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Environmental Statement Appendix 8.9 – Information to inform HRA

May 2025

Helios Renewable Energy Project

On behalf of Enso Green Holdings D Limited

Appendix 8.9: Information to Inform a Habitats Regulations
Assessment. V~~6~~5



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1 INTRODUCTION

- 1.1.1 This revised **Appendix 8.9 Information to Inform Habitats Regulations Assessment** updates the version [EN010140/APP/6.3.8.9] submitted with **Chapter 8: Biodiversity** [EN010140/APP/6.1.8] of the Environmental Statement (ES) for the proposed development of a renewable energy generating project; consisting of ground-mounted solar photovoltaic arrays, together with on-site energy storage, associated infrastructure and grid connection (the 'Proposed Development'), on land to the south-west of the village of Camblesforth and to the north of the village of Hirst Courtney in North Yorkshire (the 'Site'), as shown on **Figure 1.1** of the ES.
- 1.1.2 Under the Conservation of Habitats and Species Regulations 2017 (as amended), hereafter referred to as the 'Habitats Regulations', all competent authorities must consider whether any plan or project could affect a European site before it can be authorised or carried out. Where the potential for likely significant effects (LSE) cannot be excluded, the competent authority must make an Appropriate Assessment (AA) decision of the implications of the plan or project for the identified European site(s).
- 1.1.3 This process is known as Habitats Regulations Assessment (HRA). The purpose of this report is to provide evidence to determine the potential for the Proposed Development to impact on European sites. This will enable the competent authority to make the Appropriate Assessment decision in accordance with UK legislation (refer to Section 2 for further details).

2 LEGISLATIVE BACKGROUND

- 2.1.1 Council Directives 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora ("the Habitats Directive") and 2009/147/EC on the conservation of wild birds ("the Birds Directive") provide for the designation of sites for the protection of certain species and habitats. The sites designated under these Directives are collectively termed European sites and form part of a network of protected sites across Europe, known as the Natura 2000 network. In the UK the Habitats Regulations transpose these Directives into national law.
- 2.1.2 The Conservation of Habitats and Species Regulations 2017 are one of the pieces of domestic law that transposed the land and marine aspects of the Habitats Directive and certain elements of the Wild Birds Directive. Following the changes made by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, SACs and Special Protection Areas (SPAs) in the UK no longer form part of the EU's Natura 2000 ecological network. The 2019 Regulations have created a national site network on land and at sea, including both the inshore and offshore marine areas in the UK. The national site network includes existing SACs and SPAs, new SACs and SPAs designated under these Regulations.
- 2.1.3 Any references to Natura 2000 in the 2017 Regulations and in guidance now refers to the new national site network.
- 2.1.4 The UK Government is also a signatory to the Convention on Wetlands of International Importance 1972 ("the Ramsar Convention"). The Ramsar Convention provides for the listing of wetlands of international importance.
- 2.1.5 The Overarching National Policy Statement ('NPS') for Energy (EN-1)¹ states that:

¹ Department for Energy Security & Net Zero (2023). *Overarching National Policy Statement for Energy (EN-1)*. <https://assets.publishing.service.gov.uk/media/65bbfbdc709fe1000f637052/overarching-nps-for-energy-en1.pdf> (accessed 20/06/2024) WORK\53031555\1

‘As a matter of policy, the following should be given the same protection as sites covered by the Habitats Regulations and an HRA will also be required:

(a) potential Special Protection Areas and possible Special Areas of Conservation;

(b) listed or proposed Ramsar sites; and,

(c) sites identified, or required, as compensatory measures for adverse effects on any of the other sites covered by this paragraph.’

- 2.1.6 For the purposes of this Appendix, in line with the Habitats Regulations and relevant Government policy, the term “European sites” and new national site network includes Special Areas of Conservation (“SAC”), candidate SACs (“cSAC”), possible SACs (“pSAC”), Special Protection Areas (“SPA”), potential SPAs (“pSPA”), Sites of Community Importance (“SCI”), listed and proposed Ramsar Sites and sites identified or required as compensatory measures for adverse effects on any of these sites.
- 2.1.7 Amongst other things, the Habitats Regulations define the process for the assessment of the implications of plans or projects on European sites. This process is termed the Habitats Regulations Assessment (HRA).
- 2.1.8 HRA can involve up to four stages, as detailed in Box 1.

Box 1 Stages of Habitats Regulations Assessment

Stage 1 – Screening:

This stage identifies the likely impacts upon a European Site of a project or Plan, either alone or ‘in combination’ with other projects or plans, and considers whether these impacts are likely to be significant.

Stage 2 – Appropriate Assessment:

Where there are likely significant impacts, this stage considers the impacts of the Plan or project on the integrity of the relevant European Sites, either alone or ‘in combination’ with other projects or plans, with respect to the sites’ structure and function and their conservation objectives. Where there are adverse impacts, it also includes an assessment of the potential mitigation for those impacts.

Stage 3 – Assessment of Alternative Solutions:

Where adverse impacts [on the integrity of the site] are predicted, this stage examines [whether or not there are] alternative ways of achieving the objectives of the project or Plan that avoid adverse impacts on the integrity of European Sites.

Stage 4 – Assessment Where No Alternative Solutions Exist and Where Adverse Impacts Remain:

This stage assesses compensatory measures where it is deemed that the project or Plan should proceed for imperative reasons of overriding public interest (IROPI).

- 2.1.9 Stages 1 and 2 are covered by Regulation 63 of the Habitat Regulations 2017, and Stages 3 and 4 are covered by Regulations 64, 68 and 84 of the Habitat Regulations 2017.
- 2.1.10 With respect to Stage 2, the integrity of a European Site relates to the site's conservation objectives and has been defined in guidance as "the coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of

habitats and/or populations of species for which the site is designated"². An adverse effect on integrity, therefore, is likely to be one which prevents the site from making the same contribution to favourable conservation status for the relevant feature as it did at the time of designation. The HRA screening process uses the threshold of LSE to determine whether effects on European sites should be the subject of further assessment. The Habitats Regulations do not define the term LSE. However, in the Waddenzee case (Case C127/02)³, the European Court of Justice found that an LSE should be presumed and an AA carried out if it cannot be excluded on the basis of objective information that the plan or project will not have significant effects on the conservation objectives of the site concerned, whether alone or in combination with any other project. The Advocate General's opinion of the Sweetman case (Case C-258/11)⁴ further clarifies the position by noting that for a conclusion of an LSE to be made "there is no need to establish such an effect...it is merely necessary to determine that there may be such an effect" (original emphasis).

- 2.1.11 For the reasons highlighted above the assessment process follows the precautionary principle throughout and the word 'likely' is regarded as a description of a risk (or possibility) rather than in a legal sense an expression of probability.
- 2.1.12 Screening can be used to screen-out European sites and elements of works from further assessment, if it is possible to determine that significant effects are unlikely (e.g., if sites or interest features are clearly not vulnerable (exposed and / or sensitive) to the outcomes of the proposal due to the absence of any reasonable impact pathways).
- 2.1.13 The screening process has two potential conclusions, namely that the proposed development, alone or in combination with other developments, could result in:
- No LSE on any of the qualifying features of the site; or,
 - LSE identified, or cannot be ruled out, on one or more of the qualifying features of the site.
- 2.1.14 Only the second of these outcomes will trigger an AA. If one or more LSE are identified, or cannot be ruled out, it is then necessary to proceed to Stage 2 and produce an AA.
- 2.1.15 On 12 April 2018, the Court of Justice of the European Union (CJEU) issued a judgment on Case C323/17 (People over Wind, Peter Sweetman v Coillte Teoranta)⁵ which stated (at paragraph 41):
- "Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that, 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 [mitigation] of the plan or project on that site."*
- 2.1.16 This means that any mitigation relating to protected sites under the Habitat Regulations 2017 Regulation 63 (1) will no longer be considered at the screening stage but taken forward and considered

² Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, at section 4.6.3 (Updated Version, November 2018)

³ Judgment of the Court (Grand Chamber) of 7 September 2004. Landelijke Vereniging tot Behoud van de Waddenzee and Nederlandse Vereniging tot Bescherming van Vogels v Staatssecretaris van Landbouw, Natuurbeheer en Visserij. Reference for a preliminary ruling: Raad van State - Netherlands. Case C-127/02

⁴ Judgment of the Court (Third Chamber), 11 April 2013 Peter Sweetman and Others v An Bord Pleanála. Request for a preliminary ruling from the Supreme Court (Ireland) Case C-258/11

⁵ Judgment of the Court (Seventh Chamber) of 12 April 2018 People Over Wind and Peter Sweetman v Coillte Teoranta Request for a preliminary ruling from the High Court (Ireland) Case C-323/17
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at the AA stage to inform a decision on whether no adverse effects on site integrity can be demonstrated.

- 2.1.17 The assessment provided within this Information to Inform a Habitats Regulations Assessment report takes into account the CJEU ruling on 'People over Wind' and the precautionary principle has been applied as per the Waddenzee case.

3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

- 3.1.1 The Site contains a series of 47 fields, as shown on ES **Figure 3.1** Field Boundaries Plan [EN010140/APP/6.2.3.1]. The Solar Farm Zone (as shown on ES **Figure 3.2** Parameter Plan [EN010140/APP/6.2.3.2]) is bound to the north-east by the A1041, to the west by agricultural fields between the Site and the Selby Branch of the East Coast Mainline railway further west, and to the south by agricultural fields, and agricultural and horticultural development surrounding Moss Green Lane. The surrounding landscape is characterised by large, irregular-shaped fields delineated by partially denuded hedgerows and drainage ditches. Occasional woodland blocks and tree belts are also present, but the landscape is primarily flat and open.
- 3.1.2 A full description of the Proposed Development is presented in Chapter 3 of the Environmental Statement. Broadly this comprises the Solar Farm Zone, Underground Cable Corridor, Substation and a BESS compound.
- 3.1.3 Activities undertaken in each of the construction, operation and decommissioning phases are outlined as follows.

Construction Phase

- 3.1.4 The construction of the Proposed Development is anticipated to comprise a 12-month period commencing no earlier than 2027 and with completion of the Proposed Development in 2029 and is summarised as follows:
- 3.1.5 The activities on-Site during the construction phase are expected to include the following:
- Site establishment and enabling works:
 - Ground clearance, where necessary;
 - Installation of security lighting and CCTV;
 - Delivery of construction materials, plant and equipment;
 - Establishment of security fencing;
 - Establishment of construction compounds including storage and welfare facilities;
 - Construction of internal access roads;
 - Setting out the positions for the infrastructure and equipment; and
 - Trenching for cable routes.
 - Construction of the Proposed Development:
 - Piling and installation of solar PV array foundations;

- Construction of on-Site electrical infrastructure to facilitate the generation of electricity such as solar PV frames and panels, 132kV substation and BESS;
- Laying of cables including PoC cable groundworks and string cabling between the solar PV array;
- PoC electrical works;
- Installation of fencing and gates;
- Final installation checks;
- Testing and commissioning;
- Site clearance and compound removal; and
- Habitat creation, landscape planting and ecological enhancements

3.1.6 Working hours will be 8am – 6pm (Monday to Friday) and 8am – 1pm (Saturday). There will be no Sunday or Bank Holiday working hours unless agreed with North Yorkshire Council (NYC).

3.1.7 An Outline Construction Environmental Management Plan ('oCEMP') (refer to **Appendix 5.1** [EN010140/APP/6.3.5.1]) of the ES details the environmental controls and best practice to minimise any adverse effects from construction. A detailed CEMP will be secured by the DCO following approval by NYC.

Operational Phase

3.1.8 During the operational phase of the Proposed Development, on-site activities would be limited and restricted to maintenance activities and grazing. Maintenance activities will include:

- Regular visual inspection of all infrastructure.
- Regular scheduled inspections and testing of equipment.
- Replacement of consumable items (e.g., inverter filters).
- Cleaning of solar PV modules, if required.
- Repair or replacement of solar modules or other components, if damaged.
- Delivery of spare parts, replacement equipment items and consumables.
- Water management (e.g., clearing of drainage ditches).
- Vegetation management (e.g., cut back of grass, hedges, trees) and on-going management of ecological enhancements.

3.1.9 In the event that there may be a requirement to replace faulty or degraded equipment, there may be a small number of HGV movements. Such movements are anticipated to be low in frequency and on an ad-hoc basis.

3.1.10 No areas of the Proposed Development will be continuously lit; however, security lighting will be required around key electrical infrastructure. This lighting will be sensor triggered and therefore not continuous.

Decommissioning Phase

- 3.1.11 Following cessation of energy generation and exportation at the Site, all solar PV modules, mounting structure, cabling (within the Solar Farm, Substation and BESS compound and Underground Cable Corridor Zones), inverters and transformers will be removed and recycled, or disposed of in accordance with good practice and market conditions at that time.
- 3.1.12 The decommissioning of the Proposed Development is anticipated to take approximately 12 months.

4 HABITATS REGULATIONS ASSESSMENT SCREENING

4.1 Introduction

- 4.1.1 Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3) of the Habitats Regulations, that is:
- whether a plan or project is directly connected to or necessary for the management of the European site; and
 - if not directly connected to or necessary for European site management, whether a plan or project, alone or in-combination with other plans and projects, is likely to have significant effects on a European site in view of its conservation objectives.
- 4.1.2 Under the first test, the purpose of the Proposed Development is not directly connected with or necessary to the management of a European site. Therefore, the second test needs to be undertaken to determine whether the Proposed Development has the potential to have likely significant effects on a European site.

4.2 Consultation

- 4.2.1 The Applicant has engaged with Natural England's ('NE') through their Discretionary Advice Service ('DAS') on the scope and method of surveys to inform the Environmental Impact Assessment (EIA) over the course of the submission and determination period.
- 4.2.2 Pre-submission consultations are summarised in the Environmental Statement (ES) **Chapter 8: Biodiversity** Table 8.5 and are presented in full in **Appendix 8.10: Consultation Record** of the ES [EN010140/APP/6.3.8.10].
- 4.2.3 This revised HRA Appendix has further been informed by NE's formal Response to Relevant Representations letter, dated 30th September 2024.

4.3 Identification of European Sites

- 4.3.1 The Proposed Development is not located within any European site but there are nine statutory designated wildlife sites of European importance within 10km of the Site. A statutory designated site plan is provided in **Appendix 8.1 Baseline Habitats and Desk Study Report** [EN010140/APP/6.3.8.1]; **Figure 8.1** of the ES.
- 4.3.2 **Table 4.1** below identifies these European sites and outlines their qualifying features.

Table 4.1: Qualifying features - European sites.

Designation	Approximate Distance from the Site	Qualifying Features
River Derwent SAC	2.22km north-east	Qualifying species: • Bullhead <i>Cottus gobio</i>; • River lamprey <i>Lampetra fluviatilis</i>; • Otter <i>Lutra lutra</i>; and, • Sea lamprey <i>Petromyzon marinus</i>. Qualifying habitats: • Water courses of plain to montane levels with <i>Ranunculum fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation (rivers with floating vegetation often dominated by water-crowfoot).
Lower Derwent Valley SAC	6.47km north-east	Qualifying species: • Otter. Qualifying Habitats: • Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>); and, • Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alder woodland on floodplains).
Lower Derwent Valley SPA	6.47km north-east	The site is designated for the following ornithological qualifying features: • Bewick's swan <i>Cygnus columbianus</i> (non-breeding); • Eurasian wigeon <i>Anas penelope</i> (non-breeding); • Eurasian teal <i>Anas crecca</i> (non-breeding); • Northern shoveler <i>Anas clypeata</i> (breeding); • European golden plover <i>Pluvialis apricaria</i> (non-breeding); • Ruff <i>Philomachus pugnax</i> (non-breeding); and, • Waterbird assemblage (pochard <i>Aythya ferina</i>, ruff, shoveler, teal, whimbrel <i>Numenius phaeopus</i>, wigeon, gadwall <i>Anas strepera</i>, greylag goose <i>Anser anser</i>, pintail <i>Anas acuta</i>, whooper swan <i>Cygnus cygnus</i>, golden plover and lapwing <i>Vanellus vanellus</i>; See Natural England document Annex B1, in Appendix 8.2 for further details).
Lower Derwent Valley Ramsar Site	6.55km north-east	Designated under Ramsar criterion 1, 2, 4, 5 and 6. Qualifying species listed as part of qualification under Ramsar Criterion 5 and 6 include: Ramsar criterion 4 A staging post for passage birds in spring. Of particular note are the nationally important numbers of ruff and whimbrel. Ramsar criterion 5 Wintering bird assemblages of international importance (peak counts in winter: 31,942 waterfowl (5-year peak mean 1998/99-2002/2003)). Ramsar criterion 6 Wintering species occurring at levels of international importance: • Eurasian wigeon; and, • Eurasian teal. Qualifying Habitats: • Species-rich alluvial flood meadow; the river and

Table 4.1: Qualifying features - European sites.

Designation	Approximate Distance from the Site	Qualifying Features
		flood meadows play a substantial role in the hydrological and ecological functioning of the Humber Basin. Qualifying Non-Avian species/assemblages: Wetland invertebrates.
Humber Estuary SAC	6.64km east	Qualifying species: - Sea lamprey; - River lamprey; and - Grey seal <i>Halichoerus grypus</i>. Qualifying Habitats: - Subtidal sandbanks; - Estuaries; - Intertidal mudflats and sandflats; - Coastal lagoons; - Glasswort and other annuals colonising mud and sand; - Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>); - Embryonic shifting dunes; - Shifting dunes with marram; - Dune grassland; and, - Dunes with sea-buckthorn
Humber Estuary SPA	6.64km east	The site is designated for the following ornithological qualifying features: - Great bittern <i>Botaurus stellaris</i> (non-breeding and breeding); - Common shelduck <i>Tadorna tadorna</i> (non-breeding); - Eurasian marsh harrier <i>Circus aeruginosus</i> (breeding); - Hen harrier <i>Circus cyaneus</i> (non-breeding); - Pied avocet <i>Recurvirostra avosetta</i> (non-breeding and breeding); - European golden plover (non-breeding); - Red knot <i>Calidris canutus</i> (non-breeding); - Dunlin <i>Calidris alpina</i> (non-breeding); - Ruff (non-breeding); - Black-tailed godwit <i>Limosa limosa</i> (non-breeding); - Bar-tailed godwit <i>Limosa lapponica</i> (non-breeding); - Common redshank <i>Tringa tetanus</i> (non-breeding); - Little tern <i>Sternula albifrons</i> (breeding); and, - Waterbird assemblage (avocet, bar-tailed godwit, bittern, black-tailed godwit, brent goose <i>Branta bernicla</i>, curlew <i>Numenius arquata</i>, dunlin, golden plover, goldeneye <i>Bucephala clangula</i>, greenshank <i>Tringa nebularia</i>, grey plover <i>Pluvialis squatarola</i>, knot, lapwing, mallard <i>Anas platyrhynchos</i>, oystercatcher <i>Haematopus ostralegus</i>, pochard, redshank, ringed plover <i>Charadrius hiaticula</i>, ruff, sanderling <i>Calidris alba</i>, scaup <i>Aythya marila</i>, shelduck, teal, turnstone <i>Arenaria interpres</i>, whimbrel and wigeon; see

Table 4.1: Qualifying features - European sites.

Designation	Approximate Distance from the Site	Qualifying Features
		Natural England Document Annex B in Appendix 8.2 for further details).
Humber Estuary Ramsar Site	6.64km east	Designated under Ramsar criterion 1, 3, 5, 6 and 8. Qualifying species listed as part of qualification under Ramsar Criterion 5 and 6 include: Ramsar criterion 5 Wintering bird assemblages of international importance (peak counts in winter: 153,934 waterfowl (5-year peak mean 1996/97-2000/2001)). Ramsar criterion 6 Species with peak counts in spring/autumn occurring at levels of international importance: • European golden plover; • Red knot; • Dunlin; • Black-tailed godwit; and, • Common redshank. Species with peak counts in winter occurring at levels of international importance: • Common shelduck; • European golden plover; • Red knot; • Dunlin; • Black-tailed godwit; and, • Bar-tailed godwit. Qualifying Habitats: • A near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/ saline lagoons. Qualifying non-avian species/assemblages: • Grey seal; • Natterjack toad <i>Epidalea calamita</i>; • River lamprey; and, • Sea lamprey.
Skipwith Common SAC	8.5km north	Qualifying habitats: • Northern Atlantic wet heaths with <i>Erica tetralix</i>; Wet heathland with cross-leaved heath; and, • European dry heaths.
Thorne Moor SAC	9.09km south-east	Qualifying habitats: • Degraded raised bogs still capable of natural regeneration.
Thorne & Hatfield Moors SPA	9.09km south-east	Qualifying species: • European nightjar <i>Caprimulgus europaeus</i>

Table 4.1: Qualifying features - European sites.

Designation	Approximate Distance from the Site	Qualifying Features
		(Breeding).

