

**Written Representations  
for the  
Royal Society for the Protection of Birds**

**6 October 2015**

**Planning Act 2008**

**In the matter of:**

**Application by National Grid Gas plc  
River Humber Gas Pipeline Replacement Project**

**Planning Inspectorate Ref: EN060004  
Registration Identification Ref: 10031565**



## **1. INTRODUCTION**

### **The RSPB**

1.1. The RSPB was set up in 1889. It is a registered charity incorporated by Royal Charter and is Europe's largest wildlife conservation organisation, with a membership of over 1 million. The principal objective of the RSPB is the conservation of wild birds and their habitats. The RSPB therefore attaches great importance to all international, EU and national law, policy and guidance that assist in the attainment of this objective. The RSPB campaigns throughout the UK and in international fora for the development and effective delivery of such law and policy. In so doing, it also plays an active role in the domestic processes by which development plans and proposals are scrutinised and considered, offering ornithological and other wider environmental expertise.

### **The RSPB's interest in this case**

1.2. The proposed River Humber Gas Pipeline Replacement Project ("the Project") includes works both within (beneath) and adjacent to the Humber Estuary. The Humber Estuary is internationally important for wildlife and is designated as:

- a Special Protection Area (SPA) under the Birds Directive<sup>1</sup> for its internationally important populations of both breeding and non-breeding birds;
- a Special Area of Conservation (SAC) under the Habitats Directive<sup>2</sup>;
- an internationally important wetland under the Ramsar Convention; and
- a Site of Special Scientific Interest (SSSI) under the Wildlife and Countryside Act 1981 (as amended).

1.3. The RSPB's interest in this case relates to the potential impacts of the Project on the above designations and specifically the Humber Estuary SPA ("the SPA"), the Humber Estuary Ramsar site ("the Ramsar site") and the Humber Estuary SSSI ("the SSSI") and the Paull Holme Strays managed realignment site, which is a compensation site in relation to adverse impacts on the SPA, SAC and Ramsar site.

1.4. These designations, and therefore the matters raised by the RSPB in relation to them, largely overlap and as such this representation focuses on the SPA. References to the SPA from this point on should therefore be taken to be also referring to the relevant Ramsar and SSSI

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<sup>1</sup> Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version)

<sup>2</sup> Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora.

components. Where specific consideration of the Ramsar site and SSSI is required, separate from the SPA, then this will be specifically highlighted in the text.

### **The Humber Estuary SPA**

- 1.5. The Humber Estuary was first classified by the UK Government as an SPA under the provisions of the Birds Directive on 28 July 1994 as the Humber Flats, Marshes and Coast (Phase 1) SPA. The extended and renamed Humber Estuary SPA was classified on 31 August 2007.
- 1.6. The SPA has an extent of 37,630.24ha and lies within the boundaries of the City of Kingston-upon-Hull, East Riding of Yorkshire, Lincolnshire, North East Lincolnshire and North Lincolnshire counties/unitary authorities.
- 1.7. The SPA is classified under Article 4(1) of the Birds Directive as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season:
  - Avocet *Recurvirostra avosetta* – wintering
  - Bittern *Botaurus stellaris* – wintering
  - Hen harrier *Circus cyaneus* – wintering
  - Golden plover *Pluvialis apricaria* – wintering
  - Bar-tailed godwit *Limosa lapponica* – wintering
  - Ruff *Philomachus pugnax*- passage
  - Bittern *Botaurus stellaris*- breeding
  - Marsh harrier *Circus aeruginosus* – breeding
  - Avocet *Recurvirostra avosetta* – breeding
  - Little tern *Sterna albifrons* - breeding
- 1.8. The site is classified under Article 4(2) of the Birds Directive as it is used regularly by 1% or more of the biogeographical populations of the following regularly occurring migratory species (other than those listed in Annex I) in any season:
  - Shelduck *Tadorna tadorna* – wintering
  - Knot *Calidris canutus* – wintering
  - Dunlin *Calidris alpina* – wintering
  - Black-tailed godwit *Limosa limosa* – wintering
  - Redshank *Tringa totanus* – wintering
  - Knot *Calidris canutus* - passage
  - Dunlin *Calidris alpina* - passage
  - Black-tailed godwit *Limosa limosa* - passage
  - Redshank *Tringa totanus* - passage

- 1.9. The site is also classified under Article 4(2) of the Birds Directive as it is used regularly by an internationally important assemblage of over 20,000 waterbirds in any season (this includes all waterbirds except non-native or introduced species). The assemblage at the time of designation was listed as 153,934 individuals with 26 species named as key components. The SPA citation and the UK SPA standard data form are provided in Appendix A.
- 1.10. On 30 June 2014, Natural England published revised Conservation Objectives for the SPA<sup>3</sup>. These are:

With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (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 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.**

**Qualifying Features:**

A021 *Botaurus stellaris*; Great bittern (Non-breeding)

A021 *Botaurus stellaris*; Great bittern (Breeding)

A048 *Tadorna tadorna*; Common shelduck (Non-breeding)

A081 *Circus aeruginosus*; Eurasian marsh harrier (Breeding)

A082 *Circus cyaneus*; Hen harrier (Non-breeding)

A132 *Recurvirostra avosetta*; Pied avocet (Non-breeding)

A132 *Recurvirostra avosetta*; Pied avocet (Breeding)

A140 *Pluvialis apricaria*; European golden plover (Non-breeding)

A143 *Calidris canutus*; Red knot (Non-breeding)

A149 *Calidris alpina alpina*; Dunlin (Non-breeding)

A151 *Philomachus pugnax*; Ruff (Non-breeding)

A156 *Limosa limosa islandica*; Black-tailed godwit (Non-breeding)

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<sup>3</sup> Available from: <http://publications.naturalengland.org.uk/publication/5382184353398784> (accessed 25/09/15)

A157 *Limosa lapponica*; Bar-tailed godwit (Non-breeding)

A162 *Tringa totanus*; Common redshank (Non-breeding)

A195 *Sterna albifrons*; Little tern (Breeding)

Waterbird assemblage

1.11. It has been established<sup>4,5</sup> that a number of the qualifying bird species for the SPA use nearby inland habitats, including farmland, as well as the intertidal areas during various tidal and environmental conditions. This provides a functional link between such fields and the SPA. SPA qualifying birds using such functionally linked terrestrial habitats are therefore potentially at risk from habitat loss, disturbance and other effects resulting from activities within inland habitats, such as this project. This is acknowledged in the Habitats Regulations Assessment (HRA) provided in support of the application (DCO Document 5.4 HRA Part 1 of 2, paragraph 1.1.4, p3), which highlights the need to consider the potential impacts of the Project on mobile qualifying species of the European sites that may be affected (i.e. the Humber Estuary SPA).

### **The Habitats Regulations**

1.12. SACs and SPAs are protected as European sites in England by the Conservation of Habitats and Species Regulations 2010 (as amended) (“the Habitats Regulations”), which transpose the relevant parts of the Habitats and Birds Directives into domestic law.

1.13. The RSPB has focused its attention on the Habitats Regulations but please note that a number of these requirements are also set out in the Infrastructure (Environmental Impact Assessment) Regulations 2009 (as amended). However it was not felt necessary to include references to those regulations as well.

