

Heckington Fen Solar Park

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Shadow HRA to Inform Appropriate Assessment

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SHADOW HRA TO INFORM APPROPRIATE ASSESSMENT

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Table of Contents:

SHADOW HRA TO INFORM APPROPRIATE ASSESSMENT	1
1. Summary	3 <u>33</u>
2. Introduction	3 <u>33</u>
3. The Requirements for HRA.....	6 <u>65</u>
4. Baseline.....	10 <u>10</u>
5. Assessment of 'Likely Significance Effect'	14 <u>14</u>
6. Information to Support HRA Screening Assessment	16 <u>16</u>
7. Information to Support the Shadow Appropriate Assessment.....	18 <u>17</u>
8. In Combination Effects	22 <u>21</u>
9. Summary	23 <u>22</u>

List of Tables:

Table 1: Stages of Habitats Regulation Screening and Assessment	8 <u>8</u>
Table 2: Potential pathways and environmental change associated Internationally Important Sites.	14 <u>14</u>
Table 3: Summary of plans and projects with the potential to have In-Combination Effects.....	22 <u>21</u>

Glossary

Abbreviation	Description
AIS	<u>Air-Insulated Switchgear</u>
DCO	Development Consent Order
EIA	Environmental Impact Assessment
EPS	European Protected Species
FLL	Functionally linked land
GIS	<u>Gas-Insulated Switchgear</u>
IDB	Internal Drainage Board
SPA	Special Protection Area
SAC	Special Area of Conservation
JNCC	Joint Nature Conservation Committee
Ramsar	Wetlands of International Importance listed under the auspices of the Ramsar Convention on Wetlands (established in Ramsar, Iran, in 1971).
WeBS	Wetland Bird Survey

1. SUMMARY

1.1 An Environmental Impact Assessment (EIA) has been developed in relation to a DCO application for the construction, operation (including maintenance), and decommissioning of a ground mounted solar photovoltaic (PV) electricity generation and energy storage facility (hereafter referred to as "the Energy Park"), cable route to, and above ground works at, the National Grid Bicker Fen Substation (hereafter referred to as "the Proposed Development" (inclusive of Energy Park)) on land at Six Hundreds Farm, Six Hundreds Drove, East Heckington, Sleaford, Lincolnshire.

1.2 The Energy Park will have an approximate capacity of around 500 megawatts (MW) with a further 200-400MW of energy storage capacity on an area of agricultural land approximately 3.7km east of Heckington and 8.9km west of Boston. The Proposed Development will comprise of three elements: the Energy Park, Cable Route to, and above ground works at the National Grid Bicker Fen Substation. These three elements form the Proposed Development for the EIA and the Development Consent Order Application (the "Development").

1.3 The Order Limits have been extended to encompass a small area of plantation woodland to the south of the substation (AW1) and a further section to the west to facilitate the installation of a cable sealing end (AW2) (see **Figure 3.9 Change of Notification Areas at Bicker Fen National Grid Substation** of the ES, document reference Pre-ExA.ChangeApp.EFIG3.9.V1). A GIS solution would require less space but would not avoid the woodland completely.

1.31.4 The Order Limits area amendment (AW1 and AW2) covers approximately 0.9ha. It comprises approximately 0.4ha of plantation woodland, 0.13ha of rough grassland/scrub, a short section of roadside ditch (less than 0.1ha) and 0.3ha of semi-improved grassland to the west of the main substation. There were a number of common birds singing in the boundary of woodland but no evidence of other protected species.

1.31.5 The findings of the HRA screening determined that there were limited number effect pathways and environmental changes associated the proposed development which in combination with other plans and projects could result in the following likely significant effects:

- Silt laden run-off;
- Water quality effects; and
- Loss of functionally-linked habitat.

1.41.6 These Likely Significant Effects (LSEs) were taken forward to a Shadow Appropriate Assessment. Where the design of the Proposed Development, appropriate mitigating factors and other factors were taken into consideration, the potential adverse effects of the Proposed Development on the integrity of the North Norfolk Coast and Wash SAC, the Wash SPA, and the Wash Ramsar were ruled out.

2. INTRODUCTION

Description of the Proposed Development

2.1 The Proposed Development is summarised below, further details can be found in **Chapter 4 – Proposed Development** (document reference 6.1.4):

- Solar PV modules - Bifacial panels which absorb light energy from both the top and underside of the panel no matter which final height or design of panels will be used;

- PV module mounting infrastructure will be fixed south facing. The height of the solar panels will vary across the site, with broadly the northern half up to 0.5m taller at the lower edge, than that in the south of the site, whereby panels will be approximately 1m at their lowest edge. This is based on the hydraulic modelling results and the requirement to ensure the site can remain operational in a 1 in 1000 year, plus 20% for climate change flood event, which in this case is considered to be a breach of the Head Dike. The upper height of panels will therefore be 3 and 3.5m. The spacing between rows will be between 3m and 5m.
- Inverters (either centrally located within the fields, or string, which are mounted on the panels);
- Transformers;
- Onsite underground cabling;
- Off-site underground cabling to connect the Energy Park Site to the National Grid Bicker Fen Substation;
- Fencing and security measures; the fence will be metal mesh or deer fencing, metal mesh assessed as worse case, but as is typical on solar parks a deer fencing is also considered as will have a lesser landscape impact. A sophisticated CCTV system will be installed within the fence line. The design will include gaps to allow badgers and other small mammals to enter the Energy Park at strategic locations;
- Access tracks and construction of a new access point onto the highway (A17);
- An electrical compound some 11.9ha, comprising:
 - An energy storage facility (technology not determined at this time) - an area of 5.3ha is set aside for this element, with a maximum height of 6m and up to 400 containers which would include the energy storage component, and associated inverters, transformers and system controllers;
 - 1 x 400kV substation, to include distribution substations, transformers, control rooms in an area of 3ha;
- Gatehouses and spares containers within the Energy Park, with a maximum height of 4m;
- Equipment facilitating electrical connection at National Grid Bicker Fen Substation via an extension to the site in the south west corner.

2.2 The area of land for the Energy Park is approximately 524ha. Included in this area is a biodiversity net gain area approximately 61 ha and a 2.15 ha community orchard. The area where the solar panels and associated equipment will be located will be surrounded by a security fence. This area will be approximately 440ha. Within this area the energy storage, inverters and transformers will cover approximately 11ha.

2.3 The fenced area of the Energy Park is approximately 440ha. This will be re-seeded prior to construction with a drought resistant species rich seed mix suitable for sheep grazing with no additional fertiliser. The grasslands within the fenced area of the Energy Park will become a vital element of an integrated commercial grazing operation where sheep flocks rotate between different pasture and crop residues in the wider locality. The Energy Park will provide crucial grazing during periods when other local crops are not available and in time provide a new base for this farming enterprise when this flooded by a proposed reservoir.