4.4 Conservation Objectives of the European Sites

4.4.1 The conservation objectives of the European Sites identified in Table 4.1 are presented as follows.

River Derwent SAC⁶, Lower Derwent Valley SAC⁷ and Humber Estuary SAC⁸

‘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’.*

Lower Derwent Valley SPA⁹, Humber Estuary SPA¹⁰ and Thorne and Hatfield Moors SPA¹¹

‘Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:

- *The extent and distribution of the habitats of the qualifying features;*
- *The structure and function of the habitats of the qualifying features;*
- *The supporting processes on which the habitats of the qualifying features rely;*
- *The population of each of the qualifying features, and,*
- *The distribution of the qualifying features within the site’.*

⁶ <https://publications.naturalengland.org.uk/publication/4824082210095104> [accessed December 2024]

⁷ <https://publications.naturalengland.org.uk/publication/5660734323163136> [accessed December 2024]

⁸ <https://publications.naturalengland.org.uk/publication/5009545743040512> [accessed December 2024]

⁹ <https://publications.naturalengland.org.uk/publication/6223883187257344> [accessed December 2024]

¹⁰ <https://publications.naturalengland.org.uk/publication/5382184353398784> [accessed December 2024]

¹¹ <https://publications.naturalengland.org.uk/publication/6503407711944704> [accessed December 2024]

‘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.’*

4.5 Natural England Guidance on the Humber Estuary SPA & the Lower Derwent Valley SPA

4.5.1 Natural England provided their guidance documents on the main component species of the SPA non-breeding waterbird assemblage in two documents:

- Annex B: Humber Estuary Special Protection Area: Non-breeding waterbird assemblage (V1.1 June 2023)’.
- Annex B1: Lower Derwent Valley Special Protection Area: non-breeding waterbird assemblage (Version 1.1, June 2023)

4.5.2 These document set-out which species should be considered when assessing the non-breeding waterbird assemblage feature of these two SPAs. Natural England recommend focusing on what are referred to as the ‘main component species’ of the assemblages, categorised as:

- a) All species listed individually under the assemblage feature on the SPA citation (i.e. the species that qualified in 2007 when the site was designated).*
- b) Species which might not be listed on the SPA citation but occur at site levels of more than 1% of the national population according to the most recent Wetland Bird Survey (WeBS) 5-year average counts.*
- c) Species where more than 2,000 individuals are present according to the most recent Humber Estuary WeBS*

4.5.3 The guidance provides a species list but notes that the assemblage qualification is subject to change as species’ populations change; therefore, the appropriate British Trust for Ornithology (‘BTO’) WeBS data should be considered in any assessment, and the list should be used as a guide only. This assessment has considered all the species listed in the two documents.

4.6 Ramsar Information Sheets

4.6.1 Ramsar Information sheets for the Humber Estuary SPA and Lower Derwent Valley SPA are provided as Annex 4, in response to The Examining Authority’s written questions and requests for information (ExQ3), Issued on 2 May 2025. Conservation Objectives are not published for Ramsar sites to the Applicant’s knowledge and therefore Ramsar Information Sheets have been included.

¹² <https://publications.naturalengland.org.uk/publication/5391567648980992> [accessed December 2024]

¹³ <https://publications.naturalengland.org.uk/publication/6566028335120384> [accessed December 2024]

4.6.4.7 Identification of Potential Impacts

4.6.14.7.1 This section sets out the identified potential impacts on the qualifying habitats and/or species associated with the European sites. Potential impacts and impact pathways have been considered between the Proposed Development and designated sites within 10km of the Proposed Development. Additionally, NE's Sites of Special Scientific Interest (SSSI) Impact Risk Zone (IRZ) tool¹⁴ has been used to identify potential impacts from the Proposed Developments on the designated sites. These include consideration of the construction, operational and decommissioning phases. Decommissioning impacts are considered likely to be similar to, or less than, those identified for the construction phase. Environmental conditions change over time, and there can be a high degree of uncertainty regarding decommissioning as engineering approaches and technologies will evolve over the operational life of the Proposed Development.

4.6.24.7.2 The following potential impacts have been identified.

- Degradation of habitats due to changes in air quality
- Loss of functionally linked land for qualifying bird species
- Disturbance/ displacement of qualifying bird species using FLL
- Disruption of flight paths of qualifying bird species as a result of glint and glare
- Harm to, or disturbance of, (non-avian) mobile qualifying features

4.6.34.7.3 Refer to Annex 3 for table depicting identified European sites, qualifying features, potential impacts and impact pathways.

4.6.44.7.4 The potential impacts from each are discussed in turn.

Degradation of habitats due to changes in air quality

4.6.54.7.5 A reduction in air quality because of increased traffic in the construction phase has the potential to lead to degradation of habitats within the European sites.

4.6.64.7.6 No other pathways for potential effects have been identified.

Loss of functionally linked land for qualifying bird species

4.6.74.7.7 Construction will not result in direct loss of habitats within the European sites identified in Table 4.1.

4.6.84.7.8 However, land within and adjacent to the Site has the potential to constitute 'functionally linked land' ('FLL') for qualifying bird species for which the European sites are designated. As such, within the Site there is potential for temporary loss of FLL with construction activities, and potential for long-term loss of FLL under the footprint of the solar PV modules and associated infrastructure where this is above ground level.

¹⁴ The SSSI (also includes SPA's, SAC's and Ramsar sites) IRZ's are a Geographical Information System (GIS) tool developed by NE to make a rapid initial assessment of the potential risks to terrestrial SSIs (also includes SPA's, SAC's and Ramsar sites) posed by development proposals. They define zones around each SSSI (also includes SPA's, SAC's and Ramsar sites) which reflect the sensitivities of the features for which the site is notified and indicate the types of development proposal which could potentially have adverse impacts and need further consideration.

Disturbance/ displacement of qualifying bird species using FLL

4.6.94.7.9 There is potential for disturbance/ displacement of SPA/Ramsar site qualifying bird species using FLL within and/or adjacent to the Site during the construction, operation and decommissioning phases. This could reduce feeding efficiency and/or lead to changes in species distribution and therefore contradict the conservation objectives of the SPA/ Ramsar sites.

4.6.104.7.10 Potentially disturbing activities include the movements of vehicles, increased human presence, noise and light spillage. However, hours of work (see para 3.1.6) will mean night-time disturbance is avoided in all but the shortest months.

4.6.114.7.11 During the operational phase, disturbance or displacement could occur; however, this is considered likely to be comparable to, or less than, current farming related activity levels.

Disruption of flight paths of qualifying bird species due to glint and glare

4.6.124.7.12 During the operational phase there is potential for glint and glare to affect the flight paths of qualifying bird species of the European sites.

Harm to, or Disturbance of, (non-avian) mobile qualifying features

4.6.134.7.13 During the construction phase, there is potential for harm or disturbance of animals which are a qualifying feature of the European sites, should they utilise the Site or immediate adjacent area (for example otters).

4.74.8 Screening Assessment

4.7.14.8.1 The European sites considered for assessment in the case of the Proposed Development have been identified through desk study (see Section 8.4 of **Chapter 8: Biodiversity**), as presented in Table 4.1.

Degradation of Air Quality – all European Sites

4.7.24.8.2 A separate Technical Note, prepared by Air Quality Consultants and dated 02nd April 2024 has been submitted to Natural England, which relates to the expected air quality impacts on statutory sites designated for the protection of nature (including European Sites) as a result of the Proposed Development. Key findings are summarised as follows.

4.7.34.8.3 There are no designated sites within 200 m of the principal routes to and from the Site (A1041 or A645); however, the Humber Estuary SAC, SPA, Ramsar site and SSSI intersects, and is therefore within 200m¹⁵ of, the M62, between Junctions 36 and 37. Overall, given that the M62 is a strategic network road with high traffic volumes, any additional vehicle movements associated with construction of the Proposed Development would be negligible and as such it is considered that there are no habitats within 200 m of the construction traffic routes that require further consideration with respect to air quality impacts

4.7.44.8.4 The nearest European site is 2.2 km to the northeast. At this distance, air quality impacts from construction equipment and generators have been precluded.

¹⁵ 200m is the distance specified in NE guidance NE A001 'Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations'
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4.7.54.8.5 Operational traffic is anticipated to be limited to approximately 5 vehicle visits per month, and therefore well below the 1,000 Annual Average Daily Traffic (AADT) screening threshold for light vehicles set out in NE guidance¹⁶.

4.7.64.8.6 The Technical Notes concludes that there is no risk of air quality impacts on designated sites as a result of the construction, operation or decommissioning of the Proposed Development.

4.7.74.8.7 The transport consultants (Transport Planning Associates, TPA) have confirmed that construction traffic will not travel northbound on the M62 beyond Junction 36. The strategic road network, freight interchange and ports are accessed via Junction 35 of the M62 and construction traffic will access the site from Junction 36, consequently construction trips would not be routed via Junction 37. Therefore, the construction traffic AADT flows on the M62 at the point that it is adjacent to the Humber Estuary SAC, SPA, Ramsar and SSSI (which intersect the M62 between Junctions 36 and 37), will be zero, and there will be no significant effects to the Humber Estuary SAC, SPA, Ramsar and SSSI and there are no habitats within 200 m of the construction traffic routes that require further consideration with respect to air quality impacts.

4.7.84.8.8 Air quality effects are therefore screened-out and not considered further for all the identified European sites.

Consideration of Individual European Sites

4.7.94.8.9 The potential for effects on other European site features, as listed in Table 4.1, is considered for each European site in turn, as follows

River Derwent SAC

4.7.104.8.10 The SAC is designated for aquatic species (otter and fish species), along with watercourse habitats, and is located 2.2km NE of Site at its nearest point. The Site is separated from SAC by the River Ouse and therefore there is no direct pathway for connection between the two and impacts on habitats can be precluded.

4.7.114.8.11 Mobile features (otter and fish) are considered unlikely to be subject to impacts based on the separation distances and nature of the Proposed Development. Effects on fish species during construction can be ruled-out by virtue of separation distance and the inclusion of precautionary standard pollution control measures, as presented in **Appendix 5.1: Outline Construction Environmental Management Plan** [EN010140/APP/6.3.5.1]) of the ES ('oCEMP').

4.7.124.8.12 Whilst it is possible that otters from the River Derwent SAC could occasionally utilise the ditch network within the Site, no evidence of otter utilising the Site or immediate surrounds was identified through a desk study or field surveys undertaken in 2022 and 2023. As such, regular use of the Site and immediate surrounds by animals originating from the River Derwent is considered unlikely given the absence of desk and field survey records, and the separation by the River Ouse. Further, the Proposed Development will have negligible impacts on any ditch within the Site due to the nature of the project and it therefore highly unlikely any SAC animals could be affected.

4.7.134.8.13 Subsequently neither construction or operational effects on static or mobile features of the SAC are anticipated.

4.7.144.8.14 There is subsequently no potential for LSE for the River Derwent SAC and accordingly this European site is screened-out of further assessment.

¹⁶ Natural England (2018), 'Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations'.
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Lower Derwent Valley SAC and Ramsar

4.7.154.8.15 Qualifying features of the SAC, located 6.4km from the Site, are otters and habitats. Non-ornithological features of the Ramsar designation are also habitats, along with aquatic invertebrates.

4.7.164.8.16 As with River Derwent SAC, the Site is separated from the Lower Derwent Valley SAC by the River Ouse and therefore lacks connectivity. Impacts on habitats can be precluded.

4.7.174.8.17 As with the River Derwent SAC, impacts on otters can be ruled-out. Effects on aquatic invertebrate populations of the SAC are not anticipated due to separation distance and limited hydrological connectivity.

4.7.184.8.18 Accordingly, neither construction or operational effects on static or mobile features of the SAC or Ramsar are anticipated.

4.7.194.8.19 There is subsequently no potential for LSE for Lower Derwent Valley SAC and Ramsar, therefore this European site is screened-out of further assessment.

Humber Estuary SAC and Ramsar

4.7.204.8.20 The Humber Estuary SAC and Ramsar is located 6.6 km from the Site at its nearest location and is designated for populations of two lamprey species and grey seals.

4.7.214.8.21 Effects on all aquatic species during construction can be ruled-out by virtue of separation distance and included standard pollution control measures, as presented in the oCEMP. Seal colonies are in coastal locations and therefore will not be impacted directly or indirectly by the Proposed Development.

4.7.224.8.22 The SAC is also designated for a series of coastal and inter-tidal habitats; however, none of these is in any proximity to the Site whereby there is a potential pathway for effects. Non-ornithological features of the Ramsar designation are the same species and habitats, along with natterjack toad (a dune and heathland specialist species), and therefore will not be subject to impacts.

4.7.234.8.23 No construction or operational effects on any features of the SAC are anticipated. There is subsequently no potential for LSE for Humber Estuary SAC and Ramsar (non-ornithology features) and therefore this European site is screened-out of further assessment.

Skipwith Common SAC

4.7.244.8.24 The SAC is located 8.5km from the Site and is designated for heathland habitats. There are no mobile features of the SAC. Based on this separation distance, no pathway for effects has been identified.

4.7.254.8.25 There is subsequently no potential for LSE for Skipworth Common SAC. This European site is subsequently screened-out of further assessment.

Thorne Moor SAC

4.7.264.8.26 The SAC is located 9km from the Site and is designated for raised bog habitats only. Based on this separation distance, no pathway for effects has been identified.

4.7.274.8.27 There is subsequently no potential for LSE for Thorne Moor SAC. This European site is subsequently screened-out of further assessment.

Thorne and Hatfield Moors SPA

4.7.284.8.28 The SPA is located 9km from the Site and is designated for breeding European nightjars, a species which is restricted to moorland and heathland habitats which are absent from the Site. Based on the species' habitat requirements and the separation distance from the Site, no pathway for effects has been identified.

4.7.294.8.29 There is subsequently no potential for LSE for Thorne and Hatfield Moors SPA and the European site is subsequently screened-out of further assessment.

Lower Derwent Valley SPA and Ramsar Site

4.7.304.8.30 The SPA is designated for a series of waterbird species, as listed in **Table 4.1.** and in NE document 'Annex B1: Lower Derwent Valley Special Protection Area: non-breeding waterbird assemblage (Version 1.1, June 2023)'

4.7.314.8.31 Whilst many of the SPA qualifying species are associated with wetland habitats, some range widely and can use arable farmland for foraging, for example geese and plover species (golden plover and lapwing). It is possible that SPA qualifying species, either as individual species or part of an assemblage, utilise the Site (most likely for foraging), and therefore the site could be functionally linked to the SPA.

4.7.324.8.32 These birds could be subject to loss of FLL, or disturbance or displacement from FLL. Disruption of flight paths because of glint and glare is also possible.

4.7.334.8.33 There is subsequently potential for LSE for the Lower Derwent Valley SPA and Ramsar Site. This European site is therefore screened-in for further assessment regarding non-breeding waterbird populations.

4.7.344.8.34 Breeding qualifying species of the Lower Derwent Valley SPA are screened-out of further assessment given the lack of breeding records during the field surveys, lack of suitable habitat present onsite (and within 600m of the Site) and, given spatial separation between the SPA and the Site.

Humber Estuary SPA and Ramsar Site

4.7.354.8.35 The SPA is also designated for a series of waterbird species, as listed in **Table 4.1.** and in NE document 'Annex B: Humber Estuary Special Protection Area: Non-breeding waterbird assemblage (V1.1 June 2023)'. These are largely concurrent with those species which form part of the Lower Derwent Valley SPA qualifying features.

4.7.364.8.36 Whilst many of the SPA qualifying species are associated with coastal, wetland and intertidal habitats, some species range widely and can use arable farmland for foraging, for example geese and plover species (golden plover and lapwing). It is possible that SPA qualifying species, either as individual species or part of an assemblage utilise the Site (most likely for foraging), and therefore the site could be functionally linked to the SPA.

4.7.374.8.37 These birds could be subject to loss of FLL, or disturbance or displacement from FLL. Disruption of flight paths because of glint and glare is also possible.

4.7.384.8.38 There is subsequently potential for LSE for the Humber Estuary SPA and Ramsar Site. This European site is therefore screened-in for further assessment regarding non-breeding waterbird populations.

4.7.394.8.39 Breeding qualifying species of the Humber Estuary SPA are scoped- out of further assessment given the lack of breeding records during the field surveys, lack of suitable habitat present onsite (and within 600m of the Site) and, given spatial separation between the SPA and the Site.

4.84.9 Screening Conclusion

4.8.14.9.1 LSE cannot be precluded for the following two European Sites, which are therefore scoped in for further assessment in relation to non-breeding bird species:

- Lower Derwent Valley SPA and Ramsar Site
- Humber Estuary SPA and Ramsar Site

4.8.24.9.2 Given the overlap in qualifying interest features (species), the two European sites are considered together. This is also considered necessary as it is not possible to distinguish between populations; i.e., it cannot be known which European site any bird(s) recorded on the Site originates from, and it is also likely that there is movement between the two European Sites for some species.

4.8.34.9.3 For the remainder of this HRA Appendix, the two European Sites scoped-in for assessment are referred to collectively as 'the relevant European Sites'.

4.94.10 Ornithology Survey Baseline Summary

Identification of Functional Linkage between the Site and European Sites (Humber Estuary SPA and Lower Derwent Valley SPA)

4.9.14.10.1 Before determining any functional linkage, it is necessary to consider how FLL is identified. For the purposes of this document, FLL has been categorised based on the following three parameters:

- (1) Population & Frequency of Use Criteria (based on field survey data and previously defined thresholds);
- (2) Desk study record analysis; and,
- (3) Habitat Suitability Appraisal.

4.9.24.10.2 Each is considered in turn.

FLL Population & Frequency of Use Criteria

4.9.34.10.3 In October 2021, Natural England (NE) published a report titled '*Identification of Functionally Linked Land supporting Special Protection Areas (SPAs) waterbirds in the North West of England (NECR 361)*'¹⁷. Although the Site is not within the north-west region, the report provides a clear definition of FLL in relation to bird survey results or desk study information based on population numbers and frequency of use.

4.9.44.10.4 For alone SPA qualifying species, NECR 361 defines a significant number of birds as $\geq 1\%$ of the SPA population taken from BTO WeBS reports¹⁸. This percentage approach when assessing FLL is widely adopted for HRA and is accepted as a 'rule of thumb' by NE¹⁹.

4.9.54.10.5 For species which are not alone qualifying features of the SPA/ Ramsar Site, but instead are only listed as a component part of the qualifying waterbird assemblage, NECR361 defines a significant number of birds is defined as $\geq 1\%$ all listed species that make up the assemblage, or $\geq 1\%$ of the

¹⁷ Available at <http://publications.naturalengland.org.uk/publication/6303434392469504> [accessed March 2024]

¹⁸ Austin, G.E., Calbrade, N.A., Birtles, G.A., Peck, K., Shaw, J.M. Wotton, S.R., Balmer, D.E. and Frost, T.M. (2023.) Waterbirds in the UK 2021/22: The Wetland Bird Survey and Goose & Swan Monitoring Programme. BTO/RSPB/JNCC/NatureScot. Thetford.

¹⁹ NE Relevant Representations letter of 30th September 2024.
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national (GB) population (taken from Woodward *et al.* 2020²⁰), or a species count exceeding 2,000 birds. It is, however, acknowledged that a likely significant effect could occur for a smaller number of assemblage birds, where a site is regularly used by less than 1% SPA population of a declining species. As such the waterbird assemblage numerical criteria in NECR 361 are not adopted in this assessment, rather individual species are considered.

4.9.64.10.6 Regular usage was defined in NECR 361 report as being used by significant numbers of birds for 7 or more years since 2010. Clearly this is not compatible with surveys for impact assessment purposes; however, the report notes that Stroud *et al.* (2001²¹) define 'regular' as when a threshold is met in two thirds of the season for which adequate data are available; i.e., whether a field is consistently used by SPA species (qualifying or assemblage) throughout the survey period.

4.9.74.10.7 For the purposes of this revised HRA Appendix, the above parameters are referred to as 'the FLL Population and Frequency of Use Criteria'. These population criteria are considered as part of a wider assessment of FLL; additional information, including analysis of habitat suitability (paragraph 4.9.26 onwards).

Field Survey Results Summary and FLL Population and Frequency of Use Criteria

4.9.84.10.8 Full survey results are presented in Appendix 8.2 of the ES. A summary table is also presented as **Annex 1** to this Appendix (taken from version one of Appendix 8.9 HRA, as submitted with the ES).

4.9.94.10.9 During field surveys undertaken to inform the assessment, the Site was used by very low numbers of golden plover and shelduck (both alone SPA qualifying species; golden plover for both relevant European Sites and shelduck for only Humber Estuary SPA) on only one occasion each across the entire survey period. Numbers for both species (peak counts of two) were well below the 1% of the relevant European Site SPA populations (5-year mean) and/or frequency of use. Therefore, no qualifying species met the FLL Population and Frequency of Use Criteria.

4.9.104.10.10 The Site was also used by typically low numbers of lapwing, mallard and oystercatcher, which are listed as part of the waterbird assemblage of the SPAs (both SPAs for lapwing, and Humber Estuary SPA for mallard and oystercatcher). Records of mallard and oystercatcher onsite were very low during the survey period (peak of only respectively six mallard and four oystercatcher). Mallards were generally associated with the ditch network which is not directly affected by the Proposed Development.

4.9.114.10.11 Lapwings were recorded in greater numbers onsite and met the frequency of use criteria, with birds recorded on 11 of the 12 visits in the 2021/2022 survey period. Numbers ranged from 0 to 211 birds, with an average of 54.8 birds (median 53.5 birds). Maximum counts per visit are presented in Table 4.1 (data derived from Table 3.1 of Appendix 8.2 to the ES).

Table 4.1: Peak Lapwing Counts Across Site, per Visit 2021 / 2022

	Visit											
	1	2	3	4	5	6	7	8	9	10	11	12
Lapwing peak counts	211	71	6	52	51	55	71	63	72	2	4	0

²⁰ Woodward, I., Aebischer, N., Burnell, D., Eaton, M., Frost, T., Hall, C., Stroud, D.A and Noble, D. (2020). Population estimates of birds in Great Britain and the United Kingdom. *British Birds* 113: 69-104.

²¹ Stroud, D.A., Chambers, D., Cook, S., Buxton, N., Fraser, B., Clement, P., Lewis, P., McLean, I., Baker, H. & Whitehead, S. (eds). 2001. The UK SPA network: its scope and content. JNCC, Peterborough, p56.
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	Visit											
	1	2	3	4	5	6	7	8	9	10	11	12
(whole Site)												

4.9.124.10.12 The Site peak count of 211 lapwings represents 1.3% of the Humber Estuary five-year mean population (of 15,950 birds²²). The next largest observation was of 71 birds (0.44% of the Humber SPA population). Subsequently the 1% threshold was met on only one survey (i.e., not regular use as defined by Stroud *et al*). The average count of 55 birds equates to 0.34% of the SPA population).

