

REPORT

Boston Alternative Energy Facility – Environmental Statement

Chapter 12 Terrestrial Ecology

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HASKONINGDHV UK LTD.

Rightwell House
Rightwell East
Bretton
Peterborough
PE3 8DW
Industry & Buildings
VAT registration number: 792428892

+44 1733 334455 **T**
+44 1733 262243 **F**
email **E**
royalhaskoningdhv.com **W**

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Author(s): Claire Smith

Drafted by: Ashleigh Holmes

Checked by: Claire Smith

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Approved by: Paul Salmon

Date: 21/03/21 PS

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Executive Summary

This chapter of the Environmental Statement (ES) assesses the potential impacts of the proposed Boston Alternative Energy Facility ('the Facility') on terrestrial ecology. The assessment summarised in this Chapter relates to the Principal Application Site as, due to its estuarine influenced nature, the Habitat Mitigation Area's ecology is discussed in **Chapter 17 Marine and Coastal Ecology**.

The baseline (existing) environment is described, and has been informed through a desktop study, consultation with stakeholders and on-site surveys.

The key ecological considerations and in turn the potential construction and operational related impacts are:

- 1 Permanent loss of terrestrial habitats;
- 2 Loss of foraging and commuting bats;
- 3 Displacement of common reptile species;
- 4 Loss of habitats;
- 5 Indirect impacts from lighting and noise to bat and common bird species populations; and
- 6 Disturbance effects on species from maintenance activities.

Minor adverse effects are predicted for the following receptors during the construction phase:

- Havenside Local Nature Reserve (acid/nitrogen deposition);
- Havenside Local Wildlife Site, South Forty Drain Local Wildlife Site and Slippery Gowt Sea Bank Local Wildlife Site (acid/nitrogen deposition);
- Habitats (all types);
- Foraging and commuting bats;
- Reptiles
- Birds (loss of habitat and in turn loss of nesting opportunities); and
- Terrestrial invertebrates.

During the operational phase the disturbance effects associated with maintenance activities, operational lighting and noise is assessed as **minor adverse**.

Mitigation has been applied to the Ecological Impact Assessment (EclA) for both the construction and operational phase, in order to reduce the significance of some impacts. These mitigation measures will be secured through the adherence to a Landscape and



Ecological Mitigation Strategy. An Outline Landscape and Ecological Mitigation Strategy (OLEMS) has been prepared (document reference 7.4).

12 Terrestrial Ecology

12.1 Introduction

12.1.1 This chapter of the Environmental Statement (ES) describes the existing environment in relation to terrestrial ecology and provides the assessment of the potential impacts during the construction, operational and decommissioning phases of the Boston Alternative Energy Facility ('the Facility'). Mitigation measures are identified and where appropriate a discussion of the residual impacts is provided where significant impacts have been identified.

12.1.2 This chapter is supported by the following appendix:

- Updated Ecology Survey Report (**Appendix 12.1 Extended Phase 1 Habitat Report**).

12.1.3 This chapter describes the baseline environmental information which is of relevance to terrestrial ecology for the Principal Application Site and identifies the construction, operational and decommissioning activities which could have an adverse impact on terrestrial ecology. The ecology of the Habitat Mitigation Area is considered within **Chapter 17 Marine and Coastal Ecology**.

12.2 Legislation, Policy and Guidance

Legislation

12.2.1 There are various pieces of legislation applicable to terrestrial ecology. The following sections provide a summary of key pieces of international and UK legislation which are relevant to this chapter.

Habitats Directive – Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora

12.2.2 This Directive provides protection for specific habitats listed in Annex I and species listed in Annex II of the Directive. The Directive sets out decision making procedures for the protection of Special Areas of Conservation (SAC) and Special Protection Areas (SPA), implemented in the UK through The Conservation of Habitats and Species Regulations 2017 (as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019) discussed below.

Wildlife and Countryside Act 1981 (as amended)

12.2.3 This Act makes it an offence (with exception to species listed in Schedule 2 and

with additional penalties for species listed in Schedule 1) to intentionally: kill, injure, or take any wild bird; take, damage or destroy the nest of any wild bird while that nest is in use or being built; and take or destroy an egg of any wild bird.

12.2.4 The Act makes it an offence to intentionally kill, injure or take any animal listed in Schedule 5 of the act and protects occupied and unoccupied places used for shelter or protection.

12.2.5 The Act makes it an offence (subject to exceptions) to intentionally pick, uproot or destroy any wild plant listed in Schedule 8 of the Act. The Act makes it a criminal offence to plant or otherwise cause to grow any non-native, invasive species listed under Schedule 9 of the Act. The Act makes provision for the notification and confirmation of Sites of Special Scientific Interest (SSSI).

The Conservation of Habitats and Species Regulations 2017 as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019

12.2.6 The Regulations transpose the Council Directive 92/43/EEC the 'Habitats Directive' in national law (in respect of England and Wales). The Regulations provide for:

- designation and protection of a National Site Network (SPA and SAC) including the need for 'Appropriate Assessment' of plans and proposals likely to affect those sites;
- protection of European protected species;
- adaptation of planning and other controls for the protection of the National Site Network;
- making it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 5;
- the avoidance of activity that may impact a European protected species or its habitat unless authorised by a European Protected Species licence issued by Natural England. Licences are not issued until after planning consent has been granted and once Natural England are satisfied that adequate measures are to be put in place to mitigate for the impact of the development.
- requiring competent authorities to consider or review planning permission, applied for or granted, affecting a European site, and, subject to certain exceptions, restrict or revoke permissions where the integrity of the site would be adversely affected.

The Protection of Badgers Act 1992

12.2.7 The Act makes it an offence to wilfully kill, injure or take, or attempt to kill, injure or take a badger *Meles meles*; and to cruelly ill-treat a badger. The Act makes it an offence to intentionally or recklessly damage, destroy or obstruct a badger sett, or to disturb a badger whilst in a sett.

Natural Environment and Rural Communities (NERC) Act 2006

12.2.8 Section 41 of the Act requires the Secretary of State (SoS) to compile a list of habitats and species of principal importance for the conservation of biodiversity in England (herein 'S41 species'). Decision makers of public bodies, in the execution of their duties, must have regard to the conservation of biodiversity in England, and the list is intended to guide them.

The Hedgerow Regulations 1997

12.2.9 The Regulations make it an offence to remove or destroy certain hedgerows without permission from the local planning authority and the local planning authority is the enforcement body for such offences.

The Commons Act 2006

12.2.10 The Act aims to protect areas of common land, in a sustainable manner delivering benefits for farming, public access and biodiversity (Department for Environment, Food and Rural Affairs (Defra), 2013).

Countryside and Rights of Way Act 2000 (CRoW)

12.2.11 The Act amends the law relating to public rights of way including making provision for public access on foot to certain types of land. Amendments are made in relation to SSSIs to improve their management and protection, as well as to the Wildlife and Countryside Act 1981, to strengthen the legal protection for threatened species. Provision is also made for Areas of Outstanding Natural Beauty (AONB) to improve their management.

National Planning Policy

National Planning Policy Framework (NPPF)

12.2.12 The NPPF (Ministry of Housing, Communities and Local Government (MHCLG), 2019), published in 2019 replaces the former series of Planning Policy Statements. From its outset, the document makes plain that it is concerned with Sustainable Development, and Paragraph 8 states that there are three dimensions to sustainable development: economic, social and environmental, and that all three are mutually dependent and gains for all should be sought jointly and

simultaneously through the planning system. The environmental dimension is defined (as per the framework document) below:

“an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy”.

Natural Environment White Paper 2011

12.2.13 The paper was the first White Paper produced by the Government in 20 years. The paper contains plans to reconnect nature, connect people and nature for better quality of life and capture and improve the value of nature.

Biodiversity 2020: A Strategy for England’s wildlife and ecosystem services

12.2.14 The Strategy (Defra, 2011) sets out how England will implement the 2010 Aichi Biodiversity Targets, European Commission’s 2011 EU Biodiversity Strategy and the recommendations of the 2011 Natural Environment White Paper. It contains the following relevant targets:

- *“Better wildlife habitats with 90 % of priority habitats in favourable or recovering condition and at least 50 % of SSSIs in favourable condition, while maintain at least 95 % in favourable or recovering condition;*
- *More, bigger and less fragmented areas for wildlife, with no net loss of priority habitat and an increase in the overall extent of priority habitats by at least 200,000 ha;*
- *By 2020, at least 17 % of land and inland water, especially areas of particular importance for biodiversity and ecosystem services, conserved through effective, integrated and joined up approaches to safeguard biodiversity and ecosystem services including thorough management of our existing systems of protected areas and the establishment of nature improvement areas;*
- *Restoring at least 15 % of degraded ecosystems as a contribution to climate change mitigation and adaptation” (Outcome 1 – Habitats and ecosystems on land);*
- *“By 2020... see an overall improvement in the status of our wildlife and will have prevented further human-induced extinctions of known threatened species” (Outcome 3 – Species); and*

- “By 2020, significantly more people will be engaged in biodiversity issues, aware of its value and taking positive action” (Outcome 4 – People).

National Policy Statements

12.2.15 The assessment of potential impacts upon terrestrial ecology has been made with specific reference to the relevant National Policy Statements (NPS). These are the principal decision-making documents for Nationally Significant Infrastructure Projects (NSIPs). Those relevant to the Facility are:

- Overarching NPS for Energy (EN-1) (Department of Energy and Climate Change (DECC), 2011a); and
- NPS for Renewable Energy Infrastructure (EN-3) (DECC, 2011b).

12.2.16 The specific assessment requirements for terrestrial ecology, as detailed in the NPSs, are summarised in **Table 12-1**, together with an indication of section this chapter where each is addressed. Where any part of the NPS has not been followed within the assessment, an explanation as to why the requirement was not deemed relevant, or has been met in another manner, is provided.

Table 12-1 NPS Assessment Requirements

NPS Requirement	NPS Reference	ES Reference
EN-1 Overarching NPS for Energy (DECC, 2011a)		
“Where the development is subject to EIA (Environmental Impact Assessment) the applicant should ensure that the ES (Environmental Statement) clearly sets out any effects on internationally, nationally and locally designated sites of ecological or geological conservation importance, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity. The applicant should provide environmental information proportionate to the infrastructure where EIA is not required to help the Infrastructure Planning Commission (IPC) consider thoroughly the potential effects of a proposed project.”	Section 5.3.3	Existing environment is discussed in Section 12.6 . Effects to designated sites, along with protected habitats and species, or those that are otherwise notable such being identified as being of principal importance for the conservation of biodiversity have been fully assessed within this Chapter.
“The applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests.”	Section 5.3.4	Embedded mitigation measures are presented in Section 12.6 .
“When considering the application, the IPC will have regard to the Government’s biodiversity strategy as set out in ‘Working with the grain of nature’, which aims to halt or reverse declines in priority habitats and species; accept the importance of biodiversity to quality of life. The IPC will consider this in relation to the context of	Sections 5.3.5 – 5.3.8	Embedded mitigation measures are presented in Section 12.6 .

NPS Requirement	NPS Reference	ES Reference
<p>climate change. As a general principle, and subject to the specific policies below, development should aim to avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives (as set out in section 4.4 above); where significant harm cannot be avoided, then appropriate compensation measures should be sought.</p> <p>In taking decisions, the IPC should ensure that appropriate weight is attached to designated sites of international, national and local importance; protected species; habitats and other species of principal importance for the conservation of biodiversity; and to biodiversity and geological interests within the wider environment.”</p>		
<p>“The IPC will have the same regard to potential Special Protection Areas (pSPAs) and Ramsar sites as those sites identified through international conventions and European Directives.”</p>	Section 5.3.9	<p>Designated sites are discussed in Section 12.6. Assessment is set out in Section 12.7.</p> <p>Site selection decisions have been made to avoid interest features at designated sites.</p>
<p>“Many SSSIs are also designated as sites of international importance and will be protected accordingly. Those that are not, or those features of SSSIs not covered by an international designation, should be given a high degree of protection.”</p>	Section 5.3.11	<p>Designated sites are discussed in Section 12.6. Assessment is set out in Section 12.7.</p> <p>Site selection decisions have been made to avoid interest features at designated sites.</p>
<p>“Where a proposed development on land within or outside an SSSI is likely to have an adverse effect on an SSSI (either individually or in combination with other developments), development consent should not normally be granted.</p> <p>Where an adverse effect, after mitigation, on the site’s notified special interest features is likely, an exception should only be made where the benefits (including need) of the development at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of SSSIs.”</p>	Section 5.3.13	<p>Designated sites are discussed in Section 12.6. Assessment is set out in Section 12.7.</p> <p>Site selection decisions have been made to avoid interest features at designated sites.</p>
<p>“The IPC will have regard to sites of regional and local biodiversity and geological interest, which include Regionally Important Geological Sites, Local Nature Reserves and Local Sites when considering applications since they are recognised to have a fundamental role in meeting overall national biodiversity targets.”</p>	Section 5.3.13	Regionally Important Geological Sites are discussed in Chapter 11 Contaminated Land, Land Use and Hydrogeology .