2.4 Within the Energy Park there will a minimum setback from all Black Sluice IDB maintained drainage ditches of 9m and all other ditches of 8m, which in total will amount to approximately 46ha. In addition, there will be an area to the north of the site, along the route of the high pressure gas main and at the site entrance totalling approximately 61 ha that will be managed specifically for biodiversity gain. This biodiversity areas will be seeded / or over seeded in the existing grass margins with nature conservation species rich seed mix to provide habitat for insects and pollinators as well as nesting farmland

birds and foraging habitats for birds and mammals. This will be managed as a nature conservation pasture with late winter sheep grazing/cut; no grazing/cutting during spring until birds have finished nesting and flowers seeded followed by a hay cut and potentially aftermath grazing. An area of 2.15ha will be developed as a community orchard with a species rich meadow beneath

2.5 There is approximately 8km of farm track within the Energy Park Site. During the construction phase, temporary construction compounds will be required as well as access tracks to facilitate access to all parts of the Energy Park with a total length approximately 19km.

2.6 The Additional Works area (AW1) where the bus-bar extension and bus-coupler for the AIS technical solution is likely to be located at Bicker Fen Substation falls outside the previously submitted Order Limit boundary, therefore the Order Limit has been extended (see **Figure 3.9 Change of Notification Areas at Bicker Fen National Grid Substation**, document reference Pre-ExA.ChangeApp.EFIG3.9.V1) to encompass a small area of plantation woodland to the south of the substation, and a further section to the west to facilitate the installation of a cable sealing end (AW2).

2.52.7 The Order Limits area amendment (AW1 and AW2) covers approximately 0.9ha. It comprises approximately 0.4ha of plantation woodland, 0.13ha of rough grassland/scrub, a short section of roadside ditch (less than 0.1ha) and 0.3ha of semi-improved grassland to the west of the main substation. There were a number of common birds singing in the boundary of woodland but no evidence of other protected species.

2.62.8 The construction phase of the Development is currently anticipated to last up to 30 months but will be dependent on the final design and the findings of the access and traffic assessment. The types of construction activities required will be:

- Importing of construction materials;
- Culverting two ditches on the site;
- The establishment of the construction compound – this will likely move over the course of the construction process as each phase is built out;
- Creation of new access point of the site (A17);
- Installing the security fencing around the Energy Park Site; the perimeter security fence will be implemented early in the construction phase. The fence design will include gaps to allow mammals to pass underneath at strategic locations. This fence will also prevent construction activity in proximity to retained vegetation;
- Importing the PV panels and the energy storage equipment;
- Erection of PV frames and modules;
- Digging cable trenches and laying cables;
- Cable route for the grid connection will involve digging a trench approximately 1.2m deep and some 1m wide (deeper in some areas, e.g. crossing watercourses, the railway etc);
- Where directional drilling is required a launch pit swathe of 30m x 30m is anticipated;
- Installing transformer cabins;
- Construction of onsite electrical infrastructure for the export of generated electricity;
- Creation of the permissive path; and
- New habitat creation.

The potential effects of construction of the Proposed Development may include:

- Injury or mortality to species using the areas due to construction activities for example site clearance.
- Changes in level disturbance to species resulting from changes in normal farming practices (cultivation, sowing, spraying harvest) to construction activities (e.g., noise, vibration, human activity, light).
- Loss or gain of habitat during construction resulting from changes in land use. Temporary change in habitat during construction associated with site clearance, access tracks or construction compounds.
- Habitat degradation due to direct or indirect effects resulting in a reduction in the ecological condition of habitats and suitability for some species it supports, for example changes in water quality, or changes in surface or ground water flow.
- Changing structure of area due to construction of vertical structures (solar panels and supports, substations, energy storage facilities, fencing etc).

3. THE REQUIREMENTS FOR HRA

- 3.1 The requirement to undertake HRA of development plans/projects is set out in The Conservation of Habitats and Species Regulations 2017 (SI 2017/1012), as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (SI 2019/579)¹ ("Habitat Regulations"). When considering planning applications which may affect the integrity of European sites, the competent authority (in the case of the Proposed Development this is the Secretary of State) is required by law to carry out an HRA under the regulations.
- 3.2 The intention of this document is to provide the competent authority with sufficient evidence to determine whether the project will result in likely significant effects (the 'Screening' stage of an HRA) and if so, whether adverse effects on integrity will occur either alone or in-combination, or whether avoidance and mitigation measures can be secured with confidence which will ensure that such effects will be avoided or limited to acceptable levels (the 'Appropriate Assessment' stage of an HRA).
- 3.3 The competent authority will consider this information and may only grant the planning consent if it considers that the development will not adversely affect the integrity of any European site or have a significant effect on qualifying habitats or species for which the European sites are designated, unless there are no alternative solutions and there are Imperative Reasons of Overriding Public Interest (IROPI) for the development.
- 3.4 An HRA involves the assessment of the potential effects of a development plan or project on one or more of the following European sites:
- SACs are designated under the Habitats Regulations 2017³, and defined under the European Habitats Directive and target particular habitat types (Annex 1) and species (Annex II). The listed habitat types and species (excluding birds) are those considered to be most in need of conservation at a European level.
 - SPAs are classified in accordance with Article 4(1) of the European Union Birds Directive² for rare and vulnerable birds (as listed in Annex I of the Directive), and under Article 4(2) for regularly occurring migratory species not listed in Annex I.

¹ The Conservation of Habitats and Species Regulations 2017 (2017) SI No. 2017/1012, TSO (The Stationery Office), London.

² Council Directive 2009/147/EC of 30 November 2009 on the conservation of wild birds (the codified version of Council Directive 79/409/EEC, as amended)

- Potential SPAs (pSPAs)³, candidate SACs (cSACs)⁴, Sites of Community Importance (SCIs)⁵ and Ramsar sites should also be included in the assessment.
- Ramsar sites support internationally important wetland habitats and are listed under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention, 1971).

3.5 Although Ramsar sites do not form part of the new national site network, the Government Policy confirms that all Ramsar sites remain protected in the same way as SACs and SPAs⁶. The new national site networks was created by the 2019 amendment⁷ to the Conservation of Habitats and Species Regulations 2017 due to the SPA and SAC sites in the UK no longer being part of the European Union's Natura 200 ecological network as a result of the exit from the EU.

3.6 The overall purpose of the HRA is to conclude whether or not a proposal would adversely affect the integrity of the European site in question either alone or in combination with other plans and projects. This is judged in terms of the implications of the plan for the 'qualifying features' for which the European site was designated taking into account its conservation or biological diversity objectives, i.e.:

- SACs – Annex I habitat types and Annex II species⁸;
- SPAs – Annex I birds and regularly occurring migratory species not listed in Annex I⁹;
- Ramsar sites – the reasons for listing the site under the Convention.

3.7 Significantly, an HRA is based on the precautionary principle meaning that where scientific uncertainty or doubt remains and there is the potential for a high degree of harm to arise, a risk of adverse impacts should be assumed.

Stages of HRA

3.8 The HRA of development plans/projects is undertaken in stages (as described below) and should conclude whether or not a proposal would adversely affect the integrity of the European site in question.

3.9 The HRA should be undertaken by the 'competent authority', a competent authority is a public body that decides to give a licence, permit, consent or other permission for work to happen, adopt a plan or carry out work for itself, such as a local planning authority:

³ Potential SPAs are sites that have been approved by the Minister for formal consultation but not yet proposed to the European Commission, as listed on the GOV.UK website.