4.9.134.10.13 Field 25 onsite was the most regularly used part of the Site by lapwing in the 2021/2022 non-breeding season, with small numbers of birds present on 8 surveys (from 12). The field was in stubble over the course of the survey period. Counts in field 25 ranged from 1 to 72 birds (mean 29.9 birds).

4.9.144.10.14 During the passage periods (and nocturnal surveys) the number of lapwings recorded onsite was very low ≤ 14 birds, and during the 2022/23 season no lapwing were recorded onsite at all. As such, lapwing usage of the Site was sporadic over the duration of the overall survey programme.

4.9.154.10.15 Subsequently, no evidence of regular use by significant numbers of lapwing was recorded on the Site; however low numbers of birds were recorded regularly over winter 2021/2022 and this species is considered further in paragraph 4.9.48 onwards.

4.9.164.10.16 No evidence of regular use (in significant numbers or otherwise) of other alone or assemblage qualifying SPA species was found. Subsequently the FLL Population and Frequency of Use Criteria were not met within the Site. However, due to the declining status of lapwing, this species is considered further (see 'Additional Consideration of FLL for Declining Species', paragraph 4.9.48 onwards).

4.9.174.10.17 The Wider Survey Area (600m buffer outside the Site) supported a modest range of SPA qualifying species in low-moderate numbers. A small lake (near field 339), approximately 200m from the Proposed Development at its closest point, supported modest concentrations of Target Species, including alone qualifying SPA species such as wigeon and teal, and waterbird assemblage only SPA species (including mallard and gadwall). All counts (including the lake) were, however, well below the defined thresholds, and therefore the FLL Population Criteria was not met for any of the Target Species recorded in the 600m buffer around the Site (see Annex 1).

Desk Study Record Analysis

4.9.184.10.18 Desk study records are presented in Annex 4 of the Appendix 8.2: Ornithological Survey Report and are shown on Figure 8.21 in the same report. These principally relate to records obtained from the North & East Yorkshire Ecological Data Centre (NEYEDC).

4.9.194.10.19 Of the records returned by NEYEDC, none were confirmed to be from within the Site; however, several grid references were submitted as four-figure grid references e.g. SE6528 and therefore may include records within the Site boundary.

4.9.204.10.20 Of those species which form a qualifying feature of the European Sites, records were received of three species only; two records of marsh harrier (breeding species SPA feature which is screened-out), two records of teal and two records of redshank were returned, with all records of marsh harrier and redshank and a single record of teal referring to observations within Drax Power Station, >1.5km

²² Woodward, I.D., Calbrade, N.A., Birtles, A., Feather, G.A., Peck, K., Wotton, S.R., Shaw, J.M., Balmer, D.E. and Frost, T.M. 2024. Waterbirds in the UK 2022/23: The Wetland Bird Survey and Goose & Swan Monitoring Programme. BTO/RSPB/JNCC/NatureScot. Thetford.
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north of the Site boundary. The second record of teal referred to an observation located 4km north of the Site.

4.9.214.10.21 Of those species which qualify under the European Site waterbird assemblages, a total of 18 records were returned for: shelduck, mallard, tufted duck, oystercatcher, lapwing and curlew. No information was provided of flock size for these records. No records were from within the Site. Lapwing records referred to two records located directly to the north of Drax Power Station, approximately 1.5km from the Site boundary.

4.9.224.10.22 No records of SPA qualifying species or waterbird assemblage species were returned by NEYEDC.

4.9.234.10.23 The Yorkshire Naturalists Union and York Ornithological Club were contacted by Avian Ecology on 4th November 2024. Their responses, dated 4th, 6th and 7th November 2024 states that these organisations do not hold any records for the Drax area.

4.9.244.10.24 Desk study results do not provide evidence of regular use of the Site or adjacent land by SPA qualifying or assemblage species. Subsequently desk study records do not provide evidence of functional linkage.

Habitat Suitability Appraisal

4.9.254.10.25 Habitat suitability of Site and Wider Survey Area is assessed across the three survey periods: non-breeding season 2021/22, non-breeding season 2022-23 and non-breeding season 2023-24, based on those habitats outlined as suitable to support foraging golden plover and lapwing when foraging inland in an arable landscape (Gillings and Fuller 1999²³). The Site is not considered to afford suitable habitat for other SPA species. Outside the Site, the previously mentioned lake (near field 339) is the only habitat feature identified with the potential to support SPA species. Regular use by migrant goose species is not considered further due to the lack of records from the Site or 600m survey area (albeit small numbers were observed in flight on some surveys).

4.9.264.10.26 This section also provides additional information on cropping patterns, provided by the landowners and tenants (as provided in the Applicant's 'Natural England Supplementary Note', dated 9th January 2025).

4.9.274.10.27 Habitat surveys carried out in 2022 identified all habitats within the Site and concluded all fields remained as crop fields with grassland fields limited to the cable route. Habitat surveys were conducted during the optimal time for habitat surveys (April to September inclusive) being carried out between May and June 2022 and therefore outside of the non-breeding bird season but show a continuation of arable cropland dominating the Site throughout the year (as shown in Figure 8.2 of **Appendix 8.1: Baseline Habitats and Desk Study Report**).

Habitat Data Collected During the Course of Ornithology Surveys.

4.9.284.10.28 Details of the crop types/field types and their suitability for species associated with the relevant European Sites are presented below in Table 4.2. The table presents a breakdown of the crop-types recorded during field surveys between 2021 and 2024 and states their suitability for foraging by SPA species (principally golden plover and lapwing, based upon the findings of multiple studies of golden plover and lapwing foraging preference as listed in Gillings and Fuller 1999).

²³ Gillings, S., and Fuller, R.J. (1999). Winter Ecology of Golden Plovers and Lapwings: A Review and Consideration of Extensive Survey Methods. BTO Research Report No. 244
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4.9.294.10.29 A further 26 fields within the Wider Survey Area (i.e. outside of the Site) were not fully visible and are therefore not included within Table 4.2. Using aerial imagery, these fields appear to be ungrazed pasture or cereal crop (likely winter wheat); however, most are small, enclosed fields surrounded by lines of trees or woodland edge. A series of fields (field numbers 300-315) were located immediately adjacent to glasshouses. These fields are considered unlikely to regularly support wetland bird species. Distribution of crop types is shown in Figures 1-3 of the Applicant's 'Natural England Supplementary Note', dated 9th January 2025.

Table 4.2: Crop/Habitat type and the suitability for use by SPA species.

Habitat/Crop type	Suitability for SPA Species	Number and Proportion of fields 2021/22 (245 fields total)	Number and Proportion of fields 2022/23 (27 fields total)	Number and Proportion of fields 2023/24 (270 fields total)
The Site				
Arable stubble	Suitable	12	-	18
Oilseed rape	Suitable	3	-	3
Root	Suitable	4	-	3
Tilled	Suitable	5	-	2
Winter 'wheat' ²⁴	Suitable	22	-	20
Pasture (unstocked)	Suitable	-	1	1
% of field suitability per survey season	Suitable	100%	100%%	100%
	Unsuitable	0%	0%	0%
Wider Survey Area				
Arable stubble	Suitable	58	2	62
Maize	Unsuitable	6	-	6
Oilseed rape	Suitable	1	-	1
Pasture (stocked)	Suitable	16	2	18
Pasture (unstocked)	Suitable	48	12	60
Root	Suitable	16	-	16
Set-aside	Unsuitable	5	-	5
Tall ruderal	Unsuitable	3	-	3
Tilled	Suitable	16	2	18
Winter 'wheat'	Suitable	30	5	31
Golf course	Unsuitable	-	2	2
Scrub	Unsuitable	-	1	1

²⁴ Winter wheat refers to non-specified cereal crop (i.e. winter wheat or winter barley)

% of field suitability per survey season	Suitable	97%	88%	92%
	Unsuitable	3%	12%	8%

Habitat Data Collected provided by landowners/tenant farmers.

4.9.304.10.30 Data was provided by all five Site landowners / tenant farmers showing their recent cropping patterns across fields within the Site. The detailed cropping information and landowner locations in relation to the Site (the Site boundary is overlaid over the figures within the report) are shown separately in Annex 5 of Applicants response to NE RR ('Natural England Supplementary Note', dated 9th January 2025). This breaks the Site into five separate units, which are discussed in turn as follows.

4.9.314.10.31 Unit A: Located within the centre of the Site and covering the largest part of the Site boundary, cropping data is provided from 2014 to present. The dominant crops include wheat milling and wheat feed with oilseed rape spring barley, winter barley and potatoes accounting for most of the cropping carried out by this landowner / tenant farmer. Many fields are located outside of the Site boundary and the information provided does not give a field-level breakdown, however the dominant wheat/barley crops with smaller numbers of oilseed rape and root crops aligns with observed data collected during field surveys.

4.9.324.10.32 Unit B: Located towards the far eastern part of the Site, four fields are included within the Site boundary. These fields have been cropped since 2022 as winter barley / winter wheat and potatoes. During 2024, two of these fields were cropped with maize. All fields within this unit were used for cropping.

4.9.334.10.33 Unit C: Located towards the north-western corner of the Site with all nine fields included within the Site boundary. Crops varied between 2015 and 2023 between wheat / barley and a rotation with carrots, parsnips, oilseed rape and sugarbeet. A general pattern of two years of cereal crop followed by one year of root crop was loosely followed. All fields within this unit were used for cropping.

4.9.344.10.34 Unit D: Located in the north-western most part of the Site with one field included within the Site boundary. Between 2019 and 2023 this was on a semi-regular rotation of winter wheat and spring barley with oilseed rape and sugar beet utilised in 2019 and 2021 (however this was observed to be winter cereal during surveys). All fields within this unit were used for cropping.

4.9.354.10.35 Unit E: Located in the south-western part of the Site with all fields included within the Site boundary. Between 2007 and 2023, fields were mostly cropped with winter barley, spring barley, winter wheat and winter oats. Oilseed rape crops were used two or three times across this period, however cereal cropping was shown to dominate. All fields within this unit were used for cropping.

Review of Aerial Images

4.9.364.10.36 On-line aerial imagery was used to compare against ground-level observations of cropping data and appeared to remain consistent. All fields within the Site appeared to be arable cropland in varying states of growth.

4.9.374.10.37 Additionally, using Google Earth historical data, high-quality imagery dating back to 2002 was checked to identify any visible long-term changes to arable land use and throughout this time-period. The fields within the Site appear to have remained as arable cropland rather than grassland/pasture.

4.9.384.10.38 The agricultural land-use of the Site between 2021-2023 during non-breeding bird survey is believed to have been a typical representation of the Site as a whole.

Summary of Site Habitat Suitability for Qualifying and Assemblage Species of the Relevant European Sites

4.9.394.10.39 This section considers habitat suitability for those species recorded during field surveys, or for which desk study records have indicated potential presence.

4.9.404.10.40 Based on field survey data and records searches, this is limited to two plover species; golden plover and lapwing. It is accepted that the Site and adjacent land may, on occasion, be used by other SPA species; however, usage is considered so low that it is not feasible to link records to cropping data. Further, use of cropping data has limited use in terms of predicted effects over a forty-year period as farming practices, market forces and climatic conditions will inevitably change over that time.

4.9.414.10.41 Field-types considered suitable for lapwing and golden plover include: winter wheat, arable stubble, pasture (grazed and ungrazed), tilled and root due to their shorter swards and availability of surface foraging insects (e.g. earthworms, beetles and spiders) (Gillings and Fuller 1999), however invertebrate biomass is highest in permanent (five years or more) pasture and is mostly the chosen field habitat type of both plover species where available (Tucker, 1992²⁵).

4.9.424.10.42 All fields within the Site were arable farmland within no permanent pasture present within those fields that will be permanently impacted by the Project. A single field along the cable route was identified as ungrazed pasture (impacts to the habitats along the cable route will be temporary).

4.9.434.10.43 All fields within the Site were considered potentially suitable for use by both species, although desk study and survey evidence suggested that both species have not been recorded within the habitats on Site or Wider Survey Area. Habitats along the cable route mostly follow tarmac road habitats considered unsuitable for foraging SPA species with small sections of golf course and pasture also present. Habitat impacts along the cable route will be temporary.

4.9.444.10.44 Throughout the survey period, the majority of fields showed similar or the same crops to be present between 2021-2024 (the survey period), suggesting there to be limited crop rotation, albeit this clearly varies between years (likely due to climatic conditions and market forces). Shrubbs (1988²⁶) found crop rotation played an important role for use by plover species and that there was an almost complete avoidance of cereal crops that have been maintained as the same crop for three or more consecutive years. In contrast, cereal fields where clover leys or oil seed rape were added into the rotation were highly used in the season following the break-crops. Plover species are known to feed on surface or just below the surface-dwelling invertebrates, so regularly disturbed soils through tilling and spraying will reduce the abundance of this food source (Parr, 1992²⁷).

4.9.454.10.45 Whilst the majority of fields within the Study Area (the Site and Wider Survey Area combined) are considered to be suitable for foraging use by golden plover and lapwing, however desk study records and field surveys show there is an apparent avoidance by both species. This suggests more suitable habitat (e.g. permanent grassland) is present elsewhere between the Site and the Humber Estuary SPA or whilst the habitats may be considered suitable, the apparent irregular crop rotation observed during the survey period renders many of the crop fields as sub-optimal for both species. Therefore, the Site is unlikely to regularly support significant numbers of either species associated with the relevant European Sites.

²⁵ Tucker, G.M. (1992) Effects of agricultural practices on field use by invertebrate-feeding birds in winter. *Journal of Applied Ecology*, 29, 779-790.

²⁶ Shrubbs, M. (1988) The influence of crop rotations and field size on a wintering Lapwing *Vanellus vanellus* in a mixed farmland in West Sussex. *Bird Study*, 35, 123-131.

²⁷ Parr, R. (1992) The decline to extinction of a population of Golden Plover in north-east Scotland. *Ornis Scandinavica*, 23, 152-158.

Conclusion on Consideration of FLL

4.9.464.10.46 Following review of field survey data, records searches and an analysis of the habitats (crop-types) found within and adjacent to the Site, the Site is not considered to represent FLL for any SPA qualifying species or SPA assemblage (Humber Estuary SPA and the Lower Derwent Valley SPA). However, there is some evidence of limited use of the Site by one declining assemblage species (lapwing), which is considered further below. Given that lapwing have similar habitat requirements, often flock together and are both in decline (see BTO 'Birdfacts' website ^{28,29}), the two species are considered together.

4.9.474.10.47 No other species are considered as there is no evidence of use of the Site for foraging or roosting, and habitats are considered generally unsuitable. It is accepted that the Site may, on occasion, be used by other wader species (such as curlew); however, usage is considered infrequent and in very low numbers if it occurs at all. There is no evidence of regular use of the Site by foraging geese or other waterfowl.

Additional Consideration of FLL for Declining Species

4.9.484.10.48 This section considered habitat suitability for those species recorded during field surveys, or for which desk study records have indicated potential presence. Based on habitat data and records searches, this is limited to two plover species; golden plover and lapwing. These species are considered on the basis that both utilise farmland areas (such as that present on and around the Site) for foraging, often in mixed flocks.

4.9.494.10.49 Field-types suitable for lapwing and golden plover include; winter wheat, arable stubble, pasture (grazed and ungrazed), tilled and root due to their shorter swards and availability of surface foraging insects (e.g. earthworms, beetles and spiders) (Gillings and Fuller 1999), however invertebrate biomass is highest in permanent (five years or more) pasture and is mostly the chosen field habitat type of both plover species where available (Tucker, 1992³⁰).

4.9.504.10.50 During field surveys, all fields within the Site were arable farmland, with no permanent pasture present within those fields that will be impacted by the installation of solar panels or infrastructure; however, a single field along the cable route was identified as ungrazed pasture.

4.9.514.10.51 Within the Site, at the time of surveys, six fields (from 47 on Site) were cropped with root vegetables or oil seed rape and considered unsuitable for use by plovers due to crop height of 10cm or higher (Gregory, 1987³¹). All other fields within the Site were considered potentially suitable for use by both species, although desk study and survey data did not evidence regular use, with only a small number of birds recorded on most surveys (with one exception when 211 lapwings were recorded across the Site in three separate groups on one date).

4.9.524.10.52 Whilst the majority of fields within the Site are considered to be potentially suitable for foraging use by golden plover and lapwing, desk study data, habitat data and field survey records show inconsistent use by low numbers of birds. As such the Site is not considered to be an important resource for plover species overall. Regardless, in response to comments received from Natural

²⁸ <https://www.bto.org/understanding-birds/birdfacts/golden-plover>

²⁹ <https://www.bto.org/understanding-birds/birdfacts/lapwing>

³⁰ Tucker, G.M. (1992) Effects of agricultural practices on field use by invertebrate-feeding birds in winter. *Journal of Applied Ecology*, 29, 779-790.

³¹ Gregory, R.D. (1987) Comparative winter feeding ecology of Lapwings *Vanellus vanellus* and Golden Plovers *Pluvialis apricaria* on cereals and grassland in the Lower Derwent Valley. *Bird Study*, 34, 244-250.

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England (DAS response dated 10th February 2025³²), precautionary mitigation will be provided for non-breeding lapwing.

5 APPROPRIATE ASSESSMENT

- 5.1.1 Sections 5 and 6 comprise Stage 2 of the Habitats Regulations Assessment process, Appropriate Assessment (AA).
- 5.1.2 The AA will determine whether there is any potential for adverse effects on the integrity of the European sites screened into the assessment, as a result of the Proposed Development (alone and in combination).
- 5.1.3 Note that species recorded form qualifying features of both relevant European sites and therefore are considered concurrently.

5.2 Lapwing Mitigation

- 5.2.1 Precautionary mitigation for the loss of FLL will be provided for one species; lapwing. An outline Mitigation Strategy is included as **Annex 2**.
- 5.2.2 Two fields within the Draft Order Limits (fields 29 and 33, as shown in **Figure 1 of Annex 2**), comprising a total of 37.09 ha will be managed for lapwing in the non-breeding (autumn to commencement of spring) period. This is more than the minimum requirement of 14.03 ha calculated using 'bird day calculations' and cropping data (presented in **Table 1 and Figures 2-5 of Annex 2**) and therefore it can be concluded that the land area is adequate for mitigation.
- 5.2.3 Management for non-breeding lapwings will comprise the following measures:
 - Crops to be maintained below 8-10 cm during the non-breeding season (approximately October to March), such as wheat/barley during autumn/spring passage or fallow/newly tilled fields.
 - Avoidance of deep ploughing.
 - The addition of manure, subject to a reasonable agricultural cycle.
 - The incorporation of a ley crop within the management rotation.
 - The inclusion of permanent grass margins to the fields.
- 5.2.4 The lapwing habitat within the mitigation areas will be created sufficiently in advance of infrastructure work to ensure habitat is available prior to the beginning of the construction phase.

5.3 Assessment of Effects: Loss of FLL for Qualifying Bird Species

- 5.3.1 Habitat loss for qualifying bird species could occur at the point of construction and continue until decommissioning is completed.

Qualifying Species of the Relevant European Sites

³² Note the Natural England DAS response letter (DAS/A009135) is erroneously dated 10th February 2024. This should read 2025.

- 5.3.2 The Site is not considered to constitute FLL and is therefore of very low (to no) value for SPA qualifying species. Loss of FLL will therefore be inconsequential.

Assemblage Species of the Relevant European Sites

- 5.3.3 Lapwings are recorded to use the Site in low numbers and on an intermittent basis. This could be reasonably expected of any arable landscape and there are large areas of similar habitat in the wider landscape. Usage appears to vary between years; however assessment of habitat demonstrates that the Site is unlikely to be important for the species due to an absence of preferred (permanent pasture) habitat and limited cropping rotation. The Site is not considered to be important for lapwing; however precautionary mitigation will be provided for this species, as outlined in Section 5.2.
- 5.3.4 Based on numbers recorded and data analysis, loss of FLL for other assemblage species will be inconsequential.

Assessment Conclusion

- 5.3.5 It is concluded that there will be no adverse effects (alone) on the integrity of the relevant European Sites in relation to loss of FLL.

5.4 Assessment of Effects: Disturbance of Qualifying Bird Species Using FLL

- 5.4.1 Disturbance could occur over the course of the construction and decommissioning phases. This could be of birds within the Site, or on adjacent land. Following installation of the Proposed Development, disturbance of adjacent land could be caused by operational activities.

Qualifying Species of the Relevant European Sites

- 5.4.2 As the Site is not considered to constitute FLL and is therefore of very low (to no) value for SPA qualifying species and numbers of qualifying species were consistently low, there will be inconsequential disturbance of qualifying species using the Site.

Assemblage Species of the Relevant European Sites

- 5.4.3 Based on numbers recorded and data analysis, disturbance of assemblage species using FLL will be inconsequential.
- 5.4.4 With mitigation (as outlined in Section 5.2), which is to be implemented in advance of construction, disturbance to non-breeding lapwing is considered negligible. Two fields (fields 29 and 33, see Annex 2) have been provided for non-breeding lapwing mitigation. Both fields are located within the Site but are entirely outside the main development area. Disturbance of these two fields during construction or operation will be negligible as, aside from the extreme north-west corner of field 33, there is at least 150m of separation distance to the nearest part of the main development. The nearest component of the development is the battery storage facility, at approximately 180m to the east. As such, the large majority of both field 29 and field 33 will be sufficiently distant from development so as to ensure adequate habitat is available for non-breeding lapwings at all times.
- 5.4.5 The only other exception is the lake located adjacent to Field 339 (outside the Site), which was found to regularly support a more diverse range of waterbirds compared to surrounding arable landscape. This lake is located approximately 200m from the underground cable corridor to the grid connection (which runs along New Road and within the existing Drax national grid compound) and is visually shielded by a large area of farmland and mature woodland/tree belt, therefore the potential for disturbance of waterbirds located within this lake is considered likely to be negligible.

