

One Earth Solar Farm

Volume 5.0: Reports and Statements [EN010159]

Shadow Habitats Regulations Assessment

February 2025

Document Reference: EN010159/APP/5.3.2

Revision 03

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009
– Reg 5 (2) (g)

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1. Introduction

- 1.1.1 This Shadow Habitats Regulations Assessment (HRA) has been prepared by Logika for the One Earth Solar Farm (the ‘Proposed Development’) and presents the information necessary for the competent authority (in this case the Secretary of State for the Department for Energy Security and Net Zero) to fulfil their duties under the Conservation of Habitats and Species Regulations 2017 (as amended) (known as the “Habitats Regulations”).
- 1.1.2 The Proposed Development will involve the installation, operation (including maintenance) and decommissioning of solar photovoltaic (PV) panels, Battery Energy Storage Systems (BESS) and associated grid connection infrastructure which will allow for the generation and export of electricity to the proposed High Marnham substation.
- 1.1.3 Council Directive 92/43/EEC on the conservation of wild fauna and flora (known as the Habitats Directive) and Directive 2009/147/EC on the conservation of wild birds (known as the Birds Directive) have been transposed into English and Welsh legislation through the Conservation of Habitats and Species Regulations 2017 (as amended) (known as the ‘Habitats Regulations’). These regulations provide, among other things, a framework for the protection of European sites¹.
- 1.1.4 The Habitats Regulations defines the approach for the assessment of the implications for European sites as a result of the implementation of proposed plans and projects. This process is known as a “Habitats Regulations Assessment”. There are a number of guidance documents/web-based information provided by Government agencies that describe the process. The most relevant for the One Earth project are:
- > Habitats Regulations Assessment: protecting a European site (2021)²; and
 - > Appropriate assessment – Guidance on the use of Habitats Regulations Assessment (2019)³.
- 1.1.5 In determining whether or not a plan or project can be adopted or consented, the competent authority must comply with Regulation 63 of the Habitat Regulations.

¹ European sites are Special Areas of Conservation (SAC) and Special Protection Areas (SPA). As a matter of Government policy proposed SACs, potential SACs, Ramsar site and areas secured as sites compensating for damage to a European site are also treated in the same manner.

² Department for Environment, Food & Rural Affairs, Natural England, Welsh Government and Natural Resources Wales (2021); Habitats Regulations Assessment: protecting a European site, last updated December 2023.

³ Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2019); Appropriate assessment – Guidance on the use of Habitats Regulations Assessment.

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

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

Is not directly connected with or necessary to the management of the site,

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

“63(2) A person applying for any such consent, permission or other authorisation must provide such information as the competent authority may reasonably require for the purposes of the assessment or to enable it to determine whether an appropriate assessment is required.”

“63(5) In the light of the conclusions of the assessment, and subject to regulation 64, the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site or the European offshore marine site (as the case may be).”

“68 Where in accordance with 64 –

- a. A plan or project is agreed, notwithstanding a negative assessment of the implications for a European site or a European offshore marine site, or*
- b. A decision, or a consent, permission or other authorisation, is affirmed on review, notwithstanding such an assessment,*

The appropriate authority must secure that any necessary compensatory measures are taken to ensure that the overall coherence of Natura 2000⁴ is protected.”

1.1.6 In order to undertake an assessment that accords with legislation, a staged process has developed over time that has been shaped by guidance and case law.

1.1.7 There are three recognised stages to the HRA process. These being:

Stage 1 – Screening. This stage identifies LSE that may occur due to the implementation of a plan or project alone or in-combination with other plans and projects in the absence of mitigation. If LSE are identified, assessment at Stage 2 is required. In the event that no LSE are identified, no further assessment or stages are necessary;

⁴ To be construed as ‘The national site network’, per Regulation 3(10) of the Conservation of Habitats and Species Regulations 2017 (as amended), inserted by Regulation 4(4) of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019/579.