⁴ Candidate SACs are sites that have been submitted to the European Commission, but not yet formally adopted, as listed on the JNCC's SAC list.

⁵ SCIs are sites that have been adopted by the European Commission but not yet formally designated as SACs by the UK Government.

⁶ Policy Paper : Changes the Habitats Regulations 2017 <https://www.gov.uk/government/publications/changes-to-the-habitats-regulations-2017/changes-to-the-habitats-regulations-2017#creating-a-national-site-network>

⁷ Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

⁸ As listed in the site's citation on the JNCC website (all features of European importance, both primary and non-primary, need to be considered).

⁹ As identified in sections 3.1, 3.2 and 4.2 of the SPA's standard data form on the JNCC website; species for which the site assessment of population (abbreviated to 'Pop.' in table at section 3.1 and 3.2) is 'D' (non-significant population) are not qualifying features and are only relevant to the HRA if qualifying features are dependent on them. Information from SAC and SPA Standard Data Forms is also published by the JNCC in the 'Natura 2000 site details - spreadsheet'. At sites where there remain differences between species listed in the 2001 SPA Review and the extant site citation in the standard data form, the relevant country agency (Natural England or Natural Resources Wales) should be contacted for further guidance.

- a statutory undertaker carrying out its work, like a water company or an energy provider;
- a minister or department of government, for example that makes national policy or decides an appeal against another competent authority's decision; and
- anyone holding public office, such as a planning inspector, ombudsman or commissioner.

3.10 An HRA also requires close working with Natural England as the statutory nature conservation body in order to obtain the necessary information, agree the process, outcomes and mitigation proposals. Under Regulation 61(3) of the Habitat Regulations, the competent authority must consult Natural England in any Appropriate Assessment and have due regard to any representations made. The Environment Agency, while not a statutory consultee for the HRA, is also in a strong position to provide advice and information throughout the process as it is required to undertake an HRA for its existing licences and future licensing of activities.

3.11 In assessing the effects of a project in accordance with Regulation 63 of the Habitats Regulations, there are potentially four stages to be applied by the competent authority. The first stage is a 'Significance Test', followed, if necessary, by an Appropriate Assessment. This would then inform the 'Integrity Test'. If the Integrity test is not satisfied, then there is a need to consider alternatives. If alternative solutions cannot ensure the avoidance of adverse effects on integrity, the final stage is to consider whether the plan or project meets the requirements of the derogation tests. The relevant sequence of questions under the Habitat Regulations is as follows:

- Under Reg. 63(1)(b), consider whether the plan or project is directly connected with or necessary to the management of the sites. If not, as is the case for The Proposed Development, proceed to next step.
- Under Reg. 63(1)(a) consider whether the plan/project is likely to have a significant effect on a European site, either alone or in combination with other plan/projects or projects (the 'Significance Test'). If yes, proceed to next step.
- Under Reg. 63(1), make an Appropriate Assessment of the implications for the European site in view of its current conservation objectives (the 'Integrity Test'). In so doing, it is mandatory under Reg. 63(3) to consult Natural England, and optional under Reg. 63(4) to take the opinion of the general public.
1UK Government Planning Practice Guidance, available from <https://www.gov.uk/guidance/appropriate-assessment>
- In accordance with Reg. 63(5), but subject to Reg. 64, give effect to the land use plan/project only after having ascertained that the plan/project would not adversely affect the integrity of a European site.
- Under Reg. 64, if adverse effects on the integrity of a European site cannot be ruled out and no alternative solutions exist then the competent authority may nevertheless agree to the plan/project or project if it must be carried out for 'imperative reasons of overriding public interest' (IROPI).

3.12 Table 1 summarises the stages and associated tasks and outcomes typically involved in carrying out a full HRA of a development plan/project.

Table 1: Stages of Habitats Regulation Screening and Assessment

Stage	Task	Outcome
Stage 1: HRA Screening	Provide a description of the development plan or project.	Where effects are unlikely, prepare a 'finding of no significant effect report'.

Stage	Task	Outcome
	Identification of potentially affected European sites and factors contributing to their integrity. Review of other plans and projects. Assessment of likely significant effects of the development plan/project alone or in combination with other plans and projects.	Where effects judged likely, or lack of information to prove otherwise, proceed to Stage 2.
Stage 2: Appropriate Assessment (where Stage 1 does not rule out likely significant effects)	Information gathering (development plan/project and European Sites). Impact prediction. Evaluation of development plan/project impacts in view of conservation objectives. Where impacts are considered to affect qualifying features, identify how these effects will be avoided or reduced.	Appropriate assessment report describing the plan/project, European site baseline conditions, the adverse effects of the plan/project on the European site, how these effects will be avoided or reduced, including the mechanisms and timescale for these mitigation measures. If effects remain after mitigation measures have been considered proceed to Stage 3.
Stage 3: Assessment of Alternatives	Identify conditions/other restrictions that would enable it to be ascertained that the proposal would not adversely affect integrity	Re-assess adverse effects on integrity in light of alternative solutions. If there are no alternative solutions, proceed to Stage 4: IROPI.
Stage 4: Assessment of IROPI.	Identify 'imperative reasons of overriding public interest' (IROPI). Demonstrate no alternatives exist. Identify potential compensatory measures.	This stage is only pursued at the discretion of the Competent Authority, but exists to facilitate projects of over-riding public interest, which in the end is a political judgment balancing the need for and benefits of the project with the impact on the European site.

Relevant case law changes

- 3.13 This HRA has been prepared in accordance with recent case law findings, including most notably the recent 'People over Wind'¹⁰ and 'Holohan'¹¹ rulings from the Court of Justice for the European Union (CJEU).
- 3.14 The 2018 'People over Wind, Peter Sweetman v Coillte Teoranta' judgment ruled that Article 6(3) of the Habitats Directive should be interpreted as meaning that mitigation measures should be assessed as part of an Appropriate Assessment and should not be taken into account at the screening stage.

¹⁰ CJEU: Case C-323/17 People Over Wind & Peter Sweetman

¹¹ CJEU: Case C-461/17 Holohan v An Bord Pleanála

- 3.15 In light of the above, and in line with recent Government guidance¹², the HRA screening stage for the Proposed Development has not relied upon avoidance or mitigation measures to draw conclusions as to whether the Proposed Development would result in likely significant effects on European sites, with any such measures being considered at the Appropriate Assessment stage as appropriate. This is discussed in more detail in Section 3 below.
- 3.16 This HRA also fully considers the *Holohan v An Bord Pleanala* (9 Nov 2018) CJEU judgement which, in summary requires the potential for effects on species and habitats, including those not listed as qualifying features, to result in secondary effects upon the qualifying features of European sites, including the potential for complex interactions and dependencies. In addition, the potential for offsite impacts, such as through impacts to functionally linked land, and or species and habitats located beyond the boundaries of European site, but which may be important in supporting the ecological processes of the qualifying features. The implications of this ruling have also been fully considered in this HRA.
- 3.17 The HRA will therefore only consider the existence of conservation and/or preventative measures if the expected benefits of those measures are certain at the time of the assessment. The HRA will also ensure that if a threshold approach is applied it will consider the risk of significant effects being produced even if below the threshold values to ensure that there is no adverse effect on integrity of the European sites.

