

South Humber Bank Energy Centre Development Consent Order

South Marsh Road, Stallingborough, DN41 8BZ

Appendix 10C: Preliminary Ecological Appraisal Report



Applicant: EP Waste Management Limited
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SUMMARY

EP Waste Management Limited is submitting a Development Consent Order application for a proposed energy from waste plant of up to 95 MW, referred to as the South Humber Bank Energy Centre (SHBEC) (the Proposed Development). The Proposed Development is located on a parcel of land to the east of the South Humber Bank Power Station (SHBPS), off South Marsh Road, Immingham (centred on approximate grid reference TA 230 133). This preliminary appraisal is intended to contribute to the evidence base to support the Ecological Impact Assessment (EclA) undertaken for the Proposed Development.

The Proposed Development is set in a landscape dominated by the industrial areas of the Humber Estuary hinterland and mainly arable land. The Main Development Area is dominated by semi-improved neutral grassland that was created as part of a habitat creation scheme undertaken in the mid-2000s by SHBPS. Small blocks of semi-mature broad-leaved woodland have been planted to the west and south of SHBPS, although these are outside the Main Development Area.

Further surveys for protected and notable species were undertaken to support the EclA as follows:

- reptiles – the rough grassland and ditches on the site represent suitable habitat for reptiles, particularly grass snake;
- water vole and otter – potential for these species to be present in drainage ditches surrounding the Site; and
- aquatic invertebrates – the ditches on the Site provide opportunities for a range of aquatic invertebrates, potentially including nationally or regionally notable species, and these habitats may be directly impacted by the Proposed Development.

The Proposed Development is located adjacent to the Humber Estuary European Marine Site, which is designated as a Special Area of Conservation (SAC), Special Protection Area (SPA), Ramsar site and Site of Special Scientific Interest (SSSI). The Proposed Development is therefore likely to require Habitat Regulations Assessment (HRA) screening to determine the potential for likely significant effects (LSE) under the Conservation of Habitats and Species Regulation 2017. If the HRA screening determines that there is the potential for the Proposed Development to result in LSE, then an appropriate assessment should be undertaken to examine whether the proposals will result in any adverse effects on the integrity of the European site.

1.0 INTRODUCTION

Purpose of Survey

- 1.1 AECOM initially undertook a Preliminary Ecological Appraisal (PEA) of habitats within and adjacent to the planning application boundary of a proposed 49.9 MW energy from waste power station referred to as the South Humber Bank Energy Centre, which received full planning consent in April 2019 (referred to hereafter as 'the Consented Development'). The Consented Development is located on the same site, a parcel of land to the east of the SHBPS, off South Marsh Road, Immingham (centred approximately on grid reference TA 230 133).
- 1.2 An up to 95 MW energy from waste power station (referred to as the Proposed Development) is now proposed in place of the 49.9 MW Consented Development. Development consent is required from the Secretary of State for Business, Energy and Industrial Strategy for the Proposed Development because it is defined as a nationally significant infrastructure project under the Planning Act. The survey data and PEA undertaken for the Consented Development provide relevant information to inform the EcIA of the Proposed Development, but have been updated where relevant.
- 1.3 The PEA aims to identify whether there are known or potential ecological features (nature conservation designations and protected and notable habitats and species) that may constrain or influence the design and implementation of the Proposed Development. The approach applied when undertaking this PEA accords with the *Guidelines for Preliminary Ecological Appraisal* published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017). The PEA addresses relevant wildlife legislation and planning policy as summarized in Section 2 of this report, and is consistent with the requirements of British Standard 42020:2013 Biodiversity: Code of Practice for Planning and Development.
- 1.4 The survey area referenced in this PEA are as follows:
 - Main Development Area (shown on Figures 10C.3 and 10C.4) – refers to the land required for the energy from waste power station and associated infrastructure, including access roads and sub-station; and
 - Wider Survey Area – refers to remaining land outside the Main Development Area that is within the Application Site boundary (the Site).

Scope of Works

- 1.5 In order to deliver the PEA, a desk study and an extended Phase 1 Habitat survey were undertaken by an appropriately experienced ecologist in May 2018, to identify ecological features within the Site and the wider potential zone of influence of the Proposed Development (where access to adjacent land had been agreed). An update Phase 1 Habitat survey was also undertaken in October 2019. The potential zone of influence (see also Section 3: Methods) was defined with reference to available information about the likely nature of the Proposed Development.
- 1.6 The purpose of the PEA was to:
 - identify and categorise all habitats associated with the Main Development Area and any adjacent areas where there may be potential for direct or indirect effects (the 'zone of influence');
 - carry out an appraisal of the potential of the habitats recorded to support protected or notable species of fauna and flora;

- provide advice on any potential ecological constraints and opportunities in the zone of influence, including the identification (where relevant) of any requirements for follow-up habitat and species surveys and/or requirements for ecological mitigation; and
- provide a map showing the location of the identified ecological features of relevance.

1.7 The purpose of this report is to provide a high level appraisal of the ecological risks and opportunities associated with the Proposed Development and to provide a basis for the identification of relevant ecological features that might be impacted by the Proposed Development, and requirements for further survey and impact assessment to assess this further. The report makes evidence based recommendations on the scope of further work (where necessary) that would be required to support a planning application. High level recommendations are made on:

(a) potential options for the avoidance, mitigation or compensation of the potential impacts of the Proposed Development (where known or where they can reasonably be anticipated) on the identified ecological features in accordance with objectives to deliver No Net Loss for biodiversity; and

(b) potential enhancements that could be delivered in accordance with objectives to secure Net Gain for biodiversity as a consequence of new development.

Background Information

- 1.8 The land parcel where the Proposed Development would be located is within an area of semi-improved grassland currently managed for nature conservation by the adjacent SHBPS, created around 10 years ago. The nature conservation area also comprises a newly-planted orchard and areas of broad-leaved woodland (located to the west and south of SHBPS). At the time of the first Phase I Habitat survey in May 2018, two man-made ponds were present within the Main Development Area, but these were infilled in Summer 2019 in preparation for the construction of the Consented Development. There are also a number of drainage ditches around the perimeter of the Wider Survey Area, to the north, east, south and west of the existing SHBPS. A Biodiversity Action Plan (BAP) has been prepared for the nature conservation area, and the grassland has been managed through sheep grazing and annual mowing in September (Humber INCA, 2011).
- 1.9 Ecological surveys of the nature conservation area were undertaken in 2010 on behalf of Centrica Plc to feed into the BAP for the SHBPS; these surveys are summarised in Table 10C.1 below. These were reported in a Phase 1 Habitat survey report (Humber INCA, 2010).

Table 10C.1: Summary of previous ecology surveys on Site

SURVEY	DATE	REFERENCE	COMMENTS
Phase 1 habitat survey	18.05.10	Humber INCA, 2010	Habitat on site is dominated by semi-improved grassland seeded with flowers and managed for nature conservation. A network of ditches surrounds the site and two ponds are present. Small woodland copses are present to the west and south of SHBPS.
Water vole survey	15.04.10	Humber INCA, 2010	Water vole presence confirmed on ditches within the Site.
Amphibian survey	15.04.10 18.04.10	Humber INCA, 2010	Two visits undertaken (torch survey and egg search) No great crested newt (<i>Triturus cristatus</i>) (GCN) recorded

2.0 WILDLIFE LEGISLATION AND PLANNING POLICY

Wildlife Legislation

- 2.1 The following wildlife legislation is potentially relevant to the Proposed Development (Table 10C.2). This legislation has been considered when planning and undertaking this PEA using the methods described in Section 3, when identifying potential constraints to the Proposed Development, and when identifying further survey requirements, design options and mitigation, as discussed in Section 5. Compliance with legislation may require the attainment of relevant protected species licences prior to the implementation of the Proposed Development.
- 2.2 Further information on the requirements of the above legislation is provided as Appendix 10A.

Table 10C.2: Summary of relevant legislation

DOCUMENT	REQUIREMENTS/ PURPOSE
The Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations)	<p>Affords protection to European Protected Species, such as bats and GCN, listed on Schedule 2 (animals) and 5 (plants). It is an offence (subject to exceptions) to deliberately capture, kill, disturb or trade in listed animals. In certain circumstances, licences can be granted to permit some actions prohibited under the Act.</p> <p>Section 10 of the Regulations requires that competent authorities must take such steps in the exercise of their functions as they consider appropriate to secure the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds as appropriate, and having regard to the requirements of Article 2 of the new Wild Birds Directive. This includes the use of planning and development control measures.</p>
Wildlife and Countryside Act 1981 (as amended) (WCA)	<p>Part 1 of the Act affords general protection to all species of wild bird and specific protection to flora and fauna listed on Schedules 1 (birds protected by special penalties), 5 (other animals) and 8 (flora, fungi and lichens).</p> <p>In certain circumstances, licences can be granted to permit some actions prohibited under the Act.</p> <p>The Act contains measures for preventing the establishment of non-native species which may be detrimental to native wildlife, including prohibiting the planting and spread of plants listed in Schedule 9.</p>
Countryside and Rights of Way (CRoW) Act 2000	The Act increases powers for the protection and management of SSSIs and places a duty on public bodies to further the conservation and enhancement of SSSIs.
Natural Environment and Rural Communities (NERC) Act 2006	Section 41 (s41) includes a list of habitats and species of principal importance for nature conservation in England which is to be used by decision-makers to guide the implementation of their duties under section 40 of the Act, so as to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

DOCUMENT	REQUIREMENTS/ PURPOSE
Protection of Badgers Act 1992	If badger (<i>Meles meles</i>) is present, the legislation may have a bearing on post-consent implementation and mitigation, and the baseline evidence required to support development of this. Legislation makes it an offence to kill or take a badger, to cruelly ill-treat a badger, or to interfere with a badger sett, including disturbing a badger while it is occupying a sett. In certain circumstances, licences can be granted to permit some actions prohibited under the Act.
The Water Environment (Water Framework Directive) (WFD)(England and Wales) Regulations 2017	Proposed developments or activities that have the potential to affect the water environment require a WFD Assessment. Compliance with the WFD means attainment of good ecological status, prevention of deterioration in status, and prevention of failure to achieve future attainment of good status where it is not already achieved within waterbodies.

Relevant Planning Policy and Related Guidance

- 2.3 Relevant national and local planning policies and related guidance applicable to North East Lincolnshire are detailed in Table 10C.3. For the precise wording of each specific policy please refer back to the source documents. This planning policy has been considered when assessing potential ecological constraints and opportunities identified by the desk study and field surveys; and, when assessing requirements for further survey, design options and ecological mitigation, as described in Section 5.