NPS Requirement	NPS Reference	ES Reference
		<p>Designated sites for their biodiversity interests are discussed in Section 12.6. Assessment of biodiversity designated sites is set out in Sections 12.7 and 12.5.</p> <p>Site selection decisions have been made to avoid interest features at designated sites.</p>
<p>“Ancient woodland is a valuable biodiversity resource both for its diversity of species and for its longevity as woodland. Once lost it cannot be recreated.</p> <p>The IPC should not grant development consent for any development that would result in its loss or deterioration unless the benefits (including need) of the development, in that location outweigh the loss of the woodland habitat.</p> <p>Aged or ‘veteran’ trees found outside ancient woodland are also particularly valuable for biodiversity and their loss should be avoided.</p> <p>Where such trees would be affected by development proposals the applicant should set out proposals for their conservation or, where their loss is unavoidable, the reasons why.”</p>	Section 5.3.14	<p>There is no ancient woodland within or adjacent to the Application Site, therefore no further requirements are needed.</p> <p>Site selection decisions have been made to avoid interest features such as trees wherever possible.</p>
<p>“The IPC will aim to maximise opportunities to build in beneficial biodiversity features when considering proposals as part of good design.”</p>	Section 5.3.15	<p>Embedded mitigation measures are presented in Section 12.6. This includes replanting and reinstatement of habitat where considered necessary. Further information regarding reinstatement and landscape mitigation planting is presented in Chapter 9 Landscape and Visual Impact Assessment.</p>
<p>“The IPC shall have regard to the protection of legally protected species and habitats and species of principal importance for nature conservation.</p> <p>The IPC shall refuse consent where harm to the habitats or species and their habitats would result, unless the benefits (including need) of the development outweigh that harm. In this context the IPC should give substantial weight to any such harm to the detriment of biodiversity features of national or regional importance which it considers may result from a proposed development.”</p>	Sections 5.3.16 – 5.3.17	<p>Protected and important species and habitats is discussed in Section 12.6. Assessment is set out in Sections 12.7 and 12.5.</p>

NPS Requirement	NPS Reference	ES Reference
<p>“The applicant should include appropriate mitigation measures as an integral part of the proposed development and demonstrate that:</p> <p>During construction, they will seek to ensure that activities will be confirmed to the minimum areas required for the works;</p> <p>During construction and operation best practice will be followed to ensure that risk of disturbance or damage to species or habitats is minimised, including as a consequence of transport access arrangements;</p> <p>Habitats will, where practicable, be restored after construction works have finished; and</p> <p>Opportunities will be taken to enhance existing habitats and, where practicable, to create new habitats of value within the site landscaping proposals.”</p>	Section 5.3.18	Embedded mitigation measures are presented in Section 12.6 . This includes replanting and reinstatement of habitat where considered necessary.
<p>“The IPC will need to take account of what mitigation measures may have been agreed between the applicant and Natural England has granted or refused or intends to grant or refuse, any relevant licences, including protected species mitigation licences.”</p>	Section 5.3.20	Embedded mitigation measures are presented in Section 12.6 . Consultation/liaison with Natural England are presented in Section 12.3 .
EN-3 NPS for Renewable Energy Infrastructure (DECC, 2011b)		
<p>“Proposals for renewable energy infrastructure should demonstrate good design in respect of landscape and visual amenity, and in the design of the project to mitigate impacts such as noise and effects on ecology.”</p>	Section 2.4.2	Project design has avoided sensitive features where possible. Embedded mitigation measures are presented in Section 12.6 . See also Chapter 9 Landscape and Visual Impact Assessment .
<p>“Ecological monitoring is likely to be appropriate during the construction and operational phases to identify the actual impact so that, where appropriate, adverse effects can then be mitigated and to enable further useful information to be published relevant to future projects.”</p>	Section 2.6.70	Monitoring is discussed in mitigation set out in Section 12.6 .
<p>“There may be some instances where it would be more harmful to the ecology of the site to remove elements of the development, such as the access tracks or underground cabling, than to retain them.”</p>	Section 2.7.15	Decommissioning is discussed in Section 12.6 .

Local Planning Policy

12.2.17 EN-1 states, in Paragraph 4.1.5 that:

“Other matters that the IPC (now the Planning Inspectorate) may consider important and relevant to its decision-making may include Development Plan Documents or other documents in the Local

Development Framework. In the event of a conflict between these or any other documents and an NPS, the NPS prevails for the purposes of IPC decision making given the national significance of the infrastructure.”

12.2.18 The Facility falls within the following local authority boundaries:

- Lincolnshire County Council (LCC); and
- Boston Borough Council (BBC).

12.2.19 **Table 12-2** provides details of the local planning policy documents and the relevant policies in respect of terrestrial ecology. Designated areas which these policies may refer to are shown in **Figure 12.2**. Several policies which primarily relate to the management of water resources, and which are inter-linked with terrestrial ecology are discussed in **Chapter 13 Surface Water, Flood Risk and Drainage Strategy** and **Chapter 9 Landscape and Visual Impact Assessment**.

Table 12-2 Relevant Local Planning Policies

Document	Policy / Guidance	Policy / Guidance Purpose
South-East Lincolnshire Joint Strategic Planning Committee		
South-East Lincolnshire Local Plan	Policy 28	<ul style="list-style-type: none"> • development proposals that would cause harm to these assets (internationally designated sites, on land or at sea) will not be permitted, except in exceptional circumstances, where imperative reasons of overriding public interest exist, and the loss will be compensated by the creation of sites of equal or greater nature conservation value. • a development proposal that would directly or indirectly adversely affect nationally or locally-designated sites (including Havenside Local Nature Reserve (LNR)) will not be permitted unless there are no alternative sites that would cause less or no harm; the benefits of the development at the proposed site, clearly outweigh the adverse impacts on the features of the site and the wider network of natural habitats; and suitable prevention, mitigation and compensation measures are provided. • Addressing gaps in the ecological network: by ensuring that all development proposals shall provide an overall net gain in biodiversity, by: <ul style="list-style-type: none"> ○ protecting the biodiversity value of land, buildings and trees (including veteran trees) minimising the fragmentation of habitats; ○ maximising the opportunities for restoration, enhancement and connection of natural habitats and species of principal importance; ○ incorporating beneficial biodiversity conservation features on buildings, where appropriate; and maximising opportunities to enhance green infrastructure and ecological corridors, including water space; and ○ conserving or enhancing biodiversity or geodiversity conservation features that will provide new habitat and help wildlife to adapt to climate change, and if the development is within a Nature Improvement Area (NIA), contributing to the aims and objectives of the NIA.
LCC		
LCCs Environmental Policy (2007)	Natural, Historic and Built Environment	Encourage wildlife and increase biodiversity by protecting and creating habitats and managing land appropriately, to value, protect and enhance the diversity of the built environment.

Guidance

12.2.20 This Ecological Impact Assessment (EclA) has been undertaken in accordance with the following industry guidance and standards:

- Chartered Institute of Ecology and Environmental Management (CIEEM) (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 3rd Edition;
- British Standard (BS) 42020:2013 – Biodiversity. Code of Practice for planning and development; and
- CIRIA Guidance note C692 Environmental Good Practice on Site Guide (3rd Edition).

12.2.21 The following species-specific guidance and standards have been used during the assessment process:

- Natural England (2015) Standing advice on protected species (bats (all species), great crested newts *Triturus cristatus*, badgers, water voles *Arvicola amphibius*, otters *Lutra lutra*, reptiles, protected plants, invertebrates and white-clawed crayfish *Austropotamobius pallipes*);
- BS 5837:2012 – Trees in relation to design, demolition and construction;
- Bat Conservation Trust (BCT) and Institute of Lighting Engineers (2018) Bats and Artificial Lighting in the UK;
- Dean *et al.* (2016) The Water Vole Mitigation Handbook (The Mammal Society Guidance Series);
- Edgar *et al.* (2010) Reptile Habitat Management Handbook;
- English Nature (2001) Great Crested Newt Mitigation Guidelines;
- Joint Nature Conservation Committee (JNCC) (2003) Herpetofauna Worker's Manual;
- Natural England (2014) Otters: surveys and mitigation for development projects. Natural England Standing Advice;
- Natural England (2015) Badgers: surveys and mitigation for development projects. Natural England Standing Advice;
- Natural England (2015) Bats: surveys and mitigation for development projects. Natural England Standing Advice;
- Natural England (2015) Great crested newts; surveys and mitigation for development projects. Natural England Standing Advice;

- Natural England (2015) Invertebrates; surveys and mitigation for development projects. Natural England Standing Advice;
- Natural England (2015) Reptiles; surveys and mitigation for development projects. Natural England Standing Advice;
- Natural England (2015) Water voles: surveys and mitigation for development projects. Natural England Standing Advice;
- Strachan and Moorhouse (2011) Water Vole Conservation Handbook, 3rd Edition; and
- GB Non-native Species Secretariat (2015) Species Information.

12.3 Consultation

12.3.1 Consultation is a key part of the Development Consent Order (DCO) application process. To date, consultation regarding terrestrial ecology has been to obtain the biological data records in 2018, reviewing and drawing on the information reported within the Scoping Report (Royal HaskoningDHV, 2018), three rounds of Public Information Days (PIDs) in September 2018, February 2019 and July 2019 and additional consultation during a fourth consultation period in August 2020. In addition, a meeting with Natural England was held on the 11th February 2019 where the scope and approach to the ecological assessment was discussed and agreed. Further consultation was undertaken following the publication of the Preliminary Environmental Information Report (PEIR). Full details of the Facility's consultation process are presented within **Chapter 7 Consultation**.

12.3.2 Consultation that has been undertaken throughout the DCO preparation phase has informed the approach to the assessment of terrestrial ecology impacts and the information presented in this chapter. A summary of the consultation relevant to terrestrial ecology is detailed in **Table 12-3**.

Table 12-3 Consultation and Responses

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
The Planning Inspectorate Scoping Opinion, July 2018	The Inspectorate accepts that significant effects are unlikely to result from the Proposed Development with respect to invasive plant species, dormice, white clawed crayfish. The information in the Scoping Report is limited, however, this decision is based on an understanding that the habitats within the Study Area are suboptimal for these species and they are therefore unlikely to be present. However, the ES should include the information that	Section 12.6 provides information on the environment gathered through both the desk and field surveys completed to inform this EclA.

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
	<p>supports this position.</p>	
	<p>Regarding great crested newts, the Inspectorate considers that insufficient survey information has been provided for potential breeding ponds and inadequate justification has been provided regarding the Study Area applied.</p> <p>The Proposed Development site contains suitable terrestrial habitat and therefore should newts be within the area significant effects could occur. Therefore, the ES should provide an assessment with respect to great crested newts, supported by adequate survey information</p>	<p>An updated HSI assessment for great crested newts has been undertaken and the conclusion presented to NE and no comment or concerns raised by NE to date.</p> <p>The 250 m Survey Area that has been used to identify the ponds within and up to 250 m of the Applicant Site boundaries is as per guidance and agreed with NE.</p> <p>Section 12.6 provides further information in respect to great crested newts.</p>
	<p>The Scoping Report notes Havenside Local Nature Reserve (LNR) as the closest statutory designated site and provides a description; however, there is no figure to depict its location in relation to the Proposed Development.</p> <p>The Inspectorate considers the three Local Wildlife Sites mentioned in the scoping report, however, the exact location of these sites in relation to the Proposed Development site and all designated sites referred to in the assessment.</p>	<p>Section 12.6 provides information in relation to LNRs. The locations of LNR's are shown on Figure 12.2.</p>
	<p><u>Designated sites – indirect effects</u></p> <p>The scoping report states that as there are not Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA) or Ramsar sites within 2km and that there is no potential impact on these designations. No justification is provided in the Scoping Report as to why no indirect impacts could occur beyond 2km. The Inspectorate considers that the ES should assess potential indirect impacts on designated sites and advises that significant effects could occur as a result of shipping</p>	<p>Section 12.6 provides information on the statutory designated sites within the Study Area for this EclA.</p> <p>Chapter 17 Marine and Coastal Ecology provides further assessment on designated sites</p>

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
	<p>movements associated with the Proposed Development or from the construction and maintenance of the new wharf and berths. The ES should include an assessment of indirect effects on The Wash SPA and Ramsar site working in co-ordination with the proposed HRA, as required by the 2017 EIA Regulations. This aspect chapter should cross refer to Chapter 17 Marine and Coastal Ecology to provide additional clarity to the reader and avoid repetition.</p>	<p>associated with The Wash.</p>
	<p><u>Habitats of ecological value</u> The Inspectorate advises that the ES should include an assessment of significant effects on all habitats likely to be impacted by the Proposed Development including an assessment of their ecological value. This should include an assessment of the loss of saltmarsh and intertidal mudflat habitats, where significant effects could occur.</p>	<p>Section 12.6 provides information on the baseline environment within the Study Area, for which has informed this EclA.</p> <p>Chapter 17 Marine and Coastal Ecology provides information on intertidal mudflat habitats.</p>
	<p><u>Potential effects on water voles, reptiles</u> Given the potential presence of water voles and reptiles, the Inspectorate considers that significant effects may occur. Consequently, the Inspectorate considers that the ES should include an assessment of the likely significant effects on water voles and reptiles and should be supported by appropriate survey information.</p>	<p>Section 12.6 provides information on the baseline environment within the Study Area, for which has informed this EclA.</p> <p>No evidence of water voles has been recorded during the surveys undertaken to date and therefore they are considered to be absent.</p>
	<p><u>Birds – including foraging water bird species, ground nesting birds, foraging raptors</u> The Inspectorate considers that an assessment of foraging water birds, ground nesting birds, and foraging raptors should be assessed in the ES. Given the information on baseline conditions and predicted potential effects it is not apparent why it is stated in Paragraph 6.6.39 of the Scoping Report that no further bird survey work is required. As assessment should be made in the ES of the significant effects on these features, supported by appropriate survey information and data gathering. Cross reference should be made in this chapter of the ES to the aspect of Chapter 17</p>	<p>Section 12.6 provides information on the baseline environment within the Study Area, for which has informed this EclA.</p> <p>Section 12.67 presents the EclA that has been undertaken in respect to terrestrial bird species.</p>