Assessment Conclusion

- 5.4.6 It is concluded that there will be no adverse effects (alone) on the integrity of the relevant European Sites in relation to disturbance of qualifying bird species using FLL.

5.5 Assessment of Effects: Disruption of flight paths of qualifying bird species due to Glint and Glare

- 5.5.1 There is very limited research of this effect in the UK, with the main studies associated with very large solar farms in desert regions, which are not comparable with the UK. It is noted that a NE 2016 report (NEER 012³³) 'Evidence review of the impact of solar farms on birds, bats and general ecology' makes no reference to evidence of glint and glare. To the Applicant's knowledge, there are no known cases of waterbirds colliding with solar panels. As such the risk of such an occurrence is extremely low.
- 5.5.2 Regardless, with reference to the Proposed Development, it is likely that the configuration of the land parcels and solar PV modules will help break up any potentially reflective area and reduce the likelihood of birds perceiving them as waterbodies.
- 5.5.3 Based on the low number of observations of birds moving through the Site and the configuration of the solar PV modules, it is considered that there would be no adverse effects on the integrity of the populations of the qualifying species of relevant European Sites in relation to disruption of flight paths as a result of glint and glare and no additional mitigation is required.

Assessment conclusion

- 5.5.4 It can be concluded that there would be no adverse effects (alone) on the integrity of the relevant European Sites as a result of glint and glare.

5.6 Appropriate Assessment Conclusion (alone)

- 5.6.1 The AA has considered the potential implications of the Proposed Development in relation to the relevant European Sites.
- 5.6.2 The AA concludes that there would be no adverse impacts (alone) on the integrity of the relevant European sites as a result of the Proposed Development.

6 IN-COMBINATION ASSESSMENT

- 6.1.1 A search of the North Yorkshire Council and PINS planning portal was undertaken to identify plans and proposals in the local area that in combination with the Proposed Development may have an effect on the designated sites. Applications within 10km of the Proposed Development were reviewed based on the identified potential impacts and impact pathways (Section 4.6). Twelve applications are located within 5km of the Site, three of which comprise large installations of solar-related developments (denoted with *):

- *Land South of A645, Wade House Lane, Drax (ref: 2023/0128/EIA);
- *East Yorkshire Solar Farm NSIP (PINS ref: EN010143);

³³ Natural England (2017) Evidence review of the impact of solar farms on birds, bats and general ecology (NEER012) 1st edition - 9th March 2017.
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- Drax Bioenergy with Carbon Capture and Storage Project NSIP (PINS Ref: EN010120);
- Land Off New Road, Drax (Ref: 2020/1357/FULM);
- Land Off Hales Lane, Drax (Ref: 2021/1089/FULM);
- *Land North and South of Camela Lane, Camblesforth (ref: 2021/0788/EIA);
- Drax Power Station, Drax (Ref: 2022/0107/NYSCO);
- Land to the East of New Road, Drax (Ref: 2022/0711/EIA);
- Land East of Broadacres, Mill Lane, Carlton (Ref: ZG2023/0732/OUTM);
- Land Adjacent to Barlow Common Road, Barlow, Selby (Ref: 2022/0287/SCN);
- Newlands Farm, Turnham Lane, Cliffe, Selby (Ref: 2021/0348/SCN); and
- Eggborough Power Station, Selby Road, Eggborough (Ref: 2019/1343/EIA).

6.1.2 One additional application for the installation of a large solar related development is located within 10km of the Site:

- Land near Osgodby Grange, South Duffield Road, Osgodby, Selby (ref: 2021/0978/FULM).

6.1.3 Cumulative effects on non-breeding SPA/ Ramsar qualifying bird species are not anticipated to be significant on the basis of extremely low levels of activity recorded during the passage and over-wintering periods within the Site. Non-breeding bird survey data, concerning SPA/ Ramsar qualifying species, for the following projects was reviewed:

- Land South of A645, Wade House Lane, Drax (ref: 2023/0128/EIA);
- East Yorkshire Solar Farm NSIP (PINS ref: EN010143);
- Drax Bioenergy with Carbon Capture and Storage Project NSIP (PINS Ref: EN010120);
- Land North and South of Camela Lane, Camblesforth (ref: 2021/0788/EIA);
- Land to the East of New Road, Drax (Ref: 2022/0711/EIA); and
- Land near Osgodby Grange, South Duffield Road, Osgodby, Selby (ref: 2021/0978/FULM).

6.1.4 No SPA/ Ramsar qualifying bird species were recorded during surveys for the 'Land South of A465', 'Land North and South of Camela Lane' and 'Land near Osgodby Grange' projects.

6.1.5 Table 8.13 of **Chapter 8: Biodiversity** of the ES provides the results of the cumulative assessment for non-breeding SPA/ Ramsar qualifying bird species. Note, given the surveys for the projects were undertaken at different times/ years it is considered highly likely that at least some of the birds recorded will be the same birds. The results, which combine the counts from all projects are thus considered precautionary. Note, also for the regularity score (in terms of number of surveys) in Table 8.13, only the survey visits for those projects where the SPA qualifying species was recorded was considered, to also ensure a precautionary approach.

- 6.1.6 There are some occasions where the species (such as golden plover) are included as an alone qualifying species and part of the assemblage for the Humber Estuary SPA. In this instance, the species is treated as an alone qualifying species to consider it with the highest regard.
- 6.1.7 The results from the field surveys from the 2021/22 are used in the cumulative assessment, to avoid over-complicating the assessment with inclusion also of the 2022/23 field survey results. Given no FLL thresholds were met during field surveys in 2021/22 and 2022/23 for any SPA qualifying species (see **Table 8.11 of Appendix 8.2: Ornithological Survey Report**), and with the implementation of lapwing mitigation (Section 5.2), this is considered appropriate.
- 6.1.8 Note, wigeon and teal (both alone qualifying species of the Lower Derwent Valley SPA/ Ramsar, and assemblage species for the Humber Estuary SPA/ Ramsar), curlew (assemblage species for the Humber Estuary SPA/ Ramsar), greylag goose (assemblage species for the Lower Derwent Valley SPA/ Ramsar) and redshank (alone qualifying species of Humber Estuary SPA/ Ramsar) were also recorded in typically small numbers during some of the other projects, but were not recorded using the Site during the field surveys. Of these only wigeon (peak of 73) and teal (peak of 21) were recorded during field surveys in the 600m buffer around the Site, but with no evidence of FLL with any of the SPAs/ Ramsars was identified. Wigeon and teal were recorded using the lake by field 339 which is c. 200m from the Site at its closest point (grid connection). Goodship and Furness (2022³⁴) document a disturbance buffer of 200-500m for wigeon during the non-breeding season, with the higher range, for highly intrusive activities like boating disturbance. As well as the spatial separation, the lake is also buffered from the Site (and thus Proposed Development) by arable habitat including field boundaries, reducing visual disturbance to species like wigeon and teal using the lake.
- 6.1.9 For those SPA/ Ramsar qualifying species which used the Site, and were recorded at other projects (as summarised in Table 1.9.1) the FLL threshold was not met for any assemblage qualifying species when considered cumulatively with other projects, nor did any of the alone qualifying species (golden plover and shelduck) meet the threshold where FLL would be identified (>1% of SPA population and during 2/3 of the surveys) when considered cumulatively with other projects.
- 6.1.10 Cumulative assessment results are summarised in **Table 6.1**.
- 6.1.11 Subsequently cumulative and in-combination effects on non-breeding birds (including SPA/Ramsar qualifying species) are considered to be no more than minor adverse, and therefore not significant.

³⁴ Goodship, N.M. and Furness, R.W. (MacArthur Green) Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283.
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Table 6.1: Cumulative Assessment for non-breeding SPA/ Ramsar Qualifying Bird Species³⁵

Designated Site	SPA /Ramsar Qualifying Species	Peak count as % of SPA 5-year mean					Regularity when FLL threshold met
		Proposed Development	East Yorkshire Solar Farm ³⁶	Drax Bioenergy	Land to the East of New Road	Total %	
Alone SPA / Ramsar Qualifying Species							
Humber Estuary SPA Ramsar	Golden plover	0.01	0.17	0.26	0	0.44	0 out of 30 surveys
	Shelduck	0.03	0	0	0	0.03	0 out of 12 surveys
Lower Derwent Valley	Golden plover	0.06	1.15	1.76	0	2.97	2 out of 30 surveys (6/67%)
Waterbird Assemblage SPA/ Ramsar Qualifying Species							
Designated Site	SPA / Ramsar Qualifying Species	Peak Count					Threshold met (2,000 birds or ≥1 GB population)
		Project	‘East Yorkshire Solar Farm’	‘Drax Bioenergy’	‘Land to the East of New Road’	Total	
Humber Estuary SPA & Ramsar	Lapwing	211	51	0	0	262	N
	Mallard	4	36	30	0	70	N
	Oystercatcher	4	6	0	0	10	N

³⁵ Table 8.13 taken from Environmental Statement Appendix 8.2: Ornithology Survey Report [EN010140/APP/6.3.8.2]

In Combination

6.1.13 Whilst there is no legal definition of what constitutes a ‘plan’ or ‘project’ for the purposes of the Habitats Regulations, PINS advises in paragraph 3.12 of Advice Note 10 that the following developments should be considered for the HRA in-combination assessment:

- Projects that are under construction;
- Permitted application(s) not yet implemented;
- Submitted application(s) not yet determined;
- All refusals subject to appeal procedures not yet determined;
- Projects on the PINS’ National Infrastructure Programme of Projects (Ref. 51); and
- Projects identified in the relevant development plan (and emerging development plans – with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited and the degree of uncertainty which may be present.

6.1.14 The relevant plans and projects with a potential for in-combination effects are shown in **Table 6.2**.

6.1.15 The potential loss of functionally linked habitats for SPA/Ramsar birds has an important strategic element. While preventing the loss of individual supporting habitats (e.g., single arable fields) is important, population-level impacts are most likely where many green spaces are being lost due to multiple developments. This has the potential to limit site choice for birds, increases competitive foraging pressure within remaining land parcels and, potentially, reduces the ability of migrating birds to adequately replenish their critical nutritional reserves. Several projects identified in **Table 6.2**, particularly those that overlap with or lie close to the Site boundary (e.g., East Yorkshire Solar Farm, Drax Carbon Capture, Humber Low Carbon Pipelines), are likely to result in their own loss to potentially functionally linked land. Using 1% of the qualifying population as a threshold for establishing functional linkage, explicitly captures the in-combination impact from several development projects across multiple land parcels. Other locally proximate planning applications are likely to lead to the loss of arable land in East Yorkshire. Using the available information of non-breeding bird surveys to assess the potential for disturbance of qualifying SPA species from potentially FLL, the in-combination effects are presented as non-significant due to the lack of cumulative flocks of SPA species using the arable land within the Site or in close proximity to the Site.

Table 10: In combination planning applications within close proximity to the Site.

Application reference, name and description	Approximate distance from the Site	Status of project	Assessment
PINS ref: EN010143 East Yorkshire Solar Farm The construction, operation (including maintenance) and decommissioning of a ground-mounted solar photovoltaic ("PV") electricity generating facility with a total capacity exceeding 50 megawatts (MW) and export connection to the national grid, as National Grid's Drax Substation.	Application's grid connection corridor boundary immediately to the east of the Proposed Development's Underground Cable Corridor to the grid connection.	Application at the end of Examination period in November 2024	HRA concluded that the scheme would not result in adverse effects on the integrity of the Lower Derwent Balley SPA/Ramsar and Humber Estuary SPA/Ramsar. However, the potential for residual in-combination effects with the scheme is considered in relation to: - Noise/visual disturbance (construction and decommissioning phases) of non-breeding bird qualifying features (Lower Derwent Valley SAC/SPA/Ramsar and Humber Estuary SPA/Ramsar. - Water quality impacts (construction, operational and decommissioning phases) to all SAC/Ramsar habitats, SAC species and SPA/Ramsar non-breeding birds (as all are directly and/or indirectly water quality sensitive Lower Derwent Valley SAC/SPA/Ramsar, River Derwent SAC and Humber Estuary SAC/SPA/Ramsar. - Atmospheric pollution (dust deposition; construction and decommissioning phases) to water courses of plain to montane levels, river lamprey, sea lamprey, bullhead and otter (River Derwent SAC) - Loss of FLL (operational phase) for non-breeding bird qualifying features (Lower Derwent Valley SPA/Ramsar, Humber Estuary SPA/Ramsar)
2022/0711/EIA Land to the east of New Road, Drax The installation of high voltage direct current (HVDC) underground cables from the River Ouse to the converter station and high voltage alternating current (HVAC) underground cables from the	Approximately 150m to the north of the Site boundary, at its closest point.	Application approved in 2023	- Noise/visual disturbance (construction and decommissioning phases) of non-breeding bird qualifying features (Lower Derwent Valley SAC/SPA/Ramsar and Humber Estuary SPA/Ramsar. - Water quality impacts (construction phase) to all SAC/Ramsar habitats, SAC species and SPA/Ramsar non-breeding birds (as all are directly and/or indirectly water quality sensitive Lower Derwent Valley SAC/SPA/Ramsar, River Derwent SAC and Humber Estuary SAC/SPA/Ramsar.

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existing Drax Substation as well as all associated temporary works including compounds accesses and bellmouths as part of the construction of Scotland/England Green Link 2.			Atmospheric pollution (dust deposition; construction phase) to water courses of plain to montane levels, river lamprey, sea lamprey, bullhead and otter (River Derwent SAC). Loss of FLL (operational phase) for non-breeding bird qualifying features (Lower Derwent Valley SPA/Ramsar, Humber Estuary SPA/Ramsar)
22/01990/STPLFE Scotland England Green Link 2 (SEGL2) Construction of sub-surface cable route from National Grid Drax Substation to Fraisthorpe Coastline with associated accesses and temporary construction compounds in association with the Scotland to England Green Link.	Approximately 200m to the north of the Site boundary cable route, at its closest point.	Application approved 03.03.23	HRA concluded no adverse effects on the integrity of the European sites assessed with appropriate mitigation in place where required. This has been agreed by Natural England, subject to appropriate mitigation being in place (ref: 418271) and is recorded on the East Riding of Yorkshire Council planning portal. However, the potential for residual in-combination effects with the scheme is considered in relation to: - Noise/visual disturbance (construction and decommissioning phases) of non-breeding bird qualifying features (Lower Derwent Valley SAC/SPA/Ramsar and Humber Estuary SPA/Ramsar). - Water quality impacts (construction, operational and decommissioning phases) to all SAC/Ramsar habitats, SAC species and SPA/Ramsar non-breeding birds (as all are directly and/or indirectly water quality sensitive Lower Derwent Valley SAC/SPA/Ramsar, River Derwent SAC and Humber Estuary SAC/SPA/Ramsar). - Atmospheric pollution (dust deposition; construction and decommissioning phases) to water courses of plain to montane levels, river lamprey, sea lamprey, bullhead and otter (River Derwent SAC) - Loss of FLL (operational phase) for non-breeding bird qualifying features (Lower Derwent Valley SPA/Ramsar, Humber Estuary SPA/Ramsar)
PINS ref: EN010120 Drax Carbon Capture	Located within the Site's cable route.	Application approved in 2024.	HRA concluded that the proposed scheme would not have an adverse effect on the integrity of any of the European sites

Drax Power Limited proposes to install post-combustion capture technology that would capture carbon dioxide emissions from up to two of the existing biomass units at Drax Power Station. The proposal includes the construction and operation of carbon capture technology and associated equipment, and the integration of the units into the existing Common Services at Drax Power Station. The proposal includes associated development.			assessed with agreement to this recorded between the Applicant and Natural England in the relevant Statement of Common Ground (SoCG) (Examination Library Reference REP8-018). However, the potential for residual in-combination effects with the scheme is considered in relation to: • Noise/visual disturbance (construction and decommissioning phases) of non-breeding bird qualifying features (Lower Derwent Valley SPA/Ramsar and Humber Estuary SPA/Ramsar). • Water quality impacts (construction, operational and decommissioning phases) to all SAC/Ramsar habitats, SAC species and SPA/Ramsar non-breeding birds (as all are directly and/or indirectly water quality sensitive Lower Derwent Valley SAC/SPA/Ramsar, River Derwent SAC and Humber Estuary SAC/SPA/Ramsar). • Atmospheric pollution (dust deposition; construction and decommissioning phases) to water courses of plain to montane levels, river lamprey, sea lamprey, bullhead and otter (River Derwent SAC) • Loss of FLL (operational phase) for non-breeding bird qualifying features (Lower Derwent Valley SPA/Ramsar, Humber Estuary SPA/Ramsar)
EN010091 Drax Re-power Drax Power Ltd is proposing to modify up to two of the coal-fired generating units (known as Units 5 and 6) at Drax Power Station, Selby, to become gas-powered generating plant. The proposed Project comprises up to four new combined cycle gas turbines (CCGT) (up to two for Unit 5 and up to	Located within the Site's cable route.	Application approved in 2019.	HRA concluded that the proposed scheme would not have an adverse effect on the integrity of any of the European Sites assessed, with agreement to this recorded between the Applicant and Natural England in the relevant SoCG (Examination Library Reference APP-004). The potential for residual in combination effects is considered regarding: • Noise/visual disturbance (construction and decommissioning phases) of non-breeding bird qualifying features (Lower Derwent Valley SPA/Ramsar and Humber Estuary SPA/Ramsar).

two for Unit 6), each powering a dedicated generator of up to 600MW in capacity. Each Unit would provide steam to the existing steam turbine for that Unit which would generate up to 600MW per Unit. Once re-powered, Unit 5 would have a gross electrical output capacity of up to 1,800 megawatts and Unit 6 would have a gross electrical output capacity of up to 1,800 megawatts. The repowered units would have a new combined capacity of up to 3,600MW. It is also proposed to construct a battery storage facility with capacity of up to 200MW. The proposal includes associated development.			• Water quality impacts (construction, operational and decommissioning phases) to all SAC/Ramsar habitats, SAC species and SPA/Ramsar non-breeding birds (as all are directly and/or indirectly water quality sensitive Lower Derwent Valley SAC/SPA/Ramsar, River Derwent SAC and Humber Estuary SAC/SPA/Ramsar). • Atmospheric pollution (dust deposition; construction and decommissioning phases) to water courses of plain to montane levels, river lamprey, sea lamprey, bullhead and otter (River Derwent SAC) • Loss of FLL (operational phase) for non-breeding bird qualifying features (Lower Derwent Valley SPA/Ramsar, Humber Estuary SPA/Ramsar).
2020/1357/FULM Lakeside Energy Storage Development of an energy storage facility including battery storage containers; substations; power conversion systems; transformers and associated switchgear; HVAC equipment; communications and grid compliance equipment; temporary construction	Located within the Site's cable route.	Application approved.	No HRA provided. No objection from Natural England. Potential for in-combination effects in terms of: • Noise/visual disturbance (construction and decommissioning phases) of non-breeding bird qualifying features (Lower Derwent Valley SPA/Ramsar and Humber Estuary SPA/Ramsar.) • Water quality impacts (construction, operational and decommissioning phases) to all SAC/Ramsar habitats, SAC species and SPA/Ramsar non-breeding birds (as all are directly and/or indirectly water quality sensitive

compound; CCTV; fencing; infrared lighting; access, drainage and landscaping works and associated development.			Lower Derwent Valley SAC/SPA/Ramsar, River Derwent SAC and Humber Estuary SAC/SPA/Ramsar. • Atmospheric pollution (dust deposition; construction and decommissioning phases) to water courses of plain to montane levels, river lamprey, sea lamprey, bullhead and otter (River Derwent SAC). • Loss of FLL (operational phase) for non-breeding bird qualifying features (Lower Derwent Valley SPA/Ramsar, Humber Estuary SPA/Ramsar)
22/02118/STPLFE Relief Road and Residential development at Land South Off Thorpe Hall Thorpe Road Howden Hybrid Planning Application comprising of: a) Full Planning Permission for the construction of a Relief Road from Thorpe Road to Station Road with drainage and landscaping, erection of an industrial unit (Use Class B2/B8 with associated parking, drainage, creation of a bund with fencing and landscaping; Continued use of the temporary construction access onto Thorpe Road (planning application 22/02029/STPLF) and b) Outline Permission for erection of a		Application approved in 2024	The Environmental Impact Assessment for the development indicates that <i>“Extensive Breeding Bird and Autumn, Winter & Spring Passage Bird Surveys have been undertaken at the Site by an experienced Ornithologist with Brooks Ecological. These surveys encompassed all land within the red line boundary and established a robust baseline for the Site in terms of its Bird Interest. This is summarised in the ‘Baseline Information’ section on Page 4 of this report, and these reports can be seen in full at Appendices 1 & 2. From these surveys, it was found that habitat within the site supported only one Humber Estuary SPA and Lower Derwent SPA qualifying species, Lapwing. However, there were few registrations of this species during the survey period, with records of Lapwing on site most likely a transient flock perhaps wintering on farmland locally, and two pairs recorded in March and April most likely birds returning to breed on open arable fields. It was ultimately concluded that there would be no significant impacts on any of the qualifying bird species associated with the Humber Estuary SPA or Lower Derwent SPA, and that the site cannot be considered to be supporting habitat to these SPA’s.”</i> The report to inform the HRA concluded that, with appropriate mitigation in place (secured through suitably worded planning conditions), there will not be a significant effect on the habitats or species associated with the Humber Estuary SAC/SPA, Lower Derwent Valley SAC/SPA, River Derwent SAC, both alone or in combination with other residential developments. However,

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Helios Renewable Energy Project

Appendix 8.9: Information to Inform a Habitats Regulations Assessment V2

			the there is potential for residual in-combination effects regarding: • Noise/visual disturbance (all construction/ and decommissioning phases) of non-breeding bird qualifying features (Lower Derwent Valley SPA/Ramsar and Humber Estuary SAC/SPA/Ramsar) • Water quality impacts (construction, operational and decommissioning phases) to all SAC/Ramsar habitats, SAC species and SPA/Ramsar non-breeding birds (as all are directly and/or indirectly water quality sensitive Lower Derwent Valley SAC/SPA/Ramsar, River Derwent SAC and Humber Estuary SAC/SPA/Ramsar. • Atmospheric pollution (dust deposition; construction and decommissioning phases) to water courses of plain to montane levels, river lamprey, sea lamprey, bullhead and otter (River Derwent SAC) • Loss of FLL (operational phase) for non-breeding bird qualifying features (Lower Derwent Valley SPA/Ramsar, Humber Estuary SPA/Ramsar)
2021/0788/EIA Solar Farm at Land North and South of Camela Lane Development of a ground-mounted solar farm including associated infrastructure.	Located adjacent to the northeastern Site boundary and overlaps with the cable route.	Application approved.	The HRA for this planning application could not be located. Wintering bird surveys have been carried out and did not reveal SPA/Ramsar species to be utilising the area. However, the potential for residual in-combination effects with the scheme is considered in relation to: • Noise/visual disturbance (construction and decommissioning phases) of non-breeding bird qualifying features (Lower Derwent Valley SPA/Ramsar and Humber Estuary SPA/Ramsar.). • Water quality impacts (construction, operational and decommissioning phases) to all SAC/Ramsar habitats, SAC species and SPA/Ramsar non-breeding birds (as all are directly and/or indirectly water quality sensitive Lower Derwent Valley SAC/SPA/Ramsar, River Derwent SAC and Humber Estuary SAC/SPA/Ramsar.