Table 10C.3: Summary of planning policy and guidance

DOCUMENT	PLANNING POLICY	PURPOSE
Overarching National Policy Statement for Energy (NPS EN-1)	Part 5.3	NPS EN-1 sets out national policy for energy infrastructure. Part 5.3 relates to biodiversity and states that where development is subject to Environmental Impact Assessment (EIA), the Environmental Statement (ES) should clearly set out the effects on internationally, nationally and locally designated nature conservation sites, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity. It also requires that the applicant shows how the project has taken advantage of opportunities to conserve and enhance biodiversity.
National Planning Policy Framework (NPPF)	Section 15	The NPPF states the commitment of the UK Government to minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity. It specifies the obligations that the Local Authorities and the UK Government have

DOCUMENT	PLANNING POLICY	PURPOSE
		regarding statutory designated sites and protected species under UK and international legislation and how this it to be delivered in the planning system. Protected or notable habitats and species can be a material consideration in planning decisions and may therefore make some sites unsuitable for particular types of development, or if development is permitted, mitigation measures may be required to avoid or minimise impacts on certain habitats and species, or where impact is unavoidable, compensation may be required.
North East Lincolnshire Local Plan 2018	Policy 9	Habitat Mitigation – South Humber Bank - sets out the approach to delivering mitigation within the Local Plan area for the loss of wintering bird habitat that is functionally linked to the Humber Estuary internationally designated site. Within the Mitigation Zone identified on the policies map, development proposals on greenfield land that adversely affect the Humber Estuary SPA/ Ramsar site due to the loss of functionally linked land will be required to make contributions towards the provision and management of the mitigation sites identified. This is secured on a proportional approach relating to the development area.
	Policy 41	Biodiversity and Geodiversity – relates to the protection of statutory and non-statutory designated sites, biodiversity features and the county's ecological network.
Natural England and Defra Standing Advice	-	The purpose of standing advice is to guide decision-makers on the determination of proposals with potential to affect protected species. The guidance sets out responsibilities and minimum requirements for survey and mitigation.
Providing and protecting habitat for wild birds	-	Standing advice to local planning authorities on how they should maintain wild bird populations by supporting and protecting their habitats. This guidance has been prepared to support delivery of a legal obligation specified through amendment of the Habitats Regulations. It is important to acknowledge that this guidance requires competent authorities to 'consider' and 'take steps', but it does not require the complete protection of all bird habitats, the mitigation of all losses, and there are no national population targets have been set for wild birds.
National Character Area (NCA)	-	NCA profiles are guidance documents intended to help local decision-making. The information they contain supports the planning of conservation

DOCUMENT	PLANNING POLICY	PURPOSE
Profile: 41 Humber Estuary		initiatives at a landscape scale, informs the delivery of Nature Improvement Areas and encourages broader partnership working through Local Nature Partnerships. Each profile includes a description of the relevant natural and cultural features. Statements of Environmental Opportunity (SEOs) are suggested, which draw on this integrated information. The SEOs offer guidance on the critical issues, which could help to achieve sustainable growth and a more secure environmental future.

3.0 METHODS

Desk Study

- 3.1 A desk study was carried out to identify nature conservation designations, and protected and notable habitats and species potentially relevant to the Proposed Development.
- 3.2 A stratified approach was taken when defining the desk study area, based on the likely worst case zone of influence of the Proposed Development on different ecological features, and an understanding of the maximum distances typically considered by statutory consultees. Accordingly, the desk study identified any international nature conservation designations within 10 km of the Main Development Area¹, other statutory nature conservations designations within 2 km of the Main Development Area, local non-statutory nature conservation designations within 2 km of the Main Development Area, and protected and notable habitats and species within 1 km of the Main Development Area.
- 3.3 The desk study was carried out using the data sources detailed in Table 10C.4. Protected and notable habitats and species include those listed under Schedules 1, 5 and 8 of the WCA; Schedules 2 and 5 of the Habitats Regulations; species and habitats of principal importance for nature conservation in England listed pursuant to section 41 (s41) of the NERC Act; and other species that are Nationally Rare, Nationally Scarce or listed in national or local Red Data Lists and Biodiversity Action Plans.

Table 10C.4: Desk study data sources

DATA SOURCE	DATE OBTAINED	SUMMARY OF DATA OBTAINED
Multi-Agency Geographic Information for the Countryside (MAGIC) website	October 2019	International statutory designations within 10 km Other statutory designations within 2 km Ancient woodlands within 2 km Higher Level Environmental Stewardship agreements applied to the site Information on habitats and habitat connections (based on aerial photography) relevant to interpretation of planning policy and assessment of potential protected and notable species constraints
Lincolnshire Environmental Records Centre (LERC)	June 2018 Updated data requested October 2019	Non-statutory designations within 2 km Protected and notable species records within 1 km (records for the last 10 years only)

¹ This has been extended to reflect the potential zone of influence considered for developments that may result in changes in air quality.

DATA SOURCE	DATE OBTAINED	SUMMARY OF DATA OBTAINED
Humber Environmental Data Centre	September 2018 Updated data requested October 2019	Records of wintering/ passage waterbirds within Fields 30, 31, 37 and 39 from South Humber Bank wintering surveys completed in 2006/07, 2007/08 and 2010/11.
Ordnance Survey 1:2500 Pathfinder maps and aerial photography	October 2019	Information on habitats and habitat connections (based on aerial photography) relevant to interpretation of planning policy and assessment of potential protected and notable species constraints
Lincolnshire BAP (LBAP) (Greater Lincolnshire Biodiversity Partnership, 2015)	May 2018 Updated data requested October 2019	General information on Local Biodiversity Action Plan Priority Habitats and Species
North Lincolnshire Local Plan Proposals Map	October 2019	Non-statutory designations within 2 km Designated green corridors, wildlife networks and other such features
Ecological Assessment of Centrica SHBPS (Humber INCA, 2010)	-	Phase 1 Habitat survey of the Main Development Area and Wider Survey Area Survey results for water vole and GCN
Centrica South Humber Bank Biodiversity Action Plan (Humber INCA, 2011)	-	Habitat and protected species information relevant to the Main Development Area and Wider Survey Area.

Wintering Bird Desk Study

- 3.4 In addition to the desk study referred to above, a specific desk study exercise was undertaken to determine the importance of the land parcel in which the Proposed Development is located, and the large arable field to the south (between the SHBPS and Old Fleet Drain), to wintering/ passage waterbirds. This data will be needed subsequently to inform the EcIA and HRA of the Proposed Development. These assessments are provided separately and are not within the remit of this PEA report.
- 3.5 The following data sources were consulted for this desk study:
- 2006/07, 2007/08 and 2010/11 South Humber Bank winter high tide count data provided by the Humber Environmental Data Centre (EDC);
 - Habitats Regulations Assessment (HRA) undertaken for the Stallingborough Power Station (Department of Energy & Climate Change, 2012));
 - planning application information including HRA for the re-development of the former Acordis site (Planning Ref: DM/0455/14/OUT);

- planning application information including HRA for the South Humber Bank Link Road (Planning Ref: DM/0094/18/FUL); and
- information to inform the HRA for the Consented Development.

Field Survey

Phase 1 Habitat Survey

- 3.6 A Phase 1 Habitat survey was undertaken in accordance with the standard survey method (Joint Nature Conservation Committee, 2010). Phase 1 Habitat survey is a standard method of environmental audit. It involves categorising different habitat types and habitat features within a survey area. The information gained from the survey can be used to determine the likely ecological value of a site, and to direct any more specific survey work which may need to be carried out prior to the submission of a planning application. The standard Phase 1 Habitat survey method can be 'extended' to record target notes on protected, notable and invasive species.
- 3.7 The survey was undertaken on 18th May 2018 by a suitably qualified AECOM ecologist who recorded and mapped habitat types, along with any associated relevant ecological features observed. The survey area encompassed all safely accessible parts of the Main Development Area and Wider Survey Area (see Figures 10C.3 and 10C.4).
- 3.8 Where relevant to the PEA, target notes (Annexes A and F) were recorded and the position of these is shown on the Phase 1 Habitat maps (Figures 10C.3 and 10C.4). Typical and notable plant species were recorded for different habitat types and reflect the conditions at the time of survey. This was not intended to be a detailed inventory of the plant species present in the survey area, as this is not required for the purposes of Phase 1 Habitat survey.
- 3.9 An update Phase 1 Habitat survey was undertaken on 16th October 2019 to review any ecological changes to the Site since May 2018 (see Figure 10C.4).

Appraisal of Potential Suitability of Habitats to Support Protected and Notable Species

- 3.10 An appraisal was made of the potential suitability of the habitats present to support protected and notable species of plants or animals. Field signs, habitat features with potential to support protected species, and any sightings or auditory evidence were recorded when encountered. No detailed surveys were carried out for any particular species, because such surveys are beyond the scope of this PEA, with the exception of the following:
- examination of aerial photography and 1:25,000 Ordnance Survey mapping to attempt to identify all potential permanent standing waters within 250 m of the Main Development Area. This process could not guarantee to definitively identify all waterbodies present, but is the best that can be achieved within the limits of available data; and
 - inspection of all accessible waterbodies to appraise their suitability for GCN. In particular, the aim was to identify permanent waterbodies (referred to as ponds in this report) which would need further survey, and temporary waterbodies which could be discounted as they would not retain water for long enough to allow breeding by GCN. As noted earlier, the ponds identified in May 2018 have since been infilled and are no longer present.
- 3.11 A note was made of visible instances of invasive non-native plant species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), including Japanese knotweed (*Fallopia japonica*). Locations of plants or stands of any such invasive non-native plant species found were recorded.

GCN Environmental DNA Survey

- 3.12 Water samples were collected by AECOM from two man-made ponds (referred to as Ponds 1 and 2) within the Main Development Area on 18th May 2018 and sent for analysis in accordance with approved field and laboratory protocols. Although these ponds are no longer present the survey findings are reported because the results inform the consideration of use of terrestrial habitat within the Main Development Area by newts.
- 3.13 Waterbodies were not entered by surveyors during sample collection, and new sterile equipment was used to collect each water sample, to prevent contamination between samples. Samples were collected by a suitably qualified ecologist holding a Natural England GCN survey licence.
- 3.14 The initial result returned from the laboratory for Pond 1 was inconclusive, and therefore this pond was re-tested on 8th June 2018..
- 3.15 The presence or likely absence of GCN from each of the ponds was determined based on the results of the eDNA analysis. If eDNA is detected this provides confirmation of presence and the relevant waterbodies are likely to represent a development constraint that requires further consideration. If eDNA is not detected then this provides high confidence that there is no reasonable likelihood of GCN being present in the relevant waterbodies, and they require no further assessment with regard to this species.

Limitations

- 3.16 The data obtained from third party data providers and online databases is based on existing records but does not necessarily constitute a comprehensive list of protected and notable species records. These records are not exhaustive, as there is currently no national or regional policy for systematic data gathering. Therefore, absence of data does not constitute evidence of absence. It is also possible that other data exist within this area that has not been made available to AECOM. The quality of the ecological data from the different sources may be highly variable.
- 3.17 The updated data searches requested in October 2019 have not yet been received, but the desk study data received in May 2018 is still considered to be valid.
- 3.18 No limitations to the collection of field data were identified.

4.0 DESK STUDY RESULTS

Nature Conservation Designations

Statutory Designations

- 4.1 Table 10C.5 details the statutory nature conservations designations identified by the desk study, based on the method given in Section 3.1 of this report. The designations are listed in descending order, with those closest to the Main Development Area listed first and are presented on Figure 10C.2.

Table 10C.5: Statutory nature conservation designations within 10 km

DESIGNATION	REASON(S) FOR DESIGNATION	RELATIONSHIP TO THE MAIN DEVELOPMENT AREA
Humber Estuary SAC	<p>Internationally important for its estuary and inter-tidal mudflat and sandflat habitats. Other qualifying features encompass:</p> <p><u>Habitats</u></p> <ul style="list-style-type: none"> • Sandbanks which are slightly covered by sea water all the time • Coastal lagoons • Salicornia and other annuals colonizing mud and sand • Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) • Embryonic shifting dunes • Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes") • Fixed coastal dunes with herbaceous vegetation ("grey dunes") • Dunes with <i>Hippophae rhamnoides</i> <p><u>Species</u></p> <ul style="list-style-type: none"> • Sea lamprey (<i>Petromyzon marinus</i>) • River lamprey (<i>Lampetra fluviatilis</i>) • Grey seal (<i>Halichoerus grypus</i>) 	Approx. 175 m east
Humber Estuary SPA	<p>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 (<i>Botaurus stellaris</i>), marsh harrier (<i>Circus aeruginosus</i>), avocet (<i>Recurvirostra</i></p>	Approx. 175 m east

DESIGNATION	REASON(S) FOR DESIGNATION	RELATIONSHIP TO THE MAIN DEVELOPMENT AREA
	<i>avosetta</i>) and little tern (<i>Sterna albifrons</i>).	
Humber Estuary Ramsar	Internationally important as a representative example of a near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/saline lagoons. Internationally important for its breeding colony of grey seal, and its assemblage of non-breeding and wintering waterfowl and the component populations of individual bird species.	Approx. 175 m east
Humber Estuary SSSI	Supports a series of nationally important habitats. These are the Estuary itself (with its component habitats of intertidal mudflats and sandflats and coastal saltmarsh) and the associated saline lagoons, sand dunes and standing waters. The site is also of national importance for the geological interest at South Ferriby Cliff (Late Pleistocene sediments) and for the coastal geomorphology of Spurn. The Estuary supports nationally important numbers of 22 wintering waterfowl and nine passage waders, and a nationally important assemblage of breeding birds of lowland open waters and their margins. It is also nationally important for a breeding colony of grey seal, river lamprey and sea lamprey, a vascular plant assemblage and an invertebrate assemblage.	Approx. 175 m east

Non-statutory Designations

- 4.2 Table 10C.6 details the non-statutory nature conservation designations identified by the desk study based on the method given in Section 3.1 of this report. The designations are listed in descending order, with those closest to the Main Development Area listed first.

