Botley West Solar Farm

Environmental Statement

Volume 3

Appendix 9.14 Habitat Regulations Assessment Report

~~November~~ October ~~2024~~ 2025

PINS Ref: EN010147

Document Ref: EN010147/APP/6.5

Revision ~~P0~~ P1

APFP Regulation 5(2)(a); Planning Act 2008; and Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations

Approval for issue

[redacted] [redacted]

~~14 November 2024~~20 October 2025

Prepared by:

RPS
101 Park Drive,
Milton Park, Abingdon,
Oxfordshire, OX14 4RY
United Kingdom~~20 Western Avenue,~~
~~Milton Park, Abingdon,~~
~~Oxfordshire, OX14 4SH~~
~~United Kingdom~~

Prepared for:

Photovolt Development Partners GmbH, on behalf of SolarFive Ltd.

Contents

Tables

Annexes

Glossary

Term	Meaning
European site	Sites protected under the Habitats Directive as defined in regulation 8 of The Conservation of Habitats and Species Regulations 2017.
The Applicant	SolarFive Ltd
The Project	Botley West Solar Farm
The Site or Order Limits	The area of land encompassing the Project development and shown on the Site Location and Order Limits plan (Volume 2, Figure 1.1 of the ES).

Abbreviations

Abbreviation	Meaning
APIS	Air Pollution Information System
AADT	Average Annual Daily Traffic
CEA	Cumulative Effects Assessment
CJEU	Court of Justice of the European Union
DCLG	Department for Communities and Local Government
DLUHC	Department for Levelling Up, Housing and Communities
DCO	Development Consent Order
DMRB	Design Manual for Roads and Bridges
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
ES	Environmental Statement
ExA	Examining Authority
HDD	Horizontal Directional Drilling
HRA	Habitats Regulations Assessment
IAQM	Institute of Air Quality Management
INNS	Invasive Non Native Species
IROPI	Imperative Reasons of Overriding Public Interest
JNCC	Joint Nature Conservation Committee
LSE	Likely Significant Effect
NH3	Ammonia
NOx	Nitrogen oxide

Abbreviation	Meaning
NPPF	National Planning Policy Framework
PEIR	Preliminary Environmental Information Report
PINS	The Planning Inspectorate
pSAC	Proposed Special Area of Conservation
pSPA	Proposed Special Protection Area
PV	Photovoltaic
PVDP	Photovolt Development Partners GmbH
SAC	Special Area of Conservation
SIP	Site Improvement Plan
SPA	Special Protection Areas
SSSI	Site of Special Scientific Interest

Units

Unit	Description
%	Percentage
ha	Hectare
km	Kilometre
m	Metre

1 Introduction

1.1 Overview

1.1.1 This Appendix of the Environmental Statement (ES) has been prepared by RPS for Photovolt Development Partners GmbH, on behalf of. SolarFive Ltd. (the Applicant). This Appendix supports Chapter 9: Ecology and Nature Conservation of the ES **[EN010147/APP/6.3]**.

1.1.2 This document forms Appendix 9.14 of the ES **[EN010147/APP/6.5]**. This document provides the findings of the Habitat Regulations Assessment (HRA) process undertaken for the Project.

1.2 Purpose of this Report

1.2.1 The purpose of this report is to apply the legislative requirements of the Conservation of Habitats and Species Regulations 2017 (the "Habitats Regulations") to the Project. The Habitats Regulations transposed into domestic law the requirements of Article 6(3) of Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna ("the Habitats Directive"). Regulation 63(1) of the Habitats Regulations sets out the circumstances in which an appropriate assessment of a project is required:

'A competent authority, before deciding to...give any consent, permission or 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, must make an appropriate assessment of the implications of the plan or project for that site in view of that site's conservation objectives.'

1.2.2 Regulation 63 applies the precautionary principle to European designated areas. Regulation 63(5) states the following: "*In the light of the conclusions of the assessment, and subject to regulation 64, the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site or the European offshore marine site*". "European sites" include any Special Protection Area (SPA) and Special Area of Conservation (SAC). Pursuant to Regulation 84, these assessment provisions apply to any application for development consent under the Planning Act 2008.

1.2.3 A project is likely to have a significant effect that requires an appropriate assessment if the risks cannot be excluded on the basis of objective information. If an appropriate assessment is required, the competent authority must be satisfied that the project will not adversely affect the integrity of the European site(s) concerned in view of its conservation objectives.

1.2.4 Plans and projects for which it is not possible to conclude that there would be no adverse effect on the integrity of European sites may still be permitted if there are no alternatives and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead (Regulation 64 of the Habitat Regulations). In such cases, any compensation measures necessary

to ensure the overall coherence of the site network is protected must also be secured (Regulation 68 of the Habitat Regulations).

1.3 Scope

1.3.1 In line with PINS Guidance with respect to Habitats Regulations Assessments (PINS 2024), key activities in the Project programme that are considered within this report are:

- Site preparation and enabling works;
- Construction phase;
- Operation; and
- Decommissioning.

1.3.2 It is a matter of UK Government policy and guidance (PINS 2024) that the following sites should also be subject to a HRA, where affected by a plan or project:

- proposed SACs;
- potential SPAs;
- Ramsar sites (both proposed and listed); and
- areas secured as sites compensating for damage to a European site.

1.3.3 The scope of sites included in the assessment is based on whether there is a pathway for a potential effect. Such pathways could include:

- Presence on the Project site of a species for which the site is designated;
- Where the site is within 200 m of a road that may encounter increases in traffic flow as a result of the Project;
- Those with a possible hydrologic connection to the Project site; or
- Those designated for the presence of mobile species such as bats or birds.

1.3.4 Taking the above into account, the following two sites were identified as requiring consideration as to whether they could be affected:

-
- Cothill Fen SAC (on the basis that it could have a hydrological connection to the Project site); and
- Oxford Meadows SAC (on the basis of both being within 200 m of a road where an increase in traffic could occur and having a hydrological connection to the Project site via the River Thames).

1.3.5 The location of these sites relative to the Project site is shown on Annex D Figure 1.

1.3.6 The scope of the sites to be considered has been agreed with Natural England during pre-submission engagement.

1.3.7 No European sites or Ramsar sites lie wholly or partly within the Project site boundary. Apart from the two SACs identified above, no other sites to be subject to a HRA are within the zone of influence of the Project and, as such, are not considered further in this report.

1.3.8 The findings of the technical chapters of the ES (specifically Chapter 4 Approach to Environmental Assessment **[EN010147/APP/6.3]** and Chapter 19: Air Quality **[EN010147/APP/6.3]**) and consultation and engagement with Natural England have been taken into account in preparing this HRA.

1.3.9 There is no potential for transboundary effects as scoped out at PEIR stage.

2 Methodology

2.1 Approach

2.1.1 The approach to Habitats Regulations Assessment has been set out in caselaw and guidance issued by PINS[1]:

- All plans and projects (including planning applications) which are not directly connected with, or necessary for, the conservation management of a habitat site, require consideration of whether the plan or project is likely to have significant effects on that site. This consideration – typically referred to as the 'Habitats Regulations Assessment screening' – should take into account the potential effects both of the plan/project itself and in combination with other plans or projects. In the light of the precautionary principle, a project is "likely to have a significant effect" so as to require an appropriate assessment if the risk cannot be excluded on the basis of objective information and it might undermine a site's conservation objectives. A risk or a possibility of such an effect is enough to warrant the need for an appropriate assessment.
- If a proposed plan or project is considered likely to have a significant effect on a protected habitats site (either individually or in combination with other plans or projects) then an appropriate assessment of the implications for the site, in view of the site's conservation objectives, must be undertaken. The conservation objectives relate to each of the habitats and species for which the site was designated.
- An appropriate assessment must consider the direct and indirect effects on the designated features and conservation objectives, including the following principles:
  - An appropriate assessment must catalogue the entirety of habitat types and species for which a site is protected.
  - An appropriate assessment must identify and examine the implications of the proposed plan or project for the designated features present on that site, including for the typical species of

[1] "See PINS 2024, as well as R (Wyatt) v. Fareham Borough Council [2022] EWCA Civ 983 at [9] and R (Mynnyd y Gwynt) v. SSBEIS [2018] EWCA Civ 231 at [8], which summarise the effect of previous authorities at national and ECJ level.

designated habitats as well as the implications for habitat types and species present outside the boundaries of that site and functionally linked; insofar as those implications are liable to affect the conservation objectives of the site.

- 'Appropriate' is not a technical term. It indicates that an assessment needs to be proportionate and sufficient to support the task of the competent authority in determining whether the plan or project will adversely affect the integrity of the site. What is required of the competent authority, therefore, is a case-specific assessment in which the applicable science is brought to bear with sufficient rigour on the implications of the project for the protected site concerned. An appropriate assessment must contain complete, precise and definitive findings and conclusions to ensure that there is no reasonable scientific doubt as to the effects of the proposed plan or project. It must be based on the best scientific knowledge in the field.
- The competent authority may agree to the plan or project only if it is satisfied that there is no reasonable scientific doubt as to the absence of adverse effects on the integrity of the site concerned. The competent authority must determine whether the proposal will not adversely affect the integrity of the site(s). The integrity of a site is the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was designated.
- The duty to ascertain whether there will be no adverse effects on the integrity of the protected site does not need to be established to the standard of "absolute certainty". What is required is a sufficient degree of certainty to ensure that there is no reasonable doubt on the relevant question.
- A competent authority must consult Natural England for the purposes of the assessment and must have regard to any representations that Natural England may wish to make within a reasonable time (as specified by the competent authority).

2.2 Process

2.2.1 Prior to completing the HRA process, projects need to collect information on identified sites and their conservation objectives.

2.2.2 The qualifying interest features for the sites assessed in this report have been obtained via the citation details on the Joint Nature Conservation Committee (JNCC) and Natural England websites. The conservation objectives provide the basis for determining what is currently causing, or may cause, a significant effect, and for informing the scope of appropriate assessments.

2.2.3 In addition to qualifying interest features, it is necessary to explore the environmental features and conditions required to maintain the integrity of the sites, as well as both current condition and trends in environmental processes.

2.2.4 At every stage of the Habitats Regulations Assessment process, consultation between the Applicant and the appropriate nature conservation body (Natural England) is important in agreeing the conclusions of that stage.

Stage 1 – Likely Significant Effect

2.2.5 Once the information on identified sites and their conservation objectives have been collected, the first stage of the HRA process is to determine whether there are any Likely Significant Effects (LSEs) on European sites as a result of the Project in the absence of mitigation/avoidance measures in accordance with the "People over Wind" ruling.[2] This is essentially a risk assessment to decide whether a more detailed assessment is required and, if so, the scope of the issues and features to be addressed. This involves identifying the potential pathways through which the Project could affect the qualifying interest features of European sites and then assessing, in broad terms, the magnitude of each impact to determine whether a significant effect is likely. In making this determination, the risk of an effect has been taken into account, not just on those sites within the administrative boundaries of Vale of White Horse, West Oxfordshire and Cherwell Valley, along with Oxfordshire County Council (within which the Project sits), but, in line with best practice, considering potential ways in which the Project could impact upon other European sites.

2.2.6 The Habitats Regulations require that a decision to grant consent can only be made once the competent authority is satisfied that no adverse effects on the integrity of the European sites in question are likely, either alone and in-combination with other plans and projects. Therefore, the HRA process requires the identification of other plans and projects that might affect the qualifying interest features of the European sites in combination with the Project and a decision as to whether there are any LSEs that might occur in-combination (collectively) that would not occur when the impacts of the Project are considered alone.

2.2.7 The process of identifying other consented or proposed developments and screening to create a shortlist of those having potential for cumulative effects with the Project is described in Chapter 20: Cumulative and Inter-relationships **[EN010147/APP/6.3].** Appendix 20.1: Cumulative Developments Longlist and Shortlist **[EN010147/APP/6.5]** lists the shortlisted cumulative developments and the tier they have been assigned (reflecting the level of certainty regarding each development's likelihood of being realised) in accordance with Planning Inspectorate Advice Note 17 (PINS, 2019).