Stage 2 – Appropriate assessment. This stage focuses on establishing, beyond reasonable scientific doubt, whether any of the LSE may adversely affect the integrity of a European site in light of its conservation objectives⁵, either alone or in combination with other plans and projects; where no adverse effect on site integrity is identified Stage 3 is not necessary. This Report presents the findings of the Appropriate Assessment at Stage 2;

Stage 3 – Derogation. This stage considers an assessment of alternatives. Where an adverse effect on site integrity is concluded, it is necessary to determine whether there are alternatives to the proposed plan or project that would avoid or lessen the effects on a European site(s). It also considers Imperative Reasons of Overriding Public Interest (IROPI). Where there are no alternative solutions available, an IROPI assessment is undertaken to determine the need for the plan or project with respect to the type and scale of the public benefit.

1.1.8 The Proposed Development can be considered “a project” with reference to the Habitats Regulations making it necessary for the competent authority to undertake an appropriate assessment of Likely Significant Effects (LSE) in European sites as a result of the project alone and in-combination with other plans and projects. This Shadow HRA includes:

- > A summary of the Habitats Regulations Assessment process;
- > An HRA screening assessment for the Proposed Development;
- > Appropriate assessment of the LSE on European sites; and
- > In-combination assessment considering other plans and projects.

⁵ Defined by the European Commission in Commission Note on Setting Conservation Objectives for Natura 2000 sites (2012) as ‘*the specification of the overall target for the species and/or habitat types for which a site is designated, in order for it to contribute to maintaining or reaching favourable conservation status of the habitats and species concerned at the national, the bio-geographical or the European level*’.

Available at <https://circabc.europa.eu/sd/a/68834981-033a-4d8e-b306-54dd8b6f48fa/Commission%20note%20on%20setting%20conservation%20objectives.pdf> [accessed 06/02/2025]

2. Stage 1: HRA Screening Methodology

- 2.1.1 The basis for the HRA screening methodology described in this report is taken from case C-127/02⁶ of the CJEU, known as the ‘Waddenzee decision’. Paragraph 44 of the decision states *“In the light, in particular, of the precautionary principle.....such a risk exists if it cannot be excluded on the basis of objective information that the plan or project will have significant effects on the site concerned.”*
- 2.1.2 Guidance on the screening stage has been provided by the Government⁷ who describe it as a simple assessment to check if a proposal:
- “is directly connected with or necessary for the conservation management of a European site;*
- risks having a significant effect on a European site on its own or in combination with other proposals”.*
- 2.1.3 As the Proposed Development is not directly connected to the conservation management of European sites it must be assessed in terms of the risk of significant effects on European sites it poses, either alone or in combination with other plans programmes or projects.
- 2.1.4 Consideration of Stage 2 – Appropriate Assessment is only required if one or more LSE are identified at the screening stage. Those potential effects discounted must be done so on the basis that there is no identifiable effect pathway or there is objective and scientific information available that supports the decision.
- 2.1.5 Proposed or potential mitigation measures cannot be considered during the screening stage in accordance with the judgement made in Case C-323/17⁸ (known as ‘People over Wind’) in 2018. Therefore, the screening assessment below does not take into account any measures or policy that are specifically intended to reduce harmful effects on a European site(s).
- 2.1.6 To identify potential effects it is necessary to understand what effects the construction, operation (including maintenance) and decommissioning of a solar

⁶ Transcript of judgement C127/02 available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:62002CJ0127> [accessed 20/01/2025]

⁷ Department of Environment, Food and Rural Affairs, Natural England, Welsh Government and Natural Resources Wales (2023) Habitats regulations assessments: protecting a European site. Available at <https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site#screening> [accessed 07/02/2025]

⁸ Transcript of judgement C323/17 available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A62017CJ0323> [accessed 20/01/2025]

farm could have on the designated features (and the habitats and species that support them both within and outside of a site boundary (i.e. functionally linked land, as per Case C-461/17⁹) of European sites. The One Earth Solar Farm lies more than 10km away from any European site. Hence, all potential effects are associated with mobile fauna that could use habitats within or close to the Order Limits as functionally linked land. These are:

- > Loss of foraging and roosting habitat for non-breeding birds;
- > Loss of foraging and roosting habitat for bats;
- > Loss or degradation of spawning and nursery habitats for anadromous fish associated with the River Trent.

2.1.7 In order to ascertain the European sites that may be affected by the Proposed Development it is necessary to identify precautionary Zones of Influence (Zoi) for each potential effect.

2.1.8 The Chartered Institute of Ecology and Environmental Management (CIEEM) defines the Zoi in their “Guidelines for Ecological Impact Assessment in the UK and Ireland” (2018, updated 2024) as:

“The Zone of Influence for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities.”

