min. daily temperature: 6.1° C Days of air frost: 41.9 Rainfall: 553.5 mm Hrs. of sunshine: 1501.2

General description of the Physical Features: No information available

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

No information available

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Flood water storage / desynchronisation of flood peaks

19. Wetland types: Inland wetland

Code	Name	% Area
U	Peatlands (including peat bogs swamps, fens)	100

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

To the north of Wicken Lodge is the original peat fen. Here the site supports fen communities of carr and sedge. The carr scrub is largely of alder buckthorn *Frangula alnus*, buckthorn *Rhamnus cathartica*

and sallow over a sparse vegetation of fen plants including the marsh fen *Thelypteris palustris*. The more open areas of sedge fen are typically of tall grasses, saw sedge *Cladium mariscus*, purple moor-grass *Molinia caerulea*, sedges *Carex* spp. and rushes *Juncus* spp. A large number of herbs are associated with this community such as milk parsley *Peucedanum palustre* and yellow loosestrife *Lysimachia vulgaris*. To the south of Wicken Lodge, the area is of rough pastureland, reedbed and pools subject to winter flooding. The dykes, abandoned clay-pits and other watercourses are rich in aquatic plants.

Ecosystem services

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21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Nationally important species occurring on the site.

Higher Plants.

Viola persicifolia, Carex appropinquata, Lathyrus palustris, Myriophyllum verticillatum, Oenanthe fluviatilis, Peucedanum palustre, Potamogeton coloratus, Potamogeton friesii, Potamogeton praelongus

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22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Birds

Species Information None reported

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23. Social and cultural values:

Describe if the site has any general social and/or cultural values e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

Aesthetic
Aquatic vegetation (e.g. reeds, willows, seaweed)
Archaeological/historical site
Environmental education/ interpretation
Livestock grazing
Non-consumptive recreation
Scientific research

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? No

If Yes, describe this importance under one or more of the following categories:

i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:

ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:

iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:

iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

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24. Land tenure/ownership:

Ownership category	On-site	Off-site
Non-governmental organisation (NGO)	+	+
Private	+	+

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25. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	
Recreation	+	
Current scientific research	+	
Collection of non-timber natural products: (unspecified)	+	
Grazing (unspecified)	+	

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26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

1. *Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.*
2. *Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.*

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
Reservoir/barrage/dam impact: flooding	1	Work carried out on the nearby river system to prevent flooding in the 1960s means that the site no longer receives the amount of winter water as it did in the past. This has brought about a lowering of the water table over the past 40 years.	+	+	+

For category 2 factors only. What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?
Is the site subject to adverse ecological change? NO

27. Conservation measures taken:

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

Conservation measure	On-site	Off-site
Site/ Area of Special Scientific Interest (SSSI/ASSI)	+	
National Nature Reserve (NNR)	+	
Land owned by a non-governmental organisation for nature conservation	+	+
Site management statement/plan implemented	+	
Special Area of Conservation (SAC)	+	

b) Describe any other current management practices:

The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes, and is overseen by the relevant statutory conservation agency. Details of the precise management practises are given in these documents.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

No information available

29. Current scientific research and facilities:

e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Flora.

Fen Violet *Viola persicifolia* species recovery programme.
Fen Ragwort *Senecio paludosus* species recovery programme.

Fauna.

Swallowtail *Papilio machaon* species recovery programme.
Long ongoing history of research and monitoring – refer to draft Management Plan 1998–2003 and Friday (1997).

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

School visits by arrangement are led by The National Trust education and interpretation officer. Visiting University and College groups may visit independently. Individuals engaged in research on the Fen must hold a permit.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Activities, Facilities provided and Seasonality.

National Trust visitor centre and shop, nature trails, three hides and 16 km of walking routes. Entry by ticket by permit only (this was adopted in 1980 to help control visitor numbers). Visitors are also managed by 'zoning' parts of the Fen near the entrance, leaving the more remote parts of the site relatively undisturbed. The Fen is open throughout the year from dawn to dusk.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.

Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs, European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6EB

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House, Northminster Road, Peterborough, PE1 1UA, UK

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see **15** above), list full reference citation for the scheme.

Site-relevant references

Bratton, JH (ed.) (1991) *British Red Data Books: 3. Invertebrates other than insects*. Joint Nature Conservation Committee, Peterborough

Colston, A (2004) Wicken Fen – realising the vision. *Ecos*, **25**(3/4), 42-45

Environment Agency (1997) *Wicken Fen water level management plan*. Environment Agency

Friday, L (ed.) (1997) *Wicken Fen – the making of a nature reserve*. Harley Books, Colchester

Friday, L & Colston, A (1999) Wicken Fen – the restoration of a wetland nature reserve. *British Wildlife*, **11**(1), 37-46

National Trust (1997) *Wicken Fen NNR – draft management plan*. National Trust

Ratcliffe, DA (ed.) (1977) *A Nature Conservation Review. The selection of biological sites of national importance to nature conservation in Britain*. Cambridge University Press (for the Natural Environment Research Council and the Nature Conservancy Council), Cambridge (2 vols.)

Shirt, DB (ed.) (1987) *British Red Data Books: 2. Insects*. Nature Conservancy Council, Peterborough

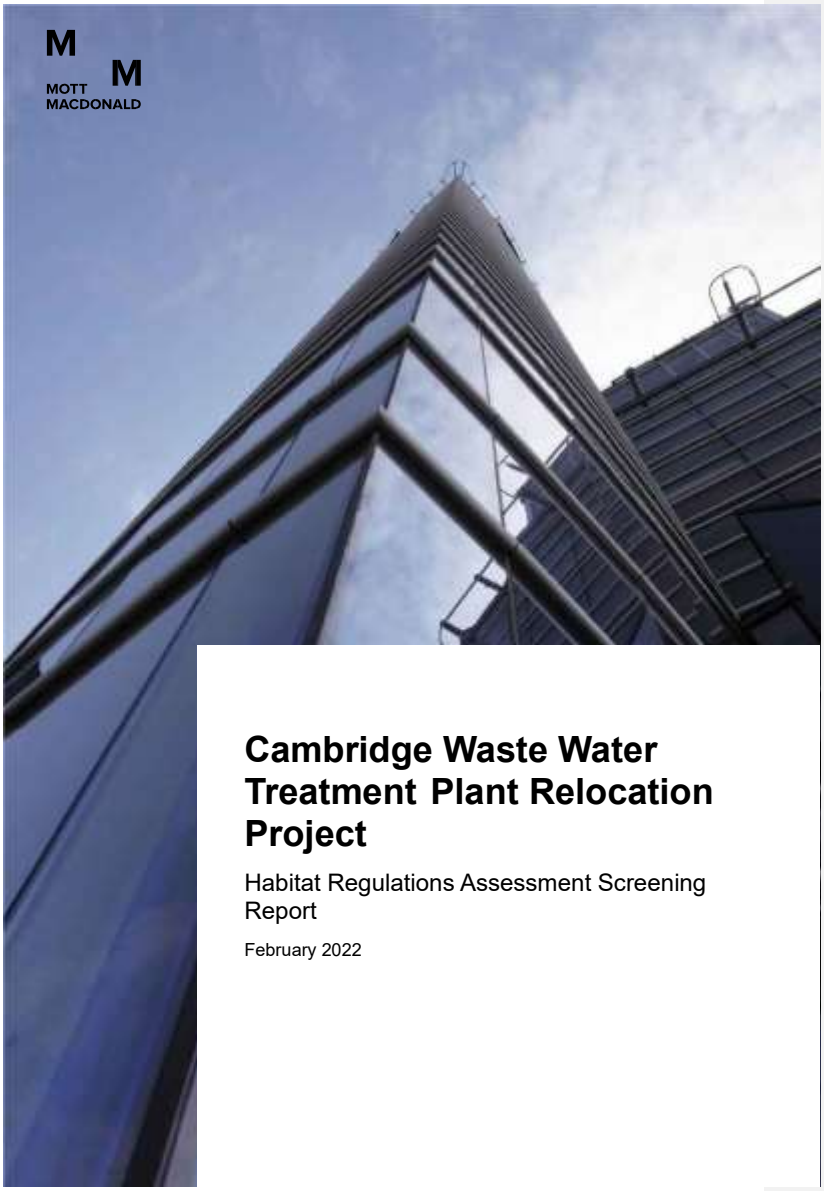
Stewart, NF (2004) *Important stonewort areas. An assessment of the best areas for stoneworts in the United Kingdom.* Plantlife International, Salisbury

Walters, M (1994) Classic wildlife sites: Wicken Fen Nature Reserve. *British Wildlife*, **6**(1), 5-13

Wiggington, M (1999) *British Red Data Books. 1. Vascular plants*. 3rd edn. Joint Nature Conservation Committee, Peterborough

Please return to: **Ramsar Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
Telephone**: +41 22 999 0170** • Fax: **+41 22 999 0169** • email: **ramsar@ramsar.org**

D. HRA Screening Report – Natural England Comments



Cambridge Waste Water Treatment Plant Relocation Project

Habitat Regulations Assessment Screening Report

February 2022

Mott MacDonald 22 Station Road
Cambridge CB1 2JD
United Kingdom

T +44 (0)1223 463500
mottmac.co
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Cambridge Waste Water Treatment Plant Relocation Project

Habitat Regulations Assessment Screening Report

February 2022

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
Draft	12 June 2021	Ben Benatt	Simon Allen	Claire Squires	Draft for internal review
P01	*17 Jan 2022*	*Ben Benatt / Simon Allen*	*Celia Figueira*	*Claire Squires*	Update to align with revised project description / Draft client review
P02	10 Feb 2022	Ben Benatt / Simon Allen	Celia Figueira	Claire Squires	Update to align with revised project description/address comments
P02	20 May 2022	Tom Bridges	Celia Figueira	Claire Squires	Update following NE comments

Document reference: 100415458-MML-XX-00-RP-EN-0201003 |

Information class: Standard

Natural England Review Record

Version Number	Date	Comments
P02	March 2022	Issued to Natural England for review and comment
P03	May 2022	Update to account for comments

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Executive summary

A Habitats Regulations Assessment (HRA) screening has been completed in relation to the proposals for the relocation of the Cambridge Waste Water Treatment Plant (hereafter referred to as the 'Proposed Development' or CWWTP). A HRA refers to the several distinct stages of assessment undertaken in accordance with the Conservation of Habitats and Species Regulations 2017 (as amended). HRA refers to the whole process of assessment, including an Appropriate Assessment (where one is required).

The screening is carried out using the accepted steps (aligned to HRA stages), identifying all those Special Areas of Conservation (SAC), candidate SACs (cSACs), possible Special Areas of Conservation (pSAC), Special Protection Areas (SPA), possible Special Protection Areas (pSPA), Ramsar sites and proposed Ramsar sites that could potentially be affected by the Proposed Development. The screening aligns with 'Advice note ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects' published by the Planning Inspectorate (November 2017), both in terms of methodology and report structure. Key to this are the screening matrices in Appendix B, which summarise the screening exercise for likely significant effects (LSE) of the Proposed Development on the habitat sites[29] and their qualifying features.

[29] European Sites identified under the Conservation of Habitats and Species Regulations 2017 (as amended) are referred to as 'habitats sites' in the National Planning Policy Framework.

The Proposed Development involves the construction of a new Waste Water Treatment Plant (WWTP) together with associated waste water transfer infrastructure (comprising a waste water transfer tunnel, and treated effluent transfer pipelines) a new outfall to the River Cam, , a transfer pipeline corridor connecting from Waterbeach, and a new access road to the Proposed Development.

This document sets out the details of the HRA screening exercise undertaken for the Proposed Development. This screening assessment investigates the potential for significant effects arising from the relocation of the existing Cambridge WWTP on the qualifying interests of:

- Wicken Fen Ramsar site/ Fenland SAC,
- Eversden and Wimpole Woods SAC,
- Devil's Dyke SAC,
- The Wash and North Norfolk Coast SAC,
- The Wash SPA and
- The Wash Ramsar site.

The screening assessment considers whether the Proposed Development, either alone or in combination with other plans, policies or projects, will have a likely significant effect on the habitat sites. A desk based assessment has been completed to identify habitat sites

potentially affected by the Proposed Development. Identification of habitat sites has been through definition of an Ecological Zone of Influence (EZoI) based on proximity and connectivity to the Proposed Development.

Having regard to the precautionary principle, it is concluded that there is potential for significant effects on all of the above sites from the Proposed Development either alone or in-combination with other plans and/or projects, with the exception of Eversden and Wimpole Woods SAC. Likely significant effects may be due to changes in river water quality of the River Cam as a result of unplanned events in construction (for example a pollution event), change to water quality within the River Cam as a result of effluent quality and quantity (for example changes in nutrients) which could affect downstream SACs, pSACs, SPAs, pSPAs and Ramsar sites, or emissions from construction phase vehicles resulting in nitrogen deposition that may affect qualifying habitats and/or species of an adjacent SAC.

The findings of this report are summarised in the Screening Statement set out in Chapter 5 of this document.

1 Introduction

1.1 Background

1.1.1 Anglian Water has commissioned a Habitats Regulations Assessment (HRA) screening report in relation to the relocation of the Cambridge Waste Water Treatment Plant (hereafter referred to as the 'Proposed Development' or CWWTP).

1.1.2 The Proposed Development involves construction of a new Waste Water Treatment Plant (WWTP) together with the associated waste water transfer infrastructure (comprising a waste water transfer tunnel and treated effluent transfer pipelines) and outfall to the River Cam, a transfer pipeline corridor from a pumping station off Bannold Drove (Waterbeach), and a new access road.

1.1.3 This document sets out the details of the HRA screening exercise undertaken for this development.

1.2 The purpose of this Habitats Regulations Assessment Screening

1.2.1 This report contains all the HRA screening information necessary for the competent authority to identify all Likely Significant Effects (alone or in-combination with other projects or plans) in accordance with Part 6 of the Conservation of Habitats and Species Regulations 2017 (as amended) or Habs Regs.

1.3 The purpose of the Habitats Regulations Assessment

1.3.1 The Habs Regs are the UK government's pieces of legislation that originally transposed aspects of the Habitats Directive (Council Directive 92/43/EEC) and certain elements of the Wild Birds Directive (Directive 2009/147/EC) (both EU, Directives, known as the Nature Directives).

1.3.2 To account for the UK having left the European Union, the Habs Regs were amended in 2019, with only relatively minor changes coming into force on 31 December 20202. The HRA regime set out in the Habs Regs will therefore continue to apply in largely the same way after the transition period ends. Examples of the relatively minor changes are that the European Commission's role in the HRA derogation test process will be replaced by the Secretary of State for the Environment, Food and Rural Affairs; and that there will be changes to the procedures for designation / classification of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

[2] A summary of the changes can be found on the following webpages:

Brexit changes to the Habitats Regulations for England and Wales (CIEEM) https://cieem.net/brexit-changes-to-the-habitatsregulations/

Habitats Regulations Assessment after 31 December | How will it look? (Freeths) https://www.freeths.co.uk/2020/10/22/thehabitats-regulations-assessment-regime-after-31-december-2020-how-will-it-look/ (both accessed 04.02.2021)

1.3.3 In England the government implements the protection afforded to habitats and species by the Habs Regs through a set of statutory instruments collectively referred to as the 'Habitats Regulations'. A cornerstone of the Habitats Regulations is the designation and conservation of sites to maintain the favourable conservation status of protected habitats and species listed in the Habs Regs. These sites make up the European Union-wide Natura 2000 network, within which the UK sites are referred to as the National Site Network (NSN) from January 2021.

1.3.4 For any plan or project that could affect one or more NSN sites, the provisions of Part 6 of the Habs Regs establish the procedure that a competent national authority must follow before agreeing to the implementation of a plan or project on land or at sea within the Ecological Zone of Influence (EZoI) of the baseline. The procedure, known as an 'appropriate assessment', requires such plans or projects to undergo a stepwise impact assessment against the NSN sites' conservation objectives (see Figure 1.1). In England the assessment process is known as a Habitats Regulations Assessment (HRA).

1.3.5 The competent authority can only agree to the plan or project if, based on the findings of the appropriate assessment, it has demonstrated the absence (rather than the presence) of an adverse effect on the integrity of the NSN site concerned.

1.3.6 In exceptional circumstances, a plan or project having an adverse effect on the integrity of an NSN site can be approved under Part 6 of the Habs Regs if it can be demonstrated that there is an absence of less damaging alternatives and the plan or project is necessary for imperative reasons of overriding public interest (IROPI). In such cases, adequate compensation measures must be secured to ensure that the overall coherence of the NSN is maintained.

1.3.7 The Planning Inspectorate (PINS) Advice Note Ten 'Habitat Regulations Assessment relevant to nationally significant infrastructure projects' (online[3]), defines HRA as a step by step process which determines likely significant effect (LSE) and (where appropriate) assesses adverse impact on the integrity of a European site, examines alternative solutions, and provides justification of Imperative Reasons of Overriding Public Interest (IROPI). The advice note refers to the four stage process as summarised below and illustrated in Figure 1.1.

- HRA Stage 1 - Screening: Screening for LSE (alone or in-combination with other projects or plans);
- HRA Stage 2 - Appropriate Assessment: Assessment of implications of identified LSEs on the conservation objectives of a European site to ascertain if the proposal will adversely affect the integrity of a European site;
- HRA Stage 3 – Assessment of Alternative Solutions (where it cannot be ascertained that the proposal will not adversely affect the integrity of a European site); and
- HRA Stage 4 – Assessment of IROPI (where no alternative solutions are identified).

1.3.8 All four stages of the process are referred to as the Habitats Regulations Assessment (HRA) to clearly distinguish the whole process from the one step within it referred to as the "Appropriate Assessment" (AA).

1.3.9 Note that not all four stages need be completed; if screening identifies that no LSE are predicted, then the process does not need to progress further. If LSE are identified, it may be that the Appropriate Assessment, exploring the LSE if more detail, can identify that there would be no adverse effects on integrity of the NSN sites, then as above, the process can stop on completion of this stage.

