APPENDIX 3: ECOLOGY

INTRODUCTION

- This appendix provides an update to the ecological assessment carried out and published in the 3.1 original 2011 Environmental Statement for Heckington Fen Wind Park and focuses on potential changes in effects due to changes in habitats on the site or changes in species present or using the site. Annex 1 to this ecological assessment provides an updated phase 1 survey, DNA sampling for Great Crested Newts and an updated desk assessment.
- The ecological assessment follows the approach set out in the Chartered Institute of Ecology and 3.2 Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland (2016). The guidelines are based upon the baseline description of the ecological characteristics of the survey area, the evaluation of the habitats and species present (ecological receptors), the identification of ecological effects, the assessment of the significance of the identified ecological effects, the identification of mitigation to avoid or offset significant effects, and other enhancement measures to address any other identified effects.
- 3.3 The technical report, which was prepared following these surveys, can be found in Annex 1. The ecological surveys for the proposed wind turbine site at Heckington Fen focuses on the area defined as the 'developable area'; i.e., that area of the site within which the turbines and access roads will be located. The area surveyed is shown in Figure 1.

LEGISLATION

- International legislation includes the European Directive on the Conservation of Natural Habitats and 3.4 of Wild Fauna and Flora (92/43/EEC) and the Bern Convention, whilst national legislation considers the Wildlife and Countryside Act, The Conservation of Habitats and Species Regulations 2017 (the "Habitats Regulations 2017") and the Natural Environment and Rural Communities Act 2006 (NERC), as well as the National Planning Policy Framework (NPPF). Also relevant national legislation and guidance are the Hedgerow Regulations (1997), Tree Preservation Orders made under the Town and Country Planning act 1990, the town and Country Planning (Tree Preservation) (England) Regulations 2012, the UK Biodiversity Action Plan and England's Biodiversity Strategy 2020.
- Policy pertaining to the North Kesteven Local Plan (2007) is referenced in paragraphs 7.39 to 7.44 3.5 of the 2011 ES Ecology chapter. This has since been replaced by the Central Lincolnshire Local Plan (adopted April 2017).

STATEMENT OF COMPETENCE

3.6 Dr. Simon Pickering and Nadine Smykatz-Kloss carried out the assessment. Both are experienced ecologists and consultants. Dr. Simon Pickering has a Bachelor of Science with Honours degree in Biological Sciences from Hatfield Polytechnic and a degree of Doctor of Philosophy in Zoology from the University of Durham. He has worked as a professional ecologist for over 30 years and has been the Principal Ecologist at Ecotricity since 2008. He is responsible for overseeing the ecological assessment process for renewable energy as well as other development projects for the company and has experience of writing over 25 Ecological Impact Assessments (EcIA), the most recent ones

being for wind farms at Dulater Hill, Scottish Borders and Upper Sonachan, Argyll and Bute. Simon was a member of the Steering Group that oversaw the Defra Bats and Turbine research project. He has supervised several research projects on bats and turbines and is currently supervising a PhD Student at Bristol University on the potential value of ultrasonic deterrents.

3.7 Nadine Smykatz-Kloss is a professional ecologist with 20 years' experience in the environmental sector, of which 5 years' experience is as a part of the Ecology team with Ecotricity as a Senior Ecologist She has written 15 Phase I Habitat Survey reports, 7 EcIAs and two Ecology chapters since being with the company. In addition Nadine has provided expert witness at appeal hearings and holds protected species licences for bats and great crested newt.

METHODOLOGY

Desk Study Methodology

- 3.8 Data searches were requested for protected species from Lincolnshire Environmental Records Centre (LERC) in April 2018. Records of all protected plant and animal species (excluding birds) were requested within a five kilometre radius of the proposed development site centre. The search distance was increased to 15km for bat species. The National Biodiversity Gateway website (http://data.nbn.org.uk/) was also used to search for species records.
- 3.9 Any existing records of designated nature conservation sites (e.g. Sites of Special Scientific Interest (SSSI), and Local Wildlife Sites (LWS)) on the site and up to 5km away were obtained by a search of the MAGIC Database and a request for a data search to Lincolnshire Environmental Records Centre (LERC).

Field Survey Methodology

Extended Phase I

- 3.10 An extended Phase 1 habitat survey was conducted during a site visits on 23 April 2018. A walk over survey had previously been conducted in 2017 when water samples were taken to test from Great crested newt DNA. It was therefore already known that there had been no significant changes in the habitat present on the site. The area surveyed for the extended Phase 1 habitat survey was an area encompassing the developable area and a buffer extending to 500m from the proposed development where access was permitted. The original Phase 1 survey conducted in 2009 was used as a guide to target previously identified areas of ecological importance and check for any significant changes.
- 3.11 Target notes were used to identify areas suitable for particular species. The habitat types were recorded during the extended Phase 1 habitat survey using the standard methodology as outlined in the Nature Conservancy Council Handbook (1990) (see Figure 1: Updated Phase 1 Habitat Survey 2018). This method provides a broad overview of the habitat resource and aims to describe the character, distribution and importance of habitat types in the survey area. However, it does not provide an assessment of the botanical composition of each habitat type surveyed; this requires a Phase 2 or National Vegetation Classification Survey.
- 3.12 The survey involved searching for indications and/or signs of the following Protected Species:

Amphibians - water bodies and terrestrial habitat were assessed as to their potential to support amphibians; in 2017 water samples were taken from four water bodies to test for Great Crested Newt DNA.

Reptiles – the site was assessed for suitability for use by reptiles, and surveyors looked for casual reptile observations. In addition, suitable refuges and resting places (old carpets, sheets of metal, plastic or wood) were, where possible, lifted up to check for the presence of reptiles.

Water voles - the water courses and ditches found on the site were searched for evidence of water voles including latrines, nests in vegetation, sounds of voles entering water, tunnel entrances, cropped 'lawns' around tunnel entrances and feeding stations of chopped vegetation.

Hazel dormice - the land was searched for suitable dormouse habitat.

Badgers - the land was searched for evidence of setts, latrines, scratches on trees, badger hair on barbed wire across animal trails, snuffle holes or feeding activity.

Otters - the watercourses within and adjacent to the site were checked for signs of otter including 'spraint' deposited on prominent rocks, stones, logs or branches within watercourses and tracks and slides in soft mud adjacent to the watercourses.

Bats

An assessment of potential foraging habitat and roost sites within the land holding was conducted 3.13 during the extended Phase 1 surveys in 2018. There was specific focus on whether there had been any significant change in potential foraging habitat or roost sites within the survey area...

Assessment of significance

- This section describes the methodology used to assess the significance of effects of the proposed 3.14 development upon the non-avian ecological resources of the site. The methodology uses professional judgement to do the following:
 - Identify and value the nature conservation interest of the site in a systematic manner, i) establishing levels of interest for its main ecological features;
 - ii) Assess the likely magnitude of impact of the development on each feature of nature conservation interest; and,
 - iii) Assess the significance of ecological effects in relation to the level of ecological interest and impact magnitude.
- This approach follows guidelines on ecological assessments that have been produced by the Institute 3.15 of Ecology and Environmental Management (IEEM).

Receptor value

3.16 In an environmental impact assessment context, features of nature conservation interest are considered to be the ecological receptors. These are populations, species, communities, habitats and sites selected as likely to be affected (in a positive or negative way) by the environmental changes created by a proposed development.

3.17 The important ecological receptors define the nature conservation interest of the development site and must be valued to provide a basis for assessing the impacts of a development. Valuation usually seeks to assign a geographical frame of reference for the importance of an ecological receptor. Those used are as follows:

Table 3.1: Determining factors for nature conservation importance

Designation	Importance
International	Sites of international importance designated under the EU Habitat Conservation (SACs). Candidate also considered to be of internati Annex II of the Habitats Directive of the Conservation of Habitats a
National (i.e. England, Wales, Scotland or Northern Ireland	Special Scientific Interest (SSSIs designated under the Wildlife and their selection (JNCC, 1998), as Schedule 5 of the Act.
Regional	Local authorities and County Wild regional importance, designation include areas, habitats or species Plans.
County (or Metropolitan)	Local authorities and County Wild regional, county or district levels Conservation – SINCs) and the c
District (or Unitary Authority, City or Borough)	In some local authority areas the sites with sites of District or Boro or Metropolitan importance.
	21 of the National Parks and Acc local authorities ,Parish and Town
Local or Parish	Habitats within a parish of local in Nature Reserves or local designation
Within zone of influence only (site or study area).	Habitats of ecological importance ecological connectivity

3.18 Sites worthy of designation with habitat and/or species interest at any level must have a 'viable area' of habitat. Viability means that the area should be sufficient to maintain the habitat interest in adequate condition through appropriate management (which might involve some form of rotational

on the basis of their habitats or species are ts Directive and include Special Areas of or potential sites for these designations are ional importance. Species protected under and given UK protected status by Schedule 2 and Species Regulation 2010.

s) are of national importance and are d Countryside Act 1981 using guidelines on well as the presence of species listed in

dlife Trusts may have designated sites of criteria being published locally. This may s identified in regional Biodiversity Action

dlife Trusts may have designated sites at (e.g. Sites of Importance for Nature designation criteria may be published locally.

ere is a 2 tier system of designation of local ugh importance in addition to those of County

s a statutory designation made under Section ess to the Countryside Act 1949 by principal n Councils

mportance which may be designated as Local ations such as pocket parks or village greens

within the site such as hedgerows providing

manipulation of vegetation), as well as providing sufficient territory and suitable habitat for the breeding and wintering populations of species of interest.