Two Sites of Nature Conservation Importance (SNCI) were identified in the desk study area and four Local Wildlife Sites (LWS)². These are presented on Figure 10C.2.

- 4.3 There are no ancient woodlands in the search area, and there are no Higher Level Countryside Stewardship agreements applied to land in the boundary of the Main Development Area.

Table 10C.6: Non-statutory nature conservation designations within 2 km

DESIGNATION	REASON(S) FOR DESIGNATION	RELATIONSHIP TO THE MAIN DEVELOPMENT AREA
Field West of Power Station, Stallingborough SNCI	No citation available ³	30 m south
Healing Cress Beds Stallingborough LWS	Former watercress beds (created in 1945, ceased production in 1970), which have become vegetated with scrub and woodland. Wetland scrapes and a new pond have been recently created, and the site is managed to maintain its botanical interest.	1.7 km south-west
Sweedale Croft Drain LWS	1 km long spring-fed canalised drain that supports scarce aquatic plants including opposite-leaved pondweed (<i>Groenlandia densa</i>).	1.8 km south-east
North Moss Lane Meadow SNCI	No citation available ³	1.9 km west
Laporte Road Brownfield Site LWS	Brownfield mosaic habitat on a former industrial site. Supports a diverse assemblage of breeding birds, and a population of water vole.	2 km north-west
Fish Ponds to the West of Power Station, Stallingborough LWS	Mosaic of ponds surrounded by woodland, scrub and coarse vegetation.	2 km south-west

² The LWS designation supersedes the SNCI designation. GLNP aims to assess all SNCIs against the LWS selection criteria, but until sites have been assessed they retain their SNCI designation. On a precautionary basis they are assumed to have a comparable nature conservation value to LWS until such time that they have been formally assessed.

³ It is assumed that a citation is not available because either this SNCI has not been re-assessed against LWS criteria, or it has not previously been surveyed.

Protected Species

- 4.4 A summary of the relevant protected species records returned by LERC is provided in Table 10C.7. These data have been screened to include only records post-2000. In addition, records from previous surveys of the Site and other nearby developments have been referred to as necessary within this PEA.
- 4.5 A large number of records of coastal bird species were also returned for the Pyewipe mudflats. These have not been included in the table below as they are not directly relevant to the scope of this PEA report.

Table 10C.7: Summary of Protected Species Records from LERC within 1 km

DESIGNATION	LOCATION OF RECORD(S)	RELATIONSHIP TO THE MAIN DEVELOPMENT AREA
Great crested newt	Several records from Stallingborough in 2007 at TA 255 128, TA 228 137, TA 230 127 and TA 230 133	Nearest records are approximately 200 m north and 400 m south respectively (however these are more than ten years old)
Water vole (<i>Arvicola amphibius</i>)	Oldfleet Drain, various drains in Stallingborough area	Nearest records are approximately 400 m south (on Oldfleet Drain)
Otter (<i>Lutra lutra</i>)	Humber Estuary	Approximately 500 m east

Wintering Birds

A summary of the wintering bird peak counts for each of the fields within the potential zone of influence of the Main Development Area is provided below. The field numbers are shown in Annex G.

- 4.6 . The relevant fields are:
- Field 39 – within the Main Development Area;
 - Field 37 – large arable field to the south of the Main Development Area (between the southern boundary and Oldfleet Drain); and
 - Fields 30 & 31 – two large arable fields to the north of SHBPS (between South Marsh Road and Middle Drain).

Main Development Area (Field 39)

- 4.7 The Main Development Area occupies a parcel of grassland in close proximity to the Humber Estuary SPA/ Ramsar, in which a number of shallow scrapes have been constructed to attract feeding, loafing and roosting birds at high tide when they are displaced from coastal mudflats. This field is referred to as 'Field 39' in the South Humber Bank (SHB) Wintering Bird Surveys undertaken in 2007/08 and 2010/11 to inform the

South Humber Gateway strategic mitigation approach (Policy 9 in the North East Lincolnshire Local Plan).

- 4.8 Surveys of the Site in winter 2007/ 08 recorded very few SPA/ Ramsar birds. Turnstone (*Arenaria interpres*) were recorded in small numbers (one or two birds) at the far eastern end of the field (i.e. nearest to the coastal mudflats) in November, December, January, February and March across this period. The only other species recorded were redshank (*Tringa tetanus*), with one record of one bird in December 2017, and curlew (*Numenius arquata*), with two records of seven birds in January 2008 and one record of one bird in April 2008. No birds were recorded in the field in the 2010/11 surveys.
- 4.9 A summary of the peak counts of birds in the 2007/08 survey season is provided in Table 10C.8, with comparison against the Humber Estuary five year peak mean counts (from Frost *et al.*, 2018) and the thresholds for international importance.

Table 10C.8: Peak Counts of Wintering Birds (Field 39)

SPECIES	PEAK COUNT ON SITE (2007/08)	HUMBER ESTUARY 5-YEAR MEAN PEAK COUNT	PERCENTAGE OF HUMBER ESTUARY POPULATION ON SITE	THRESHOLD FOR INTERNATIONAL IMPORTANCE
Turnstone	2	249	0.8%	1,400
Redshank	1	3,368	0.03%	2,400
Curlew	7	2,806	0.2%	8,400

Field to the South (Field 37)

- 4.10 The large arable field to the south of the Main Development Area, for which the southern boundary is defined by Oldfleet Drain, is referred to as 'Field 37' in the South Humber Bank counts.
- 4.11 This field regularly supported lapwing (*Vanellus vanellus*), curlew and golden plover (*Pluvialis apricaria*) across the surveyed winter months, and was noted to be one of the most important fields in the South Humber Bank survey area for high tide roosting, loafing and feeding birds. Although outside the Humber Estuary SPA/ Ramsar designated site boundary, this field is considered to be functionally linked to the SPA/ Ramsar. A summary of the survey results, with the peak counts from the three seasons of survey in 2006/07, 2007/08 and 2010/11 is provided in Table 10C.9, with comparison against the Humber Estuary five year mean peak counts (from Frost *et al.*, 2018) and thresholds for international importance.
- 4.12 Sparrowhawk (*Accipiter nisus*), buzzard (*Buteo buteo*), peregrine falcon (*Falco peregrinus*) and barn owl (*Tyto alba*) were all recorded hunting over the field during the survey period. Other records were made during the survey period of snow bunting (*Plectrophenax nivalis*) and snipe (*Gallinago gallinago*).

Table 10C.9: Peak Counts of Wintering Birds (Field 37)

SPECIES	PEAK COUNT ON SITE (2006/07 – 2010/11)	HUMBER ESTUARY 5-YEAR MEAN PEAK COUNT	PERCENTAGE OF HUMBER ESTUARY POPULATION ON SITE	THRESHOLD FOR INTERNATIONAL IMPORTANCE
Curlew	75	2,806	2.7%	8,400
Golden plover	228	33,994	0.7%	9,300
Lapwing	510	11,702	4.4%	20,000
Ringed plover	17	1,089	1.6%	730
Black-tailed godwit	15	2,951	0.5%	610
Mallard	46	1,204	3.8%	20,000

Fields to the North (Fields 30 & 31)

- 4.13 Two large arable fields to the north of the Main Development Area (on the north side of South Marsh Road) were also included within the baseline study area; these are Fields 30 and 31 in the South Humber Bank counts.
- 4.14 These fields are also considered to be functionally linked to the Humber Estuary. Peak counts in 2006/07 for golden plover and lapwing were particularly significant, but in the most recent survey years they have supported very low numbers of birds. A summary of the survey results, with the peak counts from the three seasons of survey in 2006/07, 2007/08 and 2010/11, is provided in Table 10C.10 and is compared against the Humber Estuary five year mean peak counts (from Frost *et al.*, 2018) and thresholds for international importance.
- 4.15 Ringed plover (*Charadrius hiaticula*) and mallard (*Anas platyrhynchos*) were also recorded in these fields.

Table 10C.10: Peak Counts of Wintering Birds (Fields 30 and 31)

SPECIES	PEAK COUNT ON SITE 2006/07 – 2010/11	HUMBER ESTUARY 5-YEAR MEAN PEAK COUNT	PERCENTAGE OF HUMBER ESTUARY POPULATION ON SITE	THRESHOLD FOR INTERNATIONAL IMPORTANCE
Curlew	41	2,806	1.5%	8,400
Golden plover	3,600	33,994	10.6%	9,300
Lapwing	1,130	11,702	9.7%	20,000
Ringed plover	16	1,089	1.5%	730
Mallard	6	1,204	0.5%	20,000

5.0 FIELD SURVEY RESULTS

Habitats

Phase 1 Habitat Types

- 5.1 Field survey results reported within this section are taken from the updated Phase 1 habitat survey, undertaken in 2019.
- 5.2 The Main Development Area is set in a landscape dominated by the industrial areas of the Humber Estuary hinterland and mainly arable land. The semi-natural habitat surrounding the Main Development Area is dissected by a series of man-made drains, and a small watercourse (Oldfleet Drain) is located to the south.
- 5.3 The habitats recorded within the Main Development Area and Wider Survey Area in 2019 are shown on Figure 10C.4. The 2018 habitat map is also included as Figure 10C.3. These habitats are described below and are summarised in Table 10C.11, with the latter also detailing their relative extent within the Main Development Area.
- 5.4 The associated target notes are provided in Annexes B and E and located on Figures 10C.3 and 10C.4. Illustrative photographs are provided where relevant in Annexes C and F.
- 5.5 The Main Development Area is dominated by semi-improved neutral grassland that was created as part of a habitat creation scheme undertaken in the mid-2000s by the SHBPS. Two ponds were also created as part of this scheme, located within the grassland areas to the east of the existing SHBPS. These ponds were infilled in 2019 and therefore during the repeat survey in October 2019 were not present. Small blocks of semi-mature broad-leaved woodland have been planted to the west and south of SHBPS, although these are outside the Main Development area.
- 5.6 The topography of the area is fairly flat, although there are undulations and shallow hollows in the grassland to the east of SHBPS that are likely to be seasonally inundated. There are also banked areas in the northern part of the grassland area, close to the northern pond. The Main Development Area is surrounded by ditches.
- 5.7 The above habitats are managed as part of the SHBPS BAP.
- 5.8 Further information about the habitats within the Main Development Area is provided in the paragraphs below.

Semi-improved Neutral Grassland

- 5.9 This is the dominant habitat within the Main Development Area and was created as part of a habitat enhancement scheme around 10 years ago. An annual hay cut is taken as part of the biodiversity enhancement measures undertaken by SHBPS (TN3, Photographs 7-10).
- 5.10 There were localised areas where the grassland was more floristically-rich, which reflected spatial variations in the application of the seed mixture and/ or plant establishment at the time of the grassland creation rather than variations in substrate/ soil type. Grass species included abundant red fescue (*Festuca rubra*) and locally abundant meadow fox-tail (*Alopecurus pratensis*). The presence of locally frequent marsh foxtail (*Alopecurus genticulatus*) and locally abundant common reed within localised shallow depressions are indicative of seasonally impeded drainage in these areas.
- 5.11 There was a diverse assemblage of herb species in the sward, including frequent red clover (*Trifolium pratense*), locally frequent black medick (*Medicago lupulina*), frequent ribwort plantain (*Plantago lanceolata*), locally frequent common knapweed (*Centaurea nigra* agg.), occasional daisy (*Bellis perennis*), occasional meadow vetchling (*Lathyrus*

pratensis), frequent dandelion (*Taraxacum* agg.), locally frequent common sorrel (*Rumex acetosa*), locally frequent common vetch (*Vicia sativa* ssp. *segetalis*), occasional beaked hawk's-beard (*Crepis vesicaria*) and birds-foot trefoil (*Lotus corniculatus*).

