Heckington Fen Solar Park

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Appendix 8.5: Extended Phase 1 Survey Report – Cable Route Corridor

Applicant: Ecotricity (Heck Fen Solar) Limited

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APPENDIX 8.5- EXTENDED PHASE 1 SURVEY REPORT – CABLE ROUTE CORRIDOR

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Heckington Fen Energy Park Grid Route

Phase 1 Habitat Survey

2483649

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RSK biocensus
EXPERTS IN ECOLOGY

RSK GENERAL NOTES

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EXECUTIVE SUMMARY

This report presents the results of a Phase 1 habitat survey together with an assessment for badgers and trees suitable for roosting bats. The survey was carried out on 26-29 April 2022. This report has been produced to support a planning application for the proposed cable route connecting Heckington Fen Energy Park to Bicker Fen National Grid Substation in Lincolnshire, UK. The Heckington Fen Energy Park will comprise three elements: the Energy Park, cable route to, and above ground works at, the National Grid Bicker Fen Substation (referred to within this report as 'the Proposed Development'. The appraisal was based on the red line boundary plan of the development site (the 'site').

The site, as shown in Figure 1, comprises a large extent of arable land bordered by field drains, with some renewable energy infrastructure already in place (e.g. Bicker Fen Wind Farm). In this intensively-managed landscape areas of semi-natural habitat are rare, small in area and sparsely-dispersed.

Some waterways are rich in aquatic flora although eutrophication of aquatic environments is evidenced by extensive algal blooms and dominance of plant species indicative of nutrient enrichment. While these habitats are intrinsically valuable to nature, no protected species were recorded. Surveys of ditches and arable margins are discussed further in the separate report (RSK 2022 2483649 Botany Surveys Report - document reference 6.3.8.6)

Twenty-three trees with low to moderate suitability for roosting bats were recorded. Further surveys will be necessary should any of these trees need to be felled or have significant branches lopped to facilitate the proposed development. Of these trees, 3 were felt to be deserving of veteran status. All veterans lay outside the proposed cable route but should plans change these trees and their root zones should be protected on account of their high value to biodiversity.

No further surveys are necessary for badgers, although cable routes should be checked pre-excavation for new badger setts.

Further surveys for water vole of watercourses intersecting with the proposed cable route are recommended.

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1.0 INTRODUCTION

1.1 Purpose of this Report

1.1.1 This report presents the results of a phase 1 habitat survey carried out along the proposed cable route for Heckington Fen Solar Park (grid reference: TF2040 4080) on 26-29 April 2022.

1.1.2 The survey was undertaken as part of a Development Consent Order (DCO) for the connection of the proposed energy park to the Bicker Fen Substation (drawing number: 6945_T0026_04_Cable_Route_Options_60m buffer). The Survey Area included all land for which access consent had been granted, the Survey area is shown in Figure 1.

1.2 Landscape Context

1.2.1 The approximately 1,260 ha site is located to the west of the town of Swineshead, with the majority of the site bordered by Hammond Beck in the east and South Forty Foot Drain in the west. The topology of the site and surrounding area is flat, and woodlands and hedgerows are few. Arable farming is the predominant land use onsite and in the surrounding area, with fields devoted to growing barley, Oilseed rape, with some wheat, bulbs and green manure. Fields are typically bordered by ditches of varying widths and depths, some dry at the time of survey. These often have a narrow belt of semi-improved grassland on banks and field margins.

1.2.2 Other land use includes a small amount of pasture, grazed by cows and sheep, as well as residential properties and farm buildings. The Bicker Fen Wind Farm is located to the south of the site and there are two electricity generating stations nearby. At the time of the survey, access roads were being constructed for other cable route excavations, and a review of aerial photographs and Ordnance Survey maps shows evidence of recent previous excavations which have now wholly or partially revegetated.

1.3 Development Proposals

1.3.1 The development proposals involve the construction of access roads and the digging of trenches in order to lay electricity cables. There are currently two proposed cable routes, but land access permissions have been sought for a wider area of land than the proposed routes (and buffers). This phase 1 survey encompasses all land for which access permission has been given, assumed to be the indicative DCO extents. A map of the survey area is presented in *Figure 2.*

2.0 METHODS

2.1 Overview

2.1.1 The Phase 1 habitat survey was undertaken in line with guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017); it therefore included:

- a desk study (here called a background data search (BDS)) of existing ecological information relating to the site and its surroundings, including a search for statutory designated sites of national and international importance within 2km and 10km of the survey area respectively; a review of aerial photographs; requesting data from the local records centre; review of the Lincolnshire Biodiversity Action Plan (Lincolnshire Biodiversity Partnership, 2011) and accessing freely-available information from online sources including the BSBI Distribution Database [redacted] and National Biodiversity Network [redacted]
- a field survey that informed habitat mapping, an assessment of the possible presence of protected or priority species and the likely importance of habitat features.

2.1.2 The phase 1 report includes an ecological description of the habitats found onsite. Notes and mapping of any incidental sightings of invasive non-native plant species are also provided. A ground-level tree assessment was carried out of trees onsite to check for suitability for roosting bats, and signs of badger activity were searched for within the red line boundary.

2.1.3 The survey was carried out on 26-29 April 2022 by Senior Ecologist Pete Flood and Graduate Ecologist Joe Pepper. Pete is a suitably qualified and experienced ecological consultant, a member of CIEEM and a holder of a Field Identification Skills Certificate (FISC) in botany Level 6 certificate. He is highly experienced in carrying out habitat surveys of this type.

2.2 Background Data Search

2.2.1 A search was made in June 2022 for relevant reference materials. A list of sources is given in Table 1.

Table 1 Data sources

Information obtained	Available from
Protected and noteworthy species-records	Greater Lincolnshire Nature Partnership
MAGIC (the Multi-Agency Geographic Information website) to view statutory designated nature conservation sites	www.magic.gov.uk [NB: this site is included for convenience as a viewer, but data to create maps for any figures used is extracted from Open Source data provided by the SNCBs]
Nationally designated site locations and citations	Natural England

Information obtained	Available from
European and Internationally designated site locations and citations	Joint Nature Conservation Committee (JNCC) website
Local Designated site locations and citations	Greater Lincolnshire Nature Partnership
Designations and legal protection of noteworthy species	Joint Nature Conservation Committee (JNCC) website
Aerial photography	As a viewer only, sources include: [redacted] Google earth. Where reproduced as figures, sources vary and are licensed through ArcGIS, as stated.

2.2.2 A search was made for the following international and national statutory designated sites of ecological importance within 10km of the site boundary: Ramsar sites, Special Areas of Conservation (SAC), Special Protection Areas (SPA)[1], and for Sites of Special Scientific Interest (SSSI), including consideration of SSSI risk zones, within 2km.

2.2.3 A search was also made for non-statutory designated (often important in a local context) within 1 km of the site boundary. The distance was selected because of the limited nature of disturbance caused by this development and the relatively small footprint of its works area.

2.2.4 The BDS also included a search for records within 1 km of the site boundary of bats and badgers.

2.3 Plants and Habitats

Phase 1 Habitat Survey

2.3.1 The field survey was based on the Phase 1 habitat survey approach (Joint Nature Conservation Committee, 2010) . This field survey was undertaken in line with CIEEM 2017 and involved the following elements:

- habitat mapping using a set of standard colour codes to indicate habitat types on a habitat map (Figure 2); and
- a description of features of possible ecological or nature conservation interest in notes relating to numbered locations on the habitat map, called ‘target notes’.

2.3.2 Vascular plant species were recorded during the survey, although no attempt was made to produce an exhaustive species list (additional species would almost certainly be found during more detailed surveys or repeat surveys at various times of the year). A plant species list was recorded for the site and is given in Appendix F. Subjective estimates of the relative abundance of species within the site were added to the list using a modified DAFOR scale. The DAFOR scale ranks species according to their relative abundance in a given parcel of land as follows: D – dominant, A – abundant, F – frequent, O – occasional, R – rare. In addition, the following prefixes are used: L – locally, V – very.

2.3.3 Plant nomenclature in this report follows Stace (2019) for native and naturalised species of vascular plant, and mosses and liverworts follow Blockeel *et al*. (2021). Introduced

species and garden varieties were identified using relevant Floras. Plant names in the text are given with common names with the scientific name (in italics) immediately following the first time it is mentioned.

Invasive Non-Native Species (INNS)

2.3.4 Phase 1 habitat survey does not involve exhaustive surveying for individual plant species, and various invasive species may be little in evidence at various times of year (depending on the species). A survey seeking to identify habitat types cannot therefore be relied upon to provide firm information about the presence or extent of any INNS. However, any INNS that would be encountered during the habitat survey were noted, including Japanese Knotweed (*Reynoutria japonica*), Giant Hogweed (*Heracleum mantegazzianum*) and Himalayan Balsam (*Impatiens glandulifera*), as well as any invasive non-native species of animals.

Ancient and Veteran Trees

2.3.5 The survey included assessment of all ancient and veteran trees found onsite. Ancient trees are those which have passed into senescence and are slowly declining. These may become valuable sites for a range of organisms including bats and other mammals, birds, fungi, lichens and bryophytes. Veteran trees are those which through disease or other damage have developed a number of features of use to wildlife, including trunk cavities and other hollowing, bark flakes, dead wood in canopy, sap runs, epiphytic plant and lichen species and fungal fruiting bodies. Not all veteran trees are ancient, but all ancient trees are veterans.

2.4 Protected and Notable Animals

General

2.4.1 The site was assessed for its suitability to support protected or otherwise notable animals that are likely to occur in the area. Taking into account the results of the BDS, the geographic location, connectivity to natural habitats in the wider landscape, the nature and extent of habitats at the site, and the proposed development, specific assessment was also carried out for the species/species groups outlined below. Other protected species are discussed in 2483649 – Heckington Fen Solar Farm – GCN Survey Report.

Bats

2.4.2 Habitats were assessed for their suitability for foraging and commuting bats, in line with guidance provided in Collins (2016). Areas of particular interest vary between species, but generally include sheltered areas and habitats with good numbers of insects, such as woodland, scrub, rivers and species-rich or rough grassland.

2.4.3 Trees were noted if they had potential suitability for roosting bats (Collins, 2016). This involved identifying features that roosting bats may favour (*e.g.* holes, cracks and cavities that might be used as bat access-points or roost sites).

Ground-Level Tree Surveys

2.4.4 All trees within the site were surveyed from ground level. Features that might be used by roosting bats were described and categorised according to accepted guidelines (Collins, 2016). Each tree was given a category during the ground-level surveys (see *Table 2*) based on its potential for roosting bats.

Table 2: Categorisation of the suitability of buildings or trees for roosting bats (Collins 2016)

Category (Potential to support roosting bats)	Description
Negligible suitability	Negligible habitat features on site likely to be used by roosting bats.
Low suitability	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
Moderate suitability	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely for a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High suitability	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.
Confirmed roost	Bats or evidence of bats recorded during the initial inspection surveys or during dusk/dawn surveys. A confirmed record (supplied by records centre/local bat group) would also apply.

