

REPORT

Boston Alternative Energy Facility – Environmental Statement

Appendix 12.1 Extended Phase 1 Habitat Report

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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): Ashleigh Holmes

Drafted by: Ashleigh Holmes

Checked by: Claire Smith

Date: 17/06/20 CS

Approved by: Paul Salmon

Date: 24/02/21 PS

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A12 Extended Phase 1 Habitat Survey

A12.1 Introduction

A12.1.1 This report has been produced on behalf of Alternative Use Boston Projects Ltd (the Applicant) to establish an up-to-date ecological baseline of the Principal Application Site for the proposed Boston Alternative Energy Facility ('the Facility') in Boston, Lincolnshire (herein referred to as the survey area).

A12.1.2 The Facility will deliver approximately 80 megawatts electric (MWe) of renewable energy to the National Grid using Refuse Derived Fuel (RDF) as a feedstock into a thermal treatment facility generating power via steam turbine generators. The construction period for the Facility, including commissioning, is anticipated to be between 46 and 48 months. A detailed project description is provided in **Chapter 5 Project Description**.

A12.1.3 At this scale, the Facility would constitute a Nationally Significant Infrastructure Project (NSIP). Therefore, the Applicant is pursuing a Development Consent Order (DCO) for the Facility.

A12.1.4 The survey area is denoted by the solid red line on **Figure 12.1** and is centred on National Grid Reference (NGR) TF 33994223. This does not include the Habitat Mitigation Area which is considered within **Chapter 17 Marine and Coastal Ecology**.

A12.2 Purpose of this Report

A12.2.1 An Extended Phase 1 Habitat Survey was initially undertaken on 16th August 2017. The key findings from this survey were used to inform the findings from the more recent survey that was undertaken on 9th October 2018. The findings of the 2017 survey are reported separately (Royal HaskoningDHV, 2017) and this report is not appended to this document. The initial findings were presented in the Scoping Report (Royal HaskoningDHV, 2018).

A12.2.2 Due to updates to the original 2017 survey area boundaries, an updated Extended Phase 1 Habitat Survey and updated desk study was undertaken on 9th October 2018. The findings of which were used, in combination with the findings from the 2017 survey, to identify any ecological constraints associated with the Facility as well as identifying any recommendations and/or enhancements that will be considered within the design proposals. An updated check of the site conditions was also undertaken as part of the 2020 ecology survey effort, namely monthly bat activity transect surveys and breeding bird

survey, noting of any changes to those conditions recorded during the 2017 or 2018 surveys.

A12.2.3 This report has been prepared in line with the guidelines set out in the Chartered Institute of Ecology and Environmental Management's (CIEEM) Guidelines on Ecological Report Writing (December, 2017).

A12.3 Legislation

A12.3.1 **Table A12- 1** provides a summary of the key ecological legislation in relation to individual species that have been identified from the ecological surveys undertaken to date and therefore identified as being relevant to the survey area.

Table A12- 1 Summary of Protected Species Legislation Relevant to the Survey Area.

Species	Legislation	Level of Protection	Relevant Mitigation/Actions
Reptiles	Sections 9(1) and 9(5) of Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) All common reptile species, including grass snake, are listed under Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006.	It is an offence to intentionally kill or injure.	No licence is required.
Birds	Wildlife and Countryside Act 1981 (as amended) S.1	It is an offence to intentionally kill, injure or take any wild bird; intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built; Intentionally take or destroy the nest or eggs of any wild bird. [Special penalties are liable for those offences involving birds on Schedule 1]. It is an offence to intentionally or recklessly disturb a Schedule 1 species while it is building a nest or is in, on or near a nest containing eggs or young; intentionally or recklessly disturb dependent young of such a species.	No licences are available to disturb any birds in regard to development. Licences are available in certain circumstances to damage or destroy nests, but these only apply to the list of licensable activities in the Act and do not cover development. General licences are available in respect of 'pest species' but only for certain very specific purposes e.g. public health, public safety, air safety.
Bats	Conservation of Habitats and Species Regulations 2017 (as amended) Reg. 41	It is an offence to deliberately capture, injure or kill a bat; to deliberately disturb bats; or damage or destroy a breeding site or resting place used by a bat.	A Natural England (NE) licence in respect of development is required in England. European Protected Species:

Species	Legislation	Level of Protection	Relevant Mitigation/Actions
		[The protection of bat roosts is considered to apply regardless of whether bats are present].	Mitigation Licensing – How to get a licence (NE 2010)
	Wildlife and Countryside Act 1981 (as amended) S.9	It is an offence to intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection or disturb a bat in such a place.	Licence from NE is required for surveys (scientific purposes) that would involve disturbance of bats or entering known or suspected roost site.
Badgers	Protection of Badgers Act 1992	Wilfully kill, injure or take a badger; or intentionally or recklessly damage, destroy or obstruct access to a badger sett or disturb a badger in its sett. [It is not illegal to carry out disturbance activities in the vicinity of setts that are not occupied].	Where required, licences for development activities involving disturbance or sett interference or closure are issued by Natural England (NE). Licences are normally not granted from December to June inclusive because cubs may be present within setts.
Otters	Conservation of Habitats and Species Regulations 2017 (as amended)	Intentionally or deliberately capture, injure or kill; deliberately damage or disturb the breeding or resting site, or any structure used for shelter or protection. Intentionally or recklessly kill, injure or take, obstruct access to any structure or place used for shelter or protection, or disturb in such a place.	Where offences under the Conservation of Habitats and Species Regulations 2017 cannot be avoided Licences from Natural England can be obtained to legitimise works.
Water voles	Wildlife and Countryside Act 1981 (as amended)	Intentionally or recklessly kill, injure or take, obstruct access to any structure or place used for shelter or protection, or disturb in such a place.	A licence is required if disturbance of water voles or their burrows is likely (e.g. detailed and prolonged examination of a known water vole burrow which would cause disturbance to any water voles present or interference with burrow entrances by digging or blocking) and to trap them for marking or study.