1.14. The Habitats Regulations set out the sequence of steps to be taken by the competent authority (here the Secretary of State) when considering authorisation for a project that may have an impact on a European site before deciding to authorise that project. These are as follows:

- Step 1 Under reg 61(1)(b), consider whether the project is directly connected with or necessary to the management of the European site. If not –

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<sup>4</sup> Mander, L., Cutts, N. & Thomson, S., 2006. *Review of the High Tide Waterfowl Roosting and Foraging Sites on the Humber Estuary*. English Nature, Peterborough

<sup>5</sup> Allen, J., Boyes, S., Burdon, D., Cutts, N., Hawthorne, E., Hemingway, K., Jarvis, S., Jennings, K., Mander, L., Murby, P., Proctor, N., Thomson, S., & Waters, R., 2003. *The Humber Estuary: A comprehensive review of its nature conservation interest*. English Nature Research Report Number 547. English Nature, Peterborough

- Step 2 Under reg 61(1)(a) consider, on a precautionary basis, whether the project is likely to have a significant effect on the European site, either alone or in combination with other plans or projects (the Significance Test).
- Step 3 Under reg 61(1), make an appropriate assessment of the implications for the European site in view of its conservation objectives. Reg 61(2) empowers the competent authority to require an applicant to provide information for the purposes of the appropriate assessment. There is no requirement or ability at this stage to consider extraneous (non-conservation, e.g. economic) matters in the appropriate assessment.
- Step 4 Pursuant to reg 61(5) and (6), consider whether it can be ascertained that the project will not, alone or in combination with other plans or projects, adversely affect the integrity of the European site, having regard to the manner in which it is proposed to be carried out, and any conditions or restrictions subject to which that authorisation might be given (the Integrity Test).
- Step 5 In light of the conclusions of the assessment and in accordance with reg 61(5) and (6), the competent authority shall agree to the project only after having ascertained that it will not adversely affect the integrity of the European site, alone or in combination with other plans or projects.

1.15. As set out in the National Planning Policy Framework, Ramsar sites and sites identified, or required, as compensation measures for adverse effects on European sites (such as Paull Holme Strays, see paragraph 1.3) are given the same protection as European sites and therefore should be included in the consideration and assessment process set out above<sup>6</sup>. As a result, Paull Holme Strays must effectively be considered as part of the Humber Estuary SPA for the purposes of this Project's assessments.

## **2. THE RSPB'S CONCERNS**

### **Introduction**

2.1. Having established that the Project will involve no construction works or land-take from within the Humber Estuary itself nor its intertidal habitats (ES Document 6.7, paragraph 7.4.7, p23), the RSPB's principal concerns over the Project and its impacts on the Humber Estuary SPA relate to the potential habitat loss, disturbance and displacement impacts associated with the establishment and operation of the Project's construction compounds.

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<sup>6</sup> The National Planning Policy Framework, pg 28, para 118, <http://www.communities.gov.uk/publications/planningandbuilding/nppf>.

### **The Project's construction compounds**

- 2.2. The construction of the Project will involve the establishment of two construction compounds on opposite banks of the Humber: one near to Goxhill on the south bank and one near to Paull on the north bank.
- 2.3. The Goxhill compound lies to the north-east of Goxhill village, within the Goxhill Marshes area, and is situated c.500m from the Humber Estuary SPA. The Paull compound lies to the south-east of Paull village and c.200m from the boundary of the Paull Holme Strays managed realignment site and therefore also c.200m from the boundary of land which must be treated as part of the Humber Estuary SPA. (see paragraphs 2.22 and 2.23 for further detail on this matter).

### **The bird survey methods used to inform the assessments**

- 2.4. As detailed in the HRA (DCO Document 5.4 HRA Part 1 of 2, paragraphs 5.3.3 to 5.3.11), a suite of bird surveys were undertaken between October 2013 and September 2014 to investigate bird usage of the proposed construction compound locations and their surroundings.
- 2.5. The RSPB's Relevant Representation (RR) referred to concerns over two elements of the bird surveys undertaken: the spring passage survey effort and the nocturnal survey effort. On the former of these points, the applicant has provided clarification to the RSPB over the spring passage surveys, confirming that two surveys per month were undertaken during this time<sup>7</sup>. The RSPB is therefore now satisfied that the spring passage survey effort was sufficient to inform the necessary assessments in this case.
- 2.6. In contrast, the RSPB continues to have concerns over the nocturnal survey effort and, at this time, this remains a matter of discussion between the RSPB and the Applicant. The rationale for the RSPB's concerns and therefore the basis for the ongoing discussions are outlined below.
- 2.7. The HRA states (DCO Document 5.4 HRA Part 1 of 2, paragraphs 5.3.9 to 5.3.10) that nocturnal surveying was undertaken as a result of the potential presence of golden plover in the vicinity of the Paull construction compound, with the surveys extended to cover the vicinities of both construction compounds. However, the methodology used, of undertaking surveys starting 30 minutes before dawn or dusk and finishing 30 minutes after dawn or dusk, is not true nocturnal surveying as it offers no coverage of periods between dusk and dawn.

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<sup>7</sup> Document 8.1.6, Draft Statement of Common Ground with the RSPB (Table 3-1, p5)

- 2.8. The applicant has stated their view (Document 8.1.6 Draft Statement of Common Ground with the RSPB, Table 3-1, p5) that, because of the difficulties of undertaking nocturnal surveys – principally identifying species, health and safety concerns and the potential for disturbance of birds – it was agreed with Natural England (NE) that dawn and dusk surveys, such as described in the paragraphs referenced above, would provide sufficient information to inform the assessments.
- 2.9. The RSPB recognises the challenges associated with nocturnal surveying but does not consider any of the difficulties identified above to be insurmountable. To illustrate: nocturnal surveying, including for waders such as golden plover, forms part of standard survey methodology guidance for onshore wind farm developments, with guidance from NE<sup>8</sup> including descriptions of potential equipment options.
- 2.10. The RSPB’s concerns over the lack of nocturnal surveying are based principally on studies of nocturnal usage by plovers (i.e. golden plover and lapwing) of farmland habitats in Norfolk<sup>9,10</sup>. The following findings of these studies demonstrated the need for and importance of nocturnal surveying for plovers when attempting to accurately understand plover usage of arable habitats:
- Fields used by plovers during the day are also likely to be used by night
  - Fields are used on average three times more often at night than in the day
  - Birds use more fields within an area at night than during the day
  - No conclusions about the numbers of birds that will use fields at night can be drawn from surveys of the same fields during the day
  - The vast majority of arable farmland usage by plovers at night is for feeding
  - Plovers feeding at night obtain up to 50% more food than during the day
  - Feeding at night may be the preferred strategy for plovers
- 2.11. In a more local context, the broad principle of nocturnal use of farmland habitats by plovers is supported by radar work conducted for a proposed wind farm development on the north bank of the Humber. This showed significant evening, inland movements of birds from the Estuary

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<sup>8</sup> Natural England, 2010. *Assessing the effects of onshore wind farms on birds*. Natural England Technical Information Note 069.