2.4.5 Trees may also be categorised as having *unknown potential* if the surveyor's view of the tree is obscured. This can be caused by dense Ivy (*Hedera helix*) covering the trunk and major limbs so as to conceal potential roosting features from view.

Badgers

2.4.6 An initial assessment was carried out to identify areas that might be used by badgers (*Meles meles*) for commuting, foraging or setts within 30m of all areas potentially affected by works (where access was possible). The area was systematically searched for signs of badgers including setts, foraging signs, paths (runs) and latrines where possible, and the category of sett and levels of activity visible at each sett was recorded.

2.5 Constraints and Limitations

2.5.1 Less conspicuous plant species (including INNS) may have been missed as a result of the survey being undertaken outside of the ideal survey season. However, the majority of plants present were confidently identified, and the survey was sufficient to make a broad assessment of the habitats present on the site.

2.5.2 This preliminary appraisal as to whether protected or otherwise notable species might occur on the site is based on the suitability of habitat, the known distribution of relevant species in the local area (from online sources and desk study), and any signs of the relevant species. It does not constitute a full and definitive survey of any protected species group.

2.5.3 Field signs for protected and valuable species are often difficult to find or absent from a site. The survey conducted was not intended to be a comprehensive presence/absence survey for all species, but rather to provide an indication of the likely presence of such species based on the field signs found, and the nature of the habitats present.

2.5.4 All recommendations made in this report are based on the proposed site layout plan (6945_T0026_04_Cable_Route_Options_60m buffer) provided. If the plans change significantly, then an ecologist must be consulted and further surveys may be required.

3.0 RESULTS

3.1 Background Data Search

Statutory Designated Sites

3.1.1 There are no statutory designated sites within 10 km of the site boundary.

Non-Statutory Sites

3.1.2 There are no non-statutory designated sites within 1 km of the site boundary.

Habitats

3.1.3 There are no areas of ancient woodland within 1 km of the site boundary.

3.2 Plants and habitats

Phase 1 Habitat Survey

3.2.1 The Phase 1 habitat map is provided as *Figure 2.* The site comprises the following:

A1.1.1 Broadleaved Woodland – Semi-Natural

3.2.2 Small, fragmentary areas of broadleaved woodland remain in this largely arable landscape. In most cases these consisted of lines of trees or narrow bands of woodland retained as a shelter belt, with little connectivity to the wider landscape. Canopy species included Ash (*Fraxinus excelsior*), Field Maple (*Acer campestre*), Sycamore (*Acer pseudoplatanus*), Pedunculate Oak (*Quercus robur*) and Wild Cherry (*Prunus avium*), with occasional planted specimens of Horse Chestnut (*Aesculus hippocastanum*) and Lawson's Cypress (*Cupressus lawsoniana*). Below the canopy, the understorey and ground layer were typically dense, as in most cases the small size of the wooded area allowed plenty of light to penetrate. Elder (*Sambucus nigra*) was common and abundant wherever woodland had been left to develop, while other shrubby species included Wild Privet (*Ligustrum vulgare*), Blackthorn (*Prunus spinosa*), Wayfaring-tree (*Viburnum lantana*) and Dog-rose (*Rosa canina*). The field layer was often dominated by Nettle (*Urtica dioica*), Cow Parsley (*Anthriscus sylvestris*), Wood Avens (*Geum urbanum*) and Hogweed (*Heracleum sphondylium*).

3.2.3 An area of woodland at TF 2032 4350 was dominated by suckering English Elms (*Ulmus procera*), many of whom had succumbed to Dutch Elm Disease early in their growing cycle, creating a low scrubby canopy with an abundance of dead wood.

3.2.4 A partial line of native Black Poplars (*Populus nigra* ssp. *betulifolia*) was found at TF 2056 4318, with an understorey of Elder and Nettle. These are old trees, certainly veteran, but under attack from Poplar Mushroom (*Cyclocybe cylindracea*). There is some sign that the white rot caused by this species is a limiting factor in the size of any single branch, but that new branches are constantly arising from the remains of the central trunk (at least in the largest species). The trees may therefore be veterans, despite initial appearances.

B2.2 Neutral Grassland – Semi-Improved

3.2.5 The principal sections of semi-improved grassland within the survey area are largely unmappable at the resolution used for phase 1 survey, consisting of narrow (1-3m) strips bordering the extensive network of drains that surround most fields. These grassland areas are homogeneous and largely species-poor, dominated by False Oat-grass (*Arrhenatherum elatius*), with other grass species including Yorkshire-fog (*Holcus lanatus*), Perennial Rye-grass (*Lolium perenne*) and Creeping Bent (*Agrostis stolonifera*). Tall herbs such as Nettle, Creeping Thistle (*Cirsium arvense*), Horse-radish (*Armoracia rusticana*), Cow Parsley (*Anthriscus sylvestris*) and Hogweed (*Heracleum sphondylium*) were often present, as were plants typical of arable margins such as Red Dead-nettle (*Lamium purpureum*), Scentless Mayweed (*Tripleurospermum inodorum*) and Bristly Ox-tongue (*Helminthotheca echioides*) and arable escapes such as Oilseed Rape (*Brassica napus* ssp. *oleifera*) and Two-rowed Barley (*Hordeum distichon*). Areas of compacted ground contained plants such as Annual Meadow-grass (*Poa annua*), Pineappleweed (*Matricaria discoidea*), Common Whitlowgrass (*Erophila verna*) and Greater Plantain (*Plantago major*). Most grassland was extensively managed by mowing but in a few areas limited encroachment by Bramble scrub or waterside species such as Common Reed (*Phragmites australis*) and Bargeman's Cabbage (*Brassica rapa* ssp. *sylvestris*) was seen.

3.2.6 More extensive areas of semi-improved grazing pasture were found bordering the South Forty Foot Drain as well as in fields north of North Drove at Bicker Gauntlet (TF2100 3965), and north of Timm's Drove at TF2122 4176. These had Perennial Rye-grass, Crested Dog's-tail (*Cynosurus cristatus*) and Red Fescue (*Festuca rubra*) as the dominant grass species, with some Broad-leaved Dock (*Rumex obtusifolius*), Clustered Dock (*Rumex conglomeratus*), Common Ragwort (*Jacobaea vulgaris*), Common Knapweed (*Centaurea nigra* agg.), White Clover (*Trifolium repens*) and Common Mouse-ear (*Cerastium fontanum*).

B4 Improved Grassland

3.2.7 An area of pasture forming part of the footprint of Bicker Wind Farm (TF1916 3922) consisted of improved grassland, with a low, species-poor sward dominated by Perennial Rye-grass and White Clover. A second area to the east of Vicarage Drove (TF1998 3827) was planted as a ley, with a lush sward consisting of Perennial Rye-grass, Meadow Foxtail (*Alopecurus pratensis*), Cock's-foot (*Dactylis glomerata*), Creeping Buttercup (*Ranunculus repens*), Creeping Thistle and Clustered Dock.

C3.1 Tall Ruderal

3.2.8 Dominated by plants associated with arable habitats such as Charlock (*Sinapis arvensis*), Fat Hen (*Chenopodium album*), Black Grass (*Alopecurus myosuroides*) and Sun Spurge (*Euphorbia helioscopia*), with some plants of waste ground such as Weld (*Reseda luteola*), Hedge Mustard (*Sisymbrium officinale*), Great Willowherb (*Epilobium hirsutum*) and Chickweed (*Stellaria media*). Arable set-aside areas often had some additional species grown in nectar/seed mixes such as Sunflower (*Helianthus annuus*), Phacelia (*Phacelia tanacetifolia*), Cabbage (*Brassica oleracea*) and Common Millet (*Panicum*

miliaceum), although it wasn't always obvious whether these plants were casuals from previous crops or deliberate plantings.

G2 Running Water – Ditch

3.2.9 Ditch habitats were the focus of much of the biodiversity onsite, with a fairly rich assemblage of aquatic and marginal species. Species-rich wet ditches were earmarked during the initial walkover which forms the basis of this report. The vegetation was recorded separately using National Vegetation Classification (NVC) methodology, and the results of these surveys can be found in RSK 2022 2483649 Botany Surveys Report (document reference 6.3.8.6).

3.2.10 Ditches varied in water availability, forming a continuum from wet, via seasonally-wet to dry, with different communities found in each. Common obligate aquatic species included Mare's-tail (*Hippuris vulgaris*), Reed Sweet-grass (*Glyceria maxima*), Small Pondweed (*Potamogeton berchtoldii*), Curled Pondweed (*Potamogeton crispus*), Broad-leaved Pondweed (*Potamogeton natans*) and Bur-reeds (*Sparganium* species). Indicators of eutrophication such as Duckweeds (*Lemna* species) and algae such as Tape Weed (*Ulva flexuosa*) and Water-net (*Hydrodictyon reticulatum*) were locally frequent but not ubiquitous.

3.2.11 Bankside and channel management regimes were varied but the vegetation of most banks was analogous with the semi-improved grassland which typically formed a strip between the ditch and adjacent field, with some plants of wetter habitats on the lower slopes such as Common Reed, False Fox-sedge (*Carex otrubae*), Greater Pond-sedge (*Carex riparia*) and Reed Canary-grass (*Phalaris arundinacea*). Dwarf Elder (*Sambucus ebulus*), Horseradish, Bargeman's Cabbage and Oilseed Rape were locally frequent.

J1.1 Cultivated/Disturbed Land - Arable.

3.2.12 The bulk of the survey area was comprised of arable land, with crops of Two-rowed Barley, Oilseed Rape, Bread Wheat (*Triticum aestivum*) and Root Beet (*Beta vulgaris* ssp. *vulgaris*) in evidence, as well as some fallow ground and other fields in varying stages of ground preparation. Arable weeds were few at the time of the survey, and mostly comprised of common species such as Field Pansy (*Viola arvensis*), Common Fumitory (*Fumaria officinalis*), Shepherd's-purse (*Capsella bursa-pastoris*), Black Medick (*Medicago lupulina*), Common Field-speedwell (*Veronica persica*) and Groundsel (*Senecio vulgaris*). A few plants of the rare casual Eastern Groundsel (*Senecio vernalis*) were found in a field planted with 'green manure' at TF2041 4217.

3.2.13 Headlands and margins with richer-than-average arable species assemblages were earmarked during the initial walkover for later survey. The results of these investigations can be found the companion document 2483649 Botany Surveys Report (document reference 6.3.8.6).