2.2.8 There is no formal screening stage under the Habitats Regulations, but following PINS guidance (PINS 2024), the term is used here to refer to the consideration of whether the need for appropriate assessment under the

[2] See Case C-323/17 "People over Wind" (in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site); and para. 3.15 of Advice Note 10 (PINS, 2022).

Habitats Regulations has been triggered according to the application of the precautionary principle summarised above.

2.2.9 The main purpose of this stage is to screen out those aspects of the Project which would not be likely to give rise to significant effects (either alone or in combination with other plans or projects) and to screen out features of each European site that are not likely to be significantly affected. Judgments have been based on sound reasoning and within the context of best available knowledge of the various ways in which development of the nature proposed could impact on the qualifying interest features of the European sites. If likely significant effects cannot be excluded under the precautionary principle, then it is necessary to proceed to Stage 2 (appropriate assessment) for more detailed consideration.

Stage 2 – Appropriate Assessment

2.2.10 The appropriate assessment stage assesses the likely significant effects of the Project on the qualifying features of the site, in view of the conservation objectives of European sites and determines whether a conclusion of no adverse effect on the integrity of the site in question can be reached for the Project alone and in-combination with other plans or projects.

2.2.11 Government guidance (DLUHC, 2019b) defines integrity as '…*the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was designated*'.

Stage 3 & Stage 4 – Imperative Reasons of Over-riding Public Interest and Compensation

2.2.12 If an adverse effect on integrity cannot be ruled out after Appropriate Assessment, the next steps, Stages 3 and 4, are to consider whether there are Imperative Reasons of Over-riding Public Interest (IROPI) and, if there are, what compensatory measures can be implemented to ensure the maintenance of the ecological integrity of the sites in question. With respect to the Project, these steps are not considered further as they are not necessary with the overall conclusions being that there would be no adverse effect on the integrity of any of the sites assessed.

3 Qualifying Interest Features and Conservation Objectives

3.1 Introduction

3.1.1 SACs and SPAs are European sites designated under the Habitats Directive, as transposed into the Habitats Regulations, which refer to the Annexes of the Habitats Directive.

3.1.2 Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the habitat types and species identified in Annexes I and II of the Habitats Directive.

3.1.3 A sub-set of the Annex I habitat types are defined as being 'priority' because they are considered to be particularly vulnerable.

3.1.4 Citations for all sites are provided in Annex C.

3.1.5 As set out in section 1.3.5 above, the sites considered within this report have been agreed with Natural England during pre-submission consultation.

3.2 Cothill Fen Special Area of Conservation

3.2.1 Cothill Fen SAC lies in the Vale of the White Horse between the Berkshire Downs and the River Thames in Oxfordshire, forming part of the Mid Vale Ridge National Character Area. Although close to Oxford and Abingdon, the surrounding area is largely rural. The site is screened by woodland. The site includes the Cothill Fen National Nature Reserve. Cothill Fen SAC covers 43.55 ha.

3.2.2 The citation for the site provides the following description of the SAC (Natural England, 2005a):

> *'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.*
>
> *Alluvial forests with* Alnus glutinosa *and* Fraxinus excelsior *(*Alno-Padion, Alnion incanae, Salicion albae*) comprises woods dominated by alder* Alnus glutinosa *and willow* Salix *spp. On flood plains in a range of situations from islands in river channels to low-lying wetlands alongside the channels. The habitat typically occurs on moderately base-rich, eutrophic soils subject to periodic inundation. Many such woods are dynamic, being part of a successional series of habitats. Their structure and function are best maintained within a larger unit that includes the open communities, mainly fen and swamp, of earlier successional stages. On the drier margins of these areas other tree species, notably ash* Fraxinus excelsior *and elm* Ulmus *spp., may become abundant. In other situations, the alder woods occur as a stable component within transitions to surrounding dry-ground forest, sometimes including other Annex I woodland types. These transitions from wet to drier woodland and from open to more closed communities provide an important facet of ecological variation. Associated with the permanently waterlogged peat of the SAC is a base-rich spring-line alder-greater tussock sedge* Carex ilatate *NVC W5 woodland community with a canopy dominated by tall alder and ash. The ground flora is rich and reflects the transition from fen to woodland including five species of sedge including the thin-spiked*

wood sedge Carex ilatate*. The herbs present include moschatel* Adoxa moschatellina*, common spotted-orchid* Dactylorhiza ilatat*, yellow pimpernel* Lysmachia nemorum*, ladyfern* Athyrium felix-femina *and brooklime* Veronica beccabunga'*.*

3.2.3 Qualifying features include include a range of habitats. Habitats include:

- Alkalline fens (H7230); calcium-rich springwater-fed fens;
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) (alder woodland on floodplains*).

3.2.4 The natural habitats denoted with an asterisk (*) above are 'priority habitats' in Annex I of the Habitats Directive as described above. The term 'priority' is also used in other contexts within ecology, 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 Directive or the Habitats Regulations.

3.2.5 The site is not designated for any qualifying species.

European Site Conservation Objectives for Cothill Fen Special Area of Conservation (Natural England, 2016)

3.2.6 The Conservation Objectives for a designated site set out the goals that are considered necessary to maintain or restore the qualifying features of a site to Favourable Conservation Status. Subject to natural change, the Conservation Objectives for the SAC, are to '*ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;*

- *The extent and distribution of qualifying natural habitats;*
- *The structure and function (including typical species) of qualifying natural habitats; and*
- *The supporting processes on which qualifying natural habitats rely;*
- *(Natural England, 2018)'.*

3.2.7 The Supplementary Advice on Conserving and Restoring Site Features for Cothill Fen SAC (Natural England 2019) sets out the attributes of the SAC that are required in order for the Conservation Objectives to be achieved. This includes targets with respect to each attribute. **Table 3.2** provides details of these, as set out in the Supplementary Advice.

Table 3.2 Attributes of Cothill Fen SAC (Natural England 2018).

Attributes	Target	Qualifying Features
Extent of the feature within the site	Maintain the total extent of the H7230 feature at 4.95 hectares.	H7230. Alkaline Fens
Spatial distribution of the feature within the site	Maintain the distribution and configuration of the H7230 feature, including where applicable its component vegetation types, across the site.	H7230. Alkaline Fens

Attributes	Target	Qualifying Features
Vegetation community composition	Ensure the component vegetation communities of the H7230 feature are referable to and characterised by the following National Vegetation Classification type (s) M13 *Schoenus nigricans Juncus subnodulosus* mire.	H7230. Alkaline Fens
Structure and function (including its typical species) Invasive, nonnative and/or introduced species	Ensure invasive and introduced non-native species are either rare or absent, but if present are causing minimal damage to the H7230 feature.	H7230. Alkaline Fens
Structure and function (including its typical species) Presence/cover of woody species	Maintain a low cover of woody species of not more than 10% scrub/tree cover across the H7230 feature.	H7230. Alkaline Fens
Structure and function (including its typical species) Exposed substrate	Maintain the exposure of the fen substrate to appropriate levels, which will typically be between 1 – 5% of the open fen areas.	H7230. Alkaline Fens
Structure and function (including its typical species) Key structural, influential and distinctive species	Maintain the abundance of the species listed below to enable each of them to be a viable component of the H7230 habitat: Assemblage of higher plants characteristic of the M13 type including bog pimpernel *Anagallis tenella*, sedges *Carex* spp. Meadow thistle *Cirsium dissectum*, southern marsh-orchid *Dactylorhiza praetermissa*, marsh helleborine Epipactis palustris, broad-leaved cottongrass *Eriophorum latifolium* bog asphodel *Narthecium ossifragum*, parsley waterdropwort *Oenanthe ilatate* grass-of-Parnassus *Parnassia palustris*, lousewort *Pedicularis sylvatica* common butterwort *Pinguicula vulgaris,* fen pondweed *Potamogeton coloratus*, black bog-rush *Schoenus nigricans* Assemblage of wetland bryophytes, including Campylium stellatum, *Climacium dendroides, Mnium seligeri, Palustriella ilatate Philonotis ilatate, Scorpidium cossonii, Scorpidium* (*Drepanocladus*) *revolvens*, *Scorpidium scorpioides Tetraphis pellucida*. Assemblage of wetland invertebrates including Orangehorned green general *Odontomyia angulate*, Clubbed general *Stratiomys chamaeleon,* Small red damselfly *Ceriagrion tenellum,* Azure damselfly *Coenagrion puella*, Variable damselfly *Coenagrion pulchellum*, Southern damselfly *Coenagrion mercurial*, Whirlygig beetle *Gyrinus suffriani* Desmoulin's whorl snail *Vertigo moulinsiana.*	H7230. Alkaline Fens
Structure and function (including its typical species)	At a site, unit and/or catchment level (as necessary), maintain natural hydrological processes to provide the conditions necessary to sustain the H7230 feature within the site,	H7230. Alkaline Fens

Attributes	Target	Qualifying Features
Hydrology	including a high piezometric head and permanently high water table with groundwater at or very near surface level (allowing for natural seasonal fluctuations).	
Structure and function (including its typical species) Water chemistry	Maintain the low nutrient status of irrigating water, ensuring it is rich in base ions, particularly calcium.	H7230. Alkaline Fens
Structure and function (including its typical species) Adaptation and resilience	Maintain the H7230 feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the site.	H7230. Alkaline Fens
Structure and function (including its typical species) Functional connectivity with wider landscape	Maintain the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the SAC.	H7230. Alkaline Fens
Supporting processes (on which the feature relies) Air quality	Maintain as necessary, the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk)	H7230. Alkaline Fens
Supporting processes (on which the feature relies) Conservation measures	Maintain the management measures (either within and/or outside the site boundary as appropriate) which are necessary to maintain the structure, functions and supporting processes associated with the H7230 feature.	H7230. Alkaline Fens
Extent and distribution of the feature Extent of the feature within the site	Maintain the total extent of the H91E0 feature, including transitions to other habitats, at 33.5 hectares.	H91E0. Alluvial forests with *Alnus glutinosa* and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*)* ('alder woodland on floodplains')
Structure and function (including its typical species) Vegetation structure – canopy cover	Maintain an appropriate tree canopy cover across the H91E0 feature, which will typically be between 80-95% of the stand area.	H91E0. Alluvial forests with *Alnus glutinosa* and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*)* ('alder woodland on floodplains')
Structure and function (including its typical species) Vegetation structure – dead wood	Maintain the continuity and abundance of standing or fallen dead and decaying wood as part of the H91E0 feature.	H91E0. Alluvial forests with *Alnus glutinosa* and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*)* ('alder woodland on floodplains')
Structure and function (including its typical species) Vegetation structure – woodland edge	Maintain a graduated woodland edge into open fen or scrub.	H91E0. Alluvial forests with *Alnus glutinosa* and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion*