<sup>9</sup> Gillings, S., Fuller, R.J., and Sutherland, W.J., 2005. Diurnal studies do not predict nocturnal habitat choice and site selection of European Golden Plovers (*Pluvialis apricaria*) and Northern Lapwings (*Vanellus vanellus*). *The Auk* 122(4): 1249-1260

<sup>10</sup> Gillings S. & Sutherland W.J., 2007. Comparative diurnal and nocturnal diet and foraging in Eurasian Golden Plovers *Pluvialis apricaria* and Northern Lapwings *Vanellus vanellus* wintering on arable farmland. *Ardea* 95(2): 243–257.

to adjacent agricultural habitats, clearly demonstrating nocturnal usage of farmland by these species around the Humber<sup>11</sup>, building on the evidence cited in paragraph 1.11.

- 2.12. When combined, the above evidence strongly indicates that the surveying used to inform the HRA is highly likely to have underestimated the regularity, extent, profitability and importance of feeding by golden plover and lapwing of the Humber Estuary SPA on the fields within and adjacent to the construction compounds. As a result, the HRA is likely to have underestimated the fitness and survival implications for golden plover and lapwing of the potential habitat loss and disturbance impacts resulting from the Project.
- 2.13. Returning to the points raised over the difficulty of nocturnal surveying (paragraph 2.8 above), the evidence described above from the Norfolk studies clearly demonstrates the feasibility of collecting useable data on nocturnal usage of farmland by plover species, with these studies successfully employing night vision equipment to record both numbers and behaviour of golden plover and lapwing.
- 2.14. As identified in paragraph 2.6 above, the lack of nocturnal surveying and how this could be addressed in the assessments continues to be a matter of discussion between the RSPB and the Applicant. The RSPB's view is that it does not necessarily have to be a barrier to consent but that this will require a suitably precautionary approach to assessing impacts and devising mitigation.
- 2.15. Without a sufficiently precautionary approach, it is the RSPB's view that the lack of nocturnal surveying is a significant issue, to the extent that insufficient information would be available to properly assess the potential impacts of the Project, as required by the provisions of the Habitats Regulations described in paragraph 1.14. This forms the basis of the current discussions between the RSPB and the Applicant.

#### **Disturbance to non-breeding birds of the Humber Estuary SPA, Ramsar site and SSSI**

- 2.16. The RSPB's RR referred to our concerns over the potential noise disturbance impacts at both the Goxhill and Paull construction compounds and potential visual disturbance works associated with the tunnel flooding works. On the latter issue, the RSPB and the Applicant have now agreed that the tunnel flooding works will not lead to significant visual disturbance to SPA birds. Possible additional measures to further limit the likelihood of any disturbance

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<sup>11</sup>Plonczkier, P., Simms, I.C., Somerwill, K. and Jowett, A.S., 2010. *Far Marsh Farm Golden Plover Targeted Bird Surveys and Radar Deployment*. Food and Environmental Research Agency.

are matters of ongoing discussion between the RSPB and the Applicant but will have no bearing on the HRA.

- 2.17. In relation to the potential noise disturbance impacts, the RSPB recognises that both noise monitoring and predictive noise modelling have been undertaken to inform the assessments. Discussions between the RSPB and the Applicant are currently ongoing, with the Applicant committed to providing further information on the baseline noise levels, the predicted maximum noise levels resulting from the construction activities, the predicted effectiveness of the embedded mitigation measures aimed at reducing noise impacts (principally the use of bunding and closed board fencing; DCO Document 5.4 HRA Part 1 of 2, paragraph 3.4.1, p41), and how this has been captured in the relevant assessments.
- 2.18. At this stage, the RSPB's principal concern in relation to noise impacts is that the predictive noise modelling provided (DCO Document 5.4 HRA Part 2 of 2, Figures 12 and 13) indicates that the construction activities will lead to increases over baseline in both maximum and average noise levels in the vicinity of both Goxhill and Paull construction compounds.
- 2.19. The RSPB's view is that consideration of predicted noise levels against baseline noise levels is of more value than consideration of predicted noise levels against a "threshold" such as the proposed 70dB (DCO Document 5.4 HRA Part 1 of 2, paragraph 8.3.19, p80). Uses of such thresholds take no account of existing, background noise levels and therefore offer no context against which the predicted noise levels can be considered. The reference cited in the HRA (DCO Document 5.4 HRA Part 1 of 2, paragraph 8.3.19, p80) of Cutts *et al.* (2003) is unknown to the RSPB and not listed in the references, but is assumed to refer to a report published in 2008 and revised in 2009<sup>12</sup>. This review proposed the threshold of 70dB but this was on the basis of a single set of studies undertaken on the Humber by the authors, as opposed to the outcomes of the wider literature review component of the report. It must also be noted that the report's conclusions and recommendations for the 70dB are as follows:

*"Construction noise levels should be restricted to below 70 dB (A), birds will habituate to regular noise below this level. Where possible sudden irregular noise above 50 dB (A) should be avoided as this causes disturbance to birds. However, data are generally poor."* [Emphasis added]

- 2.20. In light of these factors, and as indicated above, the RSPB does not consider the 70dB "threshold" to be supported by sufficiently robust evidence and therefore recommends

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<sup>12</sup> Cutts, N., Phelps, A. & Burdon, D., 2009. *Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance*. Report to Humber INCA. Institute of Estuarine and Coastal Studies, University of Hull.

comparisons of predicted noise against baseline noise, with the aim of ensuring that the former does not exceed the latter. Where this is not possible, and noise levels are expected to exceed background, it is the RSPB's view that mitigation measures will be required, as is the case here. As described in paragraph 2.17, the RSPB is awaiting further information from the Applicant on the effectiveness of the embedded noise mitigation measures. Subject to the provision of this material, the RSPB's current view is that the proposed construction works at both Goxhill and Paull will lead to elevated noise levels that have the potential to disturb and displace SPA birds from adjacent habitats.

- 2.21. In understanding potential noise impacts, it is vital to not only understand the noise levels likely to be generated but also the potential exposure of birds to these noise levels. As identified in the HRA (DCO Document 5.4 HRA Part 1 of 2, paragraph 6.2.13), it is typically considered that areas of functionally-linked land supporting more than 1% of the population of a SPA species are significant. Fields within and adjacent to the footprint of the Goxhill construction compound meet or exceed this criterion for golden plover (Field 6) , black-tailed godwit (Field 4), and curlew (Fields 1, 2, 4, 5, & 6) when considered against the respective latest 5 year peak mean populations for the Humber Estuary<sup>13</sup>. The predicted noise plots provided in the HRA (DCO Document 5.4 HRA Part 2 of 2, Figures 12 & 13) show that the noise modelling predictions include noise levels elevated above baseline, at both maximum and average levels, for these fields. There is therefore potential at Goxhill for significant numbers of SPA birds to be exposed to, and therefore disturbed and displaced by, increased noise levels as a result of the proposed construction activities.
- 2.22. At Paull, based on the same HRA figures, the elevated noise levels will potentially affect the intertidal habitats of the managed realignment at Paull Holme Strays. As described above, Paull Holme Strays was created in 2003 by the Environment Agency to provide cost-effective flood risk management and compensatory habitat for the adverse effects (habitat losses to flood defence schemes and coastal squeeze) on the Humber Estuary SPA/SAC resulting from implementation of the Humber Flood Risk Management Strategy (HFRMS)<sup>14</sup>.
- 2.23. The elevated noise levels therefore have the potential to disturb and displace qualifying species of the SPA (including golden plover, bar-tailed godwit, avocet, ruff, shelduck,