			• Atmospheric pollution (dust deposition; construction and decommissioning phases) to water courses of plain to montane levels, river lamprey, sea lamprey, bullhead and otter (River Derwent SAC). • Loss of FLL (operational phase) for non-breeding bird qualifying features (Lower Derwent Valley SPA/Ramsar, Humber Estuary SPA/Ramsar).
2023/0128/EIA Solar Farm at Land South Off A645 Development of a ground-mounted solar farm including associated infrastructure.	Located 400m east of the Site with cable route overlapping with the Site's cable route.	Application approved in 2024.	While the HRA for this planning application could not be located, Natural England have made no objection (ref 425552), stating: "Based on the plans submitted, Natural England considers that the proposed development will not have a likely significant effect on the Humber Estuary Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar and Site of Special Scientific Interest (SSSI) and has no objection." However, the potential for residual in combination effects with the scheme is considered in relation to: • Noise/visual disturbance (construction and decommissioning phases) of non-breeding bird qualifying features (Lower Derwent Valley SPA/Ramsar and Humber Estuary SPA/Ramsar). • Water quality impacts (construction, operational and decommissioning phases) to all SAC/Ramsar habitats, SAC species and SPA/Ramsar non-breeding birds (as all are directly and/or indirectly water quality sensitive Lower Derwent Valley SAC/SPA/Ramsar, River Derwent SAC and Humber Estuary SAC/SPA/Ramsar). • Atmospheric pollution (dust deposition; construction and decommissioning phases) to water courses of plain to montane levels, river lamprey, sea lamprey, bullhead and otter (River Derwent SAC). • Loss of FLL (operational phase) for non-breeding bird qualifying features (Lower Derwent Valley SPA/Ramsar, Humber Estuary SPA/Ramsar).

2021/1089/FULM Battery Storage Facility at Land Off Hales Lane Development of a battery storage facility, associated infrastructure, access and grid connection		Application approved.	No HRA provided. Ecological Assessment concluded no likely significant effects on the River Derwent SAC or any potential adverse effects on any other statutory site. However, the potential for residual in-combination effects with the scheme is considered in relation to: • Noise/visual disturbance (construction and decommissioning phases) of non-breeding bird qualifying features (Lower Derwent Valley SPA/Ramsar and Humber Estuary SAC/SPA/Ramsar.) • Water quality impacts (construction, operational and decommissioning phases) to all SAC/Ramsar habitats, SAC species and SPA/Ramsar non-breeding birds (as all are directly and/or indirectly water quality sensitive Lower Derwent Valley SAC/SPA/Ramsar, River Derwent SAC and Humber Estuary SAC/SPA/Ramsar. • Atmospheric pollution (dust deposition; construction and decommissioning phases) to water courses of plain to montane levels, river lamprey, sea lamprey, bullhead and otter (River Derwent SAC). • Loss of functionally linked habitat (operational phase) for non-breeding bird qualifying features (Lower Derwent Valley SPA/Ramsar, Humber Estuary SPA/Ramsar).
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7 OVERALL CONCLUSION

- 7.1.1 The AA has determined that there would be no adverse effects (alone or in-combination) on the integrity of the relevant European sites screened into the assessment, as a result of the Proposed Development.

ANNEX 1:
TABULATED SURVEY DATA SUMMARY

Full details of the survey results are provided in **Appendix 8.2** of the ES. **Table A1.1** below summarises Target Species peak counts and frequency of use. The table is repeated from **Appendix 8.9 Information to Inform Habitats Regulations Assessment** [EN010140/APP/6.3.8.9], as submitted with **Chapter 8: Biodiversity**.

Table A1.1: Target Species Peak Counts and Regularity during the Survey Period. Target Species which are only a component of the waterbird assemblage and are not alone qualifying species are shaded.

LDV = Lower Derwent Valley SPA Qualifying Species, HE = Humber Estuary SPA Qualifying Species.

Species	Peak Count	FLL Population Threshold (2/3rds of Surveys Would Need to Reach This Bird Number)	Regularity of Use in Percentage (Number of Surveys when Species Recorded in Brackets)	Number of Surveys Where FLL Population Threshold was Exceeded.
The Site (Winter 2021/22 & 2022/23)				
Golden plover	2	31 (LDV) 208 (HE)	4.8% (1/12 (2021/22)) & 0% (0/12 (2022/23))	0% (0/12 (2021/22)) & 0% (0/12 (2022/23))
Lapwing	211	2,000 birds (LDV & HE)	92% (11/12 (2021/22)) & 0% (0/12 (2022/23))	0% (0/12 (2021/22)) & 0% (0/12 (2022/23))
Mallard	4	2,000 birds (HE)	41.7% (5/12 (2021/22)) & 0% (0/12 (2022/23))	0% (0/12 (2021/22)) & 0% (0/12 (2022/23))
600m buffer (Winter 2021/22 & 2022/23)				
Gadwall	64	310 birds (based on GB population) (LDV)	100% (12/12 (2021/22)) & 0% (0/12 (2022/23))	0% (0/12 (2021/22)) & 0% (0/12 (2022/23))
Mallard	52	2,000 birds (HE)	92% (11/12 (2021/22)) & 41.7% (5/12 (2022/23))	0% (0/12 (2021/22)) & 0% (0/12 (2022/23))
Teal	21	73 (LDV) 2,000 birds	33% (4/12 (2021/22)) & 0% (0/12 (2022/23))	0% (0/12 (2021/22)) & 0% (0/12 (2022/23))

Species	Peak Count	FLL Population Threshold (2/3rds of Surveys Would Need to Reach This Bird Number)	Regularity of Use in Percentage (Number of Surveys when Species Recorded in Brackets)	Number of Surveys Where FLL Population Threshold was Exceeded.
		(HE)		
Wigeon	73	115 (LDV) 2,000 birds (HE)	50% (6/12 (2021/22)) & 0% (2022/23)	0% (0/12 (2021/22)) & 0% (0/12 (2022/23))
Oystercatcher	2	2,000 birds (HE)	8% (1/12 (2021/22)) & 0% (0/12 (2022/23))	0% (0/12 (2021/22)) & 0% (0/12 (2022/23))
Lapwing	28	2,000 birds (LDV & HE)	33% (4/12 (2021/22)) & 42% (5/12 (2022/23))	0% (0/12 (2021/22)) & 0% (0/12 (2022/23))
The Site (Passage Spring 2023)				
Shelduck	2	65 (HE)	50% (2/4)	0% (0/4)
Oystercatcher	3	2,000 birds (HE)	75% (3/4)	0% (0/4)
Lapwing	5	2,000 birds (LDV & HE)	75% (3/4)	0% (0/4)
600m buffer (Passage Spring 2023)				
Shelduck	2	65 (HE)	25% (1/4)	0% (0/4)
Gadwall	6	310 birds (based on GB population) (LDV)	25% (1/4)	0% (0/4)

Species	Peak Count	FLL Population Threshold (2/3rds of Surveys Would Need to Reach This Bird Number)	Regularity of Use in Percentage (Number of Surveys when Species Recorded in Brackets)	Number of Surveys Where FLL Population Threshold was Exceeded.
Mallard	16	2,000 birds (HE)	75% (3/4)	0% (0/4)
Oystercatcher	3	2,000 birds (HE)	50% (2/4)	0% (0/4)
Lapwing	2	2,000 birds (LDV & HE)	25% (1/4)	0% (0/4)
The Site (Passage Autumn 2023)				
Oystercatcher	4	2,000 birds (HE)	66% (2/3)	0% (0/3)
Lapwing	14	2,000 birds (LDV & HE)	100% (3/3)	0% (0/3)
600m Buffer (Passage Autumn 2023)				
Gadwall	52	310 birds (based on GB population) (LDV)	100% (3/3)	0% (0/3)
Mallard	15	2,000 birds (HE)	100% (3/3)	0% (0/3)
Wigeon	2	115 (LDV) 2,000 birds (HE)	33% (1/3)	0% (0/3)

Species	Peak Count	FLL Population Threshold (2/3rds of Surveys Would Need to Reach This Bird Number)	Regularity of Use in Percentage (Number of Surveys when Species Recorded in Brackets)	Number of Surveys Where FLL Population Threshold was Exceeded.
Lapwing	14	2,000 birds (LDV & HE)	33% (1/3)	0% (0/3)
The Site (Nocturnal Bird Surveys 2024)				
Mallard	6	2,000 birds (HE)	100% (3/3)	0% (0/3)
Lapwing	1	2,000 birds (LDV & HE)	100% (3/3)	0% (0/3)
600m buffer (Nocturnal Bird Surveys 2024)				
Mallard	5	2,000 birds (HE)	33% (1/3)	0% (0/3)

Note, modest numbers of goldeneye (peak of two across the surveys) and pochard (peak of six across the surveys) were recorded in the 600m buffer around the Site, on the lake near field 339; see **Appendix 8.2** of the ES (**Table 3.2 and Figure 8.12**). Although these are waterbird assemblage species of the Humber Estuary SPA (and only pochard for the Lower Derwent Valley SPA), they are diving ducks which require deeper water. As such the Site is unsuitable for these species.

ANNEX 2:
OUTLINE MITIGATION STRATEGY: NON-BREEDING LAPWING

Outline Mitigation Strategy: Non-breeding Lapwing

Prepared: H. Fearn MSc MCIEEM

Date: 13th February 2025

Introduction

This document provides a summary of lapwing mitigation proposed by the Applicant in response to Natural England's Discretionary Advice Service (DAS) letter, dated 10th February 2024.

A detailed ecological mitigation plan for non-breeding lapwings will be secured through a DCO Requirement. This will include the following:

- Aims and Objectives
- Target/s for each objective
- Details of management and monitoring
- Limits of acceptable change
- Details of remedial actions, where appropriate.

Overview of Proposed Measures

Fields within the Draft Order Limits ('the LMA') will be managed for use by foraging non-breeding lapwing annually for the lifetime of the Proposed Development. As the LMA is located within the Draft Order Limits all measures can be fully secured.

To determine the area (ha) of habitat required for non-breeding lapwings, the method used for the consented Cleeve Hill NSIP Solar Park³⁷ has been adopted. This method calculates current (baseline survey usage of the entire Draft Order Limits by the species. A 'bird days per winter' formula is used to calculate the area of land required to support the baseline number of birds, based on peak counts per month. Calculations for the Proposed Development are presented in **Table 1**. These demonstrate that, to accommodate comparable numbers of lapwings recorded during baseline field surveys, 14.03 ha of land is required.

Identification of fields suitable for use for lapwing mitigation has focussed on those areas where the species was recorded during baseline field surveys. Field 29 (peak lapwing count of 118 birds) comprises 19.63 ha of arable land has been selected based on location and evidence of recent use. Field 29 is considerably larger than the minimum 14.03 ha requirement and is therefore potentially suitable in isolation; however, an over-

³⁷ <https://national-infrastructure-consenting.planninginspectorate.gov.uk/projects/EN010085>

provision approach has been adopted and therefore the adjacent field 33 (17.46 ha) will also be managed for non-breeding lapwings. This will provide an overall area of 37.09 ha.

Table 1: Bird-day Calculations

*Please note: bird day calculations do not consider habitat type, they are an area (ha) calculation process only. For ease of reference, crop type data is provided in **Figures 2 – 5** (repeated from Applicant's document 'the Applicant's 'Natural England Supplementary Note', dated 9th January 2025).*

Survey days between October 13th, 2021, and March 24th, 2022 (162 days)										
Species	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Winter Mean	bird days	Bird days supported by each ha	Area required (ha)
Lap wing	211	52	55	71	72	4	77.5	12,555	1,000	12.56
Survey days between 1st October 2021 and 31st March 2022 (181 days)										
Species	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Winter Mean	bird days	Bird days supported by each ha	Area required (ha)
Lap wing	211	52	55	71	72	4	77.5	14,027.5	1,000	14.03

Both fields are outside the development footprint, aside from the underground cable route, and there is no development of adjacent fields as part of the Proposed Development (hence neither will be subject to any enclosure effect). Field locations are shown on **Figure 1**.

Management for non-breeding lapwings will comprise the following measures:

- Crops to be maintained below 8-10 cm during the non-breeding season (approximately October to March), such as wheat/barley during autumn/spring passage or fallow/newly tilled fields.
- Avoidance of deep ploughing.
- The addition of manure, subject to a reasonable agricultural cycle.
- The incorporation of a ley crop within the management rotation.
- The inclusion of permanent grass margins to the fields.

The lapwing habitat within the mitigation areas will be created sufficiently in advance of infrastructure work to ensure habitat is available prior to the beginning of the construction phase.

Please note; these fields will also be used for skylark mitigation in the breeding season as the two conservation objectives are compatible.