Screening Assessment

- 3.18 HRA Screening of the Proposed Development has been undertaken in line with the current available guidance and the requirements of the Habitats Regulations. The tasks that have been undertaken during the screening stage of the HRA and the conclusions reached are described in detail below.
- 3.19 The purpose of the screening stage is to:
- Identify whether the Proposed Development would have no effect on a European site alone, so that it can be eliminated from further consideration;
 - Identify whether the Proposed Development would not be likely to have a significant effect on a European site (i.e., would have some effect, because of links/connectivity, but which are not significant), either alone or in combination with other plans or projects, which therefore do not require 'appropriate assessment'; and
 - Identify where it is not possible to rule out the risk of significant effects on a European site, either alone or in combination with other plans or projects, and therefore whether appropriate assessment will be required.

4. BASELINE

European sites which may be affected by the Proposed Development

- 4.1 The Wash SPA, The Wash and North Norfolk Coast Special Area of Conservation (SAC), and Wash Ramsar site is situated approximately 14.5km from the Proposed Development at its nearest point.

¹² Defra and Natural England (2021) Habitats regulations assessments: protecting a European site.

The Wash Special Protection Area (SPA)

- 4.2 The conservation objectives of Wash SPA are to 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.
- 4.3 The Qualifying features of the Wash SPA are the non-breeding population of 19 species of wetland birds: Bewick's swan *Cygnus columbianus bewickii*, Pink-footed goose *Anser brachyrhynchus*, Dark-bellied brent goose *Branta bernicla*, Common shelduck *Tadorna tadorna*; Eurasian wigeon *Anas penelope*, Gadwall *Anas strepera*, Northern pintail (*Anas acuta*, Black (common) scoter *Melanitta nigra*, Common goldeneye *Bucephala clangula*, Eurasian oystercatcher *Haematopus ostralegus*, Grey plover *Pluvialis squatarola*, Red knot *Calidris canutus*, Sanderling *Calidris alba*, Dunlin *Calidris alpina*, Black-tailed godwit *Limosa limosa islandica*, Bar-tailed godwit *Limosa lapponica*, Eurasian curlew *Numenius arquata*, Common redshank *Tringa totanus*, Ruddy turnstone *Arenaria interpres* and also for breeding Common Tern *Sterna hirundo* and Little Tern *Sterna albifrons*.
- 4.4 The Lincolnshire Environmental Record Centre (LERC) has provided one record of Curlew, and Dark bellied brent goose, two records of Redshank, four records of Wigeon, six records of gadwall, 25 records of Pink footed goose, 27 records of Lapwing, two records of Redshank within the last 10 years within 5kms of the Proposed Development.

The Wash and North Norfolk Coast Special Area of Conservation (SAC)

- 4.5 The Norfolk Coast and Wash Special Conservation Area is the largest embayment in the UK. It is connected via sediment transfer systems to the north Norfolk coast. Together, the Wash and North Norfolk Coast form one of the most important marine areas in the UK and European North Sea coast, and include extensive areas of varying, but predominantly sandy, sediments subject to a range of conditions. Communities in the intertidal include those characterised by large numbers of polychaetes, bivalve and crustaceans. Subtidal communities cover a diverse range from the shallow to the deeper parts of the embayment's and include dense brittlestar beds and areas of an abundant reef-building worm ('ross worm') *Sabellaria spinulosa*. The embayment supports a variety of mobile species, including a range of fish, otter *Lutra* and common seal *Phoca vitulina*. The extensive intertidal flats provide ideal conditions for common seal breeding and hauling-out.
- 4.6 Sandy sediments occupy most of the subtidal area, resulting in one of the largest expanses of subtidal sandbanks in the UK. The subtidal sandbanks vary in composition and include coarse sand through to mixed sediment at the mouth of the embayment. Communities present include large dense beds of brittlestars *Ophiothrix fragilis*. Species include the sand-mason worm *Lanice conchilega* and the tellin *Angulus tenuis*. Benthic communities on sandflats in the deeper, central part of the Wash are particularly diverse. The subtidal sandbanks provide important nursery grounds for young commercial fish species, including plaice *Pleuronectes platessa*, cod *Gadus morhua* and sole *Solea solea*.
- 4.7 In the tide-swept approaches to the Wash, with a high loading of suspended sand, the relatively common tube-dwelling polychaete worm *Sabellaria spinulosa* forms areas of biogenic reef. These structures are varied in nature, and include reefs which stand up to 30 cm proud of the seabed and which extend for hundreds of metres. The reefs extend into The Wash where super-abundant *S. spinulosa* occurs and where reef-like structures

such as concretions and crusts have been recorded. The reefs are diverse and productive habitats which support many associated species that would not otherwise be found in predominantly sedimentary areas. Associated motile species include large numbers of polychaetes, mysid shrimps, the pink shrimp *Pandalus montagui*, and crabs.

- 4.8 Sandy flats predominate in the intertidal zone with some soft mudflats in the areas sheltered by barrier beaches and islands along the north Norfolk coast. The biota includes especially large numbers of polychaetes, mysid shrimps, the pink shrimp and crabs. Salinity ranges from that of the open coast in most of the area (supporting rich invertebrate communities) to estuarine close to the rivers. Smaller, sheltered and diverse areas of intertidal sediment, with a The Wash and North Norfolk Coast SAC UK0017075 Compilation date: May 2005 Version: 1 Designation citation Page 2 of 2 rich variety of communities, including some eelgrass *Zostera* spp. beds and large shallow pools, are protected by the north Norfolk barrier islands and sand spits.
- 4.9 The site contains the largest single area of saltmarsh in the UK and is one of the few areas in the UK where saltmarshes are generally accreting. The proportion of the total saltmarsh vegetation represented by glasswort *Salicornia* and other colonising annuals is high because of the extensive enclosure of marsh in this site and is also unusual in that it forms a pioneer community with common cord-grass *Spartina anglica*. There are large ungrazed saltmarshes on the North Norfolk Coast and traditionally grazed saltmarshes around the Wash. Saltmarsh swards dominated by sea-lavenders *Limonium* spp. are particularly well-represented. In North Norfolk, in addition to typical lower and middle saltmarsh communities, there are transitions from upper marsh to tidal reedswamp, sand dunes (which are largely within the adjacent North Norfolk Coast SAC), shingle beaches and mud/sandflats. Mediterranean saltmarsh scrub vegetation is dominated by a shrubby cover up to 1 metre high of bushes of shrubby sea-blite *Suaeda vera* and sea-purslane *Atriplex portulacoides*, with a patchy cover of herbaceous plants and bryophytes. This scrub vegetation often forms an important feature of the upper saltmarshes, and extensive examples occur where the drift-line slopes gradually and provides a transition to dune, shingle or reclaimed sections of the coast. At a number of locations on this coast perennial glasswort *Sarcocornia perennis* forms an open mosaic with other species at the lower limit of the sea-purslane community.
- 4.10 The Qualifying habitats: The site is designated under article 4(4) of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);
 - Coastal lagoons*;
 - Large shallow inlets and bays;
 - Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) (Mediterranean saltmarsh scrub);
 - Mudflats and sandflats not covered by seawater at low tide. (Intertidal mudflats and sandflats);
 - Reefs;
 - *Salicornia* and other annuals colonising mud and sand. (Glasswort and other annuals colonising mud and sand); and
 - Sandbanks which are slightly covered by sea water all the time. (Subtidal sandbanks).
- 4.11 Qualifying species: The site is designated under article 4(4) of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:
- Common seal *Phoca vitulina*; and
 - Otter *Lutra*

- 4.12 The LERC has provided records of Otter within the Proposed Development Area. The Proposed Development is drained by a network of ditches which via the South Forty Foot Drain provide a hydrological connection to the Wash SAC.

