South East Strategic Reservoir Option (SESRO)

Supporting Document C2

Habitats Regulations Assessment

J696-AJ-A02X-ZZZZ-RP-EN-100053

Version: 1.0

Standard Gate three submission for SESRO

SRO

Notice – Position Statement

- This document has been produced as the part of the process set out by RAPID for the development of the Strategic Resource Options (SROs). This is a regulatory gated process allowing there to be control and appropriate scrutiny on the activities that are undertaken by the water companies to investigate and develop efficient solutions on behalf of customers to meet future drought resilience challenges.
- This report forms part of the suite of documents that make up the 'Gate 3 submission.' Gate 3 of the RAPID programme represents a checkpoint on the way to solutions being prepared for consent applications. The intention at this stage is to provide RAPID with an update on activities being undertaken in preparation for consent application submission; activities' progress including programme through to completion; and consideration of specific activities to address particular risks or issues associated with a solution. The regulatory gated process does not form part of the consenting process and will not determine whether an SRO is granted planning consent.
- Given the stage of the SROs in the planning process, the information presented in the Gate 3 submission includes material or data which is still in the course of completion, pending further engagement, consultation, design development and technical / environmental assessment. Final proposals will be presented as part of consent applications in due course.
- The project information captured in this document reflects a design freeze in October 2024 following the non-statutory consultation, to meet the requirements of RAPID's gated process. Since then, the design has continued to evolve which includes further work with Affinity Water and Southern Water partners to form agreed requirements for the development consent application, such as the incorporation of Southern Water's proposed water treatment works into the SESRO consent. You can find the latest information about the design and development of the project at https://thames-sro.co.uk/projects/sesro/.

Disclaimer

This document has been written in line with the requirements of the RAPID Gate 3 Guidance (v3, January 2024) and to comply with the regulatory process pursuant to Thames Water's, Southern Water's and Affinity Water's statutory duties. The information presented relates to material or data which is still in the course of completion. Should the solution presented in this document be taken forward, the co-sponsors will be subject to the statutory duties pursuant to the necessary consenting process, including environmental assessment and consultation as required. This document should be read with those duties in mind.

Revision history

Version	Date	Submitted at
1.0	28-07-2025	RAPID submission

Table of contents

List of tables:

List of figures:

Appendices

Glossary

Terms and acronyms	Definition
ACWG	All Companies Working Group
ADC	Auxiliary Drawdown Channel
ARN	Affected Road Network
DCO	Development Consent Order
DWI	Drinking Water Inspectorate
EA	Environment Agency
EIA	Environmental Impact Assessment
HRA	Habitats Regulations Assessment
IROPI	Imperative Reason of Overriding Public Interest
IRZ	Impact Risk Zone
JNCC	Joint Nature Conservation Committee
LSE	Likely Significant Effects
MAGIC	Multi-Agency Geographic Information for the Countryside
PINS	Planning Inspectorate
RAPID	Regulator's Alliance for Progressing Infrastructure Development
SAC	Special Area of Conservation
SESRO	South East Strategic Reservoir Option
SPA	Special Protection Area
SROs	Strategic Resource Options
STT	Severn to Thames Transfer
UKWIR	UK Water Industry Research
WFD	Water Framework Directive
WRMP	Water Resources Management Plan
WRSE	Water Resources South East
WTW	Water Treatment Works

Executive Summary

Project background information

In August 2024 the Thames Water Water Resources Management Plan (WRMP) was approved for publication by the Secretary of State for Environment, Food and Rural Affairs (Defra). The WRMP establishes the need for a new strategic reservoir in the south-east of England that will supply Thames Water, Southern Water and Affinity Water customers. Following feedback from regulators, stakeholders, customers and further modelling work, it was concluded that a 150 million cubic metres (Mm^3) reservoir (South East Strategic Reservoir Option (SESRO), the 'Project') was the preferred solution.

This report presents the Habitats Regulations Assessment (HRA) Stage 1 Screening Report for SESRO. It sets out the potential for Likely Significant Effects (LSE), during construction and operation, on National Network Sites (see Section 1.6.2 for full definition), as a result of the Project. As described in paragraph 5.5.10 of the EIA Scoping Report, decommissioning has been scoped out of the assessment as the reservoir is to be permanent, and consequently decommissioning is not included within this HRA report. Reference is made to any potential LSE in relation to the Project, alone, and in combination with other plans and projects. This assessment will be submitted to RAPID (The Regulator's Alliance for Progressing Infrastructure Development) as supporting documentation for the Gate 3 submission in August 2025.

A previous version of this report was issued as supporting documentation for the Gate 2 submission in 2022.

Habitats Regulations Assessment summary

SESRO is located within 10km of, and / or has potential hydrological or hydrogeological links, to four National Network Sites, these are:

- Cothill Fen Special Area of Conservation (SAC);
- Hackpen Hill SAC;
- Little Wittenham SAC; and
- Oxford Meadows SAC.

The assessment of LSEs on these four SACs has concluded that no LSEs would occur alone or in-combination with other projects as a result of the impact pathways, listed below. The impact pathways consider the construction and operation of SESRO at this stage of the RAPID assessment process.

- habitat degradation via pollution of ground water and changes in hydrogeology
- habitat degradation via pollution of surface water and changes in hydrology
- habitat degradation as a result of the introduction of invasive non-native species

- habitat degradation via air pollution (impact of atmospheric nitrogen deposition)

The assessment of LSEs associated with the Project on the Oxford Meadows SAC, has concluded no LSEs would occur as a result of habitat degradation via the introduction of invasive non-native species or surface water changes as a result of the construction and operation of SESRO, at this stage of the assessment process.

Although nitrogen deposition is not a listed vulnerability of the qualifying species of Oxford Meadows SAC within the citation, Natural England has requested this pathway to effect be investigated for other projects which could potentially impact the SAC. As such, this pathway to effect will be investigated further for SESRO. The A34 will be the primary access road to SESRO and bisects the SAC. The road would potentially form part of the Affected Road Network (ARN) and may conceivably have a pathway to LSE on the SAC through emissions from increased levels of traffic as a result of SESRO.

Further modelling of traffic generation and distribution associated with the construction and operation of SESRO, and consideration of the sensitivity of the SAC habitats to nitrogen deposition, will need to be undertaken to determine if this a realistic pathway to LSEs at Oxford Meadows SAC. Should a pathway to LSE on Oxford Meadows SAC be identified, the site will need to be screened into HRA Stage 1. Furthermore, Stage 2 Appropriate Assessment may also be required, subject to further information gathering and assessments. Mitigation is expected to be achievable through the use of nutrient credits, habitat management and restoration and a targeted reduction in nitrogen emissions. As more information and data becomes available this will be discussed with Natural England and a suitable approach to HRA on this SAC will be agreed.

There are no SACs designated for bats within 30km of SESRO.

1 Introduction

1.1 Project introduction and context

1.1.1 Under the Water Industry Act 1991, every water company must prepare and maintain a Water Resources Management Plan (WRMP). This plan is updated every five years and sets out how companies are required to produce WRMPs every five years. The water-stressed status of south-east England was recognised by Ofwat (the Water Services Regulation Authority) following submission of the WRMP 2019 (Various Water Companies, 2019), and subsequently, funding was provided for water companies to investigate, then develop Strategic Resource Options (SROs) that will benefit customers and the wider society and help protect and enhance the environment. Thames Water's WRMP 2024 was published on 18 October 2024, following a direction to publish from the Secretary of State in August 2024. The WRMP24 aligns with the revised draft Water Resources South East (WRSE) regional plan and establishes the need for a new 150Mm^3 reservoir (the South East Strategic Reservoir Option, or SESRO) that will primarily supply Thames Water, Southern Water and Affinity Water customers.

1.2 SESRO

1.2.1 In 2019, Ofwat provided funding for water companies to investigate and develop new large scale SROs which are expected to play a crucial role in meeting long-term water needs, particularly in the south east which is described as "seriously water stressed". SESRO is a strategically important SRO which requires development by multiple partners for wider regional benefit beyond one company's supply boundaries. This type of scheme is lengthy and complex to consent and develop. In accordance with Thames Water's WRMP, SESRO is required to be operational by 2040.

1.3 RAPID

1.3.1 The Regulator's Alliance for Progressing Infrastructure Development (RAPID), a joint team made up of the three water regulators: Ofwat, the Environment Agency (EA) and the Drinking Water Inspectorate (DWI), was set up to support and oversee the progress of SROs. At Price Review (PR19), Ofwat introduced a new gated process for which RAPID provides advisory oversight. At each gate, RAPID assesses the progress made in the development of each solution and provides recommendations to Ofwat on whether to release the next tranche of funding to continue scheme development. This process allows comparison of the solutions at regular intervals, and has clear checkpoints, or 'gates', to assess progress and determine which solutions should be taken forward for further work.

1.3.2 The gates, for a standard SRO, set out by Ofwat in PR19 are as follows:

- Gate 1 – initial feasibility, design and multi-solution decision making
- Gate 2 – detailed feasibility, design and multi-solution decision making

- Gate 3 – finalised feasibility, pre-planning investigations and planning applications
- Gate 4 – Planning applications, procurement strategy and land purchase

1.4 Purpose of this report

Habitats Regulations Assessment

1.4.1 As part of the Gate 3 submission to RAPID, a Habitats Regulations Assessment (HRA) is required. The HRA should be sufficiently advanced to represent the SRO's position within Development Consent Order (DCO) pre-application stages. This report provides an update to the HRA Stage 1 Screening report produced for SESRO at Gate 2[1].

1.4.2 This assessment has been undertaken following the principles of an HRA, to inform the development of the Project and identify and reduce risk of non-compliance to current legislation at later stages of the process. Further iterations of the HRA will be undertaken as part of the DCO process, based on more detailed information once the design for the Project has been secured.

1.4.3 This report has been prepared to provide technical supporting information for the SESRO Gate 3 submission to RAPID. It presents the HRA Stage 1 Screening Assessment for SESRO. Following the principles of HRA, as described in the sections below, it sets out the potential for Likely Significant Effects (LSE), during construction and operation, on National Network Sites (see Section 1.6.2), as a result of SESRO. Reference is made to any potential LSE in relation to the Project, alone, and in combination with other plans and projects in accordance with All Companies Working Group (ACWG) guidance[2] and is aligned to the expectations and rationale for the level of assessment at Gate 3 of the RAPID process[3].

1.5 Structure of report

1.5.1 This report has been prepared to provide technical supporting information for the SESRO SRO Gate 3 submission to RAPID. An overview of the SESRO Project is provided in the Gate 3 main report to RAPID (primarily, in Section 2).

1.5.2 The structure of this supporting document is as follows:

- Section 1: Introduction to the Project, Legislative context and an introduction to HRA

[1] Thames Water and Affinity Water (2022). *South East Strategic Reservoir Option (SESRO): Technical Supporting Document B4 Habitats Regulations Assessment.*
[2] Mott MacDonald (2020). *ACWG, WRMP Environmental Assessment Guidance and Applicability with SROs*
[3] OFWAT (2023). *Regulators' Alliance for Progressing Infrastructure Development (RAPID) Strategic Regional Water Resource Solutions Guidance for Gate Three (version 2).*

- Section 2: Project description
- Section 3: Approach to HRA
- Section 4: HRA Screening and conclusions

1.6 Legislative context

Requirements

1.6.1 The Conservation of Habitats and Species Regulations 2017 (as amended) ("the Habitats Regulations") transposed the European Union (EU) Habitats Directive and Wild Birds Directives into English and Welsh law. Regulations 63(1) - (9), 64 and 68 of the Habitats Regulations set out the requirements for assessment of impacts on National Network Sites. The general provisions at 63, 64 and 68 of the Habitats Regulations guides the assessment of implications for National Network Sites:

- *'63. (1) A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which –*

  (a) is likely to have a significant effect on a European Site or a European offshore marine site (either alone or in-combination with other plans or projects), and

  (b) is not directly connected with or necessary to the management of that site[4],

  must make an appropriate assessment of the implications for that site in view of that site's conservation objectives.'

- *64. (1) If the competent authority is satisfied that, there being no alternative solutions, the plan or project must be carried out for imperative reasons of overriding public interest (which, subject to paragraph (2), may be of a social or economic nature), it may agree to the plan or project notwithstanding a negative assessment of the implications for the European Site or the European offshore marine site (as the case may be).'*
- *64. (2) Where the site concerned hosts a priority natural habitat type or a priority species, the reasons referred to in paragraph (1) must be either—*

  (a) reasons relating to human health, public safety or beneficial consequences of primary importance to the environment; or

  (b) any other reasons which the competent authority, having due regard to the opinion of the [appropriate authority], considers to be imperative reasons of overriding public interest.'

[4] If the project is directly connected with or necessary to the management of a National Network Site then according to regulations 63(1)(b) the requirement for a competent authority to make an Appropriate Assessment is not required

- *'68. Where in accordance with regulation 64 —*

  (a) a plan or project is agreed to, notwithstanding a negative assessment of the implications for a National Network Site or a European offshore marine site, or

  (b) a decision, or a consent, permission or other authorisation, is affirmed on review, notwithstanding such an assessment,

  the appropriate authority must secure that any necessary compensatory measures are taken to ensure that the overall coherence of Natura 2000 is protected.'