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
	<p>Marine and Coastal Ecology.</p>	<p>Chapter 17 Marine and Coastal Ecology provides information on birds using the intertidal and mudflat habitats and also The Wash.</p>
	<p><u>Bats – particularly foraging bats</u> Paragraph 6.6.32 of the Scoping Report states that no further bat survey work in relation to bat foraging activity is required. The Inspectorate has had regard to the baseline information contained within the Scoping Report and does not agree. The ES should include an assessment of the likely significant effects to bats, including foraging bats. The assessment should be supported by appropriate survey information and data gathering.</p>	<p>Section 12.6 provides information on the baseline environment within the Study Area, for which has informed this EclA.</p> <p>Section 12.67 presents the EclA that has been undertaken in respect to bats.</p>
	<p><u>Invertebrates</u> The Inspectorate considers that further survey effort for invertebrates is required to inform the assessment of likely significant effects and this should be presented in the ES.</p>	<p>Section 12.6 provides information on the baseline environment within the Study Area, for which has informed this EclA.</p> <p>No evidence of suitable habitat to support significant populations of invertebrates was noted during the surveys undertaken to date. The tidal River Witham and mudflats may also provide suitable habitat for common species of aquatic invertebrates.</p> <p>Further details are provided in Chapter 17 Marine and Coastal Ecology in respect to aquatic invertebrates.</p>

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
	<u>Scope of EIA</u> The ES must clearly set out the features taken forward into the EIA and provide justification for the scope presented, with reference to where agreement has been reached with relevant consultees.	Section 12.5 provides information on the Scope of this EclA.
	<u>Potential construction effects</u> The ES should assess the likely significant effects to ecological receptors during the construction phase, e.g. the bat roost sites to be affected, the area of habitats to be removed and retained, and the anticipated nature of pollution and disturbance effects including those from noise and lighting.	Section 12.6 provides information on the baseline environment within the Study Area, for which has informed the construction impacts (Section 12.7) considered within this EclA.
	<u>Potential operational effects</u> The Inspectorate considers that specific impacts associated with the operation of the Application Site, including those associated with night-time operation and lighting, and transportation of materials, must be identified in the ES and assessed where significant effects may occur.	Section 12.6 provides information on the baseline environment within the Study Area, for which has informed the operational impacts (Section 12.7) considered within this EclA.
	<u>Mitigation</u> The ES should describe the anticipated efficacy of any proposed mitigation measures and present residual effects following mitigation. The mechanism by which mitigation is secured e.g. DCO requirements or other legal agreement, should also be provided in the ES.	Section 12.6 provides information on the baseline environment. The potential impacts on the ecological receptors which in turn has enabled the mitigation measures to be identified is presented in Section 12.7 .
	<u>Cumulative effects</u> The assessment of impacts to ecological receptors should include an assessment of cumulative effects with other development.	Section 12.8 provides information in relation to the Cumulative Impact Assessment (CIA).
Environment Agency Scoping Opinion, July 2018	Updated protected species surveys may need to be undertaken by suitably qualified ecologists at appropriate times of year to account for the dynamic nature of some species and the suitable habitat that exist within the	Section 12.6 provides information on the statutory designated sites within the Study

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
	<p>boundary of the proposed development and in the surrounding area.</p> <p>Where possible, suitable habitat should be integrated within the project to deliver net gains for Biodiversity in line with current environmental policy. The integration of mitigation measures under the Water Framework Directive (WFD) may also have wider ecological and biodiversity gains, further than preventing deterioration of water status.</p> <p>The Environment Agency states that aquatic species information may need to be supplanted with additional surveys to provide evidence on the potential impacts and suitable mitigation as part of the proposed development.</p>	<p>Area for this EclA.</p> <p>Section 12.6 provides information on the baseline environment and findings from the ecological surveys that have been undertaken to date.</p> <p>Chapter 13 Surface Water, Flood Risk and Drainage Strategy Appendix 13.1 Water Framework Directive Compliance Assessment.</p>
Natural England Scoping Opinion, July 2018	<p>Natural England advises that the potential impact of the proposal upon features of nature conservation interest and opportunities for habitat creation/enhancement should be included within this assessment in accordance with appropriate guidance. Guidelines for EclA have been developed by CIEEM.</p>	<p>Section 12.6 provides information on the statutory designated sites within the Study Area for this EclA.</p> <p>Further information relating to opportunities for habitat creation/enhancement is presented in the OLEMS (document reference 7.4).</p>
	<p>Natural England advises that the ES should thoroughly assess the potential for the proposal to affect designated sites. European sites fall within the scope of the Conservation of Habitats and Species Regulations 2017. In addition, paragraph 118 of the National Planning Policy Framework requires that potential Special Protection Areas, possible Special Areas of Conservation, listed or proposed Ramsar sites, and any site identified as being necessary to compensate for adverse impacts on classified, potential or possible SPAs, SACs and Ramsar sites be treated in the same way as classified sites.</p> <p>Under Regulation 61 of the Conservation of Habitats and Species Regulations 2017 an appropriate assessment needs to be undertaken in respect of any plan or project</p>	<p>Section 12.6 provides information on the statutory designated sites within the Study Area for this EclA.</p> <p>Further information in relation to the Habitats Regulations Assessment (HRA) is presented in Appendix 17.1 Habitats Regulations Assessment.</p>

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
	<p>which is: Likely to have a significant effect on a European site (either alone or in combination with other plans or projects) and Not directly connected with or necessary to the management of the site.</p> <p>Should a Likely Significant Effect on a European/Internationally designated site be identified or be uncertain, the Local Planning Authority may need to prepare an Appropriate Assessment, in addition to consideration of impacts through the EIA process.</p>	
	<p><u>Regionally and Locally Important Sites</u> The EIA will need to consider any impacts upon local wildlife and geological sites. Local Sites are identified by the local wildlife trust, geoconservation group or a local forum established for the purposes of identifying and selecting local sites. They are of county importance for wildlife or geodiversity. The ES should therefore include an assessment of the likely impacts on the wildlife and geodiversity interests of such sites. The assessment should include proposals for mitigation of any impacts and if appropriate, compensation measures.</p>	<p>Regionally Important Geological Sites are discussed in Chapter 11 Contaminated Land, Land Use and Hydrogeology.</p>
	<p><u>Protected Species – Species protected by the Wildlife and Countryside Act 1981 (as amended) and by the Conservation of Habitats and Species Regulations 2017</u> The ES should assess the impact of all phases of the proposal on protected species (including great crested newts, reptiles, birds, water voles, badgers and bats). Natural England advises that records of protected species should be sought from appropriate local biological record centres, nature conservation organisations, groups and individuals; and consideration should be given to the wider context of the site for example in terms of habitat linkages and protected species populations in the wider area, to assist in the impact assessment.</p>	<p>Section 12.6 provides information on the baseline environment within the Study Area, for which has informed this EclA.</p>
	<p><u>Habitats and Species of Principal Importance</u> The ES should thoroughly assess the impact of the proposals on habitats and/or species listed as ‘Habitats and Species of Principal Importance’ within the England Biodiversity List, published under the requirement of S41 of the Natural Environment and Rural Communities (NERC) Act 2006.</p> <p>Natural England advises that survey, impact assessment and mitigation proposals for Habitats and Species of Principal Importance should be included in the ES.</p>	<p>Section 12.6 provides information on the baseline environment within the Study Area, for which has informed this EclA.</p>

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
	<p>Consideration should also be given to those species and habitats included in the relevant Local BAP.</p> <p>Natural England advises that habitat survey (equivalent to Phase 2) is carried out on the site, in order to identify any important habitats present. In addition, ornithological, botanical and invertebrate surveys should be carried out at appropriate times in the year, to establish whether any scarce or priority species are present. The Environmental Statement should include details of:</p> <ul style="list-style-type: none"> • Any historical data for the site affected by the proposal; • Additional surveys carried out as part of this proposal; • The habitats and species present; • The status of these habitats and species; • The direct and indirect effects of the development upon those habitats and species; • Full details of any mitigation or compensation that might be required. 	
Natural England, February 2019	<ul style="list-style-type: none"> • Natural England's standing advice on protected species including Badgers, Bats, Otter, Water Vole is available here. We would suggest repeating the Water Vole survey due to an exceptionally dry summer in 2018, and also to resurvey for Badgers as they are known in the local area (from the south along the sea defence) and have been recently. 	Noted Section 12.6 summarises the findings from the 2019 surveys for badgers, bats and water voles respectively.
Lincolnshire Wildlife Trust (LWT), April 2019	<ul style="list-style-type: none"> • Has a Local Environmental Records Centre (LERC) search been undertaken? • Understanding impact on LWS during both the construction and operational phases. • Biodiversity Net Gain should be included in the project. 	<p>Biological records have been received for the Principal Application Site plus up to a 2 km search area in December 2018. Findings of which have been used to inform the baseline conditions and subsequent EclA.</p> <p>The construction phase may have an impact on the Local Wildlife Sites (LWS). Consideration of potential impacts (or none) during the construction and operational phases of the Facility will be</p>

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
		considered and consulted on with stakeholders to ensure mitigation measures (where required will be implemented).
Section 42 Consultation Response – Natural England, 6 th August 2019	Natural England acknowledges that the assessment has followed our advice at the scoping stage to consider impacts on statutory and non-statutory nature conservation designations and protected and notable habitats and species and has been undertaken in accordance with published best practice.	Section 12.6 details the findings of the assessment on statutory and non-statutory sites.
	Phase 1 habitat surveys were undertaken in 2017, with additional survey work being carried out in October 2018 which appears in Appendix 12. The applicant has taken on board NE's comment made at the meeting of February 2019 regarding the dry summer in 2018 and will be repeating the water vole, otter and badger surveys.	Section 12.6 summarises the findings from the 2019 surveys for badgers and water voles respectively.
	Whilst there is no evidence of bat roosting within the site in 2017/18, we welcome the intention that further bat surveys will be undertaken during 2019 as the proposed Facility will result in the of potential foraging habitats. The further surveys should establish the current usage of foraging/commuting bats (numbers and species) and we will look forward to receiving the complete information for these. The recommendations in Appendix 12 for additional planting, the use of bat boxes and bricks and proposals to minimise lighting is welcome.	Section 12.6 summarises the findings from the monthly bat activity transect surveys that have been undertaken.
	We acknowledge that the proposed precautionary methods of working during construction will reduce the impact on reptile to minor adverse significance.	Section 12.6 summarises the proposed mitigation measures in relation to reptiles.
	We consider that very limited information is provided on terrestrial use of the site by birds. It appears that a breeding bird survey has not been completed (as we requested in our February meeting) but instead assessment is relying on off-site BTO data. We note however that nesting bird checks will be undertaken ahead of works starting. Natural England would be interested in seeing the bird survey report if one has been done and not fully included in the PEIR.	A breeding bird survey was undertaken between April and June 2020. Details and results of which are presented in Section 12.6 .