- It is more difficult to judge a level of importance for study areas/sites with no designation. Ecological 3.19 resources contributing to the biodiversity or nature conservation importance of a study area may include:
 - 1. Internationally, nationally or locally rare or uncommon species, subspecies or varieties;
 - 2. Ecosystems or their parts supplying the requirements of populations of the above species
 - 3. Habitat rarity, diversity and connectivity;
 - 4. Communities typical of valued natural or semi-natural vegetation types
 - 5. Large populations of uncommon or threatened species;
 - 6. Species-rich assemblages;
 - 7. Species on the edge of their range; and,
 - 8. Typical faunal assemblages of homogenous habitats.
- Establishment of the level of importance relating to the ecological features found by the baseline 3.20 surveys firstly involves applying the criteria for designation of international, national and sub-national (where available) sites to the feature set. The approach should be to consider the ecologically coherent unit(s) of the study area and to establish as well as possible the extent of equivalent ecologically coherent units at the local, regional, national and international scales in order that the study area can be placed in context.
- 3.21 Reference to national and local Biodiversity Action Plans is necessary, although the biodiversity importance of a particular species must be judged in relation to its rarity, distribution (national and international, including consideration of its mobility), population size, status (e.g. population stable or declining) and priority according to biodiversity action plans.
- 3.22 Other aspects that may be important in the valuation of habitats and species include potential value (e.g. the potential for habitat enhancement or creation), social value (e.g. the value of the study area to local people for recreation and the enjoyment of wildlife), economic value (e.g. hunting and fishing interests or the value of the ecological interest as a tourist attraction), and secondary ecological value (e.g. buffer zones to areas of greater importance or areas that are important in ecological networks or corridors).
- 3.23 Legal protection must be considered and may apply to habitats and species that are rare and declining and are covered by statutory instruments such as the Conservation (Natural Habitats) & Regulations 1994, the Countryside and Rights of Way Act (CRoW Act) 2000 and the Wildlife and Countryside Act 1981. Species may be protected under legislation (e.g. parts of the Wildlife and Countryside Act 1981, the Protection of Badgers Act 1992 and the Wild Mammals (Protection) Act 1996) for reasons other than rarity. In these cases the ecological importance of the species concerned must be judged in their local context.

Potential Risk to Bats

Based on available information Natural England (in guidance note TIN051) have made a preliminary 3.24 assessment of species of bat and bat populations likely to be at risk from wind farms (Tables 3.2 and 3.3).

4038 P0245 02

Table 3.2: UK bat species likely to be at risk from wind turbines

Low Risk	Medium risk	High risk
<i>Myotis</i> species	Serotine	Noctule
Long-eared bats	Barbastelle	Leisler's
Horseshoe bats	Common pipistrelle	Nathusius pipistrelle
	Soprano pipistrelle	

Table 3.3: UK bat populations likely to be threatened due to impacts from wind turbines

Low Risk	Medium risk	High risk
Myotis Species	Serotine	Noctule
Long-eared bats	Barbastelle	Leisler's
Horseshoe bats		Nathusius pipistrelle
Common pipistrelle		
Soprano pipistrelle		

Predicting and characterising impacts

- 3.25 Following the identification of the activities likely to cause significant impacts, it is necessary to predict and characterise the resultant changes and to assess the impact on the valued ecological resource.
- In order to do this, it is necessary to take into account the effects the following parameters would 3.26 have on the ecological structure and function of the relevant feature.

Likelihood

3.27 A level of likelihood should be attached to both the occurrence of a predicted impact and the assessment of its ecological effect:

Table 3.4: Likelihood of occurrence

Likelihood	Definition
Certain/near-Certain:	Probability estimated at 95% chance or higher.
Probable	Probability estimated above 50% but below 95%.
Unlikely	Probability estimated above 5% but less than 50%.
Extremely Unlikely	Probability estimated at less than 5%.

Positive or Negative impact

In addition, a description of any potential impact also needs to address whether that impact will have 3.28 a positive or negative effect on the population level of a particular species or habitat.

Magnitude

3.29 The size or amount of an impact e.g. a small increase in the population of a rare species is displaced, or a total loss of the structure and function of semi natural grassland. Broad categories of spatial magnitude can be defined as below:

Table 3.5: Spatial magnitude criteria

Magnitude	Definition
Very High	Total loss or very major alteration to key elements/features of the baseline (pre- development) conditions such that the post development attributes would be fundamentally changed and may be lost altogether. Guide: >80% of population lost (or gained).
High	Major loss or major alteration to key elements/features of the baseline conditions such that the post development attributes would be fundamentally changed. Guide: 21-80% of population lost (or gained).
Moderate	Loss or alteration to one or more key elements/features of the baseline conditions such that post development attributes would be partially changed. Guide: 6-20% of population lost (or gained).
Minor	Shift away from baseline conditions. Change arising from the loss/alteration would be discernible but the underlying attributes would be similar to pre- development circumstances/patterns. Guide: 1-5% of population lost (or gained).
Negligible	Very slight change from baseline conditions. Change barely distinguishable, approximating to the "no change" situation. Guide: < 1% population lost (or gained).

Duration and Reversibility

The period over which the impact is expected to last prior to recovery and replacement of the feature 3.30 is considered. An irreversible (permanent) impact is one from which recovery is not possible. A reversible (temporary) impact is one from which recovery is possible.

Table 3.6: Temporal magnitude criteria

Magnitude	Definition
Permanent	Effects continuing indefinitely bey as approximately 25 years), ex- improvement after this period (e- trees which need >25 years to removal of a development. Suc- effects).
Temporary	Long term (15 - 25 years or long
	Medium term (5 – 15 years).
	Short term (up to 5 years).

Timing and frequency

3.31 Some changes may only cause an impact if they happen to coincide with critical life stages or seasons, such as the bird nesting season. The frequency of an activity should also be considered.

Effect significance

- 3.32 Having identified the ecologically important features likely to be affected by the development, the current IEEM guidance moves away from the use of a matrix in which ecological value and magnitude of impact are combined to determine different grades of significance based on subjective assessment. Instead, a transparent approach is promoted in which an impact is determined to be significant or not on the basis of an evaluation of the factors that categorise it.
- Significant effects encompass effects on structure and function of defined sites and ecosystems. 3.33
- 3.34 For designated sites it needs to be determined whether the project and associated activities are likely to:
 - Undermine the site's conservation objectives or affect the conservation status of species or habitats for which the site is designated either positively or negatively; or,
 - · Whether it may have positive or negative effects on the condition of the site or its interest/qualifying features.
- For ecosystems it needs to be determined if the project is likely to result in a change in ecosystem 3.35 structure and function. Consideration should be given to whether any processes or key characteristics will be removed or changed; whether there will be an effect on the nature, extent, structure and

yond the span of one human generation (taken xcept where there is likely to be substantial e.g. the replacement of mature trees by young reach maturity, or restoration of ground after ch exceptions can be termed very long term

er)

function of component habitats; or whether there is an effect on the average population size and viability of component species.

- 3.36 Consideration of functions and processes acting outside the formal boundary of a designated site is required, particularly where a site falls within a wider ecosystem e.g. wetland sites. Predictions should always consider wider ecosystem processes.
- 3.37 Many ecosystems have a degree of resilience to perturbation that allows them to tolerate some biophysical change. Ecological effects should be considered in the light of any information available or reasonably obtainable about the capacity of ecosystems to accommodate change.

Habitats and species

- Consideration of conservation status is important for evaluating the effects of impacts on individual 3.38 habitats and species and assessing their significance.
- For habitats, the conservation status is determined by the sum of the influences acting on the habitat 3.39 that may affect its extent, structure and functions, as well as its distribution and its typical species within a given geographical area.
- 3.40 For species, the 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.
- 3.41 In many cases (e.g. for species and habitats of principal importance for biodiversity), there may be an existing statement of the conservation status of a feature and objectives and targets against which the effect can be judged. However, not all species or habitats will be described in this way. The conservation status of a habitat or species will vary depending on the geographical frame of reference.
- 3.42 When assessing potential effects on conservation status, the known or likely background trends and variations in status should be taken into account. The level of ecological resilience or likely level of ecological conditions that would allow the population of a species or area of habitat to continue to exist at a given level, or continue to increase along an existing trend, or reduce a decreasing trend, should also be estimated.

Limitations of assessment

- 3.43 It is neither possible nor intended to cover the entire ecology of a site during a survey such as this. This report will nonetheless identify the probable value of the site in nature conservation terms, based upon the survey data gathered. It does not attempt to describe the total ecological composition of the study area.
- Although best practice was followed for the faunal field surveys, the species in question are secretive 3.44 animals and it is guite possible that some field signs were overlooked. In addition, usage of a site by many mammal species for foraging, shelter and as a transit route varies with season, and the surveys carried out therefore represent only 'snapshots' of activity on the site. It should also be noted that absence of recorded field signs is not necessarily evidence that a particular species is not utilising an area. However, this report will identify the probable value of the site for the pertinent species, based upon the survey data gathered.

BASELINE CONDITIONS

3.45 This section provides a summary of available desk-based information, and the results of field surveys and consultations.

Desk Studies

Statutory designed sites

There are no European (Ramsar, SAC & SPA) or national (SSSI, NNR, LNR) statutory designated 3.46 sites within 10km of the site. The nearest SSSI is Horbling Fen SSSI located 11.5km to the southwest of the site, designated for its geological interest. The Wash, situated approximately 17km to the southeast of the site at its nearest point, is the nearest SAC, SPA and Ramsar site. See Figure 2 for locations of statutory designated sites surrounding the site.

Non-Statutory designated sites

- 3.47 There are seven local wildlife sites and 2 SINCs within a 5 km radius of the site.
- 3.48 Cole's Lane Ponds Local Wildlife Site (LWS) is located 6km southeast of the site. The site consists of two ponds surrounded by bankside trees and scrub. There is an area of wet grassland to the west and north of the smaller pond.
- 3.49 South Forty Foot Drain LWS is located approximately 1km to the south of the site. This is a manmade watercourse with bankside vegetation comprising rough neutral grassland, scrub and trees. The site is a good corridor linking the centre of Boston with the River Witham.
- Old Forty Foot Drain and Old Forty Foot to South Forty Foot Drain are LWS approximately 5 km to 3.50 the south of the site designated for aquatic plants and coarse to neutral grassland banks
- 3.51 Broadhurst Drain East LWS is approximately 5km of the site designated for aquatic plants and neutral semi-improved grassland.
- 3.52 Mill Drain LWS is approximately 6 km distance of the site, designated for aquatic plants and neutral grassland semi-improved grassland banks.
- 3.53 Willow Farm Drain is approximately 6 km southwest of the site, designated for aquatic plants coarse grassland banks.
- 3.54 Heckington Grassland Site of Nature Conservation Interest (SNCI) is located approximately 5km to the east of the site. This site consists of grassland bordered by hedgerows and is used by a variety of breeding and over-wintering birds.
- Old Wood South Kyme SNCI is located approximately 5km to the north of the site, and is an area of 3.55 woodland with Ash coppice, scrub, Elm and tall herbs.
- 3.56 See Figure 2 for locations of non-statutory designated sites surrounding the site.