National Network Sites

1.6.2 The 'Natura 2000' network of sites was established under EU law[5] by Member States to protect particular habitats and species of conservation importance[6]. As a former member of the EU, the UK has maintained this protected network and refers to the sites within it as National Network Sites. These sites comprise Special Areas of Conservation (SACs)[7] for habitats and species and Special Protection Areas (SPAs) for birds[8].

1.6.3 In addition, UK Government policy[9] dictates that all Ramsar sites, proposed Ramsar sites, possible SACs and potential SPAs are treated as though they were statutory National Network Sites, and they will be considered as such in this HRA process. In this document, these sites are referred to collectively as "National Network Sites".

1.7 The HRA process

1.7.1 The HRA process is multi-staged to ensure the requirements of Regulations 63, 64 and 68[10] are fulfilled if the plan or project is not directly connected with or necessary to the management of the National Network Site(s). The stages are described as follows[11]:

1.7.2 Stage 1 screening - to determine if a proposal is likely to have a significant effect on the site's conservation objectives alone, or in combination with, other plans or projects. Screening considers the characteristics of the proposed development and whether there are any potential pathways that could lead to effects on a National Network Site. Stage 2 appropriate assessment/consideration of effects on site

[5] Article 6 of the "Habitats Directive" and Article 4 of the "Wild Birds Directive"
[6] Those habitats and species listed in Annex I and II of the "Habitats Directive" and Annex I of the "Wild Birds Directive"
[7] Designated under the "Habitats Directive"
[8] Designated under the "Wild Birds Directive"
[9] Ministry of Housing, Communities and Local Government (2021). *National Planning Policy Framework*. Online. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/779764/NPPF. Accessed October 2024

[10] The Conservation of Habitats and Species Regulations 2017 (as amended)
[11] Planning Inspectorate (September 2024). *Nationally Significant Infrastructure Projects: Advice on Habitat Regulations Assessments https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-habitats-regulations-assessments Accessed October 2024*

integrity – to assess the implications of a proposal for the qualifying features of the National Network Site, in view of the site's conservation objectives, and identify ways to avoid or minimise any effects. Appropriate Assessment is required where likely significant effects on a site/s from a development alone, or in combination with other plans or projects, cannot be ruled out. Applicants need to consider whether these likely significant effects will adversely affect the integrity of the relevant site or sites in view of its conservation objectives.

1.7.3 Stage 3 derogation – where an adverse effect on the integrity of a site cannot be ruled out, a proposal may be able to go ahead through a derogation. Stage 3 considers if a proposal that would have an adverse effect on the integrity of a National Network Site qualifies for an exemption. The derogation stage involves (in order): the consideration of alternative solutions; consideration of Imperative Reasons of Overriding Public Interest (IROPI); and securing compensatory measures which would maintain the coherence of the UK National Site Network. Each test must be passed in sequence for a derogation to be granted.

1.7.4 Stages 1 and 2 provide the information to allow the competent authority to fulfil Regulation 63. Stage 3 provides the information to allow the competent authority to fulfil Regulations 64 and 68 and ensure the overall coherence of the National Network Sites is protected.

1.7.5 The outcome of each stage determines whether or not the next stage is required to allow a competent authority to grant permission for a project.

1.7.6 If, following screening, a project is likely to have significant effects on a National Network Site, then a Stage 2 'Appropriate Assessment' must be undertaken to ascertain whether the proposal will adversely affect the integrity of the site. If it is assessed that a project would adversely affect the integrity of a site then consideration must be given to alternative solutions and, if there are no alternative solutions, whether an IROPI case can be made. Consideration is, therefore, usually given to HRA matters at the options appraisal stage of a project, as well as at the consenting stage.

1.7.7 The implication of this is that a report of the HRA process is generally only required when decision to permit a development is made. However, screening is often used at earlier stages in a project at a high level to ensure decisions with regards to project detail have due regard to the Habitats Regulations.

1.8 Project impacts applicable to this assessment

1.8.1 Table 1 provides a list and description of the potential impacts on National Network Sites as a result of the construction and operation of SESRO, adapted from UK Water

Industry Research (UKWIR)[12] guidance. Consideration has been given to the nature of the proposed Project, is based on the literature and guidance referenced, whilst also drawing on professional judgement.

Table 1 Potential impacts during construction and operation of SESRO

Broad categories of potential impacts on National Network Sites	Description of potential impacts
Physical loss / damage: • Destruction (removal) • Smothering • Sedimentation / silting • Prevention of natural processes • Habitat degradation • Erosion • Fragmentation • Severance/barrier effects • Edge effects	*Development of built infrastructure associated with SESRO e.g. reservoir embankments, water treatment plants, pipelines, pumping stations, access routes. Indirect effects from a reduction in flows e.g. drying out marginal habitat.* Physical loss/ damage (permanent and temporary) is only likely to be significant where the boundary of the Project extends within the boundary of the National Network Site or within / adjacent to an offsite area (also referred to as functionally linked land) of known foraging, roosting, breeding habitat (that supports species for which a National Network Site is designated).
Non-physical disturbance: • Noise • Visual presence • Human presence • Light pollution	*Noise from vehicular traffic during construction of SESRO.* Noise from construction traffic is only likely to be significant where the transport route to and from the option is within 300m[13] of the boundary of a National Network Site. *Plant and personnel involved in construction and operation of the option e.g. for maintenance, plus non-operational activities such as recreation associated with the Project.* Noise / human presence are only likely to be significant where the boundary of the Project is within 300m[12] of the boundary of a National Network Site or within / adjacent to an offsite area of known foraging, roosting, breeding habitat (that supports species for which a National Network Site is designated). *Development of built infrastructure associated with the option, which includes artificial lighting.*

[12] UK WIR (2012). *Strategic Environmental Assessment and Habitats Regulations Assessment- Guidance for Water Resources Management Plans and Drought Plans (12/WR/02/7).* UK Water Industry Research, 2012.
[13] Highways England (2020). *LA 111 Noise and Vibration.*

Broad categories of potential impacts on National Network Sites	Description of potential impacts
	Effects from light pollution are only likely to be significant where the boundary of the Project is within 500m[14] of the boundary of a National Network Site or if the Project is located within / adjacent to an offsite area of known foraging, roosting, breeding habitat (functionally linked land) (that supports species for which a National Network Site is designated e.g. bats or birds).
Water availability • Drying • Flooding / stormwater • Changes to surface water levels and flows • Changes in groundwater levels and flows	*Change to water levels and flows due to water abstraction, storage and drainage interception.* These effects are only likely to be significant where the boundary of the Project extends within the same ground or surface water catchment as the National Network Site and is within 20km of the site. However, these effects are dependent on hydrological continuity between the Project and a National Network Site, and whether the option is up or down stream from a National Network Site.
Toxic contamination • Water pollution • Soil contamination • Air Pollution	*Reduced dilution in downstream or receiving waterbodies due to changes in abstraction or reduced compensation flow releases to river systems.* These effects are dependent on hydrological continuity between the Project and a National Network Site (where the boundary of the Project extends within the same ground or surface water catchment as the National Network Site), and whether the option is up or down stream from a National Network Site. *Contamination of soil due to leaching of contaminated waters, ingress of dust/air emissions or pollution events.* This effect is only likely to be significant where the boundary of the Project extends within the same ground or surface water catchment as a National Network Site. Effects from air emissions associated with vehicular traffic during construction and operation of options is only likely to be significant where the transport route to and from the Project

[14] Institute of Lighting Professionals (2011). *Guidance Notes for the Reduction of Obtrusive Light GN01:2011*

Broad categories of potential impacts on National Network Sites	Description of potential impacts
	meets the 'Affected Road Network (ARN)' criteria and is within 200m[15],[16] of the boundary of a National Network Site. Emissions of dust during earthworks, construction plant and tunnel / pipeline construction associated with the Project are only likely to be significant where the construction works are within 50m of the boundary of a National Network Site, and up to 50m from the edge of the local construction route at a distance of up to 500m from the main construction site exit(s)[17].
Non-toxic contamination • Nutrient enrichment (e.g. of soils and water) • Algal blooms • Changes in thermal regime • Changes in turbidity • Changes in sedimentation/silting • Changes in salinity	*Changes to water salinity, nutrient level, turbidity, thermal regime due to water abstraction, storage, or inter catchment transfers.* These effects are only likely to be significant where the boundary of the Project extends within the same ground or surface water catchment as a National Network Site. However, these effects are dependent on hydrological continuity between the Project and the National Network Site, and sometimes, whether the Project is up or down stream from a National Network Site.
Biological disturbance • Direct mortality • Changes to habitat availability • Introduction and subsequent out-competition by invasive non-native species • Introduction of disease	*Potential for direct mortality of qualifying feature habitats and species.* This effect is only likely to be significant where construction activities will occur within a National Network Site. *Potential for changes to habitat availability, e.g. reductions in wetted width of watercourses leading to desiccation of macrophyte beds due to changes in abstraction or reduced compensation flow.* This effect is only likely to be significant where the receiving water for the option is a National Network Site or a tributary of a National Network Site.

[15] Institute of Air Quality Management (IAQM) (2020). *A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites. V1.1*
[16] Natural England (2018). *Natural England's Approach to Advising Competent Authorities on the Assessment of Road Traffic Emissions under the Habitats Regulations (NEA001)*
[17] Institute of Air Quality Management (IAQM) (2016). *Guidance for Assessing Dust from Demolition and Construction (Version 1.1)*

Broad categories of potential impacts on National Network Sites	Description of potential impacts
	Potential for the introduction and subsequent out-competition by non-native species leading to the degradation of qualifying feature habitats. This effect is only likely to be significant where the National Network Site is located downstream of the Project. *Potential for the introduction of disease to qualifying features of the National Network Sites such as Chytrid fungus in amphibians.* This effect is only likely to be significant where the National Network Site is located downstream of the Project in relation to waterborne diseases. Such instances may also occur through contact between individuals of a mobile species.

2 Project description

2.1 Land requirements

2.1.1 An EIA Scoping Boundary was developed (see Section 2.2 of the SESRO EIA Scoping Report[18]) which encompasses a total area of approximately 2,400ha and includes those areas in which land, or rights over or under land, are anticipated, at this stage, to potentially be required, either temporarily or permanently, for the construction and operation of the Project (see Figure 1). This has been used as the basis of this HRA screening.

2.2 Project description: introduction and overview

2.2.1 The key components required to deliver the Project are as follows:

Water infrastructure elements

- Provision of a fully bunded raw water storage reservoir (150Mm^3 capacity) in Oxfordshire, 5km south-west of Abingdon.
- Pumping station at the base of the proposed embankment (on the north-east side of the reservoir).
- A below ground conveyance tunnel (circa (c.) 4km long) to transfer flows via the pumping station to and from the intake / outfall structure, and to facilitate drawdown of the reservoir in an emergency, on the River Thames near Culham.
- Thames Water to Southern Water (T2ST) water treatment works (WTW) associated with transfer of water to the south of SESRO (including a waste pipeline to the Abingdon Sewage Treatment Works and other related pipelines within the EIA Scoping Boundary).

Non-water infrastructure elements

- Main access road into the site from the A415 Marcham Road and diversion of the existing East Hanney to Steventon Road.
- Temporary rail siding to facilitate delivery of certain construction materials by freight train.
- Public access, parking and recreation facilities, public education facilities, landscape and biodiversity habitat proposals.
- Local stream channel diversion to both the east and the west of the reservoir and construction of compensatory floodplain.
- Provision of renewable energy infrastructure to support operational net zero, anticipated to include energy recovery turbines. Note the specific nature of renewable energy provision on site is subject to further feasibility study.

Links to other water infrastructure

2.2.2 SESRO has links to a number of other water supply projects, both directly and indirectly. The direct interfaces with other projects need to be accounted for within the DCO limits of SESRO to enable future utilisation of SESRO to reflect the requirements of the Thames Water Water Resources Management Plan 2024 (WRMP24). The following two schemes are planned to come forward by 2040[18].

- Thames to Southern Transfer (T2ST): One of the direct supplies from SESRO would be to Southern Water, via a new WTW within the SESRO EIA Scoping Boundary and a potable water transfer pipeline to Hampshire. This is anticipated to have a peak capacity of 120Ml/d. The WTW requirements are included as a key element of the Project, either to be consented as part of the SESRO DCO application, or separately by Southern Water (where it would be considered as part of the cumulative effects assessment within the EIA for SESRO). The SESRO Project also includes those elements of the potable water transfer pipeline within the EIA Scoping Boundary.
- Swindon and Oxford (SWOX) raw water transfer: The WRMP24 indicates the need for a raw water transfer pumping station and transfer pipeline to support Farmoor Reservoir and supply Thames Water's SWOX Water Resource Zone. The SWOX transfer would be required by 2040, so it would not be possible for it to be constructed after the commissioning of SESRO. The SWOX transfer would require a set of pumps and an initial section of buried pipeline within the EIA Scoping Boundary. As such, there are significant constructability and environmental benefits of providing this as part of SESRO construction rather than at a later date. Therefore, this initial section of pipeline and pumping station are included within the SESRO Project. Note: The transfer pipeline route to Farmoor Reservoir outside the SESRO EIA Scoping Boundary has not yet been developed and is therefore not considered in this HRA report and will be delivered as a separate project.