A12.4 Methodology

Study Area

A12.4.1 A 2 km buffer around the survey area is considered an appropriate 'study area' for the gathering of information during the desk study. For the 2018 updated Extended Phase 1 Habitat Survey walkover, the survey area's footprint 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*).

A12.4.2 The 2018 desk study area was determined through an updated review of the Facility to identify the spatial scale at which ecological features could be affected. This study area is sufficient to include the zone of influence, defined as the area encompassing all predicted negative ecological effects from the Facility; both those which will occur as a result of land-take and habitat loss, and those which may occur indirectly through disturbance such as noise or via other pathways such as the fluvial environment.

A12.5 Desk Study

A12.5.1 The Multi-Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk) was reviewed in November 2018, and re-checked in October 2020, for information on statutory sites and notable habitats (e.g. ancient woodlands) of nature conservation value within 2 km of the survey area centred on TL 3342 9826.

A12.5.2 A search for water bodies within 250 m of the survey area boundary was made using 1:25 000 Ordnance Survey (OS) maps in October 2018, and re-checked in October 2020, to identify potential aquatic habitat for great crested newts. A search area of 250 m was chosen having considered the habitats around the survey area. Great crested newts can use suitable terrestrial habitat up to 500 m from a breeding pond (Great Crested Newt Mitigation Guidelines, English Nature 2001), however, research suggests that newts are likely to travel no more than 250 m from ponds where suitable habitats for foraging and hibernation exist (Cresswell and Whitworth, 2004). The use of a 250 m survey area for great crested newts was agreed with Natural England at a meeting held on the 11th February 2019 where the scope and approach to the ecological field surveys was discussed.

A12.5.3 The water body information derived from the OS maps was then used to identify the potential presence of (and potential for impacts on) great crested newts and other aquatic and semi-aquatic protected species including otter *Lutra lutra*,

water vole *Arvicola amphibius* and white clawed crayfish *Austroptamobius pallipes*.

A12.5.4 Google Earth Aerial photos were reviewed in October 2018, and re-checked in October 2020, to assist in identifying any other notable habitats within the survey area and its surrounding areas.

A12.5.5 The UK Biodiversity Action Plan (UK BAP) (Joint Nature Conservation Committee (JNCC), 2019) and Lincolnshire BAP (Local BAP) (Greater Lincolnshire Nature Partnership, 2015) were reviewed in November 2018, and re-checked in October 2020, to identify habitats and species of conservation concern that may be present within the survey area.

A12.5.6 An updated biological data request from the Lincolnshire Biological Records Centre (LBRC) was undertaken in November 2018, which supplemented the information obtained from the 2017 desk study. **Figure A12.1** shows the species and habitat distribution of the records relevant to the Facility.

A12.6 Field Survey Methodologies

Updated Extended Phase 1 Habitat Survey

A12.6.1 The survey area and its immediate surrounds was surveyed on 9th October 2018.

A12.6.2 This survey was undertaken in accordance with the methodology outlined in the 'Extended Phase 1 Habitat Survey' methodology as set out in *Guidelines for Baseline Ecological Assessment* (Institute of Environmental Assessment, 1995) and the Handbook for Phase 1 Habitat Survey (JNCC, 2010). This method of survey provides information on the habitats in the survey area and assesses the potential for legally protected species to occur on or adjacent to it.

A12.6.3 Whilst undertaking the updated Phase 1 Habitat Survey, updated preliminary assessments were undertaken for the following species.

- **Great crested newts:** Searching for suitable aquatic habitats for breeding populations within the survey area and up to 250 m from its boundary. Also searching for suitable terrestrial habitat within the survey area;
- **Badger:** *Meles meles*, searching for signs of activity including setts, tracks, snuffle holes and latrines within the survey area and up to 30 m from its boundary;
- **Water voles, otters and white clawed crayfish:** Searching for suitable habitat for in water bodies within or immediately adjacent to the survey area;

- **Bats:** Preliminary daytime ground level assessments of potential bat roosting sites, particularly within trees/buildings within the survey area from the ground level and using binoculars. An assessment was also made of any suitable habitats within the survey area for which foraging/commuting bats may use;
- **Reptiles:** Searching for suitable habitats within the survey area;
- **Birds:** (nesting/breeding): Searching for signs of nests and identifying any suitable nesting habitats within the survey area;
- **Invertebrates:** Assessing the suitability of habitats to provide appropriate habitat for rare and notable aquatic and terrestrial invertebrate species.
- **Other protected species:** (e.g. dormice *Muscardinus avellanarius*): Searching for suitable habitat within the survey area; and
- **Invasive species:** Assessing their presence within, and up to 10 m from, the survey area boundary. The list of invasive plant species included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) is extensive and these plants are found in a range of different habitats. The 2018 survey assessed the presence of Japanese knotweed *Fallopia japonica*, giant knotweed *Fallopia sachalinensis*, hybrid knotweed, giant hogweed *Heracleum mantegazzianum*, Himalayan balsam *Impatiens glandulifera*, rhododendron *ponticum* and cotoneaster.