Protected Species

Amphibians

3.57 One old (1977) great-crested newt record was reported in the 2011 ES (Chapter7 paragraph 9.79) from the 1km grid square to the west of the site. Several common amphibian records were revealed from the area surrounding the site, reported in the 2011 ES (Chapter 7 paragraph 9.79). However there no further amphibian records from the site since 2009.

Reptiles

3.58 Two historical grass snake records were revealed from the 1km grid square north of the site, dating from 1977 (reported in the 2011 ES Chapter 7 paragraph 9.78), No further reptile records since 2009 were provided for the area.

Mammals

- Numerous mammal records were reported in the 2011 ES Chapter 7 paragraph 7.99 to 7.103. 3.59
- 3.60 Since 2009 there have been ten further records for European water vole, eight records for brown hare sixteen records for European otter and ten records for Badger (see Figure 3: Protected Species - Mammals 2009 to 2017).

Habitat Surveys

General site location

- This site is made up of 604 hectares of farmland situated in the Fens Natural Area. Due to the 3.61 presence of high quality agricultural soils, arable farmland comprises a major proportion of the habitats currently present within the Natural Area. This widespread habitat includes ecologically important features such as hedgerows and mature trees, ditches and ponds, drains and small watercourses and rough grassland such as is found alongside tracks and on road verges. These habitats give much of the character to the Natural Area and support a wide range of species, including some that have undergone dramatic recent declines such as skylark and grey partridge.
- The site is located some 11km west of Boston at Heckington Fen, in Lincolnshire. The survey area 3.62 is diamond shaped being approximately 2.5 km by 2.2 km centred on grid reference TF 208 457. The area comprises largely of Six Hundreds Farm situated to the south and west of the main Head Dyke-Skerth Drain and north of the A17 trunk road. The farm consists of arable farmland with large open fields growing winter wheat, winter barley and winter sown oilseed rape. The habitats identified on the site can be seen in the Figure 1: Phase 1 Habitat Survey Plan.

Habitat within the site

Hedges, woodland and individual trees.

3.63 There are three young plantations of mainly small young deciduous trees within the site, largely to provide pheasant cover. These are located to the north, northwest and west of Six Hundreds Farm. The plantation south of Six Hundreds Farm is more mature and contains some standard Ash and Oak trees. There are two short lengths (in total approximately 380m) of species-poor hedgerows on the site, to the south of Six Hundreds Farm, with Hawthorn, Blackthorn, Ash, Dog Rose and Bramble; and there are a number of standard trees and areas of scattered scrub.

Drainage Ditches

- 3.64 The land is drained by a network of drainage ditches which also act as field boundaries; many of these are less than 1 metre in depth and 1.5m in width. Some of these hold water on a permanent basis and others were only seasonally wet ditches. Many of the dry ditches were choked with vegetation including Typha, sedges, rank grasses and some bramble. Some of the major drains present were more than 2.0m in depth and up to 3.5m in width and permanently held water and contained plants such as Frogbit Hydrocharis morsus-ranae and Broad-leaved Pondweed Potamogeton natans as well as Phragmites and other riparian vegetation.
- 3.65 Head Dyke-Skerth Drain is an Environment Agency main river which runs along the northern edge of Six Hundreds farm before passing in a north-west to south-eastern direction separating Six Hundreds Farm from Spinney Farm. Head Dyke-Skerth Drain is a large, deep, canalised permanently wet drain approximately 5m wide with steep sides. There are two pumping stations on the site which allow the water level of the drains across the site to be regulated by moving water into the Head Dyke-Skerth Drain. Permanently wet drains approximately 2m wide run parallel to the Head Dyke-Skerth Drain on each side. Holland Dyke forms the eastern boundary of the site. This is also a permanently wet drain which drains into Head Dyke-Skerth Drain at Trinity College Pumping Station.

Grassland

3.66 The arable fields were generally cultivated right up to the field margins resulting in very few areas of botanical or ecological importance. A few of the intensively farmed arable fields and most of the tracks were bordered by broad rough species grassland. Head Dyke-Skerth Drain runs between two builtup earth banks, with smaller drains on either side. These banks are grassed and used for grazing sheep and cattle.

Buildings

- There were twelve buildings on the site. At Six Hundreds Farm buildings there were four modern 3.67 agricultural barns, a single storey barn/stables, a two storey barn, an open-fronted barn, a small electricity building and a row of two semi-detached disused two storey houses. The houses had an overgrown mature garden with fruit trees, surrounded by tall hedges.
- In addition to the farm buildings there are two pumping stations present on Head Dyke-Skerth Drain, 3.68 and two concrete bridges which span the Head Dyke-Skerth Drain. At Spinney Farm to the northeast of the site there was a single storey barn which was included in some of the surveys.

Species surveys

Flora

None of the plant species recorded during the survey are specifically protected by the Wildlife and 3.69 Countryside Act (WCA) 1981 (as amended) or considered rare nationally or locally (e.g. Preston et al. 2002). Also, none are listed as Species of Principal Biological Importance on Section 41 of the NERC Act 2006 or as Priority Species listed on the national BAP (UK BAP 2007). Further details of the species present are provided in Annex 1: Updated Extended Phase 1 Habitat Survey.

Amphibians

3.70 Common frog, common toad were recorded in several of the sections of drains surveyed. No great crested newts were recorded during trapping in 2009. However, in one of water samples collected in 2017 returned a 1 in 12 potential for the presence indicated the present of Great crested newt DNA.

Reptiles

The site is largely unsuitable for reptiles due to the lack of suitable rough grassy areas for foraging 3.71 or breeding. No casual observations of basking reptiles were made at the site during the Phase 1 visits. The grassy banks adjacent to the canalised Head Dyke-Skerth Drain may possibly support a relict population of reptiles. However, this area is beyond the development footprint and will not be affected by the wind farm construction.

Water vole

3.72 Whilst some of the ditches on the site which permanently hold water appeared to provide potentially suitable habitat for water voles. No evidence of water voles was observed at the site. American mink (Neovison vison), a major predator of water voles, were recorded on the site in 2009. During the 2018 survey a single mink was seen and scats (dropping) were recorded under one bridge (Figure 1). Mink can cause the extinction of water voles populations and prevent re-colonisation. Their continued presence along with the fact that large parts of the ditch network are only seasonally wet, may explain the lack of water voles.

Hazel dormouse

3.73 There is no habitat suitable for hazel dormice within the site; and no historic evidence of the presence of hazel dormice in the area.

Bats

The extended phase 1 survey in April 2018 recorded no significant change in the extent of suitable bat foraging habitat on the site and no significant changes in building where small common pipistrelle bat roosts were identified in 2009. The 2018 survey recorded no significant change in potential bat roost sites in trees identified in 2009. It is therefore considered that it is highly unlikely that there will be a significant change in bat use of the site compared to 2009. The continued intensive arable cultivation of the site and associated use of pesticides combined with national declines in flying invertebrates (principle food source of bats) may mean the quality of bat foraging habitat may have declined since 2009. Extensive surveys in 2009 recorded a low number of (common pipistrelle) bats using the site. Out of a total of 97 hours of bat transect surveys only 212 bat passes were recorded on the site. Activity concentrated around Holland Dike and Head Dyke-Skerth Drain, the larger

woodland block and the buildings. Records of small numbers of myotid bats (likely to be Daubenton's (Myotis daubentonii)) and a possible brown long-eared bat were observed on the site. The highest concentration of bats was along the banks of Head Dyke-Skerth Drain to the north of the site.

Badger

3.74 In April 2018 a total of 6 badger setts were recorded within the surveys area along with 7 latrines (see Figure 6: Confidential Badger Survey). There were two larger setts with multiple active holes, whilst the remainder were single hole outlier setts. Whilst badger foot print and track were recorded on the site in 2009 no active sett were recorded during those survey. Badgers have colonised the site since 2009. The latrines, which are used by badger for marking territory boundaries, were very well used in certain part of the site indicating that there is probably two separate badger clans using the site.

Otter

No evidence of otters was observed at the site during 2009 or 2018 surveys; however, some of the 3.75 main drains and ditches on the site appeared potentially suitable for use by otters.