2.3 Project configuration and operation

2.3.1 Water would be abstracted from the River Thames during periods of high flow and stored in a reservoir, to be released back into the river when there is a need to augment flows. Water released from SESRO could be re-abstracted by existing or new infrastructure further downstream to supply customers of Thames Water, Affinity Water and others.

2.3.2 SESRO also incorporates the future flexibility to abstract water direct from the reservoir, treat it on site (or off site) and then transfer potable water either to the south to serve Southern Water[19] or else to support Thames Water's Swindon and

[18] Thames Water (2024a). South East Strategic Reservoir Option: Scoping Report.
[19] Thames to Southern Transfer, another SRO project, jointly funded by Thames Water and Southern Water

Oxfordshire supply zone[20]. These elements will continue to be explored as the Project develops.

2.3.3 The combined river intake / outfall structure would be located on the western bank of the River Thames upstream of Culham. Abstracted water would pass through an underground tunnel and pumping station and be pumped into the reservoir at the base of an inlet tower.

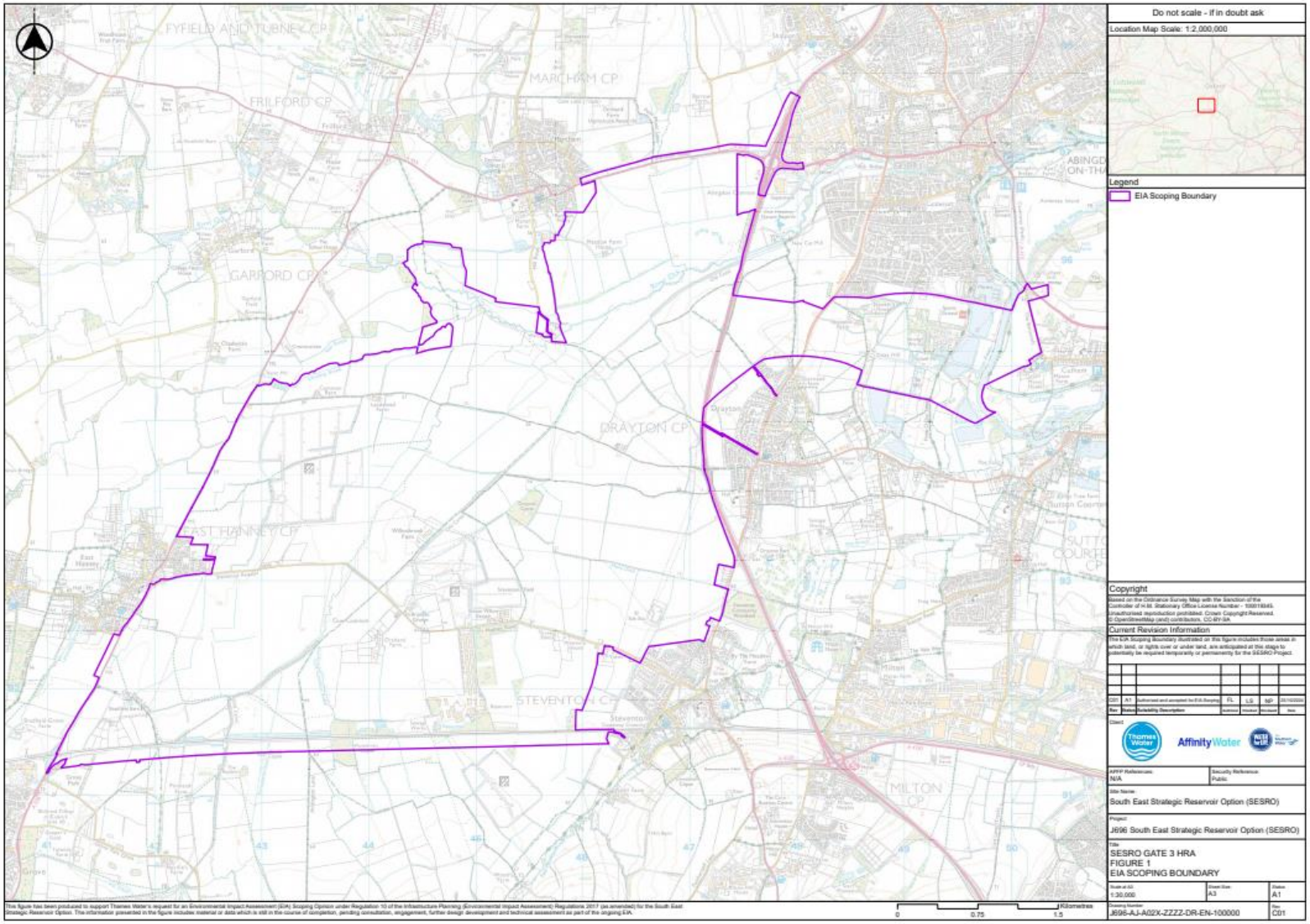
2.3.4 Water being discharged back into the river would pass through an outlet tower and the same tunnel before flowing over a stepped gravity weir at the outfall, which would maximise aeration whilst avoiding scour to the River Thames.

2.3.5 The intake for the reservoir would operate under strict conditions imposed by the EA's future environmental permit for the Project.

2.3.6 The need for water to be released from the reservoir would be triggered by conditions in the lower River Thames, governed by the Lower Thames Operating Agreement. It is expected that the release would primarily be triggered during periods of low flow.

[20] The additional transfers and associated water treatment facilities are not included within the SESRO core Project, although a provision of land allocation within the Project is identified for such future use.

Figure 1 EIA Scoping Boundary



2.4 Interim Master Plan and Design Principles

2.4.1 To provide an illustration of how the engineering requirements of the Project may be integrated with the expected environmental mitigation and possible recreational uses of the site, a landscape and environment led Interim Master Plan for SESRO has been developed for Gate 3 (see Figure 2). This vision will be subject to change and refinement as SESRO progresses through Project promotion, future consultation, environmental assessment and associated design iterations, but the Interim Master Plan provides an overview of how SESRO could be conceptualised. This level of detail is considered appropriate for the SESRO Gate 3 submission, which may exceed that available or presented for other SROs, due to the maturity of the Project (it has been considered in previous strategic plans and subject to previous public consultations) and the level of public interest in the Project, as demonstrated by the response to the non-statutory consultation in summer 2024.

2.4.2 The Interim Gate 3 Master Plan has been informed by the Design Principles and vision for the Project and driven by the initial environmental assessments that have been completed and by initial non-statutory consultation feedback.

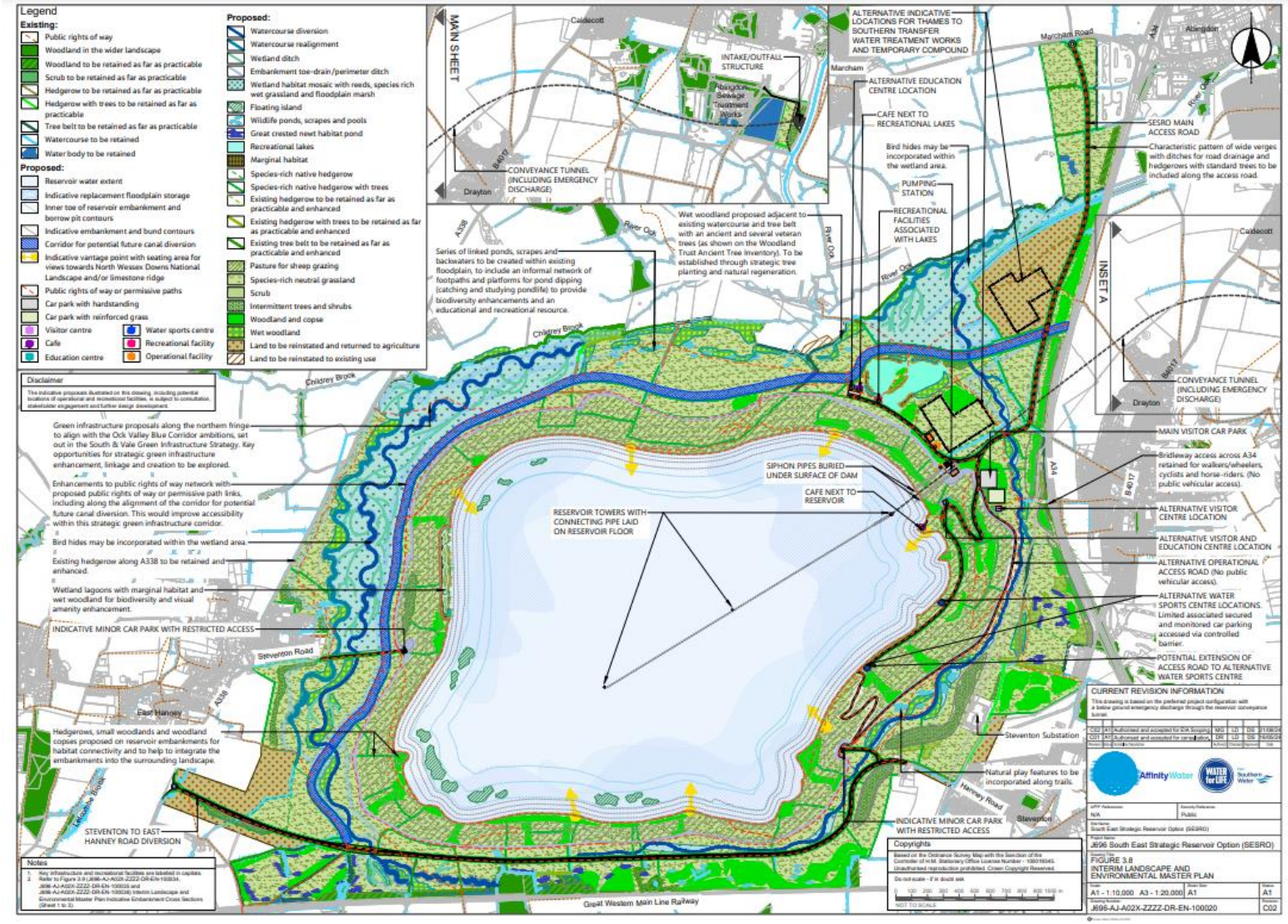
2.4.3 The Master Plan will continue to be developed as more community engagement on the specific design and use of SESRO and detailed design for the Project is undertaken.

2.4.4 The SESRO Draft Design Principles (J696-AA-ZZZZ-RP-ZDP10000) have been used to guide the Interim Master Plan design development undertaken for Gate 3. The SESRO Draft Design Principles have been aligned with the All Company Working Group Water Resources: Design Principles and User Guidance (2023)[21], which sets out requirements for SROs to produce design principles and builds on the National Infrastructure Commission Climate, People, Places, Value, Design Principles for National Infrastructure (2020)[22]. The Project-specific design principles have also been developed with regard to emerging guidance on landscape led reservoir design from Natural England.

[21] All Company Working Group (2023). *Water Resources: Design Principles and User Guidance. A Framework to Support the Development of Exemplar Projects*. Online. Available at: https://www.wrse.org.uk/media/cumkcxyg/acwg-design-principles-methodology-document.pdf. Accessed October 2024.
[22] National Infrastructure Commission (2020). *Climate, People, Places, value, Design Principles for National Infrastructure.* Online. Available at: https://nic.org.uk/app/uploads/NIC-Design-Principles.pdf. Accessed October 2024.

Figure 2 SESRO Gate 3 Interim Landscape and Environmental Master Plan (EIA Figure 3.8)

Note: the details of this plan are subject to change through future community engagement and consultation, further environmental assessment and associated design development



2.5 Scalability

2.5.1 Once built, SESRO would not enable easy future expansion and no such facility is currently built into the design.

2.5.2 Integration of SESRO with other Projects would enable scalability in the future. For example, the STT pipeline connection could be enabled for future use but not commissioned immediately, which would allow future integration with transfers from the Severn to maximise the potentially available additional deployable output. Equally, the SWOX raw water transfer supply or the Thames to Southern Transfer WTWs (developed by either consenting route as described in Section 2.2.2) could be developed in a modular fashion, depending on future need for the water. This would enable the supply of water to those subsidiary uses to be scaled, if required, to help manage future uncertainty. The design of these aspects of the Project will be developed during the next design phase and their inclusion within future iterations of this HRA decided.

3 Approach to HRA

3.1 Scope of the assessment

3.1.1 The aim of this report is to assess the potential for LSEs on National Network Sites from SESRO alone and in combination with other plans and projects.

3.1.2 The information required to inform the HRA Stage 1 Screening utilised desk-based reviews of the following typical sources.

- MAGIC (Multi-Agency Geographic Information for the Countryside) website[23] for National Network Site locations
- Joint Nature Conservation Committee (JNCC) website for National Network Site information[24], including the Natura 2000 Standard Data Form and citation (Appendix A)
- Natural England website for Conservation Objectives (Appendix B) documents, Site Improvement Plans and supplementary advice[25]

3.1.3 The information used, and the assessment that has been undertaken to date is preliminary, suitable for the current stage and will be defined and updated in the context of the consenting process.

3.1.4 National Network Sites were identified using reasonable parameters based on the nature of the potential impact or using criteria such as that set out in:

- Planning Inspectorate Advice Note: Nationally Significant Infrastructure Projects: Advice on Habitats Regulations Assessment[26],
- Design Manual for Roads and Bridges (DMRB) Guidance LA 115 Habitats Regulations Assessments[27],
- Natural England standing guidance on HRA[28].