J2.1.1/2.2.1 Hedgerow; Species-Rich (Intact and Defunct)

3.2.14 Field boundaries within the survey area were typically comprised of ditches rather than hedges, and intact/functional species-rich hedgerows were virtually confined to the margins of the South Forty Foot Drain and a couple of areas in the south around Bicker Drove and Vicarage Drove, with the exception of a few relics. These hedgerows had little to no connectivity to the wider landscape. Hedgerows were comprised of abundant Hawthorn (*Crataegus monogyna*) and Blackthorn (*Prunus spinosa*), with other lesser

quantities of other shrubby plants including Elder, English Elm, Dogwood (*Cornus sanguinea*), Ash (*Fraxinus excelsior*), Grey Willow (*Salix cinerea*), Dog-rose (*Rosa canina*), Bramble and Ivy, with some climbing Honeysuckle (*Lonicera periclymenum*) and White Bryony (*Bryonia dioica*). Species in the field layer included Herb-robert (*Geranium robertianum*), Wood Avens (*Geum urbanum*) and Lesser Celandine (*Ficaria verna*).

3.2.15 In some areas, defunct hedges were found with substantial gaps which rendered them ineffectual for stockproofing.

J2.6 Ditch - Dry

3.2.16 The hydrological status of ditches can often be ascertained by investigating the vegetation growing at the base of the ditch. Ditches marked as 'dry' typically support dry-land species such as Nettle, False Oat-grass and Cleavers rather than plants characteristic of wetlands and wetland margins. They may carry water during periods of heavy flow but are usually dry for the majority of the growing season.

J3.6 Buildings

3.2.17 Buildings within the survey area consist of dwellings, barns, silos, outhouses, other farm buildings and utility buildings for wind farm and rail operations.

J5 Line of Trees

3.2.18 Phase 1 methodology does not require separate recording of lines of trees, so this has been done under the J5 'Other habitat' code. Like hedgerows, these linear features are self-contained, with little connectivity. A single, limited exception to this can be found at TF2013 4390, bordering the A17, where a line of trees including mature Pedunculate Oak (*Quercus robur*), Lime, (*Tilia ×europaea*) and Sycamore (*Acer pseudoplatanus*) has a degree of connectivity to hedgerows and lines of trees beyond the survey area, but even here the surrounding landscape is also lacking in such features.

Hedgerow Regulations

3.2.19 No hedgerows were recorded on site as 'important' under the Wildlife and Landscape Criteria of the Hedgerow Regulations 1997.

Invasive Non-native Species

3.2.20 No terrestrial invasive plant species were found during the survey. The aquatic species Nuttall's Waterweed (*Elodea nuttallii*) was found occasionally throughout the survey area.

Ancient and Veteran Trees

3.2.21 No ancient trees were found during the survey. Three veteran trees, including 2 native Black Poplars (trees 8 and 9 of GLTA target notes (*Table 3*, below)) and one Crack Willow (GLTA target note 22) were found.

3.3 Protected and notable animals

3.3.1 *Figure 1* shows the location of the target notes referred to in the text below, which show the location of particular features with suitability for protected and notable animals. A full description for each of the target notes is given in *Appendix D*.

Bats

3.3.2 The BDS returned records of the following bat species within 1km of the site:

- Common Pipistrelle (*Pipistrellus pipistrellus*) (1 record near the confluence of Great Hale Eau with South Forty Foot Drain);
- Daubenton's bat (*Myotis daubentonii*) (1 record near the confluence of Great Hale Eau with South Forty Foot Drain); and
- Three further bats not identified to species level.

3.3.3 Twenty-three trees were identified with bat roost potential, as detailed in *Table 3,* below:

Table 3: GLTA results: trees with bat roost potential at Heckington Fen

No.	Species	Suitability	Potential roost features
1	Pedunculate Oak	Low	Single knothole 20cm deep at *c.* 1.7m height
2	Lime pollard	Low	Weld between 2 pollard stems at *c*. 1m height
3	Lime pollard	Low	Single knothole 6cm deep at *c.* 1m height
4	Lime pollard	Low	Weld between 2 pollard stems at *c*. 3m height
5	Lime pollard	Low	Bark flake and weld at *c.* 1m height
6	Lime pollard	Low	Tear out at *c.* 1m height
7	Sycamore	Moderate	4 shallow (<10cm) knotholes, numerous bark flakes
8	Black Poplar (*Populus nigra* ssp. *betulifolia*)	Moderate	Hollow at base extending upwards. Bark flakes. Rot from *Cyclocybe cylindracea*
9	Black Poplar (*Populus nigra* ssp. *betulifolia*)	Low	Small hollow at extreme base. 1 bark flake. Rot from *Cyclocybe cylindracea*
10	Stump and fallen hollow trunk of Black Poplar	Low	Substantial hollowing and overhangs at ground level. Rot from *Cyclocybe cylindracea*

	(*Populus nigra* ssp. *betulifolia*)		
11	Black Poplar (*Populus nigra* ssp. *betulifolia*)	Low	Rot and shearing causing *c.* 10cm hole through trunk at 1m height. Rot from *Cyclocybe cylindracea*
12	English Elm	Low	Hollow trunk with access through knothole and shearing cracks at *c.*1 m height
13	Ash	Low	Substantial damage from *Inonotus hispidus* resulting in large tear down with hollowing at the base, and 2 <10cm deep knotholes. Also afflicted by Ash dieback (*Hymenoscyphus fraxineus*)
14	Ash	Low	3-stemmed coppice stool. Tear down, bark flakes and 2 knotholes high on trunks
15	Ash	Low	Multi-stemmed coppice stool with 2 small tear downs and a weld in canopy
16	Scots Pine	Low	Single 6cm diameter woodpecker hole at *c.* 4m height
17	Sycamore	Low	A few small bark flakes
18	Horse Chestnut	Low	Long vertical wound, possible canker, leaving bark flakes and 2 knotholes at *c*. 1.8m height
19	Horse Chestnut	Low	Substantial knothole, inhabited during survey by nesting Jackdaws, at *c.* 5m height
20	Horse Chestnut	Moderate	Substantial butt rot, extending upwards, with ivy-choked trunk
21	Horse Chestnut	Low	2 knotholes at *c.* 3m height. Some small bark flakes
22	Crack Willow	Low	2 large tear outs, one substantially rotten (*Phelinus ignarius*) with various rot holes, the other leaving a long section of ram's-horning. Butt rot at base with some further rot holes and fissures. Numerous features but none particularly large or sheltered
23	Horse Chestnut	Low	Fluting in trunk surmounted by branch creating shallow (<15cm), wide depression

3.3.4 Surrounding waterways may provide a good food resource for foraging bats, but the lack of trees and linear woody features in the landscape may discourage commuting bats.

Badgers

3.3.5 Two records of badgers were returned during the BDS, the closest being a 2010 record from the northeastern corner of the site near Swineshead Bridge. In addition, active badger setts and latrines were recorded on land north of the A17 during 2018 and 2021 surveys of the Energy Park site. Badgers and their setts are protected under the Protection of Badgers Act 1992 and some habitats on site were noted as being potentially suitable for this species, comprising arable land for foraging and some woodland and scrub for sett building. However, no evidence of badger setts, tracks, latrines, snuffle holes, hairs or any other signs of badger activity were noted during the walkover of the grid connection survey area.

4.0 EVALUATION

4.1 Designated Sites

4.1.1 There are no international or national, statutory or non-statutory designated sites within 10km of the proposed development.

4.2 Habitats and Plants

4.2.1 Some ditch habitats had a good diversity of aquatic plants – these (as well as arable habitats) are considered further in 2483649 Botany Surveys Report (document reference 6.3.8.6). Other habitats present onsite are not species-rich and have little intrinsic botanical value. They are common and widespread in the surrounding landscape.

Invasive Non-native Species

4.2.2 Nuttall's Waterweed was found in some ditches. This species propagates quickly through root fragments and can form dense masses in waterways, choking other vegetation. Populations at Heckington Fen were limited by other vegetation growth and were at no point dominant over other species. For this reason, and because of the prohibitive difficulty of control and the risk that any attempt might spread propagules, no further action is advised.

Ancient and Veteran Trees

The veteran Black Poplar and Crack Willow trees within the site boundary are native species with considerable value to biodiversity. Proposed cable routes do not threaten these trees but should plans change they should be protected including their root zones from any adverse impacts.

4.3 Protected and Other Notable Species

Bats

4.3.1 A number of trees onsite have some degree of suitability for roosting bats. Of 23 trees identified with potential bat roosting features, 20 were of low suitability, and 3 were of moderate suitability. Current plans threaten 4 trees shown in *Figure 2*, trees 4, 5, 13 and possibly 14. Before felling or any other damaging activities are carried out a full assessment of these trees should be carried out by a suitably qualified ecologist and tree climber for evidence of roosting bats. Furthermore, any other trees to be wholly or partially felled or otherwise damaged should be checked for at-height roost features and evidence of usage by bats by an ECoW prior to works taking place.

Badgers

4.3.2 Although no signs were found indicating the presence of badgers, these are versatile and mobile animals, and may yet use the site for foraging and sett building. The predominant arable land use is suboptimal for foraging badgers, consisting as it does of large-scale

summer-ripening monocultures with few grassland, hedgerow and woodland food resources for sustenance in-between periods of crop availability. However, badgers have been recorded in the wider area and regularly move territories, open old setts, or dig new ones.

5.0 RECOMMENDATIONS

5.1 Key Constraints to Design and Construction

Habitats

5.1.1 The Lincolnshire Biodiversity Action Plan lists habitats with particular local relevance afforded special consideration under bespoke Habitat Action Plans (HAPs). Of the habitats present onsite, arable field margins and rivers, canals and drains are the two habitats most likely to suffer adverse effects from this development. They have therefore formed the basis of a separate report – RSK 2022 2483649 Botany Surveys Report (document reference 6.3.8.6).

Bats

5.1.2 Bats are protected under the Habitats Regulations and the Wildlife and Countryside Act 1981 (as amended) (see Appendix A). The majority of trees on site do not have features suitable for roosting bats. However, those with suitable features that will be felled or have large branches lopped to facilitate the proposed development will require further surveys. This will be necessary to inform an assessment of likely impacts and mitigation requirements for the proposed development. These checks should involve the aerial inspection of any suitable features using tree climbing techniques and an endoscope, to look for bats or evidence of bats. If, on inspection a feature is identified as having moderate or high potential for roosting bats then further surveys will be necessary. If features are found to have low potential the tree can be felled under precautionary measures (Collins, 2016). If tree climbing is not possible, emergence surveys will be required, the scope of which will be dependent on the value of each feature.

5.1.3 While it is unlikely that the site represents a critical foraging or commuting resource for bats, a sensitive lighting scheme should be maintained during and after construction to maintain dark commuting corridors, particularly along the watercourse.

Badgers

5.1.4 Badgers are afforded protection through the Protection of Badgers Act 1992 and the Wildlife and Countryside Act 1981 (as amended) (refer to Appendix A).

5.1.5 Badgers regularly move territories, open old setts, or dig new ones. In order to safeguard any badgers that may be active in the area, it is good practice to cover any excavations overnight to prevent badgers (and other mammals such as hedgehogs) from becoming trapped. If it is not possible to cover excavations, an egress route should be provided to allow animals to climb out. A badger survey should be undertaken in advance of construction to confirm that there are no setts that could be disturbed by the works (the timescale will depend on the season in which works start) and ensure compliance with relevant legislation.