ASSESSMENT OF EFFECTS

Effects to be assessed

Construction impacts

- A range of construction activities would be required for the various elements of the project. These 3.76 include a temporary construction compound, storage of construction materials, temporary access routes on and within the site, vegetation clearance, soil removal, ground and excavation works, routing of connections to the grid, assembly areas for components of the turbine, construction of the concrete foundations and construction traffic.
- The total landholding of the site is 604ha, however, the actual area to be developed (turbine 3.77 foundations, hard standing areas, access tracks, construction compound and substation) totals approximately 9.98ha (1.65% of landholding). Post construction this area will reduce further to 9.62ha (1.6% of landholding) as the foundation area is allowed to grass over. Each standard turbine foundation has a maximum diameter of 16.2m and depth of 2.1m (see 2011 ES Figure 4.2: Proposed Site Plan).
- 3.78 Construction effects are defined in **Table 3.6** as those caused by general construction activities and cabling. The impacts amount to disturbance followed by restoration of vegetation, and temporary disturbance to fauna. The construction of the wind farm will take place over a period of approximately 12months, although there will be a construction break of 4 weeks during this period for each turbine as detailed in Table 4.5 of Chapter 4: Project Description of 2011 ES

Table 3.6: Construction effects to be assessed

Construction Effects	Impact	Potential Effects on Receptors
General	Temporary, noise, vibration, movement and physical disturbance of vegetation	Loss or disturbance of habitat and fauna
Cable laying	Temporary, noise, vibration, movement and physical disturbance of vegetation	Loss or disturbance of habitat and fauna
Foundations	Removal or alteration of habitat	Loss of habitat
Tracks	Removal or overlaying of vegetation	Loss of habitat
Sub-station / control	Removal of vegetation	Loss of habitat
building		
Crane pads / lay down areas	Removal / overlaying of vegetation	Loss of habitat

Operational impacts

3.79 Ongoing and operational effects are defined in Table 3.7 as habitat or species loss due to site infrastructure.

Table 3.7: Operating effects to be assessed

Operating Effects	Impact	Potential Effects on Receptors
Foundations	Removal or alteration of habitat	Loss of habitat
Tracks	Removal or overlaying of vegetation	Loss of habitat
Sub-station / control building	Removal of vegetation	Loss of habitat
Service and Maintenance	Vehicle movements / personnel on site	Disturbance of species
Turbines	Noise and movement, medium intensity obstacle lighting	Disturbance / Collision risk to species

Decommissioning impacts

- 3.80 Due to the fact that the decommissioning process will not take place for 25 years, after the turbines become operational, it is difficult to predict the ecological impacts the decommissioning process particularly as current climate change models predict significant changes in average seasonal temperatures and rainfall which may results in significant changes in flora and fauna using the area. Agricultural practices in the area may also change over the next 25 years. However, decommissioning is likely to have similar impacts to those given above for construction, although over a much shorter period of time.
- 3.81 It is standard practice for the turbine towers and blades to be removed from the site by the same means as they arrive, but for the foundations and access tracks to remain on the site, but be covered with topsoil, enabling green cover to establish over the turbine site. Underground cables, disconnected from the local grid, could also remain in the ground. This minimises the level of disturbance to the area and allows for any vegetation which has established itself over the lifetime of the proposed development to remain undisturbed.
- 3.82 Prior to removal, an ecological assessment will be carried out in the year prior to removal and a full Environmental Management Plan will be prepared. Decommissioning should avoid the bird breeding season. At the time of the decommissioning the developer will consult with Natural England (or the appropriate contemporaneous authority) to check whether any specific measures are required to protect any ecological interests on, or near to, the site.

Ecological Receptors to be considered

- 3.83 The ecological receptors (habitats and species) found on or adjacent to the site are considered in this section.
- The extended Phase 1 survey did not identify any suitable habitat for hazel dormice and the further 3.84 surveys did not find any evidence for water vole and reptiles. Although it was considered possible that small remnant populations of reptiles could be present, the areas that could be used by these species will remain unaffected by the development. There was no evidence of water vole recorded during the 2018 extended survey and combined with the confirmed presence of American Mink is considered that despite the presence of suitable habitat there are no water vole present on the site water vole and reptiles are, therefore, not considered further in this section.

Construction

Statutory designated sites

Evaluation

3.85 There are no international or national statutory designated sites within the developable area or within 10km of the site.

Characterisation of impacts and significance

3.86 Prior to mitigation it is certain that there will be **no** impact on statutory designated sites.

Mitigation

None required. 3.87

Non Statutory Designated site

Evaluation

3.88 Cole's Lane Ponds LWS and South Forty Foot Drain LWS are both located within 1km of the site. Heckington Grassland and Old Wood Kyme SNCI's are both approximately 5km away. Old Forty Foot Drain and Old Forty Foot to South Forty Foot Drain LWS, Broadhurst Drain East LWS, Mill Drain LWS and Willow Farm Drain LWS are all greater than 5km from the site. These are of county importance.

Characterisation of impacts and significance

There will be no development within any non statutory designated site and there will be no direct or 3.89 indirect effects on them. Therefore it is certain that, prior to mitigation, there will be no negative **impact** on these non statutory designated sites.

Mitigation

3.90 None required.

Habitats – Trees and woodland

Ecological evaluation and assessment

- There are three young plantations of mainly small deciduous trees scattered around Six Hundreds 3.91 Farm, and one mature plantation. These are of site interest.
- 3.92 There are seven small mature trees located within the site, within the deciduous plantations and along the drains. These are of site interest.

Characterisation of impacts and significance

- There will be at least 160m between the deciduous plantation north of Six Hundreds Farm and the 3.93 nearest turbine, and 170m between the small plantation west of Six Hundreds Farm and the nearest turbine. The plantations will not be removed during the works, and it is extremely unlikely that there will be any significant disturbance to them. Prior to mitigation it is therefore probable that there will be no negative impact on the plantations.
- 3.94 No mature trees will be removed during the construction of the turbines or access tracks. Therefore, prior to mitigation it is certain there will be no negative impact on the mature trees.

Mitigation

3.95 None required.

Habitats – hedgerows

Ecological evaluation and assessment

4038 P0245 02

3.96 There are two small sections of intact species-poor hedgerows, totalling approximately 380m. These are remnant sections of hedge and do not form links between habitat features. They are of low (site) conservation significance.

Characterisation of impacts and significance

There will be no construction of turbines or access tracks within 100m of any of the sections of 3.97 hedgerow. Therefore prior to mitigation it is certain there will be no negative impact on hedgerow habitat of local importance.

Mitigation

None required. 3.98

Habitat –Standing water

Evaluation

3.99 The site is divided by a network of drainage ditches and drains, several of which hold water permanently. These have not been found to support great crested newts, but are used by common frogs, common toads and smooth newts, as well as fish species. Dragonfly and damselfly larvae were found in sweep netting surveys, along with other invertebrates indicating that water quality in ditches across the site was generally good. These are of site interest.

Characterisation of impacts and significance

- 3.100 Construction of the turbine access tracks will involve crossing 11 dry and one wet ditch. This will involve inserting pipe culverts into the ditches, which will cause some damage to the ditches and may potentially cause damage to the species using it.
- 3.101 There is a potential risk of damage to the remainder of the ditches and species using the drainage ditches if construction occurs close to the bank of ditches. If during construction there is a period of heavy rain there is a small risk of increased silt run-off. Prior to mitigation it is therefore probable there will be a negligible negative impact.

Mitigation

3.102 An engineering solution and associated pollution prevention plan (PPP) will be employed as part of the construction method statement to ensure that contaminated or silt laden run-off is prevented from reaching any water bodies or water courses.

Residual Significance

3.103 It is certain that after mitigation there will be **no significant negative impact** on watercourses during the construction phase.

Protected Species - Badgers

Evaluation

There are six setts within the survey area and numerous signs of badger activity include seven active 3.104 latrines were recorded on the site. Badger were not recorded in 2009 but have colonised the site

since that time. The location and level of activity in the latrines (they are used for sent marking the boundaries of clan territories suggested that there are now at least two clans using the site. These populations would be of local importance.

Characterisation of impacts and significance

The two main sett and 3 of the single hole outlier sett were over 100m from turbine and track 3.105 location. Therefore construction work will not cause sett disturbance to these setts. One outlying sett (single hole) was located in the bank of ditch adjacent to the proposed route of one of the access tracks. The current sett location is approximately 8m from the proposed access track therefore during track construction there is a potential risk of disturbance. However it should be noted that this single sett is approximately 3m from the edge of the arable which is cultivated each year. Therefore is potential for temporary disturbance during construction which may be significant on this one sett if occupied during the time of construction.

Mitigation

3.106 Detailed badger survey will be conducted prior to construction to assess the whether this single hole outlying sett close to the access track is still active and if any other new setts have been dug close to access track or turbine locations. An assessment will be made as to the risk of disturbance to any active setts close to infrastructure. If it is considered that disturbance is likely to significant a licence temporary exclusion will be sort to prevent badger using the outlying sett during the period of construction.

Residual significance

There will be no residual significance. 3.107

Protected Species - Otters

Evaluation

3.108 The permanently wet drains (Head Dyke-Skerth Drain, Holland Dike and several of the smaller drains) are considered suitable for use by occasional foraging and commuting otters. No otters or signs of otters were recorded on the site during the surveys. The otter population in the area is considered to be of regional importance.

Characterisation of impacts and significance

3.109 Construction of the access tracks will involve inserting short sections of pipe culvert into only one of the smaller wet drains, to the north of Six Hundreds Farm. The large main drains (Head Dyke-Skerth Drain, Labour in Vain Drain, the unnamed drain running north-south through the site and Holland Dike) will not be affected by the development. There are approximately 5450m of permanently wet drain on the site, of which approximately 10m will be affected (0.18 %). It is extremely unlikely that any otters which may make occasional use of the smaller wet drains would be disturbed by this. It is therefore considered likely that there will be no negative impact on otters.

Further surveys

3.110 As the habitat was suitable for use by otters and because they are known to be present in the surrounding areas, a precautionary approach will be necessary. Further otter surveys will be carried

Protected Species – Great crested Newts

Evaluation

3.111 No great crested newts were recorded during trapping in 2009. However, in 2017 an eDNA survey for great crested newts was conducted at four locations across the site. The result where negative from three locations but returned a potentially positive result from one location. This returned a 1 in 12 potential for the presence of great crested newt DNA at one location, indicating that there may be evidence of great crested newt DNA in the water which may indicate a low population present. The result also shows that this may not be a breeding population or great crested newts actually on the site. There is only one confirmed record since 1977. The ditch where the potentially positive sample was taken is a seasonally wet ditch, not one of permanent drain on the site. Thus in many years it is likely that there is no water in this ditch for the period of the great crested newt breeding season The ditch where the potentially positive sample was taken is adjacent to an abandon track which has become over grown with rough grassland and a small amount of scrub. This is suitable terrestrial habitat for great crested newts.