Attributes	Target	Qualifying Features
		albae)* ('alder woodland on floodplains')
Structure and function (including its typical species) Regeneration potential	Maintain the potential for sufficient natural regeneration of desirable trees and shrubs; typically tree seedlings of desirable species (measured by seedlings and <1.3m saplings – above grazing and browsing height) should be visible in sufficient numbers in gaps, at the wood edge and/or as regrowth as appropriate.	H91E0. Alluvial forests with *Alnus glutinosa* and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*)* ('alder woodland on floodplains')
Structure and function (including its typical species) Resilience/Tree and shrub species composition	Maintain a canopy and under- storey of which 95% is composed of site native trees and shrubs characteristic of the woodland community types.	H91E0. Alluvial forests with *Alnus glutinosa* and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*)* ('alder woodland on floodplains')
Structure and function (including its typical species) Key structural, influential and distinctive species	Maintain the abundance of the species listed below to enable each of them to be a viable component of the H91E0 habitat: Higher plants; alder *Alnus glutinosa*, ash *Fraxinus excelsior* downy birch *Betula pubescens* willows *Salix* spp., sedges *Carex* spp., narrow buckler-fern *Dryopteris carthusiana*, broad buckler-fern *Dryopteris ilatate,* hemp agrimony *Eupatorium cannabinum*, marsh marigold *Caltha palustris* Assemblage of wet woodland bryophytes including *Fissidens adianthoides*, *Mnium affine, Mnium hornum, Polytrichum commune, Sphagnum fimbriatum* Assemblage of wet woodland invertebrates, including ground beetle *Badister sodalist*, Conehorn cranefly *Ctenophora pectinicornis*, Cranefly *Diogma glabrata*, Cranefly *Thaumastoptera calceata,* Killer fly *Laphria marginata*, Fly Neurigona suturalis, Wood snipefly *Rhagio annulatus,* Hoverfly *Xylota tarda.*	H91E0. Alluvial forests with *Alnus glutinosa* and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*)* ('alder woodland on floodplains')
Structure and function (including its typical species) Invasive, nonnative and/or introduced species	Ensure invasive and introduced non-native species are either rare or absent, but if present are causing minimal damage to the H91E0 feature.	H91E0. Alluvial forests with *Alnus glutinosa* and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*)* ('alder woodland on floodplains')
Structure and function (including its typical species) Soils, substrate and nutrient cycling	Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal:bacterial ratio, to within typical values for the H91E0 habitat.	H91E0. Alluvial forests with *Alnus glutinosa* and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*)* ('alder woodland on floodplains')
Supporting processes (on which the feature relies) Water quality/quantity	Maintain water quality and quantity to a standard which provides the necessary conditions to support the H91E0 feature.	H91E0. Alluvial forests with *Alnus glutinosa* and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*)* ('alder woodland on floodplains')

Attributes	Target	Qualifying Features
Supporting processes (on which the feature relies) Hydrology	At a site, unit and/or catchment level (as necessary), maintain natural hydrological processes to provide the conditions necessary to sustain the H91E0 feature.	H91E0. Alluvial forests with *Alnus glutinosa* and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*)* ('alder woodland on floodplains')
Supporting processes (on which the feature relies) Functional connectivity with wider landscape	Maintain the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the site.	H91E0. Alluvial forests with *Alnus glutinosa* and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*)* ('alder woodland on floodplains')

Site Improvement Plan – Cothill Fen (Natural England, 2014)

3.2.8 The Site Improvement Plan (SIP) is drafted by Natural England and provides a high-level overview of the issues (both current and predicted) affecting the condition of the features on the site and outlines the priority measures required to maintain/improve the condition of the features.

3.2.9 A brief review of the condition status of the underlying SSSI units was completed using MAGIC maps. Around one third of the SAC (3 units) is classified as favourable with four units being unfavourable recovering (4 units), one unit being unfavourable no change and one unit not recorded.

3.2.10 The current priority issues for the Cothill Fen SAC are therefore:

- Water pollution: high nitrate levels;
- Hydrological changes: fen areas may be becoming drier; and
- Air pollution: atmospheric nitrogen deposition may be exceeding relevant critical load for rich calcareous fen feature.

3.2.11 There are several proposed actions to address the above priority issues.

3.2.12 The current position on site with regard to this is as follows (as described in the SIP with respect to these issues):

- Water samples from streams, ponds and ditches at Parsonage Moor and Cothill National Nature Reserve (NNR) show high nitrate levels;
- Populations of rare fen plants and invertebrates may be affected by hydrological changes; and
- Excess reed growth in unit 2 (Parsonage Moor & Cothill Fen NNR) which supports southern damselfly, could potentially be related to atmospheric nitrogen deposition.

3.2.13 The following actions are proposed in the SIP to address this issue:

- Continuing water quality monitoring for nitrogen and phosphorus with tracing study to determine sources of pollution;
- Long term vegetation monitoring using fixed quadrats to monitor changes in vegetation along with water pollution and hydrology;

- Develop and implement a diffuse water pollution plan;
- Assess groundwater levels, current surface water flows, and compare with earlier data to determine magnitude of any changes; and
- Control, reduce and ameliorate atmospheric nitrogen impacts.

3.3 Oxford Meadows Special Area of Conservation

3.3.1 The Oxford Meadows SAC covers approximately 270 ha on the floodplain of the River Thames to the west and north-west of Oxford.

3.3.2 The SAC is made up of an extensive complex of meadows and pastures which support species-rich grassland vegetation which would once have been widespread on floodplains in lowland England but which is now very rare.

3.3.3 A review of the condition of the underlying SSSI units was completed using information on the MAGIC website. The four SSSIs within this SAC are all 100% in favourable condition. These are Pixey and Yarnton Meads SSSI, Port Meadow with Wolvercote Common and Green SSSI, Cassington Meadows SSSI and Wolvercote Meadows SSSI.

3.3.4 The citation for the site provides the following description of the SAC (Natural England, 2005):

> *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*.*

3.3.5 Qualifying features include habitats and species. The qualifying features are:

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

European Site Conservation Objectives for Oxford Meadows Special Area of Conservation (Natural England, 2018a)

3.3.6 Subject to natural change, the Conservation Objectives for Oxford Meadows SAC are, '*to ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:*

- *The extent and distribution of 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' (Natural England, 2018a).*

3.3.7 The Supplementary Advice on Conserving and Restoring Site Features for Oxford Meadows SAC (Natural England 2019c) sets out the attributes of the SAC that are required in order for the Conservation Objectives to be achieved. This includes targets with respect to each attribute. **Table 3.3** provides details of these, as set out in the Supplementary Advice.

Table 3.3 Attributes of Oxford Meadows SAC (Natural England 2019c)

Attributes	Target	Qualifying Features
Extent and distribution of the feature Extent of the feature within the site	Maintain the total extent of the feature to at or above the baseline level of 106.96 hectares.	H6510. Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
Extent and distribution of the feature Spatial distribution of the feature within the site	Maintain the distribution and configuration of the feature, including where applicable its component vegetation types, across the site.	H6510. Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
Structure and function (including its typical species) Vegetation community composition	Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification type: MG4 *Alopecurus pratensis – Sanguisorba officinalis* grassland.	H6510. Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
Structure and function (including its typical species) Key structural, influential and/or distinctive species	Maintain or restore as necessary the abundance of the typical species listed below to enable each of them to be a viable component of the Annex 1 habitat: Constant and preferential plant species of the MG4 Alopecurus pratensis – Sanguisorba officinalis grassland type at this site.	H6510. Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
Structure and function (including its typical species) Vegetation: undesirable species	Maintain the frequency/cover of the following undesirable species to within acceptable levels and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread.	H6510. Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
Structure and function (including its typical species) Vegetation community transitions	Maintain the pattern of natural vegetation zonations/transitions.	H6510. Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
Structure and function (including its typical species) Soils, substrate and nutrient cycling	Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, to within typical values for the habitat. For this feature soil P index should typically be between index 0 and 1 (< 15 mgl -1).	H6510. Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)

Attributes	Target	Qualifying Features
Structure and function (including its typical species) Water quality	Where the feature is dependent on surface water and/or groundwater, maintain water quality and quantity to a standard which provides the necessary conditions to support the feature. For Oxford Meadows SAC groundwater supply should be assessed as 'good' in relation to Water Framework Directive targets. River water quality in the River Thames upstream of the SAC should be assessed as at least meeting the 'good ecological status' target.	H6510. Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
Structure and function (including its typical species) Hydrology: Water table	Maintain a hydrological regime which provides a consistently near-surface water table which typically averages depths of 35 cm (winter), 45cm (spring), 70cm (summer) and 60cm (autumn) below ground level.	H6510. Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
Structure and function (including its typical species) Hydrology: Flooding regime	Maintain a hydrological regime which provides a cumulative duration of annual surface flooding which is typically less than 10 days between December-February and less than 3 days between September- November, with no inundations during March – August, subject to natural change.	H6510. Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
Structure and function (including its typical species) Supporting off-site habitat	Maintain the extent, quality and spatial configuration of land or habitat surrounding or adjacent to the site which is known to support the feature.	H6510. Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
Structure and function (including its typical species) Functional connectivity with wider landscape	Maintain the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the site.	H6510. Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
Structure and function (including its typical species) Adaptation and resilience	Maintain the feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the site.	H6510. Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
Supporting processes (on which the feature relies) Air quality	Maintain the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).	H6510. Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
Supporting processes (on which the feature relies) Conservation measures	Maintain the management measures (either within and/or outside the site boundary as appropriate) which are necessary to maintain the structure, functions and supporting processes associated with the feature.	H6510. Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
Population (of the feature) Area of occupancy	Maintain the known actual area occupied by the feature, typically varies between 100 and 600 m2 depending on conditions (notably seasonal fluctuations in water table).	S1614. *Apium repens* Creeping marshwort

Attributes	Target	Qualifying Features
Population (of the feature) Population abundance	Maintain the abundance of the population at a level which is above the baseline population size, whilst avoiding deterioration from its current level as indicated by the latest count or estimation. Baseline population size = 100 plants.	S1614. *Apium repens* Creeping marshwort
Supporting habitat: extent and distribution Distribution of supporting habitat	Maintain the distribution and continuity of the feature and its supporting habitat, including where applicable its component vegetation types and associated transitional vegetation types, across the site.	S1614. *Apium repens* Creeping marshwort
Supporting habitat: extent and distribution Extent of supporting habitat	Maintain the total extent of the habitat(s) which support the feature at a baseline level of 164.97 hectares, meaning that there should be no reduction in the extent of that part of Port Meadow and Wolvercote Common within the SAC.	S1614. *Apium repens* Creeping marshwort
Supporting habitat: structure/function Hydrological regime	Maintain a regime of winter flooding (at least 2 weeks inundation at least one year in three in areas potentially holding the plant) and gradual drying out in late summer/autumn.	S1614. *Apium repens* Creeping marshwort
Supporting habitat: structure/function Soils, substrate and nutrient cycling	Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, within typical values for the supporting habitat.	S1614. *Apium repens* Creeping marshwort
Supporting habitat: structure/function Vegetation composition: invasive non-native species	Ensure that invasive non-native plants are not present or that their effects are maintained at a level which does not significantly affect the feature.	S1614. *Apium repens* Creeping marshwort
Supporting habitat: structure/function Vegetation structure	Maintain vegetation supporting Apium repens with typically 5- 10% cover of patchy bare ground in late summer and a sward typically 1-10cm tall with 75%.	S1614. *Apium repens* Creeping marshwort
Supporting habitat: structure/function Water level fluctuation	Maintain the zones where winter flooding recedes to leave a drying muddy margin with reduced competition.	S1614. *Apium repens* Creeping marshwort
Supporting habitat: structure/function Water level fluctuation	Maintain the zones where winter flooding recedes to leave a drying muddy margin with reduced competition.	S1614. *Apium repens* Creeping marshwort
Supporting processes (on which the feature and/or its supporting habitat relies Adaptation and resilience	Maintain the feature's ability, and that of its supporting habitat, to adapt or evolve to wider environmental change, either within or external to the site.	S1614. *Apium repens* Creeping marshwort
Supporting processes (on which the feature and/or its supporting habitat relies) Air quality	Maintain concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).	S1614. *Apium repens* Creeping marshwort

Attributes	Target	Qualifying Features
Supporting processes (on which the feature and/or its supporting habitat relies) Conservation measures	Maintain the management measures (either within and/or outside the site boundary as appropriate) which are necessary to maintain the structure, functions and supporting processes associated with the feature and/or its supporting habitats.	S1614. *Apium repens* Creeping marshwort
Supporting processes (on which the feature and/or its supporting habitat relies) Grazing pressure	Maintain a stable grazing regime to produce suitable habitat conditions for Apium repens, i.e. maintenance of short sward conditions (at least 75% should be less than 5cm tall) and with frequent bare patches in damp areas of the site, whilst avoiding excessive 'poaching'.	S1614. *Apium repens* Creeping marshwort
Supporting processes (on which the feature and/or its supporting habitat relies) Water quantity/quality	Maintain water quality and quantity to a standard which provides the necessary conditions to support the feature.	S1614. *Apium repens* Creeping marshwort

Site Improvement Plan Oxford Meadows SAC (Natural England 2014)

3.3.8 The SIP for the site includes the following priority issues:

- Hydrological changes to understand the functioning of the site; and
- Invasive species (in particular controlling the *Crassula* populations on site).