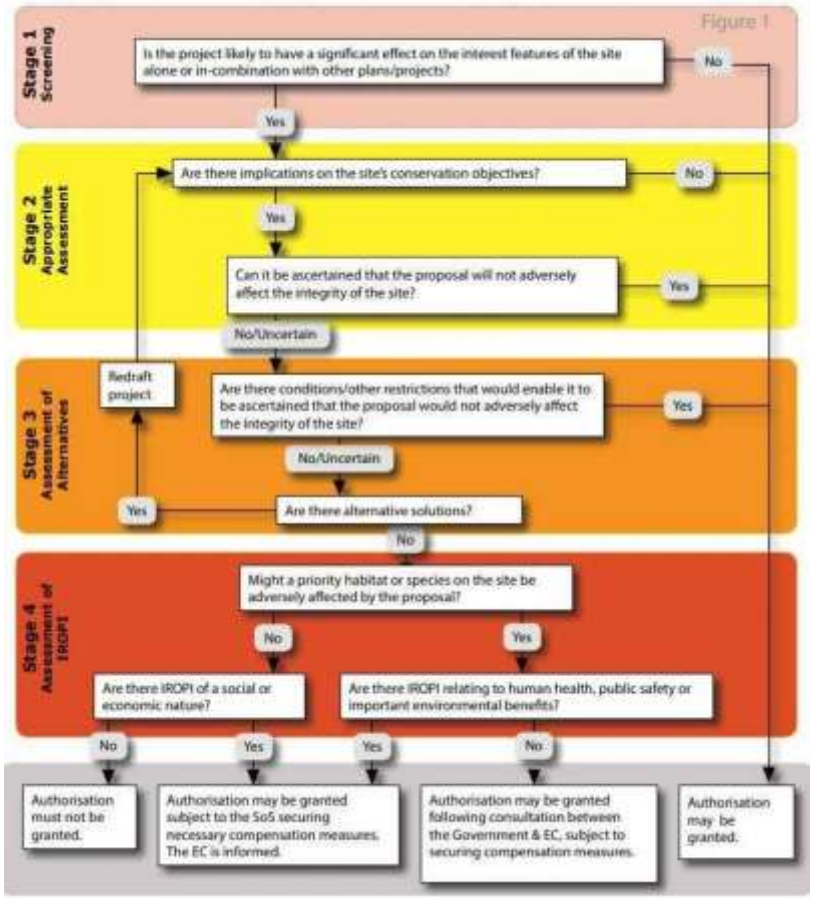
1.3.10 It is useful to note that more recent guidance has condensed the above into just three stages. The national guidance contained in 'Appropriate Assessment - Guidance on the use of Habitats Regulations Assessment. Published 22 July 2019' (GOV.UK (2019) includes the three stages below:

- Stage 1 Screening;
- Stage 2 Appropriate Assessment; and
- Stage 3 Derogation - to consider if proposals that would have an adverse effect on a European site qualify for an exemption

1.3.11 Note that the reference, in the Appropriate Assessment section of the above figure includes the requirement to assess cumulative and in-combination effects with other plans and/or projects; Unlike in EIA, the terms cumulative and in-combination are used interchangeably, as a combined process. As such, this document simply refers to this stage of the assessment as an in-combination assessment.

Figure 1.1: The Habitats Regulations Assessment process

(Source: PINS Advice Note 10[30])



1.4 Screening principles

1.4.1 The purpose of screening is to identify the likely significant effects that arise from the interaction between actions of the project and sensitive receptors through impact pathways. The following principles underpin this screening assessment:

1. NSN sites are referred to as 'habitats sites', in accordance with the government guidance on appropriate assessment. Habitats sites include the following designations:
   - A Special Area of Conservation (SAC);
   - A Site of Community Importance (SCI);

- A Special Protection Area (SPA);
- A potential SAC (pSAC);
- A potential/proposed SPA (pSPA);
- A site proposed to the European Community as an SCI, i.e. a candidate SAC (cSAC); and
- Ramsar sites and proposed Ramsar sites are not within the NSN, but are nonetheless included in the assessment in accordance with government guidance[31].

2. The project is not directly connected with or necessary to the conservation management of any habitats site.

3. Screening is undertaken regardless of whether the project is located inside or outside the boundary of a habitats site.

4. The term impact means an action 'resulting in changes to an ecological feature', and effect means an 'outcome to an ecological feature from an impact'.

[30] PINS (2012) Figure 1 in Advice Note Ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-noteten/

[31] Defra (2021) Guidance Habitats regulations assessments: protecting a European site. Available at: https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site

5. The term zone of influence means 'The area(s) over which ecological features may be affected by the biophysical changes caused by the proposed project and associated activities'.

6. The habitats sites for inclusion in the HRA screening will be identified where the project's zone(s) of influence intersect with any Sites of Special Scientific Interest (SSSI) impact risk zones (IRZ) associated with a habitats site. In this instance the selection of SSSI IRZs is based on those IRZs relevant to all planning applications and IRZs relevant to the Proposed Development. In addition, habitats sites will also be included for assessment where they are potentially affected by the Proposed Development, irrespective of distance. The most pertinent examples of this is alterations to the water quality or quantity on watercourses, where even distant downstream habitat sites may be affected.

7. In the context of the precautionary principle a likely significant effect exists when it cannot be excluded on the basis of objective information that the project will have a significant effect on the habitats site concerned and where the risk of a significant effect is "real" as opposed to hypothetical.

8. The assessment of risk will be made in the light, inter alia, of the conservation objectives, characteristics and specific environmental conditions of the habitat site concerned.

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Mitigation measures intended to avoid or reduce the harmful effects are not considered when determining if a likely significant effect exists.

Any likely significant effects identified through the application of the above principles will be taken forward and assessed in detail in an appropriate assessment.

Consultation with Natural England

The Statutory Nature Conservation Body (SNCB) is Natural England. The ongoing consultation and engagement programme includes specific focus on future permitting of the proposed WWTP. Through discussions with Natural England (and the Environment Agency) potential impacts of the Proposed Development on designated sites located downstream along the River Cam, the following sites have been identified as requiring assessment for impacts[5]:

The Wash SPA

North Norfolk Coast SAC

The Ouse Washes SPA, SAC, Ramsar and SSSI

Any other legally protected habitats sites that are hydrologically connected to the flow from the wat proposed WWTP.

Commented [NJ1]: It is important to consider the Ouse Washes SAC, SPA, Ramsar site - whilst the hydrological pathway enters the River Great Ouse system downstream of the internationally designated site, upstream effects contributing to lower flows and/or increased sediment loading in the system can result in silt build up downstream of the Ouse Washes which can impede drainage of floodwater from the Washes. This can be particularly damaging during the spring bird nesting season.

Further to discussions related to permitting and downstream locations Natural England have also undertook a review of a Hydrogeological Impact Assessment (HIA) report[6] completed to support the Stage 4 - Final Site Selection assessment for the Proposed Development. Advice within a response provided following their review of the HIA explicitly states that 'Natural England welcomes that all potential impacts on all surface water and groundwater dependant nature conservation sites will be considered in the water resources assessment of the Environmental Statement (ES), and that a Habitat Regulations Assessment (HRA) screening will be undertaken in relation to Wicken Fen Ramsar, SAC, NNR and SSSI'. [7]

Consultation with Natural England will continue through the stakeholder consultation and engagement programme and this will include seeking feedback on HRA screening and subsequent HRA stages .

Structure of this report

The structure of this screening report is as follows:

Introduction

Proposed development

The Cam Washes Site of Special Scientific Interest (SSSI) also referred to by NE which will be assessed as part of the Environmental Impact Assessment (EIA).

Mott MacDonald Ltd. (2021). Cambridge WWTP Relocation Project - Stage 4 Final Site Selection - Hydrogeological Impact Assessment https://cwwtpr.com/wp -content/uploads/2021/03/CWWTPR-Stage-4-Final-Site-Selection-Hydrogeological-Impact-Assessment.pdf

Discretionary Advice reference 16690/36570 06 September 2021

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- Identification of sites and features for screening assessment
- Assessment of Likely Significant Effects
  - Alone
  - In-Combination
- Screening Statement (Conclusions)
- Appendix A – Figures
- Appendix B – HRA Screening Matrices
- Appendix C – NSN Citations/Standard Data Forms

1.7 Assumptions, limitations, and uncertainties

1.7.1 This screening assessment is subject to the following assumptions, limitations and uncertainties:

- The design for the Proposed Development is still evolving. This screening has been completed on the basis of the design information available. It is considered sufficient as a basis for this HRA screening and where uncertainty exists a precautionary approach has been taken.
- Further information on the construction and operation of the Proposed Development will become available to inform the ongoing Environmental Impact Assessment (EIA) and the appropriate assessment which is assumed to be required as part of the HRA.

2 Proposed Development

2.1 Need for the project

2.1.1 Anglian Water supplies water and water recycling services in the east of England. The east of England region faces particularly acute challenges from climate change, population and housing growth and the need to enhance the natural environment. Above and beyond the provision of fresh, clean water and the effective treatment of waste water, Anglian Water's purpose is to tackle these challenges, delivering wider benefits to society by serving their customers and communities and safeguarding the environment. Since 1895, the existing Cambridge WWTP has been serving the needs of Cambridge and Greater Cambridge by taking waste water from people's homes and businesses, cleaning it and returning it to the environment. The existing Cambridge WWTP also plays a vital role by receiving surface water during heavy rainfall.

2.1.2 The need to relocate the existing Cambridge WWTP arises principally from forecast population growth and urbanisation in Cambridge. Cambridge City Council (CCC) and South Cambridgeshire District Council (SCDC) are jointly preparing a North East

Cambridge Area Action Plan (AAP). The AAP identifies the site of the existing Cambridge WWTP as an area where housing and other development is to be located to support the accommodation of population growth in a sustainable location. The relocation of the existing Cambridge WWTP is therefore required to deliver the objectives of the emerging AAP in close collaboration with CCC, Anglian Water and other stakeholders in the area.

2.1.3 The regeneration of this part of Cambridge ('Cambridge Northern Fringe East' - CNFE) is supported by Policy 15 'Cambridge Northern Fringe East and new railway station Area of Major Change' in the Cambridge City Local Plan (adopted 2018). Policy 15 states that the amount of development, site capacity, viability timescales and phasing of development will be established through the preparation of the AAP for the site.

2.1.4 The regeneration of CNFE commenced with the opening of the Cambridge North parkway station in 2017, followed by the award of forward funding from Homes England (HE) through a Housing Infrastructure Fund (HIF) to relocate the existing Cambridge WWTP, creating the potential to deliver over 8,600 housing units over 20 years and create up to 24,000 jobs.

2.1.5 The requirement to meet the housing needs of future population growth has been identified in the National Infrastructure Commission's 2017 report[32], which emphasised the prioritisation of the Cambridge –Milton Keynes –Oxford growth arc in the interests of advancing United Kingdom prosperity. Greater Cambridge is the fastest growing city economy in the United Kingdom and offers the potential to underpin this prioritisation. The growth of the area is an acute challenge, with an undersupply of housing and house prices more than thirteen times the average salary.

2.1.6 The Proposed Development is being pursued in anticipation of the emerging policy position to provide additional housing to accommodate population growth in Cambridge.

2.2 Consenting the Proposed Development

2.2.1 The Proposed Development has been the subject of a direction made by the Secretary of State under section 35 Planning Act 2008, and therefore is a development for which a development consent order is required.

2.2.2 Anglian water intends to submit an application for a Development Consent Order (DCO) to the Planning Inspectorate for the Proposed Development. The Planning Inspectorate will examine the DCO application and will make a recommendation to the Secretary of State on whether development consent for the Proposed Development should be granted or refused.

[32] NIC (2017) Partnering for Prosperity: A new deal for the Cambridge-Milton Keynes-Oxford Arc [ONLINE] Available at: Partnering for Prosperity: A new deal for the Cambridge-Milton Keynes-Oxford Arc (nic.org.uk)

2.3 Site location

2.3.1 The Proposed Development is located in Cambridgeshire in the east of England and does not overlap with devolved administrations or other European Economic Areas

(EEA). The proposed WWTP is expected to require a total footprint of 22 hectares (ha). This extent has been identified as a suitable size in which the necessary facilities can be accommodated, allowing for perimeter landscape screening.

2.3.2 A site location plan, including the DCO scoping boundary, is shown in the figure below. It includes:

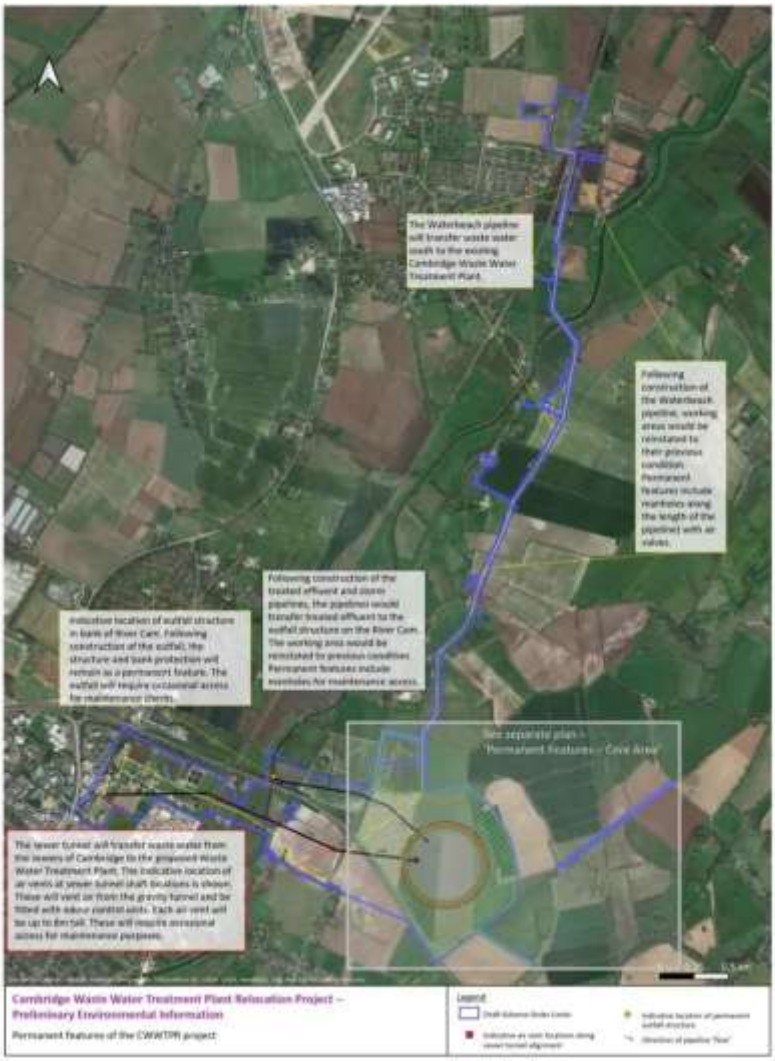
- A core area required for the proposed WWTP and all associated earth banks, landscaping, public access etc;
- the existing Cambridge WWTP, the underground transfer pipelines and the final effluent pipeline and outfall; and • the Waterbeach transfer pipeline.

2.3.3 The proposed WWTP is located 2km to the east of the existing Cambridge WWTP, within the administrative boundary of South Cambridgeshire District. The site lies between the villages of Horningsea to the north, Stow-Cum-Quy to the east and Fen Ditton to the south east. The A14 extends along the south western boundary of the site and Low Fen Drove Way, an unclassified road and public byway follows parts of the eastern and north eastern boundary of the site area. Beyond Low Fen Drove Way, open farmland extends to the north east towards and beyond StowCum-Quy Fen, and to the east, towards Stow-Cum-Quy village. To the west of the site lies Junction 34 of the A14, a junction intersected by Horningsea Road which extends north, parallel to the western boundary of the site area. Horningsea Road connects Fen Ditton to the south with the village of Horningsea in the north.

2.3.4 The area of land for the proposed WWTP area is open farmland with large arable fields defined by boundary hedges and ditches. The topography is mostly level, at 5-10m above Ordnance Datum (AOD), rising towards the west. A dismantled railway, also designated as County Wildlife Site (CWS), crosses the southern end of the site area and overhead powerlines are to the north and east of the site.

Figure 2.1: Overview of proposed development (at Consultation 3)

Source: Anglian Water CWWTP PEI Introductory Paper, 2022



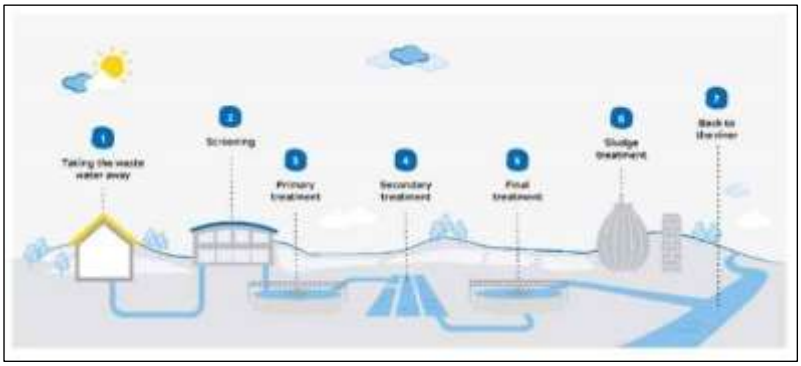
2.4 Development Overview

2.4.1 The existing Cambridge WWTP is an integrated WWTP, as would be the Proposed Development. Integrated WWTP incorporate a sludge treatment function, in the form of a Sludge Treatment Centre (STC), which treats the sludge derived from the waste water from the catchment, and the “wet sludge” produced by other satellite plants which do not have integrated STC.

2.4.2 Figure 2.2 provides an overview of the waste water and sludge treatment processes proposed for waste water and sludge. Alongside waste water treatment, all storm flows which are conveyed to the proposed WWTP following heavy rainfall would be partially treated. The sludge treatment process would produce sludge for use as bio-fertiliser for spreading on agricultural land and produce energy via anaerobic digestion as biogas is produced as a by-product.

2.4.3 The Proposed Development will also include the installation of photovoltaic panels to harness solar energy for conversion into electricity to service some of the site demand.

Figure 2.2: Treatment process overview



2.4.4 The Proposed Development comprises:

- a new integrated WWTP;
- a transfer tunnel from the existing Cambridge WWTP to the new location with ancillary infrastructure;
- a new pipeline to transfer waste water from Waterbeach to the the existing waste water collection system at the existing Cambridge WWTP;
- a return tunnel to a new discharge point at the River Cam, including ancillary structures;
- a site access to the proposed WWTP;
- utilities connections
- offsite highway network alterations;
- delivery of a landscaping masterplan; and
- renewable energy generation and storage for use on-site and export; and
- ancillary on-site buildings (including a site office, amenities building, substation building, security kiosk and vehicle parking).