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
	Some of the hedgerows at least towards Frampton/Freiston support some interesting farmland birds. We would like to see some indication as to whether the inland fields where the development is based, will have any impact on SPA bird species using the site as part of the SPA supporting habitat.	A breeding bird survey was undertaken between April and June 2020. Details and results of which are presented in Section 12.6 .
	We note that there is low value habitat for terrestrial invertebrates but would like to see some explanation how this conclusion was reached.	<p>Section 12.6 summarises the findings from the field survey as to the Principal Application Site's suitability to support terrestrial invertebrates.</p> <p>Section 12.6 summarises the proposed mitigation measures in relation to terrestrial invertebrates. No evidence of suitable habitat to support significant populations of invertebrates was noted during the surveys undertaken to date. The tidal River Witham and mudflats may also provide suitable habitat for common species of aquatic invertebrates.</p> <p>Further details are provided in Chapter 17 Marine and Coastal Ecology in respect to aquatic invertebrates.</p>

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
	<p>The Cumulative Impacts table includes the Boston Barrier which should have been finished by 2021 when construction for the Boston AEF starts but could overlap if there are project delays. The PEIR in the terrestrial section does not mention Boston Embankment works and this should have finished by the end of 2020 but there may be a slight chance of project overrun and so should be included.</p>	<p>Section 12.8 presents the CIA that has been undertaken for the Facility.</p>
	<p>One of our key messages at the meeting was the lack of bird data and the age of the historical data that is available (for Boston Barrier project i.e. from 2010). In table 17.2 it is stated that data from the BTO has been purchased to provide information on the birds. The Haven is covered by 4 BTO areas one further upstream South Forty Foot Drain (the urban side of Boston); one near to the site known as Slippery Gowt Pits and two at Frampton. It should be noted that the closest one (Slippery Gowt Pits) provides data between 2001 and 2006 (which is 13 years old) (page 39). It also shows a real reduction in bird numbers in 2005 and 2006 which is not explained. Natural England has concerns with the reliance on data which is 13 years old. At the meeting we did suggest that 2 visits per month between February until the submission of the ES should be undertaken. The data for Frampton is more recent 2012 to 2017 but is a distance from the site and may only be relevant to consider bird disturbance from increased vessel movements when the site is operational. One point to note is that the BTO bird surveys do not cover the same time window so it is difficult to understand bird usage.</p> <p>We have recently received an Ecological Clerk of Works report from the Environment Agency (EA) focusing on the geotechnical works along the Haven in February-March this year which summarises bird activity during various samplings. The report notes, for example, bird hotspots (one is further to the south of the site and also one on the other side of the channel opposite the development). It also notes the activities that caused bird disturbance was people on the embankment and also large vessels moving up the channel. It may be possible for the Boston AEF to have access to this document from the EA.</p>	<p>Bird data has been collected for the Principal Application Site to include overwintering bird counts, breeding bird counts and bird disturbance at the mouth of The Haven and these are reported in Chapter 17 Marine and Coastal Ecology.</p>
	<p>Why haven't impacts to functionally linked land and duties under the Wildlife and Countryside Act 1981 (as amended) and the NERC Act 2006 been considered.</p>	<p>Following this response, Chapter 12 Terrestrial Ecology and Chapter 17 Marine and Coastal Ecology have been updated.</p>

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
	<p>The terrestrial ecology section refers to 0.4ha of saltmarsh and 0.8ha of mudflats lost during construction – they have listed this as a minor adverse impact as it is only a BAP habitat at this location and not part of the designated area. It has been assessed as being in poor condition although it identified 18 species which is actually quite species-rich for The Wash. It is explained that once construction is finished there will be an opportunity for some saltmarsh/ mudflats to naturally re-establish, but this is likely to be restricted in area. The report notes that the boats will be grounded on the mudflats during low tide until the tide floods when the vessels will be able to leave the Facility which will re-suspend sediments and also cause ongoing permanent damage so it would seem uncertain on how much natural post-construction recovery could be achieved. The loss of saltmarsh / mudflat could potentially be an issue for bird feeding / resting areas. The report notes that the erosion of the saltmarsh along the channel is down to wind wave action rather than boat waves. This is recognised as a moderate adverse impact. However, this is a permanent loss of habitat and (approx. 2%) which should be compensated for and we would like to discuss further the potential for mitigating for this loss of saltmarsh/mudflat habitat.</p>	<p>The habitat loss for saltmarsh and mudflat is calculated in the construction impacts section and a biodiversity metric produced to assess the requirement for habitat mitigation.</p> <p>Further information regarding the saltmarsh and mudflats is presented in Chapter 17 Marine and Coastal Ecology.</p>
<p>Section 42 Consultation Response – LWT, 6th August 2019</p>	<p>LWT has noted that there will be permanent loss of intertidal mudflat and saltmarsh, both of which are listed as priority habitats of principal importance for the conservation of biodiversity under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. There is currently no planned compensatory habitat or mitigation measure associated with this loss. We would query whether the Haven could be functionally linked to The Wash SPA, with bird species using it for a variety of reasons to compliment habitat in The Wash. We would like to see compensatory habitat created as close to the site as possible.</p> <p>We support mitigation measures detailed within Chapter 12 – Terrestrial Ecology and Chapter 17 – Marine and Coastal Ecology and outlined in Table 24.1 Summary of PEIR Topic Impacts in Chapter 25 (Non-Technical Summary).</p> <p>Mitigation measures should address any impacts related to findings of further surveys planned for protected species.</p>	<p>Details regarding intertidal habitats, the outcome of the assessment and proposed mitigation measures are presented in Chapter 17 Marine and Coastal Ecology.</p> <p>Noted.</p> <p>Noted and this will be included within the outline Ecological Management Plan (EMP).</p>

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
	<p>Otter is a species designated as part of the SAC but is not mentioned specifically in the Marine & Coastal Ecology chapter. The Terrestrial Ecology chapter recognises they use the tidal River Witham for commuting in the wider area. Further surveys and considerations for otter in Chapter 12 should include assessment as a designated species associated with the SAC.</p>	<p>Details relating to otters is provided in Section 12.6.</p> <p>Further information in relation to the HRA is presented in Appendix 17.1 Habitats Regulations Assessment.</p>
	<p>There is no recognition of the potential impact or importance of the loss of habitat and disturbance to birds using the tidal haven from The Wash. This should be assessed. Removal of potential bird nesting sites is mentioned in the table of impacts in table 12.2 of Chapter 12. No replacement bird nesting habitat on the site is suggested. Habitat should be replaced and enhanced on site as mitigation for this loss.</p>	<p>A breeding bird survey was undertaken between April and June 2020. Details and results of which are presented in Section 12.6.</p>
	<p>In line with paragraph 170 and 175 of the National Planning Policy Framework (NPPF) and Policy 28 (para 3) and Policy 31 (para 5) of the South East Lincolnshire Local Plan, biodiversity net gain requires developers to ensure existing habitats are assessed for wildlife benefit and left in a measurably better condition that they were before the development took place. The existing habitat and its condition should be assessed as part of this development. It should be clearly demonstrated how biodiversity will be improved, delivered and managed beyond the construction phase. It should include habitat creation, sowing and planting of native species of known benefit to wildlife, creation of green corridors and habitat linkages through and beyond the site and wildlife friendly margins. We would like to see how this has been incorporated within the plans.</p>	<p>A biodiversity net gain calculation has been undertaken and the need for habitat has been considered in the mitigation package. Further information relating to ecological mitigation and enhancement measures is presented in the OLEMS.</p>
	<p>Have Lincolnshire County Council been formally consulted and had a chance to suggest biodiversity net gain or other opportunities related to the development to complement nearby Havenside Nature Reserve? Have the RSPB been consulted and had an opportunity to comment on any research they have on how development of the site may affect birds within The Wash and other ecology associated with their reserves at Frampton and Freiston? These sites may also benefit from enhancement through funding associated with this work.</p>	<p>A biodiversity net gain calculation has been undertaken and the need for habitat has been considered in the mitigation package. Consultation with stakeholders (Natural England and RSPB) has been undertaken and the approach agreed.</p>

Consultee and Date	Response	Chapter Section Where Consultation Comment is Addressed
Section 42 Consultation Response – Royal Society for the Protection of Birds (RSBP), August 2019	<p>The level of mitigation and enhancement to address impacts and deliver biodiversity net gains in line with the National Planning Policy Framework. It appears limited mitigation is being proposed to address impacts from the facility. There appears no evidence to justify the position that the mudflat for the wharf is of limited use by features from The Wash SPA, especially at certain times of year. The loss of intertidal habitat should, we believe, be mitigated. We also consider greater enhancement measures in line with the NPPF should be provided and support the statement provided by Lincolnshire Wildlife Trust on this point.</p>	<p>A biodiversity net gain calculation has been undertaken and the need for habitat has been considered in the mitigation package.</p> <p>Further information relating to ecological mitigation and enhancement measures is presented in the OLEMS.</p>
	<p>The level of mitigation and enhancement to address impacts and deliver biodiversity net gains in line with the National Planning Policy Framework. It appears limited mitigation is being proposed to address impacts from the facility. There appears no evidence to justify the position that the mudflat for the wharf is of limited use by features from The Wash SPA, especially at certain times of year. The loss of intertidal habitat should, we believe, be mitigated. We also consider greater enhancement measures in line with the NPPF should be provided and support the statement provided by Lincolnshire Wildlife Trust on this point.</p>	<p>The loss of saltmarsh and mudflat has been addressed in Chapter 17 Marine and Coastal Ecology. A Net Gain Strategy will be provided as part of the final LEMS secures as a requirement of the DCO.</p>
Section 42 Consultation Response – BBC, 6 th August 2019	<p>Traffic impact, the extent of machinery and equipment to be transported to the site and whether new roads will be required. Will there be a requirement for night working and how will impact on residents and wildlife be mitigated?</p>	<p>Section 12.6 presents the mitigation measures that will be adopted to manage potential impacts to ecological receptors as a result of potential working at night.</p>
	<p>We have not seen sufficient detailed plans within the proposals to be able to fully assess whether there would be an impact on the ecology of the Haven and ecosystem around the application site, however we note you will be completing an Environmental Impact Assessment.</p>	<p>Section 12.6 presents information relating to designated sites.</p>

12.4 Assessment Methodology

EclA Methodology

- 12.4.1 This EclA has been undertaken in accordance with the Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal (3rd Edition) (CIEEM, 2018). These guidelines aim to predict the residual impacts on important ecological features affected, either directly or indirectly by a development, once all the appropriate mitigation has been implemented.
- 12.4.2 The approach to determining the significance of an impact follows a systematic process for all impacts. This involves identifying, qualifying and, where possible, quantifying the sensitivity, value and magnitude of all ecological receptors which have been scoped into this assessment. Using this information, a significance of each potential impact has been determined. Each of these steps is set out in the remainder of this section.
- 12.4.3 This EclA has used professional judgement to ensure the assessed significance level is appropriate for each individual receptor, taking account of local values for biodiversity to avoid a subjective assessment wherever possible as per the CIEEM guidelines. As a result, the assessed significance level may not always be directly attributed to the guidance matrix detailed below.

Importance

- 12.4.4 The first stage of an EclA is determining the ‘importance’ of ecological features or ‘receptors’. CIEEM identifies the important ecological features as those key sites, habitats and species which have been identified by European, national and local governments and specialist organisations as a key focus for biodiversity conservation in the UK. These include:
- Statutory and non-statutory designated sites for nature conservation;
 - Species occurring on national biodiversity lists;
 - UK Habitats of Principal Importance; and
 - Red listed, rare or legally protected species.
- 12.4.5 Importance is also qualified by the geographic context of an ecological receptor, i.e. a species which may not be recognised on a national biodiversity list may be locally in decline, and therefore its local importance is greater than its national importance.
- 12.4.6 For this EclA, the guidelines outlined in **Table 12-4** have been followed to provide the relative importance of different ecological features.

Table 12-4 Definitions of Importance Levels for Terrestrial Ecology

Importance	Definition
High	<ul style="list-style-type: none"> • An internationally designated site or candidate site or an area which the statutory nature conservation organisation has determined meets the published selection criteria for such designation, irrespective if it has yet been notified; • A nationally designated site or a discrete area, including ancient woodlands, which the statutory nature conservation organisation has determined meets the published selection criteria for national designation (e.g. SSSI selection guidelines) irrespective if it has yet been notified; • A viable area of a habitat type listed in Annex 1 of the Habitats Directive, or smaller areas of such habitat which are essential to maintain the viability of a larger whole; • A viable area of a UK Habitat of Principal Importance or smaller areas of such habitat which are essential to maintain the viability of a larger whole; • A European protected species listed in The Conservation of Habitats and Species Regulations 2017; or • A regularly occurring, nationally significant population/number of any internationally important species.
Medium	<ul style="list-style-type: none"> • County Council/Unitary Authority designated sites and other sites which the designating authority has determined meet the published ecological selection criteria for designation, including Local Nature Reserves selected on defined ecological criteria and Wildlife Trust sites; • Viable areas of habitat identified in a Local Biodiversity Action Plan (LBAP); • Semi-natural woodland greater than 0.5 hectares (ha) which is in 'good condition'. • Any regularly occurring population of a nationally important species which is threatened or rare in the region; or • A regularly occurring, locally significant number of a species identified as important on a regional basis.
Low	<ul style="list-style-type: none"> • Semi-natural woodland greater than 0.25 ha which is in 'good condition' or greater than 0.5 ha in unfavourable condition; • Network of inter-connected hedgerows including some species-rich hedgerows; • Individual important hedgerows or other ancient-countryside linear features; • Viable areas of habitat identified in a sub-county (District/Borough) Biodiversity Action Plan (BAP); • Any regularly occurring population of a nationally important species which is not threatened or rare in the region or county; • Sites/features that are scarce within the District/Borough or which appreciably enrich the District/Borough habitat resource; or • Other features identified as wildlife corridors or migration routes
Negligible	<ul style="list-style-type: none"> • Features of value to the immediate area only e.g. within the site.

12.4.7 In addition to the features listed in **Table 12-4**, ecological features which play a key functional role in the landscape or are locally rare have been considered. The importance of such features has been determined by professional judgement.

12.4.8 CIEEM places the emphasis on using professional judgement when considering importance of ecological receptors, based on available guidance, information and expert advice (CIEEM, 2018). Different aspects of ecological importance should

be taken into account, including designations, biodiversity value, potential value, secondary or supporting value, social value, economic value, legal protection and multi-functional features.

Magnitude

12.4.9 The magnitude of the impact is assessed according to:

- The extent of the area subject to a predicted impact;
- The duration the impact is expected to last prior to recovery or replacement of the resource or feature;
- Whether the impact is reversible, with recovery through natural or spontaneous regeneration, or through the implementation of mitigation measures or irreversible, when no recovery is possible within a reasonable timescale or there is no intention to reverse the impact; and
- The timing and frequency of the impact, i.e. conflicting with critical seasons or increasing impact through repetition.

12.4.10 **Table 12-5** summarises the definitions of magnitude that have been used for the terrestrial ecology receptors.