3.3.9 There are several proposed actions to address the above priority issues:

- Improve knowledge and understanding of the hydrological conditions on the site required to sustain and restore the *Apium repens* population;
- Seek to manage favourable hydrological conditions in the low-lying dip in Port Meadow which is the key area for *Apium repens*. Undertake appropriate management of the channels and ditches linked to this area;
- Eliminate/control the Crassula populations on the site by implementing appropriate control mechanisms; and
- Increase the resilience of the rare *Apium repens* population to Crassula and other invasive species by considering SSSI notification for the introduced population at North Hinksey.

4 Stage 1 – Likely Significant Effect

4.1 Introduction

4.1.1 This section deals with the screening of likely significant effects on the qualifying features, in view of the conservation objectives of the European sites as a result of the construction, operation and decommissioning of the Project. The environmental pathways that could lead to a significant effect may be summarised as:

- Direct injury/killing of an interest feature species, loss or damage of habitats within a designated site or of nearby areas used by interest species, including functionally linked land;
- Change in management regimes (eg grazing/mowing) of habitats within a designated site or of nearby areas used by interest species;
- Changes in air quality from emissions to air from dust generation and traffic during construction and decommissioning;
- Changes water quality through pollution to water courses;
- Hydrological changes;
- Disturbance (activity, recreation, noise and lighting); and
- Introduction or spread of non-native invasive species.

4.1.2 The possibility of the Project having a likely significant effect on any of the designated sites identified in Section **Error! Reference source not found.** is discussed for each of these impact pathways in turn below. All phases of the Project have been considered for each pathway.

4.1.3 Screening matrices for all the sites identified in Section 3 above are provided in Annex A.

4.2 Direct Injury/Killing of an Interest Species, Loss or Damage of Designated Habitats/Those Used by Interest Species

4.2.1 As the Project is a minimum of 0.97 km away from both the Cothill Fen SAC and Oxford Meadows SAC sites, it would not result in any direct loss of any habitat within any of the designated sites considered during any phase of the Project. Works to construct and operate the Project will be undertaken within the Project site. Therefore, given the distance to the nearest designated site (0.97km) there is no risk that any direct loss of habitat within such designated sites due to Project-related activities could occur.

4.2.2 Given that there is no pathway for a Project alone effect, there is also no pathway for in-combination effects to occur.

4.2.3 Therefore, impacts occurring from direct loss/killing injury of interest feature habitats/species can be screened out both with respect to the Project alone and in-combination with other plans/projects.

4.3 Change in Habitat Management Regimes

4.3.1 The majority of the existing land immediately surrounding, and in the vicinity of, the Project site is agricultural land to the east and west with the villages of Woodstock and Cassington to the north and south, respectively.

4.3.2 The current management regimes for the European sites focus on maintaining the habitats for the qualifying interest features.

4.3.3 Given the distance from the Project site boundary to the European sites (the Project is a minimum of 0.97 km away from the nearest European site, Oxford Meadows SAC), the Project would result in no change to current management

regimes of any feature of an SAC during any phase of the Project. Works to construct and operate the Project will be undertaken within the Project site. Therefore, given the distance to the nearest designated site (0.97km) there is no risk that any changes to the management regimes within the designated sites due to Project-related activities could occur.

4.3.4 Given that there is no pathway for a Project alone effect, there is also no pathway for in-combination effects to occur.

4.3.5 Therefore, impacts occurring from a change in habitat management regimes can be screened out both with respect to the Project alone and in-combination with other plans/projects.

4.4 Air Quality

4.4.1 The two air quality impacts that could arise in relation to the Project during construction are dust generation and increased traffic emissions.

4.4.2 As set out in Chapter 12 Traffic and Transport **[EN010147/APP/6.3]**, vehicle movements during the operational phase of the Project would typically comprise a single maintenance visit undertaken by a light vehicle (typically a 4x4) on at most a daily frequency. There are no other activities that could give rise to changes in air quality during the operation of the Project as it is largely autonomous.

4.4.3 On this basis, impacts from any changes in operational air quality are screened out.

Construction Dust

4.4.4 The potential for dust release exists during the construction phase, with potential sources including site clearance, earthworks and vehicle movements.

4.4.5 For sensitive ecological receptors, the Institute of Air Quality Management (IAQM) guidance on the assessment of dust from demolition and construction sets out 50 m as the distance from the site boundary and from the site traffic route(s) within which there could potentially be nuisance dust effects.

4.4.6 The boundary of the closest European site (Oxford Meadows SAC) is over 0.97 km away from the Project site therefore, there is no pathway for construction dust to reach any of the designated sites.

4.4.7 As such, the impact of construction dust on the designated sites can be screened out, as no likely significant effects are anticipated both with respect to the Project alone and in-combination with other plans/projects during the construction period.

Traffic – Construction

4.4.8 The major impacts of air pollutants on habitats in the UK as a result of traffic are increases in nitrogen deposition and acidification. According to the Highways Agency's Design Manual for Roads and Bridges (DMRB), the contribution of vehicle emissions from the roadside to local pollution levels is not significant beyond 200 m from a road (Highways England *et al*, 2020). This is therefore the distance that has been used to determine whether European

sites are likely to be significantly affected by traffic emissions associated with the Project.

4.4.9 Oxford Meadows SAC is within 200 m of a road where an increase in traffic could occur.

4.4.10 An assessment of the change in the flows of Heavy Goods Vehicles (HGV) arising as a result of the Project near to the site during construction has been undertaken (Chapter 12 Traffic and Transport **[EN010147/APP/6.3]**). This shows that the change in HGV Average Annual Daily Traffic (AADT) on road links adjacent to the SAC (the A40 and the A34) will be 125 vehicles on the A40. This is not sufficient to trigger the requirement for any further assessment; the threshold for such an assessment is a change in AADT of 200 HGV movements (Highways England *et al*, 2019; Natural England, 2018).

4.4.11 An in-combination assessment of the traffic during construction has been undertaken and is presented within the ES Chapter 12: Traffic and Transport **[EN010147/APP/6.3]**. Details of the plans and projects considered within the in-combination assessment are set out in Chapter 20: Cumulative Effects and Inter-relationships **[EN010147/APP/6.3]**. This shows that, in the in-combination scenario, the peak change in HGV AADT on road links adjacent to the SAC (the A40 and the A34) will be 192 vehicles on the A34.

4.4.12 In response to concerns from the Examining Authority and Interested Parties that this 192 in-combination HGV AADT flows were close to the 200 threshold for further assessment, the Applicant undertook detailed air quality modelling in respect of both an alone scenario and the in-combination traffic flows. The methodology and results for this assessment are set out in Annex E[~~ADD REF~~].

4.4.13 The threshold for the consideration of a potential effect on a designated site is where a modelled change in a pollutant as a result of the change in AADT between the Project alone and in-combination scenarios is >1% of the relevant critical load/level following Natural England's guidance (Natural England, 2018) and DMRB (Highways England *et al* 2019).

4.4.14 Critical loads and critical levels are the thresholds below which effects do not occur, according to best available scientific knowledge. Critical loads relate to the quantity of a pollutant that is deposited within a habitat (in this case nitrogen deposition) expressed as kilograms per hectare per year. They are individual to a given habitat and expressed as a range with a lower and upper value. For the purposes of this assessment, the lower critical load is used to ensure the assessment is conservative.

4.4.15 Critical loads have been defined as 'a quantitative estimate of exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge'. However, an exceedance of one of the critical loads does not automatically imply that a significant effect will occur.

4.4.16 Critical levels relate to gaseous pollutants and are expressed as a concentration (in this case with respect to NO_x and NH_3). The critical level for NOx is universal for all vegetation (30 $\mu g.m^{-3}$). That for NH_3 depends on

whether lower plants (lichens and bryophytes) form a key component of the habitat (1 µg.m^{-3} if they do, 3 µg.m^{-3} if they do not). Natural England have confirmed that for the Oxford Meadows SAC, the higher threshold is correct.

4.4.17 The 1% of the critical load/level threshold is the point at which a more detailed assessment of the potential for effects should be undertaken; it does not automatically imply that an adverse effect will occur. That judgment requires more detailed assessment based on available scientific research and consideration of the conservation objectives of the site.

4.4.18 Note that all references to nitrogen deposition throughout are the combination of that arising from both NO_x and NH_3.

4.4.19 As shown in Annex E[~~ADD REF~~], for emissions derived from the Project's construction traffic alone (the alone scenario), all modelled points are <1% of the relevant critical load/level for all pollutants and can therefore be screened out as not having a significant effect.

4.4.20 With respect to the in-combination scenario, all modelled points for both gaseous NO_x and NH_3 are <1% of the relevant critical level and can therefore be screened out as not having a significant effect.

~~4.4.11~~4.4.21 With respect to nitrogen deposition in the in-combination scenario, the maximum contribution was 2% of the critical load (10kgN.ha^{-1}.yr^{-1}), Table ~~19~~.8 of Annex E[~~ADD REF~~]. This impact is therefore taken through for appropriate assessment.

~~4.4.12~~4.4.22 Therefore, on this basis, the effect from traffic-related pollution during the construction period is screened ~~out~~ in ~~from~~ for further assessment in the in-combination scenario for nitrogen deposition only. All other effects/pollutants can be screened out as ~~as it can be concluded that it would~~ not have a likely significant effect on any of the designated sites ~~both with respect to the Project alone and in-combination~~.

4.5 Water Quality

4.5.1 The quality of the water entering European sites is an important determinant of habitat condition and hence the species they support. Poor water quality can have a range of ecological impacts.

4.5.2 There are no hydrological links between the Cothill Fen SAC and the Project site. Cothill Fen SAC occurs where sandy, free draining sands meet impermeable clay, giving rise to calcareous springs that form the fen habitat for which the site is designated. As such, the issue of changes in water quality/hydrology can be screened out both alone and in combination with other plans and projects.

4.5.3 The River Evenlode runs through the site and joins the River Thames to the west of Cassington. The River Thames flows through the Oxford Meadows SAC and it is upon the floodplain of this river that the SAC has formed.

4.5.4 In addition, in order to ensure that the cable route linking the Project site to the National Grid substation in the Southern Site Area, the cable will be tunnelled underneath the River Thames using Horizontal Direct Drilling (HDD) methodologies. The route of the crossing is the subject of on-going options (as

set out in Chapter 6 Project Description). However, all would be launched from farmland north of the Swinford Crossing and land in farmland to the south of the river. In the absence of any suitable controls, the process of HDD could lead to short-term pollution events in the River Thames and, as such, effects on the SAC.

4.5.5 The Oxford Meadows SAC is designated for Lowland Hay Meadows (*Alopecurus pratensis, Sanguisorba officinalis*) and *Apium repens* creeping marshwort, an aquatic species.

4.5.6 As such, in the absence of avoidance/mitigation measures there is potential for pollution events within the Project during construction that reach the River Evenlode also impacting the SAC. Therefore, the issue of changes to water quality (both alone and in combination) during construction are screened in for appropriate assessment to determine whether there would be any adverse effect on the integrity of the site. At this stage, avoidance measures will be incorporated, as necessary, to be secured through the DCO.

4.5.7 Once installed, the solar panels do not require any form of chemical cleaning, relying on rainfall to ensure that panels are clean. Any more intensive cleaning would be undertaken with water and brushes.

4.5.8 Traffic and plant movement on the Project site will be very infrequent and very low level (likely a single vehicle per day). As such, there is a very low risk of any fuel spill and corresponding likelihood of any pollution event occurring during the operational phase of the Project.

4.5.9 Operational activities such as works to inverters may involve the use of oils and other chemicals. Although these would be very local, there is still potential for such events to be washed into the on-Site watercourses and, eventually, reach the Oxford Meadows SAC. On this basis, in the absence of mitigation/avoidance measures, potential effects from changes in water quality during the operational phase of the Project are also screened in for appropriate assessment.

4.6 Changes to hydrology

4.6.1 The hydrological regimes of both European sites are fundamental to their function. The flood meadow habitat present within the Oxford Meadows SAC relies on periodic inundation by the River Thames while the Cothill Fen SAC occurs where sandy, free draining sands meet impermeable clay, giving rise to calcareous springs that form the fen habitat for which the site is designated.