Wash Ramsar site

- 4.13 The Wash Ramsar site is describe in the citation as The Wash is the largest estuarine system in Britain. It is fed by the rivers Witham, Welland, Nene and Great Ouse. There are extensive saltmarshes, intertidal banks of sand and mud, shallow waters and deep channels. It is the most important staging post and over-wintering site for migrant wildfowl and wading birds in eastern England. It supports a valuable commercial fishery for shellfish and also an important nursery area for flatfish. It holds one of the North Sea's largest breeding populations of common seal *Phoca vitulina* and some grey seals *Halichoerus grypus*. The sublittoral area supports a number of different marine communities including colonies of the reef-building polychaete worm *Sabellaria spinulosa*. is designated under Criteria 1, 3,5, and 6:

- Ramsar Criterion 1 The Wash is a large shallow bay comprising very extensive saltmarshes, major intertidal banks of sand and mud, shallow water and deep channels.
- Ramsar criterion 3 Qualifies because of the inter-relationship between its various components including saltmarshes, intertidal sand and mud flats and the estuarine waters. The saltmarshes and the plankton in the estuarine water provide a primary source of organic material which, together with other organic matter, forms the basis for the high productivity of the estuary.
- Ramsar criterion 5 Assemblages of international importance: Species with peak counts in winter: 292,541 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:

- Eurasian oystercatcher, *Haematopus ostralegus*, Europe & NW Africa -wintering 15616 individuals, representing an average of 1.5% of the population (5 year peak mean 1998/9-2002/3).
- Grey plover, *Pluvialis squatarola*, E Atlantic/W Africa -wintering 13129 individuals, representing an average of 5.3% of the population (5 year peak mean 1998/9-2002/3 - spring peak).
- Red knot, *Calidris canutus islandica*, W & Southern Africa (wintering) 68987 individuals, representing an average of 15.3% of the population (5 year peak mean 1998/9-2002/3)
- Sanderling, *Calidris alba*, Eastern Atlantic 3505 individuals, representing an average of 2.8% of the population (5 year peak mean 1998/9-2002/3).
- Eurasian curlew, *Numenius arquata*, N. a. *arquata* Europe (breeding) 9438 individuals, representing an average of 2.2% of the population (5 year peak mean 1998/9-2002/3).
- Common redshank, *Tringa totanus*, 6373 individuals, representing an average of 2.5% of the population (5 year peak mean 1998/9-2002/3).
- Ruddy turnstone, *Arenaria interpres*, NE Canada, Greenland/W Europe & NW Africa 888 individuals, representing an average of 1.7% of the GB population (5 year peak mean 1998/9-2002/3).

Species with peak counts in winter:

- Pink-footed goose, *Anser brachyrhynchus*, Greenland, Iceland/UK 29099 individuals, representing an average of 12.1% of the population (5 year peak mean 1998/9-2002/3).

- Dark-bellied brent goose, *Branta bernicla bernicla*, 20861 individuals, representing an average of 9.7% of the population (5 year peak mean 1998/9-2002/3).
- Common shelduck, *Tadorna tadorna*, NW Europe 9746 individuals, representing an average of 3.2% of the population (5 year peak mean 1998/9-2002/3).
- Northern pintail, *Anas acuta*, NW Europe 431 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3).
- Dunlin, *Calidris alpina alpina*, W Siberia/W Europe 36600 individuals, representing an average of 2.7% of the population (5 year peak mean 1998/9-2002/3).
- Bar-tailed godwit, *Limosa lapponica lapponica*, W Palearctic 16546 individuals, representing an average of 13.7% of the population (5 year peak mean 1998/9-2002/3).

Species/populations identified subsequent to designation for possible future consideration under criterion 6. Species with peak counts in spring/autumn:

- Ringed plover, *Charadrius hiaticula*, Europe/Northwest Africa 1500 individuals, representing an average of 2% of the population (5 year peak mean 1998/9-2002/3).
- Black-tailed godwit, *Limosa limosa islandica*, Iceland/W Europe 6849 individuals, representing an average of 19.5% of the population (5 year peak mean 1998/9-2002/3).

Species with peak counts in winter:

- European golden plover, *Pluvialis apricaria*, P. a. altifrons Iceland & Faroes/E Atlantic 22033 individuals, representing an average of 2.3% of the population (5 year peak mean 1998/9-2002/3).
- Northern lapwing, *Vanellus vanellus*, Europe breeding 46422 individuals, representing an average of 1.3% of the population (5 year peak mean 1998/9-2002/3).

4.14 Wintering birds surveys recorded Pink footed Geese, Lapwing and Golden Plover within or adjacent to the Proposed Development Area.

5. ASSESSMENT OF 'LIKELY SIGNIFICANCE EFFECT'

5.1 As required under Regulation 63 of the Habitats Regulations, an assessment has been undertaken of the 'likely significant effects' of the Proposed Development. The screening assessment has been conducted without taking mitigation into account, in accordance with the 'People over Wind' judgment.

5.2 There is an extensive list of effect pathways and environmental changes associated with terrestrial developments. These are set out below in Table 2.

Table 2: Potential pathways and environmental change associated Internationally Important Sites.

Pressure /Threat	Environmental Change
Hydrological changes	Temperature changes Salinity changes Water flow changes Flood regime changes
Pollution and other chemical changes	Non-synthetic and synthetic compound contamination Radionuclide contamination

Pressure /Threat	Environmental Change
	Introduction of other substances (solid, liquid or gas) De-oxygenation Nutrient enrichment Organic enrichment
Physical loss	Physical loss Physical loss of linked habitat Physical change to another habitat
Physical damage	Habitat structure changes Changes in suspended solids Siltation rate changes
Physical pressures	Litter Noise disturbance Light disturbance Barriers to specific movements Death or Injury
Biological Pressures	Visual disturbance Genetic modification and translocation of indigenous species Introduction or spread of non-indigenous species Introduction of microbial pathogens Exploitation / harvesting of species Removal of non-target species during exploitation / harvesting

5.3 A risk-based approach involving the application of the precautionary principle is adopted in the assessment, such that a conclusion of 'no significant effect' has only been reached where it is considered very unlikely, based on current knowledge and the information available, that the Proposed Development would have a significant effect on the integrity of a European site. The screening assessment identifies assumptions that have been applied to enable specific impacts on European sites to either be scoped in or out.