2.1.9 The Zoi used within this HRA screening assessment are:

30km for non-breeding birds based on mean flight distances published by Johnson et al. 2014¹⁰:

12km for bats based on the distances provided in the Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol¹¹; and

European sites connected to the River Trent (upstream or downstream) directly or via tributaries.

⁹ Transcript of judgement C461/17 available at https://eur-lex.europa.eu/case/EN/C_461_17 [accessed 20/01/2025]

¹⁰ Johnson, W.P, Schmidt, P.M & Taylor, D.P. (2014) Foraging flight distances of wintering ducks and geese: a review. *Avian & Conservation Ecology* 9(2): 2

¹¹ South Downs National Park Authority and Natural England (2018) Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol. Available at [TLL-15-Draft-Sussex-Bat-SAC-Protocol.pdf](#) [accessed 17/01/2025]

2.1.10 The Zones of Influence for the One Earth Solar Farm project have been discussed and agreed with Natural England as reasonable.

3. Stage 1: HRA Screening Outcome

- 3.1.1 There are no European sites that lie within 30km of the Proposed Development that support wintering birds as designated features.
- 3.1.2 There are no European sites that lie within 12km of the Proposed Development that support bats as designated features.
- 3.1.3 There is only a single European site that is connected to the River Trent that supports anadromous fish (see map in Appendix A.1). This is the Humber Estuary Ramsar site and Special Area of Conservation. The citations for these European sites and a copy of the conservation objectives for the Humber Estuary SAC can be found in Appendix A.2.
- 3.1.4 The Humber Estuary Ramsar site is designated under a range of criteria¹²:
- Criterion 1 as an example of a near natural estuary with the following component habitats: dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes and coastal brackish/saline lagoons;
 - > Criterion 3 for supporting a breeding colony of grey seal;
 - Criterion 5 for supporting a waterfowl assemblage of international importance during the non-breeding season;
 - Criterion 6 for supporting internationally important numbers of species during the passage period (golden plover, red knot, dunlin, black-tailed godwit and common redshank) and internationally important numbers of species over winter (shelduck, golden plover, red knot, dunlin, black-tailed godwit, bar-tailed godwit and common redshank);
 - > Criterion 8 for an important migration route for river lamprey and sea lamprey between coastal waters and spawning areas.
- 3.1.5 The Humber Estuary SAC¹³ is designated for:

¹² Ramsar Convention on Wetlands (1971) The Ramsar Sites Criteria – The nine criteria for identifying wetlands of international importance. Available at https://www.ramsar.org/sites/default/files/documents/library/ramsarsites_criteria_eng.pdf [Accessed 07/02/2025].

¹³ JNCC (2015) Standard Data Form for sites within the 'UK national site network of European sites'. The Humber Estuary SAC. Available at <https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0030170.pdf> [Accessed 07/02/2025]

Annex I¹⁴ habitats that are a primary reason for selection.

- > Estuaries (1130); and
- > Mudflats and sandflats not covered by seawater at low tide (1140).

Annex I habitats that are not a primary reason for site selection.

- > Sandbanks which are slightly covered by sea water all the time (1110);
- > Coastal lagoons (1150);
- > Salicornia and other annuals colonizing mud and sand (1310);
- > Atlantic salt meadows (1330);
- > Embryonic shifting dunes (2110);

Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120);

- > Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130); and
- Dunes with *Hippopha ramnoides* (2160).

Annex II species that are not a primary reason for site selection.

- > Sea lamprey (1095);
- > River lamprey (1099);
- > Grey seal (1364).

3.1.6 The designated features that require consideration in a Stage 2: Appropriate assessment are sea lamprey and river lamprey. This is because they may be present or pass through areas of the Proposed Development within the River Trent or connected watercourses and wet ditches.

3.1.7 The potential for in-combination effects are associated with plans or projects that could result in potential LSE on the River Trent. These are considered in Stage 2: Appropriate Assessment.