Characterisation of impacts and significance

3.112 Construction of the access tracks and turbines will not impact on one drain where a potential great crest newt population was identified or the nearby pond. The intensive arable farmland between the nearest turbine and this nearby drain is unsuitable habitat from great crested news In the event great crested newt are in the future confirmed to colonise the site the proposed construction is highly unlikely to have any effect on any populations. It is therefore considered likely that there will be no negative impact on great crested newt, however a precautionary approach will be taken.

Mitigation

3.113 Further surveys included water samples to test for DNA and full surveys will be carried out in the season before construction to confirm presence. If great crested newts are confirmed to be present suitable mitigation will be implemented which will include the temporary placement of newt fencing between the drain and the nearest construction area and further enhancement of the nearby pond.

Residual significance

3.114 There will be no residue significant effects.

Protected Species – Bats

Evaluation

- 3.115 There has been no significant change in the amount of foraging habitat for bats since 2009 therefore it is considered highly unlikely that there will be any change in the risk to bats.
- 3.116 There was a low level of common pipistrelle bat activity over the site recorded in 2009. A high proportion (25%) of the total number of foraging bats were recorded along the Head Dyke-Skerth Drain and Holland Dike, with the remainder largely associated with sheltered linear features, smaller

drains and close to buildings. Several (mostly individual) myotid bats (likely to be Daubenton's) were recorded over the site, largely associated with Head Dyke-Skerth Drain, and a single probable brown long-eared bat was recorded at the northeast part of the site. No bat species considered to be at high risk from wind turbines were recorded

In 2009 a small number of roost sites in the farm buildings were identified, used by individual common 3.117 pipistrelle bats, located away from any proposed turbines. Maximum counts of five individuals at Barn B6 and one at the house B7 were recorded roosting at Six Hundreds Farm, and two at barn B14 at Sedland Farm. The small population of bats present in the site is considered to be of local importance. There has been no change in the structure of these roost since 2009.

Characterisation of impacts and significance

- 3.118 No roost sites or potential roost sites will be damaged during construction of turbines or associated infrastructure, and there will be no construction of turbines within 200m of any roost sites.
- There will be no loss of foraging habitat due to the construction of the turbines and therefore prior to 3.119 mitigation there will be no significant negative impacts.
- 3.120 Safety lighting may be used in the construction compound. While some lighting can sometimes disrupt commuting flight paths of some bat species, the species of bat recorded on site are not disturbed by lighting, unless close to a roost and they may even be attracted to feed on insects around bright white lighting¹.

Mitigation

3.121 Any lighting required for safe working would be limited to winter use when bats are inactive. If security lighting is required during the summer this will be of low intensity and only be used within the construction compound and directed away from the buildings and any important bat features.

Residual Significance

3.122 It is certain that after mitigation there will be **no significant impact** on bat populations during the construction phase.

Operation

Statutory and Non Statutory designated sites and Habitats

Evaluation

There will be **no operational impact** of the proposed wind turbines on any habitat or designated site. 3.123

Characterisation of impacts and significance

3.124 Not significant

Mitigation

3.125 None required.

Protected Species – Badgers

Evaluation

3.126 There are currently six active sett within the wider site. All but one are over 100m from access track or turbine locations. There is one outlying sett (single hole) approximately 8 m from one access track.

Characterisation of impacts and significance

3.127 Access for maintenance of turbines will be by van along the access tracks. The frequency of movement by maintenance vehicles each year will be significantly less than the typical annual vehicle movements associated with agricultural practice on the site. It is certain that there will be no significant impact on badgers during the operational phase.

Mitigation

3.128 None required.

Protected Species – Bats

Evaluation

- 3.129 There has been no significant change in the amount of foraging habitat for bats since 2009 therefore it is considered highly unlikely that there will be any change in the risk to bats. There was a low level of bat activity over the site with a large proportion of foraging common pipistrelles recorded close to Head Dyke-Skerth Drain and Holland Dike, The closest turbine is over 250m to the south of this dyke. There was a lower level of activity along the smaller drains, close to the woodland and around the buildings. Several recordings of probable Daubenton's and one brown long-eared bat were made. No noctules or other high-flying, high-risk, bats were recorded on the site. A small number (up to six) of individual common pipistrelles were roosting in farm buildings at Six Hundreds Farm. These buildings are over 200m from the closest turbines.
- There is concern, particularly in mainland Europe and America that onshore and offshore wind 3.130 turbines in certain locations can be a collision or barotrauma² hazard to bats if they fly close to moving turbines. The most serious incidents have involved migratory tree-dwelling bat species that fly very high and for long journeys across North America. The latest interim guidance from Natural England¹² states:

² Baerwald E,F, D'Amours G, H, Klug,B, J and Barclay R M R 2008 Current Biology, Volume 18, Issue 16, R695-R696, 26 August 2008

¹ Rydell J & Racey, P A (1993) Street lamps and the feeding ecology of insectivorous bats. Recent Advances in BatBiology Zool Soc Lond Symposium abstracts

"that most bat species in the UK are unlikely to come into contact with the blades during their normal movements, because, to the best of our knowledge, these bats do not migrate at high altitude and rarely fly at heights that intersect with the blades".

Characterisation of impacts and significance – Bat flight

Common pipistrelle, brown long-eared bat and Myotis populations are considered by Natural England 3.131 to be at low risk from wind turbines (see Table 3.2 and 3.3). Direct observations on this site combined with the low level of activity and the location of foraging indicates that these animals are very unlikely to come into direct contact with any wind turbines erected on this site. Therefore it is considered that prior to mitigation there will be a negligible negative impact on these populations.

Mitigation

- 3.132 The turbines will be located in the centre of the site and the blade sweep will be over 50m from Head Dyke-Skerth Drain and Holland Dike, the area of highest activity.
- 3.133 The location of turbines has been designed to ensure the sweep of the blades is at least 50m from hedgerows, trees and wet drains likely to be used by foraging bats in accordance with natural England guidance TIN051. The turbines are at least 200m from any buildings used by small numbers of roosting bats. These roosts will be monitored following the construction of the turbines to ensure their continued use.
- 3.134 All hedgerows within the site will be managed so that they are tight and low which makes them less attractive for foraging bats (Barndt et al 2007)³.

Residual Significance

3.135 It is certain that after mitigation there will be **no significant impact** on bat populations during the operational phase.

DECOMMISSIONING

3.136 Decommissioning is likely to have similar impacts as to those in construction, although over a much shorter period of time. However, there may well have been significant changes in habitat and species present on the site due to predicted changes in climate and associated changes in any use of the surrounding area. Therefore, further surveys will be required prior to the assessment of any impacts on particular species or habitats. The turbine towers and blades will be removed from the site by the same means as they arrive, but the foundations will remain on the site unless otherwise specified. This minimises the level of disturbance to the area and allows for any vegetation which has established itself over the lifetime of the proposed development to remain undisturbed. Therefore the impact of decommissioning is likely to be significantly less than that of construction.

MITIGATION

Design mitigation

- Access track routes and turbine locations have been selected to ensure that there is no loss of 3.137 existing hedgerows.
- 3.138 The location of turbines has been designed to ensure that the sweep of the blades is at least 50m from hedgerows, trees and wet drains likely to be used by foraging bats in accordance with natural England guidance TIN051. They are also at least 200m from any roosts used by individual bats.
- 3.139 Access routes and turbine locations have been designed so there will be no construction within 9m of any water courses except to provide new crossings.
- 3.140 An engineering solution and associated pollution prevention plan (PPP) will be employed as part of the construction method statement to ensure that contaminated or silt laden run-off is prevented from reaching any water bodies or water courses.

Construction mitigation

- 3.141 Other measures involving avoidance, reduction and enhancement, will be implemented during construction in order to offset effects identified in the previous section. These include:
 - 1) The use of noisy earth-moving machinery which will be restricted to normal working hours, to reduce levels of disturbance generally to wildlife in the area;
 - 2) Any lighting used for the construction process will be installed in such a way as to avoid excessive illumination of areas of scrub, hedge, trees or woodland. Directional lights will be used, in keeping with considerations of human safety, to reduce light pollution to areas important for wildlife. Lighting the working areas at night during the summer will be avoided;
 - 3) Preparation and implementation of an overall Environmental Management Plan (EMP) to ensure best environmental working practice, proper implementation of mitigation measures and to minimise the potentially adverse effects of construction activity;
 - 4) In the season prior to construction all potential crossing points of water courses will be re-surveyed for water voles. Should they be found to be present, sections of bank 20m either side of each proposed crossings will be kept bare of vegetation for at least 6 months prior to bridge construction to dissuade water vole use and colonisation of that section of bank, therefore avoiding risk of damage to any burrows or individual water voles:
 - 5) Should further surveys prior to construction reveal the presence of otters using the drains it may be necessary to undertake the work under licence and with a suitably experienced ecologist overseeing the work; and,

³ Brandt, G. Blows, L. Linton, D. Plaing, N. and Prescott, C. Habitat associations of British bat species on lowland farmland within the Upper Thames catchment area . Centre for Wildlife Assessment and Conservation E journal (2007) 1 10-19

6) Should further surveys confirm the presence of great crested suitable mitigation will be implemented which will include the temporary placement of newt fencing between the drain and the nearest construction area and further enhancement of the nearby pond the drain will be fen

Post-construction mitigation

- 3.142 Other measures, involving avoidance, reduction and enhancement, will be implemented postconstruction in order to offset effects identified in the previous section. These include ongoing hedgerow management to ensure all hedgerow on site are kept low and tight.
- 3.143 The location of turbines has been designed to ensure the sweep of the blades is at least 200m from any buildings used by individual roosting bats. These roosts will be monitored following the construction of the turbines to ensure their continued use.

Decommissioning Mitigation

- Due to the fact that the decommissioning process will not take place for over 25 years after the 3.144 turbines become operational, it is very difficult to predict the ecological impacts the decommissioning process will have. However, decommissioning is likely to replicate the impacts given above for construction. Therefore a full Environmental Management Plan should again be prepared and decommissioning should avoid the bird breeding season.
- 3.145 At the time of the decommissioning the developer will, if requested, consult with Natural England (or the appropriate contemporaneous authority) to check whether any specific measures are required to protect any ecological interests on, or near to, the site.
- 3.146 As a current baseline, all the mitigation measures which are undertaken for construction should be implemented, unless otherwise deemed unnecessary by the appropriate authority.