A12.7 Preliminary Daytime Inspection for Bats

A12.7.1 A daytime inspection of all features (e.g. all trees and buildings where present) within the survey area was initially undertaken in 2017 and updated during the 2018 survey, and at the same time as the 2018 updated Extended Phase 1 Habitat Survey.

A12.7.2 During the 2018 survey, all suitable buildings, structures or trees within the survey area were externally surveyed from the ground level and using binoculars for their potential to support roosting bats. Each tree/building throughout the survey area was categorised using a four-point scale (negligible, low, medium and high) broadly based on the Bat Conservation Trust (BCT) guidelines (3rd Edition, 2016) for their potential to support roosting bats:

- **Negligible potential** – no features present which could offer bats the opportunity to roost;
- **Low potential** – only minor crevices or cracks present which are considered to offer poor roosting spaces for bats;

- **Medium potential** – features present such as small cavities and gaps leading to small enclosed spaces, which offer some form of protection for either individual bats or small numbers of bats; or
- **High potential** – significant holes, cracks or crevices in roof or building structures, which are considered very suitable to be used by bats for roosting and could support large or important roosts such as maternity roosts.

A12.7.3 In addition, the habitats within the survey area were also assessed for their suitability to support foraging/commuting bats.

A12.8 Constraints to the Survey

A12.8.1 Ecological surveys are limited by factors which affect the presence of plants and animals such as the time of year, migration patterns and behaviour. There may be invasive plants species within the survey area which were not recorded, but it is considered that this survey is sufficient to identify any significant constraints posed by invasive species. The ecological survey has not therefore produced a complete list of plants and animals and the absence of any species should not be taken as confirmation of their absence.

A12.8.2 Only land immediately surrounding the survey area and up to 50 m from its boundary was surveyed at the time of the 2018 survey. Water bodies identified outwith the Applicant site and within a 250 m zone of the survey area, and their immediate surroundings, were accessed using publicly accessible means (i.e. footpaths) as landowner permission had not been granted at the time of the survey.

A12.8.3 The results of the 2018 ecological survey, in combination with the 2017 survey results, has allowed an evaluation of the likely use of the survey area by legally protected species and the requirement for mitigation for these species to be made.

A12.9 Baseline Environment

Designated Sites

Statutory Designated Sites

A12.9.1 The survey area is not located within a statutory or proposed statutory site of importance for nature conservation.

A12.9.2 Havenside Local Nature Reserve (LNR), on the northern bank of The Haven (tidal River Witham) occupies 18.91 hectares (ha) and is defined as a main

habitat of coarse or rank grassland habitats, with additional habitats of new native plantation, scrub, semi-improved neutral grassland, improved grassland, ditch pond, coastal grazing marsh, marsh, and reedbed. The LNR comprises a long man-made sea bank dating from the 19th Century. The component areas are:

- A raised bank of plantation and meadow at the western end;
- Triangular area of rough grassland and newly planted trees;
- Grazed grassland with drainage ditches and ponds;
- Older sea bank with dense scrub; and
- An amenity area centred on the Pilgrim Fathers memorial with amenity grassland, two small ponds and wet grassland.

A12.9.3 The mosaic of woodland, grassland and wetland within this site is an important feature in the local context and of significant value to local bird, mammal and invertebrate populations. The linear nature of the site also provides a good wildlife corridor through Boston.

A12.9.4 As suggested in the 2017 Ecology report and given the separation of the survey area from this LNR by The Haven, it is assessed that the Facility will not directly impact upon this designated site. However, the Facility has the potential to indirectly impact upon the species listed for the site's importance (i.e. oystercatcher *Haematopus ostralegus*, barn owl *Tyto alba*, bats, and common seal *Phoca vitulina*) (BBC, 2015) via noise and visual disturbance as a result of the Facility.

A12.9.5 Although no further surveys are recommended in relation to the LNR, mitigation measures, as detailed in the Outline Landscape and Ecological Mitigation Strategy (OLEMS) (document reference 7.4), will be implemented during the construction and operational phases of the Facility to minimise impacts upon this site and the species it is known to support.

A12.10 Non-statutory Designated Sites

A12.10.1 The survey area is not located within a non-statutory site of importance for nature conservation.

A12.10.2 Within 2 km of the survey area, there are three Local Wildlife Sites (LWS). These are Havenside (LWS (located approximately 0.01 km north-east of the Principal Application Site), South Forty Foot Drain LWS (located approximately 0.99 km

north-west of the Principal Application Site), and Slippery Gowt Sea Bank LWS (located approximately 0.24 km east of the Principal Application Site).

A12.10.3 The South Forty Foot Drain LWS is listed as comprising:

“a man-made watercourse and bankside communities. The bankside vegetation comprises rough natural grassland, scrub and trees. The site is a good corridor linking the centre of Boston with the wider countryside”.

A12.10.4 The Slippery Gowt Sea Bank LWS is listed as comprising:

“a rough grassland bank, landside only, adjacent to the Haven and associated tracts of saltmarsh. The site mainly comprises a rough grassland bank between the bank top and footpath and the drain which occurs between the waste site and the bank. The area supports Boston horsetail which occurs (or has occurred in the past) all the way along the landward bank, including the area that was stripped in 2006-7. This is the only site for this species in Greater Lincolnshire”.