5.1.6 If a sett is discovered and requires removal, a licence will be required from Natural England to exclude badgers before it can be removed; removal can only be undertaken between 1 July and 30 November inclusive. A licence would also be required for setts subject to disturbance but not removal. It is therefore recommended that works proceed

under a precautionary approach with the collaboration of an Ecological Clerk of Works (ECoW).

6.0 CONCLUSIONS

6.1.1 No further surveys are recommended for: vegetation, habitats or badgers.

6.1.2 Precautionary methods for avoiding inadvertent harm to some species of mammals should be employed during the construction phase. These are listed above in section 5.1.5.

6.1.3 As per our bid, no assessment was carried out for reptiles, dormice, otters, water voles, European hedgehogs or brown hares. There may be further constraints on development relating to these species if not surveyed previously.

6.1.4 In the event that felling or other damage is likely to the trees highlighted in 3.3.3 above, further tree-climbing surveys will be required to identify if any bats are roosting in these structures, and if so, mitigation measures may be required as part of the design proposals. The removal of trees would need to be undertaken under licence from Natural England, and there may be restrictions on timing dependent on the status of any roost.

6.2 Validity of Data

6.2.1 Unless the site changes significantly, the surveys carried out for this report should remain valid for at least 18 months, and potentially up to 3 years (CIEEM 2019).

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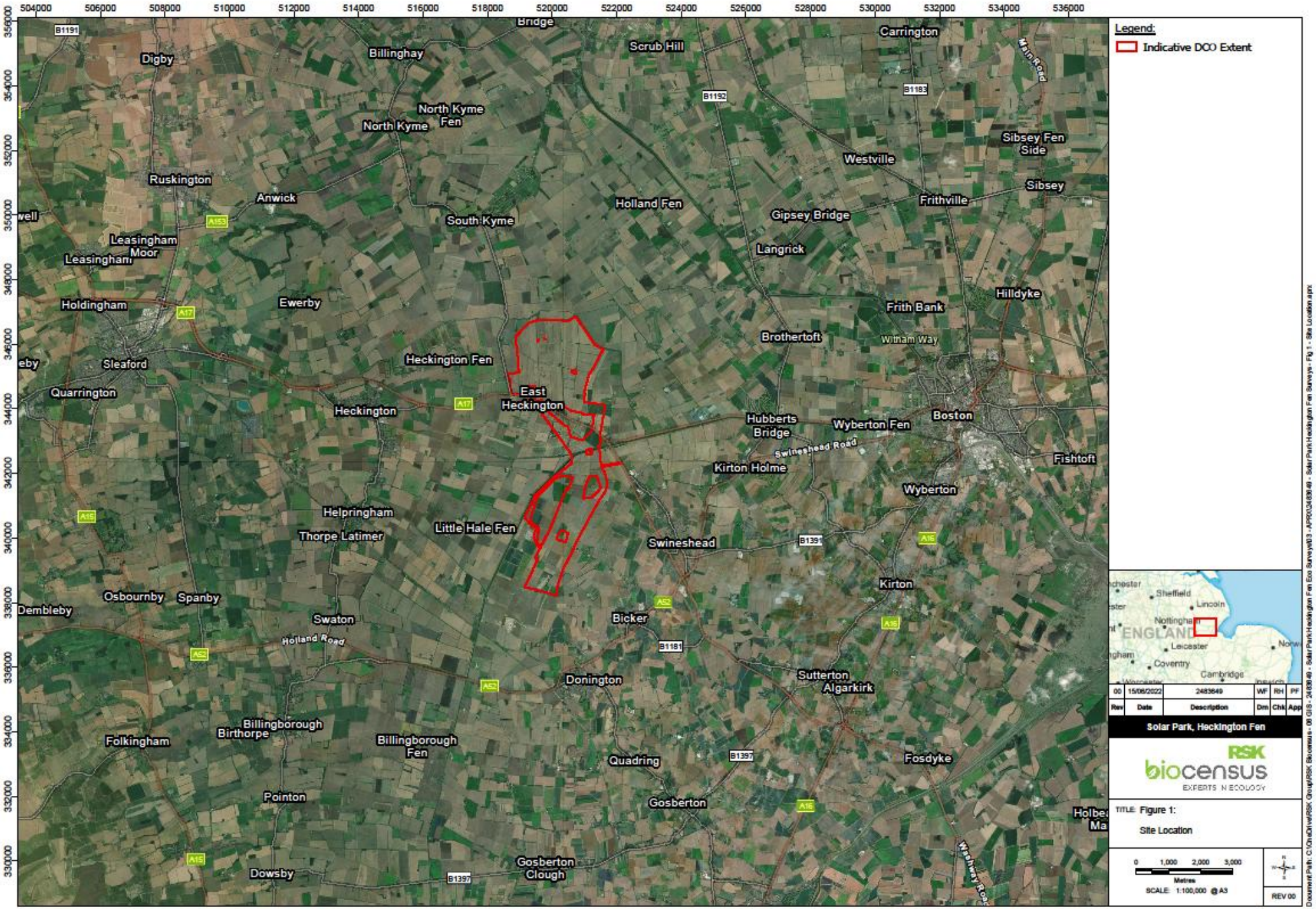
FIGURES

Figure 1 Site Location Plan
Figure 2 Habitat Map



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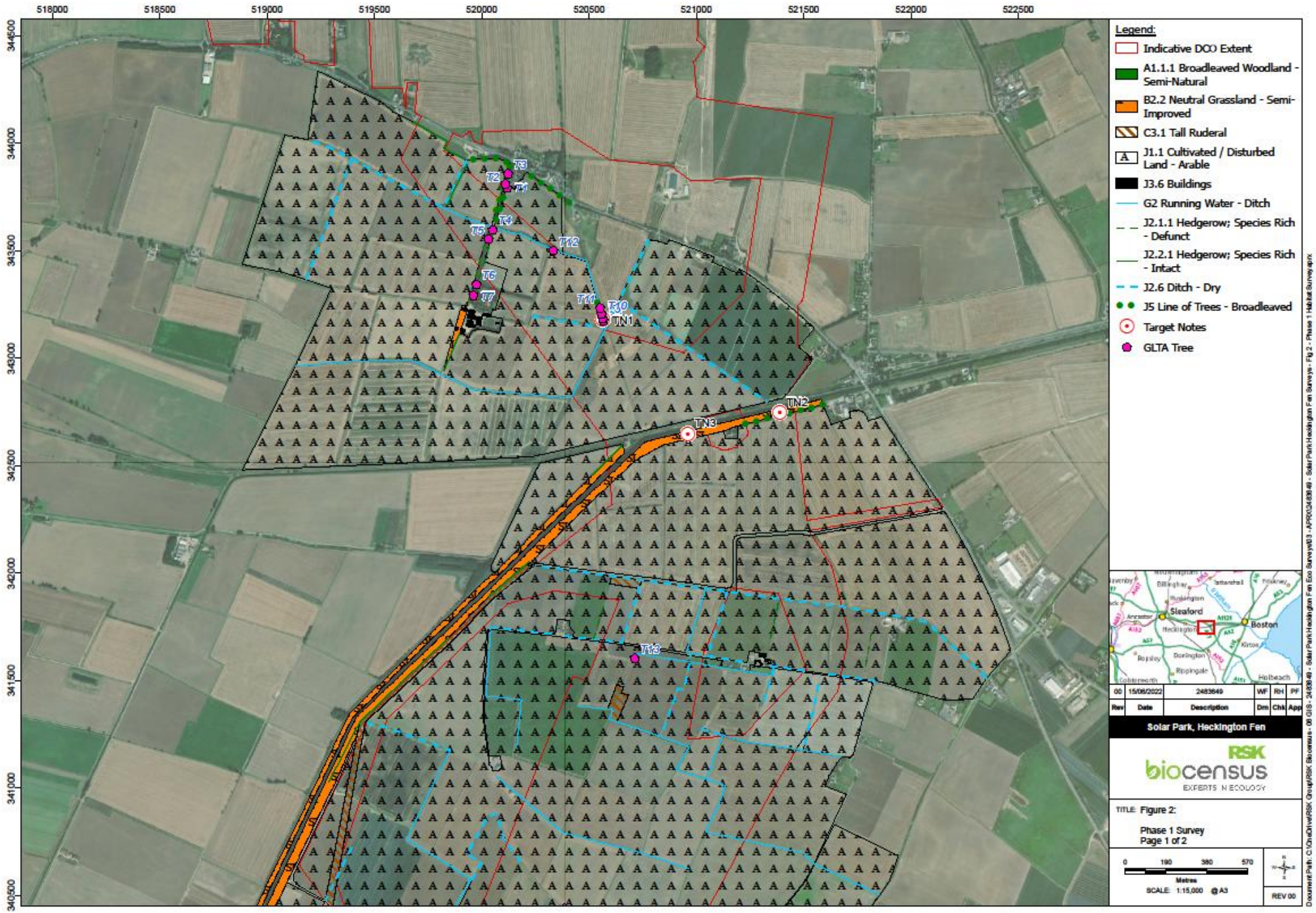