STATEMENT OF RESIDUAL SIGNIFICANCE

3.147 This section considers the effect of the development after mitigation. The potential residual significance of the proposed development is summarised in Tables 3.8 - 3.10.

Proposed Additional Monitoring

- 3.148 This section provides a summary of additional monitoring which will be undertaken when the development has obtained planning permission.
- The bat transect surveys and dusk emergence/dawn re-entrance surveys will be repeated following 3.149 the construction of the wind park to assess the impact of the turbines on the existing bat populations. These will be undertaken in July, August and September in the first two seasons after the beginning of operation.

Biodiversity Enhancements

- 3.150 Planning authorities are now required under the guidance set out in PPS9: Biodiversity and Geological Conservation to actively seek in development proposals measures that aim to promote appropriate priority habitats and species listed in the UK and Local Biodiversity Action Plans.
- An Environmental Management Plan will be drawn up identifying key management policies. These 3.151 will be implemented following construction of the turbines for the duration of the operational phase. This will include details of management and cutting/clearing regimes for the remnant sections of hedgerow, the ditch network, and the areas of grassland.
- The habitat on site, outside the developable area but inside the land ownership boundary, will be 3.152 improved, specifically for birds but also to the benefit of other wildlife. This will include:
 - 1) Creating skylark scrapes (small areas of ground left bare) in the crops within fields away from the developable area. Two plots per hectare (at least 16m² each) in fields larger than five hectares can boost productivity by almost 50%⁴. These will also benefit corn buntings and will be of benefit to invertebrates including bees;
 - Create beetle banks as over-wintering habitat for beneficial insects. Beetle banks are two-metre grass strips through the middle of arable fields;
 - 3) Nest boxes for house sparrows, tree sparrows, barn owls and starlings, on buildings within the farm complexes;
 - 4) Allowing weeds to grow up on non-cropped areas such as access tracks and the field boundaries, to encourage invertebrates which are an important food source for birds such as corn bunting, and are of biodiversity value in their own right; and
 - 5) Improving existing/creating new hedgerows surrounding the farm away from the turbines (specifically to the south adjacent to the A17). This will be done by adding whips of an appropriate mix of hedgerow species to any gaps, and cutting and laying appropriate sections.
 - 6) Enhancement of the pond in the centre of the site.

SUMMARY

- 3.153 An updated extended Phase 1 habitat and protected species survey conducted. Using species and habitat information provided by these surveys and additional desk study information, this ecology chapter has considered the impacts and provisional mitigation requirements for a range of protected species which may potentially be present on the site.
- 3.154 This assessment has determined that an unmitigated development strategy is unlikely to have a significant negative impact on habitats present on the site.
- 3.155 This assessment has determined that an unmitigated development strategy is unlikely to have a significant negative impact on protected species present on the site although the is a potential risk of

⁴ RSPB (2008) - Advice for farmers: Skylark. Available online: www.rspb.org.uk

disturbance to one outlying badger set during construction A precautionary approach will be taken to ensure no disturbance to badger during construction.

3.156 Following analysis of available survey work and background data searches, it is considered that there is no evidence to suggest that the proposed development would lead to a significant impact on any known protected species or ecological features of value at the national, county or local level provided appropriate safeguards are set in place and compensatory measures provided as outlined in this chapter.

Table 3.8: Summary Table of Construction Impacts on Habitats

Habitat	Indicative importance	Nature of impact	Potential unmitigated impact on the feature	Likely occurrence	Magnitude	Significance without mitigation	Mitigation and Enhancement	Residual significance
Trees and woodland	Site	Removal or alteration of habitat	Loss of habitat	Extremely Unlikely	Negligible	Not significant	None required	N/A
Hedgerows	Site	Removal or alteration of habitat	Loss of habitat	Extremely Unlikely	Negligible	Not significant	None required	N/A
Standing water	Site	Heavy rain during construction could increase risk of silt run-off. Damage to banks during construction of new crossing points (culverts)	Degradation of habitat downstream of site through increased turbidity, nutrient load and smothering habitats. Loss of small sections of habitat, disturbance or risk of injury to protected species	Probable	Negligible	Potential for temporary significant impacts downstream of site	An engineering solution and associated pollution prevention plan (PPP) will be employed as part of the construction method statement to ensure that contaminated or silt laden run-off is prevented from reaching any water bodies or water courses	Not significant

Table 3.9 Summary of Construction Impacts on Protected Species

Species	Indicative Importance of populations	Nature of impact	Potential Effect	Likely occurrence	Magnitude	Significance without mitigation	Mitigation & Enhancement	Residual significance
Badger	Local	Removal or alteration of foraging habitat	Construction of access tracks and turbines will result in the loss of a very small area of possible feeding habitat	Likely	Moderate	Significant	Further surveys and if the one outlying sett close to one of the access track is occupied prior to construction and licence will be obtained to temporary exclude badger from that sett	Not significant
Otter	Regional (where present)	Removal or alteration of habitat	Construction of access tracks and turbines will result in the loss of small sections of possible feeding habitat along the ditches and possible disturbance	Unlikely	Negligible	Not significant	None required. Should further surveys prior to construction reveal the presence of otters using the drains it may be necessary to implement a mitigation plan including undertaking the work under licence and with a suitably experienced ecologist overseeing the work	Not significant
Bats (largely pipistrelles)	Local	Temporary, lights, noise, vibration, movement and physical disturbance	Disruption of foraging pattern	Extremely Unlikely	Negligible	There will be no construction in identified feeding areas, no construction at night during the summer and any lighting would be limited to winter only and directed away from important feature for bats. There will be no negative impact and therefore this is not significant	None required	N/A
Great crested Newt	International (if confirmed present)	Removal or alteration of habitat	Damage to breeding habitat	Extremely Unlikely	Negligible	There will be no direct effect on potential breeding site however a precautionary approach will be taken	Further surveys will be undertaken and if considered appropriate newt fencing placed between the ditch and any construction area	N/A

Species	Indicative Importance of populations	Potential impact on population of wind farm based on NE Guidance	Nature of impact	Potential Effect	Likely occurrence	Magnitude	Significance without mitigation	Mitigation & Enhancements	Residual significance
Badger	Local	N/A	Vehicle access for turbine maintenance	Disturbance to foraging individuals	Maintenance vehicle activity will be significantly less than typical agricultural practices, therefore disturbance to badgers is extremely unlikely.	Negligible	Not significant	None required	N/A
Common Pipistrelle	Local	Low	Movement of blades	Disturbance Collision resulting in injury or death	Due to low numbers using the site and foraging patterns of species it is considered to be extremely unlikely	Negligible	Not significant	The sweep of the blades is at least 50m from hedgerows or trees likely to be used by foraging bats, and at least 200m from any buildings used by roosting bats. All hedgerows within the site will be managed tight and low which are less attractive for foraging bats	Not significant
Myotis sp. and brown long-eared	Local	Low	Movement of blades	Disturbance Collision resulting in injury or death	Due to low numbers using the site and foraging patterns of species it is considered to be extremely unlikely	Negligible	Not significant	The sweep of the blades is at least 50m from hedgerows or trees likely to be used by foraging bats, and at least 200m from any buildings used by roosting bats. All hedgerows within the site will be managed tight and low which are less attractive for foraging bats	Not significant

ANNEX 1: UPDATED EXTENDED PHASE 1 SURVEY

INTRODUCTION

- The site was re-surveyed in order identify any significant changes in habitats or species present on 3.1 the site. An extended Phase 1 survey of the proposed Heckington Fen Wind Park was undertaken in 2009. A walk over survey was carried out in 2017 when water samples were taken to test for great crested newt DNA. An extended Phase 1 Habitat Survey was conducted during a site visit on the 23rd April 2018.
- The extended phase 1 survey was conducted adopting the methods outlined in the Handbook for 3.2 Phase 1 Habitat Survey published by the Nature Conservancy Council (1990). The area which was examined was that which was nominated on a map which encompassed the land within 500m of the development footprint. Aspects which were considered on the Phase 1 Survey map were wooded shelter belts, deciduous plantations, significant standard trees, hedgerows, drains and ditches together with a categorisation of the land use. In addition, specific aspects of ecological importance such as trees with holes or cracks which had bat roost potential, main drainages or ditches which may hold a great crested newt population, badger setts, or evidence of populations of otter, water vole or reptiles were target noted. Each target note was identified with a specific number. Generally, these target-noted features were also photographed. The area surveyed is shown in Figure 1.
- The habitats found on the site in 2018 were the same as in 2009 consisting of intensive arable fields 3.3 divided by drainage ditches. Some of the ditches were more overgrown than in 2009 and some had clearly been recently cleaned out and therefore lacked vegetation.
- 3.4 The three plantations present in 2009 are still present and as in 2009 there are rough grass strips around some of the arable fields.
- 3.5 There have been no significant changes in the trees with potential bat roosts since 2009. The roof on the derelict farm building has developed a few more holes and may be slightly less suitable for roosting bats.
- 3.6 There is still suitable habitat for water vole along many of the drainage ditches, particular those that have been cleaned out one or two years previously. The vegetation in those seasonally wet ditches that have not been recently cleared out tend to become over grown with dense vegetation becoming gradually unsuitable for water vole. No evidence of water vole was found on any of the ditches. American mink are still present on site. One American mink was observed and mink dropping recorded under one bridge.
- 3.7 Whilst there is suitable habitat for otter particular on the major permanent drains within the site, no evidence of otter (spraints, footprints, holts or couch) were found in 2018.
- 3.8 The only significant change to habitats or protected species since the 2009 survey is the appearance of badger sett on the site. In 2009 badger footprint and trails were recorded but there were no active badger setts. In 2018 two multi-entrance setts were located and a further 4 single hole outlier setts. There were seven well used badger latrines found on site.