3.1.5 Consideration has also been given to the guidance contained in the All Company

[23] http://magic.defra.gov.uk
[24] http://jncc.defra.gov.uk
[25] Natural England's Access to Evidence website (undated). Online. Available at: http://publications.naturalengland.org.uk/publication/5815888603250688. Accessed October 2024.
[26] Planning Inspectorate (September 2024). *Nationally Significant Infrastructure Projects: Advice on Habitats Regulations Assessments* https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-habitats-regulations-assessments *Accessed October 2024*
[27] Design Manual for Roads and Bridges (DMRB) (2020). *LA 115 Habitats Regulations Assessment* Revision 1 https://www.standardsforhighways.co.uk/tses/attachments/e2fdab58-d293-4af7-b737-b55e08e045ae?inline=true Accessed October 2024
[28] Defra, NE, NRW, WG (February 2021). *Habitats Regulations Assessments: Protecting a European Site - How a Competent Authority must Decide if a Plan or Project Proposal that Affects a European Site Can Go Ahead.*

Working Group WRMP Environmental Assessment Guidance and applicability with SROs[29].

3.1.6 Professional judgement has been used when determining the potential effect pathways that could result in LSEs at National Network Sites which includes consideration of functionally linked land, mobile species, hydrological linkages and potential hydrogeological linkages.

3.1.7 Sites of Special Scientific Interest (SSSI) Impact Risk Zones (IRZs)[30,31] have been used as a tool to help identify potential effect pathways. This makes use of all available data specific to the National Network Sites but does not replace the consideration of the other screening criteria mentioned in Section 3.2.1, and the consideration of functionally linked land associated with the National Network Sites.

3.1.8 The approach for this stage of assessment is necessarily proportionate and aligned to the current RAPID gated process. It is based on environmental and project information currently available and builds on the HRAs produced at Gate 1 and Gate 2. It assesses the potential impacts on National Network Sites taking account of the developing Project design.

3.2 Identifying National Network Sites

3.2.1 National Network Sites have been identified for SESRO, using the following criteria, adapted from DMRB guidance[32].

- Is SESRO located within 10km of a National Network Site?
- Is SESRO located within 30km of a SAC where bats are one of the qualifying features?
- Does SESRO cross or lie adjacent to, upstream or downstream, of a watercourse designated in part or wholly as National Network Site? Consideration was given to National Network Sites located up to 20km downstream of the project.
- Does SESRO have a potential hydrological or hydrogeological linkage (within the same surface and groundwater catchments) to a National Network Site containing water dependent features?
- Does SESRO have an affected road network (ARN) and, if so, are there any National Network Sites within 200m[33] of the ARN?

[29] Mott MacDonald (2020). *ACWG, WRMP Environmental Assessment Guidance and Applicability with SROs.*
[30] IRZs have been used as a proxy to identify functionally linked land associated with a National Network Site with species qualifying features and to identify risks of impacts out with the site boundary on habitat qualifying features.
[31] Natural England IRZs are as displayed on the MAGIC website (https://magic.defra.gov.uk/MagicMap.aspx)
[32] Design Manual for Roads and Bridges (DMRB) (2020). *LA 115 Habitats Regulations Assessment*
[33] Natural England (2018). *Natural England's Approach to Advising Competent Authorities on the Assessment of Road Traffic Emissions under the Habitats Regulations (NEA001)*

- Does SESRO overlap any relevant SSSI IRZs associated with a National Network Site?

3.3 Identifying and assessing Likely Significant Effects

3.3.1 Following identification of relevant National Network Sites using the criteria in Section 3.2.1, the assessment of LSE was undertaken by considering the potential for effects at each National Network Site based on the potential Project impacts described in Table 1 and the specific vulnerabilities identified for each site as detailed in the Natura 2000 Standard Data Form and citation (see Appendix A), Conservation Objectives (see Appendix B) documents and the Site Improvement Plans[34]. The assessment has been carried out for each National Network Site to identify potential LSEs associated with the Project.

3.3.2 The Habitats Regulations require that the effects of proposals are assessed alone and in combination with other plans or projects. The approach to the in-combination assessment was to identify other plans and projects where risks of in-combination effects may exist for the Project i.e. those where interactions (pathways to effect) between the Project and the National Network Site have been identified within the alone assessment. Effects of other schemes were considered to be potentially acting in-combination with SESRO where spatial and temporal overlaps of similar effects on the same receptors were identified.

[34] http://publications.naturalengland.org.uk/

4 HRA Screening

4.1 Identification of National Network Sites

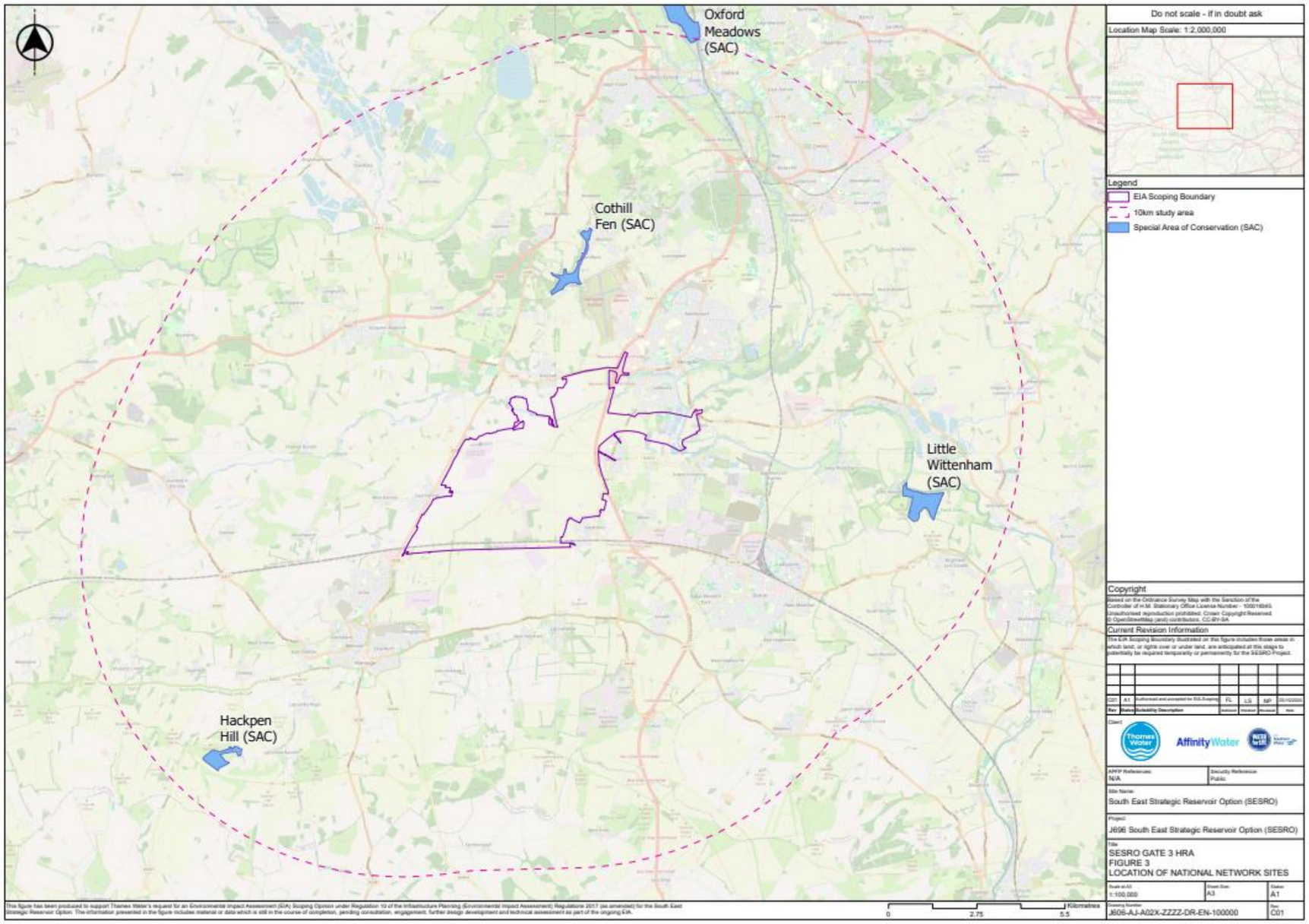
4.1.1 The Project does not include works that are connected with, or necessary for, the management of any National Network Site.

4.1.2 Table 2 details the identification of relevant National Network Sites screened into the assessment in accordance with the methodology outlined in Section 3.2. The National Network Sites identified are shown on Figure 3 and are characterised in Section 4.2.

Table 2 Identification of National Network Sites

Screening criteria	Site identified
Is SESRO located within 10km of a National Network Site?	Cothill Fen SAC – approx. 2.7km north Little Wittenham SAC – approx. 7.1km east Hackpen Hill SAC- approx. 8.9km southwest Oxford Meadows SAC – approx. 9.9km north
Is SESRO located within 30 km of a SAC where bats are one of the qualifying features?	No sites identified
Does SESRO cross or lie adjacent to, upstream or downstream, of a watercourse designated in part or wholly as a National Network Site? Consideration was given to National Network Sites located up to 20km downstream of SESRO.	River Lambourne SAC – approx. 15.7 km south. Further information is provided in Section 4.1.3
Does SESRO have a potential hydrological or hydrogeological linkage (within the same surface and groundwater catchments) to a National Network Site containing water dependent features?	Cothill Fen SAC – approx. 2.7km north Little Wittenham SAC – approx. 7.1km east Oxford Meadows SAC – approx. 9.9km north
Does SESRO have an affected road network (ARN) and, if so, are there any National Network Sites within 200m of the ARN?	The A34 will be a main haulage route for the Project and is considered to be part of the likely ARN. The A34 bisects the Oxford Meadows SAC. Further information is provided in Sections 4.1.4 - 4.1.6.
Does SESRO overlap any relevant Sites of Special Scientific Interest (SSSIs) impact risk zones (IRZs) associated with a National Network Site?	SSSI IRZ associated with Cothill Fen SAC. Further information is provided in Section 4.1.7.

Figure 3 Location of National Network Sites



4.1.3 Although the River Lambourn SAC is located approximately 15.7 km south of the Project, there was no evidence of any hydrological link, based on the information reviewed. It lies within a different management catchment[35] (Kennet and Tributaries) to SESRO.

4.1.4 A desk-based assessment of emissions from road traffic during construction was undertaken as part of the Gate 2 appraisals and changes in traffic flows associated with the construction of SESRO did not meet the criteria for requiring the need for an assessment, and no 'Affected Road Network' (ARN) was defined. In addition, the EIA Scoping Report scoped out air quality effects associated with traffic during construction and operation of the Project and only identified the A417 Marcham Road, adjacent to the site, as qualifying as the ARN. This road is not located in proximity to any National Network Sites.

4.1.5 As the SESRO design develops and construction related traffic data is finalised, it would be necessary to understand the construction vehicle distribution north and south of the A34 interchange as this, in addition to the finalised traffic data, would determine whether there is a need for a more detailed air quality assessment at the next stage of the RAPID Gated process for both HRA and EIA purposes. This assessment would be most relevant to Oxford Meadows SAC which is bisected by the A34 and the qualifying features of the habitats could be impacted by a decrease in air quality and an increase in nitrogen deposition from increased vehicular movements.

4.1.6 Further assessment may include air quality monitoring survey(s) and the production of a construction air quality risk assessment more specific to the proposals and more accurately reflecting SESRO construction activities.

4.1.7 One National Network Site was identified where SESRO is located within relevant SSSI IRZs[36]. SESRO is located within the Cothill Fen SSSI IRZ which indicates that there is risk of impacts from development outside the SAC boundary having an effect on the qualifying features within it. However, Cothill Fen SAC does not have any qualifying mobile species, which could use the SESRO site as functionally linked land[37] as its only qualifying features are habitats (as set out in further detail below in Table 3). In addition, no hydrological impact pathway has been identified in relation to the Cothill Fen SAC, despite the connectivity to the Project via the Sansford Brook, as the SAC is upgradient of any impacts from SESRO. This is covered in more detail in

[35] Environment Agency Catchment Data Explorer - https://environment.data.gov.uk/catchment-planning/

[36] Natural England IRZs are as displayed on the MAGIC website (https://magic.defra.gov.uk/MagicMap.aspx)

[37] Functionally linked land has been defined in the Natural England commissioned report 207 (Chapman & Tyldesley, 2016) as follows: '*The term "functional linkage" refers to the role or "function" that land or sea beyond the boundary of a National Network Site might fulfil in terms of ecologically supporting the populations for which the site was designated or classified. Such land is therefore "linked" to the National Network Site in question because it provides an important role in maintaining or restoring the population of qualifying species at favourable conservation status.*

Section 4.3.

4.1.8 The absence of other SACs designated for mobile species and SPAs (designated for birds) within the search area means the Project location is considered highly unlikely to be functionally linked land.

4.2 Characterisation of the National Network Sites

Cothill Fen SAC

4.2.1 Cothill Fen SAC is located 2.7km to the north of SESRO and contains one of the largest surviving examples of alkaline fen vegetation in central England, a region where fen vegetation is rare[38]. The characteristics of the site are summarised in Table 3 based on information available in the Natura 2000 Standard Data Form and citation (see Appendix A), Conservation Objective document (see Appendix B), Conservation Objectives supplementary advice documents and the Site Improvement Plan, on Natural England's Access to Evidence website[39]. The site vulnerabilities identified in Table 3 provide an indication of the types of impact that may be a risk.