¹⁴ Annex I habitats as defined in Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora. Available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A01992L0043-20130701> [accessed 07/02/2025]

4. Stage 2: Appropriate Assessment

- 4.1.1 No part of the Proposed Development requires any construction activity within the Humber Estuary Ramsar site and SAC. The LSE are all related to the potential for adult lamprey (sea and river) to be affected when swimming upstream to reach spawning gravels and juvenile lamprey (ammocetes) residing in silts.
- 4.1.2 During the construction period adult and juvenile lamprey could be disturbed by construction works, in particular noise and vibration created by the trenchless crossing that is specified to install transmission cables beneath the River Trent and any minor watercourses and wet ditches. In addition, disturbance may also be caused by noise and vibration associated with the installation of nine clear span bridges across minor watercourses and wet ditches to facilitate access. Installation of other infrastructure (such as the frames to support solar PV panels) are all in locations set back from freshwater habitats through design and are not expected to result in heightened levels of disturbance to lamprey. The construction works also have the potential to result in the loss of fine material and other pollutants into freshwater habitats. This would be both through losses from landbased activity (e.g. polluted run off) and through the risk of drilling fluid breaking out to the surface (i.e. river bed) associated with a trenchless crossing failing.
- 4.1.3 Environmental measures to manage these risks are described within the Commitments Register and would be secured through an outline CEMP to be included as part of the DCO submission (See **Volume 7 [EN010159/APP/7.15]**). A Construction Environmental Management Plan (CEMP) would be produced prior to the commencement of construction in line with the outline CEMP (see **Volume 7: Other Document [EN010159/APP/7.15]**) The measures are as follows:

All transmission cables will be installed beneath the River Trent and minor watercourses / wet ditches through the use of trenchless crossing. Minimum drill head depth below river bed will be 5m for the River Trent and 2.5m for minor watercourses / wet ditches (commitment C2);

Minimum distance of 16m to be maintained between proposed construction works and the bank top of the River Trent (commitment C4);

Minimum distance of 8m to be maintained between proposed construction works and the bank top of minor watercourses / wet ditches other than at access points (commitment C4);

- > Crossing points of minor watercourses / wet ditches will be achieved through use of clear span bridges (commitment C7), as opposed to culverts;

Good housekeeping measures will be implemented to manage the risk of pollutant escape (including fine materials) (commitment C14);

- > Monitoring of the effects of EMF on river and sea lamprey will be undertaken in coordination with the Environment Agency (commitment C12).

- 4.1.4 The construction works will inevitably result in the creation of noise and vibration. However, the setback from the bank tops will minimise this as the majority of noise and vibration will be associated with the drilling rigs delivering the trenchless crossing. Further, the trenchless crossing of each cable beneath a waterway will be installed relatively quickly (e.g. within 24 to 48 hours). Similarly the installation of clear span bridges will be relatively rapid with bridge footings being installed at each location (nine crossings are shown on the indicative masterplan) within one to three days. The short duration of these works are likely to restrict any disturbance of river or sea lamprey to the point where it does not result in a reduction in fitness of the local population or any individuals.
- 4.1.5 Appropriate management of the construction site to ensure chemicals (including hydrocarbons), dust and fines do not result in detectable differences in water quality will be implemented as a matter of course. The stand off distance to the bank top provides sufficient space to enable actions to be taken to control any issues that arise such as silt laden run-off or any chemical spills. Further, the careful design (including sufficient drill head depth under hard bed level) and management of the trenchless crossing activity (e.g. monitoring fluid pressure, appropriate viscosity of drilling fluid etc.) mean that the risk of drilling fluids reaching the surface can be managed effectively with very low risk.
- 4.1.6 During operation the transmission cables will emit electro-magnetic fields (EMF) and heat. These could result in changes in behaviour by adult and juvenile lamprey altering distribution or acting as a barrier to movement (particularly EMF). These potential effects have been considered in detail during the examination of the West Burton Solar Project¹⁵ and discounted as a significant adverse effect.
- 4.1.7 The trenchless crossing for the Proposed Development will install the cables beneath the bed of the River Trent at a minimum depth of 5m below bed level, and below smaller water features at a minimum depth of 2.5m. EMF and heat generation result in environmental changes that dissipate rapidly with distance from the cables. Changes in EMF and heat are unlikely to be detectable within a few metres (likely under 1.5m) from each cable. At the minimum specified depths no effects would be expected¹⁶. To inform future consideration of lamprey and EMF, monitoring (described within the Commitments Register) will be