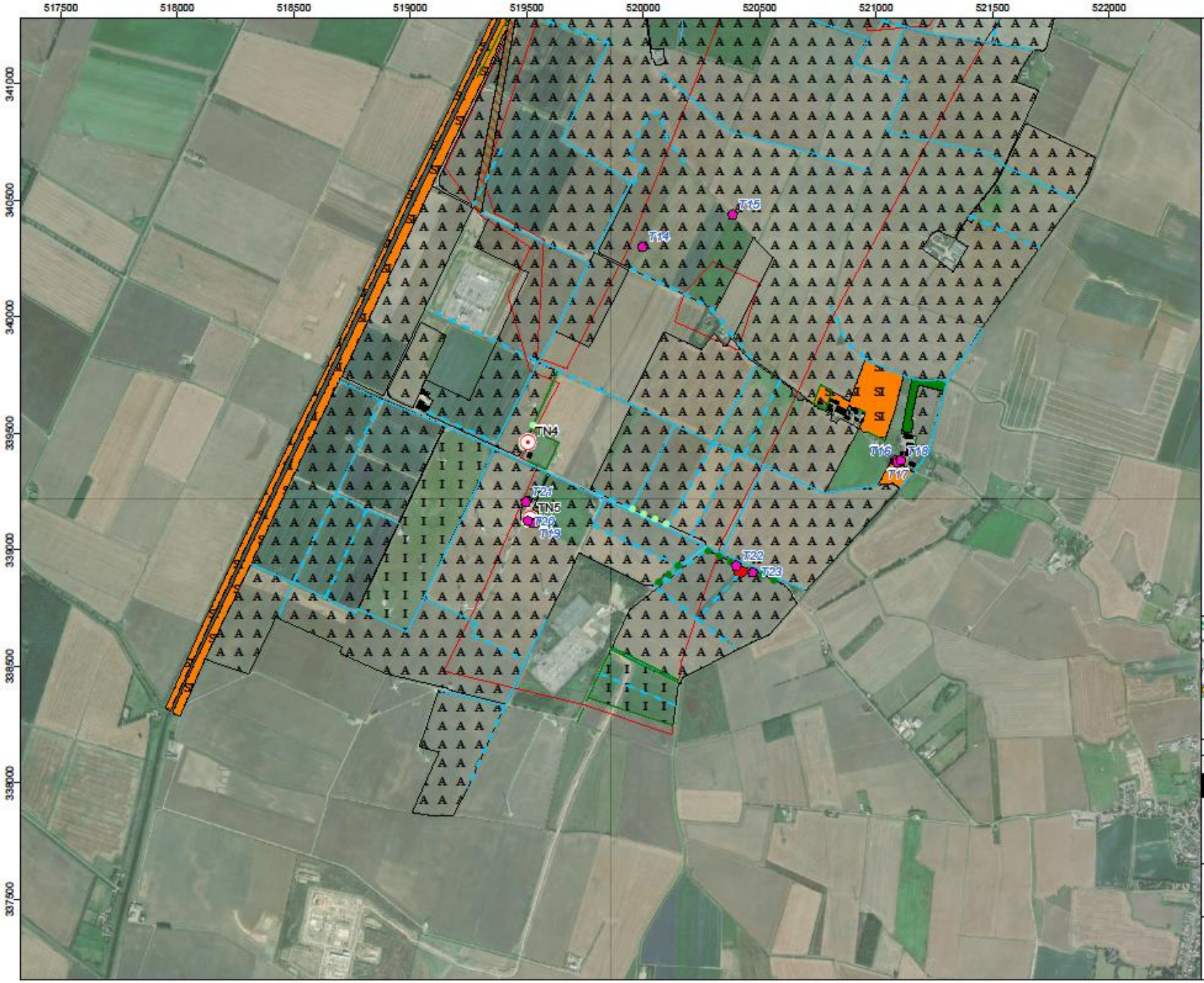

Legend:

- Indicative DCO Extent
- A1.1.1 Broadleaved Woodland - Semi-Natural
- B4 Improved Grassland
- B2.2 Neutral Grassland - Semi-Improved
- C3.1 Tall Ruderal
- J1.1 Cultivated / Disturbed Land - Arable
- J3.6 Buildings
- J5 Other: Refuse Tip
- G2 Running Water - Ditch
- J2.2.1 Hedgerow; Species Rich - Intact
- J2.6 Ditch - Dry
- J5 Line of Trees - Broadleaved
- J5 Line of Trees - Coniferous
- Target Notes
- GLTA Tree

Rev	Date	Description	Drn	Chk	App
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Solar Park, Heckington Fen

RSK biocensus EXPERTS IN ECOLOGY

TITLE: Figure 2:

Phase 1 Survey
Page 2 of 2

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APPENDIX A – NATURE CONSERVATION LEGISLATION AND POLICY

International Legislation

The following international conventions and directives apply to biodiversity protection in the UK. Post-'Brexit', even though European Union (EU) directives no longer directly apply to the UK, the provisions therein are enshrined in both domestic legislation and international agreements. Legislation has been enacted to ensure the regulations derived from these remain in force[2].

The Convention on Biological Diversity 1992 *et seq.*

This multilateral treaty [redacted] signed by 150 government leaders at the 1992 Rio Earth Summit, has three main goals, of which one is the conservation of biological diversity. Article 6 requires countries to develop national biodiversity strategies, plans or programmes. In response, the UK developed the UK Biodiversity Action Plan (BAP) 1994 (https://jncc.gov.uk/our-work/uk-bap/) as well as county-specific BAPs. Subsequent to this, parties of the convention agreed the supplementary Nagoya Protocol 2010 (available at [redacted] adopting the Strategic Plan for Biodiversity 2011-2020. The purpose of this Strategic Plan was to provide a framework for establishing national and regional biodiversity targets [redacted]

Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) 1992

https://www.legislation.gov.uk/eudr/1992/43

The Habitats Directive 1992 requires EU MSs to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of community interest, which are listed under Annex I, II, IV and/or V. Species listed under Annex IV are known as 'European Protected Species' (EPS), and have retained their protected status in UK domestic legislation post-Brexit.

Under the Habitats Directive, EU Member States are required to contribute to the Natura 2000 network through the designation of Special Areas of Conservation (SACs) for natural habitat types listed in Annex I and habitats of species listed in Annex II. Post Brexit, SACs are no longer considered part of the European Natura 2000 network and are instead components of the UK's 'national site network', but their highly protected status is unchanged.

The Convention on Wetlands of International Importance Especially as Waterfowl Habitat 1971: the Ramsar Convention

Accessible via https://jncc.gov.uk/our-work/ramsar-convention/

The Ramsar Convention is an intergovernmental treaty focused on the conservation and sustainable use of wetland, primarily as habitats for water birds. Under the convention, each

[2] Further information relating to England and Wales can be found here: https://www.gov.uk/government/publications/changes-to-the-habitats-regulations-2017/changes-to-the-habitats-regulations-2017. A similar exercise has been undertaken in Scotland and Northern Ireland.

ratified country is required to identify and designate sites (Ramsar sites) that meet the criteria for identifying a wetland of international importance, i.e. containing representative, rare or unique wetland types. In addition, the convention promotes international co-operation to promote the wise use of all wetlands and their resources.

Habitats Regulations Assessment (HRA): a note

There is a requirement under the EU nature directives, and enshrined in country-specific domestic legislation[3] (see below), to undertake a screening exercise to determine whether any sites that form part of the 'national site network' (formerly Natura 2000) are likely to be significantly affected by any proposal (project or plan). The assessment must consider the proposals alone and also in combination with other plans and projects, if they result from activities that are not directly connected with, or necessary to, the management of the designated sites. If significant effects are likely, an Appropriate Assessment (AA) will need to be carried out. The screening, any AA, and any subsequent assessment, are collectively known as a Habitats Regulations Assessment (HRA). The HRA needs to take into account each of the 'Qualifying Features' (habitats or species) that justified the site being designated. Ramsar sites are treated in the same way as SACs and SPAs in HRAs, as are sites which have not been fully adopted i.e. candidate SACs (cSACs) and potential SPAs (pSPAs).

The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) 1979

Accessible via**:** https://jncc.gov.uk/our-work/the-convention-on-the-conservation-of-migratory-species-of-wild-animals/#convention-summary

The Bonn Convention was adopted in 1979 and came into force in 1985. Contracting Parties work together to conserve migratory species and their habitats by providing strict protection for endangered migratory species (listed in Appendix I of the Convention), concluding multilateral agreements for the conservation and management of migratory species which require or would benefit from international cooperation (listed in Appendix II), and by undertaking cooperative research activities. The UK Government ratified the Bonn Convention in 1985. The current legally-binding Agreements under the Convention include EUROBATS[4].

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) 1979

[redacted]

The principal aims of the Bern Convention 1979 are to ensure the conservation and protection of wild plant and animal species and their natural habitats (listed in Appendices I and II of the Convention), to increase cooperation between contracting parties, and to regulate the exploitation of those species (including migratory species) listed in Appendix III. To this end, the Bern Convention imposes legal obligations on contracting parties, protecting over 500 wild plant

[3] In England and Wales: the Conservation of Habitats and Species Regulations 2017 (as amended).
In Scotland: the Conservation (Natural Habitats &c.) Regulations 1994 (as amended).
In Northern Ireland: the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended). .
In the UK offshore area: the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended).

[4] More information available at https://jncc.gov.uk/our-work/agreement-on-the-conservation-of-populations-of-european-bats-eurobats

species and more than 1,000 wild animal species. The UK Government ratified the Bern Convention in 1982.

National Legislation

The following pieces of domestic legislation apply to biodiversity protection in the UK.

The Wildlife and Countryside Act (WCA) 1981

https://www.legislation.gov.uk/ukpga/1981/69

The Wildlife and Countryside Act 1981 (as amended) is the primary piece of legislation relating to nature conservation in the UK, though it has been adapted in different ways in the devolved administrations. It was initially enacted to implement the Bern Convention, Bonn Convention and the Birds Directive (described above).

The act is supplemented by provisions in the Countryside and Rights of Way (CRoW) Act 2000 and the Natural Environment and Rural Communities (NERC) Act 2006, and extended in Scotland by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2011). Its equivalent in Northern Ireland is the Wildlife (Northern Ireland) Order 1985 (as amended and similarly extended). In addition to the Habitat Regulations (described below), the WCA provides protection for species listed in Schedules 1 (birds), 5 (other animals) and 8 (plants) of the Act. It provides for the notification and confirmation of Sites of Special Scientific Interest (SSSIs) in England and Wales[5]. It also sets out, in other schedules, important and invasive species which are legally protected or require management.

All species of bird are protected under the WCA. The legislation makes it an offence to intentionally:

a) kill, injure or take any wild bird;
b) take, damage, or destroy the nest of any wild bird while that nest is in use or being built; or
c) take or destroy an egg of any wild bird.

Those species of birds listed on Schedule 1 of the WCA are afforded additional protection, which deems it an offence to intentionally or recklessly:

a) disturb any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or
b) disturb dependent young of such a bird.

Under Section 9 of the WCA, for animals listed on Schedule 5, it is an offence in England and Wales to intentionally or recklessly:

- kill, injure or take any wild animal listed on Schedule 5*;
- possess or control any live or dead those wild animals or anything derived from it*;
- damage or destroy any structure or place which wild animals listed on Schedule 5 uses for shelter or protection*;
- disturb any such animal while it is occupying a structure or place of shelter or protection;

[5] Duty replaced by the Nature Conservation (Scotland) Act 2004 (as amended) and the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 (as amended) in those countries.

- obstruct access to any structure or place used by any such animal for shelter or protection; and
- sell, offer or expose for sale, or have in their possession or transports for the purpose of sale, any live or dead wild animal listed on Schedule 5 or any part of, or anything derived from such an animal.

As noted above, there are minor differences between the offences in England and Wales outlined above, and those in Scotland / Northern Ireland. The three clauses marked with asterisks do not apply to EPS in England and Wales, as these offences are included in the 'Habitats Regulations' (see below). In addition, the Wildlife and Countryside Act 1981 is no longer relevant to EPS in Scotland or Northern Ireland, which instead are afforded full protection by the 'Habitats Regulations' (see below).

In addition to EPS, species commonly found on development sites include water voles (*Arvicola amphibius*) and widespread species of reptiles: common lizard (*Zootoca vivipara*); slow-worm (*Anguis fragilis*); grass snake (*Natrix helvetica*); and adder (*Vipera berus*). These four reptile species receive partial protection, which prevents the intentional or deliberate killing and injuring of reptiles or offering them for sale.

Section 14(2)[6] states that it is an offence to plant or otherwise cause to grow any plant in the wild at a place outside its native range.