A12.10.5 No further surveys are recommended in relation to the non-statutory designated sites due to the geographical separation of the survey area from these sites, which in turn is considered to remove the potential mechanisms of direct impacts. However, there is potential for indirect impacts to occur and therefore mitigation measures, as detailed in the OLEMS, will be implemented during the construction and operational phases of the Facility to minimise impacts upon these sites and the species/habitats they are known to support.

A12.11 Flora and Habitats

Habitats

A12.11.1 The 2018 survey recorded no changes to those habitats identified during the 2017 survey. Where, the key habitats within the survey area 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).

A12.11.2 The location of these habitats is shown on **Figure 12.1**.

A12.11.3 There is no ancient woodland within the survey area.

A12.11.4 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 RDF feedstock delivery and lightweight aggregate export. This loss of Priority Habitat would account for a very small proportion of the overall saltmarsh and mudflat habitat locally. Impacts upon these habitats and associated mitigation measures are reported as part of the Marine and Coast Ecological Impact Assessment (EclA) and do not form part of the terrestrial EclA. However, mitigation measures (if required) will be considered further during the construction and operation phases of the Facility to identify opportunities that result in no net loss of these Priority Habitats. Further details of which are presented in the OLEMS and will be in the final LEMS secured through a DCO requirement.

Invasive Species

A12.11.5 There are several recent records of invasive species, including Japanese knotweed (recorded November 2009, approximately 1.2 km from the survey area) and giant hogweed (recorded in 2016, approximately 0.65 km from the survey area), within 2 km of the survey area, although none within the survey area.

A12.11.6 No invasive plant species were recorded within the survey area during the 2017 and 2018 surveys. Consequently, no further surveys and/or mitigation measures are required and as such are not considered further in this report.

A12.12 Legally Protected and Notable Species

Badgers

A12.12.1 There are seven recent records of badger within 2 km of the survey area, the most recent being 2016, although none within the survey area. The closest record is approximately 900 m west of the survey area at its closest point, recorded in October 2007.

A12.12.2 Although no evidence of badgers has been noted during the surveys undertaken to date, there is suitable habitat present, including woodland, scrub and hedgerows.

A12.12.3 The survey area comprises largely open grassland area, and is subject to regular human disturbance, therefore it is considered unlikely that badgers use the survey area for residence. Therefore, no further surveys are required; but general ecological awareness, as detailed in **Section A12.13**, is recommended to minimise any potential impacts upon the local badger population within the wider area.

Water Voles

A12.12.4 There is a total of 33 recent records of water vole within 2 km of the survey area, the most recent being 2017, although none within the survey area. The closest record is approximately 800 m west of the survey area at its closest point, recorded in October 2007.

A12.12.5 The ecological work associated with the Boston Barrier Tidal Project (reported in the Environmental Statement (ES) (Environment Agency, 2016)), noted that disused burrows, likely to be water vole, were recorded along the South Forty Foot Drain (over 2 km north-west of the survey area). In addition, the potential for water voles was also noted along the brackish ditches and saltmarsh pools within the Boston Barrier Tidal Project area.

A12.12.6 There are a series of ditches within the survey area, but these were dry at the time of the 2018 survey. Due to 2018 being an unusually dry year, a re-check of all ditches within the survey area was undertaken in 2019. All ditches remained to be dry and therefore, all these ditches were assessed as sub-optimal for water vole (**Figure 12.1**). Therefore no further surveys are required, although general

ecological awareness will be required and this is detailed in **Section A12.13** to minimise any potential impacts upon water voles if present in the wider area.

Otters

A12.12.7 There are no recent records of otter within 2 km of the survey area. There are records of otter on the River Witham to the north of Boston, but over 2 km from the survey area at its closest point.

A12.12.8 The ecological work that was undertaken to inform the ecological chapter of the Boston Barrier Tidal Project ES (Environment Agency, 2016) notes that there are no suitable features for otter holt building along the River Witham (north of the survey area) due to a lack of bankside features that would provide suitable cover, and high levels of human disturbance.

A12.12.9 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 (**Figure 12.1, Target Note 6 (TN6)**). Furthermore, the ditch network within the survey area was assessed as sub-optimal for otters, primarily due to the absence of water. However, otters may use the tidal River Witham for commuting in and around the wider area. As such, a general ecological awareness is detailed in **Section A12.13** to minimise potential impacts to otters if in the wider area.

Great Crested Newts and White Clawed Crayfish

A12.12.10 There are no recent records for great crested newts or white clawed crayfish within 2 km of the survey area.

A12.12.11 There are six waterbodies within and up to 250 m from the survey area boundaries. The locations of which are shown on **Figure A12.2**. A Habitat Suitability Index Assessment (HSI) concluded that these water bodies offer 'poor' suitability for great crested newts. Although the habitat suitability score is not a replacement for more detailed surveys, it is considered that great crested newts are unlikely to be present within the survey area due to the poor quality of the aquatic habitat, in combination with the lack of suitable surrounding terrestrial habitat. Furthermore, the tidal River Witham is considered to provide a barrier to any species movement, is known to support fish populations, and the surrounding terrestrial habitat lacks suitable shelter.