Interpretation of Likely Significant Effect

- 5.4 Relevant case law helps to interpret when effects should be considered as a Likely Significant Effect, when carrying out HRA of a land use plan/project.
- 5.5 In the Waddenzee case¹³, the European Court of Justice ruled on the interpretation of Article 6(3) of the Habitats Directive (translated into Reg. 63 in the Habitats Regulations), including that: An effect should be considered 'likely', "if it cannot be excluded, on the basis of objective information, that it will have a significant effect on the site" (para 44). An effect should be considered 'significant', "if it undermines the conservation objectives" (para 48). Where a plan/project or project has an effect on a site "but is not likely to undermine its conservation objectives, it cannot be considered likely to have a significant effect on the site concerned" (para 47).

¹³ ECJ Case C-127/02 "Waddenzee" Jan 2004.

- 5.6 An opinion delivered to the Court of Justice of the European Union commented that: “The requirement that an effect in question be ‘significant’ exists in order to lay down a de minimis threshold. Plan/projects or projects that have no appreciable effect on the site are thereby excluded. If all plan/projects or projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill.”
- 5.7 “This opinion (the ‘Sweetman’ case¹⁴) therefore allows for the authorisation of plan/projects and projects whose possible effects, alone or in combination, can be considered ‘trivial’ or de minimis; referring to such cases as those “which have no appreciable effect on the site”. In practice such effects could be screened out as having no Likely Significant Effect; they would be ‘insignificant’.

Mitigation provided by the Proposed Development

- 5.8 In accordance with the ‘People over Wind’ judgement¹⁵, avoidance and mitigation measures cannot be relied upon at the Screening Stage, and therefore, where such measures exist, they will be considered at the Appropriate Assessment stage for impacts where likely significant effects, either alone or in-combination, cannot be ruled out.

In-combination Effects

- 5.9 Regulation 63 of the Habitat Regulations requires an Appropriate Assessment where “a land use plan/project is likely to have a significant effect on a European site (either alone or in combination with other plan/projects or projects) and is not directly connected with or necessary to the management of the site”. Therefore, it will be necessary to consider whether any impacts identified from the Proposed Development may combine with other plans or projects to give rise to significant effects in combination. Potential in-combination effects are considered in Section 8.

6. INFORMATION TO SUPPORT HRA SCREENING ASSESSMENT

- 6.1 The Proposed Development is located approximately 14.5km from The Wash SPA/SAC/Ramsar site. It will not result in any direct loss of habitat, disturbance, or changes to habitat adjacent the designated sites. The majority threats listed in Table 2 will not be present in the Proposed Development, or the Proposed Development is too far away from the designated site, or there will be no pathway linking the Proposed Development to the designated site. Therefore, there will be no potential for a likely significant effect. However there is a potential hydrological link and migratory wetland birds are not always restricted to the boundaries of designed sites. Therefore, consideration has been given to the potential effect of the Proposed Development where there may be a pathway linking the development to the Wash SAC/SPA:

- Silt-laden run-off;
- Water quality effects; and
- Loss of Functionally Linked Habitat.

¹⁴ Advocate General’s Opinion to CJEU in Case C-258/11 Sweetman and others v An Bord Pleanala 22nd Nov 2012

¹⁵ CJEU: Case C-323/17 People Over Wind & Peter Sweetman v Coillte Teoranta.

Silt-laden run-off

- 6.2 The network of drains and watercourses throughout the Proposed Development area drain into the South Forty Foot Drain. This drain joins the Witham River at Boston 11 km to east the of the Proposed Development before entering The Wash SPA/ SAC a further 5 km downstream. Whilst the Proposed Development is a considerable distance from the Wash SPA/SAC/Ramsar Site, there is a hydrological link between the National site network and the Proposed Development. Therefore, the potential for a likely significant effect cannot be completely ruled out and there is a need for Silt-laden run-off to be considered at the Appropriate Assessment stage of an HRA.

Water quality effects

- 6.3 The network of drains and water courses throughout the Proposed Development area drain into the South Forty Foot Drain. This drain joins the Witham River at Boston 11 kms to east the of the Proposed Development before entering The Wash SPA/ SAC a further 5 kms downstream. Whilst the Proposed Development is a considerable distance from the Wash SPA/SAC/Ramsar site there is a hydrological link between the National site network and the Proposed Development. Therefore, the potential for a likely significant effect in relation to water quality cannot be completely ruled out, therefore water quality effects has been taken forward to Appropriate Assessment stage of the HRA.

Loss of Functionally Linked Habitat

- 6.4 'Functionally linked land' (FLL) is a term often used to describe areas of land or sea occurring outside a designated site which is considered to be critical to, or necessary for, the ecological or behavioural functions in a relevant season of a qualifying feature for which a SAC / SPA / Ramsar site has been designated. These habitats are frequently used by SPA species and supports the functionality and integrity of the designated sites for these features.
- 6.5 The only SAC qualifying species likely use the habitat in and around the Proposed Development is otter. Otter can travel considerable distances and a male territory can extended to over 20km along water courses whilst females may have territories extended 5-10km. The Proposed Development will have by design setback of 8m from all drainage ditches and in order to comply with Internal Drainage Board (IDB) regulations 9m from all IDB drainage ditches. The Proposed Development as planned prior to mitigation measures will not result in any loss watercourses or associated habitat functionally linked habitat such wetlands or drainage ditches used by otter therefore the proposed development will not result in likely significant effects on the North Norfolk Coast and Wash SAC population of otters as result of the loss of functionally linked habitat.
- 6.6 The majority of Wash SPA and Ramsar site qualifying winter wetland bird species are restricted to the wetland habitat within the designation for foraging and roosting. However, three species Pink footed goose, Golden plover and Lapwing will feed on farmland. Therefore, the potential for a likely significant effect cannot be completely ruled out therefore loss of functionally linked has been taken forward to appropriate assessment.

Screening conclusions for the proposed development

- 6.7 HRA screening of the proposed development was undertaken in accordance with available guidance and based on a precautionary approach. The key HRA screening conclusions are that it cannot be ruled out that there will be likely significant effects on the Wash SPA/SAC through silt laden run-off, water quality effects and/or loss of functionally linked habitats.