There is no provision within the Act for derogation licences to be issued for the purposes of development, although Section 10 provides a defence in cases that may be considered to be: *"the incidental result of a lawful operation and could not reasonably have been avoided"* if certain conditions are met.

Section 16(i) of the Act does make provision for derogation licences to be issued *"for the purposes of preserving public health or public … safety"*. For confirmation of this, it would be appropriate to consult the relevant statutory nature conservation body (SNCB)[7].

The Conservation of Habitats and Species Regulations (Habitat Regulations) 2017
https://www.legislation.gov.uk/uksi/2017/1012 England and Wales

The Habitats Regulations 2017 consolidated the various amendments made to the 1994 Habitat Regulations, which were developed to implement the Birds Directive and Habitats Directive (see above) at a national level, though this consolidation only applies in England and Wales. As noted above, in Scotland and in Northern Ireland, the original versions of the Regulations in each region have been retained and amended to include protections for EPS that were initially provided under the WCA (or its equivalent).

The Regulations (as amended) provide for the designation and protection of the national site network (formerly 'Natura 2000 sites'), the adaptation of planning and other controls for those sites, and the protection of EPS (listed on Schedules 2 and 5).

The 2017 Regulations (England and Wales, Reg. 43) deems it an offence to:

a) deliberately capture, injure or kill a wild animal of a EPS,
b) deliberately disturb wild animals of any such species,
c) deliberately take or destroy the eggs of such an animal, or

6 In Scotland, as amended by Section 14 of the Wildlife and Natural Environment (Scotland) Act 2011.

7 SNCBs are - in England: Natural England; in Wales: Natural Resources Wales; in Scotland: NatureScot; in Nortern Ireland: Department of Agriculture, Environment and Rural Affairs (DAERA).

d) damage or destroy a breeding site or resting place of such an animal.

For the purposes of paragraph (b), disturbance of animals includes in particular any disturbance which is likely to:

a) impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
b) to affect significantly the local distribution or abundance of the species to which they belong.

There are also restrictions on transport, possession and sale.

Currently (2021), all EPS are also listed on Schedule 5 of the WCA (outlined above), as it applies in England and Wales, though only some clauses of the WCA apply (Section 9 4(b), (c) and 5). EPS often encountered on development sites include GCN (*Triturus cristatus*), all species of bats, dormice (*Muscardinus avellanarius*) and otters (*Lutra lutra*).

Countryside and Rights of Way Act 2000
https://www.legislation.gov.uk/ukpga/2000/37

The Countryside and Rights of Way (CRoW) Act 2000 provides for public access on foot to certain land types, amends the law for public rights of way, increases protection for SSSIs, and strengthens wildlife enforcement legislation. It applies only in England and Wales.

The Natural Environment and Rural Communities (NERC) Act 2006; The Environment (Wales) Act 2016
https://www.legislation.gov.uk/ukpga/2006/16

The Natural Environment and Rural Communities (NERC) Act 2006, Section 40 requires that any public body or statutory undertaker in England must have regard to the purpose of conservation of biological diversity in a manner that is consistent with the exercise of their normal functions. This may include enhancing, restoring or protecting a population or a habitat. The intention is to help ensure that biodiversity becomes an integral consideration in the development of policies, and that decisions of public bodies work with the grain of nature and not against it. In Wales, a similar duty has been moved to Section 6 of the Environment (Wales) Act 2016.

As part of this duty, statutory undertakers must have regard to the list of habitats and species which are of principal importance for the purpose of maintaining and enhancing biodiversity. For England, the duty to compile such a list is captured under Section 41 of the NERC Act; in Wales, under Section 7 of the Environment (Wales) Act. The lists for England are accessible online via the National Archive[8]; for Wales via [redacted]

The Hedgerows Regulations 1997
https://www.legislation.gov.uk/uksi/1997/1160/made

The Hedgerows Regulations 1997 provide protection for 'important' hedgerows for which replanting is not a substitute. The 'importance' of a hedgerow depends upon several archaeological, wildlife and landscape criteria (which are outlined in the Regulations). The

8 https://webarchive.nationalarchives.gov.uk/ukgwa/20140712055944/http:/[redacted]

regulations deem it an offence to remove an 'important hedgerow' without prior notification to the relevant local planning authority.

Protection of Badgers Act 1992
https://www.legislation.gov.uk/ukpga/1992/51

Badgers and their setts are protected under the Protection of Badgers Act 1992 (England, Wales and Scotland). The key part of this legislation in relation to the proposed development are in Section 3, which deems it an offence to:

a) damage a badger sett or any part of it;
b) destroy a badger sett;
c) obstruct access to, or any entrance of, a badger sett;
d) disturb a badger when it is occupying a badger sett,
e) intend to do any of those things or be reckless as to whether those actions would have any of the consequences listed above.

Derogation licences may be obtained from the relevant SNCB[7] under Section 10 of the Act for the purpose of development, to permit activities which would otherwise be unlawful.

Note: there are additional provisions relating to badgers under the WCA Section 11 (Prohibition of certain methods of killing or taking wild animals).

The Wild Mammals (Protection) Act 1996
https://www.legislation.gov.uk/ukpga/1996/3

All wild mammals are protected by The Wild Mammals (Protection) Act 1996 (as amended). This makes it an offence to mutilate, kick, beat, nail, or otherwise impale, stab, burn, stone, crush, drown, drag or asphyxiate any wild mammal.

Invasive Alien Species (Enforcement and Permitting) Order 2019
(https://www.legislation.gov.uk/uksi/2019/527/contents/made)

The Invasive Alien Species (Enforcement and Permitting) Order applies principally in England and Wales and the UK's offshore marine area, but also controls imports and exports from the UK (including Scotland and Northern Ireland). It lists species of concern which cannot be imported, kept, bred/grown, transported, sold, used, allowed to reproduce, or released into the environment. This Order replaces some elements relating to invasive species in the Wildlife and Countryside Act 1981 (as amended).

National, regional and local policy and guidance of relevance

Planning policy relating to ecology and nature conservation is set out below.

National Planning Policy Framework 2019
Access via: https://www.gov.uk/government/publications/national-planning-policy-framework--2

The National Planning Policy Framework (NPPF) sets out the Government's planning policy in England at the national level. It does not contain specific policies for nationally significant infrastructure projects, which are determined in accordance with the decision-making framework in the Act and relevant National Policy Statements for major infrastructure, as well as any other matters that are relevant (which may include the NPPF). Section 15 (paragraphs 170-183) of the

NPPF specifies the requirements for conserving and enhancing the natural environment through the planning and development process to minimise impacts on habitats and biodiversity.

Planning Practice Guidance 2019

Accessed via: https://www.gov.uk/government/collections/planning-practice-guidance

The Planning Practice Guidance 2019 is a web-resource to support the NPPF, including guidance for Environmental Impact Assessments (https://www.gov.uk/guidance/environmental-impact-assessment) and the Natural Environment (https://www.gov.uk/guidance/natural-environment). The guidance for the Natural Environment explains key issues in implementing the NPPF to protect and enhance the natural environment, including local requirements. The guidance outlines what evidence needs to be taken into account in preparing planning applications to identify and map local ecological networks. It also outlines how biodiversity can be taken into account in preparing a planning application.

Government's 25-Year Environment Plan 2018

Accessed via: https://www.gov.uk/government/publications/25-year-environment-plan

The Government's 25-Year Environment Plan 2018 sets out how the UK Government intends to improve the natural health of the UK through improving land, air and water quality, as well as setting out how the effects of climate change will be tackled. The plan promotes the creation or restoration of wildlife-rich habitat outside the protected site network and seeks to recover threatened, iconic or economically important species of animals, plants and fungi, and where possible to prevent human induced extinction or loss of known threatened species in England. The plan sets out a number of goals and corresponding policies that look at managing land sustainably, improving and enhancing landscapes and biodiversity for both marine and terrestrial environments, improving resource efficiency and reducing waste and pollution, whilst also examining the UK's contribution to improving the global environment.

APPENDIX B – NOTEWORTHY SPECIES RECORDS

Table 4 displays noteworthy species records that are located within 1 km of the site boundary. These species records were obtained from Environmental Records Information Centre North East. The scientific and common names for species are given as well as their level of designation. A glossary defining abbreviations used in the table is given in *Table 7*, Appendix C. If a species is not included in the table below it does not necessarily mean the species is absent from the search area, but that data-holding organisations do not have records of it in these locations.

Table 4: Noteworthy species records within 1 km of the site boundary

Scientific name	Common name	Designation	Most Recent	Within 100m	Within 1km
Mammals					
Meles meles	Eurasian Badger	BAP	2010	x	x
Meles meles	Eurasian Badger	BAP	2007	x	x
Chiroptera	Bat	EPS(Sch2)	2016		x
Chiroptera	Bat	EPS(Sch2)	2013		x
Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	EPS(Sch2), WCA5	2016	x	x
Myotis daubentonii	Daubenton's Bat	EPS(Sch2), WCA5	2016	x	x
Myotis	Myotis Bat species	EPS(Sch2), WCA5	2014		x