- 5.12 The raised bunded area to the north of the access track supported a tussocky grass-dominated sward of abundant cock's-foot (*Dactylis glomerata*) with some red fescue (TN4). Forb species include frequent meadow vetchling and occasional curled dock (*Rumex crispus*).

Bare Ground

- 5.13 Three isolated patches of bare ground, each c.2 0m² in size, are located towards the north to north-eastern extents of the Main Development Area. These areas have formed as a result of the in-filling of ponds at these locations; comprising the previous pond locations and an area used for substrate storage.
- 5.14 There are no botanical species present within bare ground areas.

Ditches

- 5.15 A number of ditches were present around the perimeter of the Site. The ditch bordering South Marsh Road outside the SHBPS boundary fence was inaccessible at the time of the surveys (TN6) (Ditch 3). The ditches bordering the north-eastern part of the Site, located outside the SHBPS boundary fence, and the ditches bordering the south-eastern part of the Site, within the SHBPS boundary fence, supported a continuous linear stand of emergent and marginal common reed (TN9 and TN10, Photographs 16 and 17) (Ditches 1, 2 and 5).

Hedgerow

- 5.16 A species-poor hawthorn (*Crataegus monogyna*) dominated hedgerow runs parallel with South Marsh Road within the SHBPS boundary fence (TN11, Photograph 18). The hedgerow continues along the western boundary of the Site (TN14, Photographs 19 & 20).

Broad-leaved Plantation Woodland

- 5.17 A stand of semi-mature broad-leaved plantation woodland is present in the north-west corner of the Wider Survey Area, on the western side of the SHBPS (TN12, Photographs 21-23). The closed canopy consisted of field maple (*Acer campestre*), crack willow (*Salix x fragilis*), hazel (*Corylus avellana*), blackthorn (*Prunus spinosa*), yew (*Taxus baccata*), hawthorn, dogwood (*Cornus sanguinea*), holly (*Ilex aquifolium*), elder (*Sambucus nigra*) and ash (*Fraxinus excelsior*). The ground flora was impoverished with patchy nettle (*Urtica dioica*), cleavers (*Galium aparine*) and rough meadow-grass (*Poa trivialis*).. The woodland is managed and habitat/ brash piles were noted. (
- 5.18 An orchard has been planted to the south-east of the woodland. Tree species included apple (*Malus pumila*) and damson (*Prunus domestica*) (TN13, Photograph 24).
- 5.19 A young (approx. 5 m tall) broad-leaved plantation woodland is present close to the western boundary (TN16). Species included willows (*Salix* spp.), field maple and hawthorn.

Amenity Grassland

- 5.20 The grassland within and close to the operational areas of SHBPS is regularly mown and is characterised by abundant perennial rye-grass and a paucity of herb species. The latter was limited to species such as ribwort plantain and lesser trefoil (*Trifolium dubium*).

Table 10C.11: Habitats present within the Main Development Area (October 2019)

HABITAT	APPROXIMATE EXTENT WITHIN MAIN DEVELOPMENT AREA (M ²)	APPROXIMATE PROPORTION OF THE MAIN DEVELOPMENT AREA
Semi-improved neutral grassland	60,255	82.5%
Bare ground	6,443	8.8%
Hardstanding	5,354	7.3%
Ditches	57	0.1%
Amenity grassland	449	0.6%
Scrub	462	0.6%

Notable Habitats

Semi-improved Neutral Grassland

- 5.21 The semi-improved neutral grassland within the Main Development Area has developed as part of a habitat restoration scheme, and this modified habitat is therefore considered to be a poor-fit to the 'Lowland Meadow' Habitat Action Plan that is included in the Lincolnshire Biodiversity Action Plan (BAP) (Lincolnshire Biodiversity Partnership, 2011) and also the 'Lowland Meadow' Priority Habitat as detailed in Maddock (2011) which priorities long-standing unimproved grassland.
- 5.22 An approach for the assessment of the value of the relative nature conservation value of semi-improved neutral grassland is given in Greater Lincolnshire Nature Partnership's Nature Strategy (2015). Criterion NG1 of this guidance requires a "*neutral grassland of at least 0.1 ha in extent, or linear areas at least 50m long, with a minimum species index score of eight using Table 7*". The requirement that the grassland is at least 0.1 ha in extent is met, and the minimum threshold for scoring species is also met (ten species present: marsh foxtail, meadow foxtail, glaucous sedge, common knapweed, meadowsweet, meadow vetchling, oxeye daisy, common bird's-foot trefoil, cowslip and yellow rattle). However, considering that the grassland is derived from a sown meadow seed mixture and that some of the aforementioned species are no more than rare components of the sward (i.e. glaucous sedge, meadowsweet and common bird's-foot trefoil), it is considered that to suggest that the neutral grassland is of LWS quality would be to over-value it. Also, species indicative of high quality lowland neutral grasslands were absent e.g. pignut (*Conopodium majus*), burnet-saxifrage (*Pimpinella saxifraga*), great burnet (*Sanguisorba officinalis*) and orchids (Orchidaceae). It is therefore evaluated that the grassland habitat is of District nature conservation value, recognising that its size and species-richness aligns with LWS selection criteria but that it is otherwise not of sufficient age or quality to justify County value.

Protected and Notable Species

- 5.23 Table 10C.12 provides a summary of potentially relevant species identified through a combination of desk study and review of the habitat data collected during the field survey. The table summarises the conservation status of each species and provides comment on the likelihood of presence. Key potential constraints associated with the Site are discussed further in the text below.

5.24 Where species are identified in Table 10C.12 as likely or possible, they are likely to represent legal constraints or may be relevant to determination of a planning application. Further surveys may be required to determine presence/ likely absence. Requirements for further survey are identified in Section 6 of this report.

5.25 No invasive non-native plant species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were recorded during the Phase 1 Habitat survey.

Great Crested Newt

5.26 There were two ponds within the Main Development Area in 2018: Pond 1 (TA 231 134) and Pond 2 (TA 230 133). Both were assessed using the Habitat Suitability Index (HSI) as being of 'good' suitability for GCN (see Annex B). The ponds were created within the nature conservation area around ten years ago. These ponds were surveyed for GCN in May/ June 2018 (see methods) and both returned a negative result for GCN (after a re-testing of one of the ponds due to an inconclusive result). The laboratory results confirming this are presented as Annex D.

5.27 The 1:25,000 Ordnance Survey map indicates that there is one pond within 250 m of the Main Development Area on the north side of South Marsh Road within the industrial area occupied by the Synthomer factory. The pond is located at TA 228 137 approximately 200 m north of the Main Development Area. Based on examination of recent aerial photography, this pond no longer exists and is not considered further in this report.

5.28 The 1:25,000 Ordnance Survey map indicates that there are three further ponds to the north of the Synthomer factory (two at TA 228 713 and one at TA 229 813). The aerial photograph of the site indicates that these still exist, but they can be discounted on the basis that they are all greater than 250 m from the Main Development Area.

5.29 The process lagoon (at TA 235 134), 35 m west of the Main Development Area that is part of the cooling water pumping station for SHBPS has been discounted on the basis that it is of a design and operational regime that is unsuitable for GCN.

5.30 Based on the above assessment no further surveys for GCN were considered necessary to inform the Consented Development assessment, and the species was given no further consideration. As the ponds are no longer present, this conclusion is also made in relation to the Proposed Development.

Bats

5.31 There are no suitable structures or mature trees within the Proposed Development Area, and therefore there is no potential for roosting bats to be present.

5.32 Habitats within the Main Development Area are evaluated to be sub-optimal for foraging bats due to the relatively exposed and coastal nature of the site. The proximity of the Main Development Area to the existing SHBPS which, along with the other industrial areas to the north, is lit at night is also likely to deter bats from foraging within the Main Development Area or Wider Survey Area. Given these conditions, it is reasonable to assume that only small numbers of common species would be likely to forage in the vicinity of the Site. On this basis, further surveys for bats are not considered necessary as the potential implications of the Proposed Development for bats are sufficiently understood, and further survey is not necessary or proportionate for the purposes of EclA.

Otter

5.33 The ditches in the Wider Survey Area are suitable for otter foraging/ passage, but lack sufficient cover to encourage otters to reside for any length of time in proximity to the Proposed Development Area.

5.34 During the updated Phase 1 Habitat survey in October 2019, all culverts and bridges along the ditches were checked for spraints and areas of wet ground/ silt/ mud were checked for signs of otters activity, specifically tracks/ prints. No signs of otter activity were observed and no new sheltering opportunities for potential residential otter populations or individuals were observed.

5.35 Mitigation may be necessary to avoid disturbance to otter or disruption to foraging/ passage activity.

Reptiles

5.36 The ditches within the Wider Survey Area, and the adjacent terrestrial habitats provide good quality habitat for grass snake (*Natrix helvetica*). There are also suitable habitats within the Main Development Area for refuge and egg laying.

5.37 There is potential for grass snake to present in low numbers, therefore mitigation will be required to ensure that no reptiles are harmed/ injured as a result of the Proposed Development.

Water Vole

5.38 A previous survey of the ditches in the Wider Survey Area at SHBPS in 2010 confirmed the presence of water vole on most of them, and concluded that they were all suitable for the species although usage may vary between seasons (Humber INCA, 2010). There are also desk study records indicating that this species is present in numerous drains in the Stallingborough area.

5.39 The ditches within the Wider Survey Area remain suitable for this species, and it is reasonable to conclude that water vole is present. A water vole survey is required to establish the extent of the population, and to assist with the development of an appropriate mitigation strategy should ditches supporting water voles be directly or indirectly affected by the Proposed Development.

5.40 Best practice survey guidelines suggest that two surveys are undertaken in early summer (May) and early autumn (September) to determine presence/ absence. However, as presence is highly likely based on the results of previous surveys, in this case it is considered that one survey in late August/ September will be sufficient to inform specification of any necessary mitigation (or Natural England licence).

Wintering Birds

5.41 The land parcel in which the Main Development Area is located was part of the Humber EDC wintering bird counts in 2010/11 (Field 39). This field, and the fields immediately to the north and south of the Proposed Development (Fields 30, 31 and 37), may be considered to be functionally linked to the Humber Estuary SPA/ Ramsar because they provide high tide feeding, roosting and loafing habitat for the qualifying wintering bird species golden plover, lapwing and curlew, as well as birds that are part of the qualifying wintering/ passage assemblage.

5.42 Mitigation for the loss of wintering bird habitat may be required where the habitat is considered 'functionally linked' to the SPA/ Ramsar, and to ensure that the Proposed Development is compliant with the Habitats Regulations.

Breeding Birds

5.43 The habitats within the Main Development Area provide limited opportunities for nesting birds, although ground nesting birds such as skylark (*Alauda arvensis*) and meadow pipit (*Anthus pratensis*) may be present.