Table 3 Cothill Fen SAC key features for NNS selection and listed vulnerabilities.

Cothill Fen SAC	
Name of National Network Site and its code	Cothill Fen - UK0012889 SSSI components – Cothill Fen SSSI
National Network Site size	43.39 ha
Key features of the National Network Site including the primary reasons for selection and any other qualifying interests	**Annex I habitats that are a primary reason for selection of this site** 7230. Alkaline fens (Calcium-rich springwater-fed fens) This lowland valley mire contains one of the largest surviving examples of alkaline fen vegetation in central England, a region where fen vegetation is rare. The M13 *Schoenus nigricans* – *Juncus subnodulosus* vegetation found here occurs under a wide range of hydrological conditions, with frequent bottle sedge *Carex rostrata*, grass-of-Parnassus *Parnassia palustris*, common butterwort *Pinguicula vulgaris* and marsh helleborine

[38] EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora, Citation for Special Area of Conservation (SAC), Cothill Fen, available at: http://publications.naturalengland.org.uk/publication/5691343946907648 - accessed October 2024

[39] Natural England's Access to Evidence website (undated). Online. Available at: http://publications.naturalengland.org.uk/publication/5691343946907648 - accessed October 2024

Cothill Fen SAC	
	Epipactis palustris. The alkaline fen vegetation forms transitions to other vegetation types that are similar to M24 *Molinia caerulea – Cirsium dissectum* fen-meadow and S25 *Phragmites australis – Eupatorium cannabinum* tall-herb fen and wet alder *Alnus spp*. wood. **Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:** 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*); Alder woodland on floodplains *Priority feature (Some of the natural habitats and species for which UK SACs have been selected are considered to be particular priorities for Conservation at a European scale and are subject to special provisions in the Habitats Regulations. These priority natural habitats and species are denoted with an asterisk (*) in Annex I and Annex II of the Habitats Directive. **Annex II species that are a primary reason for selection of this site:** Not Applicable **Annex II species present as a qualifying feature, but not a primary reason for site selection:** Not Applicable
Vulnerability of the National Network Site – any information available from the standard data forms on potential effect pathways	Based on the Natura 2000 Standard Data Form and Site Improvement Plan (including supplementary advice), threats to this site, which are reflected in the SSSI IRZs, include: • human induced changes in hydrological conditions; • pollution to ground water (point sources and diffuse sources).
National Network Site conservation objectives	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.

Little Wittenham SAC

4.2.2 Little Wittenham SAC is located 7.1km to the east of SESRO. The SAC is one of the best-studied great crested newt (GCN; *Triturus cristatus*) sites in southern England with large numbers of adult newts consistently counted within the two main ponds present on the site during the breeding season (March to June inclusive). GCN have also been recorded several hundred metres into the woodland blocks present within the SAC, during the terrestrial phase of their life cycle. The characteristics of the site are summarised in Table 4 based on information available in the Natura 2000 Standard Data Form and citation (see Appendix A), Conservation Objectives document (see Appendix B), Conservation Objectives supplementary advice and the Site Improvement Plan, on Natural England's Access to Evidence website[40].

4.2.3 GCN are considered mobile species, and the connectivity of the wider local landscape, including the supporting terrestrial habitat to the SAC, may therefore be important in helping to ensure the survival of the overall population. Given the typical distance GCN is known to travel from breeding ponds is approximately 500m[41], and taking account of the distance of the SAC from the indicative location for SESRO (7.1 km), as well as major infrastructure barriers (A34 and the rail line between Didcot and Oxford) to the movement of GCN, there is no impact pathway that could affect functionally linked land related to this SAC.

Table 4 Little Wittenham SAC key features for its NNS selection and listed vulnerabilities.

Little Wittenham SAC	
Name of National Network Site and its code	Little Wittenham SAC - UK0030184 SSSI components – Little Wittenham SSSI
National Network Site size	68.65ha
Key features of the National Network Site including the primary reasons for selection and any other qualifying interests	**Annex I habitats that are a primary reason for selection of this site:** Not Applicable **Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:** Not Applicable **Annex II species that are a primary reason for selection of this site:** Great crested newt *(Triturus cristatus)* Little Wittenham comprises two main ponds set in a predominantly woodland context (broadleaved and conifer woodland is present). There are also areas of grassland, with

[40] Natural England's (undated). Online: *Access to Evidence Website*, available at: http://publications.naturalengland.org.uk/publication/6104670577623040 - accessed October 2024
[41] English Nature (2001). *Great Crested Newt Mitigation Guidelines*.

Little Wittenham SAC	
	sheep grazing and arable bordering the woodland to the south and west. The River Thames is just to the north of the site, and a hill fort to the south. Large numbers of GCN have been recorded in the two main ponds, and research has revealed that they range several hundred metres into the woodland blocks. **Annex II species present as a qualifying feature, but not a primary reason for site selection:** Not Applicable
Vulnerability of the National Network Site – any information available from the standard data forms on potential effect pathways	Based on the Natura 2000 Standard Data Form and Site Improvement Plan (including supplementary advice), threats to this site include: • the introduction of invasive non-native species; • habitat fragmentation; and • changes in the quality and quantity of water supply to their supporting wetland habitats.
National Network Site conservation objectives	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, for example: • the abundance of the population; • as necessary, the connectivity of the SAC population to any associated meta-populations (either within or outside of the site boundary); • the distribution and continuity of the feature and its supporting habitat and the total extent of the habitats which support the feature; and • an overall GCN Habitat Suitability Index score of no less than 0.8. • the permanence of water within ponds in the site; and ensure fish are absent in all breeding ponds.

Hackpen Hill SAC

4.2.4 Hackpen Hill SAC is located 8.9km to the south-west of SESRO and is an extensive area of unimproved chalk grassland in the North Wessex Downs. The characteristics of the site are summarised in Table 5 based on information available in the Conservation Objectives document, Conservation Objectives supplementary advice

and the Site Improvement Plan, on Natural England's Access to Evidence website[42].

Table 5 Hackpen Hill SAC key features for its NNS selection and its listed vulnerabilities.

Hackpen Hill SAC	
Name of National Network Site and its code	Hackpen Hill SAC - UK0030162 SSSI components – Hackpen, Warren and Gramp's Hill Downs SSSI
National Network Site size	35.83ha
Key features of the National Network Site including the primary reasons for selection and any other qualifying interests	**Annex I habitats that are a primary reason for selection of this site:** Not Applicable **Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:** 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) **Annex II species that are a primary reason for selection of this site:** 1654 Early gentian *(Gentianella anglica)* Hackpen Hill is an extensive area of unimproved chalk grassland in the Downs. The site has a variety of aspects and gradients, with the grassland dominated by red fescue *Festuca rubra* and upright brome *Bromus erectus*. The herb flora includes a significant population of early gentian *Gentianella anglica*, as well as autumn gentian *Gentianella amarella*, fragrant orchid *Gymnadenia conopsea*, frog orchid *Coeloglossum viride*, horseshoe vetch *Hippocrepis comosa*, common rock-rose *Helianthemum nummularium* and dwarf thistle *Cirsium acaule*. **Annex II species present as a qualifying feature, but not a primary reason for site selection:** Not Applicable
Vulnerability of the National Network Site – any information available from the standard data	For this site, no vulnerabilities are listed on the Natura 2000 Standard Data Form and Site Improvement Plan. Based on information from the Supplementary Advice Document for this SAC threats to this site include changes in air

[42] Natural England's (undated). Online. *Access to Evidence Website*, available at: http://publications.naturalengland.org.uk/publication/5182475147935744 - accessed October 2024

Hackpen Hill SAC	
forms on potential effect pathways	quality, introduction of invasive non-native species and increases in undesirable species (coarse and aggressive native species such as false oat grass *Arrhenatherum elatius* and tor grass *Brachypodium pinnatum*).
National Network Site conservation objectives	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.

Oxford Meadows SAC

4.2.5 Oxford Meadows SAC is located 9.9km to the north of SESRO and includes vegetation communities that are unique in reflecting the influence of long-term grazing and hay-cutting on lowland hay meadows. The site has benefitted from the survival of traditional management, which has been undertaken for several centuries, and so exhibits good conservation of structure and function. Port Meadow (part of the Oxford Meadows SAC) is the largest of only three known sites in the UK for creeping marshwort (*Apium repens*).

4.2.6 The characteristics of the site are summarised in Table 6 based on information available in the Conservation Objectives document, Conservation Objectives supplementary advice and the Site Improvement Plan, on Natural England's Access to Evidence website[43].

[43] Natural England (undated). Online. *Access to Evidence Website*, available at: http://publications.naturalengland.org.uk/publication/5182475147935744 - accessed October 2024

Table 6 Oxford Meadows SAC key features for NNS selection and its listed vulnerabilities.

Oxford Meadows SAC	
Name of National Network Site and its code	Oxford Meadows SAC - UK0012845 SSSI components – Cassington Meadows SSSI, Pixey and Yarnton Meads SSSI, Port Meadow with Wolvercote Common and Green SSSI, Wolvercote Meadows SSSI
National Network Site size	267.4ha
Key features of the National Network Site including the primary reasons for selection and any other qualifying interests	**Annex I habitats that are a primary reason for selection of this site:** 6510 Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) Together with North Meadow and Clattinger Farm, also in southern England, Oxford Meadows represents lowland hay meadows in the Thames Valley area. The site includes vegetation communities that are perhaps unique in the world in reflecting the influence of long-term grazing and hay-cutting on lowland hay meadows. The site has benefitted from the survival of traditional management, which has been undertaken for several centuries, and so exhibits good conservation of structure and function. **Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:** Not applicable **Annex II species that are a primary reason for selection of this site:** 1614 Creeping marshwort ***(Apium repens)*** Oxford Meadows is selected because Port Meadow is the larger of only two known sites in the UK for creeping marshwort - *apium repens*. **Annex II species present as a qualifying feature, but not a primary reason for site selection:** Not Applicable
Vulnerability of the National Network Site – any information available from the standard data forms on potential effect pathways	Based on the information from the Natura 2000 Standard Data Form and Site Improvement Plan the key threats to the SAC include the introduction of invasive non-native species, pollution to surface waters (limnic and terrestrial, marine and brackish) and human induced changes in hydrological conditions.
National Network Site conservation objectives	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:

Oxford Meadows SAC	
	• 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.

4.3 Assessment of Likely Significant Effects

4.3.1 The following sections report the consideration of the potential for LSEs on the National Network Sites identified and characterised in Section 4.2 of this report, taking into account the potential impacts of SESRO (see Table 1), the screening criteria triggered (see Table 2) and vulnerabilities of the National Network Sites (refer to Table 3, 4, 5 and 6).

4.3.2 Table 7, 8, 9 and 10 below identify the potential impacts of the Project on each of the SAC's considered and the potential pathways to effect. The potential impacts have been colour coded as green, blue and red. Impacts colour coded green have been ruled out from further assessment as no impact pathway is present. Impacts colour coded blue are considered unlikely to have a pathway to effect and further information is provided to justify this conclusion. Impacts colour coded red have the potential to have a pathway to effect and justification and recommendations for further assessment are provided.

Cothill Fen SAC

4.3.3 Cothill Fen SAC lies approximately 2.7km to the north of SESRO and there would be no direct habitat loss from the SAC. The qualifying features of Cothill Fen SAC are alluvial forests and alkaline fen which are not sensitive to non-physical disturbance.

4.3.4 Vulnerabilities identified for this site (see Table 3) that are relevant to this assessment, are human induced changes in hydrological conditions and pollution of ground and surface waters which could all have the potential to result in the degradation of qualifying features. Therefore, potential LSEs are likely to be limited to changes in hydrology or hydrogeology resulting in a reduction in condition of qualifying habitat and/or the loss of qualifying features. Table 7 sets out the potential effect pathways for effects from SESRO on Cothill Fen SAC and an assessment as to whether or not they would result in LSE is presented in the paragraphs following it.

Table 7 Potential impact pathways to Cothill Fen SAC

Project impacts	Potential effect pathway considered
Physical loss / damage	There would be no direct loss of habitat from the SAC due to the distance between the SAC and Project.
Non-physical disturbance	Cothill Fen SAC does not have qualifying features that would be vulnerable / sensitive to changes in noise, visual or human presence and light pollution. This is because the qualifying features are all habitats.
Water table/availability	Construction of the reservoir and abstraction and release of water from and to the River Thames are considered unlikely to result in changes in surface or ground water levels resulting in habitat loss or degradation as this SAC is distant from the Thames. Further justification is provided in Sections 4.3.5 to 4.3.11.
Toxic contamination – water quality	Construction of the reservoir and abstraction of water from the River Thames are considered unlikely to result in changes in surface or ground water quality resulting in habitat loss or degradation. Further justification is provided in Sections 4.3.5 to 4.3.11.
Toxic contamination – air quality	Cothill Fen SAC does not have qualifying features that would be vulnerable / sensitive to changes in air quality.
Non-toxic contamination	Construction of the reservoir and abstraction of water from the River Thames are considered unlikely to result in changes in surface or ground water quality resulting in habitat loss or degradation. Further justification is provided in Sections 4.3.5 to 4.3.11.
Biological disturbance	Cothill Fen SAC does not have qualifying features that would be vulnerable / sensitive to impacts such as direct mortality or changes to habitat availability. The habitats are also not vulnerable to the introduction of INNS or disease.