2.4.5 Integrated waste water treatment plants act as “hubs” dealing not only with the waste water treatment process for the catchment areas in which they, and their nearby population centres, are located but also completing the waste water treatment process for the “wet sludge” tankered in from the local satellite facilities. The “wet sludge” from these satellite plants is transported to the WWTP by tankers and deposited into the first stage of the STC process at the WWTP. The existing Cambridge WWTP acts as a “hub” for local satellite sites. The overall Cambridge catchment has around 45 such satellite sites which send wet sludge to the existing Cambridge WWTP. Other local catchments, Huntingdon and Ely also feed into the existing Cambridge WWTP.

2.4.6 Sludge treatment is undertaken to separate suspended solids from the waste water which are then digested anaerobically. The dewatered solids at the conclusion of the digestion process are reduced to methane (which is used to generate heat required to activate the water treatment process, and power in the form of electricity), and an agricultural product to be used as fertilizer. The waste water removed as a result of the digestion process is then returned to the start of the waste water treatment process.

Capacity

2.5.1 The design capacity of the proposed WWTP will be approximately 548,000 population equivalent. The waste water treatment element (i.e. the Water Recycling Centre not including the Sludge Treatment Centre) has an overall design capacity of 270,000 to 300,000 population equivalent. This covers the duration of the Greater Cambridge Local Plan's anticipated growth to 2041. The Sludge Treatment Centre will be designed to treat sludge produced at the proposed WWTP plus imported liquid sludges arriving by road. The STC is designed to treat a total amount of up to 16,000 Tonnes Dry Solids (TDS) per year for both indigenous and imported sludge.

2.5.2 The design incorporates flexibility and extra space within the proposed WWTP, that will allow modification of the facility beyond 2040s. These measures include:

- flexibility within the treatment processes that would allow influent flow rates to be managed both through the process design, and within the choice of technologies;
- having flexibility within the footprint of the proposed WWTP for adaptation and change which will allow treatment processes changes in the future; and
- additional capacity within the storm tank storage and transfer tunnel which will serve to help attenuate future stormflows.

Biogas generation

2.6.1 At the existing Cambridge WWTP heat and electrical power are generated through burning biogas produced at the STC in combined heat and power (CHP) engines. Two options are under consideration for the proposed WWTP. These are:

- Biogas generated by the process will be firstly burned within onsite steam raising boilers to generate heat for use in the sludge treatment process and the surplus cleaned (concentration of methane increases as impurities are removed to create bio-methane) and exported to the national natural gas network; or
- The approach utilised at the existing Cambridge WWTP of burning biogas within CHP (no greater than 5MW) engines to generate electricity, will be used with the waste heat utilised within the process.

2.6.2 The biogas system also includes a waste-gas-burner, which burns the biogas during a failure event on site, to protect people and the environment from potential harmful

impacts associated with high concentrations of methane and other gasses, in accordance with Environmental Permit requirements.

Connection with the River Cam

2.7.1 The Environment Agency regulates WWTP by assessing the quality of the treated effluent returned to the environment against set compliance limits. The required level of treatment and monitoring is based on the population that the WWTP serves and the characteristics of the receiving environment. The level of treatment that a WWTP must provide and monitoring by the operator depends on the PE of the 'agglomeration[33]' it serves.

2.7.2 During construction of the proposed WWTP the existing Cambridge WWTP would remain in operation under the current environmental permit (ref: AN/ASCNF1033/014). There would be a planned transition period between the two WWTPs.

2.7.3 Once fully operational the existing Cambridge WWTP permit will be rescinded to the standards required by the Environment Agency.

2.7.4 As per paragraph 3.7.3 of the National Policy Statement (NPS) on Waste Water, 'the Examining Authority and the decision maker should work on the assumption that the relevant pollution control regime will be properly applied and enforced[34]'. The main pollution control mechanism in the case of a WWTP is the Environment Agency environmental permit. The NPS goes on to say that the focus should rest on whether the development itself is an acceptable use of the land, and on the impacts of that use, rather than the control of processes, emissions or discharges themselves.

2.7.5 Over its operational lifetime, the Proposed Development's final effluent discharges will remain subject to the Environmental Permitting regime. The Environment Agency is required through the River Basin Management Planning (RBMP) process to ensure that river water quality is maintained, and will periodically review the relevant water quality components in the Environmental Permit. Permit conditions are, therefore, likely to vary over time in response to changes in flow, including those arising from population growth, changes in water usage, climatic or environmental factors. The plant has been designed to be flexible and accommodate changing regulatory requirements within the footprint of the landscaping bund.

Storm flow management

2.7.6 Due to the nature and design of the Cambridge sewer network all flow conditions (including storm) will be delivered via the terminal pumping station to the proposed WWTP. The provision of full treatment capacity for these larger diluted 'storm' flows is not required. Therefore, once the rate of flow into the terminal pump station exceeds the expected 'Flow to Full Treatment' (FFT)

[33] An agglomeration is an area where the population and economic activities are sufficiently concentrated for urban waste water collection. The waste water is then taken for treatment to a WWTP and to a final discharge point.

[34] Defra (2012) National Policy Statement for Waste Water [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69505/pb13709-wastewater-nps.pdf

(2,000litres/second) storm pumps will start working and divert the excess incoming flows to the stormwater storage and treatment plant. This stormwater management solution will be in accordance with the agreement reached with the Environment Agency as part of the environmental permit for storm and emergency overflows which aims to minimise the risk of release of waste water to the environment.

2.7.7 The storm tanks will also have discharge overflow pipework that transfer flows to the River Cam only once the stormwater storage is full. These flows will be screened and partially settled. The Environment Agency's response to the environmental permit pre-application and other interactions indicates a "no detriment" impact to the River Cam approach between the existing Cambridge WWTP and proposed WWTP for storm water management.

2.7.8 The influent flows to the proposed WWTP are currently being refined by hydraulic models of the existing sewer network and include allowances to accommodate the planned development requirements and growth allowances. During a 1 in 100 year design storm in the catchment area the flow rates to the proposed WWTP, dependant on the storm intensity chosen, are expected to peak at 7,000litres/second. The storm flows will be influenced by the treatment plant, processes and attenuation capabilities in line with the environmental permit for storm and emergency overflows (storm storage in the permit). The estimated magnitude and frequency of the storm events are currently being developed through network modelling and storm storage and treatment options.

Landscaping

2.7.9 A Landscape, Ecology and Recreation Management Plan (LERMP) will be submitted as part of the DCO application, which will set out the principles for how the landscape and ecological features included within the DCO application would be delivered and how the land will be managed long term. The majority of management will be carried out in the operational phase, although landscape and habitat features will be created from the construction phase and onwards.

2.7.10 The delivery of elements of the landscape masterplan such as tree planting and grassland creation would start during the construction phase to ensure trees planted for visual screening can be effectively established.

Reinstatement

2.7.11 During the construction phase and once construction works are complete, for example after a certain construction compound has served its purpose, reinstatement will be undertaken. This would be done in a phased manner once certain areas are complete.

2.5 Construction of the Proposed Development

Construction staff and working hours

2.8.1 Proposed working hours are provided in Table 4.1.

Table 2-1: Proposed construction hours

Working Hours Categorisation	Description
Winter core working hours (October to March) 7am to 6pm Monday to Friday. 8am to 4pPPTm Saturday. Daily mobilisation activities- Plus up to one hour before and after for mobilisation/maintenance activities i.e. 6am to 7pm Monday to Friday and 7am to 5pm Saturday.	Core hours that will apply to the majority of work areas and activities. <u>Daily mobilisation/maintenance activities</u> - Arrival and departure of the workforce to the construction compounds. - Movement from compounds to the working areas (if parked engines shall be turned off and shall be considerate toward neighbours with no loud music or raised voices). - Site meetings (briefings in compound buildings) and quiet walk overs or site inspections. - Refuelling. - Site cleaning and maintenance (not requiring the use of plant or hammering/banging).
<u>Summer core hours (April to September)</u> 6am to 7pm Monday to Friday 8am to 6pm Saturdays Daily mobilisation activities- Plus one hour before and after for mobilisation activities i.e. 5am to 8pm Monday to Friday and 7am to 7pm Saturday.	Longer working hours proposed in the summer months to maximise the works which can be completed in better weather conditions (they may not be used every day). <u>Daily mobilisation/maintenance activities</u> - Arrival and departure of the workforce to the construction compounds. - Movement from compounds to the working areas (if parked engines shall be turned off, no loud music or raised voices). - Site meetings (briefings in compound buildings) and quiet walk overs or site inspections. - Refuelling. - Site cleaning and maintenance (not requiring the use of plant or hammering/banging).

Working Hours Categorisation	Description
Very special circumstances extension for particular activities 6pm to 10pm Monday to Friday 6pm to 10pm on Saturdays 8am to 2pm on Sundays These are more likely to be required during the first two years of the Project.	Required for specific activities which are not possible to be completed during core hours. Limited activities within this category will be limited and not necessarily taking place on consecutive days. Identified as: - Major concrete pours including base slabs; - Abnormal load delivery including those escorted by the Police; - Contract lifts i.e. lifting of pieces of equipment on crane.
Continuous Working Hours 0.00 to 0.00 Monday to Sunday	Certain specific construction activities will need to take place on a continuous 24 hour, 7 day a week basis. These have been identified as; - Tunnelling and underground work including the maintenance of underground equipment. Essential surface support activities including the processing and handling of excavated material, shaft lifting operations, tunnel lining supply. - Where over pumping takes place 24 hour call out will be needed in order to respond to any issues should they arise. - Network Rail and/or National Highways are expected to stipulate a requirement for 24 hour working in relation to works under or adjacent to their assets. - Construction under the River Cam. Horizontal Directional Drill will need to be a period of continuous working in order to complete the drill shots.
Out of hours working	It would be beneficial to carry out the following activities outside of the core working hours in order to minimise disruption to the local community. The following activities are proposed: - Construction deliveries to utilise periods of low traffic flow -this will be set out in the CTMP; - works within the highway or footpaths; - Connections into Anglian Water's existing network so that these can be done during periods of low demand; - Utility connections as required by the relevant statutory undertaker so that these can be done during periods of low demand.
Short notice working for safety reasons	Isolated occasions where works need to be made safe. This requirement could arise due to adverse weather or climate conditions.

Over running works	Minimal occasions when a construction activity over runs and cannot be paused until it has been completed and/or made safe.

2.8.2 during construction of the proposed WWTP:

- hours of 0730-1700
- working hours of 0730-1700
- One operations process controller is expected to be on site at any time working two 12hr shifts per day (0700-1900 & 1900-0700)
- One operation shifts technician is expected to be on site at any time working two 12hr shifts per day (0600-1800 & 1800-0600)
- Four mechanical and electrical specialists are expected to be on site each day, with normal working hours of 0730-1700.

Construction access

Existing Cambridge WWTP staff and working hours

The number of staff on the existing Cambridge WWTP would remain as current

Eight office staff are expected to be on site each day, with normal working

Six operations daytime staff are expected to be on site each day, with normal

In construction there are several points of access required from the public highway to land required for the construction of the Proposed Development. In operation there will be a new access from the proposed WWTP on to the B1047 Horningsea Road. The construction will be sequenced so the permanent access would be constructed and then used to support construction. Prior to its completion there will be a temporary constructio n access to the land required to build the proposed WWTP from Low Fen Drove Way. In operation there will be a new access from the proposed WWTP on to the B1047 Horningsea Road.

It is anticipated that during the peak construc tion period, particularly during the large concrete pour, construction -based traffic could equate to an additional 200 to 300 peak daily vehicle movements. When not carrying out large concrete pours this number would likely be between 100 and 200 vehicl e movements. In addition, there will be light goods vehicles (LGV) delivery vehicle movements and construction worker arrival and departures. Construction traffic predictions will be confirmed in the Environmental Statement (ES).

Commented [NJ2]: Assume this is daily?

The land identified in Figure 2.1 includes land for the proposed WWTP as well as land to accommodate the construction of the proposed WWTP and associated transfers and pipelines. Construction compounds will be required in implementing various components of th e Proposed Development, such as construction of vent shafts and pipe laying. It currently understood that up to five construction compounds, two of which will be on the land of the existing Cambridge WWTP; one at the end of Green End Road adjacent to the R iver Cam; one on Horningsea Road and another one will be along the River Cam bank, with the exact location yet to be determined.

Construction vehicle movements

2.8.4

Construction compounds

2.8.5

Construction programme and duration

2.8.6 During construction of the proposed WWTP the existing Cambridge WWTP and existing Waterbeach WRC would remain in operation under their current discharge permits. There would be a planned transition period between the existing Cambridge WWTP and proposed relocated WWTP.

2.8.7 The earliest construction is expected to start is 2024 with the Waterbeach pipeline works. The proposed WWTP is planned to be fully operational in 2028.

Table 2-2: Construction timeline

Construction Phase	Duration	Start	End
Waterbeach works including enabling works & mobilisation and decommissioning of the Waterbeach WRC	12 months	Apr-2024	Apr-2025
Enabling works & mobilisation for non-Waterbeach elements	3.5 months	Aug-2024	Nov-2024
Water Recycling Centre including water testing and dry commissioning	31 months	Oct-2024	Mar-2027
Sludge Treatment Centre including water testing and dry commissioning	19 months	Nov-2024	Jun-2026
Wet Commissioning	5.5 months	May-2027	Feb-2028
Transfer Tunnel	18 months	Nov-2024	Jun-2026
Treated and storm Effluent Main and outfall	14 months	Jul-2025	Aug-2026
De-Commissioning existing Cambridge WWTP	8 months	Oct-2027	Mar-2028

Source: PEI Introductory Paper, 2022

2.6 Operation of the Proposed Development

Operational staff and hours

2.9.1 The proposed WWTP would be operated by the following staff with the following operational hours.

- Eight office staff are expected to be on site each day, with normal working hours of 07:30-17:00
- Six operations daytime staff are expected to be on site each day, with normal working hours of 07:30-17:00
- One operations process controller is expected to be on site at any time working two 12 hour shifts per day (07:00-19:00 & 19:00-07:00)
- One operation shifts technician is expected to be on site at any time working two 12 hour shifts per day (06:00-18:00 & 18:00-06:00)
- Four mechanical and electrical specialists are expected to be on site each day, with normal working hours of 07:30-17:00.

Operational traffic

2.9.2 Once the existing Cambridge WWTP ceases to operate th is would result in a reassignment of all operational vehicles across the strategic and local road network. Daily vehicle trips, including the 129 two-way operational HGV trips that currently travel to and from the existing Cambridge WWTP would reassign on the highway network to routes to and from the proposed WWTP.

Commented [NJ3]: Daily?

Decommissioning activities

2.10.1 Once the proposed WWTP is fully opera tional and the Waterbeach transfer pipeline works are complete, the existing Cambridge WWTP and existing water recycling centre (WRC) at Waterbeach will be decommissioned. Decommissioning is expected to include activities such as the draining down and clea ning of existing tanks (including the disposal/treatment of any waste), making the plant mechanically and electrically safe.

2.10.2 As part of the relocation process the existing Cambridge WWTP will be decommissioned once the proposed WWTP is fully operational an d taking all the flows that would have previously been treated at the existing Cambridge WWTP. The scope of the decommissioning will be aligned with the requirements set out by the Environment Agency in respect of the anticipated rescinding of the current operational permits, specifically the final effluent and storm discharge consents, and sludge treatment operation permit. Whilst the detail of these requirements is not yet defined but would include the draining down and cleaning of existing tanks (including the disposal/treatment of any waste), making the plant mechanical and electrically safe, preventing heat generating equipment from being operated and prevention of rainwater storage in open top tanks.

2.10.3 Other decommissioning activities, including the dem olition of structures and site preparation for the site's redevelopment are outside of the scope of the relocation project DCO and will be carried out by the site developer in accordance with a separate planning permission. The connection shaft for the new waste water transfer tunnel will be retained as a permanent surface feature to allow access for future maintenance activities.

2.10.4 The existing Waterbeach Water Recycling Centre (WRC) would cease to operate once the Waterbeach transfer pipeline is fully opera tional taking all Waterbeach flows to treatment. Waterbeach WRC currently discharges final effluent (up to 1350m3/day) into the adjacent Bannold Drain which runs parallel to Bannold Drove and is maintained by the Internal Drainage Board (IDB). Once the new pipeline is operational and the existing Waterbeach WRC decommissioned, the existing final effluent flow into Bannold Drain will cease.

Maintenance activities

2.11.1 The type and frequency of maintenance activities will be defined as the design evolves.

3 Identification of Habitat Sites and Features Potentially Affected by the Proposed Development

3.1 Zones of influence and impact pathways

3.1.1 The identification of habitats sites and their associated qualifying features that could potentially be affected by the Proposed Development has been undertaken by a two-stage approach:

- The first screening step based on proximity of the Proposed Development to habitats sites. These were identified using the MAGiC website – the Multi Agency Geographic Information for the Countryside at www.magic.gov.uk. The various layers showing all SACs and possible SACs, SPAs and potential SPAs, Ramsar sites and proposed Ramsar sites were identified, as were the

SSSI Impact Zones layer. All habitat sites within 10km of the Proposed Development (or 30km for SAC sites designated for bat species) were identified, and the various Impact Zones considered, in relation to the various aspects of the Proposed Development.

- Following this, all habitats sites potentially connected by other, non-distance constrained pathways, were identified. This stage focussed on potential hydrological pathways, given the interface between the Proposed Development and the River Cam, and catchment-based pathways for example where there may be the potential for changes to groundwater that could affect habitats sites elsewhere in the catchment or where changes to air quality from emissions may affect habitats within the affected airshed.

3.2 Data sources

3.2.1 The principal data sources used for the HRA screening are provided in Table 3.1. The full reference list is provided in Section 6.