- 5.44 Habitats providing suitable nesting habitats for a wide range of species are present within broad-leaved woodland and scrub at the Site.
- 5.45 Breeding birds noted during the course of the Phase 1 Habitat survey (2018) that are likely to be nesting in habitats within the Site include sedge warbler (*Acrocephalus schoenobaenus*), reed warbler (*Acrocephalus scirpaceus*), reed bunting (*Emberiza schoeniclus*), yellow wagtail (*Motacilla flava*) and linnet (*Carduelis cannabina*). The majority of the habitats supporting these species, which is focussed on the boundary ditches, would be unaffected by the Proposed Development. The updated Phase 1 Habitat Survey (2019) recorded common blackbird (*Turdus merula*), house sparrow (*Passer domesticus*) and great tit (*Parus major*) onsite. It is not considered necessary to undertake a detailed suite of breeding bird surveys given the limited suitability of the Site for breeding birds, and on the basis that standard mitigation measures can be adopted to achieve legal compliance e.g. sensitive timing of vegetation clearance. Direct impacts on breeding territories would result in some displacement of breeding species, but this is unlikely to be significant given the relatively small size of the area affected when compared against the availability of similar habitats in the wider local area.
- 5.46 EP SHB Ltd (the operator of SHBPS) has confirmed the presence of a pair of nesting peregrine falcon on one of the towers of SHBPS, which is adjacent to the Proposed Development. It is assumed that this pair nests annually on the SHBPS. However, given that this species is present in the existing industrial context of the SHBPS, it is reasonable to assume that the nesting pair would not be adversely affected by the construction or operation of a development of a similar nature and scale on the adjacent plot.

Badger

- 5.47 No badger setts or other evidence of badger (*Meles meles*) activity was recorded during the Phase 1 Habitat survey (2019). All areas of the Site were checked for signs of badger activity; including foraging (snuffle holes/ digging), latrines, mammal tracks and potential ground disturbance for sett-building. It is reasonable to conclude that this species is absent from the Site, and therefore it is not considered further in this report.

Aquatic Invertebrates

- 5.48 The ditches have the potential to support rare and notable aquatic invertebrates. As one of the ditches will be directly impacted by the Proposed Development (during the construction of the new site access), an aquatic invertebrate survey is required.

Terrestrial Invertebrates

- 5.49 The grassland habitat within the Main Development Area does not have the potential to support a rare or notable assemblage of terrestrial invertebrates, on the basis that it is fairly homogenous in nature and does not have a range of habitats and/or niches suitable to support a diversity of insects. A detailed survey for terrestrial invertebrates is therefore not considered necessary to inform the EclA, and this group of species is not considered further.

Table 10C.12: Summary of protected and notable species relevant or potentially relevant to the Proposed Development

Species	Legally Protected Species?	Species of Principal	Other Notable Species?	Present on Site or in potential ZOI?	Supporting Comments
European Protected Species					
GCN	✓	✓	×	?	Desk study returned several records within 1 km. Two ponds on Site (for which negative eDNA samples were obtained in 2018) have since been infilled. No other potentially suitable ponds were identified within 250 m of the Proposed Development. Not considered further
Bats	✓	✓	×	×	No desk study records of bats were returned. There is no suitable roosting habitat within the Main Development Area. Habitats within the Main Development Area are considered to represent sub-optimal habitat for foraging bats. Not considered further
Otter	✓	✓	×	?	Desk study returned one record of this species from the Humber Estuary. Ditches on Site are suitable for this species.
Other Species					
Reptiles	✓	✓	×	?	Desk study returned no records for reptiles. Habitats within the Main Development Area are potentially suitable for grass snake.

Species	Legally Protected Species?	Species of Principal	Other Notable Species?	Present on Site or in potential ZOI?	Supporting Comments
Water vole	✓	✓	x	✓	The desk study returned several records of water vole from the Stallingborough area. Previous survey of site in 2010 identified all ditches as being suitable for this species, and water vole field signs were recorded on most of the ditches surveyed. Likely to be present on all ditches.
Wintering birds	x	✓	x	✓	The proximity of the Site to the Humber Estuary SPA/ Ramsar and the suitability of the grassland mean that it may be considered 'functionally linked' to the designated site.
Breeding birds	✓	✓	x	✓	Suitable habitat for nesting birds within the Main Development Area, but this is limited to the open grassland areas. Higher quality ditch habitat would be unaffected by the Proposed Development. Peregrine falcon recorded to nest at SHBPS.
Badger	✓	x	x	x	No desk study records. No suitable habitat within the Proposed Development and no evidence of badger activity recorded on site during Phase 1 Habitat survey. Not considered further
Aquatic invertebrates	x	✓	✓	?	No desk study records. Ditches within the Proposed Development and Wider Survey Area may be suitable for a rare and notable assemblage of aquatic invertebrates.

Species	Legally Protected Species?	Species of Principal	Other Notable Species?	Present on Site or in potential ZOI?	Supporting Comments
Terrestrial invertebrates	x	✓	✓	?	No desk study records. Habitat is unsuitable to support a rare or notable assemblage of terrestrial invertebrates. Not considered further
<p>Key to symbols: ✓ = yes, x = no, ? = likely or possible, see Supporting Comments for further rationale.</p> <p>Species present on Site are those for which recent direct observation or field signs confirmed presence. Species which are possibly present are those for which there is potentially suitable habitat based on the results of the Phase 1 Habitat survey, or this combined with desk study records.</p>					

6.0 ECOLOGICAL CONSTRAINTS AND OPPORTUNITIES

Approach to the Identification of Ecological Constraints

- 6.1 The national and local planning policy (summarised in Section 2 of this report) specify requirements for the protection of features of importance for biodiversity. Planning policy is a material consideration when determining development consent applications.
- 6.2 Compliance with planning policy requires that the Proposed Development considers and engages the following mitigation hierarchy where there is potential for impacts on relevant ecological features:
1. avoid features where possible;
 2. minimise impact by design, method of working or other measures (mitigation) e.g. by enhancing existing features; and
 3. compensate for significant residual impacts, e.g. by providing suitable habitats elsewhere (whether in the control of the Applicant or otherwise legally enforceable through requirements).
- 6.3 This hierarchy requires the highest level to be applied where possible. Only where this cannot reasonably be adopted should lower levels be considered. The rationale for the proposed mitigation and/ or compensation should be provided, including sufficient detail to show that these measures are feasible and can be provided.
- 6.4 In pursuance of the objective within the NPPF of providing net gains in biodiversity where possible, consideration should be given to the scope for enhancement as part of the Proposed Development. This should represent biodiversity gain over and above that achieved through mitigation and compensation. Enhancement could be achieved on and/ or off Site. Where such recommendations are made in this PEA they are high level only, recognising that this report has been prepared to support the EclA.

Constraints and Requirements for Further Survey: Designations

Statutory Designations

- 6.5 The Main Development Area is located approximately 175 m west of the Humber Estuary SSSI, SAC, SPA and Ramsar. HRA screening is therefore likely to be required to determine whether the Proposed Development would result in Likely Significant Effects (LSE) on the European site.
- 6.6 The land parcel in which the Main Development Area is located was part of the Humber EDC wintering bird counts in 2010/11 (Field 37). This field, and the field immediately to the south adjacent to Old Fleet Drain (Field 39) may be considered to be functionally linked to the Humber Estuary SPA/ Ramsar because it provides high tide feeding, roosting and loafing habitat for the qualifying wintering bird species golden plover, lapwing and curlew, as well as birds that are part of the qualifying wintering/ passage assemblage. The loss of functionally linked habitat within the footprint of the Proposed Development will require mitigation, and it is likely that this would be drawn down from the South Humber Bank strategic mitigation allocation, which forms a key part of the adopted Local Development Framework (Policy 9), i.e. carrying over the provisions secured for the Consented Development to the Proposed Development.
- 6.7 It is considered unlikely that the construction and operation of the Proposed Development would directly impact these designations at the distance concerned; however, there is the potential for indirect impacts. The following topics should therefore be scoped into the EclA:

- potential indirect effects on habitats and qualifying features resulting from air emissions during construction, and from the operational power plant;
- potential noise and visual impacts resulting from construction/ operation, and displacement/ disturbance effects on wintering and passage birds; and
- potential surface water impacts resulting from pollution during construction and operation.

Non-Statutory Designations

- 6.8 There are five non-statutory nature conservation designations within 2 km of the Proposed Development. It is considered unlikely that the construction and operation of the Proposed Development would directly impact these designations at the distance concerned. However, potential air quality impacts may need to be assessed.
- 6.9 Given that no citations are available for two of the designations (Field West of Power Station, Stallingborough SNCI and North Moss Lane Meadow SNCI), these should be discounted from the EclA because there is no baseline data for the sites on which to base an assessment.

Constraints and Requirements for Further Survey: Habitats and Protected Species

- 6.10 Table 10C.13 sets out the recommendations from the initial PEA for the further protected species surveys that were undertaken in spring and summer 2018 to inform the EclA for the Consented Development, and provide valid data to inform the EclA for the Proposed Development. The relevant species are:
- otter;
 - reptiles;
 - water vole; and
 - aquatic invertebrates.

EIA Scoping

- 6.11 A summary of the EclA scoping exercise undertaken as part of this PEA, to set out the framework for the subsequent impact assessment in Chapter 10: Ecology, and is provided in Table 10C.13 below. This includes the requirements for further survey work for protected species as set out above. No further habitat surveys are considered necessary.
- 6.12 All habitats to be lost as a result of the Proposed Development should be quantified, along with habitat gains associated with buffer zones and soft landscaping, and presented in a habitat losses and gains table, so that the EclA can make a conclusion regarding impacts on the overall biodiversity of the Site.

Table 10C.13: Summary of EcIA Scoping and Further Surveys Required

Ecology Feature	Ecological Value	Requires EcIA?	Rationale	Further Surveys necessary to Support EcIA?	Scope of Surveys	Timing
Statutory Designations						
Humber Estuary SAC/ SPA/ Ramsar/ SSSI	National	✓	Potential for direct impacts through loss of wintering bird SPA/ Ramsar functionally linked habitat, and indirect impacts via noise, air quality and surface water.	x		
Non-statutory Designations						
Field West of Power Station, Stallingborough SNCI	County	x	No citation available therefore no baseline for impacts to be assessed against.	x	-	-
Healing Cress Beds Stallingborough LWS	County	✓	Potential for air quality impacts	x	-	-
Sweedale Croft Drain LWS	County	✓	Potential for air quality impacts	x	-	-
North Moss Lane Meadow SNCI	County	x	No citation available therefore no baseline for impacts to be assessed against.	x	-	-

Ecology Feature	Ecological Value	Requires EcIA?	Rationale	Further Surveys necessary to Support EcIA?	Scope of Surveys	Timing
Laporte Road Brownfield Site LWS	County	✓	Potential for air quality impacts	×	-	-
Fish Ponds to the West of Power Station, Stallingborough LWS	County	✓	Potential for air quality impacts	×	-	-
Protected & Notable Species						
GCN	N/A	×	Absence confirmed through eDNA sampling of two ponds that were present on Site; ponds have since been infilled.	×	-	-
Bats – roosting	N/A	×	No suitable roosting habitat present within Main Development Area.	×	-	-
Bats – foraging and commuting	Site	✓	Potential for displacement/ disruption to small numbers of common species due to lighting impacts.	×	-	-
Otter	?	✓	Ditches on Site may be used by foraging and passage otter	✓	Survey of all ditches within and adjacent to Proposed Development	September 2018

Ecology Feature	Ecological Value	Requires EcIA?	Rationale	Further Surveys necessary to Support EcIA?	Scope of Surveys	Timing
Reptiles	?	✓	Grassland habitats potentially suitable for grass snake.	✓	Seven presence/ absence visits spread across April/ May and September using artificial refuges deployed at a density of at least 10 per hectare of suitable habitat (Froglife, 1999), and visual observation transects. Surveys to be undertaken in appropriate weather conditions and spread across the two survey months.	April/ May and Sept 2018
Water vole	?	✓	Ditches previously confirmed to support water vole, therefore continued presence highly likely.	✓	Survey of all lengths of ditches within Site boundary	Sept 2018
Wintering birds	?	✓	Potential for loss of functionally linked habitat to the SPA/ Ramsar; SHG mitigation strategy to be used as a way of compensating for this loss. Potential for indirect noise, visual and air quality impacts.	x	-	-