Figure 1: Lapwing Mitigation Area

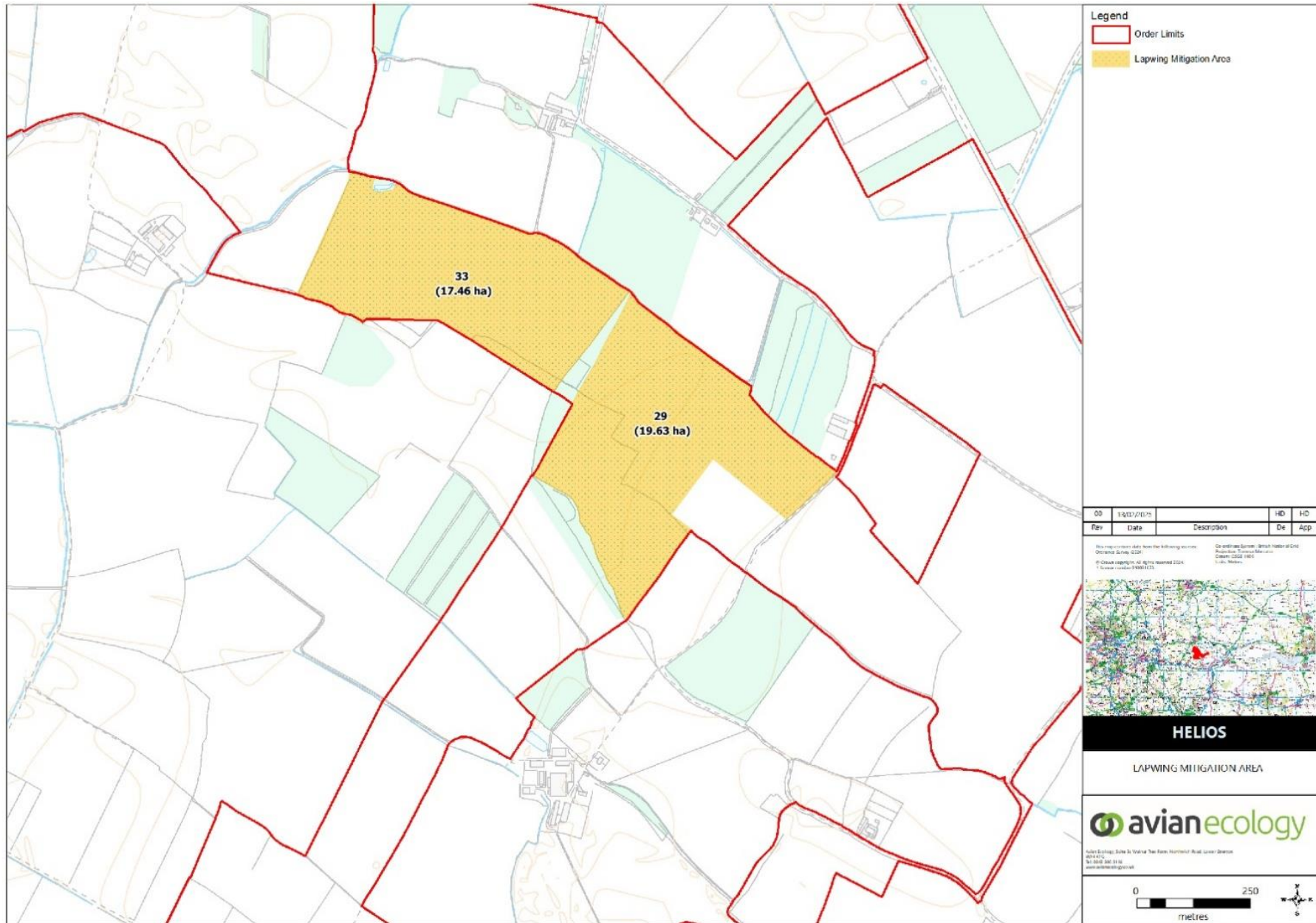


Figure 2: Field/Crop Types – 2021/22

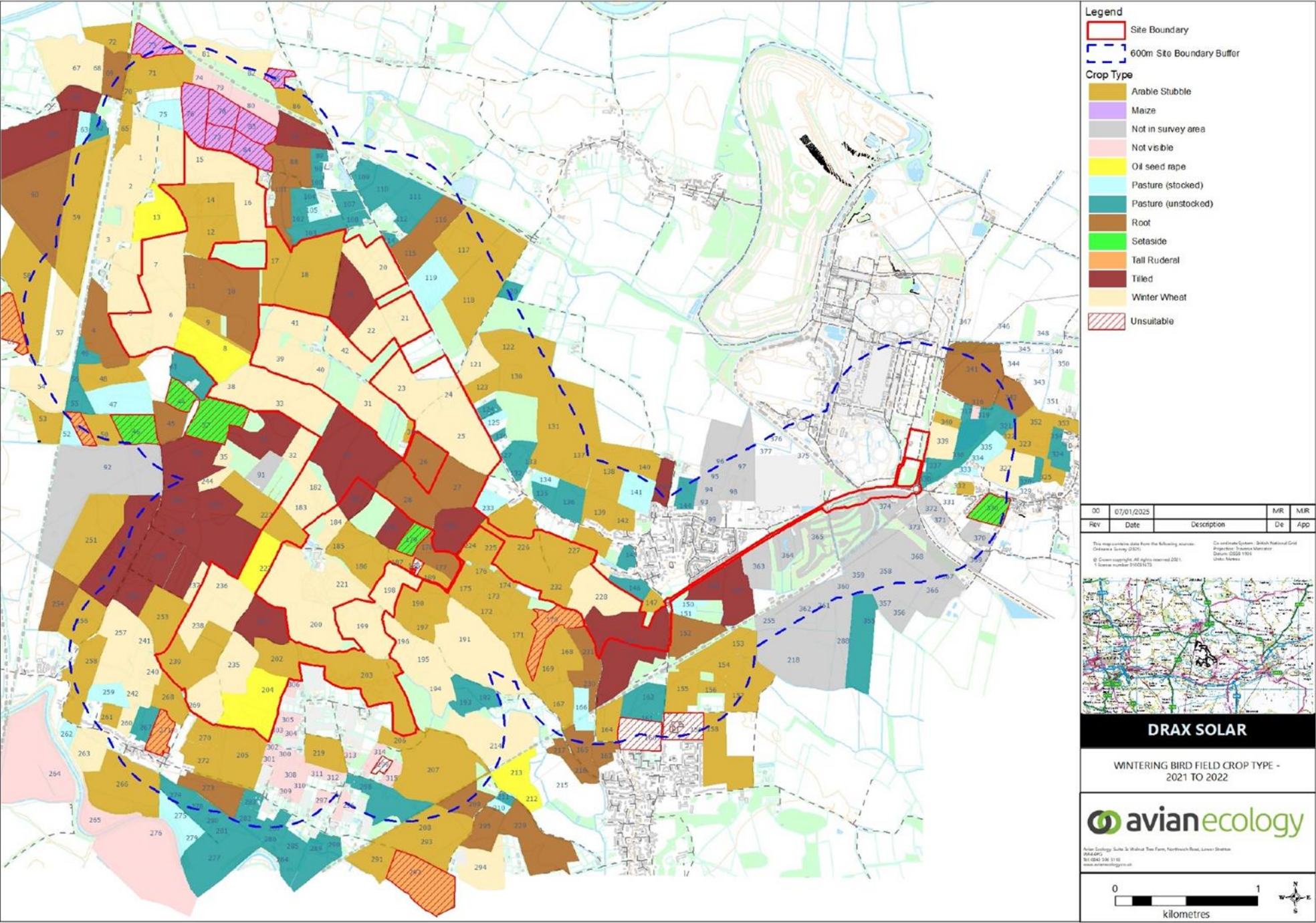


Figure 3: Field/Crop Types – 2022/23

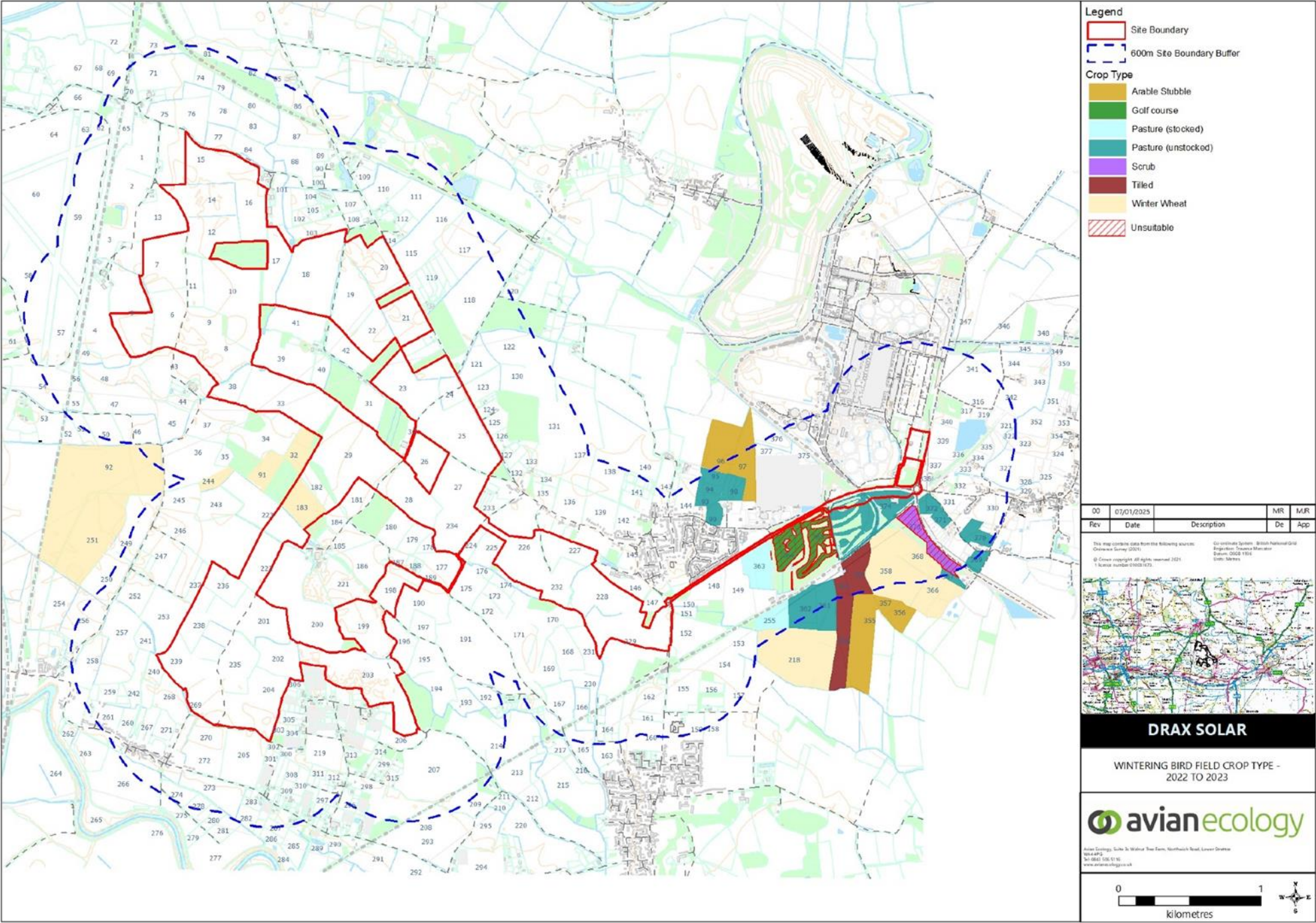


Figure 4: Field/Crop Types – 2023/24

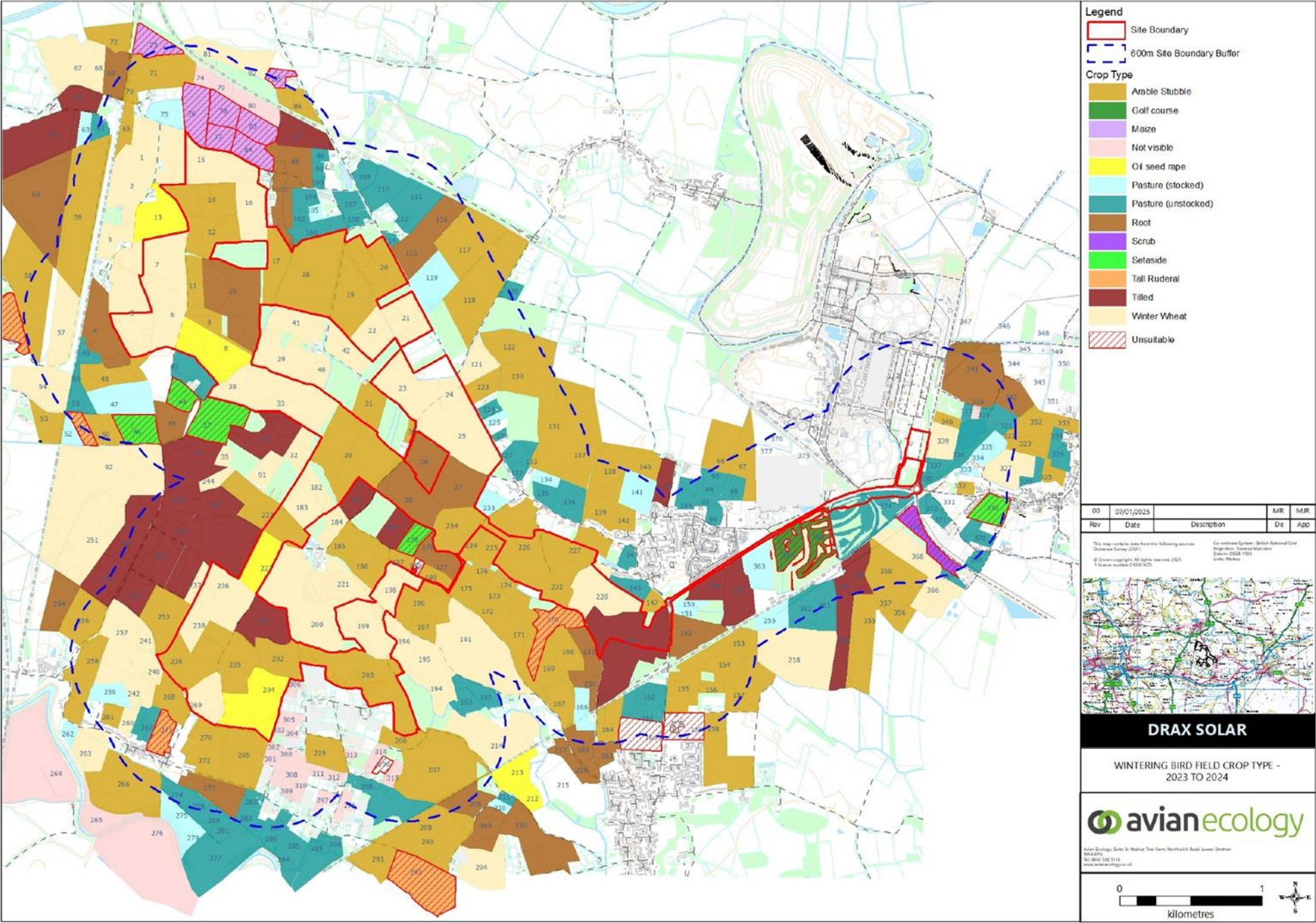
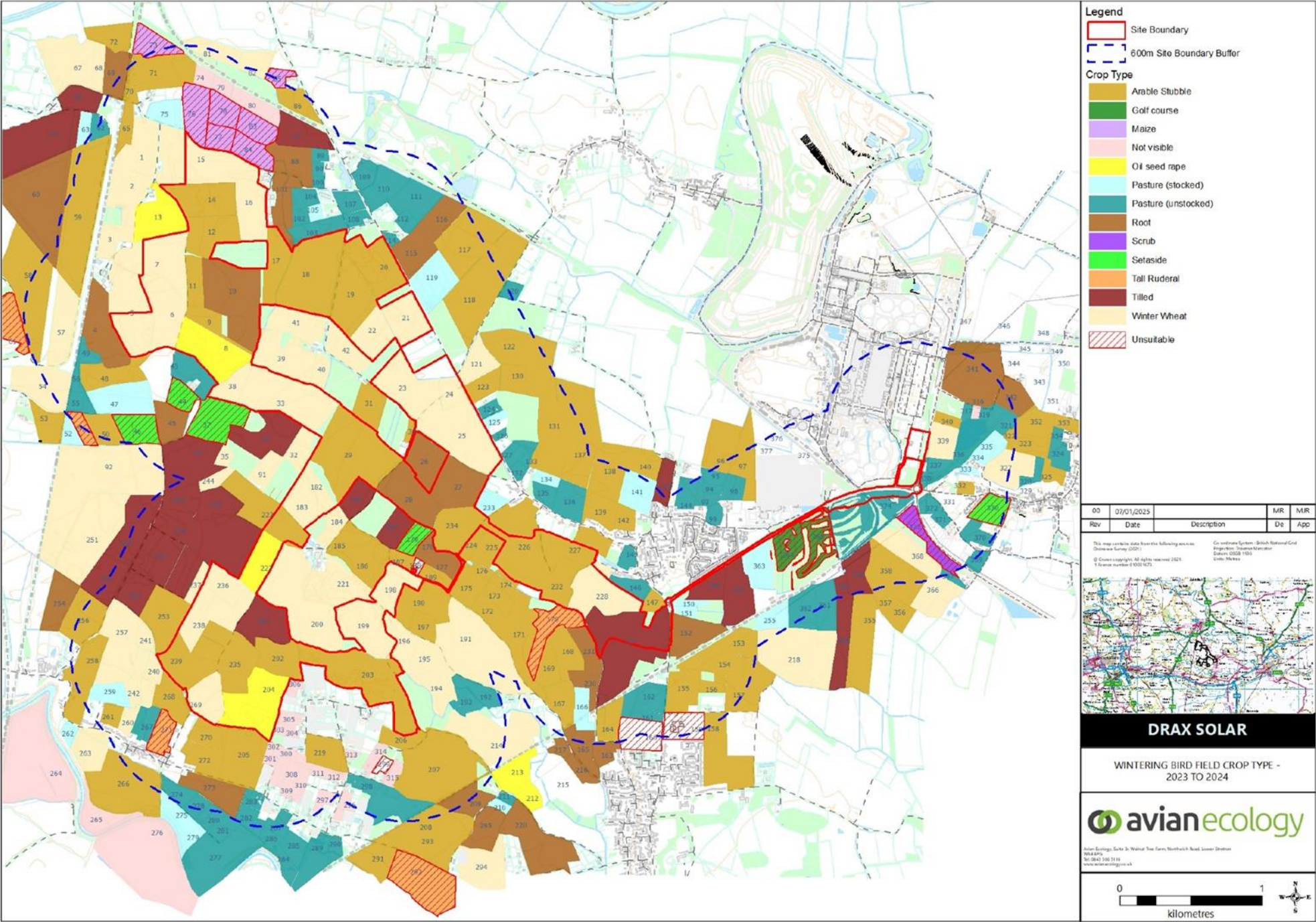


Figure 5: Field/Crop Types – 2023/24



ANNEX 3:
EUROPEAN DESIGNATED SITES; POTENTIAL IMPACTS AND POTENTIAL
IMPACT PATHWAYS

Designation	Qualifying Features	Potential Impact	Construction Pathway	Operational Pathway
River Derwent SAC	Qualifying species: - Bullhead <i>Cottus gobio</i>; - River lamprey <i>Lampetra fluviatilis</i>; - Otter <i>Lutra lutra</i>; and, - Sea lamprey <i>Petromyzon marinus</i>. Qualifying habitats: - Water courses of plain to montane levels with <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation (rivers with floating vegetation often dominated by water-crowfoot).	Degradation of habitats due to changes in air quality	Air quality - increased traffic in the construction phase has the potential to lead to degradation of habitats within the European sites.	None identified.
		Loss of functionally linked land for qualifying bird species	N/A – SAC designated for aquatic species and habitat.	N/A – SAC designated for aquatic species and habitat.
		Disturbance/ displacement of qualifying bird species using FLL	N/A – SAC designated for aquatic species and habitat.	N/A – SAC designated for aquatic species and habitat.
		Disruption of flight paths of qualifying bird species as a result of glint and glare	N/A during construction phase.	N/A – SAC designated for aquatic species and habitat.
		Harm to, or disturbance of, (non-avian) mobile qualifying features	None identified - Mobile features (otter) are considered unlikely to be subject to impacts based on the separation distances and nature of the Proposed Development. Effects on fish species during construction can be ruled-out by virtue of separation distance.	None identified - Mobile features (otter) are considered unlikely to be subject to impacts based on the separation distances and nature of the Proposed Development. Effects on fish species during construction can be ruled-out by virtue of separation distance.
Lower Derwent Valley SAC	Qualifying species: - Otter. Qualifying Habitats: - Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>); and,	Degradation of habitats due to changes in air quality	Air quality - increased traffic in the construction phase has the potential to lead to degradation of habitats within the European sites.	None identified.
		Loss of functionally linked land for qualifying bird species	N/A – SAC designated for aquatic species and habitat.	None identified.

Designation	Qualifying Features	Potential Impact	Construction Pathway	Operational Pathway
	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alder woodland on floodplains).	Disturbance/ displacement of qualifying bird species using FLL	N/A – SAC designated for aquatic species and habitat.	None identified.
		Disruption of flight paths of qualifying bird species as a result of glint and glare	N/A during construction phase.	None identified.
		Harm to, or disturbance of, (non-avian) mobile qualifying features	None identified - Mobile features (otter) are considered unlikely to be subject to impacts based on the separation distances and nature of the Proposed Development. Effects on fish species during construction can be ruled-out by virtue of separation distance.	None identified - Mobile features (otter) are considered unlikely to be subject to impacts based on the separation distances and nature of the Proposed Development. Effects on fish species during construction can be ruled-out by virtue of separation distance.
Lower Derwent Valley SPA	The site is designated for the following ornithological qualifying features: - Bewick's swan <i>Cygnus columbianus</i> (non-breeding); - Eurasian wigeon <i>Anas penelope</i> (non-breeding); - Eurasian teal <i>Anas crecca</i> (non-breeding); - Northern shoveler <i>Anas clypeata</i> (breeding); - European golden plover <i>Pluvialis apricaria</i> (non-breeding); - Ruff <i>Philomachus pugnax</i> (non-breeding); and,	Degradation of habitats due to changes in air quality	Air quality - increased traffic in the construction phase has the potential to lead to degradation of habitats within the European sites.	None identified.
		Loss of functionally linked land for qualifying bird species	Land take - Land within and adjacent to the Site has the potential to constitute FLL for qualifying bird species for which the European sites are designated.	Land take - Potential for long-term loss of FLL under the footprint of the solar PV modules and associated infrastructure where this is above ground level.
		Disturbance/ displacement of qualifying bird species using FLL	Construction activities - could reduce feeding efficiency and/or lead to changes in species distribution and therefore contradict the conservation	Operational activities - anthropogenic disturbance; however, this is considered likely to be comparable to, or

Designation	Qualifying Features	Potential Impact	Construction Pathway	Operational Pathway
	Waterbird assemblage (pochard <i>Aythya ferina</i> , ruff, shoveler, teal, whimbrel <i>Numenius phaeopus</i> , wigeon, gadwall <i>Anas strepera</i> , greylag goose <i>Anser anser</i> , pintail <i>Anas acuta</i> , whooper swan <i>Cygnus cygnus</i> , golden plover and lapwing <i>Vanellus vanellus</i> ; See Natural England document Annex B1, in Appendix 8.2 for further details).		objectives of the SPA/ Ramsar sites.	less than, current farming related activity levels.
		Disruption of flight paths of qualifying bird species as a result of glint and glare	N/A during construction phase.	Operational infrastructure - During the operational phase there is potential for glint and glare to affect the flight paths of qualifying bird species of the SPA.
		Harm to, or disturbance of, (non-avian) mobile qualifying features	None identified – qualifying features of the SPA relate to avian features only.	None identified – qualifying features of the SPA relate to avian features only.
Lower Derwent Valley Ramsar Site	Designated under Ramsar criterion 1, 2, 4, 5 and 6. Qualifying species listed as part of qualification under Ramsar Criterion 5 and 6 include: Ramsar criterion 4 A staging post for passage birds in spring. Of particular note are the nationally important numbers of ruff and whimbrel. Ramsar criterion 5 Wintering bird assemblages of international importance (peak counts in winter: 31,942 waterfowl (5-year peak mean 1998/99-2002/2003)). Ramsar criterion 6 Wintering species occurring at levels of international importance: Eurasian wigeon; and,	Degradation of habitats due to changes in air quality	Air quality - increased traffic in the construction phase has the potential to lead to degradation of habitats within the European sites.	None identified.
		Loss of functionally linked land for qualifying bird species	Land take - Land within and adjacent to the Site has the potential to constitute FLL for qualifying bird species for which the European sites are designated.	Land take - Potential for long-term loss of FLL under the footprint of the solar PV modules and associated infrastructure where this is above ground level.
		Disturbance/ displacement of qualifying bird species using FLL	Construction activities - could reduce feeding efficiency and/or lead to changes in species distribution and therefore contradict the conservation objectives of the Ramsar site.	Operational activities - anthropogenic disturbance; however, this is considered likely to be comparable to, or less than, current farming related activity levels.

Designation	Qualifying Features	Potential Impact	Construction Pathway	Operational Pathway
	- Eurasian teal. Qualifying Habitats: - Species-rich alluvial flood meadow; the river and flood meadows play a substantial role in the hydrological and ecological functioning of the Humber Basin.	Disruption of flight paths of qualifying bird species as a result of glint and glare	N/A during construction phase.	Operational infrastructure - During the operational phase there is potential for glint and glare to affect the flight paths of qualifying bird species of the Ramsar.
	Qualifying Non-Avian species/assemblages: Wetland invertebrates.	Harm to, or disturbance of, (non-avian) mobile qualifying features	None identified - Mobile features (wetland invertebrates) are considered unlikely to be subject to impacts based on the separation distances and nature of the Proposed Development.	None identified - Mobile features (wetland invertebrates) are considered unlikely to be subject to impacts based on the separation distances and nature of the Proposed Development.
Humber Estuary SAC	Qualifying species: - Sea lamprey; - River lamprey; and - Grey seal <i>Halichoerus grypus</i>.	Degradation of habitats due to changes in air quality	Air quality - increased traffic in the construction phase has the potential to lead to degradation of habitats within the European sites.	None identified.
	Qualifying Habitats: - Subtidal sandbanks; - Estuaries; - Intertidal mudflats and sandflats; - Coastal lagoons; - Glasswort and other annuals colonising mud and sand;	Loss of functionally linked land for qualifying bird species	N/A – SAC designated for aquatic species and habitat.	N/A – SAC designated for aquatic species and habitat.
		Disturbance/ displacement of qualifying bird species using FLL	N/A – SAC designated for aquatic species and habitat.	N/A – SAC designated for aquatic species and habitat.
		Disruption of flight paths of qualifying bird species as a result of glint and glare	N/A – SAC designated for aquatic species and habitat.	N/A – SAC designated for aquatic species and habitat.

Designation	Qualifying Features	Potential Impact	Construction Pathway	Operational Pathway
	- Atlantic salt meadows (Glauco-Puccinellietalia maritima); - Embryonic shifting dunes; - Shifting dunes with marram; - Dune grassland; and, - Dunes with sea-buckthorn	Harm to, or disturbance of, (non-avian) mobile qualifying features	Effects on seal and fish species during construction can be ruled-out by virtue of separation distance.	Effects on seal and fish species during construction can be ruled-out by virtue of separation distance.
Humber Estuary SPA	The site is designated for the following ornithological qualifying features: - Great bittern <i>Botaurus stellaris</i> (non-breeding and breeding); - Common shelduck <i>Tadorna tadorna</i> (non-breeding); - Eurasian marsh harrier <i>Circus aeruginosus</i> (breeding); - Hen harrier <i>Circus cyaneus</i> (non-breeding); - Pied avocet <i>Recurvirostra avosetta</i> (non-breeding and breeding); - European golden plover (non-breeding); - Red knot <i>Calidris canutus</i> (non-breeding); - Dunlin <i>Calidris alpina</i> (non-breeding); - Ruff (non-breeding); - Black-tailed godwit <i>Limosa limosa</i> (non-breeding);	Degradation of habitats due to changes in air quality	Air quality - increased traffic in the construction phase has the potential to lead to degradation of habitats within the European sites.	None identified.
		Loss of functionally linked land for qualifying bird species	Land take - Land within and adjacent to the Site has the potential to constitute FLL for qualifying bird species for which the European sites are designated.	Land take - Potential for long-term loss of FLL under the footprint of the solar PV modules and associated infrastructure where this is above ground level.
		Disturbance/ displacement of qualifying bird species using FLL	Construction activities - could reduce feeding efficiency and/or lead to changes in species distribution and therefore contradict the conservation objectives of the SPA site.	Operational activities - anthropogenic disturbance; however, this is considered likely to be comparable to, or less than, current farming related activity levels.
		Disruption of flight paths of qualifying bird species as a result of glint and glare	N/A during construction phase.	Operational infrastructure - During the operational phase there is potential for glint and glare to affect the flight paths of qualifying bird species of the SPA.