Table 3-1: Principal data sources collected to inform the HRA screening

Baseline item	Data source	Available at:
Designated sites	Extent and location of habitats site. The Multi Agency Geographic Information for the Countryside	www.magic.gov.uk
	Natural England Designated Sites View	https://designatedsites.naturalengland.org.uk/SiteSearch.aspx
Baseline item	**Data source**	**Available at:**
Proposed designations	Extent and location of habitats site. The Multi Agency Geographic Information for the Countryside	www.magic.gov.uk
Impact risk zones	Extent and location of zone. The Multi Agency Geographic Information for the Countryside	www.magic.gov.uk
Ramsar sites	Ramsar Sites Information Services	https://rsis.ramsar.org/ris/752
Hydrogeology	CWWTP Hydrogeological Impact Assessment March 2021	https://cwwtpr.com/wp-content/uploads/2021/03/CWWTPR-Stage-4-Final-Site-SelectionHydrogeological-Impact-Assessment.pdf
Habitats Sites - SAC	SACs in the United Kingdom	https://sac.jncc.gov.uk/

	Standard Data Forms for designations	
Threats and pressures	Improvement programme for England's Natura 2000 sites (IPENS)	https://www.gov.uk/government/publications/improvementprogramme-for-englands-natura2000-sites-ipens/improvementprogramme-for-englands-natura2000-sites-ipens
Conservation objectives	Natural England Conservation objectives for European Sites: East of England	http://publications.naturalengland.org.uk/category/6581547796791296

3.3 List of potentially affected sites

Habitat sites potentially affected by proximity to the Proposed Development

3.3.1 A map showing locations of Habitats Sites is located within Appendix A.

3.3.2 The ecological zones of influence (EZoI) (the 10km and 30km Proposed Development buffers) intersect a number of SSSI IRZs, although in the absence of cross-referencing in the Natural England spatial data it is not always clear which IRZ is related to which habitats site. Taking a precautionary approach, the sites which are scoped in at this stage and which have SSSI IRZs (all NSN/ Ramsar sites are also SSSIs) overlapping with the project's zones of influence are considered to be associated with the following habitats sites:

- Wicken Fen Ramsar site and Fenland SAC occupy the same land area/ location (Wicken Fen Ramsar site is a component site within the larger SAC designation), approximately 4.72km from the closest point within the Proposed Development site, and the site details are as follows:
  –
  –
- 0037

3.3.3 the reason for designation: •

3.4

Wicken Fen Ramsar site - reference UK11077, area 254.49 hectares – see https://rsis.ramsar.org/RISapp/files/RISrep/GB752RIS.pdf

Fenland SAC - reference UK0014782, area 619.41 hectares – see http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?eucode=UK0014782

Devil's Dyke SAC which lies 8.97km from the closest point within the Proposed Development site - reference UK0030037, area 8.25 hectares – see http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?eucode=UK003

There is also one SAC within 30km of the Proposed Development for which bats are

Eversden and Wimpole Woods SAC – this site lies 14.97km from the closest point within the Proposed Development site, and the site details are as follows – reference UK0030331, area 66.22 hectares – see https://sac.jncc.gov.uk/site/UK0030331 .

Habitat sites potentially affected due to hydrological

The following habitats sites are located downstream of the Proposed Development, and hence are, or are likely to be, connected hydrologically through the River Cam. This pathway means that there is the potential for effects at the downstream sites.

Commented [NJ4]: Also note comments above regarding the Ouse Washes SP, SAC, Ramsar site

Commented [CS5R4]: It is important to consider the Ouse Washes SAC, SPA, Ramsar site - whilst the hydrological pathway enters the River Great Ouse system downstream of the internationally designated site, upstream effects contributing to lower flows and/or increased sediment loading in the system can result in silt build up downstream of the Ouse Washes which can impede drainage of floodwater from the Washes. This can be particularly damaging during the spring bird nesting season.

The Wash and North Norfolk Coast SAC, The Wash SPA and The Wash Ramsar site all overlap at the location where the River Great Ouse meets the sea, approximate 59.57km to the north of the Proposed Development. The individual site details are as follows:

- The Wash and North Norfolk Coast SAC – reference UK17075, area 107718 hectares – see https://sac.jncc.gov.uk/site/UK0017075

  The Wash SPA - reference UK9008021, area 62044 hectares – see https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9008021.pdf

  The Wash Ramsar site – reference UK11072, area 62212 hectares – see https://rsis.ramsar.org/RISapp/files/RISrep/GB395RIS.pdf

Plans showing the Proposed Development in relation to the above habitats sites

The following sections set out the reasons for the designation of NSN/ Ramsar sites identified within the EZoI for the Proposed Development.

connectivity

3.3.4

3.3.5

-
-

3.3.6 can be found in Appendix A.

3.5 Reasons for designation of the habitat sites

3.4.1

Fenland SAC

3.4.2 Annex I habitats that are a primary reason for selection of this site[35]:

- 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*). Fenland contains, particularly at Chippenham Fen, one of the most extensive examples of the tall herb-rich East Anglian type of M24 *Molinia caerulea – Cirsium dissectum* fen-meadow. It is important for the conservation of the geographical and ecological range of the habitat type, as this type of fen-meadow is rare and ecologically distinctive in East Anglia.
- 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* (priority feature). The individual sites within Fenland cSAC each hold large areas of calcareous fens, with a long and well-documented history of regular management. There is a full range from species-poor *Cladium*dominated fen to species-rich fen with a lower proportion of *Cladium* and containing such species as black bog-rush *Schoenus nigricans,* tormentil *Potentilla erecta* and meadow thistle *Cirsium dissectum*. There are good transitions to purple moor-grass *Molinia caerulea* and rush pastures, all set within a mosaic of reedbeds and wet pastures.

[35] JNCC (2015) Fenland Standard Data Form [online]. Available at: https://jncc.gov.uk/jncc-assets/SACN2K/UK0014782.pdf

3.4.3 Annex II species present as a qualifying feature, but not a primary reason for site selection

- 1149 Spined loach *Cobitis taenia*
- 1166 Great crested newt *Triturus cristatus*

Wicken Fen Ramsar site

3.4.4 Qualifying features for which the Wicken Fen Ramsar has been designated:

- Ramsar criterion 1 - one of the most outstanding and representative remnants of the East Anglian peat fens. The area is one of the few which has not been drained. Traditional management has created a mosaic of habitats from open water to sedge and litter fields.
- Ramsar criterion 2 - the site supports one endangered species of Red Data Book plant, the fen violet *Viola persicifolia*, which survives at only two other sites in Britain. It also contains eight nationally scarce plants and 121 Red Data Book invertebrates.

Devil's Dyke SAC

3.4.5 Annex I habitats that are a primary reason for selection of this Devil's Dyke SAC[36]:

- 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (important orchid sites). This site hosts the priority habitat type "orchid rich sites". Devil's Dyke consists of a mosaic of CG3 *Bromus erectus* and CG5 *Bromus erectus – Brachypodium pinnatum* calcareous grasslands. It is the only known UK semi-natural dry grassland site for lizard orchid *Himantoglossum hircinum*.

Eversden and Wimpole Woods SAC

3.4.6 Annex II species as reason for selection of this site are 1308 Barbastelle bat *Barbastella barbastellus*:

- The site comprises a colony of barbastelle bats *Barbastella barbastellus* which is associated with a mixture of ancient coppice woodland (Eversden Wood) and high forest woods likely to be of more recent origin (Wimpole Woods)[37].

The Wash and North Norfolk Coast SAC

3.4.7 Annex I habitats that are a primary reason for selection of this site[38]:

[36] JNCC (2015 Devils Dyke SAC Standard Information Form [online]. Available at: https://jncc.gov.uk/jnccassets/SAC-N2K/UK0030037.pdf

[37] JNCC (2015) Eversden and Wimpole Woods Standard Data Form [online]. Available at: https://sac.jncc.gov.uk/site/UK0030331

[38] JNCC (2015) The Wash and North Norfolk Coast SAC Standard Data Form [online]. Available at: https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0017075.pdf

- 1110 Sandbanks which are slightly covered by sea water all the time. On this site sandy sediments occupy most of the subtidal area, resulting in one of the largest expanses of sublittoral sandbanks in the UK. It provides a representative example of this habitat type on the more sheltered east coast of England. The subtidal sandbanks vary in composition and include coarse sand through to mixed sediment at the mouth of the embayment. Sublittoral communities present include large dense beds of brittlestars *Ophiothrix fragilis*. Species include the sand-mason worm *Lanice conchilega* and the tellin *Angulus tenuis*. Benthic communities on sandflats in the deeper, central part of the Wash are particularly diverse. The subtidal sandbanks provide important nursery grounds for young commercial fish species, including plaice *Pleuronectes platessa*, cod *Gadus morhua* and sole *Solea solea*.
- 1140 Mudflats and sandflats not covered by seawater at low tide. The Wash, on the east coast of England, is the second-largest area of intertidal flats in the UK. The sandflats in the embayment of the Wash include extensive fine sands and drying banks of coarse sand, and this diversity of substrates, coupled with variety in degree of exposure, means that there is a high diversity relative to other east coast sites. Sandy intertidal flats predominate, with some soft mudflats in the areas sheltered by barrier beaches and islands along the north Norfolk coast. The biota includes large numbers of polychaetes, bivalves and crustaceans. Salinity ranges from that of the open

coast in most of the area (supporting rich invertebrate communities) to estuarine close to the rivers. Smaller, sheltered and diverse areas of intertidal sediment, with a rich variety of communities, including some eelgrass *Zostera* spp. beds and large shallow pools, are protected by the north Norfolk barrier islands and sand spits.

- 1160 Large shallow inlets and bays. The Wash is the largest embayment in the UK, and represents Large shallow inlets and bays on the east coast of England. It is connected via sediment transfer systems to the north Norfolk coast. Together, the Wash and North Norfolk Coast form one of the most important marine areas in the UK and European North Sea coast, and include extensive areas of varying, but predominantly sandy, sediments subject to a range of conditions. Communities in the intertidal include those characterised by large numbers of polychaetes, bivalve and crustaceans. Sublittoral communities cover a diverse range from the shallow to the deeper parts of the embayments and include dense brittlestar beds and areas of an abundant reef-building worm ('ross worm') *Sabellaria spinulosa*. The embayment supports a variety of mobile species, including a range of fish and 1365 Common seal *Phoca vitulina*.

- 1170 Reefs. The Wash is the largest embayment in the UK with extensive areas of subtidal mixed sediment. In the tide-swept approaches to the Wash, with a high loading of suspended sand, the relatively common tube-dwelling polychaete worm *Sabellaria spinulosa* forms areas of biogenic reef. These structures are varied in nature, and include reefs which stand up to 30 cm proud of the seabed and which extend for hundreds of metres (Foster-Smith & Sotheran 1999). The reefs are thought to extend into The Wash where super-abundant *S. spinulosa* occurs and where reef-like structures such as concretions and crusts have been recorded. The site and its surrounding waters are considered particularly important as this is the only currently known location of well-developed stable *Sabellaria* reef in the UK. The reefs are particularly important components of the sublittoral as they are diverse and productive habitats which support many associated species (including epibenthos and crevice fauna) that would not otherwise be found in predominantly sedimentary areas. As such, the fauna is quite distinct from other biotopes found in the site. Associated motile species include large numbers of polychaetes, mysid shrimps, the pink shrimp *Pandalus montagui*, and crabs. *S. spinulosa* is considered to be an important food source for the commercially important pink shrimp *P. montagui* (see overview in Holt et al. 1998).
- 1310 Salicornia and other annuals colonizing mud and sand. The largest single area of this vegetation in the UK occurs at this site on the east coast of England, which is one of the few areas in the UK where saltmarshes are generally accreting. The proportion of the total saltmarsh vegetation represented by *Salicornia* and other annuals colonising mud and sand is high because of the extensive enclosure of marsh in this site. The vegetation is also unusual in that it forms a pioneer community with common cord-grass *Spartina anglica* in which it is an equal component. The inter-relationship with other habitats is significant, forming a transition to important dune, saltmeadow and halophytic scrub communities.
- 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*). This site on the east coast of England is selected both for the extensive ungrazed saltmarshes of the North Norfolk Coast and for the contrasting, traditionally grazed saltmarshes around the Wash. The Wash saltmarshes represent the largest single area of the habitat type in the UK. The Atlantic salt meadows form part of a sequence of vegetation types that are unparalleled among coastal sites in the UK for their diversity and are amongst the most important in Europe. Saltmarsh swards dominated by sea-lavenders *Limonium* spp. are particularly well-represented on this site. In addition to typical lower and middle saltmarsh communities, in North Norfolk there are transitions from upper marsh to freshwater reedswamp, sand dunes, shingle beaches and mud/sandflats.

- 1420 Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*). The Wash and North Norfolk Coast, together with the North Norfolk Coast, comprises the only area in the UK where all the more typically Mediterranean species that characterise Mediterranean and thermo-Atlantic halophilous scrubs occur together. The vegetation is dominated by a shrubby cover up to 40 cm high of scattered bushes of shrubby sea-blite *Suaeda vera* and sea-purslane *Atriplex portulacoides*, with a patchy cover of herbaceous plants and bryophytes. This scrub vegetation often forms an important feature of the upper saltmarshes, and extensive examples occur where the drift-line slopes gradually and provides a transition to dune, shingle or reclaimed sections of the coast. At a number of locations on this coast perennial glasswort *Sarcocornia perennis* forms an open mosaic with other species at the lower limit of the sea-purslane community.

3.4.8 Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- 1150 Coastal lagoons * Priority feature

3.4.9 Annex II species that are a primary reason for selection of this site:

- 1365 Harbour seal *Phoca vitulina*. The Wash, on the east coast of England, is the largest embayment in the UK. The extensive intertidal flats here and on the North Norfolk Coast provide ideal conditions for Harbour seal *Phoca vitulina* breeding and hauling-out. This site is the largest colony of common seals in the UK, with some 7% of the total UK population.

3.4.10 Annex II species present as a qualifying feature, but not a primary reason for site selection:

- 1355 Otter *Lutra lutra*

The Wash SPA

- Article 4.1 Qualification (79/409/EEC)
  - During the breeding season the area regularly supports:
    - Little tern, Sterna albifrons ○ Common tern, *Sterna hirundo*
  - Over winter the area regularly supports:
    - Bewick's swan, Cygnus columbianus bewickii
    - Bar-tailed godwit, *Limosa lapponica*
- Article 4.2 Qualification (79/409/EEC)
  - Over winter the area regularly supports:
    - Pintail, Anas acuta
    - Wigeon, Anas penelope
    - Gadwall, Anas strepera
    - Pink-footed goose, Anser brachyrhynchus

- Turnstone, Arenaria interpres
- Brent goose, Branta bernicla bernicla
- Goldeneye, Bucephala clangula
- Sanderling, Calidris alba
- Dunlin, Calidris alpina alpina
- Knot, Calidris canutus
- Eurasian oystercatcher, Haematopus ostralegus
- Black-tailed godwit, Limosa limosa islandica
- Common scoter, Melanitta nigra
- Curlew, Numenius arquata
- Grey plover, Pluvialis squatarola
- Shelduck, Tadorna tadorna
- Redshank, Tringa totanus

- Article 4.2 Qualification (79/409/EEC): An Internationally Important Assemblage of Birds
  - Over winter the area regularly supports 400367 waterfowl (5 year peak mean 1991/92-1995/96) Including: ○ Bewick's swan, Cygnus columbianus bewickii
    - Pink-footed goose, *Anser brachyrhynchus*
    - Brent goose, Branta bernicla bernicla
    - Shelduck, Tadorna tadorna
    - Wigeon, Anas penelope
    - Gadwall, Anas strepera
    - Pintail, *Anas acuta*
    - Common scoter, *Melanitta nigra*
    - Goldeneye, Bucephala clangula
    - Eurasean oystercatcher, *Haematopus ostralegus*
    - Grey plover, Pluvialis squatarola
    - Knot, Calidris canutus
    - Sanderling, *Calidris alba*
    - Dunlin, Calidris alpina alpina
    - Black-tailed godwit, Limosa limosa islandica
    - Bar-tailed godwit, *Limosa lapponica*
    - Curlew, Numenius arquata
    - Redshank, Tringa totanus

- Turnstone, Arenaria interpres

The Wash Ramsar site

3.4.11 Qualifying features for which the site has been designated[39]:

- Ramsar criterion 1 - The Wash is a large shallow bay comprising very extensive saltmarshes, major intertidal banks of sand and mud, shallow water and deep channels.
- Ramsar criterion 3 - Qualifies because of the inter-relationship between its various components including saltmarshes, intertidal sand and mud flats and the estuarine waters. The saltmarshes and the plankton in the estuarine water provide a primary source of organic material which, together with other organic matter, forms the basis for the high productivity of the estuary.
- Ramsar criterion 5 – Assemblages of international importance:
  - Species with peak counts in winter:
    - 292541 waterfowl (5 year peak mean 1998/99-2002/2003)
- Ramsar criterion 6 – Species/populations occurring at levels of international importance.
  - Species with peak counts in spring/autumn:
    - Eurasian oystercatcher, Haematopus ostralegus ostralegus
    - Grey plover, Pluvialis squatarola
    - Red knot, Calidris canutus islandica
    - Sanderling, Calidris alba
  - Species with peak counts in winter:
    - Black-headed gull, *Larus ridibundus*
    - Common eider, Somateria mollissima mollissima
    - Bar-tailed godwit, Limosa lapponica lapponica
    - Common shelduck, *Tadorna tadorna*
    - Dark-bellied brent goose, *Branta bernicla bernicla*
    - Dunlin, Calidris alpina alpina
    - Pink-footed goose, Anser brachyrhynchus

[39] JNCC (2008) The Wash Information Sheet on Ramsar Wetlands Version 3.0, 13/06/2008 [online] Available at: https://jncc.gov.uk/jncc-assets/RIS/UK11072.pdf

- Species/populations identified subsequent to designation for possible future consideration under criterion 6:
- Species with peak counts in spring/autumn:
  - Black-tailed godwit, Limosa limosa islandica
  - Ringed plover, Charadrius hiaticula –

  Species with peak counts in winter:
  - European golden plover, Pluvialis apricaria altifrons
  - Northern lapwing, *Vanellus vanellus*

3.4.12 Table 3.2 below sets out the details of the above referenced sites and environmental pathways between the identified site and the Proposed Development.