Surface water changes

4.3.5 The surface water feature in Cothill Fen SAC is the Sandford Brook, which rises approximately 2km to the north-north-west of Cothill, flows through the SAC and discharges to the River Ock, approximately 4km south of the SAC boundary. The River Ock meets the River Thames 3.5km downstream and approximately 1km north of the proposed SESRO abstraction point.

4.3.6 Sandford Brook and Cothill Fen SAC are not directly connected to, and are effectively

upstream of, the area affected by SESRO and are located upstream of the proposed intake / outfall point on the River Thames. The Cothill Fen SAC is located within a different surface waterbody catchment to SESRO. Cothill Fen is within the Sandford Brook (source to Ock) water body catchment and SESRO is within the Cow Common Brook and Portobello Ditch water body catchment[44]. This, coupled with the fact that the Sandford Brook flows south from the Cothill Fen SAC, into the River Ock, which acts as a further hydraulic barrier to any connection to the south towards the Project, whereas the Cow Common and Portobello Ditch flows north into the River Ock, no surface water related connection is feasible. Therefore, there is no surface water pathway that could influence water availability, toxic or non-toxic contamination within the SAC and no LSE on the qualifying habitats of the Cothill Fen SAC is predicted to occur.

Ground-water changes

4.3.7 Groundwater bodies were reviewed as part of the Stage 1 Water Framework Directive (WFD) screening assessment. Two groundwater bodies, as defined by the WFD occur close to the Project: Shrivenham Corallian (GB40602G60060) and Vale of White Horse Chalk (GB40601G601000) (see Supporting Document, Gate 3 WFD Assessment[45]). However, no WFD groundwater body underlies the indicative location of SESRO.Shrivenham Corallian (GB40602G60060) is located north of the SESRO EIA scoping boundary around Marcham and Shippon, c. 1km from SESRO, this groundwater body is associated with the limestone and sandstone bedrock geologies of the Stanford Formation, Kingston Formation and Hazelbury Bryan Formation. As well as being separated from the location of the proposed reservoir by distance, the unproductive Ampthill Clay Formation and Kimmeridge Clay Formation underlying SESRO limits the hydraulic connectivity with the groundwater body. Furthermore, the River Ock is a hydraulic barrier to any connection to the south. Therefore, this groundwater body is screened out from any further assessment.

4.3.8 The Vale of White Horse Chalk (GB40601G601000) groundwater body is associated with the Chalk and Upper Greensand bedrock geology formations located south of EIA Scoping Boundary (c. 1.6km south of SESRO). As such, this aquifer does not lie between SESRO and Cothill Fen SAC and therefore cannot represent a pathway for groundwater between them. Also, this aquifer is separated from the site by multiple unproductive formations: the Ampthill Clay Formation, Kimmeridge Clay Formation and the Gault Formation. Additionally, the groundwater flow in this aquifer is broadly to the south, away from SESRO and Cothill Fen SAC. Thus, this groundwater body is also be screened out from any further assessment.

4.3.9 There is a superficial aquifer which underlies much of the site, associated with the Northmoor Sand and Gravel Member, the Summertown-Radley Sand and Gravel

[44] Ock Operational Catchment | Catchment Data Explorer
[45] Thames Water (2024b) Gate 3 Water Framework Directive Assessment.

Member, the Wolvercote Sand and Gravel Member and Alluvium superficial deposits. This is designated as a Secondary A aquifer (defined as "permeable layers that can support local water supplies and may form an important source of base flow to rivers"). There is also a small, isolated area of Secondary (undifferentiated) aquifer to the east of the site. The River Ock is a hydraulic barrier to groundwater flow between SESRO and Cothill Fen SAC. Therefore, these aquifers can also be screened out from any further assessment.

4.3.10 At Gate 1, following comments from the EA regarding the risk of saline intrusion to areas surrounding the proposed reservoir location, a review of the hydrogeological conditions in proximity to SESRO and the Cothill Fen SAC was undertaken[46]. The hydrogeological conditions were described in the SESRO Gate 1 HRA and a schematic hydrogeological conceptual site model developed to support that assessment[47]. The model clearly demonstrated that the groundwater beneath Cothill Fen SAC flows southward towards the River Ock Valley and would be unaffected by any changes to groundwater conditions as a result of the proposed reservoir further to the south.

4.3.11 Therefore, there is no groundwater pathway that could influence the water table, toxic or non-toxic contamination within the SAC and no LSE on the qualifying habitats of the Cothill Fen SAC are predicted to occur.

Summary

4.3.12 The assessment of LSEs associated with the Project on Cothill Fen SAC has concluded no LSEs would occur on the Cothill Fen SAC as a result of habitat degradation via pollution of ground water and changes in hydrogeology or habitat degradation via pollution of surface water and changes in hydrology. This is because no pathways are considered present for LSE as a result of the construction and operation of SESRO at this stage of the assessment process. **Cothill Fen SAC has, therefore, been screened out of the Stage 1 HRA.**

Little Wittenham SAC

4.3.13 Little Wittenham SAC lies approximately 7.1km (from the designation boundary) to the east of SESRO, and approximately 13km downstream of the proposed intake / outfall into the River Thames (and approximately 2.1km to the outermost IRZ boundary). The qualifying feature of Little Wittenham SAC is GCN.

4.3.14 Vulnerabilities identified for this site include (see Table 4) the introduction of invasive

[46] Atkins (2021). *South East Strategic Reservoir Option Gate 1 Submission – Technical Annex B2 - Habitats Regulations Assessment - Thames Water Utilities - Ltd 28 June 2021*
[47] Figure 5-4 in Atkins (2021) *South East Strategic Reservoir Option Gate 1 Submission – Technical Annex B2 - Habitats Regulations Assessment - Thames Water Utilities - Ltd 28 June 2021*

non-native species, specifically fish species, habitat fragmentation and changes in the quality and quantity of water supply to GCN supporting wetland habitats. Therefore, potential LSEs are limited to Project related impacts that would result in the introduction of invasive non-native species and changes in surface water availability and quality which may reduce the suitability of the habitat to support GCN. Table 8 sets out the potential effect pathways for Little Wittenham SAC and the assessment as to whether or not they would result in LSE at Little Wittenham SAC is presented in the paragraphs following it.

Table 8 Potential impact pathways to Little Wittenham SAC

Project impacts	Potential effect pathway considered
Physical loss/ damage	There would be no direct loss of habitat from the SAC due to the distance between the SAC and Project.
Non-physical disturbance	The qualifying features of Little Wittenham SAC (great crested newts) are not vulnerable / sensitive to changes in noise, visual or human presence and light pollution.
Water table/availability	Construction of the reservoir and abstraction and release of water from and to the River Thames are considered unlikely to result in changes in surface water levels resulting in habitat loss or degradation. Further justification is provided in Sections 4.3.16 to 4.3.17.
Toxic contamination – water quality	Construction of the reservoir and abstraction of water from the River Thames are considered unlikely to result in changes in surface water quality resulting in habitat loss or degradation. Further justification is provided in Sections 4.3.16 to 4.3.17.
Toxic contamination – air quality	Little Wittenham SAC does not have qualifying features that would be vulnerable / sensitive to changes in air quality.
Non-toxic contamination	Construction of the reservoir and abstraction of water from the River Thames is considered unlikely to result in changes in surface water quality resulting in habitat loss or degradation. Further justification is provided in Sections 4.3.16 to 4.3.17.
Biological disturbance	Construction of the reservoir is considered unlikely to result in the spread of Invasive non-native species to the Little Wittenham SAC resulting in habitat degradation. Further justification is provided in Section 4.3.15.

Risk of introduction of invasive non-native species

4.3.15 The distance between the SAC and SESRO (approximately 7.1km from the designation boundary and approximately 13km downstream of the proposed intake / outfall point on the River Thames) precludes this pathway, particularly as the GCN population, for which the SAC is designated, as well as most of its functionally linked woodland habitat is concentrated around one of the larger ponds which is not located within existing flood risk zones for the River Thames[48]. Therefore, there is no feasible pathway to effect and, therefore, no LSE are anticipated as a result of the introduction of non-native species on Little Wittenham SAC.

Surface water changes

4.3.16 The closest surface water feature to the Little Wittenham SAC is the River Thames which runs directly north of the National Network Site. The SAC is predominantly woodland which includes a number of ponds, streams, flushes and damp hollows fed by springs[49]. The GCN population, as well as most of its functionally linked woodland habitat, is concentrated around one of the larger ponds in the woodland which is not located within existing flood zones identified in the area. In addition, the construction and operation of SESRO will not change the flood flow dynamics of the River Thames.

4.3.17 Taking into consideration the distance of the SAC from the SESRO intake / outfall point (13km downstream) and the qualifying features of the SAC not being located within the flood zone for the River Thames, it is concluded that no feasible pathway to effects exist, and no LSEs would occur as a result of surface water level or quality changes.

Summary

4.3.18 The assessment of LSEs associated with the Project on the Little Wittenham SAC has concluded no Likely Significant Effects would occur as a result of habitat degradation via pollution of surface water and changes in hydrology or the introduction of invasive non-native species as a result of the construction and operation of SESRO at this stage of the assessment process. **The Little Wittenham SAC has, therefore, been screened out of the Stage 1 HRA.**

Hackpen Hill SAC

4.3.19 Hackpen Hill SAC lies approximately 8.9km to the southwest of SESRO. The qualifying features of Hackpen Hill SAC are semi-natural dry grasslands and scrubland facies

[48] As shown on the "extent of flooding from rivers or the sea" at the location of the SAC https://check-long-term-flood-risk.service.gov.uk/map
[49] https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/2000429.pdf

on calcareous substrates, as well as Early gentian *Gentianella anglica*.

4.3.20 Vulnerabilities identified for this site (see Table 5) are the introduction of invasive non-native species and increases in undesirable species (coarse and aggressive native species such as false oat grass *Arrhenatherum elatius* and tor grass B*rachypodium pinnatum*) which could result in the degradation of qualifying features. Therefore, potential LSEs are likely to be limited to the introduction of non-native species as a result of the construction and operation of the Project. Table 9 sets out the potential effect pathways for Hackpen Hill SAC and the assessment as to whether or not they would result in LSE at Hackpen Hill SAC is presented in the paragraphs following it.

Table 9 Potential impact pathways to Hackpen Hill SAC

Project impacts	Potential effect pathway considered
Physical loss/ damage	There would be no direct loss of habitat from the SAC due to the distance between the SAC and Project.
Non-physical disturbance	Hackpen Hill SAC is designated for habitats and plant species present and, therefore, does not have qualifying features that would be vulnerable / sensitive to changes in noise, visual or human presence and light pollution. The SAC is also located 8.9km from SESRO so there is no pathway for non-physical disturbance.
Water table/availability	There is no hydrological connectivity between SESRO and the Hackpen Hill SAC.
Toxic contamination – water quality	There is no hydrological connectivity between SESRO and the Hackpen Hill SAC.
Toxic contamination – air quality	Hackpen Hill SAC does not have qualifying features that would be vulnerable / sensitive to changes in air quality.
Non-toxic contamination	There is no hydrological connectivity between SESRO and the Hackpen Hill SAC.
Biological disturbance	Construction of the reservoir is considered unlikely to result in the spread of invasive non-native species to the Hackpen Hill SAC resulting in habitat degradation. Further justification is provided in Section 4.3.21.

Risk of introduction of invasive non-native species

4.3.21 The distance of the SAC, approximately 8.9km, from SESRO and the lack of any hydrological connectivity precludes the feasibility of this pathway and no LSE on the Hackpen Hill SAC, due to the introduction of invasive non-native plant species or undesirable species, is predicted to occur.

Summary

4.3.22 The assessment of LSEs on the Hackpen Hill SAC, from SESRO has concluded no LSEs would occur as a result of habitat degradation via the introduction of invasive non-native species as a result of the construction and operation of SESRO at this stage of the assessment process. **The Hackpen Hill SAC has, therefore, been screened out of the Stage 1 HRA.**

Oxford Meadows SAC

4.3.23 Oxford Meadows SAC lies approximately 9.9km to the north of SESRO and there would be no direct habitat loss. The qualifying features of Oxford Meadows SAC are lowland hay meadows and the presence of creeping marshwort.

4.3.24 Vulnerabilities identified for this site (see 5), that are relevant to this assessment, are human induced changes in hydrological conditions, pollution of surface waters (limnic and terrestrial, marine and brackish) and the introduction of invasive non-native species which could all result in the degradation of qualifying features. Therefore, potential LSEs are likely to be limited to changes in hydrology or hydrogeology and INNS introduction resulting in a reduction in condition of qualifying habitat and/or the loss of qualifying features. Table 10 sets out the potential effect pathways for Oxford Meadows SAC and the assessment as to whether or not they would result in LSE at Oxford Meadows SAC is presented in the paragraphs following it.