3.9 No evidence of reptiles were found in 2009 or 2018. Whilst surveys for great crested newt in 2009 recorded no evidence DNA testing of water samples in 2017 indicated the possible presence of great crested newt DNA in one seasonally dry ditch.

METHODOLOGY

Desk Study Methodology

- Data searches were requested for protected species from Lincolnshire Environmental Records 3.10 Centre (LERC) in April 2018. Records of all protected plant and animal species (excluding birds and bats) were requested within a five kilometre radius of the proposed development site (landownership boundary). Bat records were requested within a 15km buffer. The National Biodiversity Gateway website (http://data.nbn.org.uk/) was also used to search for species records.
- 3.11 Any existing records of designated nature conservation sites (e.g. Sites of Special Scientific Interest (SSSI), and Local Wildlife Sites (LWS)) on the site and up to 5km away were obtained by a search of the MAGIC Database and a request for a data search to Lincolnshire Environmental Records Centre (LERC).

Field Survey Methodology

Extended Phase I

- 3.12 An extended Phase 1 Habitat Survey was conducted during a site visit on the 23rd April 2018. A walk over survey had previously been conducted in 2017 when water samples were taken to test for great crested newt DNA. It was therefore already known that there had been no significant changes in the habitat present on the site. The area surveyed for the extended Phase 1 Habitat Survey was an area encompassing the developable area and a buffer extending to 500m from the proposed development where access was permitted. The original Phase 1 Survey conducted in 2009 was used as a guide to target previously identified areas of ecological importance and check for any significant changes.
- 3.13 Target notes were used to identify areas suitable for particular species. The habitat types were recorded during the extended Phase 1 Habitat Survey using the standard methodology as outlined in the Nature Conservancy Council Handbook (revised reprint 2010) (Figure 1: Phase 1 Habitat Survey 2018). This method provides a broad overview of the habitat resource and aims to describe the character, distribution and importance of habitat types in the survey area. However, it does not provide an assessment of the botanical composition of each habitat type surveyed; this requires a Phase 2 or National Vegetation Classification Survey.
- 3.14 The survey involved searching for indications and/or signs of the following Protected Species:
 - i) Great crested Newt DNA.
 - ii) of reptiles;

Amphibians - water bodies and terrestrial habitat were assessed as to their potential to support amphibians. In 2017 water samples were taken from 4 water bodies to test for

Reptiles - the site was assessed for suitability for use by reptiles, and surveyors looked for casual reptile observations. In addition, suitable refuges and resting places (old carpets, sheets of metal, plastic or wood) were, where possible, lifted up to check for the presence

- iii) Water voles - the water courses and ditches found on the site were searched for evidence of water voles including latrines, nests in vegetation, sounds of voles entering water, tunnel entrances, cropped 'lawns' around tunnel entrances and feeding stations of chopped vegetation;
- iv) Hazel dormice – the land was searched for suitable dormouse habitat;
- V) Badgers - the land was searched for evidence of setts, latrines, scratches on trees, badger hair on barbed wire across animal trails, snuffle holes or feeding activity; and
- vi) Otters - the watercourses within and adjacent to the site were checked for signs of otter including 'spraint' deposited on prominent rocks, stones, logs or branches within watercourses and tracks and slides in soft mud adjacent to the watercourses.

Great Crested Newts

3.15 There is one pond within the study area along with a network of drains, some of which were identified during the extended Phase 1 Survey as having the potential to support great crested newts. Water samples were taken from four points (including the pond) and were tested for great crested newt DNA by ADAS.

Bats

3.16 An assessment of potential foraging habitat and roost sites within the land holding was conducted during the extended Phase 1 surveys. There was specific focus on whether there had been any significant change in potential foraging habitat or roost sites within the survey area.

Limitations of assessment

- 3.17 It is neither possible nor intended to cover the entire ecology of a site during a survey such as this. This report will nonetheless identify the probable value of the site in nature conservation terms, based upon the survey data gathered. It does not attempt to describe the total ecological composition of the study area.
- 3.18 Although best practice was followed for the faunal field surveys, the species in question are secretive animals and it is quite possible that some field signs were overlooked. In addition, usage of a site by many mammal species for foraging, shelter and as a transit route varies with season, and the surveys carried out therefore represent only 'snapshots' of activity on the site. It should also be noted that absence of recorded field signs is not necessarily evidence that a particular species is not utilising an area. However, this report will identify the probable value of the site for the pertinent species, based upon the survey data gathered.

BASELINE CONDITIONS

3.19 This section provides a summary of available desk-based information, and the results of field surveys and consultations.

Desk Studies

Statutory designed sites

There are no European (Ramsar, SAC & SPA) or national (SSSI, NNR, LNR) statutory designated 3.20 sites within 10km of the site. The nearest SSSI is Horbling Fen SSSI located 11.5km to the southwest of the site, designated for its geological interest. The Wash, situated approximately 17km to the southeast of the site at its nearest point, is the nearest SAC, SPA and Ramsar site. See Figure 2 for locations of statutory designated sites surrounding the site.

Non-Statutory designated sites

- 3.21 There are seven local wildlife sites (LWS) and 2 SINCs within a 6km radius of the site
- 3.22 Cole's Lane Ponds Local Wildlife Site (LWS) is located 6km southeast of the site. The site consists of two ponds surrounded by bankside trees and scrub. There is an area of wet grassland to the west and north of the smaller pond.
- 3.23 South Forty Foot Drain LWS is located approximately 1km to the south of the site. This is a manmade watercourse with bankside vegetation comprising rough neutral grassland, scrub and trees. The site is a good corridor linking the centre of Boston with the River Witham.
- Old Forty Foot Drain and Old Forty Foot to South Forty Foot Drain are LWS approximately 5km to 3.24 the south of the site designated for aquatic plants and coarse to neutral grassland banks.
- 3.25 Broadhurst Drain East LWS is approximately 5km from the site, designated for aquatic plants and neutral semi-improved grassland.
- 3.26 Mill Drain LWS is approximately 6km distance of the site, designated for aquatic plants and neutral semi-improved grassland banks.
- 3.27 Willow Farm Drain is approximately 6km southwest of the site, designated for aquatic plants coarse grassland banks.
- 3.28 Heckington Grassland SNCI is located approximately 4.4km to the east of the site. This site consists of grassland bordered by hedgerows and is used by a variety of breeding and over-wintering birds
- 3.29 Old Wood South Kyme SNCI is located approximately 4km to the north of the site, and is an area of woodland with Ash coppice, scrub, elm and tall herbs.
- See Figure 2 for locations of non-statutory designated sites surrounding the site. 3.30

Protected Species

Amphibians

3.31 One old (1977) great-crested newt record was reported in the 2011 ES (Chapter7 paragraph 9.79). Several common amphibian records were revealed from the area surrounding the site, including common frog, common toad and smooth newt. However there no further amphibian records from the site since 2009.

Reptiles

3.32 Two historical grass snake records were revealed from the 1km grid square north of the site, dating from 1977 (reported in the 2011 ES Chapter 7 paragraph 9.78), No further reptile records since 209 were provided for the area

Mammals

- There were numerous mammal records report in the original 2011 ES Chapter 7 Ecology paragraph 3.33 7.99 to 7.103 and are listed below:
- 3.34 Numerous (150) water vole records were revealed from the surrounding 5km. The nearest of these was at East Heckington, immediately southwest of the site, dating from 2006.
- Numerous (74) hare records were revealed from around the site, including historical (1977) records 3.35 from the 1km squares within the site.
- 3.36 Numerous (79) brown long-eared bat records were revealed from within 15km of the site, including a roost at South Kyme approximately 3.5km to the northeast of the site. Numerous (112) common pipistrelle (*Pipistrellus pipistrellus*) records were revealed from the area, the nearest of which was 2.9km to the east of the site. One soprano pipistrelle (*Pipistrellus pygmaeus*) record was revealed from 6.4km to the west of the site. One barbastelle record was revealed from 6.5km to the west of the site, dating from 2001. The nearest noctule (Nyctalus noctula) record is from Tatershall 11.8km to the north of the site. The nearest Leisler's (N. Leisleri) record is from Kirkby Moor in the 1km grid square 15km to the north of the site. The nearest serotine (Eptesicus serotinus) record is from Cowbridge, 12.5km to the east of the site, dating from 2003.
- 3.37 There are 36 records of badgers including several setts within 5km of the site. The exact location of these was not provided but the closer setts are present at East Heckington immediately south of the site, Bicker Fen and Great Hale Fen North Drain.
- Two otter records were revealed from the area, dating from 2010. These were a fresh spraint at 3.38 Skerth Drain approximately one kilometre to the east of the site, and a dead individual on the road at South Forty Foot Drain approximately two kilometres to the southeast of the site.
- 3.39 Since 2009 there have been ten further records for European water vole, eight records for brown hare sixteen records for European otter and ten records for Badger (see Figure 3). Five further bat roosts have been recorded since 2009 and 5 further bat records have been reported (common pipistrelle, brown long-eared bat) (see Figure 4).

Habitat Surveys

General site location

- This site is made up of 604 hectares of farmland situated in the Fens Natural Area. Due to the 3.40 presence of high quality agricultural soils, arable farmland comprises a major proportion of the habitats currently present within the Natural Area. This widespread habitat includes ecologically important features such as hedgerows and mature trees, ditches and ponds, drains and small watercourses and rough grassland such as is found alongside tracks and on road verges. These habitats give much of the character to the Natural Area and support a wide range of species, including some that have undergone dramatic recent declines such as skylark and grey partridge.
- 3.41 The site is located some 11km west of Boston at Heckington Fen, in Lincolnshire. The survey area is diamond shaped being approximately 2.5 km by 2.2 km centred on grid reference TF 208 457. The area comprises largely of Six Hundreds Farm situated to the south and west of the main Head Dyke-Skerth Drain and north of the A17 trunk road. The farm consists of arable farmland with large open fields growing winter wheat, winter barley and winter sown oilseed rape. The habitats identified on the site can be seen in the Phase 1 habitats map Figure 1.