Table 3-2: Details of habitats sites considered to be connected by a pathway

Site Name	Designation	Distance and direction from EIA scoping boundary	Reason for designation	Pathways to Draft DCO Limits boundary	SSSI impact risk zone
Wicken Fen	Ramsar site	4.72km northeast of the Waterbeach pipeline. 8.9km north-east of the new WWTP site area. 9.61km north-east of treated effluent transfer tunnel or pipeline and associated potential discharge location. 10.14km north-east of the wastewater transfer tunnel.	Supports one of the most outstanding remnants of the East Anglian peat fens. The area is one of the few which has not been drained. Traditional management has created a mosaic of habitats from open water to sedge and litter fields. Also designated as the site supports one species of British Red Data Book (RDB) plant, fen violet *Viola persicifolia*, which survives at only two other sites in Britain. It also contains eight nationally scarce plants and 121 British RDB invertebrates	Potential for hydrological / water chemistry impact as the site is downstream in the catchment of the River Cam. The site is highly dependent on surface water and is subject to winter flooding, potentially connected to the River Cam. The site is also highly sensitive to water quality, so alterations to water chemistry may also have effects. Unlikely to be ecologically linked other than by this means.	Discharge to Cam catchment
Fenland	SAC	4.72km northeast of the Waterbeach pipeline.	Designated primarily for presence of Molinia meadows on calcareous,	Potential for hydrological impact as the site is downstream	Discharge to Cam catchment

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		8.9km north-east of the new WWTP site area. 9.61km north-east of treated effluent transfer tunnel or pipeline and associated potential discharge location. 10.14km north-east of the wastewater transfer tunnel.	peaty or clayey-silt-soils (*Molinion* in the catchment of the laden River Cam. *caeruleae)* and Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* habitats, with spined loach *Cobitis taenia* and great crested newt also present as qualifying features.	The site is highly dependent on surface water and is subject to winter flooding, potentially connected to the River Cam. The site is also highly sensitive to water quality changes, so alterations to water chemistry may also have effects. Unlikely to be ecologically linked other than by this means.	
Devil's Dyke	SAC	9.76km east of the Waterbeach pipeline 9.86km east of the new WWTP site area. 10.95km east of the wastewater transfer tunnel. 10.95km east of the treated effluent transfer tunnel or pipeline	Designated for the presence of semi-natural and scrubland on calcareous substrates. The site site consists of a mosaic of CG3 *Bromus erectus* and CG5 *Bromus erectus* – *Brachypodium pinnatum* construction and calcareous grasslands. operational vehicles Devil's Dyke is classified using the road network as priority habitat adjacent to the SAC and "orchid rich sites". It is the only known UK semi-natural dry grassland site for lizard orchid	No hydrological impact expected. Potential for air quality impact on designated qualifying features, due to the vehicular emissions of construction and operational vehicles on the road network or from emissions from the operation of the CHP system	N/A

Commented [NJ6]: Clarification regarding any other AQ emissions would be helpful

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			Himantoglossum hircinum.		
Eversden and Wimpole Woods	SAC	16.90km northeast of the Waterbeach pipeline 16.46km south-west of the new WWTP site area 15.2km south-west of the wastewater transfer tunnel 16.0km east of the treated effluent transfer tunnel or pipeline	The site comprises a mixture of ancient coppice woodland (Eversden Wood) and high forest woods likely to be of more recent origin (Wimpole Woods). A colony of barbastelle bats *Barbastella barbastellus* (Annex II species 1308 Barbastelle) is associated with the trees in Wimpole Woods. These trees are used as a summer maternity roost where the female bats gather to give birth and rear their young. Most of the roost sites are within tree crevices. The bats also use the site as a foraging area. Some of the woodland is also used as a flight path when bats forage outside the site.	Ecological connectivity considered via any potential corridors providing ecological connectivity for dispersing and/or foraging bats, such as hedge networks of tracts of suitable habitat joining the SAC and the EZoI, and none were identified. As the site lies on the opposite side of Cambridge (approximately 13km from the proposed WWTP), with no obvious dispersal corridors no ecological impact is expected to occur.	N/A
The Wash and North Norfolk Coast	SAC	70.3km downstream of the treated effluent	The Wash and North Norfolk Coast Special Area of Conservation	Potential for hydrological/water quality effects as the site	N/A

Commented [NJ7]: This seems reasonable; however, given the potential for barbastelles for forage up to 20km (and beyond) from their main roost NE's bat specialists will need to confirm that they are satisfied with this when they review the detailed bat survey and assessment report.

Commented [CSBR7]: Note – re check when all surveys are complete

is downstream in the catchment of the River Cam.

transfer tunnel or pipeline

(SAC) encompasses the largest embayment in the UK, as well as extensive intertidal sand and mudflats, subtidal sandbanks, biogenic and geogenic reef, saltmarsh and a barrier beach system unique in the UK.

Under Article 4(4) of the Directive (92/43/EEC) the Annex I habitats that are a primary reason for selection of this site include: Sandbanks which are slightly covered by sea water all the time; Mudflats and sandflats not covered by seawater at low tide; Large shallow inlets and bays; Reefs; Salicornia and other annuals colonizing mud and sand; Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*); Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*). Coastal lagoons form a

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			Priority feature within this SAC. Annex II species that are a primary reason for selection of this site is the Harbour seal (*Phoca vitulina*) with the Otter (*Lutra lutra*) present but not as a primary reason for site selection.		
The Wash	SPA	70.3km downstream of the treated effluent transfer tunnel or pipeline	The Wash is numerically the most important area in Britain for wintering waterfowl, taking waders and wildfowl together. It is also the most important area in Britain in early autumn for moulting waders. The Wash is important also to certain wintering passerines, to breeding waders and terns, and to certain seabirds. The Wash qualifies under Article 4(1) because it supports 30 breeding pairs of little terns *Sterna albifrons* (2% of the British population) and 220 pairs of common terns	Potential for hydrological/water quality effects as the site is downstream in the catchment of the River Cam.	N/A

Mott MacDonald
Habitat

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			Sterna hirundo (2%); and because it supports 130 Bewick's swans *Cygnus cygnus* (3%) in winter. The Wash qualifies under Article 4(2) as an internationally important wetland by supporting in winter an average of 163,000 waders and also 51,000 wildfowl.		
The Wash	Ramsar	70.3km downstream of the treated effluent transfer tunnel or pipeline	A vast intertidal embayment incorporating one of the largest and most important areas of estuarine mudflats, sandbanks and saltmarsh in Britain. Counts of wintering waterbirds reach 320,673 individuals and include nationally and internationally important numbers of numerous species, notably up to 17,000 passerines (perching songbirds). The site is also of outstanding international importance	Potential for hydrological/water quality effects as the site is downstream in the catchment of the River Cam.	N/A

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Habitat

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for passage birds, notable waders, and supports various breeding birds, an important shell fishery, and the largest breeding colony in Europe of the seal *Phoca vitulina*.

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3.5.2 sections below.

Fenland SAC

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- 3.5.4

Conservation objectives, site sensitivities and vulnerabilities

Relevant conservation objectives and management targets for the sites within the EZoI are subject to an initial assessment below in order to establish potential site sensitivities further and identify vulnerability to any effects from the Proposed Development.

Commented [NJ9]: We welcome consideration of site conservation objectives and management targets. Please ensure that site Supplementary Advice is also considered, where available. This can also be found on line with the sites' citations and conservation objectives.

Threats and pressures on the SACs have been identified as part of the Improvement Programme for England's Natura 2000 Sites (IPENS) 16, and are summarised in the

Fenland is a multi-site SAC in and was designated to protect three w etland sites:

Chippenham Fen (52.298°N 0.415°E)

Wicken Fen (52.307°N 0.278°E)

Woodwalton Fen (52.445°N 0.193°W)

The conservation objectives of the Fenland SAC site are stated to be:

Ensure that the integrity of the site is maintained or restored as appropriate and ensure that the site contributes to achieving the aims of the Wild Birds Directive by maintaining or restoring:

The extent and distribution of the habitats of the qualifyin g features;

The structure and function of the habitats of the qualifying features;

The supporting processes on which the habitats of the qualifying features rely;

The population of each of the qualifying features; and

The distribution of the qualifying fea tures within the site.

The Wicken Fen SSSI also underlies the Wicken Fen SAC site, and so this information also applies to their sections below.

Threats, pressures and activities with impacts on Fenland SAC

The most important impacts and activities with high effect on the Fenland SAC are

Air pollution, air-borne pollutants – high rank

Pollution to groundwater (point sources and diffu se sources) – high rank

Human induced changes in hydraulic conditions – high rank

Table 3.3 provides a summary of Fenland SAC pressures and threats.

Natural England (2015) IPENS Plan Summary [online] Available at: http://publications.natu ralengland.org.uk/file/6208723374571520)

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Table 3-3: Fenland SAC pressures/ threats

Priority and issue	Feature affected	Pressure or Threat	Measure
Air Pollution: risk of atmospheric nitrogen deposition	H6410 Purple moorgrass meadows, H7210 Calcium-rich fen dominated by great fen sedge (saw sedge)	Pressure/ Threat	Further investigate potential atmospheric nitrogen impact on the site

(Source: Natural England, 2015 IPENS site improvement plan)

3.5.8 Consequently, nitrogen oxide emissions and potential groundwater quality impacts related to the Proposed Development are of relevance to the assessment for Fenland SAC.

Wicken Fen SSSI unit information (Natural England, 2020[40])

[40] Natural England (2020) Condition of SSSI Units for Site Wicken Fen SSSI [online] Available at: https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1003251&ReportTitle=Wicken Fen SSSI

3.5.9 The condition assessment for units 1 and 2 are both listed as 'Unfavourable recovering' and that 'the general consensus regarding management is that areas of Sedge Fen and Verrall's Fen are gradually becoming too dry and an input of calcareous, low nutrient status water is needed to maintain the notified botanical communities and invertebrate habitat'. The site is the subject of a Water Level Management Plan (WLMP) and work to implement this has commenced.

3.5.10 The condition assessment for units 3, 4 and 5 are all listed as 'Favourable condition'. The assessment states that 'the breadth of surveys completed indicate general good health in all constituent habitats, and for individual species e.g. spined loach'.

Wicken Fen Ramsar site

3.5.11 Information for Wicken Fen Ramsar[41] lists only flooding as the factor adversely affecting the ecological character. This factor includes changes in land/ water use and development projects (reservoir/barrage/dam).

3.5.12 The overlap between Wicken Fen Ramsar site and the related part of the Fenland SAC means that the information in section 3.4.1 can be taken to apply to this habitats site.

Devil's Dyke SAC

3.5.13 Devils Dyke SAC is a 7.68ha site designated in 2005. It contains semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) for which this is considered to be one of the best areas in the United Kingdom. It is considered to be the priority sub-type of important orchid site[42].

3.5.14 The Devils Dyke SAC is within the extent of the Devils Dyke SSSI site, and so this information also applies to their sections below.

3.5.15 Conservation objectives[43] for this SAC are:

- 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.

Threats, pressures and activities with impacts on Devil's Dyke SAC

3.5.16 The most important impacts and activities with high effect on Devil's Dyke SAC[16]

- Air pollution, air-borne pollutant (atmospheric nitrogen) – high rank

[41] Ramsar (2005) Information Sheet on Ramsar Wetlands (RIS) for Wicken Fen [online] Available at:

https://rsis.ramsar.org/RISapp/files/RISrep/GB752RIS.pdf

[42] JNCC (2015) Natura 2000 Standard data Form [online] Available at: https://jncc.gov.uk/jncc-assets/SACN2K/UK0030037.pdf

[43] Natural England (2014) European Site Conservation Objectives for Devils Dyke SAC (UK0030037) [online] Available at: http://publications.naturalengland.org.uk/publication/5870018029944832?category=6581547796791296

- Biocenotic evolution, succession – high rank

3.5.17 The first of these is considered to be relevant to the current assessment. Table 3.4 provides a summary of Devil's Dyke SAC pressures and threats.

Table 3-4: Devil's Dyke SAC pressures/ threats

Priority and issue	Feature affected	Pressure or Threat	Measure
Air Pollution: risk of atmospheric nitrogen deposition	H6210 Dry grasslands and scrublands on chalk or limestone (important orchid sites)	Threat	Investigate potential air pollution impacts

(Source: Natural England, 2015 IPENS site improvement plan)

Devil's Dyke SSSI unit information (Natural England, 2020[44])

3.5.18 The SSSI condition assessment for units 1 (broadleaved, mixed and yew woodland – lowland) and 3 (calcareous grassland – lowland) is listed as 'favourable'. Unit 1 passed assessment criteria related to 'extent of the important plant communities (woodland and scrub), maintenance of mature/near veteran trees, presence of young trees to replace these in time, presence of large roots covered in mosses, some open scrub and plentiful dead wood'. Criteria concerned with open space and domination of trees and shrubs local to the area were less clear. Unit 3 met all site specific standards defining favourable condition which included 'extent of important plant communities, proportion of herbs in the sward, frequency of the characteristic plant species, limited coverage by trees and scrub, limited agricultural weeds and other coarse species as well as having an appropriate sward height and a lack of plant litter'.

3.5.19 The SSSI condition assessment for units 2, 4, 5, 6 and 7 (all calcareous grassland – lowland) is recorded as 'Unfavourable - recovering'. A Higher Level Stewardship (HLS) agreement is now in place for units 6 and 7 which allows for grazing, cutting and scrub management.

3.5.20 The IPENS information is not considered to be relevant to the current assessment, but in conclusion air pollution, air-borne pollutants/ air pollution (risk of atmospheric nitrogen deposition) is considered to be of relevance to this screening assessment in relation to Devil's Dyke SAC.

[44] Natural England (2020) Condition of SSSI Units for Devil'sDyke SSSI [online] Available at: https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1000404&ReportTitle=Devil%27s Dyke SSSI

The Wash and North Norfolk Coast SAC

3.5.21 The Wash and North Norfolk Coast SAC is a marine site designated in 2005. It encompasses the largest embayment in the UK, as well as extensive intertidal sand and mudflats, subtidal sandbanks, biogenic and geogenic reef, saltmarsh and a barrier beach system unique in the UK. It includes the following overlapping protected areas[45]:

- The Wash Special Protection Area (SPA),
- North Norfolk Coast SAC and SPA,
- Gibraltar Point SPA and Inner Dowsing,
- Race Bank and North Ridge SAC

3.5.22 The conservation objectives of The Wash and North Norfolk Coast SAC site are [46]:

- 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 and habitats of qualifying species
  - The structure and function (including typical species) of qualifying natural habitats
  - The structure and function of the habitats of qualifying species
  - The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
  - The populations of qualifying species, and,
  - The distribution of qualifying species within the site.

Threats, pressures and activities with impacts on the site

3.5.23 The most important impacts and activities with high effect on The Wash and North Norfolk Coast SAC are listed as (Natural England, 2015):

- Changes in abiotic conditions – high rank
- Fishing and harvesting aquatic resources – high rank
- Outdoor sports and leisure activities, recreational activities – high rank
- Modification of cultivation practices – high rank
- Human induced changes in hydraulic conditions – high rank

[45] The Wash & North Norfolk Coast SAC Factsheet [online]. Available at: MMO Report Style and GIS Guide (publishing.service.gov.uk)

[46] Natural England (2014) European Site Conservation Objectives for The Wash & North Norfolk Coast SAC (UK0017075) [online] Available at: European Site Conservation Objectives for The Wash & North Norfolk

Coast SAC - UK0017075 (naturalengland.org.uk)

3.5.24 Upstream effects contributing to lower flows and/or increased sediment loading in the system are reported to result in silt build up downstream of the Ouse Washes which can impede drainage of floodwater from the Washes. This can be particularly damaging during the spring bird nesting season.

The Wash SSSI unit information (Natural England, 2020)

3.5.25 There are 60 units in the Wash SSSI. Close to 68% is recorded as being in Favourable condition, 32% is Unfavourable – Recovering and 0.5% is Unfavourable – Declining. The most recent assessment of the majority of the units was 2009. condition assessment for units 1 (broadleaved, mixed and yew woodland – lowland) and 3

3.5.26 The units that comprise the SSSI are made up of a range of intertidal, subtidal and coastal habitats. Reasons for the condition assessments are often not provided; those assessments that are given tend to be more easily accessed (i.e. costal) units, and not those marine areas where access is more difficult. Those coastal areas where the condition is unfavourable are subject to overly heavy grazing.

3.5.27 Note that information for the North Norfolk Coast SSSI have not been included here as it is several tens of km from the mouth of the Ouse, and hence well beyond the influence of this project.

3.5.28 The Wash SSSI also underlies the Wash SPA and Ramsar site, and so this information also applies to their sections below.

The Wash SPA

3.5.29 The conservation objectives for the Wash SPA are listed as:

3.5.30

- Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
  - The extent and distribution of the habitats of the qualifying features
  - The structure and function of the habitats of the qualifying features
  - The supporting processes on which the habitats of the qualifying features rely
  - The population of each of the qualifying features, and,
  - The distribution of the qualifying features within the site.

The most important impacts and activities with high effect on the site (Natural England, 2015):

- Human induced changes in hydraulic condit ions – high rank
- Invasive non-native species – high rank
- Modification of cultivation practices – high rank
- Outdoor sports and leisure activities, recreational activities – high rank

The Wash Ramsar site

No specific conservation objectives, or information t hreats, pressures and activities with impacts on site is available for this Ramsar site. It is therefore assumed that the related information for The Wash SPA also relates at least indirectly, to the site.

Summary

Having considered the likely presence and absence of impact pathways, Wicken Fen Ramsar site / Fenland SAC, Devil's Dyke SAC, The Wash and North Norfolk Coast SAC, The Wash SPA and the Wash Ramsar site have potential for LSEs to occur and need to be considered further in this screening assessment so are taken forward into the next chapter. Assessment of Likely Significant Effects

Commented [NJ10]: Agreed but please see comments above relating to the Ouse Washes SPA, SAC, Ramsar site.

Initial assessment of indicated potential impact pathways

Based on the description of the Proposed Development, the impacts listed in Table 4.1 below are considered likely to occur. The zone of influence for each impact is also stated in this table together with the relevant evidence to support the defined distance.

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3.6.1

3.8

4.1.1

Table 3-~~5~~1: Project impacts and their zones of influence

Commented [NJ11]: NE generally agrees with the project impacts and zones of influence identified.