Table 12-5 Magnitude of Impact

Magnitude	Definition
High	Major impacts on the feature / population, which would have a sufficient effect to alter the nature of the feature in the short to long term and affect its long-term viability. For example, more than 20% habitat loss or damage.
Medium	Impacts that are detectable in short and long-term, but which should not alter the long-term viability of the feature / population. For example, between 10 - 20% habitat loss or damage.
Low	Minor impacts, either of sufficiently small-scale or of short duration to cause no long-term harm to the feature / population. For example, less than 10% habitat loss or damage.
Negligible / No Impact	A potential impact that is not expected to affect the feature / population in any way, therefore no effects are predicted.

Duration

12.4.11 The definitions of duration used within this EclA are dependent on the individual ecological receptor, and how sensitive it is to effects over different timescales. However, in general terms the following definitions have been used:

- **Short term** – effects which at most occur over a part of – or over a part of a key period of – a species' active season or a habitat's growing season, i.e. typically effects which occur over a matter of days or weeks;

- **Medium term** – effects which occur over the full duration of a species' active season or a habitat's growing season, i.e. typically, effects which occur over a matter of months or one year; and
- **Long term** – effects which occur over the multiple active or growing seasons, i.e. typically, effects which occur over more than one year.

12.4.12 Where deviations from these definitions are used within **Section 12.7**, this is explained within the text.

Impact Significance

12.4.13 Following the identification of receptor importance and magnitude of the effect, it is possible to determine the significance of the impact.

12.4.14 Ecologically significant impacts are defined as:

"...impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution)" (CIEEM, 2018).

12.4.15 Impacts are unlikely to be significant where features of low importance are subject to small scale or short-term effects. If an impact is found not to be significant at the level at which the resource or feature has been valued, it may be significant at a more local level.

12.4.16 CIEEM recommend that the following factors are considered when determining significance for selected ecological receptors:

- **Designated sites** - is the project and associated activities likely to undermine the site's conservation objectives, or positively or negatively affect the conservation status of species or habitats for which the site is designated, or may it have positive or negative effects on the condition of the site or its interest/qualifying features?
- **Ecosystems** – is the project likely to result in a change in ecosystem structure and function?
- **Habitats** – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area.
- **Species** – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area (CIEEM, 2018).

12.4.17 Following the identification of receptor importance and magnitude of effect, the

significance of the impact has been considered using the matrix presented in **Chapter 6 Approach to EIA, Table 6-1** and knowledge of the ecological features affected.

12.4.18 The assessment of potential impacts has been undertaken assuming implementation of embedded mitigation and commitments for the Facility. Residual impacts include any additional mitigation measures required. An assessment of residual impacts is then made, after assuming implementation of additional mitigation measures where required, i.e. the significance of the effects that are predicted to remain after the implementation of all committed mitigation measures.

12.4.19 The impact significance categories are defined as shown in **Chapter 6 Approach to EIA, Table 6-2**.

12.4.20 Note that for the purposes of this EclA, **major** and **moderate** impacts are deemed to be significant. In addition, whilst **minor** impacts are not significant in their own right, it is important to distinguish these from other non-significant impacts as they may contribute to significant impacts cumulatively or through interactions.

12.4.21 Embedded mitigation has been referred to and included in the initial assessment of impact. If the impact does not require mitigation (or none is possible) the residual impact remains the same. If, however, mitigation is required an assessment of the post-mitigation residual impact is provided.

Cumulative Impact Assessment

12.4.22 For an introduction to the methodology used for the Cumulative Impact Assessment (CIA), please refer to **Chapter 6 Approach to EIA**. This chapter includes those cumulative impacts that are specific to terrestrial ecology.

12.4.23 The key consideration with respect to terrestrial ecology is whether there is a spatial or temporal overlap of effects from projects on the same receptors. Therefore, for habitats and non-mobile species, unless there is a spatial overlap there is no pathway for cumulative impact between spatially separated projects. There is however a potential for a cumulative impact upon the overall habitat resource at a regional or national level. Where potential regional or national level impacts are identified and considered to be relevant, they are highlighted in the CIA.

12.4.24 For mobile species, there is only a pathway for cumulative impact if there is spatial overlap of potential receptor ranges in addition to temporal overlap with the activity or its resultant impact (i.e. where developments follow on from one another before

the species has recovered from displacement or other impact). In addition, whilst it is assumed that any consented development would be subject to mitigation and management measures which would reduce impacts to non-significant unless there were exceptional circumstances, it is accepted that such projects may contribute to a wider cumulative impact.

12.4.25 Finally, in cases where this project has **negligible** or **no impact** on a receptor (through for example avoidance of impact through routing or construction methodology) it is considered that there is no pathway for a cumulative impact.

Transboundary Impact Assessment

12.4.26 There are no transboundary impacts with regards to terrestrial ecology because the Facility is not sited near any international boundaries.

12.5 Scope

Study Area and Survey Area

12.5.1 The development footprint considered within this assessment the Principal Application Site and is shown on **Figure 1.1**. Due to its estuarine influenced nature, the Habitat Mitigation Area is discussed in relation to ecology in **Chapter 17 Marine and Coastal Ecology**.

12.5.2 For the purposes of the desk study, a 2 km buffer (5 km for bats) around the Principal Application Site is considered an appropriate 'Study Area'. For the field surveys, the 'Survey Area' is the Principal Application Site plus a 50 m buffer from its boundary is considered appropriate (except for a 250 m zone for the purposes of great crested newts *Triturus cristatus*).

12.5.3 A full description of, and associated information for, the Principal Application Site is provided in **Chapter 5 Project Description**.

Data Sources

12.5.4 This EclA has been informed by the findings from a desk-based exercise and field survey data which has been collected between August 2017 and September 2019. This has been included in **Appendix 12.1 Extended Phase 1 Habitat Report**. This data has been collected for different Study Areas depending on the receptor concerned and upon the information available for the Facility at the time of the data collection.

12.5.5 The assessment was undertaken with reference to several sources, as detailed in **Table 12-6**.

Table 12-6 Key Information Sources

Data Source	Reference
Desk Study Data	
MAGIC	Search for statutory and non-statutory designated sites within and up to 2 km of the Principal Application Site. Available at: https://magic.defra.gov.uk/MagicMap.aspx
Lincolnshire Ecological Records Centre (LERC)	Data received in December 2018 from Greater Lincolnshire Nature Partnership for the Principal Application Site and up to 2 km (5 km for bats) from its boundaries.
Field Survey Data	
Extended Phase 1 Habitat Survey (2017 and 2018)	An Extended Phase 1 Habitat Survey following 'Extended Phase 1' methodology as set out in <i>Guidelines for Baseline Ecological Assessment</i> (Institute of Environmental Assessment (IEMA), 1995). Habitats were classified and mapped following JNCC's <i>Handbook for Phase 1 habitat survey: A technique for environmental audit (2010)</i> . Included a search for: <ul style="list-style-type: none"> • Field signs of badgers; • Assessment of roost suitable trees and structures for bats; • Assessment of commuting/foraging suitability of all linear features for bats; • Field signs of otter; • Assessment of suitability of watercourse to support water voles; • Habitats suitability assessment of all standing water bodies for ability to support great crested newts; • Assessment of suitability of habitats to support reptiles; • Assessment of suitability of habitats to notable invertebrates; and • Evidence of non-native invasive species.
Badger presence/absence surveys	A badger presence/absence survey of all suitable habitats (including field margins, dry drain systems) was undertaken concurrently with the Extended Phase 1 Habitat Surveys. Checks were also made whilst undertaking the water vole, otter surveys.
Water vole and otter presence/absence surveys	A water vole presence/absence survey of all watercourses within the Principal Application Site was undertaken in 2018 and repeated in 2019. Two separate survey visits in both survey windows were undertaken. Field signs of otter were also checked and recorded during all water vole surveys.
Bat activity transect surveys	Bat activity surveys of all linear features (hedgerows, watercourses, scrub) identified during the Extended Phase 1 Habitat Surveys as providing moderate suitability for commuting/foraging bats were undertaken between June and September 2019.
Breeding bird surveys	Three survey visits were undertaken between April and June 2020 in accordance with the Common Bird Census (CBS) methodology and included all habitats (including the riverbanks) within the Principal Application Site.

Table 12-7 Study Areas for Different Terrestrial Ecology Receptors Used for this EclA

Data/Survey	Study Area
Statutory designated sites	Within and up to 2 km of the Principal Application Site.
Non-statutory designated sites	Within and up to 2 km of the Principal Application Site.
Species and Habitat Distribution	Within and up to 2 km of the Principal Application Site (5 km for bats)
Badger Distribution	Within and up to 2 km of the Principal Application Site
Location of ponds	Within and up to 250m of the Principal Application Site
Field surveys (i.e. Extended Phase 1 Habitat Survey and species-specific surveys)	Within and up to 50 m of the Principal Application Site

Assumptions and Limitations

12.5.6 The absence of records does not imply any species, habitat or designation is absent from the search area. Nor does recorded presence imply current, continuing or breeding presence. Despite these caveats, biological records provide very useful supporting data to provide context and supplement field survey data.

12.5.7 LERC data comprises of records collected by volunteers and therefore may not necessarily provide a true reflection of the species present at and surrounding the Principal Application Site.

12.5.8 The field surveys which have been undertaken to date have been undertaken within the optimal surveying windows. Landowner access has been possible to all of the Survey Area (i.e. the Principal Application Site infrastructure plus a 50 m buffer, as shown on **Figure 12.1**).

12.5.9 For the purposes of this EclA, an assessment of the habitat available has been made using the findings from the Extended Phase 1 Habitat Survey or freely available online data sources, which in combination has allowed an assessment of those species which are likely to utilise these habitats to be made.

12.5.10 An Extended Phase 1 Habitat Survey was originally undertaken in August 2017 and updated in October 2018, which are both within a suitable surveying window for this survey. Species specific surveys were undertaken as detailed in **Table 12-6**.

12.5.11 The survey team made the utmost effort to cover every habitat and record all field

signs present during the field surveys. The data drawn on to inform this EclA, is considered to provide an accurate description of the habitats and accurate account of species presence / absence within the Survey Area.

12.5.12 Ecological surveys are limited by factors which affect the presence of plants and animals such as the time of year, migration patterns and behaviour. Although, despite the above limitations, the information and conclusions drawn within this EclA is considered to be valid and robust.

12.6 Existing Environment

Statutory Designated Sites

12.6.1 The Principal Application Site is not located within a statutory or proposed statutory site of importance for nature conservation.

12.6.2 Havenside LNR is located 34.5 m east of the Principal Application Site at its closest point on the eastern bank of The Haven (tidal River Witham) (**Figure 12.2**).

12.6.3 As a statutory designated site for nature conservation, Havenside LNR, is considered to be of **medium** importance.

Non-Statutory Designated Sites

12.6.4 The Survey Area is not located within a non-statutory site of importance for nature conservation.

12.6.5 There are three LWS within 2 km of the Principal Application Site (**Figure 12.2**), specifically:

- Havenside LWS (0.01 km);
- South Forty Foot Drain LWS (0.99 km); and
- Slippery Gowt Sea Bank LWS (0.24 km).

12.6.6 All non-statutory designated sites are considered to be of **medium** importance.

Flora and Habitats

Habitats

12.6.7 The baseline presented here is based on the field survey data collected during the 2017 and 2018 Extended Phase 1 Habitat Surveys. Full details of these surveys are provided in **Appendix 12.1**. Features of interest are described in 'Target Notes', which are referenced using a numbering system. The locations of the Target Notes (TN) are shown on **Figure 12.1**.

12.6.8 The key habitats recorded within the Survey Area during the 2017 survey and reconfirmed as being present during the 2018 survey, include:

- Semi-improved neutral grassland with scattered scrub comprising species such as bramble *Rubus fruticosus*, teasel *Dipsacus spp.*, and nettle *Urtica dioica*);
- Area of tall ruderals (comprising predominantly nettle);
- Areas of scattered and dense scrub;
- Species poor intact hedgerows;
- Species rich hedgerows with trees;
- Areas of amenity grassland;
- Areas of bare ground (hard standing and areas or rubble);
- Areas of bare ground (with scattered shrub);
- Semi-natural broadleaved woodland;
- Dry ditches (drainage channels);
- Marginal vegetation; and
- Running water (brackish).

12.6.9 There is no ancient woodland within the Principal Application Site.

12.6.10 The north-eastern extent of the Survey Area adjoins Coastal Saltmarsh and Mudflat Priority Habitat. The Facility will involve a localised loss of these habitats (0.99 ha and 1.54 ha respectively) to accommodate the proposed wharf facilities on The Haven for the refused derived fuel (RDF) feedstock delivery and lightweight aggregate (LWA) export. This loss of Priority Habitat would account for a very small proportion of the overall saltmarsh and mudflat habitat locally. Further information in relation to these habitats and associated impacts and mitigation measures is provided in **Chapter 17 Marine and Coastal Ecology**.

Protected, Notable and Invasive species

12.6.11 This section provides a summary of the key species recorded within the Principal Application Site and up to 50 m from its boundaries. The information provided in this section has drawn on the biological records obtained from the desk study and the findings from the 2017 and 2018 field surveys.

Invasive Species

12.6.12 There are several recent records of invasive species, including Japanese

knotweed (record dated November 2009, approximately 1.2 km from the Principal Application Site) and Giant hogweed (record dated 2016).