Designation	Qualifying Features	Potential Impact	Construction Pathway	Operational Pathway
	- Bar-tailed godwit <i>Limosa lapponica</i> (non-breeding); - Common redshank <i>Tringa tetanus</i> (non-breeding); - Little tern <i>Sternula albifrons</i> (breeding); and, Waterbird assemblage (avocet, bar-tailed godwit, bittern, black-tailed godwit, brent goose <i>Branta bernicla</i>, curlew <i>Numenius arquata</i>, dunlin, golden plover, goldeneye <i>Bucephala clangula</i>, greenshank <i>Tringa nebularia</i>, grey plover <i>Pluvialis squatarola</i>, knot, lapwing, mallard <i>Anas platyrhynchos</i>, oystercatcher <i>Haematopus ostralegus</i>, pochard, redshank, ringed plover <i>Charadrius hiaticula</i>, ruff, sanderling <i>Calidris alba</i>, scaup <i>Aythya marila</i>, shelduck, teal, turnstone <i>Arenaria interpres</i>, whimbrel and wigeon; see Natural England Document Annex B in Appendix 8.2 for further details).	Harm to, or disturbance of, (non-avian) mobile qualifying features	None identified – qualifying features of the SPA relate to avian features only.	None identified – qualifying features of the SPA relate to avian features only.
Humber Estuary Ramsar Site	Designated under Ramsar criterion 1, 3, 5, 6 and 8. Qualifying species listed as part of qualification under Ramsar Criterion 5 and 6 include:	Degradation of habitats due to changes in air quality	Air quality - increased traffic in the construction phase has the potential to lead to degradation of habitats within the European sites.	None identified.
	Ramsar criterion 5 Wintering bird assemblages of international importance (peak counts in winter: 153,934 waterfowl (5-year peak mean 1996/97-2000/2001)).	Loss of functionally linked land for qualifying bird species	Land take - Land within and adjacent to the Site has the potential to constitute FLL for qualifying bird species for which the European sites are designated.	Land take - Potential for long-term loss of FLL under the footprint of the solar PV modules and associated infrastructure where this is above ground level.

Designation	Qualifying Features	Potential Impact	Construction Pathway	Operational Pathway
	Ramsar criterion 6 Species with peak counts in spring/autumn occurring at levels of international importance: • European golden plover; • Red knot; • Dunlin; • Black-tailed godwit; and, • Common redshank. Species with peak counts in winter occurring at levels of international importance: • Common shelduck; • European golden plover; • Red knot; • Dunlin; • Black-tailed godwit; and, • Bar-tailed godwit. Qualifying Habitats: • A near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/ saline lagoons. Qualifying non-avian species/assemblages: • Grey seal; • Natterjack toad <i>Epidalea calamita</i>; • River lamprey; and,	Disturbance/ displacement of qualifying bird species using FLL	Construction activities - could reduce feeding efficiency and/or lead to changes in species distribution and therefore contradict the conservation objectives of the Ramsar sites.	Operational activities - anthropogenic disturbance; however, this is considered likely to be comparable to, or less than, current farming related activity levels.
		Disruption of flight paths of qualifying bird species as a result of glint and glare	N/A during construction phase.	Operational infrastructure - During the operational phase there is potential for glint and glare to affect the flight paths of qualifying bird species of the Ramsar.
		Harm to, or disturbance of, (non-avian) mobile qualifying features	Effects on seal, amphibian and fish species during construction can be ruled-out by virtue of separation distance.	Effects on seal, amphibian and fish species during construction can be ruled-out by virtue of separation distance.

Designation	Qualifying Features	Potential Impact	Construction Pathway	Operational Pathway
	Sea lamprey.			
Skipwith Common SAC	Qualifying habitats: - Northern Atlantic wet heaths with <i>Erica tetralix</i>; Wet heathland with cross-leaved heath; and, - European dry heaths.	Degradation of habitats due to changes in air quality	Air quality - increased traffic in the construction phase has the potential to lead to degradation of habitats within the European sites.	None identified.
		Loss of functionally linked land for qualifying bird species	N/A – SAC designated for habitat.	N/A – SAC designated for habitat.
		Disturbance/ displacement of qualifying bird species using FLL	N/A – SAC designated for habitat.	N/A – SAC designated for habitat.
		Disruption of flight paths of qualifying bird species as a result of glint and glare	N/A – SAC designated for habitat.	N/A – SAC designated for habitat.
		Harm to, or disturbance of, (non-avian) mobile qualifying features	N/A – SAC designated for habitat.	N/A – SAC designated for habitat.
Thorne Moor SAC	Qualifying habitats: Degraded raised bogs still capable of natural	Degradation of habitats due to changes in air quality	Air quality - increased traffic in the construction phase has the potential to lead to degradation of habitats within the European	None identified.

Designation	Qualifying Features	Potential Impact	Construction Pathway	Operational Pathway
	regeneration.		sites.	
		Loss of functionally linked land for qualifying bird species	N/A – SAC designated for habitat.	N/A – SAC designated for habitat..
		Disturbance/ displacement of qualifying bird species using FLL	N/A – SAC designated for habitat.	N/A – SAC designated for habitat..
		Disruption of flight paths of qualifying bird species as a result of glint and glare	N/A – SAC designated for habitat.	N/A – SAC designated for habitat..
		Harm to, or disturbance of, (non-avian) mobile qualifying features	N/A – SAC designated for habitat.	N/A – SAC designated for habitat..
Thorne & Hatfield Moors SPA	Qualifying species: European nightjar <i>Caprimulgus europaeus</i> (Breeding).	Degradation of habitats due to changes in air quality	Air quality - increased traffic in the construction phase has the potential to lead to degradation of habitats within the European sites.	None identified.
		Loss of functionally linked land for qualifying bird species	Land take - Land within and adjacent to the Site has the potential to constitute FLL for qualifying bird species for which the European sites are designated.	Land take - Potential for long-term loss of FLL under the footprint of the solar PV modules and associated infrastructure where this is above ground level.
		Disturbance/ displacement of qualifying bird species using FLL	Construction activities - could reduce feeding efficiency and/or lead to changes in species distribution and therefore contradict the	Operational activities - anthropogenic disturbance; however, this is considered likely to be comparable to, or

Designation	Qualifying Features	Potential Impact	Construction Pathway	Operational Pathway
			conservation objectives of the SPA.	less than, current farming related activity levels.
		Disruption of flight paths of qualifying bird species as a result of glint and glare	N/A during construction phase.	Operational infrastructure - During the operational phase there is potential for glint and glare to affect the flight paths of qualifying bird species of the Ramsar.
		Harm to, or disturbance of, (non-avian) mobile qualifying features	None identified – qualifying features of the SPA relate to avian features only.	None identified – qualifying features of the SPA relate to avian features only.

ANNEX 4:
RAMSAR SITE INFORMATION SHEETS

Information Sheet on Ramsar Wetlands (RIS)

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

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

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

Joint Nature Conservation Committee

Monkstone House

City Road

Peterborough

Cambridgeshire PE1 1JY

UK

Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948

Email: RIS@JNCC.gov.uk

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DD MM YY

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

Designated: 31 August 2007

3. Country:

UK (England)

4. Name of the Ramsar site:

Humber Estuary

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

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

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area:

The boundary has been extended

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

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

7. Map of site included:

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

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

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

b) Describe briefly the type of boundary delineation applied:

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

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

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

8. Geographical coordinates (latitude/longitude):

053 32 59 N 000 00 03 E

9. General location:

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

Nearest town/city: Kingston-upon-Hull

The Humber Estuary is located on the boundary between the East Midlands Region and the Yorkshire and the Humber Region, on the east coast of England bordering the North Sea.

Administrative region: City of Kingston upon Hull; East Riding of Yorkshire; Humberside; Lincolnshire; North East Lincolnshire; North Lincolnshire

10. Elevation (average and/or max. & min.) (metres): **11. Area** (hectares): 37987.8

Min. -13

Max. 10

Mean No information available

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The Humber Estuary is the largest macro-tidal estuary on the British North Sea coast. It drains a catchment of some 24,240 square kilometres and is the site of the largest single input of freshwater from Britain into the North Sea. It has the second-highest tidal range in Britain (max 7.4 m) and approximately one-third of the estuary is exposed as mud or sand flats at low tide. The inner estuary supports extensive areas of reedbed with areas of mature and developing saltmarsh backed in places by limited areas of grazing marsh in the middle and outer estuary. On the north Lincolnshire coast the saltmarsh is backed by low sand dunes with marshy slacks and brackish pools. The Estuary regularly supports internationally important numbers of waterfowl in winter and nationally important breeding populations in summer.

13. Ramsar Criteria:

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

1, 3, 5, 6, 8

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 1

The site is a representative example of a near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/saline lagoons.

It is a large macro-tidal coastal plain estuary with high suspended sediment loads, which feed a dynamic and rapidly changing system of accreting and eroding intertidal and subtidal mudflats, sandflats, saltmarsh and reedbeds. Examples of both strandline, foredune, mobile, semi-fixed dunes, fixed dunes and dune grassland occur on both banks of the estuary and along the coast. The estuary supports a full range of saline conditions from the open coast to the limit of saline intrusion on the tidal rivers of the Ouse and Trent. Wave exposed sandy shores are found in the outer/open coast areas of the estuary. These change to the more moderately exposed sandy shores and then to sheltered muddy shores within the main body of the estuary and up into the tidal rivers. The lower saltmarsh of the Humber is dominated by common cordgrass *Spartina anglica* and annual glasswort *Salicornia* communities. Low to mid marsh communities are mostly represented by sea aster *Aster tripolium*, common saltmarsh grass *Puccinellia maritima* and sea purslane *Atriplex portulacoides* communities. The upper portion of the saltmarsh community is atypical, dominated by sea couch *Elytrigia atherica* (*Elymus pycnanthus*) saltmarsh community. In the upper reaches of the estuary, the tidal marsh community is dominated by the common reed *Phragmites australis* fen and sea club rush *Bolboschoenus maritimus* swamp with the couch grass *Elytrigia repens* (*Elymus repens*) saltmarsh community. Within the Humber Estuary Ramsar site there are good examples of four of the five physiographic types of saline lagoon.

Ramsar criterion 3

The Humber Estuary Ramsar site supports a breeding colony of grey seals *Halichoerus grypus* at Donna Nook. It is the second largest grey seal colony in England and the furthest south regular breeding site on the east coast. The dune slacks at Saltfleetby-Theddlethorpe on the southern extremity of the Ramsar site are the most north-easterly breeding site in Great Britain of the natterjack toad *Bufo calamita*.

Ramsar criterion 5

Assemblages of international importance:

153,934 waterfowl, non-breeding season

(5 year peak mean 1996/97-2000/2001)

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

Eurasian golden plover, *Pluvialis apricaria*

altifrons subspecies – NW Europe, W Continental Europe, NW Africa population

17,996 individuals, passage, representing an average of 2.2% of the population

(5 year peak mean 1996-2000)

Red knot, *Calidris canutus*

islandica subspecies

18,500 individuals, passage, representing an average of 4.1% of the population

(5 year peak mean 1996-2000)

Dunlin, *Calidris alpina*

alpina subspecies – Western Europe (non-breeding) population

20,269 individuals, passage, representing an average of 1.5% of the population
(5 year peak mean 1996-2000)

Black-tailed godwit, *Limosa limosa*

islandica subspecies

915 individuals, passage, representing an average of 2.6% of the population
(5 year peak mean 1996-2000)

Common redshank, *Tringa totanus*

britannica subspecies

7,462 individuals, passage, representing an average of 5.7% of the population
(5 year peak mean 1996-2000)

Common shelduck, *Tadorna tadorna*

Northwestern Europe (breeding) population

4,464 individuals, wintering, representing an average of 1.5% of the population
(5 year peak mean 1996/7-2000/1)

Eurasian golden plover, *Pluvialis apricaria*

altifrons subspecies – NW Europe, W Continental Europe, NW Africa population

30,709 individuals, wintering, representing an average of 3.8% of the population
(5 year peak mean 1996/7-2000/1)

Red knot, *Calidris canutus*

islandica subspecies

28,165 individuals, wintering, representing an average of 6.3% of the population
(5 year peak mean 1996/7-2000/1)

Dunlin, *Calidris alpina*

alpina subspecies – Western Europe (non-breeding) population

22,222 individuals, wintering, representing an average of 1.7% of the population
(5 year peak mean 1996/7-2000/1)

Black-tailed godwit, *Limosa limosa*

islandica subspecies

1,113 individuals, wintering, representing an average of 3.2% of the population
(5 year peak mean 1996/7-2000/1)

Bar-tailed godwit, *Limosa lapponica*

lapponica subspecies

2,752 individuals, wintering, representing an average of 2.3% of the population
(5 year peak mean 1996/7-2000/1)

Common redshank, *Tringa totanus*

britannica subspecies

4,632 individuals, wintering, representing an average of 3.6% of the population

(5 year peak mean 1996/7-2000/1)

Ramsar criterion 8

The Humber Estuary acts as an important migration route for both river lamprey *Lampetra fluviatilis* and sea lamprey *Petromyzon marinus* between coastal waters and their spawning areas.

Ramsar criterion 5

Assemblages of international importance:

Species with peak counts in winter:

153934 waterfowl (5 year peak mean 1998/99-2002/2003)

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

Qualifying Species/populations (as identified at designation):

Species with peak counts in spring/autumn:

European golden plover , <i>Pluvialis apricaria</i> <i>apricaria</i> , P. a. altifrons Iceland & Faroes/E Atlantic	17996 individuals, representing an average of 2.2% of the population (1996-2000)
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Red knot , <i>Calidris canutus islandica</i> , W & Southern Africa (wintering)	18500 individuals, representing an average of 4.1% of the population (1996-2000)
---	--

Dunlin , <i>Calidris alpina alpina</i> , W Siberia/W Europe	20269 individuals, representing an average of 1.5% of the population (1996-2000)
---	--

Black-tailed godwit , <i>Limosa limosa islandica</i> , Iceland/W Europe	915 individuals, representing an average of 2.6% of the population (1996-2000)
---	--

Common redshank , <i>Tringa totanus totanus</i> ,	7462 individuals, representing an average of 5.7% of the population (1996-2000)
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Species with peak counts in winter:

Common shelduck , <i>Tadorna tadorna</i> , NW Europe	4464 individuals, representing an average of 1.5% of the population (1996/7 to 2000/1)
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European golden plover , <i>Pluvialis apricaria</i> <i>apricaria</i> , P. a. altifrons Iceland & Faroes/E Atlantic	30709 individuals, representing an average of 3.8% of the population (1996/7 to 2000/1)
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Red knot , <i>Calidris canutus islandica</i> , W & Southern Africa (wintering)	28165 individuals, representing an average of 6.3% of the population (1996/7 to 2000/1)
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Dunlin , <i>Calidris alpina alpina</i> , W Siberia/W Europe	22222 individuals, representing an average of 1.7% of the population (1996/7 to 2000/1)
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Black-tailed godwit , *Limosa limosa islandica*, 1113 individuals, representing an average of 3.2% of the population (1996/7 to 2000/1)
Iceland/W Europe

Bar-tailed godwit , *Limosa lapponica lapponica*, 2752 individuals, representing an average of 2.3% of the population (1996/7 to 2000/1)
W Palearctic

Contemporary data and information on waterbird trends at this site and their regional (sub-national) and national contexts can be found in the Wetland Bird Survey report, which is updated annually. See www.bto.org/survey/webs/webs-alerts-index.htm.

See Sections 21/22 for details of noteworthy species

Details of bird species occurring at levels of National importance are given in Section 22

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

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

a) biogeographic region:

Atlantic

b) biogeographic regionalisation scheme (include reference citation):

Council Directive 92/43/EEC

16. Physical features of the site:

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

Soil & geology	neutral, shingle, sand, mud, clay, alluvium, sedimentary, sandstone, sandstone/mudstone, limestone/chalk, gravel, nutrient-rich
Geomorphology and landscape	lowland, coastal, floodplain, shingle bar, intertidal sediments (including sandflat/mudflat), estuary, islands, cliffs
Nutrient status	eutrophic
pH	circumneutral
Salinity	brackish / mixosaline, fresh, saline / euhaline
Soil	mainly mineral
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Cleethorpes, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/cleethorpes.html) Max. daily temperature: 13.1° C Min. daily temperature: 6.4° C Days of air frost: 29.0 Rainfall: 565.4 mm Hrs. of sunshine: 1521.9

General description of the Physical Features:

The Humber estuary is approximately 70 km long from the limit of saline intrusion on the River Ouse at Boothferry to the estuary mouth at Spurn Head, where it enters the North Sea. The area of the estuary is approx. 365 km², and it has a width of 6.6 km at the mouth.

The Humber is a macro-tidal estuary with a tidal range of 7.4 m, the second-largest range in the UK and comparable to other macro-tidal estuaries worldwide. It is a shallow and well mixed estuary, with an average depth of 6.5m rising to 13.2 m at the mouth.

The Humber is the second-largest coastal plain estuary in the UK, and the largest coastal plain estuary on the east coast of Britain. Suspended sediment concentrations are high, and are derived from a variety of sources, including marine sediments and eroding boulder clay along the Holderness coast. This is the northernmost of the English east coast estuaries whose structure and function is intimately linked with soft eroding shorelines.

Upstream from the Humber Bridge, the navigation channel undergoes major shifts from north to south banks. This section of the estuary is noteworthy for extensive mud and sand bars, which in places form semi-permanent islands.

The estuary covers the full salinity range from fully marine at the mouth of the estuary (Spurn Head) to the limit of saline intrusion on the Rivers Ouse and Trent). A salinity gradient from north to south bank is observed in the outer estuary, due to the incoming tide flowing along the north bank, while the fresh water keeps to the south bank as it discharges to the sea. As salinity declines upstream, reedbeds and brackish saltmarsh communities fringe the estuary..

17. Physical features of the catchment area:

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

The Humber catchment covers an area of ca. 24,240 km², more than 20% of the land area of England. Average annual precipitation in the upland areas of the catchment is as much as 1000 mm. Average freshwater flow into the Humber estuary from the rivers is 250 m³s⁻¹, ranging from 60 m³s⁻¹ in drier periods to 450 m³s⁻¹ in wet periods. Peak flows of up to 1500 m³s⁻¹ have been recorded during floods. The rivers Trent and Ouse, which provide the main fresh water flow into the Humber, drain large industrial and urban areas to the south and west (River Trent), and less densely populated agricultural areas to the north and west (River Ouse). The Trent/Ouse confluence is known as Trent Falls.

On the north bank of the Humber estuary the principal river is the river Hull, which flows through the city of Kingston-upon-Hull, and has a tidal length of 32 km, up to the Hempholme Weir. The Hull provides only about 1% of the freshwater input to the estuary. On the south bank, the River Ancholme enters the Humber at South Ferriby, but the tide is excluded by a sluice and a tidal lock. Altogether, the total tidal length of rivers and estuary is 313 km.

There are several major urban centres within the river catchments. Nottingham, Leicester, and the West Midlands/Birmingham conurbation are drained by the Trent, the Leeds-Bradford area in West Yorkshire is drained by the Aire/Calder and the Sheffield/Rotherham/Doncaster area in South Yorkshire is drained by the Don. There are also large rural regions, whose populations are currently experiencing high population growth, while the urban areas are showing a small decline. The 1992 population for the Ouse catchment was 4.1 million, and for the Trent catchment was 7.1 million. The population of Humberside, which comprises North and North-east Lincolnshire, the East Riding of Yorkshire, and Kingston-upon-Hull (Hull), was just under 0.9 million. Land use around the estuary itself is 50-98% agricultural, within only two areas of high population/ industry – the major conurbation around Kingston-upon-Hull (Hull) on the north bank, and several large industrial areas around Grimsby/ Immingham/ Cleethorpes on the south bank.

The area around the Humber estuary is low-lying, and much land-claim of wetlands and supratidal zones, as well as parts of the intertidal zone, was carried out in the past two centuries. The mid to

outer estuary (Humber Bridge to Spurn Point) changed from a region of low water erosion in the 19th century to one of accretion in the 20th century, nonetheless a net loss of intertidal zone of some 3000 ha has taken place since the mid-19th century. Around the estuary some 894 km² of land are below the 5 m contour, protected by extensive coastal defences. Most of the sediment entering the estuary comes from the North Sea, and a large part of it is believed to come from the continuing erosion of the Holderness Cliffs, which form the coastline to the north of the estuary mouth at Spurn Head. The estuary currently has approximately 1,775 ha of saltmarsh

18. Hydrological values:

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

Sediment trapping

19. Wetland types:

Marine/coastal wetland

Code	Name	% Area
F	Estuarine waters	66.8
G	Tidal flats	26.4
H	Salt marshes	4.7
E	Sand / shingle shores (including dune systems)	0.8
7	Gravel / brick / clay pits	0.5
Q	Saline / brackish lakes: permanent	0.3
J	Coastal brackish / saline lagoons	0.3
Other	Other	0.1
9	Canals and drainage channels	0.01
Y	Freshwater springs	0.01

20. General ecological features:

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

Description

Much of the intertidal area of the Humber Estuary consists of mudflats with fringing saltmarsh. There are smaller areas of intertidal sand flats, and sand dunes. The saltmarsh is both eroding and accreting; although coastal squeeze is resulting in net losses, and cord grass *Spartina anglica* is a major colonising species. In areas of reduced salinity such as the Upper Humber there are extensive areas of common reed *Phragmites australis* with some sea club-rush *Bolboschoenus maritimus*. Mid-level saltmarsh tends to be much more floristically diverse, and in the higher level marsh with its dendritic network of drainage channels, salt pans and borrow pits grasses dominate with thrift *Armeria maritima* where the marsh is grazed by cattle and sheep. Extensive areas of eel grass *Zostera marina* and *Z. noltii* have been known to occur at Spurn Bight, although in recent years records are limited. Behind the sandflats of the Cleethorpes coast the mature sand-dune vegetation contains some locally and nationally rare species including chestnut flat sedge *Blasmus rufus*, bulbous meadow grass *Poa bulbosa* and dense silky-bent *Apera interrupta*. The sand dunes, which cap the shingle spit that forms Spurn Peninsula are dominated by marram grass *Ammophila arenaria* and patches of dense sea buckthorn *Hippophae rhamnoides*.