Habitat within the site

Hedges, woodland and individual trees.

3.42 There are three plantations of mainly deciduous trees within the site, largely to provide pheasant cover. These are located to the north, northwest and west of Six Hundreds Farm. The plantation south of Six Hundreds Farm is more mature and contains some standard Ash and Oak trees (T14). There are two short lengths (in total approximately 380m) of species-poor hedgerows on the site, to the south of Six Hundreds Farm, with Hawthorn, Blackthorn, Ash, Dog Rose and Bramble; and there are a number of standard trees and areas of scattered scrub (T18, T19, T20, T21, T22). There is also one small stand of dead elm trees which appear to have been affected by Dutch elm disease (T17).

Drainage Ditches

- 3.43 The land is drained by a network of drainage ditches which also act as field boundaries; many of these are less than 1 metre in depth and 1.5m in width. Some of these hold water on a permanent basis and others were only seasonally wet ditches. Many of the dry ditches were choked with vegetation including Typha, sedges, rank grasses and some bramble. Some of the major drains present were more than 2.0m in depth and up to 3.5m in width and permanently held water and contained plants such as Frogbit Hydrocharis morsus-ranae and Broad-leaved Pondweed Potamogeton natans as well as Phragmites and other riparian vegetation.
- 3.44 Head Dyke-Skerth Drain is an Environment Agency main river which runs along the northern edge of Six Hundreds farm before passing in a north-west to south-eastern direction separating Six Hundreds Farm from Spinney Farm. Head Dyke-Skerth Drain is a large, deep, canalised permanently wet drain approximately 5m wide with steep sides. There are two pumping stations on the site which allow the water level of the drains across the site to be regulated by moving water into the Head Dyke-Skerth Drain. Permanently wet drains approximately 2m wide run parallel to the Head Dyke-Skerth Drain on each side. Holland Dyke forms the eastern boundary of the site. This is also a permanently wet drain which drains into Head Dyke-Skerth Drain at Trinity College Pumping Station.

Grassland

The arable fields were generally cultivated right up to the field margins resulting in very few areas of 3.45 botanical or ecological importance. There are species poor rough grassland adjacent to the farm tracks across the sites. Head Dyke-Skerth Drain runs between two built-up earth banks, with smaller drains on either side. These banks are grassed and used for grazing sheep and cattle.

Buildings

- 3.46 There are a number buildings on the site. At Six Hundreds Farm buildings there were four modern agricultural barns, a single storey barn/stables, a two storey barn, an open-fronted barn, a small electricity building and a row of two semi-detached disused two storey houses. The houses had an overgrown mature garden with fruit trees, surrounded by tall hedges (T5, T6, T7, T8, T16).
- In addition to the farm buildings there are two pumping stations present on Head Dyke-Skerth Drain, 3.47 and two concrete bridges which span the Head Dyke-Skerth Drain. At Spinney Farm to the northeast of the site there was a single storey barn which was included in some of the surveys.

Species surveys

Flora

3.48 None of the plant species recorded during the survey are specifically protected by the Wildlife and Countryside Act (WCA) 1981 (as amended) or considered rare nationally or locally (e.g. Preston et al. 2002). Also, none are listed as Species of Principal Biological Importance on Section 41 of the NERC Act 2006 or as Priority Species listed on the national BAP (UK BAP 2007).

Amphibians

- 3.49 In 2017 an eDNA survey for great crested newts was conducted at four locations across the site (Figure 5). The results were negative from three locations but returned a potentially positive result from one location This returned a 1 in 12 potential for the presence of great crested newt DNA at one location, indicating that there may be evidence of great crested newt DNA in the water. This may indicate a low population present either within the site or in the ditch network outside the site. The result suggests this may not be a breeding population. The ditch where the potentially positive sample was taken is a seasonally wet ditch, not one of the permanent drains on the site. Thus in many years it is likely that water only flows through this ditch in winter there is no water in this ditch for the period of the great crested newt breeding season The ditch where the potentially positive sample was taken is adjacent to an abandoned track which has become overgrown with rough grassland and a small amount of scrub. This is suitable terrestrial habitat for great crested newts.
- 3.50 Common frog, common toad were observed in several of the sections of drains surveyed.

Reptiles

The site is largely unsuitable for reptiles due to the intensive management of the land and lack of 3.51 significant suitable habitat for foraging or breeding. Whilst it was early in the season, the day of the Phase 1 Survey was bright and sunny and would have been suitable for reptiles to bask in sheltered location. No casual observations of basking reptiles were made at the site during the Phase 1 visit The grassy banks adjacent to a number of the drains and the canalised Head Dyke-Skerth Drain may

possibly support a relict population of reptiles. However, this area is beyond the development footprint and will not be affected by the wind farm construction.

Water vole

No evidence of water voles was observed at the site. However, some of the ditches on the site which 3.52 permanently hold water provide potentially suitable habitat for water voles. One American mink (Neovison vison), a major predator of water voles, was observed on the site on 23rd April (T23) along with mink scats under one bridge (T15). Mink presence can cause the extinction of water voles populations. Their presence, along with the fact that large parts of the ditch network are only seasonally wet, may explain the lack of water voles.

Hazel dormouse

3.53 There is no habitat suitable for hazel dormice within the site; and no historic evidence of the presence of hazel dormice in the area.

Bats

There was no significant change in the area or distribution of bat foraging habitat. There was no 3.54 significant changes in the built structure with recorded bat roost and no changes in the tree with potential for bat roosts. The roof on the derelict farm building has developed a few more holes and may be slightly less suitable for roosting bats.

Badger

3.55 A total of 6 badger setts were recorded within the surveys area along with 7. There were two larger setts with multiple active holes, whilst the remainder where were single hole outlier setts. The latrines, which are used for marking territory boundaries, were well used indicating that there is probably two separate badger clans using the site (see Figure 6: Confidential Badger Survey).

Otter

3.56 No evidence of otters was observed at the site; however, some of the main drains and ditches on the site appeared potentially suitable for occasional use by otters

Summary

- 3.57 The habitats found on the site in 2018 were the same as in 2009 consisting of intensive arable fields divided by drainage ditches. Some of the ditches were more overgrown than in 2009 and some had clearly been recently cleaned out and therefore lacked vegetation. The three plantations present in 2009 are still present and as in 2009 there are rough grass strips around some of the arable fields.
- 3.58 There have been no significant changes in the trees with potential bat roosts since 2009. The roof on the derelict farm building has developed a few more holes and may be slightly less suitable for roosting bats.
- 3.59 Mink are found to still be present on site and there was no evidence of water voles. Whilst there is suitable habitat for otter no evidence of otter (spraints, footprints, holts or couch) were found in 2018.
- The only significant change and habitats or protected species since the 2009 survey is the 3.60 appearance of badger setts on the site. In 2009 badger footprint and trails where recorded but there

were no active badger setts. In 2018 two multi-entrance setts were located and a further 4 single hole outlier setts. There were seven well used badger latrines found on site.

No evidence of reptiles were found in 2009 or 2018. Whilst surveys for great crest newt in 2009 no 3.61 recorded no evidence, eDNA testing of water samples in 2017 indicated the possible presence of great crested newt DNA in one seasonally dry ditch.

TARGET NOTES

The following target notes of ecological interest were specified during the Phase 1 Habitat Survey.

Target Note		
 Hollow broken-off Ash treat edge of plantation offering low to moderate Bat Roost Potential (BRP 2-3) 	T2 – Oak tree with splits, cracks and flaking barks offering, low bat roost potential. (BRP 3)	
T3 – Ash tree with splits, cracks and holes, low to moderate bat roost potential	T4 – Ash tree with dead branch and some knot holes, low bat roost potential; kestrel box	





Drain bank.



Heckington Fen Wind Park Variation of Consent (2018) Environmental Statement



T18 - Large multiple stemmed Ash tree



T22 - Large ash trees on north west boundary of the site and recently cleared drain

T23 Location of mink sighting	



om Ordnance Survey digital map data © Crown copyright 2016. All rights reserved. Licence number 0100031673



Figure: 1
Title: Updated Phase 1 Habitat Survey

ered UNCONTROLLED will be c





Legend

	•	Heckington Fen Turbine Location	
	1000	2km Distance Band From Turbines	
ske,	ı - - - ı !	5km Distance Band From Turbines	
1110		Site of Special Scientific Interest	
		Site of nature Conservation Interest	
		Local Wildlife Trust Reserve	
		Local Nature Reserves	
		Special Protection Area	
		Special Area of	
		RSPB Reserve	
	1000	RAMSAR	
1 Lpal		National Nature Reserve	
11		Local Nature Reserve	
1 1		International Bird Area	
10	Ancient	Woodland	
Lu		Ancient & Semi-Natural Woodland	
		Ancient Replanted Woodland	
	Non-sta	atutory sites	
		Notified SNCI	
4		Selected LWS	
/			
1			
\leq			
_			
	There ar	e no material changes	
1	to the ba	aseline conditions from 2011	
	Figure 2	to tame and New Otato tame	
	Litle: Sta	signated Sites Around	
2	N	0 3.5 km	
<		Scale: 1:125,000 @ A3	
	Drawn by:	Checked by: Approved by:	
1	Dof: 4004		
	Hockingt	on Fen Wind Park	
	Variation of Consent 2018		





•	Heckington Fen Turbine Location
12221	2km Distance Band From Turbines
, , 	5km Distance Band From Turbines
•	Brown Hare (8)
0	Eurasian Badger (10)
•	European Otter (15)

ered UNCONTROLLED will be c





Legend

•	Heckington Fen Turbine Location
::::::	2km Distance Band From Turbines
::	5km Distance Band From Turbines
	Bats (5)
	Brown Long-eared Bat (2)
	Common Pipistrelle (2)
lacksquare	Pipistrelle Bat species (1)
\bigcirc	Roost Record

Figure 4

Title: Desk Study Records of Protected Species - Bats 2009 to 2017