4.6.2 The Project does not change the speed of infiltration nor volume of water discharge from the Project site compared to the baseline. Details of the hydrological function of the Project site are set out in Chapter 10 Hydrology and Flood Risk.

4.6.3 Since there is no pathway for an effect from the Project alone, there is also no pathway for an in-combination effect to occur. This conclusion is relevant to all phases of the Project.

4.6.4 As such, the issue of changes to hydrology is therefore screened out both with respect to the Project alone and in-combination with other plans/projects.

4.7 Disturbance

4.7.1 Disturbance can be caused by activity, recreation, noise and lighting. The Project site is more than 0.97 km from the nearest European site (Oxford Meadows SAC) with villages (e.g. Cassington) and major roads (the A34 and A40) in between. The A34, A40 and villages produce significant noise, lighting and activity. Therefore, the distance of the Project site, combined with any noise, lighting or activity produced by the Project would have no greater effect than what is already generated by these roads and villages (and would not add to these effects but rather be inperceptible because of them).

4.7.2 As such, there is no potential for any disturbance on such sites from the Project during any phase of the Project and all such effects can be screened out as not significant both alone and in-combination with other plans/projects.

4.8 Introduction or Spread of Non-native Invasive Species

4.8.1 The movement of people and traffic, as well as importation of material and plants to a site, can result in the spread or introduction of Invasive Non-Native Species (INNS) to a site. To date, the only non-native species identified on site is a small stand of giant knotweed *Reynoutria sachalinensis* in one location in the Southern Site Area. No other non-native species is currently known to be present on the Project site. This area of the Project site is a considerable distance (>3km) from any that are near to the hydrological pathways that would be necessary for this species to be spread into any of the designated sites considered here. Notwithstanding this, although the risk of the spread of non-native species is considered low given the very limited presence of such species on site, there is still a risk. On this basis, the issue of spread of non-native species is screened in for appropriate assessment to determine whether there would be any adverse effect on the integrity of the Oxford Meadows SAC for both the construction and operational phases of the Project.

4.8.2 Given the distance, lack of hydrological connectivity and isolation from any road used during construction of the Cothill Fen SAC, this issue is screened out for this site from any potential effect both alone and in-combination.

4.9 Conclusion of Stage 1 Screening

4.9.1 At this stage, following the screening, no likely significant effects have been identified for these sites or qualifying interest features with respect to the following impacts: direct killing/injury; loss of/damage to habitat; of change in habitat management; disturbance; changes in hydrology and changes in air quality during construction (including from dust generation, NO_x and NH_3 concentrations). These conclusions apply both to the Project alone and in-combination with other plans/projects.

~~4.9.1~~

4.9.2 Likely significant effects have been identified for Oxford Meadows SAC with respect to changes in water quality, nitrogen deposition from construction traffic in the in-combination scenario and spread of INNS in both construction

and operational phases. As such, these impacts are taken forward to Stage 2 Appropriate Assessment.

4.9.3 Effects from changes in water quality and spread of INNS have been screened out with respect to Cothill Fen SAC.

5 Stage 2 – Appropriate Assessment

5.1 Introduction

5.1.1 The Habitats Regulations set out that where a likely significant effect cannot be ruled out, the competent authority should make an appropriate assessment of the implications of the plan or project for the designated site in view of the conservation objectives of that site. The only likely significant effects that cannot be ruled out, as set out in section 4 above, are water quality impacts on the Oxford Meadows SAC during the construction phase and the introduction and/or spread of INNS.

5.1.2 The following analysis therefore makes reference to the conservation objectives of that site (the Oxford Meadows SAC), as necessary, and considers whether an adverse effect on integrity is possible due to the impacts of the Project alone, or in-combination with other plans/projects.

5.1.3 Integrity matrices are presented in Annex B. These provide the overall conclusions of the Appropriate Assessment with respect to designated site integrity.

5.1.4 The potential for the Project alone to result in an adverse effect on integrity is considered first, followed by the Project in combination with other plans and projects.

5.2 Changes in water quality at the Oxford Meadows SAC

5.2.1 The qualifying interest features of the Oxford Meadows SAC are:

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

5.2.2 The Conservation Objectives of the SAC are, to maintain or restore:

- 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.

5.2.3 The screening of likely significant effects identified a potential pathway for an effect to occur as a result of short-term changes in water quality from pollution incidents during construction (fuel spill, leak from plant etc.) that reach the River Evenlode and, eventually, the River Thames. Such incidents could then enter the Oxford Meadows SAC during a flood event, especially if they were to occur over winter when such flood events are more likely.

5.2.4 In order to ensure that such water quality issues during construction are avoided, the Project will adopt a Code of Construction Practice (CoCP) that will be based on the principles set out in the outline CoCP (oCoCP) submitted with the application **[EN010147/APP/7.6.1]**. This CoCP will be secured by way of DCO Requirement. This includes the adoption of general industry guidelines and best practice measures to be incorporated into the construction phase of the Project. These measures will be set out within a Pollution Prevention Plan to be prepared as part of the detailed CoCP. Measures to be adopted include (as set out in the oCoCP **[EN010147/APP/7.6.1]**):

- Plant and machinery would be inspected before use to ensure they are clean and fit for operation onsite;
- All static plant or mobile plant parked for prolonged periods would be fitted with ‘plant nappies’ or drip trays, which would be checked regularly (i.e. prior to first use following the prolonged period) and emptied if required into bunded waste oil containers;
- All mobile plant would carry spill kits where practicable, with other spill kits placed in sealed containers at key locations and at all works near to watercourses. Spill kits are to be checked regularly and replaced after use;
- All construction workers onsite, where identified through risk assessment are to be trained in the use of spill kits;
- All tanks containing fuel would be located in a secure and designated area on hardstanding, where practicable, away from surface drains and any watercourses. Fuel oil in mobile bowsers would be double skinned to 110% of their capacity. All bowsers would be fitted with automatic shut-off refuelling. Where movements occur of mobile fuel browsers, the refuelling valves and flaps should be shut down to prevent lapping liquids escaping;
- Refuelling of mobile plant to be undertaken in designated areas, for example construction compounds on an impermeable surface;
- Drilling fluids and additives (if used) would be stored appropriately in bunded tanks holding 110% of its capacity of the largest container or 25% of the total maximum stored volume (whichever is the greater volume). Any waste or used drilling fluid would be stored and then tankered offsite for appropriate disposal or disposed of by other suitable method determined in accordance with legislation, any consents or permissions;
- Other liquid chemicals to be used onsite to be stored within a secure container in a designated area and clearly labelled;

- Where practicable, precast concrete structures would be used to minimise the impact of wet cementitious materials on groundwater and surface water quality. Where this is not possible and wet concrete pours are to be made, care is to be taken when delivering the concrete to the site and during the operation. Formworks should be secure and fixed tightly to reduce egress of concrete. Measures to catch any spillage are to be provided and removed before water is allowed back into the working area;
- Implementation of site working practices to minimise the risk of concrete spillages. In particular, specific concrete wash out facilities are to be provided away from any watercourse, on flat land and operated to ensure no spillage of wet concrete to ground (for example by use of geotextiles, skips); and
- The construction site and construction compounds should be kept secure at all times to prevent vandalism and anti-social behaviour that could lead to a pollution incident.

5.2.5 In addition, the oCoCP **[EN010147/APP/7.6.1]** sets out the principles of how pollution prevention will occur during HDD operations. Full details of these will be incorporated into the detailed CoCP. Measures include:

- The choice of drilling mud and any additives required will be selected based on drilling performance and environmental constraints;
- Use of drilling fluids that are biodegradable;
- Betonite breakout plan to be produced;
- A temporary mud lagoon will be used to capture and recycle the drilling mud ensuring it does not exit the site; and
- On completion of the HDD works, the lagoons will be drained and disposed of at a licensed waste management facility after completion of HDD works.

5.2.6 With respect to the operational phase, maintenance activities of plant such as inverters may require the use of chemicals and oils. In order to ensure that there is no risk of pollution events occurring, the Outline Operational Management Plan for the Project **[EN010147/APP/7.6.2]** provides a series of measures to ensure that any pollution event is prevented or controlled. Such measures include:

- Secure storage facilities would be provided, including a secondary containment system;
- A spillage control procedure would be implemented to ensure that any spillages are contained and removed;
- Regular inspection of infrastructure would be undertaken and maintenance completed as necessary during the period of operation; and
- Detailed Pollution Prevention Plan (PPP) will be set out which will set out how to reduce/eliminate pollution at its source.

5.2.7 These measures are standard industry practice and there is therefore a high degree of certainty in their efficacy in protecting water courses and, by inference, the Oxford Meadows SAC from pollution events.

5.2.8 Therefore, once avoidance measures have been accounted for, it is considered that no adverse effect on the integrity of the Oxford Meadows SAC is predicted due to changes in water quality from the Project either alone or in combination with other plans/projects.

5.3 Changes in nitrogen deposition from construction traffic at the Oxford Meadows SAC

5.3.1 The nitrogen deposition resulting from emissions by construction traffic in combination with other plans and projects in the area was predicted to be 2% of the relevant critical load for the Oxford Meadows SAC (Annex E~~ADD REF~~).

5.3.2 The modelling described in Annex E(~~ADD REF~~) used a 10m grid pattern of modelling points across all areas within 200m of the roads that cross the SAC (the A40 and A34) resulting in 4,059 individual modelled locations. Of these, only two had a nitrogen deposition that was >1% of the minimum critical load for the SAC.

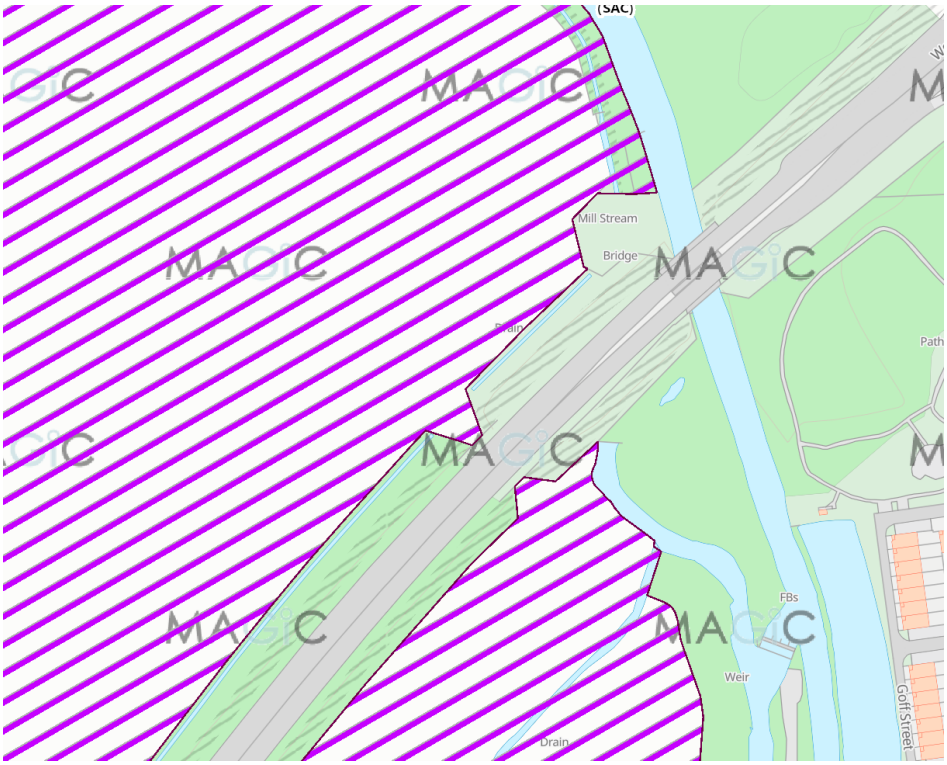
5.3.3 The location of these two modelled points was therefore further investigated to determine whether an increase in nitrogen deposition in those locations might lead to changes to the conservation objectives of the SAC such that an adverse effect on the site's integrity might occur.