Ecosystem services

Aesthetic

Education

Food

Recreation

Storm/wave protection

21. Noteworthy flora:

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

None reported

22. Noteworthy fauna:

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

Birds

Species Information

Species Information

Birds

Species currently occurring at levels of national importance:

Great bittern, *Botaurus stellaris*

stellaris subspecies – W Europe, NW Africa (breeding) population

2 booming males, breeding, representing an average of 10.5% of the GB population
(3 year mean 2000-2002)

Eurasian marsh harrier, *Circus aeruginosus*

Europe population

10 females, breeding, representing an average of 6.3% of the GB population
(5 year mean 1998-2002)

Pied avocet, *Recurvirostra avosetta*

Western Europe (breeding) population

64 pairs, breeding, representing an average of 8.6% of the GB population
(5 year mean 1998-2002)

Little tern, *Sterna albifrons*

albifrons subspecies, Western Europe (breeding) population

51 pairs, breeding, representing an average of 2.1% of the GB population
(5 year mean 1998-2002)

Dark-bellied brent goose, *Branta bernicla*

bernicla subspecies

2,098 individuals, wintering, representing an average of 2.1% of the GB population
(5 year peak mean 1996/7-2000/1)

Eurasian wigeon, *Anas penelope*

Northwestern Europe (non-breeding) population

5,044 individuals, wintering, representing an average of 1.2% of the GB population
(5 year peak mean 1996/7-2000/1)

Common teal, *Anas crecca*

crecca subspecies, Northwestern Europe (non-breeding population)

2,322 individuals, wintering, representing an average of 1.2% of the GB population

(5 year peak mean 1996/7-2000/1)

Common pochard, *Aythya ferina*

Northeastern & Northwestern Europe (non-breeding) population

719 individuals, wintering, representing an average of 1.2% of the GB population

(5 year peak mean 1996/7-2000/1)

Greater scaup, *Aythya marila*

marila subspecies, Western Europe (non-breeding) population

127 individuals, wintering, representing an average of 1.7% of the GB population

(5 year peak mean 1996/7-2000/1)

Common goldeneye, *Bucephala clangula*

clangula subspecies, Northwestern & Central Europe (non-breeding) population

467 individuals, wintering, representing an average of 1.9% of the GB population

(5 year peak mean 1996/7-2000/1)

Great bittern, *Botaurus stellaris*

stellaris subspecies – W Europe, NW Africa (breeding) population

4 individuals, wintering, representing an average of 4.0% of the GB population

(5 year peak mean 1998/9-2002/3)

Hen harrier, *Circus cyaneus*

Europe population

8 individuals, wintering, representing an average of 1.1% of the GB population

(5 year peak mean 1997/8-2001/2)

Eurasian oystercatcher, *Haematopus ostralegus*

ostralegus subspecies

3,503 individuals, wintering, representing an average of 1.1% of the GB population

(5 year peak mean 1996/7-2000/1)

Pied avocet, *Recurvirostra avosetta*

Western Europe (breeding) population

59 individuals, wintering, representing an average of 1.7% of the GB population

(5 year peak mean 1996/7-2000/1)

Great ringed plover, *Charadrius hiaticula*

hiaticula subspecies

403 individuals, wintering, representing an average of 1.2% of the GB population

(5 year peak mean 1996/7-2000/1)

Grey plover, *Pluvialis squatarola*

squatarola subspecies, Eastern Atlantic (non-breeding) population

1,704 individuals, wintering, representing an average of 3.2% of the GB population

(5 year peak mean 1996/7-2000/1)

Northern lapwing, *Vanellus vanellus*

Europe (breeding) population

22,765 individuals, wintering, representing an average of 1.1% of the GB population

(5 year peak mean 1996/7-2000/1)

Sanderling, *Calidris alba*

Eastern Atlantic (non-breeding) population

486 individuals, wintering, representing an average of 2.3% of the GB population
(5 year peak mean 1996/7-2000/1)

Curlew, *Numenius arquata*

arquata subspecies

3,253 individuals, wintering, representing an average of 2.2% of the GB population
(5 year peak mean 1996/7-2000/1)

Ruddy turnstone, *Arenaria interpres*

interpres subspecies, Northeastern Canada & Greenland (breeding) population

629 individuals, wintering, representing an average of 1.3% of the GB population
(5 year peak mean 1996/7-2000/1)

Great ringed plover, *Charadrius hiaticula*

psammodrroma subspecies

1,766 individuals, passage, representing an average of 5.9% of the GB population
(5 year peak mean 1996-2000)

Grey plover, *Pluvialis squatarola*

squatarola subspecies, Eastern Atlantic (non-breeding) population

1,590 individuals, passage, representing an average of 2.3% of the GB population
(5 year peak mean 1996-2000)

Sanderling, *Calidris alba*

Eastern Atlantic (non-breeding) population

818 individuals, passage, representing an average of 2.7% of the GB population
(5 year peak mean 1996-2000)

Ruff, *Philomachus pugnax*

Western Africa (non-breeding) population

128 individuals, passage, representing an average of 1.4% of the GB population
(5 year peak mean 1996-2000)

Whimbrel, *Numenius phaeopus*

islandicus subspecies

113 individuals, passage, representing an average of 2.3% of the GB population
(5 year peak mean 1996-2000)

Common greenshank, *Tringa nebularia*

Northwestern Europe (breeding) population

77 individuals, passage, representing an average of 5.5% of the GB population
(5 year peak mean 1996-2000)

23. Social and cultural values:

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

Aesthetic

Aquatic vegetation (e.g. reeds, willows, seaweed)

Archaeological/historical site

Environmental education/ interpretation

Fisheries production

Livestock grazing

Non-consumptive recreation

Sport fishing
Sport hunting
Tourism
Transportation/navigation

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

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

- i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

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

25. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	+
Tourism	+	+
Recreation	+	+
Current scientific research	+	
Cutting of vegetation (small-scale/subsistence)	+	
Fishing: commercial	+	+
Fishing: recreational/sport	+	+
Gathering of shellfish	+	+
Bait collection	+	+
Permanent arable agriculture		+
Permanent pastoral agriculture	+	+
Hunting: recreational/sport	+	+
Industrial water supply	+	+
Industry	+	+
Sewage treatment/disposal	+	+
Harbour/port	+	+

Flood control	+	+
Irrigation (incl. agricultural water supply)		+
Mineral exploration (excl. hydrocarbons)		+
Oil/gas exploration	+	+
Transport route	+	+
Domestic water supply		+
Urban development		+
Non-urbanised settlements		+
Military activities	+	+
Horticulture (incl. market gardening)		+

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

Explanation of reporting category:

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

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
Disturbance to vegetation through cutting / clearing	1	Reedbeds being cut and cleared on margins of pits associated with angling. Management agreements and enforcement to address.	+		
Vegetation succession	1	Lack of reedbed management leading to scrub encroachment. Management agreement to address.	+		
Water diversion for irrigation/domestic/industrial use	1	Abstraction causes reduced freshwater input. Review of consents well advanced but not yet implemented.	+	+	
Overfishing	2	Substantial lamprey by-catch in eel nets in River Ouse.		+	
Pollution – domestic sewage	1	Reduced dissolved oxygen in River Ouse is a barrier to fish migration. Review of consents well advanced but not yet implemented.	+	+	+
Pollution – agricultural fertilisers	1	Reduced dissolved oxygen in River Ouse is a barrier to fish migration. To be addressed through Catchment Sensitive Farming Initiatives and implementation of Water Framework Directive.	+	+	+
Recreational/tourism disturbance (unspecified)	1	Particularly illegal access by motorised recreational vehicles and craft. Control through management scheme.	+		

Other factor	1	Coastal squeeze causing loss of intertidal habitats and saltmarsh due to sea level rise and fixed defences. The Humber Flood Risk Management Strategy has been developed and is being implemented.	+		+

For category 2 factors only.

What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?
Overfishing - Overfishing – to be considered through an ‘in-combination’ assessment of possible factors as part of the Review of Consents exercise.

Is the site subject to adverse ecological change? YES

27. Conservation measures taken:

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

Conservation measure	On-site	Off-site
Site/ Area of Special Scientific Interest (SSSI/ASSI)	+	+
National Nature Reserve (NNR)	+	
Special Protection Area (SPA)	+	
Land owned by a non-governmental organisation for nature conservation	+	+
Management agreement	+	+
Site management statement/plan implemented	+	
Area of Outstanding National Beauty (AONB)		+
Special Area of Conservation (SAC)	+	
IUCN (1994) category IV	+	

b) Describe any other current management practices:

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

28. Conservation measures proposed but not yet implemented:

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

No information available

29. Current scientific research and facilities:

e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Fauna.

Numbers of migratory and wintering wildfowl and waders are monitored annually as part of the national Wetland Birds Survey (WeBS) organised by the British Trust for Ornithology, Wildfowl & Wetlands Trust, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.

Seal populations are monitored by the Sea Mammal Research Unit

Humber Wader Ringing Group

Spurn Bird Observatory

National Nature Reserve monitoring

Environment.

Institute of Estuarine & Coastal Studies, Hull: various

Industrial Concerns: monitoring on behalf of companies such as Associated British Ports and BP

Environment Agency monitoring: various

Geomorphological studies associated with shoreline management planning

National Nature Reserve monitoring

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

There are four National Nature Reserves with associated facilities within the Ramsar site (Spurn, Far Ings, Donna Nook and Saltfleetby – Theddlethorpe Dunes) and a number of other visitor, information and/or education centres including the Spurn Bird Observatory, the Cleethorpes Discovery Centre, Water's Edge and Far Ings. A wide range of Humber wide and area-specific information is available through a range of media (eg leaflets, displays, internet etc) including 'Humber Estuary European Marine Site Codes of Conduct' developed with a range of stakeholders to cover a range of recreational and educational activities and 'Coastal Futures' – a partnership project working with local communities affected by flood risk and associated issues including managed realignment includes proactive education work within schools.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Activities, Facilities provided and Seasonality.

Sailing: marinas at Brough, Winteringham, Hull, Grimsby and South Ferriby.

Bathing etc: Cleethorpes (some 6m visitors/yr).

Walking/Horse riding: throughout

Beach fishing, match sea-fishing, non-commercial bait digging.

Non-commercial samphire collection

Wildfowling

Tourist amusements: Cleethorpes.

Bird watching: throughout but particularly at Blacktoft Sands RSPB reserve and the four National Nature Reserves.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.

Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs,

European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6EB

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House, Northminster Road, Peterborough, PE1 1UA, UK

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

Site-relevant references

Site-relevant references

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Information Sheet on Ramsar Wetlands (RIS)

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

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

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

Joint Nature Conservation Committee

Monkstone House

City Road

Peterborough

Cambridgeshire PE1 1JY

UK

Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948

Email: RIS@JNCC.gov.uk

FOR OFFICE USE ONLY.

DD MM YY

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

Designated: 08 June 1993

3. Country:

UK (England)

4. Name of the Ramsar site:

Lower Derwent Valley

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

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

6. **For RIS updates only**, changes to the site since its designation or earlier update:

a) Site boundary and area:

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

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

7. Map of site included:

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

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

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

b) Describe briefly the type of boundary delineation applied:

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

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

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

8. Geographical coordinates (latitude/longitude):

53 53 04 N 00 55 34 W

9. General location:

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

Nearest town/city: York

The site lies approximately 10 km east of York, much of it on the boundary between North Yorkshire and East Yorkshire.

Administrative region: East Riding of Yorkshire; North Yorkshire; York

10. Elevation (average and/or max. & min.) (metres): **11. Area** (hectares): 915.45

Min. 4

Max. 7

Mean 5

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The Lower Derwent Valley represents one of the most important examples of traditionally managed species-rich alluvial flood meadow habitat remaining in the UK. These grasslands, which were formerly widespread, are now very restricted in distribution due to agricultural improvement. The river and these floodlands play a substantial role in the hydrological and ecological functioning of the internationally important Humber basin.

13. Ramsar Criteria:

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

1, 2, 4, 5, 6

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 1

The site represents one of the most important examples of traditionally managed species-rich alluvial flood meadow habitat remaining in the UK.

The river and flood meadows play a substantial role in the hydrological and ecological functioning of the Humber Basin.

Ramsar criterion 2

The site has a rich assemblage of wetland invertebrates including 16 species of dragonfly and damselfly, 15 British Red Data Book wetland invertebrates as well as a leafhopper, *Cicadula ornata* for which Lower Derwent Valley is the only known site in Great Britain.

Ramsar criterion 4

The site qualifies as a staging post for passage birds in spring. Of particular note are the nationally important numbers of Ruff, *Philomachus pugnax* and Whimbrel, *Numenius phaeopus*.

Ramsar criterion 5

Assemblages of international importance:

Species with peak counts in winter:

31942 waterfowl (5 year peak mean 1998/99-2002/2003)

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

Qualifying Species/populations (as identified at designation):

Species with peak counts in winter:

Eurasian wigeon , <i>Anas penelope</i> , NW Europe	8350 individuals, representing an average of 2% of the GB population (5 year peak mean 1998/9-2002/3)
Eurasian teal , <i>Anas crecca</i> , NW Europe	4200 individuals, representing an average of 1% of the population (5 year peak mean 1998/9-2002/3)

Contemporary data and information on waterbird trends at this site and their regional (sub-national) and national contexts can be found in the Wetland Bird Survey report, which is updated annually. See www.bto.org/survey/webs/webs-alerts-index.htm.

See Sections 21/22 for details of noteworthy species

Details of bird species occurring at levels of National importance are given in Section 22

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

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

a) biogeographic region:

Atlantic

b) biogeographic regionalisation scheme (include reference citation):

Council Directive 92/43/EEC

16. Physical features of the site:

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

Soil & geology	neutral, sand, clay, alluvium, peat, nutrient-poor, sedimentary
----------------	---

Geomorphology and landscape	lowland, valley, floodplain
Nutrient status	mesotrophic
pH	circumneutral
Salinity	fresh
Soil	mainly mineral
Water permanence	usually seasonal / intermittent
Summary of main climatic features	Annual averages (High Mowthorpe, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/high_mowthorpe_.html) Max. daily temperature: 11.6° C Min. daily temperature: 5.1° C Days of air frost: 52.5 Rainfall: 729.4 mm Hrs. sunshine: 1397.9

General description of the Physical Features:

The Lower Derwent Valley is a major floodplain system holding a series of neutral alluvial flood meadows, fens, swamps, valley mires, alder *Alnus glutinosa* woodlands and other freshwater habitats lying adjacent to the River Derwent, Pocklington Canal and The Beck.

17. Physical features of the catchment area:

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

The Yorkshire River Derwent catchment area covers approximately 2000 km² and includes the River Derwent, River Rye, Sea Cut, River Hertford, Costa Beck, Bielby Beck, Pocklington Canal and other tributaries. The rivers rise in the Vales of Pickering and York, Yorkshire Wolds and North York Moors before joining the River Derwent which joins the River Ouse at a tidal barrage at Barmby.

The River Derwent, its tributaries and associated wetlands are highly valued for nature conservation, ecology and landscape. The river is used extensively for public water supply and for recreation.

18. Hydrological values:

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

Flood water storage / desynchronisation of flood peaks, Maintenance of water quality (removal of nutrients), Water supply

19. Wetland types:

Inland wetland

Code	Name	% Area
4	Seasonally flooded agricultural land	81.9
Ts	Freshwater marshes / pools: seasonal / intermittent	8.7
M	Rivers / streams / creeks: permanent	6.6
Tp	Freshwater marshes / pools: permanent	2.2
W	Shrub-dominated wetlands	0.4
Xf	Freshwater, tree-dominated wetlands	0.2

20. General ecological features:

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

The Lower Derwent Valley contains extensive species-rich flood meadows, fens, swamps and wet woodland. The main vegetation types over 20 ha in extent are MG4; MG7c; MG8; MG9; MG13; S5; S19; S28; *Carex acuta* in swamps and fens; OV32.

Ecosystem services

21. Noteworthy flora:

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

Nationally important species occurring on the site.**Higher Plants.**

Lathyrus palustris, *Sium latifolium*, *Oenanthe silaifolia*, *Persicaria laxiflora*, *Potamogeton trichoides*

22. Noteworthy fauna:

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

Birds**Species currently occurring at levels of national importance:****Species regularly supported during the breeding season:**

Black-necked grebe , <i>Podiceps nigricollis</i> <i>nigricollis</i> , Europe, N Africa	11 pairs, representing an average of 35.4% of the GB population (5 year mean 1994-1998)
Great bittern , <i>Botaurus stellaris stellaris</i> , W Europe, NW Africa	1 individuals, representing an average of 4.7% of the GB population (5 year mean 1994-1998)
Garganey , <i>Anas querquedula</i> , W Africa/Europe	15 pairs, representing an average of 65.2% of the GB population (5 year mean 1994-1998)
Common quail , <i>Coturnix coturnix</i> , Europe	41 pairs, representing an average of 7.9% of the GB population (5 year mean 1994-1998)
Spotted crane , <i>Porzana porzana</i> , Europe	9 individuals, representing an average of 12.3% of the GB population (5 year mean 1994-1998)
Black-headed gull , <i>Larus ridibundus</i> , N & C Europe	2240 pairs, representing an average of 1.7% of the GB population (5 year mean 1994-1998)

Species with peak counts in winter:

Whooper swan , <i>Cygnus cygnus</i> , Iceland/UK/Ireland	63 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)
Gadwall , <i>Anas strepera strepera</i> , NW Europe	286 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3)
Mallard , <i>Anas platyrhynchos platyrhynchos</i> , NW Europe	3850 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3)
Northern pintail , <i>Anas acuta</i> , NW Europe	295 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3)

Northern shoveler , <i>Anas clypeata</i> , NW & C Europe	232 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3)
Water rail , <i>Rallus aquaticus</i> , Europe	8 individuals, representing an average of 1.7% of the GB population (5 year peak mean 1998/9-2002/3)
European golden plover , <i>Pluvialis apricaria apricaria</i> , P. a. altifrons Iceland & Faroes/E Atlantic	4800 individuals, representing an average of 1.9% of the GB population (5 year peak mean 1998/9-2002/3)
Ruff , <i>Philomachus pugnax</i> , Europe/W Africa	115 individuals, representing an average of 16.4% of the GB population (5 year peak mean 1998/9-2002/3)

Species Information

Nationally important species occurring on the site.

Invertebrates.

Panagaeus cruxmajor, *Dytiscus dimidiatus*, *Saprinus virescens*, *Hydraena palustris*, *Atheta terminalis*, *Parphotistus nigricornis*, *Hypera diversipunctata*, *Rhamphomyia phyoprocta*, *Hilara brevittata*, *H. merula*, *Dolichopus cilifemoratus*, *Herrostomus angustifrons*, *Antichaeta analis*, *A. obliviosa*, *Dichetophora finlandica*

23. Social and cultural values:

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

Aesthetic
Archaeological/historical site
Environmental education/ interpretation
Livestock grazing
Non-consumptive recreation
Scientific research
Traditional cultural

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

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

- i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:
 - ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
 - iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
 - iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:
-

24. Land tenure/ownership:

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

25. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	+
Recreation	+	+
Current scientific research	+	
Commercial forestry		+
Fishing: recreational/sport	+	+
Arable agriculture (unspecified)		+
Permanent arable agriculture		+
Grazing (unspecified)	+	+
Hay meadows	+	+
Hunting: recreational/sport	+	+
Sewage treatment/disposal	+	+
Flood control	+	
Irrigation (incl. agricultural water supply)	+	+
Transport route		+
Domestic water supply	+	+
Urban development		+
Non-urbanised settlements		+

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

Explanation of reporting category:

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

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
Water diversion for irrigation/domestic/industrial use	1		+		
Reservoir/barrage/dam impact: flooding	1		+		

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For category 2 factors only.

What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?

Is the site subject to adverse ecological change? NO

27. Conservation measures taken:

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

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

b) Describe any other current management practices:

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

28. Conservation measures proposed but not yet implemented:

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

No information available

29. Current scientific research and facilities:

e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Fauna.

Numbers of migratory and wintering wildfowl and waders are monitored annually as part of the national Wetland Birds Survey (WeBS) organised by the British Trust for Ornithology, Wildfowl & Wetlands Trust, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.

Migratory whimbrel.

All important breeding birds.

Otter populations.

Environment.

Biological and chemical water quality (routine).

Miscellaneous.

Research has been undertaken under the Lower Derwent Project into the hydrological and ecological functioning of the river, inlets and associated features of wildlife interest.

Eutrophication and its effects on invertebrate communities.

Habitat requirements of farmland birds.

Flora.

NVC survey has been undertaken for much of the site.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

Guided walks and lectures are available on request. There are interpretation panels on the site and a site leaflet is available. The site is well used as an educational facility for schools, work-experience placements and for undergraduate/postgraduate demonstrations, placements and projects. It is also used by NGOs for staff development.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Activities, Facilities provided and Seasonality.

There is no significant regular use of the site for recreation or tourism.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.

Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs, European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6EB

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House, Northminster Road, Peterborough, PE1 1UA, UK

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

Site-relevant references

ADAS (1990) *Botanical monitoring North Duffield Carrs, North Yorkshire*. Unpublished report from ADAS Land Management Services, to British Coal Corporation

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Shirt, DB (ed.) (1987) *British Red Data Books: 2. Insects*. Nature Conservancy Council, Peterborough

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