¹⁵ West Burton Solar Project (2024) The Applicant's responses to written representations and other submissions at Deadline 1/; Part 1 – Appendix 1 Risk Assessment of EMF Impacts on Fish. Available at <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010132-001329-WB8.1.17%20Response%20to%20Written%20Representations%20at%20Deadline%201%20Part%201.pdf>

¹⁶ Based on information provided in paragraph 2.6.76 of the National Policy for Renewable Energy Infrastructure (EN-3) (2011). It is noted that the updated version of the NPS does not repeat this paragraph.

implemented in coordination with the Environment Agency and Natural England (as has been requested of other solar developers in the general locale¹⁷).

- 4.1.8 The Proposed Development will have negligible effects on river and sea lamprey associated with the Humber Estuary Ramsar site and SAC due to the implementation of effective mitigation measures that are routinely implemented on construction projects across the UK (secured within the CEMP). Further, the burial depth of transmission cables will likely be effective (based on the scientific literature available) in ensuring that neither EMF or heat alter the behaviour of adult or juvenile lamprey. Precautionary monitoring is also to be undertaken to provide further confidence to this conclusion and that of future projects that have transmission cables installed beneath rivers supporting river and sea lamprey (secured via the Commitments Register). Overall, neither the construction or operation of the Proposed Development will result in an adverse effect on the integrity of the Humber Estuary Ramsar site and SAC.
- 4.1.9 The potential for the Proposed Development to act in-combination with other plans and projects to result in adverse effects on river and sea lamprey is very low.
- 4.1.10 Noise and vibration caused by installation of transmission cables and clear span bridges for the Proposed Development will be so short in duration¹⁸, that even should an overlap occur with other plans or projects up or downstream the potential for a cumulative effect to be realised on any individual sea or river lamprey is negligible. This is because the areas affected would be highly localised and therefore any displacement of individuals would last for short periods (measured in hours) only. Even if this occurs at a small number of locations separated geographically at the same time the combined effect on numbers and distribution of river and sea lampreys would likely be undetectable.
- 4.1.11 The projects that could result in an in-combination impact are those that propose to install other transmission cables beneath the River Trent. These projects include the consented Gate Burton Energy Park [EN010131], Cottam Solar Project [EN010133] and West Burton Solar Project [EN010132]. This could result in the EMF or heating effects acting as barriers to movement of sea and river lamprey. As the number of barriers to movement (noting that they would not be

¹⁷ West Burton Solar Project (2024) Outline Operational Environmental Management Plan (Revision D) – available at <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010132/EN010132-001762-West%20Burton%20Solar%20Project%20Limited%20-%20Any%20further%20information%20requested%20by%20ExA%202024.pdf>

¹⁸ Clear span bridge installation would be expected to result in noise and disturbance within freshwater habitats during three distinct activities (1) footing creation on one bank, (2) footing creating on opposite bank, (3) lifting of bridge into place. Each of these activities will be completed in a matter of hours and there will be periods when no activity is undertaken (e.g. over-night). Disturbance from trenchless crossings will be mainly associated with active drilling. Details of each drill beneath the River Trent will be submitted for approval but are likely to be drilled within 24 hours to 72 hours.

absolute barriers as changes in depth of swim profile, current strength etc.) increase the result could be the lowering of population health as less adults reach spawning gravels upstream and fewer juveniles make it to the estuary. Although it is considered unlikely that individual cables or a number of cables will result in changes to lamprey behaviour the lack of robust scientific evidence regarding river and sea lamprey means that a precautionary approach must be adopted.

- 4.1.12 This precautionary approach has been evidenced within the Statement of Common Ground between the consented West Burton Solar Project¹⁹ and the Environment Agency. It has been agreed that the potential for an effect to be realised is low. It has also been agreed that a suitable approach to resolving any remaining concerns is to secure monitoring of river and sea lamprey in the vicinity of the transmission cables to provide more robust evidence for future consideration of this issue.
- 4.1.13 As there is not predicted to be any barrier to movement associated with individual transmission cables, the spread of any direct effect on individuals can be measured within a few metres at most and no transmission cables from individual plans and projects are geographically close (being several kilometres apart) no in-combination effects are predicted. Therefore, no adverse effects on the integrity of the Humber Estuary Ramsar site and SAC are expected for the Proposed Development alone or in-combination with other plans and projects.
- 4.1.14 A summary of the pathways of effects on qualifying features of the Humber Estuary SAC and Ramsar site are provided in Appendix A.2.