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<sup>13</sup> Holt, C.A., Austin, G.E., Calbrade, N.A., Mellan, H.J., Hearn, R.D., Stroud, D.A., Wotton, S.R. and Musgrove, A.J. 2015. *Waterbirds in the UK 2013/14: The Wetland Bird Survey*. BTO/RSPB/JNCC. Thetford <http://www.bto.org/volunteer-surveys/webs/publications/webs-annual-report> (accessed 29/09/15)

<sup>14</sup> Manson, S. & Pinnington, N., 2012. *Paull Holme Strays managed realignment (Humber estuary)*. Measure analysis in the framework of the Interreg IVB project TIDE. Measure 31. Hull. Available from: [http://www.tide-toolbox.eu/pdf/measures/Paull\\_Holme\\_Strays.pdf](http://www.tide-toolbox.eu/pdf/measures/Paull_Holme_Strays.pdf) (accessed 25/09/15)

redshank, dunlin, black-tailed godwit, wigeon, teal, ringed plover, lapwing, curlew and turnstone) from habitats within areas that must be treated as part of the designation, effectively reducing the extent of habitat available to these species within the SPA. This is clearly contrary to the Conservation Objectives of the SPA detailed in paragraph 1.10.

2.24. Based on the concerns outlined in the preceding paragraphs, the RSPB does not consider that it is currently possible to rule out adverse effects on the integrity of the Humber Estuary SPA, as a result of noise disturbance and displacement of birds from habitats both adjacent to (Goxhill) and within (Paull) the SPA. As identified in paragraph 2.17, discussions on these matters between the RSPB and the Applicant are ongoing.

#### **Disturbance to breeding birds of the Humber Estuary SPA, Ramsar site and SSSI**

2.25. As referenced in the RSPB's RR, the ground investigation works undertaken to inform the Project identified the presence of nesting marsh harrier in the SPA in the vicinity of the Goxhill construction compound. The Applicant has confirmed that nesting was recorded, with the nesting area reported to be over 500m from the construction compound (Document 8.1.6, Draft Statement of Common Ground with the RSPB, Table 3-1, p9).

2.26. Marsh harriers typically show strong fidelity to nest sites, although nests are rarely located in the same precise location, but in the same area<sup>15</sup>. Based on the information provided by the Applicant, and the status of marsh harrier as both a Qualifying Feature of the Humber Estuary SPA and a species afforded special protection from disturbance through its listing on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) ("the WCA"), it is the RSPB's view that a mitigation strategy should be devised at this point, which can be implemented in the event of marsh harriers nesting in the proximity of the construction compound. Without the production of such a strategy at this stage, there is not sufficient certainty to conclude that the proposed construction works will not lead to disturbance of nesting marsh harriers, the associated adverse effect on the integrity of the Humber Estuary SPA and potentially offences under the WCA.

2.27. The RSPB's view is that the mitigation strategy should be sufficiently detailed, with appropriate criteria to trigger its implementation, that appropriate avoidance of disturbance impacts can be established and recorded within the HRA for the Project. These principles form the basis of the ongoing discussions on this matter between the RSPB and the Applicant.

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<sup>15</sup> Clarke, R. *The Marsh Harrier*. Hamlyn Species Guides. Hamlyn, London.

## The loss for the duration of the project of land with functional links to the SPA

- 2.28. As identified in paragraph 2.21 above, fields within and adjacent to the footprint of the Goxhill construction compound meet or exceed the 1% significance criterion for golden plover (Field 6), black-tailed godwit (Field 4), and curlew (Fields 1, 2, 4, 5, & 6) when considered against the respective latest 5 year peak mean populations for the Humber Estuary. According to Figure 2.2 of the ES (ES Document 6.2), those fields that lie within the footprint of the works compound, either wholly or partially, are Fields 5 and 6.
- 2.29. Fields 5 and 6 are both long, linear fields with their long boundaries (perpendicular to the Humber) formed by intact, species-poor hedgerows (ES Document 6.7, Figure 7.3). Within both fields there are areas that will be physically lost to the formation of the construction compound. However, , the effective habitat loss will be larger than this as a result of the presence of the compound, its noise, light, etc. and the deterring effect that this will have on bird usage. This effect is illustrated by studies of the effects of various construction activities in Cardiff Bay, across an 11 year period, including the construction of a barrage, new housing, a hotel, a new highway and land claim. During this period, densities of five of seven species studied (including curlew) were significantly reduced adjacent to construction work<sup>16</sup>. This builds upon a body of evidence<sup>17,18,19</sup> that identifies preferences among the species in question, particularly golden plover and curlew, for large fields with open views. As a result of this combined package of evidence of species preferences and effects of construction, it is the RSPB's view that the presence of the construction compound will lead to the effective loss of both Fields 5 and 6 as habitat functionally available to SPA birds.
- 2.30. In considering the potential impacts of this loss against the Conservation Objectives, it is necessary to consider its potential impacts on all relevant Qualifying Features. This includes the Waterbird Assemblage, which the Applicant correctly "screens in" to the Appropriate Assessment (DCO Document 5.4 HRA Part 1 of 2, paragraph 8.1.1, p74). While subsequent sections of the HRA provide some analysis of the potential impacts on the constituent species of the Waterbird Assemblage, the RSPB is concerned that the constituent species are not

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<sup>16</sup> Burton, N.H.K., Rehfisch, M.H. & Clark, N.A., 2002. Impacts of disturbance from construction work on the densities and feeding behaviour of waterbirds using the intertidal mudflats of Cardiff Bay, UK. *Environmental Management*, 30: 865-871

<sup>17</sup> Kirby, J., Drewitt, A., Chivers, L. & Saunders, R., 2000. *Key Habitat Attributes and Bird Assemblages in England*. English Nature Research Report No. 359

<sup>18</sup> Milsom, T.P., Ennis, D.C, Haskell, D.J., Langton, S.D. & McKay, H.V. 1998. Design of grassland feeding areas for waders during winter: the relative importance of sward, landscape factors and human disturbance. *Biological Conservation* 84:119-129.

<sup>19</sup> Mason, C.F. & Macdonald S.M., 1999. Habitat use by Lapwings and Golden Plovers in a largely arable landscape. *Bird Study*, 46:1, 89-99

explicitly considered on a species-by-species basis. This is critical to properly understanding the potential impacts of the Project on the Waterbird Assemblage. The assemblage is protected for both its overall numbers and its species diversity, i.e. all species which contribute to the assemblage as a whole. Assemblage species, and the potential impacts that they will experience, must therefore be considered on a species-by-species basis to ensure that their contribution to the assemblage both in terms of their numbers (i.e. population) and diversity are properly protected.