Impact	Zone of Influence	Evidence
Construction		
Permanent removal of habitat in relation to the footprint of the proposed WWTP plus any other above-ground assets such as vent shafts, access roads and new outfall structure.	Permanent above ground footprint.	Change in baseline conditions will be measurable only within the footprint.
Temporary removal or covering of habitat in relation to the footprint of any construction related to the Proposed Development such as associated pipeline easements, construction access routes, construction compounds and laydown areas, temporary water storage lagoons for commissioning.	Temporary above ground footprint.	Change in baseline conditions will be measurable only within this footprint.
Generation of airborne dust such as from earthworks, materials handling and vehicle trackways.	Permanent and temporary above ground footprint plus 50m to account for dust deposition.	Good industry practice states that an assessment will normally be required where there is an 'ecological receptor' within 50m of the boundary of the site (Holman *et al*, 2014)
Changes in water quality and/or quantity from unplanned events including but not limited to spills or leaks from machinery operating close to waterways, deep excavations, surface water run off for areas under construction, dewatering activities, and flood events washing substances into waterways.	Varies.	Where watercourses are, or may be affected during construction, then effects may be felt downstream over any distance. For pathways other than surface water and/or groundwater pathways, a precautionary 500m zone of influence is applied on the basis of good industry practice recommendations. Activities related to operating any vehicle, plant or other equipment (machinery) in or near (≤10m) any surface water or wetland, would require measures to avoid or minimise adverse effects (SEPA, 2019). Furthermore, groundwater must not be abstracted from any

Impact	Zone of Influence	Evidence
		excavations, wells or boreholes that are within 250m of a wetland.
Introduction of invasive non-native species (INNS) such as from the movement of equipment from one location to another or from physical disturbance during earthworks / riverbanks works that may result in distribution of INNS.	Permanent and temporary above ground footprint (terrestrial) Aquatic - varies	Good industry practice recommends that measures to avoid or minimise adverse effects may be required with respect to the risk of INNS being introduced, spread within, or moved off site (SEPA, 2016). Other pathways associated with the movement of vehicle and/or materials should also be considered.
Noise from construction activities such as vehicle movements, operation of machinery, materials movements and piling.	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	A precautionary 750m zone of influence is applied based on expert opinion (Whitfield, D.P., Ruddock, M. & Bullman, R., 2008). The maximum sensitivity to

		disturbance for species likely to be present is in this range (Voight *et al*, 2018).
Presence of construction personnel and vehicle movements within the construction footprint of the Proposed Development/ to and from the Proposed Development-during construction	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	A precautionary 750m zone of influence is applied based on expert opinion. The maximum sensitivity to disturbance for species likely to be present is in this range (Voight *et al*, 2018).
Temporary use of artificial lighting during construction	Permanent and temporary above ground footprint plus an area within 500m to account for the sensitivity of various ecological receptors.	The zone of influence is applied based on the recommended survey area for assessing the impacts of lighting projects in relation to bats (100m) (Voight *et al*, 2018) and evidence that unshielded lights can attract invertebrates from at least 500m. (Bruce-White and Shardlow, 2011)
Air quality emissions from the operation of construction plant (which may include a batching plant), vehicle movements and associated dry deposition of atmospheric nitrogen and other possible pollutants	Varies – likely to be dependent on prevailing wind conditions etc	Where emissions may be generated in construction, designations may be affected effects may be felt within the airshed over any distance.

Impact	Zone of Influence	Evidence
Operation		
Noise from operating and maintenance activities within the proposed WWTP	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	A precautionary 750m zone of influence is applied based on expert opinion. The maximum sensitivity to disturbance for species likely to be present is in this range (Voight *et al*, 2018).
Production of air emissions associated with on-site combustion from the potential CHP plant, within the airshed over any distance.	Varies – likely to be dependent on prevailing wind conditions etc	Where emissions may be generated in operation, designations may be affected effects may be felt **intermittent venting, fugitive emissions and from operational vehicle movements.**

Presence of operational and maintenance personnel and vehicles within the proposed WWTP	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	A precautionary 750m zone of influence is applied based on expert opinion. The maximum sensitivity to disturbance for species likely to be present is in this range (Voight *et al*, 2018).
Use of artificial lighting at operational above ground assets (proposed WWTP and its access).	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird/bat species.	The zone of influence is applied based on the recommended survey area for assessing the impacts of lighting projects in relation to bats (100m) (Voight *et al*, 2018) evidence that unshielded lights can attract invertebrates from at least 500m (Bruce-White and Shardlow, 2011).
Changes in final effluent quality and/or quantity discharged to the River Cam from the Proposed Development	Varies	Where watercourses are, or may be, affected, then effects may be felt downstream over any distance; the zone of influence for changes to water quality and/or quality is based not on distance but on connectivity. Effects could feasibly be created many kilometres downstream.

4.1.2

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Potential impact pathways have been ide ntified on the basis of spatial overlap (a habitats site within one or more zone of influence) and environmental connectivity (e.g. a surface water feature within a habitats site and zone of influence) and can be summarised as follows:

- None of the habitats sites identified overlap with the zone of influence in relation to noise from operating and maintenance activities and the presence of operational and maintenance personnel and vehicles.

  The River Cam provides a hydrological connection to the zone of inf luence with Wicken Fen Ramsar site/ Fenland SAC as this wetland site lies downstream of the proposed outfall, within the River Cam catchment. (It is noted that Wicken Fen Ramsar Site/Fenland SAC is on a tributary of the River Cam, a short distance upstream; however, given the exceptionally flat nature of the topography it is still considered that under some circumstances there is the scope for connectivity).

  The River Cam also permits a potential hydrological connection to The Wash and North Norfolk Coast SAC, The Wash SPA and The Wash Ramsar site, via the River Great Ouse.

  There are no surface water features which connect the zone of influence with Devil's Dyke SAC. However, there is the scope that combustion from a potential CHP or Gas to Grid within the proposed development could cause an elevation in emissions that could cause deposition on the qualifying feature habitats of the SAC. This SAC is also close to the A11/A14, which could potentially see an increase in traffic-related emissions due to construction traffic.

  Given the distance separating the zone of influence and the habitats site and considering the absence of hydrological connectivity Eversden and Wimpole Woods SAC is not considered further in subsequent chapters of this screening assessment, but Wicken Fen Ramsar site ~~/Fenland SAC~~ and Devil's Dyke SAC are subjected to further assessment due to hydrological and impacts air emissions, respectively.

Table 4.2 provides further details of these pathways.

Commented [NJ12]: This seems reasonable subject to agreement of NE bat specialists following their review of detailed bat survey and assessment report.

Commented [JN13]: We assume this is an error since only hydrological impacts are considered further for Wicken Fen.

4.1.3

Table 3-~~62~~: Impacts with connectivity to the wider environment

Impact	Zone of Influence	Impact Pathways
Construction		
Permanent removal of habitat in relation to the footprint of the proposed WWTP plus any other above ground assets such as pumping stations, access roads and water storage tanks.	Permanent above ground footprint of the Proposed Development.	No spatial overlap between zone of influence and any NSN/Ramsar sites.
Temporary removal or covering of habitat in relation to the footprint of any construction related to the Proposed Development such as associated pipeline easements, construction access routes, construction compounds and laydown areas, water storage lagoons for commissioning.	Temporary above ground footprint of the Proposed Development.	No spatial overlap between zone of influence and any NSN/Ramsar sites.
Generation of airborne dust such as from earthworks, materials handling and vehicle trackways.	Permanent and temporary above ground footprint plus 50m to account for dust deposition.	No spatial overlap between zone of influence and any NSN/Ramsar sites.
Changes in water quality and/or quantity from unplanned events including but not limited to spills or leaks from machinery operating close to waterways, deep excavations, surface water run off for areas under construction, dewatering activities, and flood events washing substances into waterways.	Permanent and temporary above ground footprint plus 500m to account for changes in ground water as well as potential surface water and groundwater pathways to sensitive receptors.	No spatial overlap between zone of influence and Devil's Dyke SAC. The CWWTP discharges into the River Cam and is thus hydrologically connected downstream to Wicken Fen Ramsar site/ Fenland SAC, and to The Wash and North Norfolk Coast SAC, The Wash SPA and the Wash Ramsar site. Flooding of an active construction site could result in a pollution incident as a result of materials washed from site (including silt) which are then passed downstream
Introduction of invasive non-native species (INNS) such as from the movement of equipment from one location to another or from physical disturbance during earthworks	Permanent and temporary above ground footprint.	~~No spatial overlap between zone of influence and any NSN/Ramsar sites.~~ Possible impact pathway in relation to dispersion of INNS downstream such as from physical disturbance to waterways in construction.

Commented [NJ14]: We generally agree with impact pathways identified.

Impact	Zone of Influence	Impact Pathways
/ riverbanks works that may result in distribution of INNS.		
Noise from construction activities such as vehicle movements, operation of machinery, materials movements and piling.	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	No spatial overlap between zone of influence and any NSN/Ramsar sites.
Presence of construction personnel and vehicle movements within the construction footprint of the Proposed Development/ to and from the Proposed Development-during construction	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	No spatial overlap between zone of influence and any NSN/Ramsar sites.
Temporary use of artificial lighting during construction	Permanent and temporary above ground footprint plus an area within 500m to account for the sensitivity of various ecological receptors.	No spatial overlap between zone of influence and any NSN/Ramsar sites.
Air quality emissions from the operation of construction plant (which may include a batching plant), vehicle movements and associated dry deposition of atmospheric nitrogen and other possible pollutants	Receptors within 200m of an 'affected road' should be considered. Use the scoping criteria in DMRB to choose which roads are 'affected' (see Section 2.1 of DMRB LA 105 - Highways England, 2019) Change of 200 heavy duty vehicles or more	Possible impact pathway between construction vehicle emissions and Devil's Dyke SAC if using A14 at greater than the rates shown. No effects considered likely on the other sites.
Operation		
Noise from operating and maintenance activities at the proposed WWTP	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	No spatial overlap between zone of influence and any NSN/ Ramsar sites.
Presence of operational and maintenance personnel and vehicles within the proposed WWTP and moving to/from the proposed WWTP	Permanent and temporary above ground footprint plus an area within 750m to account for the sensitivity of bird species.	No spatial overlap between zone of influence and any NSN/ Ramsar sites.

Commented [NJ15]: Is there not potential to mobilise and direct INNS to downstream sites?

Impact	Zone of Influence	Impact Pathways
Use of artificial lighting at operational above ground assets within the proposed WWTP and its access road	Permanent and temporary above ground footprint plus an area within 500m to account for the sensitivity of various ecological receptors.	No spatial overlap between zone of influence and any NSN/ Ramsar sites.
Changes in final effluent quality and/or quantity discharged to the River Cam from the Proposed Development	Permanent and temporary above ground footprint plus 500m to account for changes in ground water as well as potential surface water and groundwater pathways to sensitive receptors.	No spatial overlap between zone of influence and Devil's Dyke SAC. The CWWTP discharges into the River Cam and is thus hydrologically connected downstream to Wicken Fen Ramsar site/ Fenland SAC, and to The Wash and North Norfolk Coast SAC, The Wash SPA and the Wash Ramsar site. Winter flooding may also carry effluent downstream to potentially impact on these sites.

3.9 Assessment of likely significant effects alone

Commented [NJ16]: We support the conclusions of the LSE alone conclusion for each site.

4.1.4 This part of the assessment considers whether the Proposed Development would have any LSE when considered in isolation. Each habitats site is assessed, in terms of potential effects on each of the qualifying features. Both the construction and operational phases are assessed.

4.1.5 The assessments in this section should be read alongside the Screening Matrices in Appendix B, which present the results of the screening assessments in a format required for projects being submitted into the DCO application process.

Fenland SAC

4.1.6 The LSE on Fenland SAC are set out within Table 4.3.

3.10 In-Combination

4.2.1

i s c h a r g e s .

There is potential for other plans, policies and, most pertinently, projects, to act in-combination with the proposed development. The primary means by which these in-combination effects may be felt relate s to:

- those developments that in operation may act to increase the demand on the proposed WWTP beyond the population equivalent growth projections , such that the alteration to water chemistry in the River Cam extends beyond the potential changes associated proposed development in isolation.
- the construction activities in the catchment that may change diffuse run-off characteristics in the catchment that contributes to adverse water quality changes in the catchment of the River Cam that are additive to the potential changes associated proposed development in isolation .
- the physical changes to the catchment as a result of completed developments that also change diffuse run-off characteristics in the catchment that contributes to adverse water quality changes in the catchment of the River Cam that are additive to the potential changes associated proposed development in isolation.

This would therefore have potential effects on all those habitats sites connected hydrologically to the proposed development.

In addition, there is the potential for airborne emissions sources to act in combination with those arising fro m the Proposed Development to give rise to a LSE sensitive habitats within the habitat sites described above.

In common with other project assessments, the plans policies and projects detailed in Table 4.9 below have been assessed for potential in combinat ion effects.

Table 3-13: Plans and Projects for In Combination Assessment

Plan, Policy or Project	Application Reference	Status	Distance from EIA

Commented [NJ17]: The list appears to include all relevant plans and projects. We trust that the relevant LPAs have been contacted to ensure this is comprehensive.

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4.2.2

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4.2.4

Scoping boundary

Tier 1. **1a. Development in construction**			
1. Up to 6,500 dwellings, business, retail, community, leisure and sports uses; a hotel; new primary and secondary schools; green open spaces including parks, ecological areas and woodlands; principal new accesses from the A10 and other points of access; associated infrastructure, groundworks and demolition; with all matters reserved except for the first primary junction from the A10 and construction access from Denny End Road. Waterbeach. CB25 9GU	SCDC ref. S/0559/17/OL	Permitted 27/9/19	4.5km
Tier 1.			

1b. permitted but not likely to be implemented at the time when construction of CWWTPR commences			
2. Railway station comprising platforms, pedestrian bridges, access road, pedestrian and cycle routes, car and cycle parking, with other associated facilities and infrastructure. Waterbeach. CB25 9NZ	SCDC ref. S/0791/18/FL	Permitted	5.5km
3. Construction and operation of a Waste Water Treatment Plant, and ancillary works, with a capacity of 75,000 tonnes per annum. Waterbeach. CB25 9PG	CCC ref. S/0202/16/CW	Permitted	4.3km
Tier 1.			
1c. Applications in planning and under considerat	**ion**		
4. Up to 4,500 dwellings, business, retail, community, leisure and sports uses; new primary and secondary schools and sixth form centre; public open spaces including parks and ecological areas; points of access, associated drainage and other infrastructure, groundworks, landscaping, and highways works. Waterbeach. CB25 9LW	SCDC ref. S/2075/18/OL	Under considerati on	5.5km
5. Energy from Waste Facility to treat up to 250,000 tonnes of residual waste per annum. Waterbeach. CB25 9PQ	CCC ref. S/3372/17/CW	Appeal	6.2km
Tier 2.			
Projects for which an EIA scoping request has been submitted to PINS			
6. A428 Black Cat to Caxton Gibbet Road Improvement proposed development. CB23 3AS		Preapplication	18km
7. Sunnica Energy Farm. IP28 8UQ		Preapplication	22km
Tier 3.			
3a. Projects on PINS programme but EIA scoping request not yet sub		**mitted**	
8. None			

Tier 3.	
3b. Proposals identified in Development Plans and emerging Development Plans	
9. Cambridge Local Plan	2018
10. North West Cambridge Area Action Plan: University Quarter	Adopted 2009
11. Cambridge East Area Action Plan 2020: New dwellings and employment space	Draft
12. North East Cambridge Area Action Plan: New dwellings and employment space	Draft
13. The Draft Cambridgeshire and Peterborough Local Transport Plan: A10 Ely to Cambridge Capacity Improvements (Dualling proposed development)	Published 2019
Tier 3.	
3c. Other plans or programmes / framework for likely future development	
14. None known at this stage	

4.2.5 The above plans policies and projects are considered in combination with the Proposed Development, to identify those projects that could act alongside this project to have likely significant effects on qualifying feature habitats or species at any of the sites.

Fenland SAC

4.2.6 The LSE on Fenland SAC in relation to in combination impacts on Fenland SAC are set out within Table 3-14~~Table 4-10~~.

Table 3-~~14~~10: Fenland SAC LSEs

Interest Feature	Possible Likely Significant Effects	Possible In-Combination Pathway, and likely trigger plans, policies and projects
Annex I habitats - 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae).	Yes	**Construction phase:** Unplanned events (spills/ leaks, site run off, flooding of site), dewatering and wet commissioning in construction could act in combination with similar effects from other plans, policies or projects to cause LSE on the site. (especially item 1 in Table 4.9 above). **Operational phase:** In-combination effects with those plans, policies and projects also likely to result in changes to the fluvial and water chemistry regimes at the SAC due to alterations in the volume of
Annex I habitats - 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* (Priority feature).	Yes	
Annex II species present as a qualifying feature - 1149 Spined loach *Cobitis taenia*	Yes, as reliant on the wetland habitats detailed above	
Annex II species present as a qualifying feature - 1166 Great crested newt *Triturus cristatus*	Yes, as reliant on the wetland habitats detailed above	

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	treated water entering the Cam: The majority of the items listed in Table 4.9 above (e.g. items 1, 4, 5, 9, 10, 11, 12 and 13) are likely to cause an increase in the volume of treated water, and hence the nutrients etc discharged into the Cam, which then potentially could affect this downstream habitats site.

Wicken Fen Ramsar site

4.2.7 The LSE on Wicken Fen in relation to in combination impacts are set out within Table 3-15.

Table 3-15: Wicken Fen Ramsar site LSEs

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Interest Feature	Possible Likely Significant Effects	Possible In-Combination Pathway, and likely trigger plans, policies and projects
Ramsar criterion 1 - one of the most outstanding and representative remnants of the East Anglian peat fens. The area is one of the few which has not been drained. Traditional management has created a mosaic of habitats from open water to sedge and litter fields.	Yes	**Construction Phase:** Unplanned events (spills/ leaks, site run off, flooding of site), dewatering and wet commissioning in construction could act in combination with similar effects from other plans, policies or projects to cause LSE on the site. (especially item 1 in Table 4.9 above). **Operational phase:** In-combination effects with those plans, policies and projects also likely to result in changes to the fluvial and water chemistry regimes at downstream habitat site due to alterations in the volume of treated water entering the Cam: the majority of the items listed in Table 4.9 above (e.g. items 1, 4, 5, 9, 10, 11, 12 and 13) are likely to cause an increase in the volume of treated water, and hence the nutrients etc discharged into the Cam,
Ramsar criterion 2 - the site supports one endangered species of Red Data Book plant, the fen violet *Viola persicifolia*, which survives at only two other sites in Britain. It also contains eight nationally scarce plants and 121 Red Data Book invertebrates.	Yes	

	which then potential could affect this downstream habitats site.

Devil's Dyke SAC

4.2.8 The LSE on Devils Dyke SAC in relation to in combination impacts are set out within Table 3-16.

Table 3-16: Devil's Dyke SAC LSEs

Interest Feature	Possible Likely Significant Effects	Possible In-Combination Impact Pathway, and likely trigger plans, policies and projects
Annex I habitats - 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (important orchid sites).	Yes	Construction Phase: Air emissions, air-borne pollutants, risk of atmospheric nitrogen deposition – on qualifying habitats, specifically from construction traffic passing within 200m on A14. In-combination effects with those projects also likely to trigger increases in volume of traffic on A14: Several of the items listed in Table 12 above have the potential to cause an increase in traffic on the A14, which may act in combination with the construction phase effects due to construction traffic to cause LSE. Operational phase: Emissions due to on-site combustion resulting in airborne pollution; risk of atmospheric nitrogen deposition. In-combination effects with those projects likely to trigger increases in volume of traffic on A14: Several of

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	the items listed in Table 4.9 above have the potential to cause an increase in traffic on the A14, which may act in combination with the operational phase effects due to combustion to cause LSE

The Wash and North Norfolk Coast SAC

4.2.9 The LSE on The Wash and North Norfolk Coast SAC in relation to in combination impacts are set out within Table 4.13.