12.6.13 No invasive plant species were recorded within the Survey Area during the 2017 and 2018 Extended Phase 1 Habitat Surveys. Consequently, invasive species are absent and have not been considered further in this report.

Legally Protected and Notable Species

Badgers

12.6.14 Badgers have been recorded within and up to 2 km from the Principal Application Site (**Figure 12.3**), the most recent being 2016. The closest record is approximately 900 m west of the Survey Area at its closest point, recorded in October 2007.

12.6.15 No evidence of badgers has been recorded within the Survey Area during the surveys undertaken to date; however suitable habitat for badger is present within the Survey Area. Although suitable habitat is present, the Survey Area comprises largely open grassland area, and is subject to regular human disturbance. Consequently, it is considered unlikely that badgers use the Survey Area for residence. Therefore, badgers are considered absent but due to the mobility of this species, pre-construction surveys will be undertaken to confirm this species remains absent. This conclusion and approach has been agreed with Natural England during a meeting held on the 11th February 2019.

Water Voles

12.6.16 There are recent records of water vole within 2 km of the Survey Area, the most recent being 2017. The closest record is approximately 800 m west of the Survey Area at its closest point, recorded in October 2007

12.6.17 There are a series of ditches within the Survey Area. The majority of which were dry at the time of the 2017, 2018 and 2019 surveys and therefore assessed as providing sub-optimal habitat for water vole. Nonetheless, two separate visits were undertaken in 2018 and 2019 to check for evidence of water voles. No evidence of water voles was recorded and therefore it is concluded that water voles are absent from the ditch network within the Principal Application Site.

12.6.18 Due to the mobility of this species, in combination with suitable habitat being present, pre-construction surveys will be undertaken to confirm this species remains absent. This conclusion and approach has been agreed with Natural England during a meeting held on the 11th February 2019.

Otters

12.6.19 There are no recent records of otter within 2 km of the Survey Area. The section of the tidal River Witham within the Survey Area does not provide suitable holt building habitat for otters due to a lack of bankside features that would provide suitable cover. Furthermore, the ditch network within the Survey Area was assessed as sub-optimal for otters. Therefore, otters are considered to be absent from the Principal Application Site but may use the tidal River Witham for commuting in the wider area, this is assessed within **Appendix 17.1 HRA**. Due to the mobility of otters, pre-construction surveys will be undertaken to confirm this species remains absent. This conclusion and approach has been agreed with Natural England during a meeting held on the 11th February 2019.

12.6.20 Further information in relation to otters and associated potential impacts is provided within **Appendix 17.1 HRA**.

Great Crested Newts and White Clawed Crayfish

12.6.21 There are no recent records for great crested newts or white clawed crayfish within 2 km of the Survey Area.

12.6.22 A Habitat Suitability Index Assessment (HIS) confirmed that the ephemeral ponds within the Survey Area are of 'poor' suitability for great crested newts. It is considered that great crested newts are unlikely to be present within the Survey Area due to poor quality of this habitat, and lack of suitable surrounding terrestrial habitat (with the River Witham creating a barrier to movement, and the surrounding terrestrial habitat lacking suitable shelter). Therefore, great crested newts have been scoped out of any further assessment.

12.6.23 The River Witham waterbody was also concluded to be sub optimal for white clawed crayfish due to the absence of suitable habitats for burrowing and refugia, and the ditch network within the Survey Area does not provide habitat (i.e. flowing water) suitable for white clawed crayfish. Therefore, white clawed crayfish have been scoped out of any further assessment.

Bats

12.6.24 There is a total of 117 records of bat species within 2 km of the Principal Application Site, with the closest observation being approximately 400 m north-east of the Principal Application Site at its closest point. No evidence of bat roost potential was noted within the trees within the Principal Application Site. However, the hedgerows and areas of scrub are assessed and concluded as providing suitable foraging and commuting opportunities for bats.

12.6.25 A suite of monthly bat activity transect surveys (four separate visits in total) were undertaken between June and September 2019 and in accordance with the Bat Conservation Trust (BCT) guidance (3rd Edition, 2016). **Table 12-8** presents the findings from these surveys.

Table 12-8 Summary of 2019 Bat Activity Transect Survey Findings

Survey Visit	Survey timings	Summary of key survey findings
25 th June 2019	Sunset: 21.29 Weather conditions: 15 degrees, dry Survey start time: 21.00 Survey finish time: 23.30	Total No. of bat passes during the survey: 5 Key species recorded: common pipistrelle and soprano pipistrelle.
17 th July 2019	Sunset: 21.09 Weather conditions: 19 degrees, dry Survey start time: 20.30 Survey finish time: 23.15	Total No. of bat passes during the survey: 8 Key species recorded: common pipistrelle.
12 th August 2019	Sunset: 20.28 Weather conditions: 17 degrees, dry Survey start time: 20.00 Survey finish time: 22.30	Total No. of bat passes during the survey: 4 Key species recorded: common pipistrelle and soprano pipistrelle.
19 th September 2019	Sunset: 19.05 Weather conditions: 16 degrees, dry Survey start time: 18.30 Survey finish time: 21.15	Total No. of bat passes during the survey: 4 Key species recorded: common pipistrelle and soprano pipistrelle.

12.6.26 As presented in **Table 12-8**, the key bat species recorded during the 2019 survey effort included common pipistrelle and soprano pipistrelle only. The highest number of foraging/commuting bat passes was recorded during the July survey visit. On all survey occasions, the foraging and commuting bats were recorded to be using the network of hedgerows along the flood embankment and adjacent arable fields.

Reptiles

12.6.27 There are no recent records of reptiles within 2 km of the Survey Area and none were observed during the 2017 and 2018 surveys. However, there are suitable habitats within the Survey Area which reptiles could use, should they be present. Given the absence of reptile records within the Principal Application Site, no specific reptile survey of these areas has been undertaken.

Dormice

12.6.28 There are no records of dormice within 2 km of the Survey Area and no evidence of dormice was recorded during the 2017 and 2018 surveys. Furthermore, there

is no suitable habitat for dormice within the Survey Area, therefore dormice have been scoped out of any further assessment in this report. This approach and conclusion has been agreed with Natural England during a meeting held on the 11th February 2019.

Birds

12.6.29 The Facility could result in direct and in-direct impacts to birds because of disturbance and habitat loss. Further information in relation to intertidal bird species is provided in **Chapter 17 Marine and Coastal Ecology**.

12.6.30 A breeding bird survey was undertaken by an independent ornithologist (Anthony Bentley) between April and June 2020. The breeding bird survey was undertaken in accordance with the Common Bird Census (CBS) methodology and all habitats (including the riverbanks) within the Principal Application Site was surveyed. Records of all birds seen or heard during the survey were noted using the British Trust for Ornithology (BTO) annotations. The full survey findings are presented in **Appendix 17.2 Breeding Bird Survey Report of Chapter 17 Marine and Coastal Ecology**.

12.6.31 **Table 12-9** summarises the bird species recorded during the 2020 breeding bird survey.

Table 12-9 Summary of 2020 Breeding Bird Survey Findings

Survey Visit	Summary of Key Survey Findings
30 th April 2020	Total No. of bird species recorded: 28 Birds of Conservation Concern (BoCC) red species recorded: 1 BoCC orange species recorded: 5 Species include dunnoek, linnet, mallard, meadow pipit, reed bunting, song thrush, stock dove and willow warbler.
31 st May 2020	Total No. of bird species recorded: 27 BoCC red species recorded: 1 BoCC orange species recorded: 7 Species include black-headed gull, dunnoek, linnet, mallard, meadow pipit, reed bunting, stock dove and willow warbler.
28 th June 2020	Total No. of bird species recorded: 19 BoCC red species recorded: 2 BoCC orange species recorded: 4 Species include dunnoek, linnet, meadow pipit, reed bunting, song thrush and stock dove.

12.6.32 No Schedule 1 species were recorded and are therefore concluded as being

absent.

12.6.33 The BoCC red species recorded during the 2020 survey include song thrush and linnet. However, both species are common passage and migrant species and were recorded as using the hedgerows surrounding the Facility.

12.6.34 The BoCC orange species recorded during the 2020 survey include black-headed gull, dunnoek, mallard, meadow pipit, reed bunting, stock dove and willow warbler. These species are common resident species and were noted to be using the habitats within the Principal Application Site, although no evidence of them nesting was recorded. Therefore, it is concluded that these species are using the Principal Application Site for resting and/or loafing but not for nesting.

Aquatic and Terrestrial Invertebrates

12.6.35 No evidence of suitable habitat to support significant populations of invertebrates was noted during surveys undertaken to date. The tidal River Witham and mudflats may also provide suitable habitat for common species of aquatic invertebrates.

12.6.36 Further details are provided in **Chapter 17 Marine and Coastal Ecology** in respect to aquatic invertebrates.

12.7 Potential Impacts

Embedded Mitigation

12.7.1 As part of the Facility's design, several embedded mitigation measures have been proposed to reduce potential impacts on terrestrial ecology. These measures are considered standard industry practice for this type of the development. Where embedded mitigation measures have been developed into the design with species regard to terrestrial ecology, these are described below. Any further mitigation measures suggested within this chapter are therefore considered to be additional mitigation.

12.7.2 An Outline Landscape and Ecology Management Scheme (OLEMS) has been produced which sets out the principles of all measures to minimise impacts to designated areas, habitats and species discussed below. This includes consideration of noise, lighting, and pollutant impacts, as a result of spillages or leaks from equipment during construction and decommissioning. A Final LEMS will be secured through a DCO Requirement, which will be substantially in accordance with the OLEMS.

12.7.3 The proposed design has where possible avoided sensitive ecological receptors

such as habitats and/or features known to support legally protected species. Where this is not possible, and habitats and/or features require removal, these will be programmed to be removed to avoid sensitive periods (i.e. outside of nesting bird season). In addition, suitable maintenance of any newly planted habitats following construction will have an aftercare period, with any failures being replaced.

12.7.4 Lighting requirements associated with the Facility would be designed to be sensitive to bats and birds in accordance with the relevant and most recent industry guidance.

Potential Impacts during Construction

Impact 1: Loss of Habitat

12.7.5 The Facility will result in the loss (temporary or permanent) of the following habitats:

- Hedgerows (species poor and species rich) 810 m (permanent);
- Semi-natural broadleaved woodland 0.14 ha (permanent) and 0.09 ha (temporary);
- Scrub 2.86 ha (permanent) and 3.94 ha (temporary);
- Semi-improved neutral grassland 2.7 ha (permanent) and 1.31 ha (temporary);
- Amenity grassland 0.01 ha (permanent) and 0.15 ha (temporary);
- Tall herb and ruderals 0.90 ha (permanent);
- Arable 8.12 ha (permanent);
- Bare ground 2.09 ha (permanent) and 2.66 ha (temporary);
- Approximately 1.54 ha of mudflat (permanent);
- Approximately 0.99 ha of saltmarsh (permanent);
- Earth bank 94.9 m (temporary); and
- Dry ditch 1,505 m (permanent) and 570 m (temporary).

12.7.6 Further details in respect to the impacts and mitigation for the loss of the mudflats and coastal saltmarsh is provided in **Chapter 17 Marine and Coastal Ecology**.

12.7.7 Given the extent of those habitat types that will be permanently lost as a result of the development within the surrounding area, in combination with their low ecological value the magnitude of effect is **medium**.

12.7.8 Landscape mitigation planting is incorporated within the Facility which in turn will result in long-term benefits to both visual amenity and ecological receptors. Further information is provided in **Chapter 9 Landscape and Visual Impact Assessment** and the OLEMS.

12.7.9 Following the implementation of appropriate mitigation measures considered necessary, in combination with the landscape and ecological mitigation planting proposals, the magnitude of the effect remains **low**, on a **medium** importance receptor. Representing a temporary residual effect of **minor adverse** significance.

Impact 2: Direct on Impacts on Designated Sites as a Result of Acid and Nitrogen Deposition

12.7.10 Although the Principal Application Site is not located within a statutory and non-statutory designated site, there are four designated sites (one LNR and three LWS) within 2 km of its boundaries. There is the potential for indirect effects on the qualifying features of these sites due to works on the land or within watercourse that are functionally connected to these designated sites. The following potential indirect effects have been identified:

- Potential indirect effects on local hydrological conditions;
- Potential indirect effects on water quality arising from accidental release of pollutants; and
- Potential indirect effects from traffic numbers on adjacent road networks.

12.7.11 The assessment of the potential indirect effects on local hydrological conditions is presented in **Chapter 13 Surface Water, Flood Risk and Drainage Strategy**. Mitigation measures relating to the potential for indirect effects on water quality due to the accidental release of pollutants are outlined within the Outline Code of Construction Practice (OCoCP) (document reference 7.1).

12.7.12 Potential indirect effects as a result of increased traffic numbers as well as in-combination effects arising from other developments is discussed in detail within **Chapter 14 Air Quality**.

12.7.13 As presented in **Chapter 14 Air Quality**, the in-combination Process Contributions (PCs) of certain annual mean Critical Levels at the Havenside LNR and Slippery Gowt Sea Bank LWS were above 1 % and therefore impacts cannot be considered to be insignificant. However, the total Predicted Environmental Concentration (PECs) were well below the Critical Levels.