A12.12.12 The River Witham waterbody was assessed as sub optimal habitat for white clawed crayfish due to the absence of suitable habitats for burrowing and

refugia. The ditch network within the survey area also does not provide suitable habitat (i.e. flowing water) for white clawed crayfish.

A12.12.13 Given the nature of the survey area and its immediate surrounds, in combination with the absence of suitable aquatic and terrestrial habitat within the survey area, it is unlikely that great crested newts and white clawed crayfish are present within the survey area. Therefore, no further surveys and/or mitigation measures are required and consequently these species are not considered further in this report.

Bats

A12.12.14 There is a total of 117 records of bat species within 2 km of the survey area, including records of Daubenton's bat *Myotis daubentonii*, Noctule bat *Nyctalus noctule*, Brown Long-eared bat *Plecotus auritus*, and Common Pipistrelle *Pipistrellis pipistrellus*, although none are within the survey area itself. The closest record is approximately 400 m north-east of the survey area at its closest point.

A12.12.15 There are no buildings within the survey area. There are several trees within the survey area which were assessed from the ground using binoculars for their suitability to support roosting bats. None of these trees were identified as providing suitability to support roosting bats. Consequently, no further emergence/re-entry surveys are required should these trees require removal.

A12.12.16 There are hedgerows and areas of woodland area within the survey that were assessed as providing moderate suitability to support foraging and/or commuting bat species (**Figure 12.1, Target Note 2 (TN2) and Target Note 5 (TN5)**). It is understood that the Facility will require the removal of these hedgerows and therefore further surveys to establish the current usage of these features by foraging/commuting bats (including what species) were undertaken between June and September 2019.

A12.12.17 The suite of bat activity surveys were undertaken in accordance with the BCT's Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition) (2016). Transect surveys involved walking at a constant speed along each linear bat habitat (i.e. hedgerows) recording observations such as number of bats, flight direction, flight height, behaviour, appearance and relative speed.

A12.12.18 No static detectors were deployed within the survey area due to the lack of suitable secure locations for the equipment to be left. Data from the activity transect surveys was however recorded and subsequently analysed using

sound-analysis analysis software to identify species and pass numbers following each survey.

A12.12.19 Each habitat scoped into the survey that had been assessed as providing suitability for commuting or foraging bats was subject to one transect survey visit per month between June and September 2019 (four visits). Each transect survey commenced at sunset and ceased 2-3 hours after sunset.

A12.12.20 The surveyors used hand-held bat detectors (any type) and recording equipment to record any echolocation calls picked up during the survey. The same model of detector was used for all surveys. Laboratory sound-analysis was used to identify the calls of any bat species picked up using the bat detectors.

A12.12.21 Weather conditions including temperature, wind speed and precipitation, were recorded at the start and end of each survey visit. Surveys were not carried out when the temperature was below 10°C at sunset, or during heavy rain or strong wind, unless justified by the surveying ecologist.

Reptiles

A12.12.22 There are no records within the last ten years of reptile species within 2 km of the survey area.

A12.12.23 Although no evidence of reptiles was noted during either the 2017 or 2018 survey, the habitats within the survey area were assessed as having potential to support common reptile species should they be present in the wider area. The areas of tall ruderals, hedgerow habitats and scattered scrub adjacent to semi-improved grassland and bare ground (with scattered debris and rubble piles) were noted to provide suitable basking, refugia and foraging habitat (**Figure 12.1, Target Note 3, 5 and 8 (TN3, TN5 and TN8)**).

A12.12.24 It is understood at the time of writing this report that these areas of vegetation, bare ground and debris/rubble piles will require removal as part of the groundworks for the Facility. Although no reptile survey has been undertaken, mitigation measures (e.g. manipulation of habitats to discourage reptiles from the working areas) will be implemented during the construction and operational phases of the Facility to minimise impacts to local reptile populations. Further

details of which are presented in the OLEMS. This approach was presented and agreed with Natural England during a meeting held on the 11th February 2019.

Dormice

A12.12.25 There are no records of dormice within 2 km of the survey area.

A12.12.26 No evidence of dormice or suitable habitat was recorded during the 2017 or 2018 surveys. It is therefore considered unlikely that this species is present within the survey area and consequently no further surveys and/or mitigation measures are required and as such this species is not considered further in this report.

Birds

A12.12.27 There are several records of Schedule 1 bird species within 2 km of the survey area, including records of Goshawk *Accipiter gentilis*, Kingfisher *Alcedo atthis*, Garganey *Anas Querquedula*, Ruff *Calidris pugnax*, Little Ringed Plover *Charadrius dubius*, Marsh Harrier *Circus aeruginosus*, Montagu's Harrier *Circus pygargus*, Peregrine *Falco peregrinus*, Hobby *Falco Subbuteo*, Black-tailed Godwit *Limosa*, Red Kite *Milvus*, Black Redstart *Phoenicurus ochruros*, Avocat *Recurvirostra avosetta*, Firecrest *Regulus ignicapilla*, and Barn Owl *Tyto alba*.

A12.12.28 Bird species recorded within the survey area during the 2018 survey included blackbird *Turdus merula*, Common gull *Larus canus*, magpie *Pica*, sparrow *Passer domesticus* and woodpigeon *Columba palumbus*.