5.3.4 Figure 5.1 shows the plotted location of the two grid points where the change in nitrogen deposition was >1%

Figure 5.1 location of modelled exceedances of 1% of critical load for nitrogen deposition under in-combination scenario.

5.3.5 In these locations, the boundary of the SAC appears to have been drawn to include the underpass linking beneath the A34, south west of the Wolvercote Mill Stream (Figure 5.2).

Figure 5.2 boundary of SAC around A34



5.3.6 On this basis, therefore, the only component of the SAC that would be subject to nitrogen deposition >1% of the relevant minimum critical load is the hardstanding of the underpass (i.e. site fabric). Beyond these two locations (i.e. within the SAC away from the road edge), modelled nitrogen deposition was <1% of the minimum critical load.

5.3.7 On the basis, therefore, that the deposition predicted to be >1% of the minimum critical load was concrete of the underpass, such changes would not impact the ability of the SAC to achieve the conservation objectives set out in section 3.3.6. The concrete is not the Annex I grassland habitat nor the Annex II plant species for which the site is designated. It would never be restored to such habitat either, on the basis that the concrete is necessary for the underpass to function. The underpass is necessary to SAC grassland management vehicles to move between fields without necessitating the use of the A34.

5.3.8 As such, no adverse effect on integrity is predicted from changes to air quality in combination with other plans and projects.

~~5.3~~5.4 Introduction or spread of INNS at the Oxford Meadows SAC

~~5.3.1~~5.4.1 The only INNS identified within the Project site was giant knotweed, present in a single small stand within the Southern Site Area. Although this part of the Project site lacks any hydrological connectivity with the SAC, there is a very small risk that this species could be transported from the Southern Site Area to other parts of the Project site that are linked to the SAC (i.e. the River Evenlode in the Central Site Area) and therefore be spread into it.

~~5.3.2~~5.4.2 To avoid this occurring, the final CoCP that will be produced, to be based on the oCoCP submitted with the application **[EN010147/APP/7.6.1],** will include an Invasive Species Management Plan. This will include details for how such species will be managed during construction to ensure there is no spread. In addition, it will set out details for how the introduction of INNS to the Project site will be prevented and how this will be monitored.

~~5.3.3~~5.4.3 The Management Plan will include details of:

- Pre-commencement surveys of the Project site will be undertaken to ensure an update baseline of presence of INNS;
- Eradication strategies for any INNS, likely to include for giant knotweed as this has already been identified in one small location on the Project site;
- Good site practice and biosecurity hygiene with appropriate cleaning of plant and footware prior to entering and exiting the Project site and between areas of the Project site;
- Cleaning areas to be on hardstanding or covered by root membrane to contain and collect any material washed off. Area to be located away from any watercourse;
- Clear demarcation of any contaminated areas, including any appropriate exclusion zone around such areas, to prevent accidental entry to these

areas and associated potential spread. Such demarcation would include areas of historic presence where mitigation has been undertaken;

- Site workforce to be educated during induction with respect to the presence of INNS and the need to avoid such areas; and
- A 'Check, Clean, Dry' approach will be implemented and staff made aware of what is required via site induction.

~~5.3.4~~5.4.4 In addition, the Management Plan will set out the process for the excavation of any soil contaminated with INNS and the process of off-site disposal at an appropriately permitted waste management facility.

~~5.3.5~~5.4.5 The Management Plan will also set out the on-going monitoring and auditing of any exclusion zones established around any INNS present by the Project's Ecological Clerk of Works (ECoW). The monitoring will include for the new growth of any new or re-growing invasive species.

~~5.3.6~~5.4.6 In addition to the Invasive Species Management Plan, the landscaping of the Project will be undertaken according to the principles set out in section 11.14 of the Outline Landscape and Ecology Management Plan (oLEMP) to ensure that INNS are not imported nor spread during the operational phase of the Project.

~~5.3.7~~5.4.7 These measures are standard industry practice and there is therefore a high degree of certainty in their efficacy in managing INNS and preventing their introduction and spread.

~~5.3.8~~5.4.8 On this basis, therefore, once avoidance measures have been accounted for, it is considered that no adverse effect on the integrity of the Oxford Meadows SAC is predicted due to the introduction or spread of INNS from the Project either alone or in combination with other plans/projects.

6 Conclusions

6.1.1 Following a consideration of the potential zone of influence of the Project and consultation with Natural England, two sites were considered for assessment within this report:

- Oxford Meadows SAC; and
- Cothill Fen SAC

6.1.2 All potential effects were screened out as not likely to occur with respect to the Cothill Fen SAC.

6.1.3 With respect to the Oxford Meadows SAC, the screening of likely significant effects concluded that, in the absence of avoidance or mitigation measures ~~both~~ changes in water quality, air quality during construction and spread of INNS during both construction and operational phases could not be screened out and were subject to appropriate assessment. All other effects were screened out as not likely to occur.

6.1.4 Following the application of ~~–~~avoidance measures and further analysis~~,~~, adverse effects on integrity were ruled out due to both potential effects.

7 References

Legislation

- European Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora.
- Conservation of Habitats and Species Regulations 2017.

Published Documents

- BAILII (2019) [2019] EWHC 3242 (Admin) [redacted]
- Highways England, Transport Scotland, Welsh Assembly Government and The Department for Regional Development Northern Ireland (2019) Design Manual for Roads and Bridges, Vol 11, Section 3, Part 5 LA105 Air Quality.
- Department for Levelling Up, Housing and Communities (DLUHC) (2021a) National Planning Policy Framework (NPPF). [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf.
- Department for Levelling Up, Housing and Communities (2019b) Guidance: Appropriate Assessment. Guidance on the Use of Habitats Regulations Assessment. [Online] Available at: https://www.gov.uk/guidance/appropriate-assessment.
- Department for Levelling Up, Housing and Communities (2021) Guidance: Habitats Regulations Assessments: Protecting a European Site [online] Available at: https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site.
- National Highways (2022) https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010062/TR010062-000302-3.2%20Environmental%20Statement%20Chapter%205%20Air%20Quality.pdf .
- Natural England (2018) Natural England's Approach to Advising Competent Authorities on the assessment of road traffic emissions under the Habitats Regulations.
- Planning Inspectorate (PINS) (2019) Cumulative Effects Assessment: Advice Note Seventeen. Version 2 [online]. Available: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/12/Advice-note-17V4.pdf.
- PINS (2024) Nationally Significant Infrastructure Projects: Advice on Habitats Regulations Assessments [online]. Available: Nationally Significant Infrastructure Projects: Advice on Habitats Regulations Assessments - GOV.UK.

Cothill Fen SAC

- Citation for Special Area of Conservation (SAC) Cothill Fen (Nature England, 2014).
- European Site Conservation Objectives for Cothill Fen Special Area of Conservation Site Code: UK0012889 (Natural England V3, 2018).
- European Site Conservation Objectives: Supplementary Advice on Conserving and Restoring Site Features Cothill Fen Special Area of Conservation (SAC) (Natural England 2019).
- Site Improvement Plan – Cothill Fen (Natural England, 2014).

Oxford Meadows SAC

- Citation for Special Area of Conservation (SAC) Oxford Meadows (English Nature, 2005).
- European Site Conservation Objectives for Oxford Meadows Special Area of Conservation Site Code: UK0012845 (Natural England V3, 2018).
- European Site Conservation Objectives: Supplementary Advice on Conserving and Restoring Site Features Oxford Meadows Special Area of Conservation (SAC) (Natural England 2019).
- Site Improvement Plan – Oxford Meadows (Natural England, 2014).

Annex A

Screening Matrices

A.1 Method

Evidence for likely significant effects on their qualifying features is detailed within the footnotes to the screening matrices below.

Matrix Key:

✓ = likely significant effect cannot be excluded

× = likely significant effect can be excluded

C = construction

O = operation

Where effects are not applicable to a particular feature they are greyed out.

A.2 Matrix A: Cothill Fen SAC

Anx Table 1 Stage 1 Matrix A: Cothill Fen SAC

Name of European Site	Cothill Fen SAC													
Distance to Project site boundary	3.65 km													
European site features	Direct damage to habitats		Change in management regime		Change in air quality		Change in water quality		Change in hydrology		Disturbance		Spread of INNS	
	C	O	C	O	C	O	C	O	C	O	C	O	C	O
Alkaline fens	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×f	× g	× g
Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* alder woodland on floodplains	×a	×a	×b	×b	×c	×c	×d	×d	×e	×e	×f	×f	× g	× g

A.2.1 Evidence Supporting Conclusions

a. Nearest element of the Project is >3.65 km from site. Therefore, no potential for land take (i.e. habitat loss) within the SAC.

b. Nearest element of the Project is >3.65 km from site; no potential for fragmentation to affect habitats.

c. Nearest element of the Project is >3.65 km from site and not within 200 m of any road that could be used by construction vehicles accessing the Project site; no potential for effects.

d. Nearest element of the Project is >3.65 km from site and is not linked to it via any hydrological pathway that could lead to change in water quality.

e. Nearest element of the Project is >3.65 km from site and is not linked to it via any hydrological pathway.

f. Site >3.65 km from Project; no potential for disturbance impacts within SAC.

g. Nearest element of the Project is >3.65 km from site; no potential for spread of INNS to site.

A.3 Matrix B: Oxford Meadows SAC

Anx Table 2 Stage 1 Matrix B: Oxford Meadows SAC

Name of European Site	Oxford Meadows SAC													
Distance to Project site boundary	0.97 km													
European site features	Direct damage to habitats		Change in management regime		Change in air quality		Change in water quality		Change in hydrology		Disturbance		Spread of INNS	
	C	O	C	O	C	O	C	O	C	O	C	O	C	O
Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	×a	×a	×b	×b	✓~~×~~ch	×c	✓d	✓e	× f	× f	× f	× f	✓g	✓g
Apium repens creeping marshwort	×a	×a	×b	×b	✓~~×~~ch	×c	✓d	✓e	× f	× f	× f	× f	✓g	✓g

A.3.1 Evidence Supporting Conclusions

a. Site 0.97km from Project; no potential for direct habitat loss.

b. Site 0.97km from Project; no potential for fragmentation to affect habitats.

c. ~~Nearest element of the Project is 0.97km from site; AADT flows on roads near to site not large enough to require full air quality assessment. Therefore, no potential for effects from aerial emissions during construction work on site to affect habitats within SAC alone. In combination scenario to be assessed in the ES~~No operational traffic of any consequence predicted. As such, no potential for effect.

d. Project site linked to SAC via River Evenlode and River Thames. Therefore, potential for water quality effects to occur during construction from pollution during spillages from plant etc.

e. Project largely autonomous during operation. However, small risk from operational activities during plant maintenance. Therefore, potential for aqueous emissions to SAC during any spillage event.

f. Site is 0.97km from Project; no potential for noise/vibration/lighting effects on species populations or habitats within SAC.

g. Project site linked to SAC via River Evenlode and River Thames. Therefore, potential for spread of INNS during both construction and operation.

h. Project construction traffic alone can be screened out as all modelled changes in air quality <1% of the relevant critical load/level. Project construction traffic, in combination with other plans and projects, predicted to result in change in nitrogen deposition >1% of the minimum critical load. Therefore, potential for effect.