APPENDIX C – ABBREVIATIONS

Table 5: Glossary of abbreviations used in this report

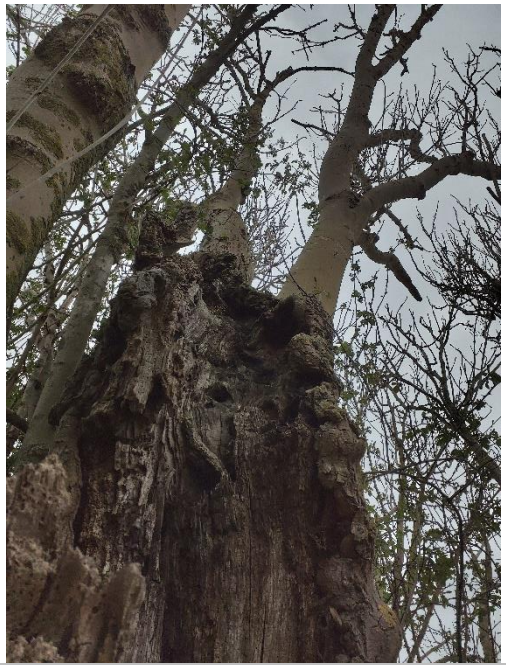
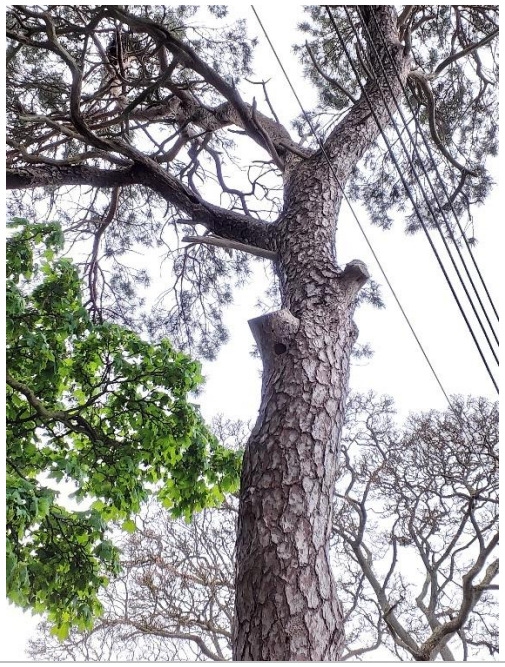
Code	Full Title	Explanation
BAP	Biodiversity action plan	A plan that identifies threats to significantly important species and habitats, and sets out targets and actions to enhance or maintain biodiversity.
~~DA~~	~~The Deer Act 1991~~	~~All wild deer with the exception of Muntjac (*Muntiacus reevesi*) and Chinese Water deer (*Hydropotes inermis*) are protected by a closed season.~~
EPS (Sch 2)	European protected species (Schedule 2)	European protected species of animals, listed on Schedule 2 of The Conservation of Habitats and Species Regulations 2017.
EPS (Sch 5)	European protected species (Schedule 5)	European protected species of plants, listed on Schedule 5 of The Conservation of Habitats and Species Regulations 2017.
GB RDB	Red data book species	Species identified in one of the UK Red Data 2001.
GB RDB(CR)	Critically endangered	An IUCN Red List designation for species at an extremely high risk of extinction.
GB RDB(EN)	Endangered	An IUCN Red List designation for species at a very high risk of extinction.
GB RDB(VU)	Vulnerable	An IUCN Red List designation for species at high risk of extinction.
HAP	Habitat action plan	A plan that identifies threats to a priority habitat and sets out targets and actions to enhance or maintain that habitat.
IUCN	International Union for Conservation of Nature and Natural Resources	A worldwide partnership and conservation network to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable.
LBAP	Local biodiversity action plan	A plan that identifies threats to locally important species and habitats, and sets out targets and actions in Species Action Plans and Habitat Action Plans to enhance or maintain biodiversity at the county or regional level.
SAP	Species action plan	A plan that identifies threats to significantly important species, and sets out targets and actions to prevent losing that species to extinction.
S41	Species of principal importance	Species of Principal Importance in England under The Natural Environment and Rural Communities (NERC) Act (2006)
UKBAP	UK biodiversity action plan	A plan that identifies threats to locally important species and habitats, and sets out targets and actions in species action plans and habitat action plans to enhance or maintain biodiversity in the UK.
WCA	The Wildlife and Countryside Act 1981 (as amended)	Containing 4 Parts and 17 Schedules, the Act covers protection of wildlife (birds, and some animals and plants), the countryside, National Parks, and the designation of protected areas, and public rights of way. All wild plants in Britain are protected from intentional uprooting by an unauthorized person, but land owners, land occupiers, persons authorized by either of these or persons authorized in writing by the local authority for the area are exempt. Protection for some species may be limited to certain Sections of the Act (*e.g.* S13(2).
WCA1	Schedule 1 of The Wildlife and Countryside Act 1981 (as amended)	This Schedule lists birds protected by special penalties at all times, but virtually all wild birds have some protection in law. Acts which are prohibited for all wild birds (except derogated 'pest' species) include intentional killing, injuring or taking; taking, damaging or destroying nests in use or being built; taking or destroying eggs; possessing or having control of (with certain exceptions but including live for dead birds, parts or derivative); setting or permitting certain traps, weapons, decoys or poisons. Selling, offering or exposing for sale, possessing or transporting for sale any live wild bird, egg or part of an egg or advertising any of these for sale, or dead wild bird including parts or derivatives are also prohibited. Many birds must be formally registered and ringed if kept in captivity. Schedule I WCA birds are additionally protected from intentional or reckless disturbance while building a nest, or when such a bird is in, on

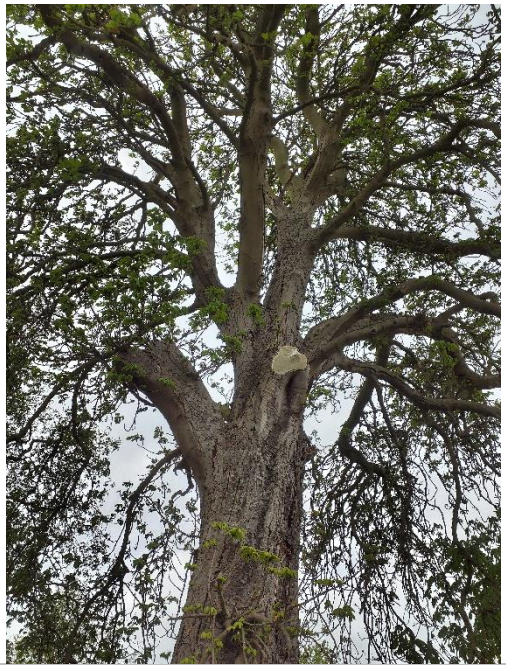
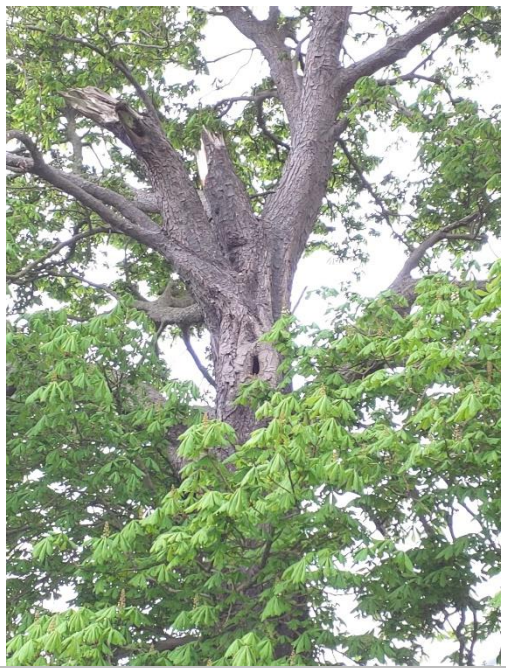
Code	Full Title	Explanation
		or near a nest containing eggs or young, or intentional or reckless disturbance of dependent young.
WCA5	Schedule 5 of The Wildlife and Countryside Act 1981 (as amended)	Schedule 5 animals are protected from intentional killing, injuring or taking; possessing (including parts or derivatives); intentional or reckless damage, destruction or obstruction of any structure or place used for shelter or protection; selling, offering or exposing for sale, possessing or transporting for the purpose of sale (alive or dead, including parts or derivatives). Protection of some species is limited to certain Sections of the Act (*e.g.* S9(1), S9(4a), S9(4b), S9(5)).
WCA8	Schedule 8 of The Wildlife and Countryside Act 1981 (as amended)	Plants and fungi protected from intentional picking, uprooting, destroying, trading (including parts or derivatives), *etc*.

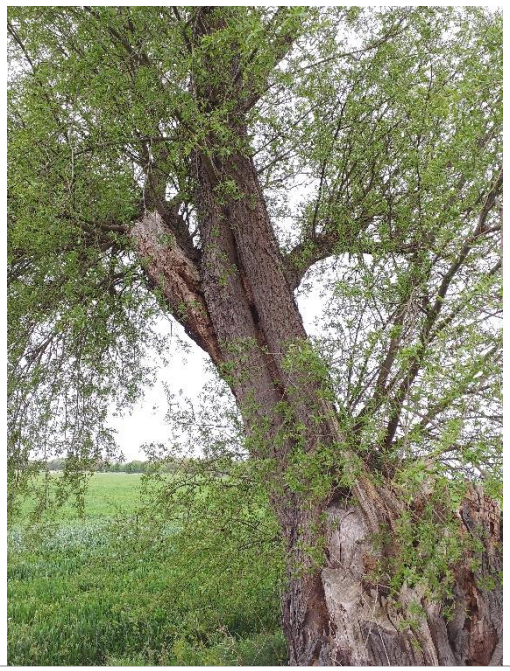
APPENDIX D – SITE PHOTOGRAPHS

1		2	
	Tree 1. Pedunculate Oak with single knothole		*Tree 2: Lime pollard with weld*
3		4	
	Tree 3: Lime pollard with knothole		*Tree 4: Lime pollard with weld*
5		6	
	Tree 5: Lime pollard with bark flake		*Tree 6: Lime pollard with tear out*

7		**8**	
	Tree 7: Sycamore with shallow knotholes		*Tree 8: Black Poplar with butt rot*
9		**10**	
	Tree 9: Black Poplar with butt rot		*Tree 10: fallen Black Poplar stump with hollowed centre*
11		**12**	
	Tree 11: Black Poplar with rot and shearing		*Tree 12: English Elm with hollowed trunk*

13		**14**	
	Tree 13: damaged Ash		*Tree 14: Ash with tear down*
15		**16**	
	Tree 15: Ash with tear downs		*Tree 16: Scot's Pine with woodpecker hole*

17		**18**	
	Tree 17: Sycamore with bark flakes		*Tree 18: Horse Chestnut with assorted features*
19		**20**	
	Tree 19: Horse Chestnut with knothole		*Tree 20: Horse Chestnut with butt rot*

21		**22**	
	Tree 21: Horse Chestnut with knotholes		*Tree 22: Crack Willow with assorted features*
23		**24**	
	Tree 23: Horse Chestnut with overhangs		*Trees 8 and 9: Black Poplars (Populus nigra* ssp. *betulifolia)*

24	
	North of Hall Farm, looking southwest
25	
	Grazing pasture alongside the South Forty Foot Drain

26	
	Timms Drove looking south
27	
	Bicker Drove looking towards pumping station and South Forty Foot Drain

APPENDIX E – SPECIES LIST

Species	Abundance by habitat		
	Arable	Grassland and margins	Ditches
a) Trees, shrubs and woody climbers			
Acer campestre (Field Maple)		R	
Acer pseudoplatanus (Sycamore)		R	
Aesculus hippocastanum (Horse-chestnut)		R	
Alnus glutinosa (Alder)		R	
Betula pendula (Silver Birch)		R	
Carpinus betulus (Hornbeam)		R	
Cornus sanguinea (Dogwood)		R	
Crataegus monogyna (Hawthorn)		LF	
Cupressus lawsoniana (Lawson's Cypress)		R	
Cupressus macrocarpa (Monterey Cypress)		R	
Euonymus europaeus (Spindle)		R	
Hedera helix s.l. (Ivy)		R	
Ilex aquifolium (Holly)		R	
Ligustrum vulgare (Wild Privet)		R	
Lycium barbarum (Duke of Argyll's Teaplant)		R	
Malus domestica (Apple)		R	
Pinus sylvestris (Scots Pine)		R	
Populus nigra ssp. *betulifolia* (Black-poplar)		LF	
Prunus avium (Wild Cherry)		R	
Prunus domestica (Wild Plum)		R	
Prunus spinosa (Blackthorn)		R	
Quercus robur (Pedunculate Oak)		R	
Rosa canina (Dog-rose)		R	
Rosa corymbifera (Hairy Dog-rose)		R	
Rubus fruticosus agg. (Bramble)		R	
Salix caprea (Goat Willow)		R	
Salix cinerea (Grey Willow)		R	
Salix ×fragilis (Crack-willow)		R	
Salix ×sepulcralis (Weeping Willow)		R	
Salix ×smithiana (Silky-leaved Osier)		R	
Salix viminalis (Osier)		R	
Sambucus nigra (Elder)		LF	
Sorbus aucuparia (Rowan)		R	
Tilia ×europaea (Lime)		LF	
Viburnum lantana (Wayfaring-tree)		R	
Viburnum opulus (Guelder-rose)		R	
b) Grasses, sedges and rushes			
Agrostis stolonifera (Creeping Bent)		O	LF
Alopecurus geniculatus (Marsh Foxtail)		R	R