A12.12.29 The trees, woodland, hedgerows, areas of scattered scrub and tall ruderals within the survey area are assessed as being suitable to support common nesting bird species. Several relic bird nests were recorded within the area of woodland at the eastern extent of the survey area (**Figure 12.1, Target Note 1 (TN 1)**). Further surveys in respect to over-wintering and breeding birds were undertaken in 2019 and 2020. The findings of which will be used to inform the mitigation measures that will be implemented during the construction and operational phases of the Facility to minimise impacts to local bird populations. Further details of which are presented in the OLEMS.

Aquatic and Terrestrial Invertebrates

A12.12.30 The grassland, scrub, trees and woodland within the survey area may support, albeit limited, common species of terrestrial invertebrates. The tidal River

Witham and mudflats may also provide suitable habitat for common species of aquatic invertebrates.

A12.12.31 No further surveys have been undertaken for invertebrate species; however, mitigation measures are recommended during the construction and operational phases of the Facility to minimise impacts to invertebrate populations. Further details of which are presented in the OLEMS.

Summary

A12.12.32 Based on the findings of the 2018 (in combination with the 2017 survey findings) ecological surveys, the ecological receptors detailed in **Table A12- 2** will be considered further in **General Ecological Awareness**.

Table A12- 2 Summary of Ecological Receptors Scoped in for Further Assessment

Receptor	Scoped in/out of assessment	Reasoning
Statutory designated nature conservation site	Yes scoped in	The survey area does not extend across any part of a statutory designated site although Havenside LNR is located less than 50m north east of the Principal Application Site. Given the separation of the survey area (and the even greater separation of the terrestrial habitat within the Principal Application Site) from the LNR by The Haven, it is assessed that the Facility will not directly impact upon this designated site. However, the Facility has the potential to indirectly impact upon the species listed for this site's importance (i.e. oystercatcher, barn owl, bats and common seal) (BBC, 2015) via noise and visual disturbance. Mitigation measures, as detailed in the OLEMS, will be implemented during the construction phase of the Facility to minimise potential impacts to these species.
Non-statutory designated nature conservation sites	No scoped out	The survey area is not located within a non-statutory or proposed non-statutory sites of importance for nature conservation. No further surveys and/or mitigation are recommended in relation to the non-statutory sites due to the geographical separation for the survey area from these sites.
Habitats	Yes scoped in	The Facility will result in areas of habitat being lost. The north-eastern extent of the Facility 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 feedstock delivery. This loss of Priority Habitat would account for a very small proportion of the overall saltmarsh and mudflat habitat locally.
Invasive species	No scoped out	No invasive species recorded during surveys undertaken to date.
Badgers	No scoped out	Badgers have not been recorded within the survey area. General ecological awareness is detailed in Section A12.13 to minimise potential impacts to local badger populations.
Water voles	No scoped out	The ditches recorded within the survey area were all dry at the time of all surveys undertaken to date and therefore assessed as sub-optimal for water vole. As such, no further surveys are required. General ecological awareness is detailed in Section A12.13 to minimise potential impacts to water vole if present in the wider area.
Otters	No scoped out	Otters may utilise the tidal River Witham for commuting in the wider area. General ecological awareness is detailed in Section A12.13 to minimise potential impacts to otter if present in the wider area.

Receptor	Scoped in/out of assessment	Reasoning
Great crested newts and white clawed crayfish	No scoped out	Given the nature of the survey area and its immediate surrounds, in combination with the absence of suitable aquatic and terrestrial habitat within the survey area, it is unlikely that great crested newts and white clawed crayfish are present within the survey area. Therefore, no further surveys and/or mitigation measures are required and consequently these species are not considered further in this report.
Bats	Yes scoped in	The hedgerows and woodland habitats within the survey area provide suitable foraging and commuting habitat for bats. As the Facility will require the removal of these habitats, further surveys to understand their current usage by foraging/commuting bats will be required. In addition, mitigation measures will need to be considered during the construction and operational phases of the Facility to minimise impacts to local bat populations.
Reptiles	Yes scoped in	There are suitable habitats within the survey area for which reptiles could use. No further reptile survey will be required; however, mitigation measures will need to be considered during the construction and operational phases of the Facility to minimise impacts to local reptile populations.
Dormice	No scoped out	There is no suitable habitat for dormice within the survey area.
Birds	Yes scoped in	The Facility will result in direct and indirect impacts to birds because of disturbance and habitat loss. Therefore, mitigation measures will need to be considered during the construction and operational phases of the Facility to minimise impacts to local bird populations.
Aquatic and terrestrial invertebrates	Yes scoped in	The grassland, scrub, trees and woodland on site may support common species of terrestrial invertebrates. The tidal River Witham and mudflats may also provide suitable habitat for common species of aquatic invertebrates. No further surveys are required for invertebrate species, but mitigation measures are recommended during the construction and operational phases of the Facility to minimise impacts to invertebrate populations.

A12.13 Recommendations

A12.13.1 The ecological recommendations presented in this section has been included within the OLEMS.

Statutory Designated Sites

A12.13.2 The Havenside LNR Facility is located less than 50 m north-east of the Principal Application Site. Therefore, the Facility has the potential to indirectly impact upon the species for which the LNR is known to support (including oystercatcher, barn owl, bats, and common seal). The Facility is likely to result in noise and visual disturbance impacts on these species.

A12.13.3 A toolbox talk with respect to the species for which the LNR is known to support is recommended to be provided to the construction workers prior to construction, explaining what this species looks like, that works should cease if one is identified and the contractors' legal obligations with respect to this species.