12.7.14 Nutrient nitrogen deposition at the Havenside LNR was less than 1 % of the appropriate Critical Load and therefore impacts of nitrogen deposition can be

considered to be insignificant. Annual mean in-combination PCs were below 1 % of the Critical Levels at the South Forty Foot Drain and impacts at this location are therefore insignificant.

12.7.15 Short-term NO_x PCs were below 10 % of the Critical Level at all sites, and therefore short-term impacts can be considered to be insignificant.

12.7.16 The designated sites for nature conservation (LNR and LWS) are considered to be of medium importance.

12.7.17 Mitigation measures as set out in **Chapter 14 Air Quality** and within the OCoCP that will be incorporated into the Facility in order to minimise air emissions will include:

Dust Management

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to note any dust deposition, record inspection results, and make the log available to BBC when asked.
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced, and 10 mph on unsurfaced, haul roads and work areas.
- Implement the Travel Plan that has been produced for the Facility, which supports and encourages sustainable travel for contractor operatives and staff (public transport, cycling, walking, and car-sharing).

Measures Specific to Earthworks

- Re-vegetate or cover earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.

Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Non-Road Mobile Machinery (NRMM)

12.7.18 NRMM and plant would be well maintained. If any emissions of dark smoke occur, then the relevant machinery should stop immediately, and any problem rectified. In addition, the following controls should apply to NRMM:

- All NRMM should use fuel equivalent to ultralow sulphur diesel (fuel meeting the specification within EN590:2004).
- All NRMM should comply with regulation (EU) 2016/1628 of the European Parliament and of the Council on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery.
- All NRMM should be fitted with Diesel Particulate Filters (DPF) conforming to defined and demonstrated filtration efficiency (load/duty cycle permitting).
- The ongoing conformity of plant retrofitted with DPF, to a defined performance standard, should be ensured through a programme of onsite checks.
- Fuel conservation measures should be implemented, including instructions to:
 - throttle down or switch off idle construction equipment;
 - switch off the engines of trucks while they are waiting to access the site and while they are being loaded or unloaded; and
 - ensure equipment is properly maintained to ensure efficient fuel consumption.

12.7.19 Through the implementation and adherence to the mitigation measures listed above, the effect is predicated to be of a temporary or localised change and/or occasional exceedance of benchmark limits. Consequently, the magnitude is therefore reduced from **medium** to **low**.

12.7.20 The sensitivity of the designated sites is considered to be **medium**, reflecting that there is some ability to tolerate this effect but a detectable change in distribution will occur.

12.7.21 Overall, it is predicated that the sensitivity of these sites is **medium**, and the magnitude of the effect is **low**. The effect is therefore of **minor adverse** significance.

Impact 3: Impacts on Bats and Birds

12.7.22 There are potential impacts to commuting/foraging bats as a result of vegetation clearance, i.e. removal of hedgerows. Consequently, the reduction in available foraging habitat, would in turn reduce the insect biomass of the area and therefore reduce the foraging habitat available to bats.

12.7.23 Bats are known to use hedgerows to commute along to navigate around the landscape and some species are potentially sensitive to gaps in hedgerows such as species in the genera *Myotis* and *Plecotus* due to the nature of their flight pattern. Species from the genera *Nyctalus* and *Eptesicus*, and *Nathusius*' pipistrelle bats are known to fly high and in open habitats and therefore are unlikely to be impacted by hedgerow severance. Common pipistrelle and soprano pipistrelle bats are generalist species and would tolerate gaps in hedgerows. There is very limited research regarding whether gaps actually negatively affect *Myotis* / *Plecotus* species. Bats would be more visible to potential predators while they fly across the gaps as they would have no cover.

12.7.24 Embedded mitigation measures have been identified and presented in the OLEMS and OCoCP. The OLEMS and OCoCP will be secured through DCO Requirements. Examples of the types of mitigation measures that are included in the OLEMS and OCoCP are:

- Pre-construction survey to confirm the presence of roosting bats;
- Replanting of hedgerows lost during construction works within alternative locations;
- Opportunities to enhance retained hedgerows through increasing their existing species diversity or in-filling any gaps;
- All temporary lighting to be designed line with the BCT Bats and Lighting in the UK guidance (2018). This to include the use of directional lighting during construction;
- Construction phase lighting will be limited to permitted working hours in low light conditions, with lower-level security lighting outside of these times; and
- Ensure that dark corridors remain in place during the construction phase.

12.7.25 Following the implementation of the agreed embedded mitigation measures the magnitude of effect is considered to be **low** on a **high** importance receptor, representing a temporary residual effect of moderate adverse significance, which would be reduced to **minor adverse** significance once hedgerows are established.

Impact 4: Impacts to Survey Area

Reptiles

12.7.26 Although no reptiles were recorded during the 2017 and 2018 surveys; suitable habitat for basking has been noted and therefore there is potential for reptiles to be present within the working areas with regards to the Facility.

12.7.27 The following impacts may occur during the construction phase:

- Temporary loss of suitable reptile habitat;
- A risk of killing or injuring reptiles which are active within these areas; and
- A risk of habitat degradation due to pollutant release during the construction phase.

12.7.28 Without mitigation, the greatest magnitude arising is **medium** magnitude on a **medium** importance receptor, results in an effect of at worst **moderate adverse** significance.

12.7.29 Mitigation measures, as included in the OLEMS, will include the adherence to a pre-cautionary method of working (PMoW) during construction, including toolbox talk, habitat manipulation and ecological supervision. This PMoW comprises the implementation of a reptile sensitive clearance methodology (under ecological supervision) prior to any construction works within the Principal Application Site. This will ensure that any reptiles are safeguarded from the construction process.

12.7.30 The reptile sensitive clearance methodology involves habitat manipulation followed by a destructive search. Habitat manipulation will be carried out a maximum of one week prior to works commencing on-site. Any potential sheltering features will be inspected (visually and by hand) before entire removal by an ecologist. Any reptiles present can then be rescued and moved to an identified and suitable location (which has been identified prior to works commencing). Any vegetation removal works should start from the furthest extent so that any reptiles, should they be present, can move into an area that will not be accessed or disturbed by the works. All arisings should be removed from the works area immediately and either taken off-site or placed in a predetermined location well away from the works area (and any access). A method statement for these actions will be prepared by an ecologist in advance of any works starting on site. This work will be undertaken within the reptile activity season (March-October inclusive).

12.7.31 Following the implementation of the agreed mitigation measures considered necessary the magnitude of effect is expected to reduce from **moderate** to **low**

on a **medium** value receptor, representing a temporary residual effect of **minor adverse** significance.

Impact 5: Impacts to Birds

12.7.32 The Facility will require the removal of habitats (e.g. hedgerows) and features (e.g. areas of scattered/dense scrub) which nesting birds may use. As part of the embedded mitigation (and included in the OLEMS), all areas of vegetation will be planned to be removed outside of the nesting bird season. Where this is not possible, pre-work checks will be undertaken at least 24 to 48 hours before the vegetation is removed to check for active nests. Furthermore, as outlined in the OLEMS, a landscape mitigation planting scheme will be implemented that will include proposed replacement planting of removed hedgerows as well as enhancing retained hedgerows. Further information relating to the landscape mitigation planting scheme is provided in **Chapter 9 Landscape and Visual Impact Assessment**.

12.7.33 The mitigation measures for breeding birds have been presented and agreed with Natural England, LWT and RSPB. The mitigation/enhancement measures presented in the OLEMS also include net gain opportunities for biodiversity. Further discussions will be undertaken with the relevant stakeholders (Natural England and RSPB) post-DCO consent to finalise and agree the relevant mitigation and / or compensation requirements prior to construction.

12.7.34 The bird species recorded within the Survey Area during the 2020 breeding bird survey effort are considered to be of **medium** value therefore the effect is of **medium** importance.

12.7.35 Following the implementation of the embedded mitigation measures, the magnitude of effect is expected to reduce from **moderate** to **low** on a **medium** value receptor, representing a temporary residual effect of **minor adverse** significance.

Impact 6: Aquatic and Terrestrial Invertebrates

12.7.36 As identified in the 2017 and 2018 Phase 1 Habitat Surveys, there are limited areas of habitat on-site to support species of terrestrial and aquatic invertebrates. As the importance is **low**, and the magnitude is **low**, the overall significance of this effect is **minor**, as the following mitigation measures will be secured through the implementation of the OLEMS.

12.7.37 The Facility will consider the potential to integrate suitable habitat for invertebrate species in its design. This could include measures such as a varied planting

regime comprising scrub fringes such as hawthorn, field maple, blackthorn and ivy, which provide sheltered elevated temperatures for invertebrates, foraging areas for predatory wasps, and nectar and pollen for flower-dependent invertebrates.

Potential Impacts during Operation

Impact 1: Direct on Impacts on Designated Sites as a Result of Acid and Nitrogen Deposition

12.7.38 Although the Principal Application Site is not located within a statutory and non-statutory designated site, there are four designated sites (one LNR and three LWS) within 2 km of its boundaries. There is the potential for indirect effects on the qualifying features of these sites due to works on the land or within watercourse that are functionally connected to these designated sites. The following potential indirect effects have been identified:

- Potential indirect effects on local hydrological conditions;
- Potential indirect effects on water quality arising from accidental release of pollutants; and
- Potential indirect effects from traffic numbers on adjacent road networks.

12.7.39 The assessment of the potential indirect effects on local hydrological conditions is presented in **Chapter 13 Surface Water, Flood Risk and Drainage Strategy**. Mitigation measures relating to operational drainage requirements and control of surface water runoff will be presented within an operational surface and foul water drainage strategy.

12.7.40 Potential indirect effects as a result of increased traffic numbers as well as in-combination effects arising from other developments is discussed in detail within **Chapter 14 Air Quality**.

12.7.41 As presented in **Chapter 14 Air Quality**, the impact of the project alone and in-combination are above 1 % and 10 % of the respective critical levels for nitrogen and acid deposition. Therefore, effects are **not insignificant**. However, the total project contributions did not exceed the critical level for any pollutant.

12.7.42 Impacts of nutrient nitrogen deposition were compared to the critical load for saltmarsh at the Havenside LNR. Given the site's location immediately downwind of the Facility, the predicted impact was greater than 1 % of the Critical Load for the project alone and in-combination. However, the total PEC was predicted to be marginally above the most stringent of the Critical Load range (20 – 30 kgN/ha/yr). The significance of these impacts on saltmarsh is discussed in **Chapter 17**

Marine and Coastal Ecology.

- 12.7.43 The designated sites for nature conservation (LNR and LWS) are considered to be of medium importance.
- 12.7.44 The Facility will be required to operate under the conditions of its Environmental Permit, and therefore will control the operational emissions in accordance with the BAT-AELs.
- 12.7.45 The sensitivity of the designated sites (LNR and LWS) is considered to be **medium** and of a medium-term duration, reflecting that the impacts are detectable in the short term, but which will not alter the long-term viability of the designated sites.
- 12.7.46 In accordance with the Facility operating in accordance with the Environmental Permit the magnitude of the effect is reduced from **medium** to **low**. The effect is therefore of **minor adverse** significance.

Impact 2: Disturbance Effects Associated Maintenance Activities – Impacts to Species

- 12.7.47 The Facility will require regular visits from staff for routine maintenance. This has the potential to disturb protected species in proximity to the operational areas of the Facility, related to noise and/or physical presence of people. For the purposes of this assessment this is assumed to be up to one visit per week requiring a single vehicle, and staff visiting the sites during daylight hours.
- 12.7.48 Given the low frequency of the visits, disturbance from human presence is predicted to be of **negligible** magnitude and only affecting receptors within the immediate vicinity of the area(s) being visited.
- 12.7.49 Without mitigation, the greatest effect arising from maintenance activities is **negligible** magnitude on at worst high importance receptors, resulting in an effect of at worst **minor adverse** significance.
- 12.7.50 No mitigation is proposed given that the magnitude of effect is reduced as low as possible.

Impact 3: Noise and Lighting – Impact on Bats and Birds

- 12.7.51 Noise and visual disturbance from the Principal Application Site may result from any night working which may occur as part of the construction of the development. This impact would be considered of **high** importance as bats are a protected species under the Conservation of Habitats and Species Regulations 2017 and birds are protected by the Wildlife and Countryside Act 1981 (as amended). The

magnitude of noise and lighting would be considered as **low**; because there are 117 records of bat species within 2 km of the Principal Application Site. However, the impact is not of high magnitude because no bat roost potential or nesting birds were noted within the Principal Application Site during either of the Phase 1 Habitat Surveys in 2017 and 2018.

12.7.52 Therefore, this effect would have a **moderate** significance as lights and activity could interrupt foraging and commuting activity for bats and birds.

12.7.53 Mitigation to manage the impact of lighting will include the use of low pressure sodium lighting which will be located away from areas that could be used by bat/bird species (i.e. hedgerow and woodland habitats). All lights will be pointed away from these features and designed in accordance with the BCT guidance relating to bats and artificial lighting.

12.7.54 The predicted noise levels for operational (day and night time) is below 55 dBA. Mitigation to manage the impact of noise include attenuating and reducing the operational noise from dominant noise sources, upgrading the sound reduction index of stated buildings and partial or full enclosure screening through natural topography or intervening buildings. Further details can be found in section 10.7 of **Chapter 10 Noise and Vibration**.