Ecology Feature	Ecological Value	Requires EcIA?	Rationale	Further Surveys necessary to Support EcIA?	Scope of Surveys	Timing
Breeding birds (non-Schedule 1)	Site	×	Limited suitability of the Site for breeding birds and Main Development Area small compared to habitats in wider local area.	×	No further surveys required. Check for presence of nesting birds within any vegetation to be cleared prior to commencement of works required (specifically scrub to the north-east of the Site)	March to September inclusive
Breeding birds (Schedule 1)	✓	✓	Site confirmed to support nesting peregrine falcon at SHBPS	×	-	-
Badger	N/A	×	Not present	×	-	-
Aquatic invertebrates	?	✓	Ditches have the potential to support rare/ notable assemblage of aquatic invertebrates.	✓	Samples of ditches (and former ponds) within Proposed Development Area and Wider Survey Area.	August/ Sept 2018
Terrestrial invertebrates	N/A	×	Habitats on site not suitable to support rare/ notable assemblage of terrestrial invertebrates.	×	-	-

7.0 REFERENCES

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Annex A: Phase 1 Target Notes (May 2018)

TARGET NOTE	DESCRIPTION
1	An oval pond (approx. 10 m x 20 m) with dominant marginal common reed (<i>Phragmites australis</i>) and rare pendulous sedge (<i>Carex pendula</i>). Floating vegetation consists of rare water lily (<i>Nymphaea</i> spp.).
2	An oval pond (approx. 15 m x 35 m) with dominant marginal common reed, with a small stand of emergent common reed in the central part of the waterbody [TN2, Photographs 5 & 6]. There is occasional marginal greater willowherb (<i>Epilobium hirsutum</i>) and rare marginal pendulous sedge, marsh marigold (<i>Caltha palustris</i>), meadowsweet (<i>Filipendula ulmaria</i>), yellow iris (<i>Iris pseudacorus</i>) and cuckooflower (<i>Cardamine pratensis</i>). There is abundant submerged water milfoil (<i>Myriophyllum</i> spp.).
3	This is an area of semi-improved neutral grassland that was created as part of a habitat restoration scheme and an annual hay cut is taken as part of the biodiversity enhancement measures undertaken by SHBPS. There are localised areas where the grassland is more floristically rich, which reflects spatial variations in the application of the seed mix rather than to variations in substrate/ soil type. There is a paucity of perennial rye-grass (<i>Lolium perenne</i>) which is indicative of a lack of agricultural improvement. Grass species include abundant red fescue (<i>Festuca rubra</i> agg.) and locally abundant meadow fox-tail (<i>Alopecurus pratensis</i>). The presence of locally frequent marsh foxtail (<i>Alopecurus genticulatus</i>) and locally abundant common reed within localised shallow depressions are indicative of seasonally impeded drainage in these areas. There is a diverse assemblage of forb species in the sward, including: frequent red clover (<i>Trifolium pratense</i>), locally frequent black medick (<i>Medicago lupulina</i>), frequent ribwort plantain (<i>Plantago lanceolata</i>), locally frequent hairy tare (<i>Vicia hirsuta</i>), locally frequent common knapweed (<i>Centaurea nigra</i> agg.), occasional daisy (<i>Bellis perennis</i>), occasional common mouse-ear (<i>Cerastium fontanum</i>), locally frequent tufted vetch (<i>Vicia cracca</i>), locally frequent ox-eye daisy (<i>Leucanthemum vulgare</i>), frequent meadow vetchling (<i>Lathyrus pratensis</i>), frequent dandelion (<i>Taraxacum</i> agg.), locally abundant yellow-rattle (<i>Rhinanthus minor</i> agg.), locally frequent common sorrel (<i>Rumex acetosa</i>), locally frequent common vetch (<i>Vicia sativa</i> ssp. <i>segetalis</i>), abundant field horse-tail (<i>Equisetum arvense</i>), occasional beaked hawk's-beard (<i>Crepis vesicaria</i>) and locally frequent cowslip (<i>Primula veris</i>). Rarer species include salad burnet (<i>Poterium sanguisorba</i>), bird's-foot trefoil (<i>Lotus corniculatus</i>), glaucous sedge (<i>Carex flacca</i>), common ragwort (<i>Senecio jacobaea</i>) and meadowsweet (<i>Filipendula ulmaria</i>). At the time of the survey parts of the grassland to the south of the access track were subject to grazing by rare breed (Shetland) sheep, which were enclosed within electric fencing.
4	The raised bunded area to the north of the access track supports a tussocky grass dominated sward with abundant cock's-foot (<i>Dactylis glomerata</i>) with some red fescue (Target Note 4). Forb species include frequent meadow vetchling (<i>Lathyrus pratensis</i>), occasional common and occasional curled dock (<i>Rumex crispus</i>). There is a small stand of abundant bramble next to the access track.

TARGET NOTE	DESCRIPTION
5	A small area of this grassland, between the northern pond and the access track, is used as a storage area for cut hay which is covered by a tarpaulin. This area is partially enclosed by linear stands of semi-improved planted scrub.
6	The drain bordering South Marsh Road is outside the SHBPS boundary fence was inaccessible at the time of the survey. A grassy verge between the wet drain and the road, with marginal common reed, was visible when viewed through the boundary fencing. This habitat represents suitable habitat for water vole.
7	The drains bordering the north-eastern part of the Site, located outside the SHBPS boundary fence, support abundant submerged water star-wort (<i>Callitriche</i> spp.) and rare celery-leaved buttercup (<i>Ranunculus sceleratus</i>).
8	The drains bordering the north-eastern part of the Site, located outside the SHBPS boundary fence, support abundant submerged water star-wort and rare celery-leaved buttercup.
9	A wet drain supporting a continuous linear stand of emergent and marginal common reed dominated swamp vegetation.
10	A wet drain supporting a continuous linear stand of emergent and marginal common reed dominated swamp vegetation.
11	A hawthorn (<i>Crataegus monogyna</i>) dominated hedgerow orientated along the northern and western boundary of the SHBPS.
12	A stand of semi-mature planted broad-leaved woodland associated with landscape planting scheme is located in the north-west corner of the site (Target Note 12, Photographs 21-23). The closed canopy consists of field maple (<i>Acer campestre</i>), crack willow (<i>Salix fragilis</i>), hazel (<i>Corylus avellana</i>), blackthorn (<i>Prunus spinosa</i>), yew (<i>Taxus baccata</i>), hawthorn, dogwood (<i>Cornus sanguinea</i>), holly (<i>Ilex aquifolium</i>), elder (<i>Sambucus nigra</i>) and ash (<i>Fraxinus excelsior</i>). The field flora is impoverished with patchy nettle, cleavers (<i>Galium aparine</i>) and rough meadow-grass (<i>Poa trivialis</i>) and localised garlic mustard (<i>Alliaria petiolata</i>). The ground flora includes patches of pleurocarpous mosses and bare ground. The woodland is managed and habitat/ brash piles noted.
13	An orchard has been planted to the south-east of the woodland; tree species include apple (<i>Malus</i> spp.) and damson (<i>Prunus</i> spp.).
14	A hawthorn (<i>Crataegus monogyna</i>) dominated hedgerow orientated along the western boundary of the SHBPS.
15	A stand of unmanaged grass dominated semi-improved neutral grassland with abundant common knapweed, occasional teasel (<i>Dipsacus fullonum</i>) and frequent cowslip. Localised areas where tufted hair-grass (<i>Deschampsia caespitosa</i>) is frequent suggest seasonally impeded drainage.
16	An inaccessible stand of densely planted young (approx. 5 m tall) broad-leaved woodland, with willow (<i>Salix</i> spp.), field maple (<i>Acer campestre</i>), hawthorn and <i>Prunus</i> spp.

Annex B: Habitat Suitability Index (HSI) Survey of Ponds (2018)

(Ponds Since Removed)

Pond 1

Location: TA 23076 13328

Description: Oval pond approximately 10 m x 20 m with dominant marginal common reed (*Phragmites australis*). Water lily species also present (covering approximately 5% of the open water). Pond was surrounded by semi-improved neutral grassland.

eDNA Sample References: NatureMetrics GCN18-1057 (inconclusive); FERA S18-01520 (negative)



Suitability Index	Habitat Attribute	Field Score	HSI Score
SI1	Location	Optimal	1.00
SI2	Pond area	200 m ²	0.40
SI3	Pond drying	Rarely	1.00
SI4	Water quality	Moderate	0.67
SI5	Shoreline shade	0%	1.00
SI6	Fowl	Absent	1.00
SI7	Fish	Minor	0.33
SI8	Pound count	5	0.78
SI9	Terrestrial habitat	Moderate	0.67
SI10	Macrophytes	50%	0.80

Suitability Index	Habitat Attribute	Field Score	HSI Score
SCORE	Good		0.72

Pond 2

Location: TA 23144 13486

Description : Oval pond approximately 35 x 15 m. Common reed dominated the margins with a small emergent stand in the middle (covering approximately 10% of the surface area of the pond). Marginal vegetation comprised occasional cuckoo flower (*Cardamine pratensis*) and rare yellow flag iris (*Iris pseudacorus*), meadowsweet (*Filipendula ulmaria*) and marsh-marigold (*Caltha palustris*). There was abundant submerged water milfoil sp. (approximately 70% cover). A pair of mallard was flushed from the pond on arrival for survey and may have nested here.

eDNA Sample Reference: NatureMetrics GCN18-1058 (negative)



Suitability Index	Habitat Attribute	Field Score	HSI Score
SI1	Location	Optimal	1.00
SI2	Pond area	500 m ²	1.00
SI3	Pond drying	Rarely	1.00
SI4	Water quality	Moderate	0.67
SI5	Shoreline shade	0%	1.00
SI6	Fowl	Minor	0.67
SI7	Fish	Minor	0.33
SI8	Pound count	5	0.78
SI9	Terrestrial habitat	Moderate	0.67

Suitability Index	Habitat Attribute	Field Score	HSI Score
SI10	Macrophytes	50%	0.80
SCORE	Good		0.76

Annex C: Site Photographs (2018)

	
<p>Photo 1: Southern pond (Pond 1) (Target Note 1)</p>	<p>Photo 2: Southern pond (Pond 1) (Target Note 1) with dominant marginal and emergent common reed.</p>
	
<p>Photo 3: Artificial amphibian/ reptile hibernaculum immediately adjacent to the southern pond</p>	<p>Photo 4: Artificial amphibian/ reptile hibernaculum immediately adjacent to the southern pond</p>

	
<p>Photo 5: Northern pond (Pond 2) (Target Note 2) with dominant marginal common reed and abundant submerged water-milfoil.</p>	<p>Photo 6: Northern pond (Pond 2) (Target Note 2) with an 'island' of emergent common reed</p>
	
<p>Photo 7: Semi-improved neutral grassland to the north of the access track (Target Note 3). This grassland was subject to an annual hay cut. The photo shows that extensive areas of the grassland were grass dominated and with a limited diversity of herb species. A raised bund (background) was more tussocky, with an abundance of cock's-foot (Target Note 4)</p>	<p>Photo 8: Localised areas within the semi-improved neutral grassland are more flower rich (for example oxeye daisy and common knapweed) (Target Note 3).</p>





	
<p>Photo 9: Common knapweed, common vetch, meadow vetchling were components of a sward where meadow foxtail was locally abundant (Target Note 3).</p>	<p>Photo 10: Localised areas within the sward were more floristically rich (for example bird's-foot trefoil and common vetch), likely to reflect spatial variations in the application of the seed mix rather than to variations in substrate/ soil type (Target Note 3).</p>
	
<p>Photo 11: The semi-improved grassland to the south of the track was grazed by Shetland sheep (Target Note 3).</p>	<p>Photo 12: An area within the semi-improved neutral grassland supported localised planted scrub and was used as an area to store the haycut (Target Note 5). This habitat was suitable for breeding and resting grass snake.</p>



Photo 13: Planted scrub and stored hay cut (Target Note 5).