Alopecurus myosuroides (Black-grass)	LF	O	
Alopecurus pratensis (Meadow Foxtail)			
Anisantha sterilis (Barren Brome)			
Arrhenatherum elatius (False Oat-grass)		A	
Avena sp. (an Oat)	R		
Bromus hordeaceus (Soft-brome)			
Carex acutiformis (Lesser Pond-sedge)			R
Carex hirta (Hairy Sedge)	R	R	
Carex otrubae (False Fox-sedge)		R	R
Carex riparia (Greater Pond-sedge)			O
Dactylis glomerata (Cock's-foot)		F	
Eleocharis palustris (Common Spike-rush)			R
Festuca rubra (Red Fescue)		O	
Glyceria sp. (a Sweet-grass)			R
Glyceria fluitans (Floating Sweet-grass)			R
Glyceria maxima (Reed Sweet-grass)			R
Holcus lanatus (Yorkshire-fog)	R	F	
Hordeum distichon (Two-rowed Barley)	D	R	
Juncus articulatus (Jointed Rush)			R
Juncus effusus (Soft-rush)			
Lolium perenne (Perennial Rye-grass)		LF	
Panicum miliaceum (Common Millet)		R	
Phalaris arundinacea (Reed Canary-grass)			O
Phragmites australis (Common Reed)			R
Poa annua (Annual Meadow-grass)		R	
Schedonorus arundicaceus (Tall Fescue)	R	R	
Vulpia bromoides (Squirreltail Fescue)		R	
Zea mays (Maize)	R		
c) Herbaceous species			
Achillea millefolium (Yarrow)	R	R	
Alisma plantago-aquatica (Water-plantain)			R
Anthriscus sylvestris (Cow Parsley)		R	
Arctium lappa (Greater Burdock)		R	
Arctium minus (Lesser Burdock)		R	
Armoracia rusticana (Horse-radish)		R	
Artemisia vulgaris (Mugwort)		R	
Bellis perennis (Daisy)	R	R	
Beta vulgaris ssp. *vulgaris* (Root Beet)	R		
Brassica napus ssp. *oleifera* (Oilseed Rape)		LF	
Brassica oleracea (Cabbage)	R		
Brassica rapa ssp. sylvestris (Bargeman's Cabbage)		LA	
Callitriche sp. (a Water-starwort)			F
Callitriche stagnalis (Common Water-starwort)			R
Calystegia sepium (Hedge Bindweed)			
Capsella bursa-pastoris (Shepherd's-purse)	R	R	
Cardamine pratensis (Cuckooflower)		R	

Centaurea debeauxii (Chalk knapweed)		R	
Cerastium fontanum (Common Mouse-ear)		R	
Cerastium glomeratum (Sticky Mouse-ear)	R	R	
Ceratophyllum demersum (Rigid Hornwort)			R
Chenopodium album (Fat-hen)	R	R	
Cirsium arvense (Creeping Thistle)		LF	
Cirsium vulgare (Spear Thistle)		R	
Conium maculatum (Hemlock)		R	
Convolvulus arvensis (Field Bindweed)	R	R	
Elodea nuttallii (Nuttall's Waterweed)			O
Epilobium ciliatum (American Willowherb)		R	
Epilobium hirsutum (Great Willowherb)		R	R
Epilobium parviflorum (Hoary Willowherb)	R	R	
Epilobium tetragonum (Square-stalked Willowherb)	R	R	
Erigeron sp. (a Fleabane)			
Erophila verna (Common Whitlowgrass)		R	
Ervilia hirsuta (Hairy Tare)		R	
Ervum tetraspermum (Smooth Tare)		R	
Euphorbia helioscopia (Sun Spurge)	R	R	
Fumaria officinalis ssp. *officinalis* (Common Fumitory)	R		
Galium aparine (Cleavers)		LF	
Geranium dissectum (Cut-leaved Crane's-bill)		R	
Geranium molle (Dove's-foot Crane's-bill)	R	R	
Geranium pusillum (Small-flowered Crane's-bill)	R	R	
Geranium pyrenaicum (Hedgerow Crane's-bill)		R	
Geranium robertianum (Herb-Robert)	R	O	
Geum urbanum (Wood Avens)	R	O	
Helianthus annuus (Sunflower)	R		
Helminthotheca echioides (Bristly Oxtongue)		R	
Helosciadium nodiflorum (Fool's Watercress)			R
Heracleum sphondylium (Hogweed)		R	
Hippuris vulgaris (Mare's-tail)			F
Hottonia palustris (Water-violet)			LA
Iris foetidissima (Stinking Iris)		R	
Iris pseudacorus (Yellow Iris)			R
Jacobaea erucifolius (Hoary Ragwort)	R	R	
Jacobaea vulgaris (Common Ragwort)	R	R	
Lactuca serriola (Prickly Lettuce)	R		
Lamium album (White Dead-nettle)	R	R	
Lamium hybridum (Cut-leaved Dead-nettle)	R	R	
Lamium purpureum (Red Dead-nettle)	LF	R	
Lemna gibba (Fat Duckweed)			R
Lemna minor (Common Duckweed)			R
Lemna trisulca (Ivy-leaved Duckweed)			O
Lepidium coronopus (Swine-cress)	R	R	
Leucanthemum vulgare (Oxeye Daisy)		LF	

Lysimachia arvensis (Scarlet Pimpernel)			
Malva sylvestris (Common Mallow)		R	
Matricaria chamomila (Scented Mayweed)	R		
Matricaria discoidea (Pineappleweed)	R	R	
Medicago arabica (Spotted Medick)		R	
Medicago lupulina (Black Medick)		R	
Myosotis arvensis (Field Forget-me-not)		R	
Myosotis ramosissima (Early Forget-me-not)		R	
Myriophyllum spicatum (Spiked Water-milfoil)			R
Narcissus pseudonarcissus (Daffodil)		R	
Nasturtium officinale (Water-cress)			R
Papaver rhoeas (Common Poppy)	R	R	
Persicaria amphibia (Amphibious Bistort)			R
Persicaria maculosa (Redshank)		R	
Phacelia tanacetifolia (Phacelia)	LF		
Plantago lanceolata (Ribwort Plantain)	R	R	
Plantago major (Greater Plantain)	R	R	
Polygonum aviculare (Knotgrass)		R	
Potamogeton berchtoldii (Small Pondweed)			F
Potamogeton crispus (Curled Pondweed)			O
Potamogeton lucens (Shining Pondweed)			LF
Potamogeton pusillus (Lesser Pondweed)			O
Potamogeton natans (Broad-leaved Pondweed)			LF
Potentilla anserina (Silverweed)			
Potentilla reptans (Creeping Cinquefoil)			
Primula veris (Cowslip)		R	
Primula vulgaris (Primrose)		R	
Prunella vulgaris (Selfheal)			
Ranunculus aquatilis (Common Water-crowfoot)			R
Ranunculus circinatus (Fan-leaved Water-crowfoot)			R
Ranunculus repens (Creeping Buttercup)		R	
Ranunculus sceleratus (Celery-leaved Buttercup)			R
Ranunculus trichophyllus (Thread-leaved Water-crowfoot)			F
Raphanus sativus var. *oleiferus* (Fodder Radish)		R	
Reseda lutea (Wild Mignonette)		R	
Reseda luteola (Weld)		R	
Rumex acetosa (Common Sorrel)			
Rumex conglomeratus (Clustered Dock)		R	
Rumex crispus (Curled Dock)		R	
Rumex obtusifolius (Broad-leaved Dock)			
Sambucus ebulus (Dwarf Elder)		R	
Senecio vernalis (Eastern Groundsel)	R		
Senecio vulgaris (Groundsel)	R	R	
Sherardia arvensis (Field Madder)		R	
Silene dioica (Red Campion)	R		
Sinapis arvensis (Charlock)		LA	

Sisymbrium officinale (Hedge Mustard)		R	
Sonchus asper (Prickly Sow-thistle)		R	
Sonchus oleraceus (Smooth Sow-thistle)		R	
Sparganium sp. (a Bur-reed)			O
Sparganium emersum (Unbranched Bur-reed)			R
Stellaria media (Common Chickweed)		R	
Stuckenia pectinata (Fennel Pondweed)			R
Taraxacum sect. *Hamata* (a Dandelion)			
Taraxacum sect. *Taraxacum* (a Dandelion)		R	
Thlaspi arvense (Field Penny-cress)	R		
Trifolium pratense (Red Clover)		R	
Trifolium repens (White Clover)		R	
Trifolium striatum (Knotted Clover)		R	
Tripleurospermum inodorum (Scentless Mayweed)	O	R	
Tussilago farfara (Colt's-foot)		R	R
Typha latifolia (Bulrush)			LF
Urtica dioica (Common Nettle)	R	LF	
Urtica urens (Small Nettle)	R		
Verbascum thapsus (Great Mullein)		R	
Veronica agrestis (Green Field-speedwell)	R		
Veronica arvensis (Wall Speedwell)	R	R	
Veronica catenata (Pink Water-speedwell)		R	R
Veronica persica (Common Field-speedwell)	R	R	
Veronica polita (Grey Field-speedwell)	R		
Vicia faba (Broad Bean)	R		
Vicia sativa ssp. *segetalis* (Common Vetch)			
Viola arvensis (Field Pansy)	R		
Zannichellia palustris (Horned Pondweed)			R
d) Ferns and horsetails			
Equisetum arvense (Field Horsetail)		R	
e) Bryophytes			
Amblystegium serpens (Creeping Feather-moss)	R		
Calliergonella cuspidata (Pointed Spear-moss)		R	R
Drepanocladus aduncus (Knieff's Hook-moss)			R
Funaria hygrometrica (Bonfire-moss)		R	
Leptodictyum riparium (Knieff's Feather-moss)			R
Oxyrhynchium hians (Swartz's Feather-moss)		R	
Syntrichia ruralis (Great Hairy Screw-moss)		R	
f) Other (e.g. fungi, lichens, stoneworts, algae)			
Chara vulgaris (Common Stonewort)			R
Hydrodictyon reticulatum (Water-net)			R
Ulva flexuosa ssp. *pilifera* (a macroalga)			LD
Cyclocybe cylindracea (Poplar Mushroom)		R	