- 2.31. The Applicant's conclusions on the potential impacts of temporary (up to 35 months) habitat loss at Goxhill are detailed in the HRA (DCO Document 5.4 HRA Part 1 of 2, paragraphs 8.3.47 to 8.3.49, p86-87) and so are not repeated here. However, the conclusions of "no effects" – taken by the RSPB to equate to a conclusion of no adverse effects on the integrity of the SPA – appear to be based on the view that the SPA birds displaced from any habitat lost will be able to relocate to alternative habitats elsewhere, with no impacts on the individuals nor the SPA's Conservation Objectives. The RSPB disagrees with these conclusions; the rationale for this is outlined below.
- 2.32. Overall, the RSPB agrees that the quantum of temporary habitat loss is likely to be similar to that identified by the Applicant for the Goxhill site, which is 34ha, although it appears that the basis for this figure differs between the Applicant and the RSPB. The RSPB's estimate is 38ha, based on the functional loss of Fields 5 and 6, whereas the Applicant's comes from the area lost to the footprint of the construction compound.
- 2.33. That there may be displacement of SPA species does not appear to be a point of difference between the RSPB and the Applicant. The Applicant states, "Whilst it is certainly possible that, on occasion, relatively large numbers of birds might be disturbed and potentially displaced from the fields close to the scheme..." (Document 8.1.6 Draft Statement of Common Ground with the RSPB, Table 3-1, p12). Rather, the key points of difference between the RSPB and the Applicant seem to relate to the potential effects of this on the SPA species in question (golden plover, black-tailed godwit and curlew) and how this should be addressed via the Appropriate Assessment.
- 2.34. The RSPB's view is that the approach adopted by the Applicant – of relying on relocation to alternative habitats and of no consequent impacts – is not supported by the evidence currently presented. In the RSPB's view, the evidence available indicates that such relocations have the potential to impact upon both the fitness of individual birds (and therefore potentially populations of the affected species) and the distribution of birds within the SPA;

both issues of fundamental importance to the Conservation Objectives. Further information to support this position is provided in the following paragraphs.

- 2.35. Species, such as golden plover, curlew and black-tailed godwit, that make use of farmland surrounding the SPA do so under the influence of complex interactions between a range of environmental factors including, as examples, tidal state, weather, predation pressure, prey availability, etc<sup>20</sup>. In such a context, the importance of an individual site, and the impacts of disturbance upon that site and the birds it holds, can be considerably greater at a given time than simple considerations of bird count data and total areas of habitat can indicate. Fundamentally, the approach adopted by the Applicant gives no consideration to condition of individual birds at the time of disturbance; the presence of other existing pressures on the populations; habitat quality of both the site of disturbance and its surroundings; the availability of different habitat areas, and the interactions between these factors.
- 2.36. In light of the above, the potential impacts of displacement via habitat loss may be considerably greater than may initially be apparent. While apparently suitable habitat may be available in the immediate vicinity, without understanding the quality of this habitat, its availability and value to the birds under the various environmental conditions, it is simply not possible to conclude that it is indeed suitable alternative habitat without the type of understanding outlined in the preceding paragraph. As such, the required relocations by the displaced birds may be considerably greater than predicted or, under certain sets of conditions, unavailable. Similarly, if relocation to adjacent habitat does occur then it can result in the birds being obligated to make use of lower quality habitat.
- 2.37. In terms of the impacts of these issues on foraging and roosting, this would have the same consequence: lower energetic gains, and potentially energetic losses, from any given cycle of foraging and roosting with potentially consequent effects on individual fitness, if the birds in question cannot compensate for this impact via increased feeding rates<sup>16</sup>. The importance of the availability of fields around the Humber in providing supplementary foraging sites and therefore in supporting or increasing survival rates has been demonstrated for curlew and indicated for other species including black-tailed godwit<sup>21</sup>
- 2.38. If effects such as those outlined above are experienced over a sufficient duration of time, or lead to relocations of sufficient distances, then the effects may be enough to impact upon

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<sup>20</sup> Burton, N.H.K., 2007. Landscape approaches to studying the effects of disturbance on waterbirds. *Ibis*, 149: 95-101

<sup>21</sup> Stillman, R.A., West, A.D., Goss-Custard, J.D., McGrorty, S., Frost, N.J., Morrissey, D.J., Kenny A.J., & Drewitt, A.L., 2005. Predicting site quality for shorebird communities: a case study on the Humber estuary, UK. *Marine Ecology Progress Series*, 305: 203-217

how a given species uses the matrix of roosting and feeding sites that exist within the SPA and its surrounding habitats. Essentially, forcing birds to relocate for an extended period, or to make longer movements than previously, has the potential to lead to birds altering their distributions within the SPA in order to minimise flight distances between feeding and roosting sites, access available habitat outside the SPA and meet their daily energy requirements<sup>22,23</sup>.

2.39. In light of the above, the RSPB disagrees with the Applicant's assertion that temporary habitat loss will have no impacts on fulfilment of the Conservation Objectives for the SPA. Reductions in individual fitness, such as those described above, have the potential in turn to impact upon populations, contrary to the Conservation Objective of maintaining or restoring the population of each of the Qualifying Features. Similarly, the potential for changing distributions of birds within the designation is clearly contrary to the Conservation Objective of maintaining or restoring the distribution of the Qualifying Features within the SPA.

2.40. Based on the concerns detailed above, the RSPB is of the view that mitigation is required to address the impacts identified. The RSPB's concerns over the current mitigation proposals and a proposed way forward are provided in the sections below. These form the basis of ongoing discussions between the RSPB and the Applicant.

**Insufficient mitigation and enhancement measures for both breeding and non-breeding SPA birds.**

2.41. In the preceding sections, the RSPB has identified three core issues that demonstrate the need for mitigation in order to conclude no adverse effects on the integrity of the Humber Estuary SPA:

- i. Disturbance to non-breeding birds
- ii. Disturbance to breeding birds
- iii. Habitat loss

2.42. As identified in paragraph 2.17, the Applicant has committed to providing the RSPB (and others) with further information on the predicted noise impacts of the Project. As described in paragraph 2.24, based on the information currently available, the RSPB has concerns over the potential for adverse impacts on the integrity of the SPA from noise disturbance and in the absence of the additional information to be provided, is therefore of the view that mitigation is required. To properly devise an appropriate mitigation strategy, it is first important to

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<sup>22</sup> Smit, C., Visser, G. J. M. 1993. Effects of disturbance on shorebirds: a summary of existing knowledge from the Dutch Wadden Sea and Delta Area. *Wader Study Group Bulletin*, 68: 6-19

<sup>23</sup> Gill, G. A. 1996. Habitat choice in wintering pink-footed geese: quantifying the constraints determining winter site use. *Journal of Applied Ecology* 33: 884-892

understand the potential impacts. It is the RSPB's view that this cannot be achieved until the additional information is provided by the Applicant and the effectiveness of the current mitigation properly understood.