Table 10 Potential impact pathways to Oxford Meadows SAC

Project impacts	Potential effect pathway considered
Physical loss/ damage	There would be no direct loss of habitat from the SAC due to the distance between the SAC and Project.
Non-physical disturbance	Oxford Meadows SAC is designated for habitats and plant species present and, therefore, does not have qualifying features that would be vulnerable / sensitive to changes in noise, visual or human presence and light pollution. The SAC is also located 9.9km north of SESRO so there is no pathway to non-physical disturbance.
Water table/availability	Construction of the reservoir and abstraction and release of water from and to the River Thames is considered unlikely to result in changes in surface or ground water levels resulting in habitat loss or degradation. Further justification is provided in Sections 4.3.25 and 4.3.26.
Toxic contamination – water quality	Construction of the reservoir and abstraction of water from the River Thames is considered unlikely to result in changes in surface water quality resulting in habitat

Project impacts	Potential effect pathway considered
	loss or degradation. Further justification is provided in Sections 4.3.25 and 4.3.26.
Toxic contamination – air quality	Impacts from air emissions associated with increased vehicular traffic during construction and operation of the Project could possibly result in impacts to qualifying habitats of the SAC through increased nitrogen deposition, for example. Further justification is provided in Section 4.3.27.
Non-toxic contamination	Construction of the reservoir and abstraction of water from the River Thames is considered unlikely to result in changes in surface water quality resulting in habitat loss or degradation. Further justification is provided in Sections 4.3.25 and 4.3.26.
Biological disturbance	Construction of the reservoir is considered unlikely to result in the spread of invasive non-native species to the Oxford Meadows SAC resulting in habitat degradation. Further justification is provided in Section 4.3.28.

Surface Water Changes

4.3.25 Oxford Meadows SAC is not directly connected to, and is located 18km upstream of, the area affected by SESRO including the proposed intake / outfall point on the River Thames. The SAC is located to the north of the Ock operational catchment, within the Thames (Evenlode to Thame) water body[50]. SESRO is also located within the Ock operational catchment, primarily within the Cow Common Brook and Portobello Ditch water body and with abstraction for the reservoir from the Thames (Evenlode to Thame) water body.

4.3.26 The River Thames upstream of the SAC would not be affected by abstraction of water from the proposed intake / outfall point to the east of SESRO approximately 18km downstream of the SAC. The proposed abstraction is not considered to have an impact on groundwater levels and winter surface water inundation in the SAC. Therefore, given the extremely large size of the Ock catchment area and the Oxford Meadows SAC position in it, relative to SESRO, it is considered that no feasible direct impact pathway exists between SESRO and the SAC.

[50] Ock Operational Catchment | Catchment Data Explorer

Air Quality Changes

4.3.27 While the citation for Oxford Meadows SAC does not include air quality as a vulnerability, it is bisected by the A34 which could potentially be categorised as part of the Affected Road Network (ARN) if there is to be a significant change in vehicular movements as a result of the Project. Natural England has requested this pathway to effect be investigated for other projects which could potentially impact the SAC. As such, this pathway to effect will need to be investigated further for SESRO. Further assessments and modelling may be required, in consultation with NE, as the EIA/HRA progresses, relating to traffic generation and distribution associated with the construction and operation of SESRO and the sensitivity of the SAC habitats to potential effects of changes in nitrogen deposition. Once this information has been gathered and interrogated, an assessment of LSE on Oxford Meadows SAC can be undertaken and a decision on whether a Stage 2 Appropriate Assessment is required, on the basis of that assessment, can be made.

Risk of introduction of invasive non-native species

4.3.28 The distance of the SAC, 9.9km, from SESRO precludes the feasibility of this pathway and no LSE on the Oxford Meadows SAC, due to the introduction of invasive non-native plant species or undesirable species, is predicted to occur.

Summary

4.3.29 The assessment of LSEs associated with the Project on the Oxford Meadows SAC, has concluded no LSEs would occur as a result of habitat degradation via the introduction of invasive non-native species or surface water changes as a result of the construction and operation of SESRO, at this stage of the assessment process. There is a possibility, however, for LSE on the Oxford Meadows SAC as a result of changes to nitrogen deposition from changes to traffic flows movements along the A34 (which bisects the SAC) as a result of both construction and operational traffic from the Project. **Oxford Meadows SAC may, therefore, need to be screened into the HRA Stage 1 and, consequently, a Stage 2 Appropriate Assessment may also be required, subject to further information gathering and assessments as referred to above in paragraph 4.3.27. Should a Stage 2 Appropriate Assessment be required, mitigation of LSE is expected to be achievable through the use of nutrient credits, habitat management and restoration and a targeted reduction in nitrogen emissions.**

4.4 Risk of Likely Significant Effects in-combination with other projects

4.4.1 The HRA process requires that the effects of other projects and plans be considered for effects on National Network Sites in-combination with the Project. However, should the Project have no discernible effect whatsoever on a National Network Site then there is no need for an in-combination assessment to be undertaken. This is because logic dictates that the Project cannot have an in-combination effect if it does not have an effect alone. For the purposes of this HRA, no LSE have been identified for the four National Network Sites assessed. However, additional information is required to rule

out potential LSE on Oxford Meadows as a result of air quality impacts from traffic increases.

4.4.2 It should be noted that the HRA in-combination assessment for the SESRO Project only considered local plans and projects within SESRO's zone of influence. The in-combination assessment with WRMPs, Drought Plans and other SROs has been considered within the Water Resources South East (WRSE) Regional Plan and Thames Water's Water Resource Management Plan 2024.

4.4.3 This HRA report only considers the in-combination effects in terms of local (immediate SESRO site and surrounding area) and site-specific information including large development allocations within Local Plans and larger planning applications. This approach is consistent with current guidance provided by the Planning Inspectorate[51]. A number of plans and projects have been identified that could act in combination with SESRO resulting in significant effects on the surrounding environment. These include; Vale of White Horse Local Plan 2031, South Oxfordshire Local Plan 2035, Oxfordshire County Council Local Transport and Connectivity Plan 2022, Oxford-Cambridge Arc Spatial Framework (emerging), Oxfordshire Plan 2050 (emerging), and Oxfordshire Minerals and Waste Local Plan.

4.4.4 Other developments located in the vicinity of Oxford Meadows e.g. Dalton Barracks are likely to increase traffic flows in the area. Should future modelling of SESRO traffic on A34 indicate significant increased traffic flows through Oxford Meadows, there could potentially be a cumulative impact.

4.4.5 It should be noted that further studies need to be conducted to assess LSE from atmospheric emissions associated with changes to traffic along the A34 on the Oxford Meadows SAC. These assessments should also determine if the changes in air quality as a result of the Project could act in-combination with other projects to cause LSEs on this SAC.

4.4.6 However, the assessment of LSE to date as a result of SESRO alone have concluded no LSE due to an absence of potential effect pathways to the National Network Sites identified at this stage of the assessment process. Therefore, it is unlikely for SESRO to act in combination with any other plans and projects to have an LSE on any of the National Network Sites identified.

4.5 Conclusion

4.5.1 The potential for LSE on National Network Sites has been assessed for the proposed SESRO Project. The following National Network Sites were identified as potentially relevant by applying the screening criteria detailed in Section 3.2.

[51] Planning Inspectorate (2024). *Nationally Significant Infrastructure Projects: Advice on Cumulative Assessment*.

- Cothill Fen SAC;
- Hackpen Hill SAC;
- Little Wittenham SAC; and
- Oxford Meadows SAC.

4.5.2 No LSE on Cothill Fen SAC, Hackpen Hill SAC or Little Wittenham SAC have been identified as a result of the construction and operation of the Project alone or in combination with other plans and projects at this stage of the assessment (see Table 11). These three SACs have consequently been screened out of the Stage 1 HRA.

4.5.3 A possible LSE has been identified for the Oxford Meadows SAC through air quality changes and increased nitrogen deposition as a result of traffic changes along the A34. Further assessments and traffic modelling are required to determine if there could be a pathway to an effect and whether the SAC should be screened into the Stage 1 HRA. **Should the SAC be screened in, due to the identification of LSE, a Stage 2 Appropriate Assessment will be required.**

Continuing Habitats Regulations Assessment Process

4.5.4 As set out in the introduction, HRA is an iterative process, and it is recommended that potential impacts on National Network Sites continue to be assessed as the design of the Project develops. The HRA process will be revisited and updated in the context of the EIA and consenting process to take account of any new information and analysis, revisiting both this screening exercise and, if necessary, carrying out further HRA stages as defined in the Planning Inspectorate Advice Note: Nationally Significant Infrastructure Projects: Advice on Habitats Regulations Assessment (2024)[11].

Table 11 Habitats Regulations Assessment screening results summary

*Note Table 11 only includes potential likely significant effect pathways which were not ruled out from further assessment and did not require any further justification for their exclusion in Section 4.3

National Network Site Assessed (including approximate distances)	Qualifying Features	Potential for effects on qualifying features	Effects alone	Effects in combination with other plans or projects	Screening result	Justification for assessment
Cothill Fen SAC (2.7km north)	Alkaline fens (Calcium-rich springwater-fed fens) Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) * Priority feature	Habitat degradation via pollution of ground water and changes in hydrogeology	No	No	No likely significant effect	No pathways are considered present for LSE from habitat degradation via pollution of ground water or changes in hydrogeology as a result of the construction and operation of SESRO. Refer to Section 4.3 for further detail.
		Habitat degradation via pollution of surface water and changes in hydrology	No	No	No likely significant effect	No pathways are considered present for LSE from habitat degradation via changes quantity or pollution of surface water as a result of the construction and operation of SESRO. Refer to Section 4.3 for further detail.
Little Wittenham SAC (7.1km east)	Great crested newt *Triturus cristatus*	Habitat degradation via changes in hydrology (quality and quantity)	No	No	No likely Significant effect	Qualifying features and supporting habitat not located within the flood risk zone so no pathway to LSE. Refer to Section 4.3 for further detail.
		Habitat degradation via spread of invasive non-native species	No	No	No likely Significant effect	No pathway identified for LSE due to the distance of the SAC (approx. 13km downstream of the discharge point within the River Thames) and the pond being located out with the flood risk zone. Refer to Section 4.3 for further detail.
Hackpen Hill SAC (8.9 km south)	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) Early gentian *Gentianella anglica*	Habitat degradation via spread of invasive non-native plant species or undesirable species	No	No	No likely Significant effect	No pathway identified for LSE due to the distance of the SAC from proposed construction works. Refer to Section 4.3 for further detail.
Oxford Meadows SAC (9.9 km north)	Lowland hay meadows and the presence of creeping marshwort *Apium repens*	Habitat degradation via spread of invasive non-native plant species or undesirable species	No	No	No likely Significant effect	No pathway identified for LSE due to the distance of the SAC from proposed construction works. Refer to Section 4.3 for further detail.
		Habitat degradation as a result of changes in pollution to surface water and hydrology	No	No	No likely Significant effect	No pathways are considered present for LSE from habitat degradation via changes quantity or pollution of surface water as a result of the construction and operation of SESRO as the Project is 18 km downstream of the SAC.

National Network Site Assessed (including approximate distances)	Qualifying Features	Potential for effects on qualifying features	Effects alone	Effects in combination with other plans or projects	Screening result	Justification for assessment
						Refer to Section 4.3 for further detail.
		Habitat degradation as a result of air quality changes and increases in Nitrogen deposition.	Possible	Possible	Possible likely significant effect	A pathway is considered possible for LSE from habitat degradation via changes to air quality and increased nitrogen deposition as a result of traffic changes associated with the Project. Refer to Section 4.3 for further detail.

Appendix A: National Network Sites Citation and Standard Data Form

Cothill Fen SAC Standard Data Form

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.

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 **UK0012889**

SITENAME **Cothill Fen**

TABLE OF CONTENTS

1. SITE IDENTIFICATION

Back to top

1.1 Type	1.2 Site code
B	UK0012889

1.3 Site name

Cothill Fen

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

Back to top

2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-1.329444444	51.69555556

2.2 Area [ha]:

43.39

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
UKJ1	Berkshire, Buckinghamshire and Oxfordshire

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

Back to top

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			0.48	0	G	D			
7230			8.68	0	M	A	C	A	B
91E0	X		9.98	0	G	B	C	A	C

- **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.
I	1044	Coenagrion mercuriale			p				P	DD	D			

- **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

Back to top

4.1 General site character

Habitat class	% Cover
N14	10.0
N09	2.0
N07	25.0
N16	62.0
N06	1.0
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: limestone,nutrient-poor,peat,nutrient-rich,basic 2 Terrestrial: Geomorphology and landscape: lowland,valley

4.2 Quality and importance

Alkaline fens for which this is considered to be one of the best areas in the United Kingdom. Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) 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	J02		B

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	D05		I
H	A02		I
H	B02		I

H	A04		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)

Back to top

5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
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

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3.1 Habitat code

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1130	Estuaries	57
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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
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2140	Decalcified fixed dunes with Empetrum nigrum	57
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2250	Coastal dunes with Juniperus spp.	57
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CODE	DESCRIPTION	PAGE NO
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4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	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

Cothill Fen SAC Citation

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name:	Cothill Fen
Unitary Authority/County:	Oxfordshire
SAC status:	Designated on 1 April 2005
Grid reference:	SU463999
SAC EU code:	UK0012889
Area (ha):	43.55
Component SSSI:	Cothill Fen SSSI

Site description:
This lowland valley mire contains one of the largest surviving examples of alkaline fen vegetation in central England, a region where fen vegetation is rare. The black bog-rush – blunt-flowered rush (*Schoenus nigricans – Juncus subnodulosus*) mire vegetation found here occurs under a wide range of hydrological conditions, with frequent bottle sedge *Carex rostrata*, grass-of-Parnassus *Parnassia palustris*, common butterwort *Pinguicula vulgaris* and marsh helleborine *Epipactis palustris*. The alkaline fen vegetation forms transitions to other vegetation types that are similar to purple moor-grass – meadow thistle (*Molinia caerulea – Cirsium dissectum*) fen-meadow and common reed – hemp-agrimony (*Phragmites australis – Eupatorium cannabinum*) tall-herb fen, as well as wet alder *Alnus glutinosa* woodland.