Photo 14: The drain on Synthomer land outside the SHBPS boundary fence (Target Note 7), providing suitable habitat for water vole.



Photo 15: The drain on Synthomer land outside the SHBPS boundary fence (Target Note 8), providing suitable habitat for water vole.



Photo 16: The east-west orientated drain forming the south-eastern boundary of the SHBPS (Ditch 1) with dominant marginal and emergent common reed (Target Note 9), providing suitable habitat for water vole.

	
<p>Photo 17: The north-south orientated drain on the south-western boundary of the SHBPS (Ditch 2) with dominant marginal common reed (Target Note 10), providing suitable habitat for water vole.</p>	<p>Photo 18: The planted species poor hedgerow screening the SHBPS viewed from South Marsh Road (Target Note 11). The amenity grassland was regularly mown.</p>
	
<p>Photo 19: Ditch and hedgerow in south-western part of Site.</p>	<p>Photo 20: The hedgerow in the south-western part of the Site (Target Note 14) - view looking south. The linear stand of semi-improved neutral grassland between the hedgerow and the drain was regularly mown.</p>


	
<p>Photo 21: The young planted woodland to the west of the SHBPS had a closed canopy and an impoverished field flora with patchy common nettle (Target Note 12).</p>	<p>Photo 22: Localised brash piles with locally abundant common nettle (Target Note 12).</p>
	
<p>Photo 23: The woodland was subject to regular woodland management, such as coppicing and construction of habitat piles (Target Note 12).</p>	<p>Photo 24: An orchard has been planted in the north-western part of the SHBPS (Target Note 13)</p>



Photo 25: The tussocky grassland in the western part of the SHBPS supported common knapweed and wild teasel. The grassland was rank and not subject to regular mowing.

Annex D: GCN eDNA Results

DNA Analysis Report - Commercial in Confidence



Customer: AECOM
Address: 2 City Walk
Leeds
LS11 9AR
Contact: Jo Atkinson
Email: jo.atkinson@aecom.com
Tel: 07881511261
Report date: 15-Jun-2018
Order Number: GCN18-0909
Samples: Pond Water
Analysis requested: Detection of Great Crested Newt eDNA from pond water.

Thank you for submitting your samples for analysis with the Fera eDNA testing service. The details of the analysis are as follows:

Method:

The method detects pond occupancy from great crested newts (GCN) using traces of DNA shed into the pond environment (eDNA). The detection of GCN eDNA is carried out using real time PCR to amplify part of the cytochrome 1 gene found in mitochondrial DNA. The method followed is detailed in Biggs J., et al, (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA. Freshwater Habitats Trust, Oxford.

The limits of this method are as follows: 1) the results are based on analyses of the samples supplied by the client and as received by the laboratory, 2) any variation between the characteristics of this sample and a batch will depend on the sampling procedure used. 3) the method is qualitative and therefore the levels given in the score are for information only, they do not constitute the quantification of GCN DNA against a calibration curve, 4) a 'not detected' result does not exclude presence at levels below the limit of detection.

The results are defined as follows:

- Positive:** DNA from the species was detected.
eDNA Score: Number of positive replicates from a series of twelve.
Negative: DNA from the species was not detected; in the case of negative samples the DNA extract is further tested for PCR inhibitors and degradation of the sample.
Inconclusive: Controls indicate degradation or inhibition of the sample, therefore the lack of detection of GCN DNA is not conclusive evidence for determining the absence of the species in the sample provided.

DNA Analysis Report - Commercial in Confidence



CustomerReference	Fera Reference	GCN Detection	eDNA Score	Inhibition	Degradation
-	S18-015120	Negative	0	No	No

The results indicate that eDNA for great crested newts was not detected in the sample submitted. Analysis was conducted in the presence of the following controls: 1) extraction blank, 2) appropriate positive and negative PCR controls for each of the TaqMan assays (GCN, Inhibition, and Degradation). All controls performed as expected.

This test procedure was developed using research funded by the Department of Environment, Food and Rural Affairs.

Issuing officer: Steven Bryce

Tel: 01904 462 070

Email: e-dna@fera.co.uk

18186-AE-AJ-1

Order number: AEC-17-AJ

Great Crested Newt eDNA Results

Company: AECOM
Address: 2 City Walk, Leeds LS11 9AR
Contact: Jo Atkinson
Project code | Task code: TBC
Date of Report: 29 May 2018
Number of samples: 1

Thank you for sending your sample for analysis by NatureMetrics. Your sample has been processed in accordance with the protocol set out in Appendix 5 of Biggs et al. (2014).

DNA was precipitated via centrifugation at 14,000 x g and then extracted using Qiagen Blood and Tissue extraction kits.

qPCR amplification was carried out in 12 replicates per sample, using the primers and probe described by Biggs et al. (2014), in the presence of both positive and negative controls.

Results indicate GCN absence in your sample. No degradation or inhibition was detected, and all controls performed as expected. Conclusive results are therefore presented.

Results are based on the samples as supplied by the client to the laboratory. Incorrect sampling methodology may affect the results. Note that a negative result does not preclude the presence of Great Crested Newts at a level below the limits of detection.

Sample	Pond ID	Date arrived	Inhibition	Degradation	eDNA score	GCN status
GCN18-1058	'Pond 2'	22-May-18	No	No	0	Negative

End of report

Report issued by: Dr. Cuong Tang

Contact: ct@naturemetrics.co.uk | 01491 829042



Understanding your results

- Positive:** GCN DNA has been detected in this sample, meaning that at least one of the 12 replicates has amplified. Remember that this is not a quantitative test, so you should not interpret a high eDNA score (e.g. 12/12) as necessarily indicating a larger population of GCN than a low eDNA score (e.g. 1/12).
- Negative:** No GCN DNA has been detected in this sample, and the internal and external controls worked as expected. This tells us that if there had been GCN DNA in the sample, we would have detected it, so we can be confident in its absence from the sample provided.
- Inconclusive:** No GCN DNA was detected in the sample, but the internal controls failed to amplify as expected. This means that any GCN DNA in the sample might also have failed to amplify properly, so we cannot have confidence in this negative result. Inconclusive results can be caused by degradation of the DNA (when the DNA marker contained in the ethanol in the kits fails to amplify) or by inhibition of the reaction (when the marker added in the lab fails to amplify) caused by certain chemicals or organic compounds that may be present in the water sample.



18186-AE-AJ-2

Order number: AEC-17-AJ

Great Crested Newt eDNA Results

Company: AECOM
Address: 2 City Walk, Leeds LS11 9AR
Contact: Jo Atkinson
Project code | Task code: TBC
Date of Report: 30 May 2018
Number of samples: 1

Thank you for sending your sample for analysis by NatureMetrics. Your sample has been processed in accordance with the protocol set out in Appendix 5 of Biggs et al. (2014).

DNA was precipitated via centrifugation at 14,000 x g and then extracted using Qiagen Blood and Tissue extraction kits.

qPCR amplification was carried out in 12 replicates per sample, using the primers and probe described by Biggs et al. (2014), in the presence of both positive and negative controls.

Results indicate GCN absence in your sample. Inhibition was detected, which could not be overcome with DNA dilution. An inconclusive result is therefore presented.

Results are based on the samples as supplied by the client to the laboratory. Incorrect sampling methodology may affect the results. Note that a negative result does not preclude the presence of Great Crested Newts at a level below the limits of detection.

Sample	Pond ID	Date arrived	Inhibition	Degradation	eDNA score	GCN status
GCN18-1057	'pond 1'	22-May-18	Yes	No	0	Inconclusive

End of report

Report issued by: Dr. Cuong Tang

Contact: ct@naturemetrics.co.uk | 01491 829042



Understanding your results

- Positive:** GCN DNA has been detected in this sample, meaning that at least one of the 12 replicates has amplified. Remember that this is not a quantitative test, so you should not interpret a high eDNA score (e.g. 12/12) as necessarily indicating a larger population of GCN than a low eDNA score (e.g. 1/12).
- Negative:** No GCN DNA has been detected in this sample, and the internal and external controls worked as expected. This tells us that if there had been GCN DNA in the sample, we would have detected it, so we can be confident in its absence from the sample provided.
- Inconclusive:** No GCN DNA was detected in the sample, but the internal controls failed to amplify as expected. This means that any GCN DNA in the sample might also have failed to amplify properly, so we cannot have confidence in this negative result. Inconclusive results can be caused by degradation of the DNA (when the DNA marker contained in the ethanol in the kits fails to amplify) or by inhibition of the reaction (when the marker added in the lab fails to amplify) caused by certain chemicals or organic compounds that may be present in the water sample.



Annex E: Phase 1 Target Notes (October 2019)

TARGET NOTE	DESCRIPTION
1	This is an area of semi-improved neutral grassland that was created as part of a habitat restoration scheme and an annual hay cut is taken as part of the biodiversity enhancement measures undertaken by SHBPS. There are localised areas where the grassland is more floristically rich, which reflects spatial variations in the application of the seed mix rather than to variations in substrate/ soil type. There is a paucity of perennial rye-grass (<i>Lolium perenne</i>) which is indicative of a lack of agricultural improvement, along with abundant red fescue (<i>Festuca rubra</i> agg.). The presence of locally frequent marsh foxtail (<i>Alopecurus genticulatus</i>) and locally abundant common reed within localised shallow depressions are indicative of seasonally impeded drainage in these areas. There is a diverse assemblage of forb species in the sward, including: frequent red clover (<i>Trifolium pratense</i>), locally frequent black medick (<i>Medicago lupulina</i>), frequent ribwort plantain (<i>Plantago lanceolata</i>), locally frequent common knapweed (<i>Centaurea nigra</i> agg.), occasional daisy (<i>Bellis perennis</i>), occasional meadow vetchling (<i>Lathyrus pratensis</i>), frequent dandelion (<i>Taraxacum</i> agg.), locally frequent common sorrel (<i>Rumex acetosa</i>), locally frequent common vetch (<i>Vicia sativa</i> ssp. <i>segetalis</i>), occasional beaked hawk's-beard (<i>Crepis vesicaria</i>) and birds-foot trefoil (<i>Lotus corniculatus</i>).
3	The raised bunded area to the north of the access track supports a tussocky grass dominated sward with abundant cock's-foot (<i>Dactylis glomerata</i>) with some red fescue (Target Note 4). Forb species include frequent meadow vetchling (<i>Lathyrus pratensis</i>), occasional common and occasional curled dock (<i>Rumex crispus</i>). There is a small stand of abundant bramble next to the access track.
4	A small storage area for cut hay which is covered by a tarpaulin.
5	An artificial hibernaculum comprising large rubble pieces, now colonised by grass species as per the improved grassland.
2	The drain bordering South Marsh Road is outside the SHBPS boundary fence was inaccessible at the time of the survey. A grassy verge between the wet drain and the road, with marginal common reed, was visible when viewed through the boundary fencing.
6	The drains bordering the north-eastern part of the Site, located outside the SHBPS boundary fence.
7	A wet drain supporting a continuous linear stand of emergent and marginal common reed dominated swamp vegetation
8	A hawthorn (<i>Crataegus monogyna</i>) dominated hedgerow orientated along the northern and western boundary of the SHBPS.
9	A stand of semi-mature planted broad-leaved woodland associated with landscape planting scheme is located in the north-west corner of the site. The closed canopy consists of field maple (<i>Acer campestre</i>), crack willow (<i>Salix fragilis</i>), hazel (<i>Corylus avellana</i>), blackthorn (<i>Prunus spinosa</i>), yew (<i>Taxus</i>

TARGET NOTE	DESCRIPTION
	<i>baccata</i>), hawthorn, dogwood (<i>Cornus sanguinea</i>), holly (<i>Ilex aquifolium</i>), elder (<i>Sambucus nigra</i>) and ash (<i>Fraxinus excelsior</i>). The field flora is impoverished with patchy nettle, cleavers (<i>Galium aparine</i>) and rough meadow-grass (<i>Poa trivialis</i>). The ground flora includes patches of pleurocarpous mosses and bare ground. The woodland is managed and habitat/ brash piles noted.
10	An orchard has been planted to the south-east of the woodland; tree species include apple (<i>Malus</i> spp.) and damson (<i>Prunus</i> spp.).
11	A hawthorn (<i>Crataegus monogyna</i>) dominated hedgerow orientated along the western boundary of the SHBPS.
12	A stand of unmanaged grass dominated semi-improved neutral grassland with abundant common knapweed, occasional teasel (<i>Dipsacus fullonum</i>) and frequent cowslip. Localised areas where tufted hair-grass (<i>Deschampsia caespitosa</i>) is frequent suggest seasonally impeded drainage.
13	An inaccessible stand of densely planted young (approx. 5 m tall) broad-leaved woodland, with willow (<i>Salix</i> spp.), field maple (<i>Acer campestre</i>), hawthorn and <i>Prunus</i> spp.