- 2.43. The RSPB's views on potential mitigation for disturbance to breeding birds has been identified in paragraphs 2.26 to 2.27 and forms the basis for ongoing discussions between the RSPB and the Applicant over this matter.
- 2.44. On the issue of habitat loss, the Applicant has identified an area of Field 6 at Goxhill to be left as set aside "to compensate for the loss of habitat under the main work area" (DCO Document 5.4 HRA Part 1 of 2, paragraph 9.1.3, p89). However, this is described as "embedded mitigation" (DCO Document 5.4 HRA Part 1 of 2, paragraph 9.1.1, p89) as opposed to mitigation provided to address potential adverse effects. Whatever the purpose of the mitigation, the RSPB does not consider it sufficient to address the potential impacts of the Project resulting from habitat loss. Indeed, based on the evidence cited in paragraph 2.29, the RSPB would question whether there can be confidence that the identified part of Field 6 would receive any significant usage by SPA birds, as the identified field size of 7.6ha (Document 4.1 Statement of Reasons, paragraph 4.3.5, p11) would be suboptimal when considered against the identified habitat preferences of the species in question and the type of impacts described in paragraph 2.29.
- 2.45. In all mitigation, it is necessary to demonstrate that the proposals will minimise the potential adverse impacts to a level where it can be demonstrated that the potential for adverse effects on the integrity of the SPA have been removed. For habitat loss this means, in the simplest terms, that an area of replacement habitat of sufficient size and quality to offset the impacts should be provided. The RSPB's view is that, for temporary habitat losses such as here, the simplest and most effective approach to attaining this aim is through the provision of an area of habitat of at least the same size and higher quality (based on sound ecological evidence), in close proximity to the impacted areas but outwith any area of likely disturbance, as that to be impacted upon by the Project.
- 2.46. The proposal to provide stubbles as alternative habitat (DCO Document 5.4 HRA Part 1 of 2, paragraph 9.1.3, p89) has some merits. However, evidence on habitat usage by birds along the south bank of the Humber indicates that this may only be of significant value to golden plover and black-tailed godwit, and of very limited use to curlew<sup>24</sup>. As can be seen from the data on

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<sup>24</sup> Catley, G.P., 2011. *Humber INCA North and north-east Lincolnshire autumn and winter bird surveys. September 2010 – April 2011*. Report to Humber Industry and Nature Conservation Association. Nyctea Ltd.

habitat usage provided in Table 1 below, this would only be the case for dragged stubbles with taller, less managed stubbles being of little to no value.

**Table 1: Use of terrestrial habitat by relevant SPA species in North and North-east Lincolnshire**

Species	Proportion of birds recorded using habitat between September and April (%)								
	Ploughed	Oilseed rape	Winter cereals	Sown	Permanent Pasture	Dragged Stubbles	Stubbles	Industrial site	Rough grass
golden plover	1	7	7	31	7	46	1	-	-
black-tailed godwit	-	-	-	-	47	45	-	7	1
curlew	1	2	1	1	72	3	6	10	4

Source: Catley, 2011.

2.47. In light of the above, the RSPB’s view is that, in this case, appropriate mitigation for habitat loss would be the provision of enhanced stubbles and pasture habitat, across a total area equivalent to that which is predicted to be lost (i.e. c.38ha) for the same duration as the construction works, including all site establishment, demobilisation, etc. These principles form the basis of the ongoing discussions between the Applicant and the RSPB.

### **3. CONCLUSION**

3.1. Based on the issues described above, the RSPB’s view is that the application does not currently comply with the requirements of the Conservation of Habitats and Species Regulations 2010 (as amended) nor the Wildlife and Countryside Act 1981 (as amended). As such, the RSPB does not consider it possible for consent to be granted on the basis of the material currently in front of the Examining Authority. However, the RSPB’s view is that there are practical and deliverable solutions to these issues – outlined in the preceding paragraphs - and we are therefore committed to continuing to work with the Applicant to address these matters.

## **APPENDIX 1**

## EC Directive 79/409 on the Conservation of Wild Birds Special Protection Area (SPA)

**Name:** Humber Estuary

**Unitary Authorities/Counties:** City of Kingston-upon-Hull, East Riding of Yorkshire, Lincolnshire, North East Lincolnshire, North Lincolnshire

**Component SSSIs:** The SPA encompasses all or parts of the following Sites of Special Scientific Interest (SSSIs): Humber Estuary SSSI, North Killingholme Haven Pits SSSI, Saltfleetby-Theddlethorpe Dunes SSSI, and The Lagoons SSSI.

**Site description:** The Humber Estuary is located on the east coast of England, and comprises extensive wetland and coastal habitats. The inner estuary supports extensive areas of reedbed, with areas of mature and developing saltmarsh backed by 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. Parts of the estuary are owned and managed by conservation organisations. The estuary supports important numbers of waterbirds (especially geese, ducks and waders) during the migration periods and in winter. In summer, it supports important breeding populations of bittern *Botaurus stellaris*, marsh harrier *Circus aeruginosus*, avocet *Recurvirostra avosetta* and little tern *Sterna albifrons*.

**Size of SPA:** The SPA covers an area of 37,630.24 ha.

### Qualifying species:

The site qualifies under **article 4.1** of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season:

Annex I species	Count and season	Period	% of GB population
Avocet <i>Recurvirostra avosetta</i>	59 individuals – wintering	5 year peak mean 1996/97 – 2000/01	1.7%
Bittern <i>Botaurus stellaris</i>	4 individuals – wintering	5 year peak mean 1998/99 – 2002/03	4.0%
Hen harrier <i>Circus cyaneus</i>	8 individuals – wintering	5 year peak mean 1997/98 – 2001/02	1.1%
Golden plover <i>Pluvialis apricaria</i>	30,709 individuals – wintering	5 year peak mean 1996/97 – 2000/01	12.3%
Bar-tailed godwit <i>Limosa lapponica</i>	2,752 individuals – wintering	5 year peak mean 1996/97 – 2000/01	4.4%
Ruff <i>Philomachus pugnax</i>	128 individuals – passage	5 year peak mean 1996-2000	1.4%
Bittern <i>Botaurus stellaris</i>	2 booming males – breeding	3 year mean 2000-2002	10.5%
Marsh harrier <i>Circus aeruginosus</i>	10 females – breeding	5 year mean 1998-2002	6.3%
Avocet <i>Recurvirostra avosetta</i>	64 pairs – breeding	5 year mean 1998 – 2002	8.6%
Little tern <i>Sterna albifrons</i>	51 pairs – breeding	5 year mean 1998-2002	2.1%

The site qualifies under **article 4.2** of the Directive (79/409/EEC) as it is used regularly by 1% or more of the biogeographical populations of the following regularly occurring migratory species (other than those listed in Annex I) in any season:

Migratory species	Count and season	Period	% of subspecies/ population
Shelduck <i>Tadorna tadorna</i>	4,464 individuals – wintering	5 year peak mean 1996/97 – 2000/01	1.5% Northwestern Europe (breeding)
Knot <i>Calidris canutus</i>	28,165 individuals – wintering	5 year peak mean 1996/97 – 2000/01	6.3% <i>islandica</i>
Dunlin <i>Calidris alpina</i>	22,222 individuals – wintering	5 year peak mean 1996/97 – 2000/01	1.7% <i>alpina</i> , Western Europe (non-breeding)
Black-tailed godwit <i>Limosa limosa</i>	1,113 individuals – wintering	5 year peak mean 1996/97 – 2000/01	3.2% <i>islandica</i>
Redshank <i>Tringa totanus</i>	4,632 individuals – wintering	5 year peak mean 1996/97 – 2000/01	3.6% <i>britannica</i>
Knot <i>Calidris canutus</i>	18,500 individuals – passage	5 year peak mean 1996 – 2000	4.1% <i>islandica</i>
Dunlin <i>Calidris alpina</i>	20,269 individuals – passage	5 year peak mean 1996 – 2000	1.5% <i>alpina</i> , Western Europe (non-breeding)
Black-tailed godwit <i>Limosa limosa</i>	915 individuals – passage	5 year peak mean 1996 – 2000	2.6% <i>islandica</i>
Redshank <i>Tringa totanus</i>	7,462 individuals – passage	5 year peak mean 1996 – 2000	5.7% <i>britannica</i>

Bird counts from: Wetland Bird Survey (WeBS) database and *The Humber Estuary: A comprehensive review of its nature conservation interest* (Allen et al. 2003).