Annex B

Integrity Matrices

B.1 Integrity matrices

✓ = adverse effect on integrity cannot be excluded

✕ = adverse effect on integrity on can be excluded

C = construction

O = operation

B.2 Stage 2 Matrix A Oxford Meadows SAC

Anx Table 3 Stage 2 Matrix A: Oxford Meadows SAC

Name of European Site	Oxford Meadows SAC													
Distance to Project site boundary	0.97 km													
European site features	Direct damage to habitats		Change in management regime		Change in air quality		Change in water quality		Change in hydrology		Disturbance		Spread of INNS	
	C	O	C	O	C	O	C	O	C	O	C	O	C	O
Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)					✕e		✕a	✕b					✕c	✕d
Apium repens creeping marshwort					✕e		✕a	✕b					✕c	✕d

A.3.2 Evidence Supporting Conclusions

a. No adverse effect on site following implementation of industry best practice avoidance measures during construction to comprise those set out in the Outline Code of Construction Practice **[EN010147/APP/7.6.1]**. The implementation of such measures will ensure that there is no change in water quality in the River Evenlode or any other water course connected to the SAC during construction.

b. No adverse effect on site following implementation of industry best practice avoidance measures during operation to comprise those set out in the Outline Operational Management Plan **[EN010147/APP/7.6.2]**. The implementation of such measures will ensure that there is no change in water quality in the River Evenlode or any other water course connected to the SAC during operation.

c. No adverse effect on site following implementation of industry best practice avoidance measures during construction to comprise those set out in the Invasive Species Management Plan to form part of the Outline Code of Construction Practice **[EN010147/APP/7.6.1]**. The implementation of such measures will ensure that INNS are not spread during construction.

d. No adverse effect on site following implementation of industry best practice avoidance measures during operation to comprise those set out in section 11.14 of the Outline Landscape and Ecology Management Plan (oLEMP) **[EN010147/APP/7.6.3]**.

~~d.~~e. No adverse effect on site following further analysis of data. Effect only occurs on hardstanding of underpass beneath A34. This is not, and can never be, habitat for which the SAC is designated.

Annex C

Designated Site Citations

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*

This citation relates to a site entered in the Register of European Sites for Great Britain.
Register reference number: UK0012845
Date of registration: 14 June 2005
Signed: [redacted]
On behalf of the Secretary of State for Environment, Food and Rural Affairs

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:

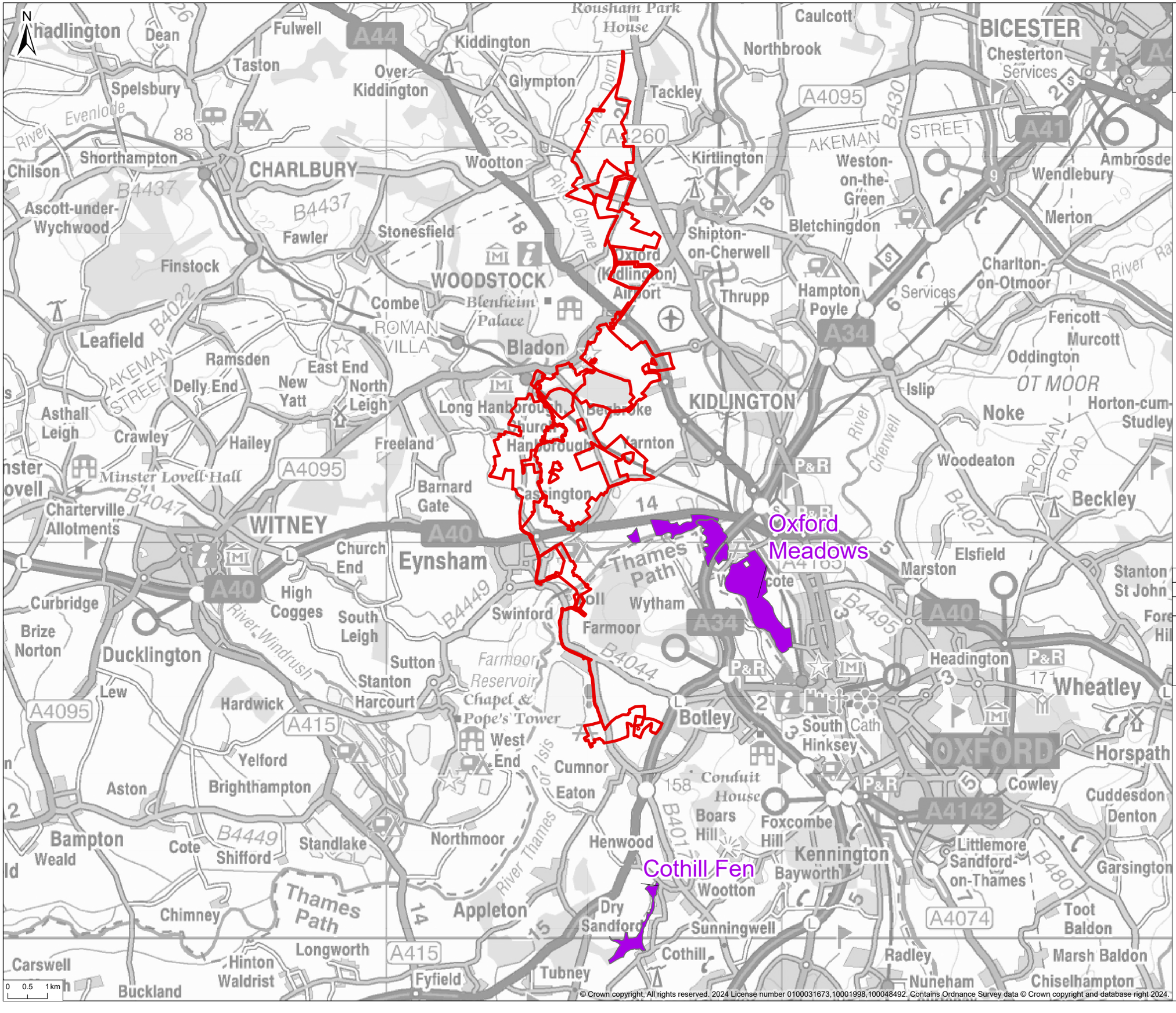
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*). (Alder woodland on floodplains)*
- Alkaline fens. (Calcium-rich springwater-fed fens)

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

This citation relates to a site entered in the Register of European Sites for Great Britain.
Register reference number: UK0012889
Date of registration: 14 June 2005
Signed: [redacted]
On behalf of the Secretary of State for Environment, Food and Rural Affairs

Annex D

Figure 1 Designated Site Locations



Notes
1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

Legend

- Order Limits
- Special Areas of Conservation

Rev	Description	By	CB	Date

PHOTOVOLT DEVELOPMENT PARTNERS

rps A TETRA TECH COMPANY

Client	PVDP
Project	Botley West Solar Farm
Title	Location of European Sites

Status	Drawn By	PM/Checked By
FINAL	OW	NB
Drawing Number	**Scale @ A3**	**Date Created**
12426-0216	1:90,000	NOV 2024
Figure Number		**Rev**
1		01

rpsgroup.com
20 Western Avenue, Milton Park, Abingdon, Oxfordshire, OX14 4SH
T: +44(0)1235 821 888 E: rpsox@rpsgroup.com

P:\eur-mpfs-02.eur.rpsgroup.com\Projects\12426 Proposed DCO Scale Solar Development 860mw\Tech\Drawings\12426-0216-01.aprx

Annex E

Air Quality Impacts on Oxford Meadows SAC

Botley West Solar Farm

Environmental Statement

Annex E

Air Quality Impacts on Oxford Meadows SAC

October 2025

PINS Ref: EN010147

Document Ref: EN010147/APP/6.5

Revision: 0

APFP Regulation 5(2)(a): Planning Act 2008; and infrastructure Planning Applications: Prescribed Forms and Procedure) Regulations

Approval for issue

[redacted] 20 October 2025

Prepared by:

RPS
101 Park Drive,
Milton Park, Abingdon,
Oxfordshire, OX14 4RY
United Kingdom

Prepared for:

Photovolt Development Partners GmbH, on behalf of SolarFive Ltd.

Contents

Tables

Glossary

Term	Meaning
The Applicant	SolarFive Ltd
The Project	The Botley West Solar Farm (Botley West) Project
Trackout	The transport of dust and dirt from the construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network

Abbreviations

Abbreviation	Meaning
AADT	Annual Average Daily Traffic Flow
ADMS	Atmospheric Dispersion Modelling System
APIS	Air Pollution Information System
AQMA	Air Quality Management Area
AQS	Air Quality Strategy
CoCP	Code of Construction Practice
DCO	Development Consent Order
Defra	Department for Environment, Food & Rural Affairs
DMP	Dust Management Plan
EIA	Environmental Impact Assessment
ES	Environmental Statement
EPUK	Environmental Protection UK
HDV	Heavy Duty Vehicle
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LDV	Light Duty Vehicle
NGET	National Grid Electricity Transmission
NH_3	Ammonia
NO_2	Nitrogen dioxide
NO_X	Nitrogen oxides
NPPF	National Planning Policy Framework

Abbreviation	Meaning
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
PEIR	Preliminary Environmental Information Report
PINS	The Planning Inspectorate
PM_{10}	Particulate matter with diameters of 10 micrometres or smaller
PV	Photovoltaic
PVDP	Photovolt Development Partners GmbH
R&A	Review and Assessment
TG	Technical Guidance
SAC	Special Area of Conservation

Units

Unit	Description
%	Percentage
km^2	Square kilometres
kWh	Kilowatt hour
$keq.ha^{-1}.yr^{-1}$	Kiliequivalent per hectare per year
$kgN.ha^{-1}.yr^{-1}$	Kilograms Nutrient Nitrogen per hectare per year
MW	Megawatt
MWe	Megawatt electrical
MWh	Megawatt hour

1 Air Quality

1.1 Introduction

Overview

1.1.1 This Annex to the Habitat Regulations Assessment Report (HRAR) has been prepared by RPS on behalf of Photovolt Development Partners GmbH. (PVDP) for the Applicant, SolarFive Ltd. (SolarFive). SolarFive is a licence holder under the Electricity Act 1989. SolarFive is also a company registered in England and Wales (company no. 12602740).

1.1.2 This Annex has been prepared in response to the *"Report on the Implications for European Sites for Botley West Solar Farm"* dated 18 September 2025.

"ExQ1 [PD-008, Q1.12.2] queried why vehicle numbers rather than vehicle movements had been used to determine that the HGV Annual Average Daily Traffic (AADT) threshold of 200 vehicles had not been breached in either project alone or in-combination scenarios. It asked the applicant and NE whether a precautionary assessment approach should be taken regarding the incombination assessment given that the AADT of 192 is very close to the 200-vehicle threshold, and it would not take much change in future vehicle trips for that threshold to be exceeded.

The applicant [REP2-025] responded that vehicle numbers in the HRA are AADT movements and as such already account for two-way flows. The AADT figures assume worst-case assumptions for all projects included, and so the applicant considers them to be suitably precautionary and that no further assessment is necessary.

NE [REP2-057] agreed that the in-combination scenario is very close to the screening threshold and that a more precautionary approach may be appropriate for this project, particularly in relation to ammonia deposition on the basis that potential impacts from ammonia emissions from road traffic were not considered when Natural England developed the NEA001 Guidance Note which is the guidance used for the HRA assessment.

NE [REP4-072] confirmed that the applicant is undertaking further work on this topic. At D4 the applicant [REP4-037] stated that NE had been provided with a proposed methodology to undertake a precautionary assessment of changes in air quality at the Oxford Meadows SAC. The results of the assessment will be provided as a technical note and updated HRA to the Examination by Deadline 6."

1.1.3 The assessment presented is informed by the following technical chapters:

- Volume 1 - Chapter 12: Traffic and Transport.
- Volume 1 - Chapter 19: Air Quality.

1.2 Methodology

Guidance

1.2.1 The IAQM *A guide to the assessment of air quality impacts on designated nature conservation sites guidance* states that:

"The DMRB provides a series of traffic screening criteria. These include the change in Annual Average Daily Traffic (AADT) flows on a given road of 1000 vehicles or 200 heavy duty vehicles (HDVs). These thresholds have been widely used to screen out the need for quantitative assessment of projects/plans in the absence of any other thresholds recognised as being applicable in this context."

1.2.2 The Proposed Development does not generate traffic flows above the screening criteria in isolation or cumulatively. However, due to the cumulative traffic flows being close to the screening criteria for HDVs and uncertainties with the local plans for the surrounding authorities, Natural England have requested an assessment of changes in air quality at the Oxford Meadows SAC be undertaken.

Approach

1.2.3 This Annex considers the impact of NOx (Nitrogen Oxides) and NH_3 (Ammonia) concentrations, nutrient nitrogen deposition and acid deposition from operational traffic emissions, associated with the Proposed Development and cumulatively, at the Oxford Meadows SAC.