Qualifying habitats: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*). (Alder woodland on floodplains)*
- Alkaline fens. (Calcium-rich springwater-fed fens)

Annex I priority habitats are denoted by an asterisk (*).

Little Wittenham SAC Standard Data Form

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.

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 **UK0030184**

SITENAME **Little Wittenham**

TABLE OF CONTENTS

1. SITE IDENTIFICATION

1.1 Type	1.2 Site code Back to top
B	UK0030184

1.3 Site name

Little Wittenham

1.4 First Compilation date	1.5 Update date
2001-03	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:	2001-03
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

2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-1.173333333	51.63138889

2.2 Area [ha]:

68.65

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
UKJ1	Berkshire, Buckinghamshire and Oxfordshire

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		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
A	1166	Triturus cristatus			p	2000	2000	i		G	C	A	C	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

4.1 General site character

Back to top

Habitat class	% Cover
N06	1.0
N14	22.0
N19	77.0
Total Habitat Cover	100

Other Site Characteristics

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

4.2 Quality and importance

Triturus cristatus 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]	inside/outside [i|o|b]
H	I01		B

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	A02		I
H	A04		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
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http://publications.naturalengland.org.uk/category/3212324
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

Back to top

5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
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
☒	No

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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

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6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
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7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
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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)

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

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

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C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
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N04	Coastal sand dunes, Sand beaches, Machair	65
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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

Little Wittenham SAC Citation

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name:	Little Wittenham
Unitary Authority/County:	Oxfordshire
SAC status:	Designated on 1 April 2005
Grid reference:	SU572929
SAC EU code:	UK0030184
Area (ha):	68.76
Component SSSI:	Little Wittenham SSSI

Site description:
Little Wittenham comprises two main ponds set in a predominantly woodland context (broad-leaved and conifer woodland is present). There are also areas of grassland, with sheep grazing and arable bordering the woodland to the south and west. The River Thames is just to the north of the site, and a hill fort to the south. Large numbers of great crested newts *Triturus cristatus* have been recorded in the two main ponds, and research has revealed that they range several hundred metres into the woodland blocks.

Qualifying species: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- Great crested newt *Triturus cristatus*

Hackpen Hill SAC Standard Data Form

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.

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 **UK0030162**

SITENAME **Hackpen Hill**

TABLE OF CONTENTS

1. SITE IDENTIFICATION

Back to top

1.1 Type	1.2 Site code
B	UK0030162

1.3 Site name

Hackpen Hill

1.4 First Compilation date	1.5 Update date
2001-01	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:	2001-01
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

2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-1.491944444	51.55944444

2.2 Area [ha]:

35.57

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
UKJ1	Berkshire, Buckinghamshire and Oxfordshire

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

Back to top

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			35.57	0	G	A	C	A	C

- **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.
P	1654	Gentianella anglica			p	1001	10000	i		M	C	A	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

Back to top

4.1 General site character

Habitat class	% Cover
N09	100.0
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: limestone,basic,nutrient-poor 2 Terrestrial: Geomorphology and landscape: escarpment

4.2 Quality and importance

Semi-natural dry grasslands and scrubland facies: on calcareous substrates (Festuco-Brometalia) for which the area is considered to support a significant presence. Gentianella anglica 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]	inside/outside [i|o|b]

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

Back to top

5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
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
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
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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
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H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
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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
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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

Hackpen Hill SAC Citation

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name:	Hackpen Hill
Unitary Authority/County:	Oxfordshire
SAC status:	Designated on 1 April 2005
Grid reference:	SU352847
SAC EU code:	UK0030162
Area (ha):	35.83
Component SSSI:	Hackpen, Warren and Gramp's Hill Downs SSSI

Site description:
Hackpen Hill is an extensive area of unimproved chalk grassland in the North Wessex Downs. The site has a variety of aspect and gradients, with species-rich grassland dominated by red fescue *Festuca rubra* and upright brome *Bromopsis erecta*. The herb flora includes a significant population of early gentian *Gentianella anglica*, as well as autumn gentian *G. amarella*, and a large population of Chiltern gentian *G. germanica*, together with fragrant orchid *Gymnadenia conopsea*, frog orchid *Coeloglossum viride*, horseshoe vetch *Hippocrepis comosa*, common rock-rose *Helianthemum nummularium* and dwarf thistle *Cirsium acaule*.

Qualifying habitats: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*). (Dry grasslands and scrublands on chalk or limestone)

Qualifying species: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- Early gentian *Gentianella anglica*

Oxford Meadows SAC Standard Data Form

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.

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 **UK0012845**

SITENAME **Oxford Meadows**

TABLE OF CONTENTS

1. SITE IDENTIFICATION

Back to top

1.1 Type	1.2 Site code
B	UK0012845

1.3 Site name

Oxford Meadows

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

2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-1.286666667	51.77694444

2.2 Area [ha]:

267.4

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
UKJ1	Berkshire, Buckinghamshire and Oxfordshire

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

Back to top

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
6510			106.96	0	M	B	B	B	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.
P	1614	Apium repens			p				P	DD	A	A	A	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

Back to top

4.1 General site character

Habitat class	% Cover
N14	13.0
N10	87.0
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: alluvium,neutral,clay 2 Terrestrial: Geomorphology and landscape: lowland,floodplain

4.2 Quality and importance

Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) for which this is considered to be one of the best areas in the United Kingdom. Apium repens for which this is the only known outstanding locality in the United Kingdom. which is known from 15 or fewer 10 x 10 km squares 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]	inside/outside [i|o|b]
H	I01		B
H	H01		B
H	J02		B

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

Back to top

5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
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
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	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
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IN09	Special Area of Conservation	67

Oxford Meadows SAC Citation

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name:	Oxford Meadows
Unitary Authority/County:	Oxfordshire
SAC status:	Designated on 1 April 2005
Grid reference:	SP492090
SAC EU code:	UK0012845
Area (ha):	265.89
Component SSSI:	Cassington Meadows SSSI, Pixey and Yarnton Meads SSSI, Port Meadow with Wolvercote Common and Green SSSI, Wolvercote Meadows SSSI

Site description:
Oxford Meadows includes vegetation communities that are perhaps unique in reflecting the influence of long-term grazing and hay-cutting on lowland hay meadows. The site has benefited from the survival of traditional management, which has been undertaken for several centuries, and so exhibits good conservation of structure and function. Port Meadow is the largest of only three known sites in the UK for creeping marshwort *Apium repens*.

Qualifying habitats: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)

Qualifying species: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- Creeping marshwort *Apium repens*

1.1

Appendix B: National Network Sites Conservation Objectives

Cothill Fen SAC Conservation Objectives

European Site Conservation Objectives for Cothill Fen Special Area of Conservation Site Code: UK0012889

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

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**

This document should be read in conjunction with the accompanying *Supplementary Advice* document, which provides more detailed advice and information to enable the application and achievement of the Objectives set out above.

Qualifying Features:

H7230. Alkaline fens; Calcium-rich springwater-fed fens

H91E0. Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*); Alder woodland on floodplains*

* denotes a priority natural habitat or species (supporting explanatory text on following page)

*** Priority natural habitats or species**

Some of the natural habitats and species for which UK SACs have been selected are considered to be particular priorities for conservation at a European scale and are subject to special provisions in the Habitats Regulations. These priority natural habitats and species are denoted by an asterisk (*) in Annex I and II of the Habitats Directive. The term 'priority' is also used in other contexts, for example with reference to particular habitats or species that are prioritised in UK Biodiversity Action Plans. It is important to note however that these are not necessarily the priority natural habitats or species within the meaning of the Habitats Regulations.

Explanatory Notes: European Site Conservation Objectives

These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2017 as amended from time to time (the "Habitats Regulations"). They must be considered when a competent authority is required to make a 'Habitats Regulations Assessment', including an Appropriate Assessment, under the relevant parts of this legislation.

These Conservation Objectives and the accompanying Supplementary Advice (where available) will also provide a framework to inform the measures needed to conserve or restore the European Site and the prevention of deterioration or significant disturbance of its qualifying features.

These Conservation Objectives are set for each habitat or species of a Special Area of Conservation (SAC). Where the objectives are met, the site will be considered to exhibit a high degree of integrity and to be contributing to achieving Favourable Conservation Status for that species or habitat type at a UK level. The term 'favourable conservation status' is defined in regulation 3 of the Habitats Regulations.

Publication date: 27 November 2018 (version 3). This document updates and replaces an earlier version dated 30 June 2014 to reflect the consolidation of the Habitats Regulations in 2017.

Little Wittenham SAC Conservation Objectives

European Site Conservation Objectives for Little Wittenham Special Area of Conservation Site code: UK0030184

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- **The extent and distribution of habitats of qualifying species**
- **The structure and function of the habitats of qualifying species**
- **The supporting processes on which the habitats of qualifying species rely**
- **The populations of qualifying species, and,**
- **The distribution of qualifying species within the site.**

This document should be read in conjunction with the accompanying *Supplementary Advice* document, which provides more detailed advice and information to enable the application and achievement of the Objectives set out above.

Qualifying Features:

S1166. *Triturus cristatus*; Great crested newt

Explanatory Notes: European Site Conservation Objectives

These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2017 as amended from time to time (the "Habitats Regulations"). They must be considered when a competent authority is required to make a 'Habitats Regulations Assessment', including an Appropriate Assessment, under the relevant parts of this legislation.

These Conservation Objectives and the accompanying Supplementary Advice (where available) will also provide a framework to inform the measures needed to conserve or restore the European Site and the prevention of deterioration or significant disturbance of its qualifying features.

These Conservation Objectives are set for each habitat or species of a Special Area of Conservation (SAC). Where the objectives are met, the site will be considered to exhibit a high degree of integrity and to be contributing to achieving Favourable Conservation Status for that species or habitat type at a UK level. The term 'favourable conservation status' is defined in regulation 3 of the Habitats Regulations.

Publication date: 27 November 2018 (version 3). This document updates and replaces an earlier version dated 30 June 2014 to reflect the consolidation of the Habitats Regulations in 2017.

Hackpen Hill SAC Conservation Objectives

European Site Conservation Objectives for Hackpen Hill Special Area of Conservation Site Code: UK0030162

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

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.**

This document should be read in conjunction with the accompanying *Supplementary Advice* document, which provides more detailed advice and information to enable the application and achievement of the Objectives set out above.

Qualifying Features:

H6210. Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*); Dry grasslands and scrublands on chalk or limestone

S1654. *Gentianella anglica*; Early gentian

Explanatory Notes: European Site Conservation Objectives

These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2017 as amended from time to time (the "Habitats Regulations"). They must be considered when a competent authority is required to make a 'Habitats Regulations Assessment', including an Appropriate Assessment, under the relevant parts of this legislation.

These Conservation Objectives and the accompanying Supplementary Advice (where available) will also provide a framework to inform the measures needed to conserve or restore the European Site and the prevention of deterioration or significant disturbance of its qualifying features.

These Conservation Objectives are set for each habitat or species of a Special Area of Conservation (SAC). Where the objectives are met, the site will be considered to exhibit a high degree of integrity and to be contributing to achieving Favourable Conservation Status for that species or habitat type at a UK level. The term 'favourable conservation status' is defined in regulation 3 of the Habitats Regulations.

Publication date: 27 November 2018 (version 3). This document updates and replaces an earlier version dated 30 June 2014 to reflect the consolidation of the Habitats Regulations in 2017.

Oxford Meadows SAC Conservation Objectives

European Site Conservation Objectives for Oxford Meadows Special Area of Conservation Site Code: UK0012845

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

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.**

This document should be read in conjunction with the accompanying *Supplementary Advice* document, which provides more detailed advice and information to enable the application and achievement of the Objectives set out above.

Qualifying Features:

H6510. Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
S1614. *Apium repens*; Creeping marshwort

Explanatory Notes: European Site Conservation Objectives

These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2017 as amended from time to time (the "Habitats Regulations"). They must be considered when a competent authority is required to make a 'Habitats Regulations Assessment', including an Appropriate Assessment, under the relevant parts of this legislation.

These Conservation Objectives and the accompanying Supplementary Advice (where available) will also provide a framework to inform the measures needed to conserve or restore the European Site and the prevention of deterioration or significant disturbance of its qualifying features.

These Conservation Objectives are set for each habitat or species of a Special Area of Conservation (SAC). Where the objectives are met, the site will be considered to exhibit a high degree of integrity and to be contributing to achieving Favourable Conservation Status for that species or habitat type at a UK level. The term 'favourable conservation status' is defined in regulation 3 of the Habitats Regulations.

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