12.7.55 Following these mitigation measures the residual effect of operational lighting and noise to bats and birds would be of **minor adverse** significance (not significant).

Potential Impacts during Decommissioning

12.7.56 No decision has been made regarding the final decommissioning policy for the Facility as it is recognised that industry best practice, rules and legislation change over time. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. A decommissioning plan will be provided. As such, for the purposes of a worst case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.

12.8 Cumulative Impacts

12.8.1 **Table 12-10** presents projects that are likely to have cumulative impacts when considered alongside the Facility. Each of these projects have been scoped in or out of the terrestrial ecology aspect of the cumulative impact assessment.

Table 12-10 Summary of Projects considered for CIA in Relation to Terrestrial Ecology

Project	Status	Development Period	Distance from the Application Site	Project Definition	Project Data Status	Included in CIA	Rationale
Boston Barrier Flood Defence	Transport and Works Act Order consented	2017 – ongoing (completed August 2021)	Boston Barrier at closest point to the Application Site is 500 m.	ES	Complete / high	Yes	Potential for cumulative impacts for impacts on terrestrial ecological receptors because this project will not overlap with the Facility because it will be completed before construction of the Facility starts – however, it is considered as a worst-case.
Battery Energy Storage Plant (Marsh Lane) B/17/0467	Application approved	2017 - ongoing	Beeston Farm less than 10 m from the Application Site	Detailed application	Incomplete / low	No	Details relating to this project are limited and therefore unable for a robust cumulative assessment to be undertaken.
The Quadrant Mixed-use development of 502 dwellings and commercial/leisure uses B/14/0165	Application approved Construction started	2014 - ongoing	Quadrant 1 1.2 km from the Application Site	Details within ES	Quadrant 1 – Complete/ high Quadrant 2 - Incomplete/ low	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.

Project	Status	Development Period	Distance from the Application Site	Project Definition	Project Data Status	Included in CIA	Rationale
Land to the west of Stephenson Close Residential Development of up to 85 dwellings B/17/0515	Application not yet determined	2017 - ongoing	From the most eastern part of the Scheme to the Application Site is 550 m.	Outline only	Incomplete/ low	No	Details relating to this project are limited and therefore unable for a robust cumulative assessment to be undertaken. However, due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated
Triton Knoll Offshore Wind Farm	DCO consented	2008 - ongoing	Onshore cable corridor and Construction compound at Langrick 9.7 km from the Application Site	ES	Complete/ high	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.
Viking Link Interconnector B/17/0340	Application approved	2014 - 2023	Bicker Fen substation 14.4 km from the Application Site	ES	Incomplete / low	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.
Sutterton Garage and adjacent land, Station Road, Sutterton, Boston, Lincolnshire PE20 2JH	Application approved	2015 – ongoing	10.3km south (following A16 and B1397) of the Application Site	Outline only	Complete / high	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.

Project	Status	Development Period	Distance from the Application Site	Project Definition	Project Data Status	Included in CIA	Rationale
B/15/0084							
Land west of Boston Road, Kirton, Boston, Lincolnshire, PE20 1ES B/15/0266	Application approved	2015 – ongoing	4 km south west of the Application Site	Approval of reserved matters	Complete / high	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.
Land adjacent to London Road/Drainside South, Kirton, Boston, Lincolnshire, PE20 1JH	Application approved	2015 – ongoing	6 km south west of the Application Site	Outline only	Complete / high	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.
Land south of Endeavour Way, PE20 0JA Erection of 14,655sq.m Class B2 (general industrial) floor space B/15/0506	Application Approved	2015 – ongoing	10 km south west of the Application Site	Detailed application	Complete / high	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.
Land off Station Road, PE20 3NX Erection of 63 no. residential dwellings with	Application approved	2016 – ongoing	8 km west of the Application Site	Detailed application	Complete / high	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.

Project	Status	Development Period	Distance from the Application Site	Project Definition	Project Data Status	Included in CIA	Rationale
associated infrastructure B/16/0052							
The Junction Community Hall, PE20 1QJ Construction of community building B/16/0062	Application approved	2016 – ongoing	4 km south west of the Application Site	Detailed application	Complete / high	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.
Yew Lodge, PE20 2EE Demolition of outbuildings and the construction of 14 no. dwellings B/16/0313	Application approved	2016 – ongoing	8 km south west of the Application Site	Outline application with some matters reserved for later approval	Complete / high	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.
Land at Station Road, PE20 2JH Erection of 21 dwellings, new vehicular access, private access road and associated works B/16/0409	Application approved	2016 – ongoing	8 km south west of the Application Site	Detailed application	Complete / high	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.

Project	Status	Development Period	Distance from the Application Site	Project Definition	Project Data Status	Included in CIA	Rationale
Land west of Boston Road, Kirton B/17/0171	Application approved	2017 - ongoing	3 km south west of the Application Site	Detailed application	Complete / high	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.
Woods Nurseries Site, Swineshead, Boston Proposed residential development of 41 market and affordable dwellings B/17/0244	Application approved	2017 – ongoing	9 km west of the Application Site	Outline application	Complete / high	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.
Land to the rear of Westminster Terrace, Swineshead, Boston Construction of 18 dwellings B/17/0396	Application approved	2017 – ongoing	8 km west of the Application Site	Detailed application	Complete / high	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.
Land adjacent to Avalon Road, PE20 1QR Construction of 4 no. detached buildings	Application approved	2018 – ongoing	6 km south west of the Application Site	Detailed application	Complete / high	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.

Project	Status	Development Period	Distance from the Application Site	Project Definition	Project Data Status	Included in CIA	Rationale
comprising 16 no. industrial units B/18/0057							
Land to the north and west of Coles Lane, PE20 3NS Change in site boundary of planning permission B/17/0404 B/18/0382	Application approved	2018 – ongoing	8 km west of the Application Site	Detailed application	Complete / high	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.
Plots C and D, The Quadrant, Land adjacent to A16, Wyberton, Boston For approval of reserved matters (appearance, layout and scale) for the construction of hotel, public restaurant and drive-thru B/18/0413	Application approved	2018 – ongoing	1 km south west of the Application Site	Application for approval of reserved matters	Complete / high	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.

Project	Status	Development Period	Distance from the Application Site	Project Definition	Project Data Status	Included in CIA	Rationale
The Quadrant, PE21 7HT Application for approval of reserved matters from application B/14/0165 (roads 6, 7 and 8) B/19/0027	Application approved	2018 – ongoing	1 km south west of the Application Site	Application for approval of reserved matters	Complete / high	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.
Wash Road/ Station Road. Kirton Demolition of dwelling and erection of 30 dwellings. B/15/0503	Application approved at appeal	2015 – ongoing	4 km south west of the Application Site	Application for demolition, outline application for erection of dwellings and matters reserved for later consideration	Complete / high	No	Due to nature of project and distance of the project from the Facility, no cumulative impact is anticipated.

12.8.2 It is likely that only the Boston Barrier flood defence project is close enough to the Facility to have the potential to result in significant cumulative impacts on terrestrial ecology receptors. Cumulative impacts may arise due to simultaneous operation. Other projects are considered to be significant distances from the Facility for them not to be considered.

12.8.3 A summary of the potential cumulative impacts with the Boston Barrier (during operation) is set out in **Table 12-11**.

Table 12-11 Potential Cumulative Impacts

Impact	Potential for cumulative impact	Data confidence	Rationale
Noise and lighting impacts on bats and birds	Yes	High	If the construction windows for Boston Barrier and the Facility overlap, there is a potential for cumulative impact. However, this is very unlikely.
Displacement of reptiles	Yes	High	

12.9 Transboundary Impacts

12.9.1 There are no transboundary impacts with regards to terrestrial ecology as the Facility is not sited in proximity to any international boundaries.

12.10 Inter-Relationships with Other Topics

12.10.1 This chapter has inter-relationships with **Chapter 9 Landscape and Visual Impact Assessment, Chapter 10 Noise and Vibration, Chapter 14 Air Quality and Chapter 17 Marine and Coastal Ecology** (see **Table 12-12**).

Table 12-12 Chapter Topic Inter Relationships

Topic and description	Related Chapter	Where addressed in this Chapter
Landscape and Visual Impact Assessment	9	Lighting impacts to protected species and reinstatement proposals.
Noise and Vibration	10	Noise disturbance to protected species.
Air Quality	14	Acid and nitrogen deposition to habitats.
Marine and Coastal Ecology	17	Impacts to intertidal and marine habitats and protected species.

12.11 Interactions

12.11.1 The impacts identified and assessed in this chapter have the potential to interact with each other, which could give rise to synergistic impacts because of that

interaction. The worst case impacts assessed within the chapter take these interactions into account and for the impact assessments are considered conservative and robust. For clarity, the areas of interaction between impacts are presented in **Table 12-13**, along with an indication as to whether the interaction may give rise to synergistic impacts.

Table 12-13 Interaction Between Impacts

Potential interaction between impacts			
Construction			
	Loss of habitat	Noise and lighting impacts on bats and birds	Displacement of reptiles
Loss of habitat	-	Yes	Yes
Noise and lighting impacts on bats and birds	Yes	-	Yes
Displacement of reptiles	Yes	Yes	-
Operation			
	Loss of habitat	Noise and lighting impacts on bats and birds	Displacement of reptiles
Loss of habitat	-	Yes	Yes
Noise and lighting impacts on bats and birds	Yes	-	Yes
Displacement of reptiles	Yes	Yes	-
Decommissioning			
It is anticipated that the decommissioning impacts will be similar in nature to those of construction.			

12.12 Summary

12.12.1 A summary of the findings for terrestrial ecology is provided in **Table 12-14**.

Table 12-14 Impact Summary

Potential Impact	Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Effect
Construction						
Impact 1: Impacts to habitats	All types	Medium	Low	Minor adverse	Embedded mitigation - implementation of landscape mitigation planting. Minimal loss of habitats through site design.	Minor adverse
Impact 2: Statutory Designated Sites (acid/nitrogen deposition)	Havenside LNR	Medium	Medium	Moderate adverse	Implementation of mitigation measures to control acid/nitrogen deposition such as, but not limited to, dust management measures.	Minor adverse
Impact 3: Impact to foraging and commuting bats	Bats (foraging and commuting only)	High	Low (further reduction to negligible over time as hedgerows are established)	Moderate adverse	Embedded mitigation - replacement planting of hedgerows that require removal and enhancing retained hedgerows through increasing their existing species diversity or in-filling any gaps, as part of the landscape mitigation planting strategy; All temporary lighting to be designed line with the BCT Bats and Lighting in the UK guidance (2018). This to include the use of directional lighting during construction; Construction phase lighting will be limited to permitted working hours in low light conditions, with lower-level security lighting outside of these times;	Minor adverse

Potential Impact	Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Effect
					Ensure that dark corridors remain in place during the construction phase. Installation of bat boxes within suitable trees that will be retained.	
Impact 4: Impacts to Reptiles	Reptiles	Medium	Medium	Moderate adverse	Precautionary methods of working during construction, including toolbox talk, habitat manipulation and ecological supervision.	Minor adverse
Impact 5: Impact to bird populations	Bird populations (loss of habitat and in turn loss of nesting opportunities)	Medium	Low	Minor adverse	Embedded mitigation - removal of vegetation outside of nesting bird season. Pre-work checks for nesting sites if vegetation requires removal during nesting bird season. Implementation of landscape mitigation planting scheme.	Minor adverse
Impact 6: Impact to terrestrial invertebrates	Terrestrial invertebrates	Low	Low	Minor adverse	Embedded mitigation - integration of habitat for invertebrate species into Facility design (e.g. varied planting regime to provide sheltered elevated temperatures for invertebrates, foraging areas and nectar and pollen for flower-dependent invertebrates)	Minor adverse
Impact to badgers	Badgers	Low	No impact	-	Pre-construction surveys to confirm badgers remain absent.	No effect

Potential Impact	Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Effect
Impact to water voles	Water voles	High	No impact	-	Pre-construction surveys to confirm water voles remain absent.	No effect
Impact to otters	Otters	High	No impact	-	Pre-construction surveys to confirm otters remain absent.	No effect
Operation						
Impact 1: Non-statutory Designated Sites (acid/nitrogen deposition)	LWS' (Havenside, South Forty Foot Drain and Slippery Gowt Sea Bank)	Medium	Medium	Moderate adverse	Implementation of mitigation measures to control acid/nitrogen deposition such as, but not limited to, dust management measures.	Minor adverse
Impact 2: Disturbance effects associated Maintenance Activities	Disturbance to Habitats and Species from Maintenance Activities	High	Negligible	Minor adverse	-	Minor adverse
Impact 3: Disturbance to Fauna from Operational Lighting and Noise	Disturbance to Fauna from Operational Lighting and Noise	High	Low	Moderate adverse	Use of low pressure sodium lighting located away from areas used by bird/bat species. All lights will also be designed in accordance with the BCT guidance relating to artificial lighting. Attenuating and reducing the operational noise from dominant noise sources, upgrading the sound reduction index of stated buildings and partial or full enclosure screening	Minor adverse

Potential Impact	Receptor	Value/ Sensitivity	Magnitude	Significance	Mitigation	Residual Effect
					through natural topography or intervening buildings	
Decommissioning						
No additional impacts on terrestrial ecology are anticipated during the decommissioning phase than those identified during construction.						

12.13 References

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