Table 3-17: The Wash and North Norfolk Coast SAC LSEs

Interest Feature	Possible Likely Significant Effects	Possible Impact Pathway
Annex I habitats – 1110 Sandbanks which are slightly covered by sea water all the time	Yes	**Construction Effects:** Unplanned events (spills/ leaks, site run off, flooding of site), dewatering and wet commissioning in construction could act in combination with similar effects from other plans, policies or projects to cause LSE on the site. (especially item 1 in Table 4.9 above). **Operational phase:** In-combination effects with those plans, policies and projects also likely to result in changes to the fluvial and water chemistry regimes (nitrates etc) at the SAC due to alterations in the volume of treated water entering the Cam: The majority of the items listed in Table 4.9 above (e.g. items 1, 4, 5, 9, 10, 11, 12 and 13) are likely to cause an increase in the volume of treated water, and hence the nutrients discharged into the Cam, which then potential could affect this downstream habitats site.
Annex I habitats – 1140 Mudflats and sandflats not covered by seawater at low tide	Yes	
Annex I habitats – 1160 Large shallow inlets and bays	Yes	
Annex I habitats – 1170 Reefs	Yes	
Annex I habitats – 1310 Salicornia and other annuals colonizing mud and sand	Yes	
Annex I habitats – 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Yes	
Annex I habitats – 1420 Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticose*)	Yes	
Annex I habitats – 1150 Coastal lagoons	Yes	
Annex II species – 1365 Harbour seal	Yes, as reliant on the coastal habitats detailed above	
Annex II species – 1355 Otter	Yes, as reliant on the coastal habitats detailed above	

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The Wash SPA

4.2.10 The LSE on The Wash SPA in relation to in combination impacts are set out within Table 4.14.

Table 3-18: The Wash SPA LSEs

Interest Feature	Possible Likely Significant Effects	Possible Impact Pathway
Article 4.1 breeding bird species	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	**Construction Effects:** Unplanned events (spills/ leaks, site run off, flooding of site), dewatering and wet commissioning in construction could act in combination with similar effects from other plans, policies or projects to cause LSE on the site. (especially item 1 in Table 4.9 above). **Operational phase:** In-combination effects with those plans, policies and projects also likely to result in changes to the fluvial and water chemistry regimes at the habitat site due to alterations in the volume of treated water entering the Cam: The majority of the items listed in Table 4.9 above (e.g. items 1, 4, 5, 9, 10, 11, 12 and 13) are likely to cause an increase in the volume of treated water, and hence the nutrients etc discharged into the Cam, which then potential could affect this downstream habitats site.
Article 4.1 overwintering bird species	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	
Article 4.2 overwintering bird species	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	
Article 4.2 An Internationally Important Assemblage of Birds	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	

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The Wash Ramsar site

4.2.11 The LSE on The Wash Ramsar in relation to in combination impacts are set out within Table 4.15.

Table 3-1915: The Wash Ramsar Site LSEs

Interest Feature	Possible Likely Significant Effects	Possible Impact Pathway
Ramsar Criterion 1 - The Wash is a large shallow bay comprising very extensive saltmarshes, major intertidal banks of	Yes	**Construction Effects:** Unplanned events (spills/ leaks, site run off, flooding of site), dewatering and wet commissioning in construction could act in

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sand and mud, shallow water and deep channels.		combination with similar effects from other plans, policies or projects to cause LSE on the site. (especially item 1 in Table 4.9 above). **Operational phase:** In-combination effects with those plans, policies and projects also likely to result in changes to the fluvial and water chemistry regimes (nitrates etc) at the SAC due to alterations in the volume of treated water entering the Cam: Many of the items listed in Table 4.9 (e.g. items 1, 4, 5, 9, 10, 11, 12 and 13) above are likely to cause an increase in the volume of treated water, and hence the nutrients etc discharged into the Cam, which then potential could affect this downstream habitats site.
Ramsar Criterion 3 – the inter-relationship between its various components including saltmarshes, intertidal sand and mud flats and the estuarine waters.	Yes	
Ramsar Criterion 5 – a range of species with peak counts in spring/autumn, and with peak counts in winter.	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	
Ramsar Criterion 6 – a range of species for possible future consideration, with peak counts in spring/autumn and in winter.	Yes, due to direct effects, and indirect effects on habitats and the prey species on which the qualifying bird species depend.	

3.11 Summary

Commented [NJ18]: We support the likely significant effect alone/in-combination conclusion and requirement for further assessment with regard to air quality impacts to Devil's Dyke SAC and hydrological impacts to Wicken Fen Ramsar/Fenland SAC, The Wash SPA, Ramsar site and The Wash and North Norfolk Coast SAC.

4.3.1 It is concluded that the various habitat sites described above may be affected by:

- air emissions and changes to air quality/ air-borne pollutants; and
- changes to groundwater and surface water quality and quantity and hydrological impacts; both via normal discharges into River Cam and through possible impacts from intermittent storm discharges.

4.3.2 The impacts may be caused by the Proposed Development when considered alone and in combination with those cited plans, policies and projects.

4.3.3 This conclusion is made on a precautionary basis, and due to the distances involved between the Proposed Development and the habitat sites the risk of likely significant effect is considered to be low, but cannot be ruled out based on the available information. Further details will be required before it will be possible to rule out likely significant effects occurring either, alone or in combination.

4.3.4 It is likely that further studies into the below pathways will demonstrate that no LSE are likely, or they can be used to identify mitigation measures to remove LSE:

- Air quality assessment – traffic modelling for the project should be analysed to gather information in relation to the possible impacts on ambient pollutant concentrations including at Devil's Dyke SAC from construction traffic passing nearby on the A14.

- Assessment of impacts to water resources (including WFD assessment) – analysis will be required of construction phase activities with the potential to result in surface and groundwater impacts, predicted effluent discharges into the River Cam (including during wet commissioning and operation) and assessment of possible risk of pollution downstream resulting from flood events, when storm water could feasibly bypass the Proposed Development and enter the river directly both within the construction and operational phases. For the operational phase, any controls to regulate discharges to be within permitted levels should be inspected to assess whether this provides adequate certainty that the Proposed Development will not release a greater volume of waste water as currently in the future.

4 Screening Statement

5.1.1

Development:

- Devil's Dyke SAC
- Eversden and Wimpole Woods SAC
- Fenland SAC
- The Wash Ramsar

This screening assessment investigates the potential for significant effects on the qualifying interests of the following habitats sites arising fr om the Proposed

The screening assessment considers whether the Proposed Development, either alone or in combination with other projects or plans, will have a significant effect

Having regard to the precautionary principle, it is concluded that there is potential for significant effects on all of these sites with the exceptio n of Eversden and Wimpole Woods SAC as a result of the Proposed Development either alone or in - combination with other plans and/or projects. The findings of this report for screening for Appropriate Assessment are summarised in the Table 5.1 below, and the Screening Matrices in Appendix B.

Commented [NJ19]: As above, we support the LSE alone and/or in-combination conclusion. This concludes the HRA screening stage. We welcome that the findings will be used for the subsequent Appropriate Assessment stage.

This is subject to NE bat specialists agreeing with the no LSE conclusion for Eversden and Wimpole Woods SAC following their review of the detailed bat survey and assessment report.

Our comments are made on the understanding that this screening assessment will be updated to consider likely significant effects for the Ouse Washes SAC, SPA, Ramsar site, prior to proceeding to the HRA Appropriate Assessment stage.

Commented [CS20R19]: Action – follow up with NE once bat baseline complete

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Project Plan	
Description of the project or plan	The Proposed Development involves construction of a new waste water treatment plant (WWTP) together with the associated waste water transfer infrastructure (comprising a waste water transfer tunnel, and treated effluent transfer pipelines and new outfall to the River Cam), a transfer pipeline corridor from a pumping station off Bannold Dr ove (Waterbeach), and a new access road to the proposed WWTP. The Proposed Development is a nationally significant infrastructure project as defined by Section 14(1)(o) of the Planning Act 2008: the construction or alteration of a was te water treatment plant, and Section 29(1) as it is expected to have a PE capacity population 300,000 (in relation to capacity for sludge treatment and not wastewater treatment).
National Sites Network sites assessed	

- The Wash and North Norfolk Coast SAC

- The Wash SPA
- Wicken Fen Ramsar site

5.1.2 on the habitat sites.

5.1.3

Table 4-1: Screening Statement

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Brief Description of the Natura 2000 Site(s)	Wicken Fen Ramsar site and Fenland SAC occupy the same land area/ location (Wicken Fen Ramsar site is a component site within the larger SAC designation), approximately 5 km from the closest point within the Proposed Development site, and the site details are as follows:

- Wicken Fen Ramsar site - reference UK11077/ area 254.49 hectares;
- Fenland SAC - reference UK0014782/ area 619.41 hectares;
- Devil's Dyke SAC lies c.8.6 km from the closest point within the Proposed Development site - reference UK0030037/ area 8.25 hectares;

- Eversden and Wimpole Woods SAC – this site lies 15.2 km from the closest point within the Proposed Development site.
- The Wash and North Norfolk Coast SAC – this site lies 59.57 km north (downstream) of the Proposed Development
- The Wash SPA - this site lies 59.57 km north (downstream) of the Proposed Development
- The Wash Ramsar site - this site lies 59.57 km north (downstream) of the Proposed Development

Assessment Criteria	
Describe how the project or plan (alone or in combination) is likely to give rise to impacts on the Natura 2000 site.	Having considered the likely presence and absence of impact pathways, Wicken Fen Ramsar site/ Fenland SAC, Devil's Dyke SAC, The Wash and North Norfolk Coast SAC, and The Wash SPA/Ramsar site have potential for LSEs to occur.
Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 site by virtue of; • Size and scale: • Land take: • Distance from the Natura 2000 site or key features of the site; • Resource requirements (water abstraction etc); • Emissions (disposal to land, water or air); • Excavation requirements; • Transportation requirements; • Duration of construction, operation, decommissioning etc; • Other.	There is the possibility of impacts arising to Wicken Fen Ramsar site/ Fenland SAC, The Wash and North Norfolk Coast SAC, The Wash SPA and The Wash Ramsar site due to: • Potential for water and groundwater changes and associated hydrological impacts as the site is downstream from the Proposed Development in the River Cam/River Great Ouse. The pathway may occur due to consented discharges and/or effluent release caused by a flood event. There is the possibility of impacts arising to Devil's Dyke SAC due to: • Air pollution/ air-borne pollutants (risk of atmospheric nitrogen deposition) from the onsite CHP plant during operation from construction traffic passing within 200m on A14 and from a consented on-site CHP plant during operation.
Describe any likely changes to the Natura 2000 site arising as a result of: • Disturbance to key species; • Habitat or species fragmentation; • Reduction in species density; • Changes in key indicators of conservation value	Degradation of habitat site due to changes in surface water quality as a result of construction activities and in combination with other projects. • Reduction in habitat area; In-combination effects for incremental increase in final effluent volumes. Adverse effects on populations of qualifying species. Degradations of habitat due to emissions from vehicles.

(water quality etc.); • Climate change.

Describe any likely impacts on the Natura 2000 site as a whole in terms of: • Interference with the key relationships that define the structure of the site; • Interference with key relationships that define the function of the site.	Not known at this stage, but LSE on the sites identified in this screening assessment is likely to add to existing pressures, jeopardising their condition/recovery, and putting additional strain on meeting the stated conservation objectives.
Provide indicators of significance as a result of the identification of effects set out above in terms of: • Loss; • Fragmentation; • Disruption; • Disturbance; • Change to key elements of the site.	Nutrient enrichment and consequential degradation of vegetation communities could occur which could reduce suitability for associated fauna species such as Annex II species listed in Fenland SAC citation.
Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.	Requires further study in the form of an air emissions risk assessment and use of traffic modelling study data as well as a hydrological study looking at likely future levels of discharge from the proposed WWTP.
Data collected to carry out the assessment	
Who carried out the assessment?	Ben Benatt CEnv MCIEEM and Simon Allen CEnv MCIEEM
Sources of data?	Please refer to the reference list at the end of this document.
Level of assessment?	Desktop.

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6 Abbreviations and Glossary

Acronyms and Abbreviations

Table 6-1: Acronyms and abbreviations

Acronym / Abbreviation	Detail
AA	Appropriate Assessment
AAP	Area Action Plan
AOD	Above Ordnance Datum
AWS	Anglian Water Services
BTO	British Trust for Ornithology
CSHR (HabsRegs)	Conservation of Habitats and Species Regulations 2017,
CWS	County Wildlife Site
CWWTP	Cambridge Waste Water Treatment Plant
CWWTPR	CWWTP Relocation
DCO	Development Consent Order
EZOI	Ecological Zone of Influence
HE	Homes England
HER	Historic Environment Record
HIF	Housing Infrastructure Fund
HLS	Higher Level Stewardship
HRA	Habitats Regulations Assessment
IROPI	imperative reasons of overriding public interest
IRZ	Impact risk zone
JNCC	Joint Nature Conservation Committee
NSIP	Nationally Significant Infrastructure Project
NSN	National Site Network
NPPF	National Planning Policy Framework
PE	Population Equivalent
SNCB	Statutory Nature Conservation Body
SSSI	Site Special Scientific Interest

Definitions

Table 6-2: Definitions

Descriptor	Detail
Annex 1 Birds	Bird species listed under Annex 1 of the Birds Directive. These are in danger of extinction, are rare, or are considered vulnerable within the European Union. Those that regularly occur at levels over 1% of the national population meet the SPA qualifying criteria.
Annex I Habitats	A natural habitat listed under Annex I of the Habitats Directive for which Special Areas of Conservation can be selected
Annex II Species	A species under Annex II of the Habitats Directive for which Special Areas of Conservation can be selected
cSAC	Sites that have been submitted to the European Commission, but not yet formally adopted.
pRamsar	Sites proposed by the UK statutory nature conservation agencies for designation the Ramsar Convention on Wetlands.
pSAC	A site that has been approved for consultation by the Government but is not yet classified.
pSPA	An area identified by the JNCC and the other UK statutory nature conservation agencies and recommend to government for designation as an SPA.
Ramsar site	Wetlands of international importance that have been designated under the criteria of the Ramsar Convention on Wetlands for containing representative, rare or unique wetland types or for their importance in conserving biological diversity.
Special Area Conservation	Sites that have been adopted by the European Commission and formally designated by the government of each country in whose territory the site lies.
SCI	Sites that have been adopted by the European Commission but not yet formally designated by the government of each country in whose territory the site lies.
Special Protection Area	Sites that have been adopted by the European Commission and formally designated by the government of each country in whose territory the site lies.
Tetrad	A collection of four Ordnance Survey 1-km squares arranged into a 2km by 2km square.

7 Appendices

A. Figures

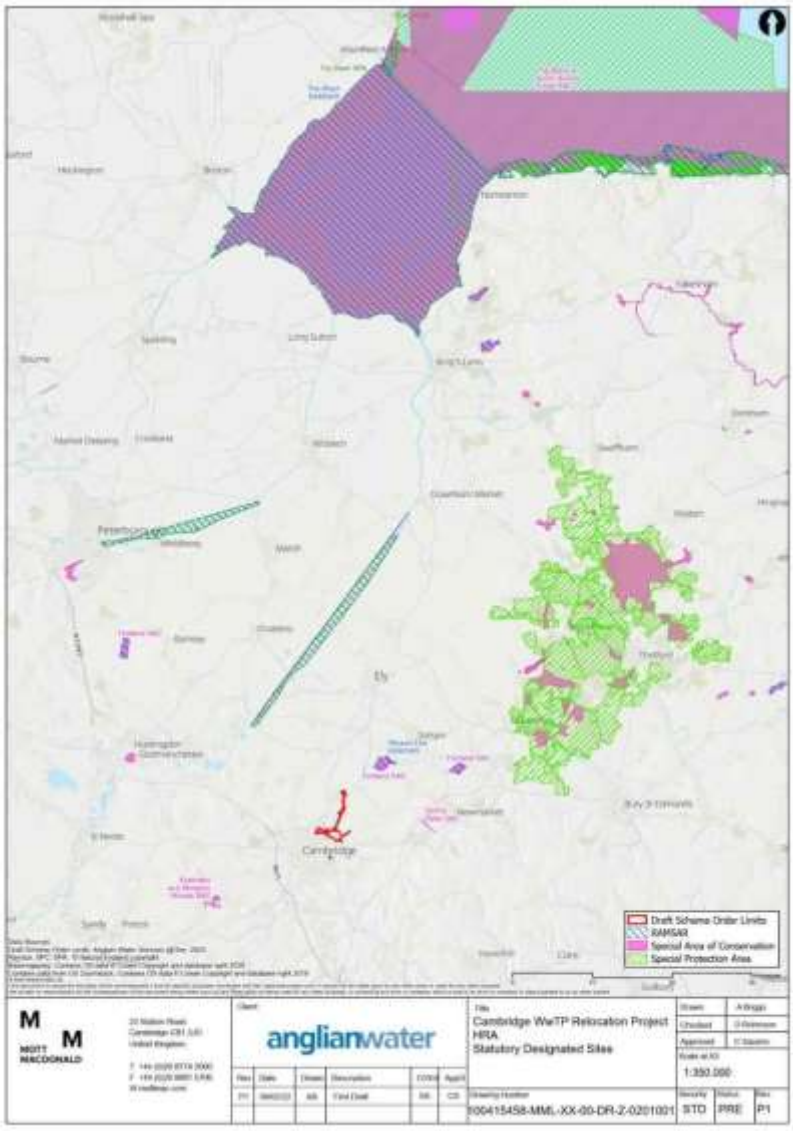

Figure 1: Map showing locations of Habitats Sites in relation to Proposed Development Area

B. Screening Matrices

= Likely significant effect cannot be excluded

✕ = Likely significant effect can be excluded

Name of European site and designation: Fenland SAC												
EU Code: UK0014782												
Distance to Proposed Development: 4.72km												
European site features	**Likely effects of Proposed Development**											
Effect	*Alterations to water quality due to pollution events*			*Alterations to water quality due to changes in water chemistry*			*Alterations to water quantity*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
6410 Molinia meadows on calcareous, peaty or clayey-siltladen soils (Molinion caeruleae)	**a**	**b**		**c** ✕	**d**		**e** ✕	**f** ✕		**g**	**h**	