Annex F: Site Photographs (2019)

	
Photo 1: Areas of bare ground at the north-east of the Main Development Area, historic location of pond.	Photo 2: Artificial hibernaculum (TN5).
	
Photo 3: Hedgerow north-west of Site (TN1)	Photo 4: Plantation broad-leaved woodland (TN15)



Photo 5: Area of bare ground towards the centre of the Main Development Area, historic location of pond.



Photo 6: Scrub adjacent to plantation broadleaved woodland at the north-west of the Site



Photo 7: Ditch at the eastern boundary of the Site (TN9)



Photo 8: Ditch at the western boundary of the Site.



Photo 9: Plantation broad-leaved woodland at the eastern extent of the Site (TN15).



Photo 10: Brash and log piles as a result of management of broadleaved woodland plantation.



Photo 11: Semi-improved grassland area and hardstanding access route to the north-east of the Site (TN1).



Photo 12: Semi-improved grassland area adjacent towards the centre of the Main Development Area.

Annex G: Humber Environmental Data Centre Wintering Bird Count Field Locations

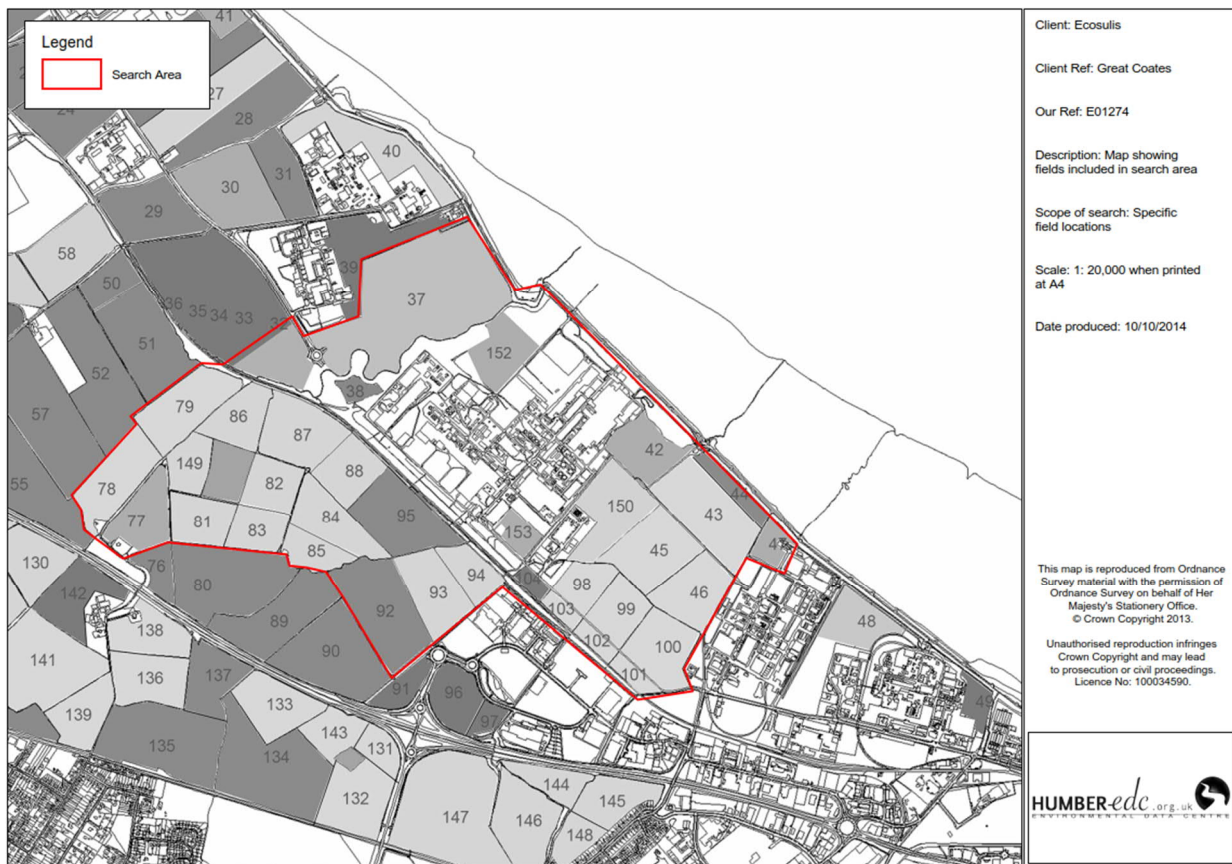


Figure 10C.1 Site Location Plan

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LEGEND

Application Boundary

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Purpose of Issue
PEI REPORT

Client
**EP WASTE
MANAGEMENT LIMITED**

Project Title
**SOUTH HUMBER BANK
ENERGY CENTRE DCO**

Application Document Ref
SITE LOCATION PLAN

Drawn	Checked	Approved	Date
LC	SD	JA	17/10/2019

AECOM Internal Project No.
60580855

Scale @ A3
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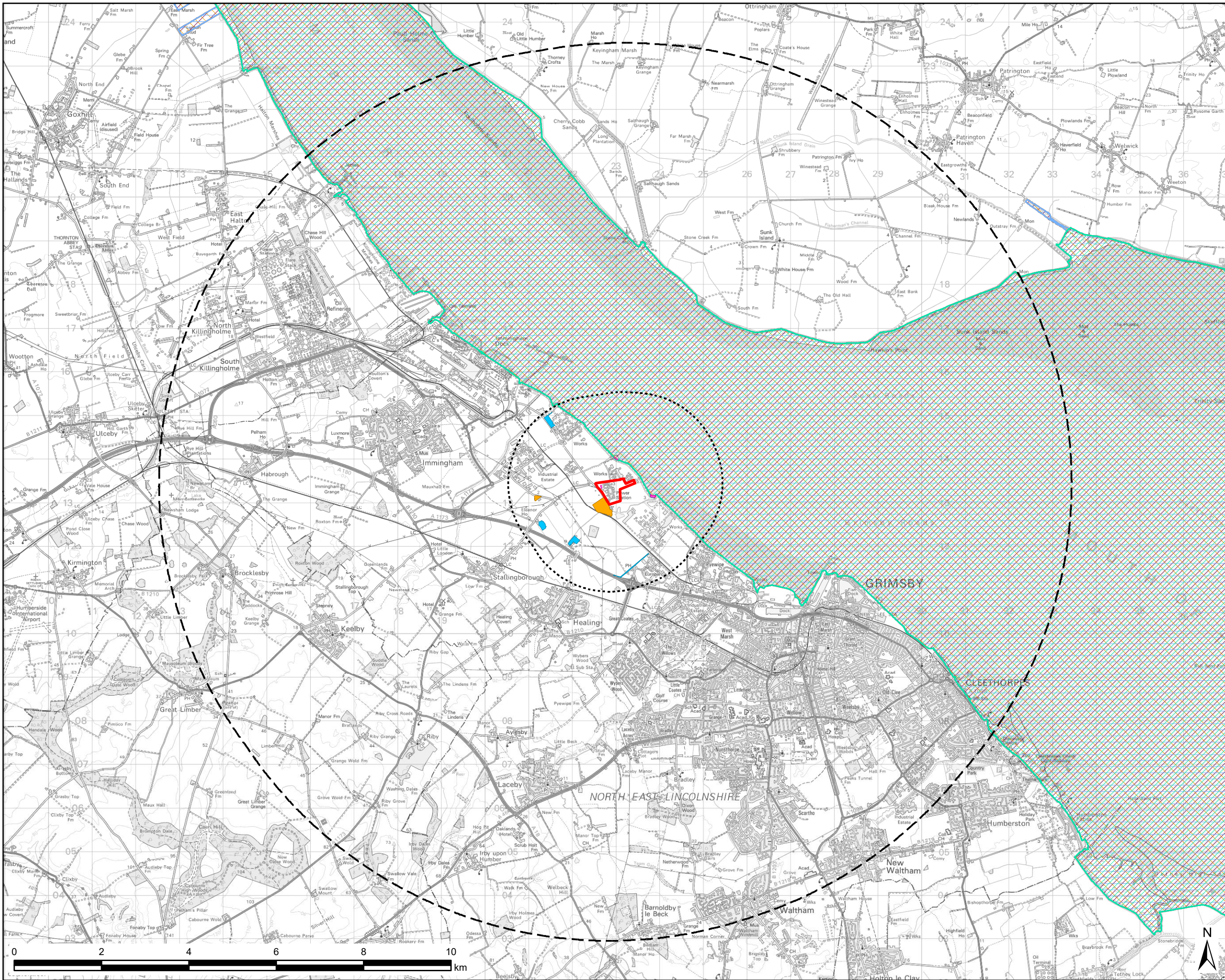
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FIGURE 10C.1

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Figure 10C.2 Statutory and Non-statutory Designations

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LEGEND

- Application Boundary
- Application Boundary 2km buffer
- Application Boundary 10km buffer
- National designated sites within 2km
- Priority Habitat
- Non-statutory designations within 2km
- Local wildlife site
- Site of nature conservation interest
- Statutory designations within 10km
 - RAMSAR
 - Special area of conservation
 - Special protection area
 - Site of special scientific interest

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Application Document Ref
**STATUTORY AND
NON-STATUTORY
DESIGNATIONS**

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FIGURE 10C.2

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Figure 10C.3 Phase 1 Habitat Map (2018)

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LEGEND

- Application Boundary
- Main development area (Indicative)
- Target note
- G2.1 - Running water - eutrophic
- J2.1.2 - Intact hedge - species-poor
- A1.1.2 - Broadleaved woodland - plantation
- A2.1 - Scrub - dense/continuous
- B2.2 - Neutral grassland - semi-improved
- F1 - Swamp
- G1 - Standing water
- G1.1 - Standing water - eutrophic
- J1.1 - Cultivated/disturbed land - arable
- J1.2 - Cultivated/disturbed land - amenity grassland
- J2.1.2 - Intact hedge - species-poor
- J3.6 - Buildings & Structures
- J5 - Other Habitat - Hard Standing

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SOUTH HUMBER BANK ENERGY CENTRE DCO

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PHASE 1 HABITAT SURVEY 2018

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FIGURE 10C.3

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Figure 10C.4 Phase 1 Habitat Map (2019)

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LEGEND

- Application Boundary
- Main development area (Indicative)
- Target note
- G2.1 - Running water - eutrophic
- J2.1.2 - Intact hedge - species-poor
- A1.1.2 - Broadleaved woodland - plantation
- A2.1 - Scrub - dense/continuous
- B2.2 - Neutral grassland - semi-improved
- F1 - Swamp
- G1.1 - Standing water - eutrophic
- J1.1 - Cultivated/disturbed land - arable
- J1.2 - Cultivated/disturbed land - amenity grassland
- J2.1.2 - Intact hedge - species-poor
- J3.6 - Buildings & Structures
- J4 - Bare ground
- J5 - Other Habitat - Hard Standing

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FIGURE 10C.4

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