A12.13.4 The proposed mitigation with regards to bat species is detailed in **Section A12.13.7**.

Habitats

A12.13.5 The Facility will result in the loss of Coastal Saltmarsh and Mudflat Priority Habitat habitats (0.99 ha and 1.54 ha respectively) to accommodate the proposed wharf facilities on the Haven for RDF feedstock delivery. This loss accounts for a very small proportion of the overall saltmarsh and mudflat habitat locally.

A12.13.6 Liaison with the RSPB, Lincolnshire Wildlife Trust and Natural England has been undertaken to establish appropriate design and mitigation measures with regards to these habitats. Consultation with the Marine Management Organisation (MMO) has also been undertaken in regard to the Facility. Further details of mitigation measures are presented in the OLEMS. A final LEMS will be produced as a requirement of the DCO and will include full details of a mitigation package.

A12.13.7 The detailed design of the proposed wharf will be sympathetic with regards to habitat loss, where enhancement measures, habitat compensation and creation

may all require consideration to result in an overall no net loss in Priority Habitat. Further details of which are presented in an OLEMS.

Bats

A12.13.8 No evidence of roosting bats was noted during the 2018 survey; however, the hedgerows and woodland areas within the survey area were assessed, and subsequently recorded, as providing suitable foraging and commuting habitat for bat species. Bat species are typically considered to be of high value and therefore as the Facility will result in the loss of these habitats.

A12.13.9 Noise and visual disturbance may result from any night working which may occur as part of the construction of the development. Lights and activity could also interrupt foraging and commuting activity.

A12.13.10 Mitigation to manage this impact will include the use of low pressure sodium lighting which will be located away from areas that could be used by bat species (i.e. hedgerow and woodland habitats) where possible. All lights will also be pointed away from these features.

A12.13.11 Consideration will be given to any new lighting required for the Facility to be designed (where safe and practical to do so) in such a way as to maintain (if not decrease) ambient night time light levels. This will be achieved by following accepted good practice guidance (BCT and Institute of Lighting Engineers (ILE), 2018), including but not limited to:

- Low pressure sodium lights are a preferred option to high pressure sodium or mercury lamps, and lights would be directed low with minimal light spillage; and
- Artificial lighting would not directly illuminate any potential bat commuting areas. Similarly, any newly planted linear features around the site boundary would not be directly lit.

A12.13.12 Enhancement measures for bats will also be incorporated into the development designs, for example the installation of bat boxes within suitable trees that will be retained. In addition, opportunities to incorporate additional planting will be incorporated within the design, with species of plants that attract insects (e.g.

oxeye daisy, yarrow, honey suckle and jasmine) being planted to encourage bats to forage within and around the survey area.

Reptiles

A12.13.13 There is potential for reptiles to be present within the working areas associated with the Facility. A reptile sensitive clearance methodology (under ecological supervision) will therefore be implemented prior to any construction works within the footprint of the Facility. This will ensure that any reptiles are safeguarded from the construction process.

A12.13.14 The reptile sensitive 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).

Birds

A12.13.15 The survey area contains suitable nesting bird habitat, such as areas of scattered and dense scrub, trees and hedgerows. The bird species recorded within the survey area are common species and are therefore considered to be of low value.

A12.13.16 All birds, their nests and eggs are protected by the Wildlife and Countryside Act 1981 (as amended) and it is an offence to intentionally take, damage or destroy the nest of any wild bird whilst it is in use or being built. Where there is a requirement for vegetation to be removed during the nesting bird season (March to August inclusive), a check of any vegetation to be removed would be required. An ecologist will need to check the area for nesting birds a maximum of 48 hours prior to the commencement of the works. Active nests and their associated vegetation/location must remain until young birds have left the nest and during this period an alternative approach to the works must be undertaken. Enhancement measures for these species (e.g. owl and other bird species

boxes) should be considered within the designs where possible to provide suitable habitat for species and ecological benefits.

General Ecological Awareness

A12.13.17 No evidence of badgers (e.g. setts, faeces, etc.). water voles, or otters was noted during the 2018 survey, although there is potential for these species to utilise the wider area for commuting and foraging.

A12.13.18 As such, it is recommended that toolbox talk with respect to these species is provided to the construction workers prior to construction. This will need to include:

- Legislation and legal obligations regarding these species;
- Field signs to look out for; and
- Who to contact in the event of discovering the presence of these species.

A12.13.19 With regards to badgers, all excavations will be covered when not working on site to avoid potential harm to badgers. Exit routes within each excavation shall be provided to allow route of potential escape.

A12.13.20 With regards to otters, all vehicles will be checked each morning before ignition and movement prior to works to ensure no otters are laying under the vehicles overnight. Any excavations dug will include an exit ramp overnight to allow egress for any trapped otter.

A12.13.21 If a badger sett or evidence of otter or water vole is discovered during the works, works should cease, and a suitably qualified ecologist consulted immediately.

Aquatic and Terrestrial Invertebrates

A12.13.22 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.

A12.14 Conclusion

A12.14.1 An Extended Phase 1 Habitat Survey was initially undertaken on 16th August 2017 and updated on 9th October 2018 by a Royal HaskoningDHV ecologist of the site in Boston. An ecological desk study was undertaken in 2017 and 2018 and re-checked in October 2020.

A12.14.2 The survey area does not extend to cover any statutory, proposed statutory, or non-statutory designated nature conservation site. The Havenside LNR is located less than 50 m north-east of the Principal Application Site.