7210 Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae* Priority feature	a	b		c✕	d		e✕	f✕		g	h	

Name of European site and designation: Fenland SAC												
EU Code: UK0014782												
Distance to Proposed Development: 4.72km												
European site features	**Likely effects of Proposed Development**											
Effect	*Alterations to water quality due to pollution events*			*Alterations to water quality due to changes in water chemistry*			*Alterations to water quantity*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
1149 Spined loach *Cobitis taenia*	**a**	**b**		**c** ✕	**d**		**e** ✕	**f** ✕		**g**	**h**	
1166 Great crested newt *Triturus cristatus*	**a**	**b**		**c** ✕	**d**		**e** ✕	**f** ✕		**g**	**h**	

Evidence supporting conclusions:

a. Any pollution events during the construction of the new outfall and the decommissioning of the existing outfall have the potential to cause likely significant effects on the downstream qualifying habitats and species of the habitats site. It is noted that the habitats site is a short distance upstream from its convergence with the River Cam, but it is felt that the fenland landscape within which the site is located may, under certain circumstances, be subject to circumstances whereby pollutants in the Cam to come into contact with habitats site itself. Pollution could

affect the qualifying habitats, and/or qualifying species, their food source/prey and/or their habitats. Therefore, LSE cannot be ruled out at this stage.

b. During operation, no changes to water quality due to pollution events are predicted. However the possibility of storm discharges causing periodic worsening of water quality/ pollution events; especially with increasing instability of climate and risk of extreme weather events due to climate change. Therefore LSE cannot be ruled out at this stage.

c. Aside from potential changes to water quality due to pollution events, no changes to water chemistry are predicted during the construction phase, that could affect the qualifying habitats or species.

d. During operation, no changes to water quality are predicted, as the Proposed Development will be dealing with the same volume of waste water as currently. However the mechanisms preventing this from exceeding predicted levels in the future are unknown, and so there is no certainty of this remaining the case. Therefore LSE cannot be ruled out at this stage.

e. During construction, no alterations to water quantity due to the Proposed Development are predicted.

f. During operation, no alterations to water quantity due to the Proposed Development are predicted.

g. During operation, the changes in water chemistry due to the pollution events may act in-combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying species of the qualifying habitats, and/or qualifying species, their food source/prey and/or their habitats cannot be ruled out.

h. During operation, the changes in water chemistry due to the discharge of waste water may act in-combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying species of the qualifying habitats, and/or qualifying species, their food source/prey and/or their habitats cannot be ruled out until it is known how the plant will operate at predicted levels and control mechanisms if this is exceeded. For example, the increase in water discharged from the Proposed Development may increase due to plans such as the large development of housing etc at Waterbeach, which will feed into the Proposed Development.

Name of European site and designation: Wicken Fen Ramsar Site												
EU Code: UK11077												
Distance to Proposed Development: 4.72km												
European site features	**Likely effects of Proposed Development**											
Effect	*Alterations to water quality due to pollution events*			*Alterations to water quality due to changes in water chemistry*			*Alterations to water quantity*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Ramsar Criterion 1 – peat fen habitats	**a**	**b**		**c** ✕	**d**		**e** ✕	**f** ✕		**g**	**h**	

Ramsar Criterion 2 - Red Data book plant fen violet *Viola persicifolia*, eight nationally scarce plants and 121 British Red Data Book invertebrates	a	b		c✕	d		e✕	f✕		g	h	

a. Any pollution events during the construction of the new outfall and the decommissioning of the existing outfall have the potential to cause likely significant effects on the downstream qualifying habitats and species of the habitats site. It is noted that the habitats site is a short distance upstream from its convergence with the River Cam, but it is felt that the fenland landscape within which the site is located may, under

certain circumstances, be subject to circumstances whereby pollutants in the Cam to come into contact with habitats site itself. Pollution could affect the qualifying habitats, and/or qualifying species, their food source/prey and/or their habitats. Therefore, LSE cannot be ruled out at this stage.

b. During operation, no changes to water quality due to pollution events are predicted. However the possibility of storm discharges causing periodic worsening of water quality/ pollution events; especially with increasing instability of climate and risk of extreme weather events due to climate change. Therefore LSE cannot be ruled out at this stage.

c. Aside from potential changes to water quality due to pollution events, no changes to water chemistry are predicted during the construction phase, that could affect the qualifying habitats or species.

d. During operation, no changes to water quality are predicted, as the Proposed Development will be dealing with the same volume of waste water as currently. However the mechanisms preventing this from exceeding predicted levels in the future are unknown, and so there is no certainty of this remaining the case. Therefore LSE cannot be ruled out at this stage.

e. During construction, no alterations to water quantity due to the Proposed Development are predicted.

f. During operation, no alterations to water quantity due to the Proposed Development are predicted.

g. During operation, the changes in water chemistry due to the pollution events may act in-combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying species of the qualifying habitats, and/or qualifying species, their food source/prey and/or their habitats cannot be ruled out.

h. During operation, the changes in water chemistry due to the discharge of waste water may act in-combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying species of the qualifying habitats, and/or qualifying species, their food source/prey and/or their habitats cannot be ruled out. For example, the increase in water discharged from the Proposed Development may increase due to plans such as the large development of housing etc at Waterbeach, which will feed into the Proposed Development.

Name of European site and designation: Devil's Dyke SAC												
EU Code: UK0030037												
Distance to Proposed Development: 8.97km												
European site features	**Likely effects of Proposed Development**											
Effect	*Deposition of nitrogen*			*Deposition of dust*			*In combination effects*					
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (FestucoBrometalia) (* important orchid sites)	**a**	**b**✕		**c**✕	**d**✕		**e**	**f**✕				

Evidence supporting conclusions:

a. The size of the fleet of vehicles to be used during construction, they type of vehicles, and their routes to the construction site, are as yet unknown. It is therefore not yet possible to screen out any LSE due to increases in nitrogen deposition during the construction phase. The adjacent A14 may experience an increase in vehicle numbers during construction that causes an unacceptable increase in rates of nitrogen deposition on the species/habitats within this habitats site.

b. During operation, production of nitrogen during any combustion process is not likely to cause any LSE, due to the distance between Proposed Development and the habitats site. The SSSI Impact Zone for combustion does not reach the Proposed Development.

c. During construction, dust creation is not likely to affect this habitats site; the construction site is nearly 9km away, significantly further than airborne dust would be expected to travel.

d. During operation, the Proposed Development is not predicted to produce any dust.

e. During construction, there may be an increase in vehicles on the adjacent A14 that could cause an unacceptable increase in rates of nitrogen deposition on the species/habitats within this habitats site in combination with other plans, policies and projects.

f. During operation, no in-combination effects are predicted that would cause LSE on this habitats site.

Name of European site and designation: Eversden and Wimpole Woods SAC				
EU Code: UK0030037				
Distance to Proposed Development: 14.97km				
European site features	**Likely effects of Proposed Development**			
Effect	*Disturbance/damage to roosts (summer and hibernation)*	*Disturbance/damage to commuting/foraging areas*	*In combination effects*	

Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
1308 Barbastelle *Barbastella barbastellus*	a✕	b✕		c✕	d✕							

Evidence supporting conclusions:

a. The Proposed Development is over 14km from the SAC site. Barbastelles are known to have large ranges, so the distance between the Proposed Development and the habitats site is does not rule out LSE. However, the connectivity between the two is impeded to a certain extent by the city of Cambridge, and the habitats affected by the project are generally of low suitability for barbastelles. The bat surveys to date have not identified any barbastelle roosts. No LSEs on bat roosts are therefore predicted.

b. The habitats within the Proposed Development are generally of limited value for bats; the area is largely arable, with larges fields and few hedgerows, tree lines, woodlands etc. A small number of barbastelle calls have been identified, in a small number of specific locations within the bat survey study area; it is not known whether these barbastelles are in any way connected with the population based at this habitats site. However, the habitats where these bats have been identified are al due for retention during the project. No LSE on bat commuting/foraging areas are therefore predicted.

Name of European site and designation: The Wash and North Norfolk Coast SAC												
EU Code: UK17075												
Distance to Proposed Development: 59.57km												
European site features	**Likely effects of Proposed Development**											
Effect	*Alterations to water quality due to pollution events*			*Alterations to water quality due to changes in water chemistry*			*In combination effects*					
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
1110 Sandbanks which are slightly covered by sea water all the time	**a**	**b** ✕		**c** ✕	**d**		**e**	**f**				

Name of European site and designation: The Wash and North Norfolk Coast SAC												
EU Code: UK17075												
Distance to Proposed Development: 59.57km												
European site features	**Likely effects of Proposed Development**											
Effect	*Alterations to water quality due to pollution events*			*Alterations to water quality due to changes in water chemistry*			*In combination effects*					
1140 Mudflats and sandflats not covered by seawater at low tide	**a**	**b**✕		**c**✕	**d**		**e**	**f**				
1160 Large shallow inlets and bays	**a**	**b**✕		**c**✕	**d**		**e**	**f**				
1170 Reefs	**a**	**b**✕		**c**✕	**d**		**e**	**f**				
1310 *Salicornia* and other annuals colonizing mud and sand	**a**	**b**✕		**c**✕	**d**		**e**	**f**				
1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	**a**	**b**✕		**c**✕	**d**		**e**	**f**				

1420 Mediterranean and thermo-Atlantic	a	b✕		c✕	d		e	f				

Name of European site and designation: The Wash and North Norfolk Coast SAC												
EU Code: UK17075												
Distance to Proposed Development: 59.57km												
European site features	**Likely effects of Proposed Development**											
Effect	*Alterations to water quality due to pollution events*			*Alterations to water quality due to changes in water chemistry*			*In combination effects*					
halophilous scrubs (Sarcocornetea fruticosi)												
1150 Coastal lagoons	**a**	**b**		**c** ✕	**d**		**e**	**f**				
1365 Harbour seal *Phoca vitulina*	**a**	**b**		**c** ✕	**d**		**e**	**f**				
1355 Otter *Lutra lutra*	**a**	**b**		**c** ✕	**d**		**e**	**f**				

Evidence supporting conclusions:

a. Any pollution events during the construction of the new outfall and the decommissioning of the existing outfall have the potential to cause likely significant effects on the downstream qualifying habitats and species of the habitats site. It is noted that the distance between the Proposed Development and the habitats site is not insignificant, but at this stage, we cannot use distance to rule out any LSE. It is noted that the distance between the Proposed Development and the habitats site is not insignificant, but at this stage, we cannot use distance to rule out any LSE.

b. During operation, no changes to water quality due to pollution events are predicted. However the possibility of storm discharges causing periodic worsening of water quality/ pollution events; especially with increasing instability of climate and risk of extreme weather events due to climate change. Therefore LSE cannot be ruled out at this stage.

c. During construction, no changes to water quality due to changes in water chemistry are predicted.

d. During operation, no changes to water quality are predicted, as the Proposed Development will be dealing with the same volume of waste water as currently. However the mechanisms preventing this from exceeding predicted levels in the future are unknown, and so there is no certainty of this remaining the case. Therefore LSE cannot be ruled out at this stage.

e. During construction, the effects of other plans, policies and projects acting in combination with the construction-phase effects of the Proposed Development to cause LSE cannot be ruled out.

f. During operation, the changes in water chemistry due to the discharge of waste water may act in-combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying habitats and species of the habitats site cannot be ruled out.

Name of European site and designation: The Wash SPA												
EU Code: UK9008021												
Distance to Proposed Development: 59.57km												
European site features	**Likely effects of Proposed Development**											
Effect	*Effects on bird species due to alterations to water quality due to pollution events*			*Effects on bird species due to alterations to water quality due to changes in water chemistry*			*In combination effects*					
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Article 4.1 Breeding season bird species (1)	**a**	**b**		**c**✕	**d**		**e**	**f**				
Article 4.1 Overwintering season bird species (2)	**a**	**b**		**c**✕	**d**		**e**	**f**				
Article 4.2 Overwintering bird species (3)	**a**	**b**		**c**✕	**d**		**e**	**f**				
Article 2.4 Assemblages of International Importance (Overwintering) (4)	**a**	**b**		**c**✕	**d**		**e**	**f**				

. Article 4.1 Qualification: During the breeding season the area regularly supports: Little tern, *Sterna albifrons*, Common tern, *Sterna hirundo*

. Article 4.1 Qualification: Over winter the area regularly supports: Bewick's swan, *Cygnus columbianus bewickii*, Bar-tailed godwit, *Limosa apponica*

1

2

3. Article 4.2 Qualification: Over winter the area regularly supports: Pintail, *Anas acuta*, Wigeon, *Anas Penelope*, Gadwall, *Anas strepera*, Pinkfooted goose, *Anser brachyrhynchus*, Turnstone, *Arenaria interpres*, Brent goose, *Branta bernicla bernicla*, Goldeneye, *Bucephala clangula*, Sanderling, *Calidris alba*, Dunlin, *Calidris alpina alpine*, Knot, *Calidris canutus*, Eurasian oystercatcher, *Haematopus ostralegus*, Blacktailed godwit, *Limosa limosa islandica*, Common scoter, *Melanitta nigra*, Curlew, *Numenius arquata*, Grey plover, *Pluvialis squatarola*, Shelduck, *Tadorna tadorna*, Redshank, *Tringa tetanus*

4. Article 4.2 Qualification: An Internationally Important Assemblage of Birds: Over winter the area regularly supports 400367 waterfowl (5 year peak mean 1991/92-1995/96) Including Bewick's swan, *Cygnus columbianus bewickii*, Pink-footed goose, *Anser brachyrhynchus*, Brent goose, *Branta bernicla bernicla*, Shelduck, *Tadorna tadorna*, Wigeon, *Anas Penelope*, Gadwall, *Anas strepera*, Pintail, *Anas acuta*, Common scoter, *Melanitta nigra*, Goldeneye, *Bucephala clangula*, Eurasean oystercatcher, *Haematopus ostralegus*, Grey plover, *Pluvialis squatarola*, Knot, *Calidris canutus*, Sanderling, *Calidris alba*, Dunlin, *Calidris alpina alpine*, Black-tailed godwit, *Limosa limosa islandica*, Bar-tailed godwit, *Limosa lapponica*, Curlew, *Numenius arquata*, Redshank, *Tringa tetanus*, Turnstone, *Arenaria interpres*

Evidence supporting conclusions:

a. Any pollution events during the construction of the new outfall and the decommissioning of the existing outfall have the potential to cause likely significant effects on the downstream qualifying species of the habitats site. Pollution could affect the individuals themselves, their food source/prey and/or their habitats used for foraging, roosting etc. It is noted that the distance between the Proposed Development and the habitats site is not insignificant, but at this stage, we cannot use distance to rule out any LSE.

b. During operation, no changes to water quality due to pollution events are predicted. However the possibility of storm discharges causing periodic worsening of water quality/ pollution events; especially with increasing instability of climate and risk of extreme weather events due to climate change. Therefore LSE cannot be ruled out at this stage.

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e. During construction, the effects of other plans, policies and projects acting in combination with the construction-phase effects of the Proposed Development to cause LSE cannot be ruled out.

f. During operation, the changes in water chemistry due to the discharge of waste water may act in-combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying habitats and species of the habitats site cannot be ruled out.

Mott MacDonald

Name of European site and designation: The Wash Ramsar Site												
EU Code: UK11072												
Distance to Proposed Development: 59.57km												
European site features	**Likely effects of Proposed Development**											
Effect	*Effects on qualifying criteria due to alterations to water quality due to pollution events*			*Effects on qualifying criteria due to alterations to water quality due to changes in water chemistry*			*In combination effects*					
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Ramsar criterion 1 – habitats present	**a**	**b**		**c** ✕	**d**		**e**	**f**				
Ramsar criterion 3 – ineter-relationships between habitats	**a**	**b**		**c** ✕	**d**		**e**	**f**				

Ramsar criterion 5 – Species with peak counts in winter, 292541 waterfowl	**a**	**b**		**c**✕	**d**		**e**	**f**				
Ramsar criterion 6 - Species with peak counts in spring/autumn	**a**	**b**		**c**✕	**d**		**e**	**f**				

Name of European site and designation: The Wash Ramsar Site												
EU Code: UK11072												
Distance to Proposed Development: 59.57km												
European site features	**Likely effects of Proposed Development**											
Effect	*Effects on qualifying criteria due to alterations to water quality due to pollution events*			*Effects on qualifying criteria due to alterations to water quality due to changes in water chemistry*			*In combination effects*					
Ramsar criterion 6 - Species with peak counts in winter	**a**	**b**		**c** ✕	**d**		**e**	**f**				
Ramsar criterion 6 for future consideration - Species with peak counts in spring/autumn	**a**	**b**		**c** ✕	**d**		**e**	**f**				

Ramsar criterion 6 for future consideration - Species with peak counts in winter	a	b		c✕	d		e	f				

Evidence supporting conclusions:

a. Any pollution events during the construction of the new outfall and the decommissioning of the existing outfall have the potential to cause likely significant effects on the downstream qualifying species of the habitats site. Pollution could affect the individuals themselves, their food source/prey and/or their habitats used for foraging, roosting etc. It is noted that the distance between the Proposed Development and the habitats site is not insignificant, but at this stage, we cannot use distance to rule out any LSE.

b. During operation, no changes to water quality due to pollution events are predicted. However the possibility of storm discharges causing periodic worsening of water quality/ pollution events; especially with increasing instability of climate and risk of extreme weather events due to climate change. Therefore LSE cannot be ruled out at this stage.

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e. During construction, the effects of other plans, policies and projects acting in combination with the construction-phase effects of the Proposed Development to cause LSE cannot be ruled out.

f. During operation, the changes in water chemistry due to the discharge of waste water may act in-combination with other plans, policies and projects to alter water chemistry to the extent where likely significant effects on the downstream qualifying habitats and species of the habitats site cannot be delete empty pages ruled out.

C. Habitats Sites Citations/Data Forms

Get in touch

You can contact us by:

Emailing at **info@cwwtpr.com**

Calling our Freephone information line on **0808 196 1661**

Writing to us at **Freepost: CWWTPR**

~~Visiting our website~~ DCO application documents and updates on the application on The Planning Inspectorate website:

https://infrastructure.planninginspectorate.gov.uk/projects/eastern/cambridge-waste-water-treatment-plant-relocation/