7. SHADOW APPROPRIATE ASSESSMENT

- 7.1 Following the screening stage, the competent authority is required under Regulation 102¹⁶ of the Habitats Regulations to make an 'Appropriate Assessment' of the implications of the plan for European sites, in view of their conservation objectives.
- 7.2 This stage seeks to determine whether implementation of the Proposed Development will result in Adverse Effects on Integrity (AEoI) of a European site. It also considers the potential for in-combination effects from other plans and projects in the local area. Consideration was given to mitigation measures that may be included in the proposed development to avoid potential impacts, or to reduce the likelihood and significance of effects.
- 7.3 A European site's integrity depends on it being able to sustain its 'qualifying features' (i.e., those Annex 1 habitats, Annex II species, and Annex 1 bird populations for which it has been designated) and to ensure their continued viability. A high degree of integrity is considered to exist where the potential to meet a European site's conservation objectives is realised and where the European site is capable of self-repair and renewal with a minimum of external management support. Appropriate Assessment therefore needs to focus on those impacts judged likely to have an effect on the qualifying features of European sites, or where insufficient certainty regarding this remained at the screening stage.
- 7.4 A shadow Appropriate Assessment has been undertaken for this European sites to determine whether the Proposed Development will result in AEoI. The Appropriate Assessment focuses on those impacts that are judged likely to have a significant effect on the qualifying features of a European site, or where insufficient certainty regarding this remained at the screening stage. A conclusion needs to be reached as to whether or not the proposed development would result in AEoI of a European site. To reach a conclusion, consideration was given to whether the predicted impacts of the proposals (either alone or in combination) have the potential to:
- Delay the achievement of conservation objectives for the site;
 - Interrupt progress towards the achievement of conservation objectives for the site;
 - Disrupt factors that help to maintain the favourable conditions of the site; and
 - Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site.

Silt-laden run-off

- 7.5 As flagged at paragraph 6.2 above, there is a hydrological link between the Wash SPA/SAC/Ramsar Site and the Proposed Development and, therefore, a need to consider silt-laden run-off at the 'Appropriate Assessment' stage of an HRA.
- 7.6 The majority of land use within Proposed Development Area is currently use for intensive arable production which typically involves annual cultivation the land to allow planting of crops.
- 7.7 The initial design for development of the Energy Park includes a 9m standoff from all Internal Drainage Board Drains (IDB) and an 8m stand-off from all other drains within

¹⁶ Assessment of plans and projects significantly affecting European sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. European Commission Environment DG, November 2001

the Energy Park Area. These areas will be fenced off during construction to prevent the risk of silt run-off into the ditch or drainage network.

- 7.8 Any potential negative impacts of possible dust deposition or silt runoff into and the drainage ditches within the Proposed Development area will be mitigated for by the implementation of a CEMP. This will restrict working during periods of heavy rain and outline the installation of silt fencing, if required. This will avoid any extra silt runoff along any ditches within the Proposed Development Area.
- 7.9 The Grid Connection will cross at least 12 field boundaries. Internal Drainage Board drains and major wet drains will be directionally drilled (or other similar method) beneath the water level although smaller field ditches which do not permanently hold water may be excavated and if wet at the time, or rainfall occurs may require to be dammed and pumped. This will minimise and virtually eliminate any silt any run-off.
- 7.10 The Proposed Development of the Energy Park will result in the conversion of 512ha of arable land to 491ha of permanent grasslands and 19ha of hard standing.
- 7.11 Species rich permanent grasslands enhance water percolation and drainage through soils reducing the risk of surface water runoff and loss of topsoil.

7.12 Stopping arable cultivation and conversation of the land mosaic of grasslands will reduce the potential for silt run-off into the drainage networks and into The Wash SPA/SAC. It is estimated the loss of soil in UK due to intensive agricultural practices is between 0.1-0.3 tonnes per ha per year (UK Parliamentary Office Publication 265)¹⁷ which would equate to between 2,120—7,032 tonne of topsoil prevented from entering The Wash SPA/SAC (over the 40 year operational life of the Proposed Development).

7.127.13 The design of the bus-bar extension and bus-coupler will include appropriate drainage to ensure no extra silt laden run-off. During construction appropriate mitigation measures (installation of barriers and or silt traps) will prevent any silt laden run-off.

7.137.14 -It is considered there will be no adverse effects on the Wash SPA/SAC due to silt-laden run-off from the proposed development and it likely there will be small but not significant positive effect on the integrity of the Wash SPA/SAC in term of a small reduction of silt laden run-off. The conversation of the majority of the Energy Park site to a mosaic of permanent grassland will virtually eliminate this loss.

Water quality effects

7.147.15 The network of drains and water courses throughout the Proposed Development area drain into the South Forty Foot Drain. This drain joins the Witham River at Boston 11 km to east the of the Proposed Development before entering The Wash SPA/ SAC a further 5 km downstream. Whilst the Proposed Development is a considerable distance from the Wash SPA/SAS/Ramsar site there is a hydrological link.

7.157.16 The majority of land use within Proposed Development Area is currently use for intensive arable production which typically involves annual cultivation the land and application of numerous agrochemicals. In 2021, according to the landowner's farm records for the Energy Park Site a total 272 tonnes of chemical fertiliser and 5,581 litres of agrochemicals was applied to the wheat crop on that land.

¹⁷ UK Soil degradation July 2006 Parliamentary Office of Science and Technology postnote 265

~~7.16~~7.17 Therefore, there is currently a risk of run-off of fertilisers and agrochemicals after each application to the fields at times of high rainfall or flooding and throughout the year via the land drains across the whole site.

7.18 The initial design for development of the Energy Park includes a 9m standoff from all Internal Drainage Board Drains (IDB) and an 8m stand-off from all other drains within the Energy Park Area.

~~7.17~~7.19 The design of the bus-bar extension and bus-coupler will include appropriate drainage to ensure no water quality effects. During construction appropriate mitigation measures (installation of barriers and or silt traps) will prevent any water quality effects.

~~7.18~~7.20 ~~5.9~~—Stopping annual arable cultivation, the cessation application of fertiliser and agrochemicals combined with conversation mosaic of permanent grasslands will reduce to zero fertiliser and agrochemical run-off into the Wash SPA/SAC via the drainage network from the site within a few years. Therefore, there will be no adverse effects on the integrity Wash SPA/SAC and it likely there will be small positive effect on the water quality of the Wash SPA/SAC in term of reduction of fertiliser and agrochemical input.

Loss of Functionally Linked Habitat

~~7.19~~7.21 The Lincolnshire Environmental Record Centre (LERC) has provided records of a small number of birds included in the citation of Wash SPA/Ramsar site. These is one record of curlew, and a dark bellied brent goose, two records of redshank, four records of wigeon, six records of gadwall, 25 records of pink footed goose, 27 records of lapwing, two records of redshank within the last 10 years within 5kms of the Proposed Development. When considered in relation to the large number of these wintering on the Wash (Section 4) there is no evidence from these records that the Proposed Development is an important wintering area for these species and no evidence that the area provide functionally linked habitat which is considered to be critical to, or necessary for, the ecological or behavioural functions in a relevant season of a qualifying feature for which the Wash SPA / Ramsar site has been designated.

~~7.20~~7.22 Winter birds survey within the Proposed Development recorded two gadwall and occasional small flocks of golden plover (peak count 128) and lapwing (peak count 318) within the Energy Park Area. No Pink-footed geese were recorded using the Energy Park Area but small flock of 56 were recorded once within corridor for the offsite Grid Connection.