#### Assemblage qualification:

The site qualifies under **article 4.2** of the Directive (79/409/EEC) as it is used regularly by over 20,000 waterbirds (waterbirds as defined by the Ramsar Convention) in any season:

In the non-breeding season, the area regularly supports 153,934 individual waterbirds (five year peak mean 1996/97 – 2000/01), including dark-bellied brent goose *Branta bernicla bernicla*, shelduck *Tadorna tadorna*, wigeon *Anas penelope*, teal *Anas crecca*, mallard *Anas platyrhynchos*, pochard *Aythya ferina*, scaup *Aythya marila*, goldeneye *Bucephala clangula*, bittern *Botaurus stellaris*, oystercatcher *Haematopus ostralegus*, avocet *Recurvirostra avosetta*, ringed plover *Charadrius hiaticula*, golden plover *Pluvialis apricaria*, grey plover *P. squatarola*, lapwing *Vanellus vanellus*, knot *Calidris canutus*, sanderling *C. alba*, dunlin *C. alpina*, ruff *Philomachus pugnax*, black-tailed godwit *Limosa limosa*, bar-tailed godwit *L. lapponica*, whimbrel *Numenius phaeopus*, curlew *N. arquata*, redshank *Tringa totanus*, greenshank *T. nebularia* and turnstone *Arenaria interpres*.

**Non-qualifying species of interest:** The SPA is used by non-breeding merlin *Falco columbarius*, peregrine *F. peregrinus* and short-eared owl *Asio flammeus*, and breeding common tern *Sterna hirundo* and kingfisher *Alcedo atthis* (all species listed in Annex I to the EC Birds Directive) in numbers of less than European importance (less than 1% of the GB population).

#### Status of SPA:

- 1) Humber Flats, Marshes and Coast (Phase 1) SPA was classified on 28 July 1994.
- 2) The extended and renamed Humber Estuary SPA was classified on 31 August 2007.

This citation relates to a site entered in the Register of European Sites for Great Britain.  
Register reference number: UK9006111  
Date of registration: 31 August 2007

Signed:   
On behalf of the Secretary of State for  
Environment, Food and Rural Affairs

**NATURA 2000****STANDARD DATA FORM**

FOR SPECIAL PROTECTION AREAS (SPA)  
FOR SITES ELIGIBLE FOR IDENTIFICATION AS SITES OF COMMUNITY IMPORTANCE (SCI)  
AND  
FOR SPECIAL AREAS OF CONSERVATION (SAC)

**1. Site identification:**

1.1 Type  1.2 Site code

1.3 Compilation date  1.4 Update

**1.5 Relationship with other Natura 2000 sites**

1.6 Respondent(s)

1.7 Site name

**1.8 Site indication and designation classification dates**

date site proposed as eligible as SCI	
date confirmed as SCI	
date site classified as SPA	200708
date site designated as SAC	

**2. Site location:****2.1 Site centre location**

longitude	latitude
00 03 25 E	53 32 59 N

2.2 Site area (ha)  2.3 Site length (km)

**2.5 Administrative region**

NUTS code	Region name	% cover
0	Marine	50.67%
UKE11	Kingston upon Hull, City of	2.61%
UKE12	East Riding of Yorkshire	23.30%
UKE13	North and North East Lincolnshire	11.50%
UKF3	Lincolnshire	11.92%

**2.6 Biogeographic region**

Alpine

Atlantic

Boreal

Continental

Macaronesia

Mediterranean

### 3. Ecological information:

#### 3.1 Annex I habitats

Habitat types present on the site and the site assessment for them:

Annex I habitat	% cover	Representativity	Relative surface	Conservation status	Global assessment

#### 3.2 Annex I birds and regularly occurring migratory birds not listed on Annex I

Code	Species name	Population			Site assessment				
		Resident	Migratory		Population	Conservation	Isolation	Global	
			Breed	Winter					Stage
A052	<i>Anas crecca</i>			2322 I		C		C	
A050	<i>Anas penelope</i>			5044 I		C		C	
A053	<i>Anas platyrhynchos</i>			2456 I		C		C	
A169	<i>Arenaria interpres</i>			629 I		C		C	
A059	<i>Aythya ferina</i>			719 I		C		C	
A062	<i>Aythya marila</i>			127 I		C		C	
A021	<i>Botaurus stellaris</i>			4 I		B		C	
A021	<i>Botaurus stellaris</i>		2 M			B		B	
A046a	<i>Branta bernicla bernicla</i>			2098 I		C		C	
A067	<i>Bucephala clangula</i>			467 I		B		C	
A144	<i>Calidris alba</i>			486 I		B		C	
A144	<i>Calidris alba</i>				818 I	B		C	
A149	<i>Calidris alpina alpina</i>				20269 I	B		C	
A149	<i>Calidris alpina alpina</i>			22222 I		B		C	
A143	<i>Calidris canutus</i>			28165 I		B		C	
A143	<i>Calidris canutus</i>				18500 I	B		C	
A137	<i>Charadrius hiaticula</i>			403 I		C		C	
A137	<i>Charadrius hiaticula</i>				1766 I	B		C	
A081	<i>Circus aeruginosus</i>		10 F			B		B	
A082	<i>Circus cyaneus</i>			8 I		C		C	
A130	<i>Haematopus ostralegus</i>			3503 I		C		C	
A157	<i>Limosa lapponica</i>			2752 I		B		C	
A156	<i>Limosa limosa islandica</i>			1113 I		B		C	
A156	<i>Limosa limosa islandica</i>				915 I	B		C	
A160	<i>Numenius arquata</i>			3253 I		C		C	
A158	<i>Numenius phaeopus</i>				113 I	C		C	
A151	<i>Philomachus pugnax</i>				128 I	C		C	
A140	<i>Pluvialis apricaria</i>			30709 I		B		C	
A141	<i>Pluvialis squatarola</i>			1704 I		B		C	
A141	<i>Pluvialis squatarola</i>				1590 I	B		C	
A132	<i>Recurvirostra avosetta</i>			59 I		C		B	
A132	<i>Recurvirostra avosetta</i>		64 P			B		B	
A195	<i>Sterna albifrons</i>		51 P			B		C	
A048	<i>Tadorna tadorna</i>			4464 I		B		C	
A164	<i>Tringa nebularia</i>				77 I	C		C	
A162	<i>Tringa totanus</i>				7462 I	B		C	
A162	<i>Tringa totanus</i>			4632 I		B		C	
A142	<i>Vanellus vanellus</i>			22765 I		C		C	