1.2.4 Figure 1.1 shows the modelled road links in relation to the Oxford Meadows SAC.

Figure 1.1: Modelled Road Links Near to Oxford Meadows SAC

1.2.5 Concentrations of NOx and NH_3 have been predicted using the same model and methodology as used in the assessment of human-health receptors (see ES Volume 1, Chapter 19: Air Quality). The receptor points have been modelled at ground level. Emission rates for NH_3 were calculated using Air Quality Consultants' Calculator for Road Emissions of Ammonia (v2A).

1.2.6 The process contribution (PC), i.e. the difference between the with and without development concentrations and, if appropriate, the predicted environmental concentration (PECs) have been calculated for comparison with the relevant critical level/load. The PEC has been calculated by adding the PC to the background levels at each designated site which have been derived from the UK Air Pollution Information System (APIS) database [1].

1.2.7 The PCs have been predicted for the Proposed Development in isolation and cumulatively with other developments using the traffic data presented in Table 1.1.

1.2.8 A total of three models were run:

- Peak year of construction (without any development)
- Peak year of construction (without Botley West Solar Farm development, with Cumulative development)
- Peak year of construction (with Botley West Solar Farm and Cumulative development)

Table 1.1: Traffic Data used in the Assessment

Road ID Link	Road Link Name	Speed (kph)	Daily Two Way Vehicle Flow					
			Without Development		Without (including cumulative) Development		With Development (Botley and Cumulative)	
			LDV	HDV	LDV	HDV	LDV	HDV
L14	A40 between A44 Woodstock Road and Eynsham Road	48/64/97	21,794	1,304	21,794	1,333	21,943	1,458
L25	A34 between A420 and A44 Woodstock Road	80	62,140	8,243	62,140	8,366	62,490	8,428

Critical Levels

1.2.9 Critical levels are maximum atmospheric concentrations of pollutants for the protection of vegetation and ecosystems and are specified within relevant European air quality directives and corresponding UK air quality regulations.

Critical Loads

1.2.10 Critical loads refer to the quantity of pollutant deposited, below which significant harmful effects on sensitive elements of the environment do not occur, according to present knowledge. Nutrient nitrogen deposition and acid deposition are considered in this Annex.

Critical Loads – Nutrient N Deposition

1.2.11 Percentage contributions to total nutrient nitrogen deposition have been derived from the modelled NOx (converted to NO_2 using Defra's NOx to NO_2 calculator – v13.1) and NH_3 concentrations. Deposition rates have been calculated using empirical methods recommended by the Environment Agency, as follows:

- The dry deposition flux ($\mu g.m^{-2}.s^{-1}$) has been calculated by multiplying the ground level NO_2 concentrations ($\mu g.m^{-3}$) by the deposition velocity of 0.003 $m.s^{-1}$ for forests/tall vegetation habitats and 0.0015 $m.s^{-1}$ for grassland/short vegetation habitats. Units of $\mu g.m^{-2}.s^{-1}$ have been converted to units of $kg.ha^{-1}.year^{-1}$ by multiplying the dry deposition flux by the standard conversion factor of 96 for NO_2.
- The NH_3 dry deposition flux ($\mu g.m^{-2}.s^{-1}$) has been calculated by multiplying the ground level NH_3 concentrations ($\mu g.m^{-3}$) by the deposition velocity of 0.03 $m.s^{-1}$ for forests/tall vegetation habitats and 0.02 $m.s^{-1}$ for grassland/short vegetation habitats. Units of $\mu g.m^{-2}.s^{-1}$ have been converted to units of $kg.ha^{-1}.year^{-1}$ by multiplying the dry deposition flux by the standard conversion factor of 260 for NH_3.
- Predicted contributions to nutrient nitrogen deposition have been calculated from the sum of the NO_2 and NH_3 contributions and compared with the relevant critical load range for the habitat types associated with the assessed designated sites. These have been derived from the APIS database.

Critical Loads – Acidification

1.2.12 The acid deposition rate, in equivalents $keq.ha^{-1}.year^{-1}$, has been calculated by multiplying the dry deposition flux ($kg.ha^{-1}.year^{-1}$) by a conversion factor of 0.071428 for N. This takes into account the degree to which a chemical species is acidifying, calculated as the proportion of N within the molecule.

1.2.13 Wet deposition in the near field is not significant compared with dry deposition for N [2] and therefore for the purposes of this assessment, wet deposition has not been considered.

1.2.14 Predicted contributions to acid deposition have been calculated and compared with the critical load function for the habitat types associated with the designated sites as derived from the APIS database.

Significance Criteria

1.2.15 Maximum PCs and PECs of NOx, NH_3 and N/acid deposition have been compared against the relevant critical levels/loads for the relevant habitat type/interest feature. The Environment Agency guidelines [3] state that:

'To screen out a PC for any substance so that you don't need to do any further assessment of it, the PC must meet the following criteria:

- *The short-term PC is less than 10% of the short term environmental standard*
- *the long-term PC is less than 1% of the long-term environmental standard*

If you meet this criteria you don't need to do any further assessment of the substance.

If you don't meet it you need to carry out a second stage of screening to determine the impact of the PEC.'

1.2.16 It continues by stating that:

'If your long-term PC is greater than 1% and your PEC is less than 70% of the long-term environmental standard, the emissions are insignificant – you don't need to assess them any further.'

1.2.17 Whilst it is noted that the Environment Agency guidelines relate to permitted installations, the guidelines have been applied within this assessment in the absence of any specific planning guidance which provides alternative assessment criteria. It is noted that both Natural England and IAQM guidance documents make reference to the application of the 1% assessment criterion.

1.3 Results

1.3.1 The ambient NOx and NH_3 concentrations as well as the existing deposition rates have been obtained from APIS. The highest deposition rates have been obtained taking into account the various habitats across the sites. The lowest critical load ranges for nitrogen deposition and acid deposition have been also obtained from APIS [4].

1.3.2 PCs for Botley in Isolation and the Cumulative traffic have been predicted and the results outlined in the sections below.

1.3.3 Consistent with the Institute of Air Quality Management's "A guide to the assessment of air quality impacts on designated nature conservation sites" [5], the PC as a % of the CL has been rounded to the nearest integer.

Botley In Isolation

1.3.4 The maximum predicted annual-mean NOx concentrations are compared with the critical level in Table 1.2. The maximum predicted annual-mean NH_3 concentrations are compared with the critical level in Table 1.3. The maximum predicted nutrient N deposition rates are compared with the critical load in Table 1.4. The maximum predicted acid deposition rates are compared with the critical load function in Table 1.5.

Table 1.2: Predicted NOx Concentrations at Oxford Meadows SAC

Habitat Site	CL	PC ($\mu g.m^{-3}$)	PC/Critical Level (%)
Oxford Meadows SAC	30	0.11	0

Table 1.3: Predicted NH_3 Concentrations at Oxford Meadows SAC

Habitat Site	CL	PC (µg.m^{-3})	PC/Critical Level (%)
Oxford Meadows SAC	3	0.02	1

Table 1.4: Predicted Nutrient N Deposition at Oxford Meadows SAC

Habitat Site	Tall or short vegetation	Lower	Upper	NOx PC (kgN.ha^{-1}.yr^{-1})	NH_3 PC (kgN.ha^{-1}.yr^{-1})	Total N Dep	PC as % of Critical (Lower)	PC as % of Critical (Upper)
Oxford Meadows SAC	Short	10	20	0.01	0.10	0.10	1	1

Table 1.5: Predicted Acid Deposition at Oxford Meadows SAC

Habitat Site	AC N (keq.ha^{-1}.yr$^{-1)}$	MinCLmaxS	MinCLminN	MinCLmaxN	PC (keq.ha^{-1}.yr^{-1})	PC/CL %
Oxford Meadows SAC	1.074	4	0.86	4.86	0.01	0

1.3.5 The maximum annual-mean NOx PC does not exceed 1% of the critical level and can therefore be screened out as insignificant.

1.3.6 The maximum annual-mean NH_3 PC does not exceed 1% of the critical level and can therefore be screened out as insignificant.

1.3.7 The maximum annual-mean Nutrient N PC does not exceed 1% of the critical load and can therefore be screened out as insignificant.

1.3.8 The maximum annual-mean Acid Deposition PC does not exceed 1% of the critical load and can therefore be screened out as insignificant.

Cumulative

1.3.9 The maximum predicted annual-mean NOx concentrations are compared with the critical level in Table 1.6. The maximum predicted annual-mean NH_3 concentrations are compared with the critical level in Table 1.7. The maximum predicted nutrient N deposition rates are compared with the critical load in Table 1.8. The maximum predicted acid deposition rates are compared with the critical load function in Table 1.9.

Table 1.6: Predicted NOx Concentrations at Oxford Meadows SAC

Habitat Site	CL	PC (µg.m^{-3})	PC/Critical Level (%)
Oxford Meadows SAC	30	0.25	1

Table 1.7: Predicted NH_3 Concentrations at Oxford Meadows SAC

Habitat Site	CL	PC (µg.m^{-3})	PC/Critical Level (%)
Oxford Meadows SAC	3	0.03	1

Table 1.8: Predicted Nutrient N Deposition at Oxford Meadows SAC

Habitat Site	Tall or short vegetation	Lower	Upper	NOx PC (kgN.ha^{-1}.yr^{-1})	NH_3 PC (kgN.ha^{-1}.yr^{-1})	Total N Dep	PC as % of Critical (Lower)	PC as % of Critical (Upper)	AC (kgN.ha^{-1}.yr^{-1})	PEC (kgN.ha^{-1}.yr^{-1})	PEC/CL % Lower	PEC/CL %Upper
Oxford Meadows SAC	Short	10	20.0	0.01	0.17	0.19	2	1	14.2	14.3	143	72

Table 1.9: Predicted Acid Deposition at Oxford Meadows SAC

Habitat Site	AC N (keq.ha^{-1}.yr$^{-1)}$	MinCLmaxS	MinCLminN	MinCLmaxN	PC (kgN.ha^{-1}.yr^{-1})	PC/CL %
Oxford Meadows SAC	1.074	4	0.86	4.86	0.01	0

1.3.10 The maximum annual-mean NOx PC does not exceed 1% of the critical level and can therefore be screened out as insignificant.

1.3.11 The maximum annual-mean NH_3 PC does not exceed 1% of the critical level and can therefore be screened out as insignificant.

1.3.12 The maximum annual-mean Nutrient N PC does exceed 1% of the critical load. When the PCs are added to the background concentrations, the resulting PECs are above 100% of the lower critical level but below 100% of the upper critical level. Further analysis of the results has been undertaken.

1.3.13 The maximum annual-mean Acid Deposition PC does not exceed 1% of the critical load and can therefore be screened out as insignificant.

1.4 Further Analysis of Nutrient N Deposition

1.4.1 A grid of receptors (with 10 m spacing) across the Oxford Meadows SAC within 200 m of the roads was included in the ADMS Roads models. A total of 4,059 points were modelled.

1.4.2 Of the 4,059 modelled points, only two exceeded the PC criteria of 1% of the CL.

1.4.3 The two points exceeding 1% of the CL are located where the SAC extends onto hardstanding for the underpass running under the A34. As shown in Figure 1.2.

Figure 1.2: Modelled Road Links Near to Oxford Meadows SAC

1.4.4 Therefore, as the PC only exceeds 1% at a location where there are no ecological receptors, the impacts have been screened out as insignificant.

1.5 Conclusion

1.5.1 The PCs do not exceed 1% of the relevant critical levels/loads at a location with ecological receptors either for the Botley in Isolation or the Cumulative scenario. Therefore, the impacts of construction traffic emissions on ecological receptors are insignificant.

1.6 References

1 *Air Pollution Information Systems, www.apis.ac.uk*

2 *Approaches to modelling local nitrogen deposition and concentrations in the context of Natura 2000 - Topic 4*

3 *Air emissions risk assessment for your environmental permit*

4 *Data downloaded from APIS October 2025*

5 *IAQM, 2020. A guide to the assessment of air quality impacts on designated nature conservation sites*

IAQM, 2020. A guide to the assessment of air quality impacts on designated nature conservation sites