¹⁹ EN010132-001847-West Burton Solar Project Limited - Final Statements of Common Ground in clear and tracked changes versions 3.pdf (main topic reference ECO-12) [accessed 19/01/2025]

A.1 Location map



A.2 Information requirements

A.2.1.1. A summary table of all European sites and qualifying features for each pathway of effect considered at Stage 1 and Stage 2 of the assessment is provided in the table below

European Site	Qualifying features	Pathway of Effect	Stage 1 outcome	Stage 2 outcome
Humber Estuary SAC	<p>Estuaries (1130) Mudflats and sandflats not covered by seawater at low tide (1140).</p> <p>Sandbanks which are slightly covered by sea water all the time (1110);</p> <p>Coastal lagoons (1150);</p> <p>Salicornia and other annuals colonizing mud and sand (1310);</p> <p>Atlantic salt meadows (1330); Embryonic shifting dunes (2110);</p> <p>Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) (2120);</p> <p>Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130);</p>	No pathway of effect due to distance from the Proposed Development with subsequent lack of potential for indirect effects to occur	Screened out	N/A

European Site	Qualifying features	Pathway of Effect	Stage 1 outcome	Stage 2 outcome
	Dunes with Hippopha ramnoides (2160). Grey seal (1364).			
Humber Estuary SAC	Sea lamprey (1095) River lamprey (1099)	Potential pathways of effect of mobile features using functionally linked habitats Construction: Noise and vibration Pollutant loss (dust, run-off, hydrocarbons) Operation: EMF production Decommissioning: N/A	Screened in for construction and operational effects Screened out for decommissioning as cable ducts will remain in situ at decommissioning	No adverse effect on integrity of the Humber Estuary SAC during construction. No adverse effect on integrity of the Humber Estuary SAC during operation.
Humber Estuary Ramsar site	Criterion 1: qualifies as an example of a near natural estuary with the following component habitats: dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes and coastal brackish/saline lagoons; Criterion 3: qualifies for supporting a breeding colony of grey seal;	No pathway of effect due to distance from the Proposed Development with subsequent lack of potential for indirect effects to occur	Screened out	N/A

European Site	Qualifying features	Pathway of Effect	Stage 1 outcome	Stage 2 outcome
	<p>Criterion 5: qualifies for supporting a waterfowl assemblage of international importance during the non-breeding season;</p> <p>Criterion 6: qualifies for supporting internationally important numbers of species during the passage period (golden plover, red knot, dunlin, black-tailed godwit and common redshank) and internationally important numbers of species over winter (shelduck, golden plover, red knot, dunlin, black-tailed godwit, bar-tailed godwit and common redshank).</p>			
Humber Estuary Ramsar site	Criterion 8: qualifies for an important migration route for river lamprey and sea lamprey between coastal waters and spawning areas.	<p>Potential pathways of effect of mobile features using functionally linked habitats</p> <p>Construction:</p> <p>Noise and vibration Pollutant loss (dust, run-off, hydrocarbons)</p> <p>Operation:</p>	<p>Screened in for construction and operational effects</p> <p>Screened out for decommissioning as cable ducts will remain in situ at decommissioning</p>	<p>No adverse effect on integrity of the Humber Estuary Ramsar site during construction.</p> <p>No adverse effect on integrity of the Humber Estuary Ramsar site during operation.</p>



European Site	Qualifying features	Pathway of Effect	Stage 1 outcome	Stage 2 outcome
		EMF production Decommissioning: N/A		

- A.2.1.2. A copy of the citation of the Humber Estuary SAC and Humber Estuary Ramsar sites is provided below.
- A.2.1.3. This is followed by a copy of the conservation objectives for the Humber Estuary SAC.

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		

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:

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Produced by JNCC: Version 3.0, 13/06/2008

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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

Information Sheet on Ramsar Wetlands (RIS), page 3

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)

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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)

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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. <i>altifrons</i> 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)
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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)
--	--

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. <i>altifrons</i> 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)
--	--

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 , <i>Limosa limosa islandica</i> , Iceland/W Europe	1113 individuals, representing an average of 3.2% of the population (1996/7 to 2000/1)
Bar-tailed godwit , <i>Limosa lapponica lapponica</i> , W Palearctic	2752 individuals, representing an average of 2.3% of the population (1996/7 to 2000/1)

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.