### 4. Site description:

#### 4.1 General site character

Habitat classes	% cover
Marine areas. Sea inlets	

Habitat classes	% cover
Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins)	93.6
Salt marshes. Salt pastures. Salt steppes	4.6
Coastal sand dunes. Sand beaches. Machair	0.8
Shingle. Sea cliffs. Islets	
Inland water bodies (standing water, running water)	0.6
Bogs. Marshes. Water fringed vegetation. Fens	0.3
Heath. Scrub. Maquis and garrigue. Phygrana	
Dry grassland. Steppes	
Humid grassland. Mesophile grassland	
Alpine and sub-alpine grassland	
Improved grassland	
Other arable land	
Broad-leaved deciduous woodland	
Coniferous woodland	
Evergreen woodland	
Mixed woodland	
Non-forest areas cultivated with woody plants (including orchards, groves, vineyards, dehesas)	
Inland rocks. Screes. Sands. Permanent snow and ice	
Other land (including towns, villages, roads, waste places, mines, industrial sites)	
<b>Total habitat cover</b>	<b>100%</b>

#### 4.1 Other site characteristics

##### Soil & geology:

Alluvium, Clay, Gravel, Limestone/chalk, Mud, Neutral, Sand, Sandstone, Sandstone/mudstone, Sedimentary, Shingle

##### Geomorphology & landscape:

Cliffs, Coastal, Estuary, Floodplain, Intertidal sediments (including sandflat/mudflat), Islands, Lagoon, Lowland, Shingle bar, Subtidal sediments (including sandbank/mudbank)

#### 4.2 Quality and importance

##### ARTICLE 4.1 QUALIFICATION (79/409/EEC)

##### During the breeding season the area regularly supports:

*Botaurus stellaris* 10.5% of the population in Great Britain  
(Europe - breeding) 2000-2002

*Circus aeruginosus* 6.3% of the population in Great Britain  
1998-2002

*Recurvirostra avosetta* 8.6% of the population in Great Britain  
(Western Europe/Western Mediterranean - breeding) 1998-2002

*Sterna albifrons* 2.1% of the population in Great Britain  
(Eastern Atlantic - breeding) 1998-2002

##### Over winter the area regularly supports:

*Botaurus stellaris* 4% of the population in Great Britain  
(Europe - breeding) 1998/9 to 2002/3

*Circus cyaneus* 1.1% of the population in Great Britain  
1997/8 to 2001/2

<i>Limosa lapponica</i> (Western Palearctic - wintering)	4.4% of the population in Great Britain 1996/7 to 2000/1
<i>Pluvialis apricaria</i> (North-western Europe - breeding)	12.3% of the population in Great Britain 1996/7 to 2000/1
<i>Recurvirostra avosetta</i> (Western Europe/Western Mediterranean - breeding)	1.7% of the population in Great Britain 1996/7 to 2000/1
<b>On passage the area regularly supports:</b>	
<i>Philomachus pugnax</i> (Western Africa - wintering)	1.4% of the population in Great Britain 1996-2000

<b>ARTICLE 4.2 QUALIFICATION (79/409/EEC)</b>	
<b>Over winter the area regularly supports:</b>	
<i>Calidris alpina alpina</i> (Northern Siberia/Europe/Western Africa)	1.7% of the population 1996/7 to 2000/1
<i>Calidris canutus</i> (North-eastern Canada/Greenland/Iceland/North-western Europe)	6.3% of the population 1996/7 to 2000/1
<i>Limosa limosa islandica</i> (Iceland - breeding)	3.2% of the population 1996/7 to 2000/1
<i>Tadorna tadorna</i> (North-western Europe)	1.5% of the population 1996/7 to 2000/1
<i>Tringa totanus</i> (Eastern Atlantic - wintering)	3.6% of the population 1996/7 to 2000/1
<b>On passage the area regularly supports:</b>	
<i>Calidris alpina alpina</i> (Northern Siberia/Europe/Western Africa)	1.5% of the population 1996-2000
<i>Calidris canutus</i> (North-eastern Canada/Greenland/Iceland/North-western Europe)	4.1% of the population 1996-2000
<i>Limosa limosa islandica</i> (Iceland - breeding)	2.6% of the population 1996-2000
<i>Tringa totanus</i> (Eastern Atlantic - wintering)	5.7% of the population 1996-2000
<b>ARTICLE 4.2 QUALIFICATION (79/409/EEC): AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF BIRDS</b>	
<b>In the non-breeding season the area regularly supports:</b>	
153934 waterfowl (5 year peak mean 1996/7 to 2000/1)	

Including:

*Anas crecca* , *Anas penelope* , *Anas platyrhynchos* , *Arenaria interpres* , *Aythya ferina* , *Aythya marila* , *Botaurus stellaris* , *Branta bernicla bernicla* , *Bucephala clangula* , *Calidris alba* , *Calidris alpina alpina* , *Calidris canutus* , *Charadrius hiaticula* , *Haematopus ostralegus* , *Limosa lapponica* , *Limosa limosa islandica* , *Numenius arquata* , *Numenius phaeopus* , *Philomachus pugnax* , *Pluvialis apricaria* , *Pluvialis squatarola* , *Recurvirostra avosetta* , *Tadorna tadorna* , *Tringa nebularia* , *Tringa totanus* , *Vanellus vanellus*

### 4.3 Vulnerability

The Humber Estuary is subject to the impacts of human activities (past and present) as well as ongoing processes such as sea level rise and climate change. Management intervention is therefore necessary to enable the estuary to recover and to secure the ecological resilience required to respond to both natural and anthropogenic change. Key issues include coastal squeeze, impacts on the sediment budget, and geomorphological structure and function of the estuary (due to sea level rise, flood defence works, dredging, and the construction, operation and maintenance of ports, pipelines and other infrastructure), changes in water quality and flows, pressure from additional built development, and damage and disturbance arising from access, recreation and other activities.

Coastal squeeze is being addressed through the development and implementation of the Humber Flood Risk Management Strategy. All proposals for flood defence, development, dredging, abstractions and discharges which require consent from any statutory body, and land use plans which may have impacts upon the site are subject to assessment under the Conservation (Natural Habitats, &c.) Regulations 1994 (the “Habitats Regulations”). Diffuse pollution will be addressed through a range of measures including implementation of the Waste Water Framework Directive and Catchment Sensitive Farming initiatives.

Other issues are addressed via a range of measures including regulation of on-site land management activities and implementation of the Humber Management Scheme, developed by all relevant statutory bodies to assist in the delivery of their duties under the Habitats Regulations.

## 5. Site protection status and relation with CORINE biotopes:

### 5.1 Designation types at national and regional level

Code	% cover
UK01 (NNR)	3.5
UK04 (SSSI/ASSI)	100.0