~~7.21~~7.23 Large number of Lapwing and Golden Plover winter in Great Britain with peak counts of over 145,000 Golden plover and 272,630 Lapwing¹⁸. A large proportion of these populations (41% of golden plover (Peak mean count 59,628)¹⁸ and 20% of Lapwing (peak mean count 55,543)¹⁸) are recorded on designated wetland site in the East of England including Humber Estuary, the Lower Derwent Valley, to the North of the proposed development and the Wash, the Ouse Washes, the Nene Washes and the North Norfolk coast. However large number of both species feed on farmland between these designated sites¹⁹ moving between field depending state of cultivation, crops being grown, muck spreading and weather conditions. The crops being grown and cultivation regimes will change from year to year due to a wide range factors including international food commodity prices, government support schemes and changing climate Whilst these

¹⁸ BTO webs counts 2019/20 rost, T.M., Calbrade, N.A., Birtles, G.A., Hall, C., Robinson, A.E., Wotton, S.R., Balmer, D.E. and Austin, G.E. 2021. Waterbirds in the UK 2019/20: The Wetland Bird Survey. BTO/RSPB/JNCC. Thetford.

¹⁹ Gillings ,S.Fuller , R.J, & Sutherland W.J. Winter use and habitat selection by Eurasian Golden Plover *Pluvialis apricaria* Northern Lapwing *Vanellus vanellus* on arable farmland.

large areas of farmland have in recent times become important alternative feeding area for qualifying species outside designated sites for both Golden Plover and Lapwing.

7.227.24 Whilst the farmland habitats are frequently used by SPA species however there is no evidence that numbers of these species using internationally important sites is directly linked to this farmland habitat but rather the management of the designated coastal wetland site themselves where food intake rates have been found to be four times higher than on nearby farmland²⁰. Therefore, these large areas of farmland cannot be considered to be critical to, or necessary for, the ecological or behavioural functions in a relevant season of a qualifying feature for which a SAC / SPA / Ramsar site has been designated.

7.237.25 The golden plover and lapwing recorded occasionally using the Energy Park area are very small proportion of populations winter the east of England (less than 1%) Even if areas of farmland could be linked to particular internationally important sites it consider that the change from open arable field to permanent grass land beneath solar panels within this Proposed Development would not be significant change in relation of total area of farmland available in eastern England

7.247.26 The Greenland/Iceland pink-footed Goose population which winters almost exclusively in Britain now exceed over 500,00 birds having increased by 111% over the last 25 years. The Wash pink-footed goose population feeds over a very wide area extending to over 350,000ha. The only roosting site in The Wash SPA is at Snettisham, the five year mean peak is 37,908 geese. Whilst many geese feed on marshes much close to the roost, particularly after the shooting season²¹. Feeding areas from the roost site are primarily inland to the south and east in Norfolk, though some also move across The Wash to South Lincolnshire.

7.27 Away from the coastal grazing marches arable fields are the main food source for pink-footed geese over this 350,000ha area, particularly post-harvest sugar beet tops and other vegetable crops. The actual distribution changes from year depending on the crops harvested and cultivation for the next years crops. Some landowners leave arable stubble and crop residues specifically to attract pink-footed geese during the shooting season (1st September to 31st January) to lease out the shooting rights.

7.257.28 The area for the bus-bar extension and bus-coupler is an area of plantation woodland and small area of partially enclosed semi-improved grassland and a small area of hawthorn scrub. This is not suitable habitat for any of the Wash SPA qualifying birds species to forage or roost, or close to land where any of these species regularly forage or roost.

7.267.29 Given the extensive foraging areas used by The Wash pink-footed goose population and their preference to feed close to the roost at Snettisham the fact that no records of use of the energy park and one small flock recorded just once within the Grid Connection Corridor it is concluded the land the Proposed Development cannot be regarded as functionally linked habitat important to the integrity of the Wash SPA/SAC.

²⁰ C. Ketzenberg & K.-M. Exo unpubl. Data cited in Gillings, S. Austin, G.A., Sutherland W.J., 2006 C. Ketzenberg & K.-M. Exo unpubl. data

²¹ Brides K., Mitchell C., & Hearn R.D., 2013 Mapping the distribution of feeding Pink-footed Geese in England Wildfowl & Wetland Trust /Natural England Report

8. IN COMBINATION EFFECTS

8.1 The potential for in-combination effects will only be considered for those components identified as unlikely to have a significant effect alone, but which could act in combination with other plans and projects to produce a significant effect.

Table 3: Summary of plans and projects with the potential to have In-Combination Effects

Plan or Project	Description	Potential effect on SPA/SAC Ramsar and HRA Outcome	Potential for in combination effects
Vicarage Drove Solar 49.9MW Farm - Approved	c. 4.5km south of the Energy Park Site at its closest point but adjacent to the proposed extension to the substation at Bicker Fen.	None identified. No HRA	None identified. The Applicant for the development has provided sufficient mitigation on the site and no significant impacts have been reported
Land at Little Hale Fen Solar 49 MW solar farm	c. 4.6km north east of Energy Park site current only screening request	None identified. No HRA	None identified. The Applicant states that overall, it is considered that the proposed development would not have any significant adverse effects on biodiversity and that there is potential for net biodiversity gains
Screening for a 28MW solar farm at Ewerby Thorpe	4.1km north-west of the Energy Park Site at its closest point	None identified. No HRA	Overall, it is considered that the proposed development would not have any significant adverse effects on biodiversity and that there is potential for net biodiversity gains.
Temple Oaks solar farm	250 MW solar farm c.18.4 km south-west of the Energy Park Site at its closest point	This is a significant distance from the Heckington Fen Application Site and it highly unlikely to create a cumulative impact. Natural England has stated that they have no nature conservation concerns.	None
Environment Agency	Boston Tidal Barrier approximately 11km from the grid cable corridor	Non assessed in project HRA screening	None
Boston Alternative Energy Facility	50MW + 11.7km west of the Energy Park Site at its closest point	This is significant development adjacent to the Wash SPA/SAC. There will be no cumulative effects in	None

Plan or Project	Description	Potential effect on SPA/SAC Ramsar and HRA Outcome	Potential for combination effects in
		terms of silt run off and pollution into the Wash SPA/SAC.	
Outer Dowsing Offshore Wind (Generating Station)	50MW + c. 390m east to the onshore scoping boundary for indicative grid connection search area	No – the onshore element of the offshore wind farm will not result in cumulative effect.	None
South Lincolnshire Reservoir	Early consultation stage c. 7.7km west of the Energy Park Site at its closest point	increase the nature conservation value of the farmed landscape and may complement the nature conservation enhancements proposed within the Heckington Fen Energy Park	None

9. SUMMARY

- 9.1 The findings of the HRA screening determined that the Proposed Development in combination with other plans and projects could result in the following likely significant effects:
- Silt laden run-off;
 - Water quality effects; and
 - Loss of functionally linked habitat.
- 9.2 These Likely Significant Effects (LSEs) were taken forward to a Shadow Appropriate Assessment (Section 7). Where the design of the Proposed Development, appropriate mitigating and other factors were taken into consideration adverse effects on the integrity of the North Norfolk Coast and Wash SAC, the Wash SPA and the Wash Ramsar were ruled out.
- 9.3 Design parameters and mitigation measures outlined can be delivered by appropriate planning ~~requirements condition~~ attached to the DCO ~~order~~ (document reference 3.1).