A12.14.3 The main habitats, as recorded during both the 2017 and 2018 surveys, include:

- Semi-improved grassland with scattered scrub;
- Area of tall ruderals;
- Areas of scattered and dense scrub;
- Species poor intact hedgerow;
- Species rich hedgerow with trees;
- Areas of amenity grassland;
- Areas of bare ground (hard standing and areas of rubble);
- Areas of bare ground (with scattered scrub);
- Semi-natural broadleaved woodland;
- Dry ditches (drainage channels);
- Marginal vegetation; and
- Running water (brackish).

A12.14.4 There is no ancient woodland within the survey area.

A12.14.5 The Facility will involve a localised loss of Coastal Saltmarsh and Mudflat Priority Habitat habitats (0.99 ha and 1.54 ha respectively) to accommodate the proposed wharf facilities on The Haven for RDF feedstock delivery. The detailed design of the proposed wharf will be sympathetic with regards to habitat loss. Enhancement measures, habitat compensation and creation will also be considered to result in an overall no net loss in Priority Habitat. Further details of which are presented in the OLEMS, and will be in the final LEMS secured through a DCO requirement

A12.14.6 No evidence of roosting bats was noted during the surveys in 2017 and 2018. However, habitats such as hedgerows and woodland were assessed to provide

suitable commuting and foraging habitat for bat species. As such there remains the potential to disturb bats if present in the area. Bat species are typically considered to be of high value; however, it is understood that most of the existing vegetation (i.e. trees and hedgerows) will be retained as part of the Facility and where possible incorporated within the design. However, given as some vegetation will require removal, a suite of monthly activity transect surveys were undertaken between June and September 2019 to ascertain the current usage of the survey area by foraging/commuting bats.

A12.14.7 Mitigation to manage the potential noise, visual and lighting disturbance as a result of the construction works should include the use of low pressure sodium lighting which will be located away from areas that could be used by bat species (i.e. the hedgerow and woodland habitats) where possible, and no night time working should be undertaken. A toolbox talk will also be delivered to all construction workers with regards to the potential presence of bats and what to do if they are encountered. Should a bat be encountered during the works, works will cease in that area and the advice from an ecologist sought prior to commencing.

A12.14.8 Consideration will be given to any new operational lighting required for the Facility to be designed (where safe and practical to do so) in such a way as to maintain (if not decrease) ambient night time light levels. Enhancement measures for bats, for example including the inclusion of bat bricks or bat boxes into the development's design, should also be considered. In addition,

A12.14.9 opportunities to incorporate additional planting will be incorporated within the design and as part of the overall proposals, with species of plants that attract insects (e.g. oxeye daisy and yarrow) being planted to encourage bats to forage within and around the survey area.

A12.14.10 Any vegetation removal works associated with the Facility will be undertaken outside of the nesting bird season (March to August inclusive), although where this is not possible, a check by a suitably qualified ecologist prior to removal is recommended.

A12.14.11 There is potential for reptiles to be present within the Facility. Therefore, a reptile sensitive clearance methodology (under ecological supervision) will be implemented prior to any construction works within the footprint of the Facility to ensure that any reptiles are safeguarded from the construction process.

A12.14.12 No evidence for the presence of badgers, otters or water voles was detected during the surveys in 2017 and 2018. However, there remains potential for

badgers, otters and water vole to be present within the wider area. Therefore, it is recommended that a toolbox talk with respect to these species will be provided to the construction workers prior to construction, explaining identification measures for these species, what to do if one is identified and contractors' legal obligations with respect to these species. All vehicles will be checked each morning before ignition and movement prior to works to ensure no otters are laying up under the vehicles overnight, and any excavations dug will include an exit ramp overnight to ensure that should an otter fall into them they can escape. All excavations will be covered when not working on site to avoid potential harm to badgers. Exit routes within each excavation will be provided to allow a route of escape.

A12.14.13 The Facility will also 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.

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A12.15 Target Notes


Please note that the Target Notes (TN) presented in **Table A12- 3** below are to be read in conjunction with **Figure 12.1**.

Table A12- 3 Target Notes

Target Notes (TN)	Description	Photograph
1	Area of semi-natural broadleaved woodland	 A photograph showing a semi-natural broadleaved woodland area. The foreground is a mix of green grass and brown, bare earth. In the background, there are several buildings, including a red one, and a line of trees under a blue sky with some clouds.
2	Area of semi-improved neutral grassland	 A photograph showing a semi-improved neutral grassland area. The foreground is a lush green field of grass. In the background, there are several large, dark structures, possibly greenhouses or industrial buildings, and a line of trees under a blue sky with some clouds.

Target Notes (TN)	Description	Photograph
3	Area of bare ground (outside of the survey area boundary)	 
4	Creek filled brackish water 8 m x 30 m	

Target Notes (TN)	Description	Photograph
5	Small creek brackish water 5 m x 40 m Stony substrate, clear water.	
6	Intertidal mudflat area	
7	2 m amenity grassland verge. Earth bound before arable (ploughed field) bordered with scrub.	

Target Notes (TN)	Description	Photograph
8	Arable ploughed field fringed with grass species and tall ruderals.	
9	Arable ploughed field adjacent to road	
10	Patches of tall ruderals	

Target Notes (TN)	Description	Photograph
11	Area of bare ground and scattered scrub	