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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/ Cleesthorpes 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

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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. nolti* 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

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(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

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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*
psammodroma 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

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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	+	+

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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.	+		

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

Citation for Special Area of Conservation (SAC)

Name:	Humber Estuary
Unitary Authority/County:	City of Kingston upon Hull, East Riding of Yorkshire, Lincolnshire, North East Lincolnshire, North Lincolnshire
SAC status:	Designated on 10 December 2009
Grid reference:	TA345110
SAC EU code:	UK0030170
Area (ha):	36657.15
Component SSSI:	Humber Estuary

Site description:

The Humber is the second largest coastal plain **Estuary** in the UK, and the largest coastal plain estuary on the east coast of Britain. 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. The range of salinity, substrate and exposure to wave action influences the estuarine habitats and the range of species that utilise them; these include a breeding bird assemblage, winter and passage waterfowl, river and sea lamprey, grey seals, vascular plants and invertebrates.

The Humber is a muddy, macro-tidal estuary, fed by a number of rivers including the Rivers Ouse, Trent and Hull. 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. The extensive mud and sand flats support a range of benthic communities, which in turn are an important feeding resource for birds and fish. 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.

Habitats within the Humber Estuary include **Atlantic salt meadows** and a range of sand dune types in the outer estuary, together with **Sandbanks which are slightly covered by sea water all the time**, extensive intertidal mudflats, **Salicornia and other annuals colonising mud and sand**, and **Coastal lagoons**. As salinity declines upstream, reedbeds and brackish saltmarsh communities fringe the estuary. These are best-represented at the confluence of the Rivers Ouse and Trent at Blacktoft Sands.

Upstream from the Humber Bridge, the navigation channel undergoes major shifts from north to south banks, for reasons that have yet to be fully explained. This section of the estuary is also noteworthy for extensive mud and sand bars, which in places form semi-permanent islands. The sand dunes are features of the outer estuary on both the north and south banks particularly on Spurn peninsula and along the Lincolnshire coast south of Cleethorpes. Examples of both **Fixed dunes with herbaceous vegetation ('grey dunes')** and **Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')** occur on both banks of the estuary and along the coast. Native sea buckthorn **Dunes with *Hippophae rhamnoides*** also occurs on both sides of the estuary.

Significant fish species include **river lamprey** *Lampetra fluviatilis* and **sea lamprey** *Petromyzon marinus* which breed in the River Derwent, a tributary of the River Ouse. **Grey seals** *Halichoerus grypus* come ashore in autumn to form breeding colonies on the sandy shores of the south bank at Donna Nook.



Humber Estuary SAC UK0030170
Compilation date: November 2009 Version: 2
Designation citation Page 1 of 2

European Site Conservation Objectives for Humber Estuary Special Area of Conservation Site Code: UK0030170



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

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

- The extent and distribution of qualifying natural habitats and habitats of qualifying species
- The structure and function (including typical species) of qualifying natural habitats
- The structure and function of the habitats of qualifying species
- The supporting processes on which qualifying natural habitats and habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.

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

Qualifying Features:

H1110. Sandbanks which are slightly covered by sea water all the time; Subtidal sandbanks

H1130. Estuaries

H1140. Mudflats and sandflats not covered by seawater at low tide; Intertidal mudflats and sandflats

H1150. Coastal lagoons*

H1310. *Salicornia* and other annuals colonising mud and sand; Glasswort and other annuals colonising mud and sand

H1330. Atlantic salt meadows (*Glauco-Puccinellietalia maritima*)

H2110. Embryonic shifting dunes

H2120. Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes"); Shifting dunes with marram

H2130. Fixed dunes with herbaceous vegetation ("grey dunes"); Dune grassland*

H2160. Dunes with *Hippophae rhamnoides*; Dunes with sea-buckthorn

S1095. *Petromyzon marinus*; Sea lamprey

S1099. *Lampetra fluviatilis*; River lamprey

S1364. *Halichoerus grypus*; Grey seal

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

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