

Preliminary Ecological Appraisal



Aswarby Estate Solar Farm, Scredington, Sleaford, NG34 0AA

Principal Author: Lauren Hadfield

Date: December 2023

Project Code/ADAS Ref: 1051749
/ WNT69105-1225 (00)

Version: 1

Address:

Commissioned For:

RSK ADAS Ltd
14 Beecham Court,
Pemberton Business Park
Wigan, WN3 6PR

Lighthouse Development
Consulting 3rd Floor,
The Senate Southernhay
Gardens, Exeter EX1
1UG



Quality Assurance

Revision	Date	Author	Checked	Approved
00	06/10/2023	Lauren Hadfield BSc (Hons) QCIEEM [REDACTED]	Simon Fawcett BSc (Hons) AICEEM [REDACTED]	Rob Nicholson BSc (Hons) MCIIEEM [REDACTED]
01	03/12/2023	Lauren Hadfield BSc (Hons) QCIEEM [REDACTED]	Simon Fawcett BSc (Hons) AICEEM [REDACTED]	Rob Nicholson BSc (Hons) MCIIEEM [REDACTED]

The information which ADAS has prepared and provided is true and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Disclaimer

RSK ADAS Ltd (ADAS) has prepared this report for the sole use of the client, showing reasonable skill and care, for the intended purposes as stated in the agreement under which this work was completed. The report may not be relied upon by any other party without the express agreement of the client and ADAS. No other warranty, expressed or implied, is made as to the professional advice included in this report.

Where any data supplied by the client or from other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by ADAS for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.

No part of this report may be copied or duplicated without the express permission of ADAS and the party for whom it was prepared.

Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK ADAS Ltd.

Contents

Summary.....	1
1 Introduction.....	5
1.1 Background and Survey Objectives.....	5
1.2 Site Description.....	5
1.3 Description of the Proposed Development.....	6
2 Methods.....	7
2.1 Desk Study.....	7
2.2 Field Survey.....	7
2.3 Assessment and Evaluation.....	9
2.4 Zone of Influence.....	9
2.5 Mitigation Hierarchy.....	10
2.6 Limitations.....	10
3 Baseline Ecological Conditions.....	10
3.1 Desk Study.....	10
3.2 Field Survey.....	14
4 Planning Policy and Legislation.....	21
4.1 Local Planning Policy.....	21
4.2 National Planning Policy Framework.....	24
4.3 Relevant Legislation.....	25
5 Evaluation of Ecological Features/Further Survey.....	28
6 Ecological Constraints, Opportunities and Recommendations.....	33
6.1 Designated Sites.....	33
6.2 Habitats.....	33
6.3 Species and Species Groups.....	34

6.4	Other Enhancement Opportunities.....	38
7	Conclusions.....	39
8	References.....	41
	Appendix 1: Proposed Plans.....	42
	Appendix 2: Designated Sites Maps.....	43
	Appendix 3: Frame of Reference for Geographical Context.....	46
	Appendix 4: UK Habitat Classification map.....	47
	Appendix 5: Photographs.....	49
	Appendix 6: Land Parcel Numbers.....	17

Summary

RSK ADAS Ltd were instructed to undertake a Preliminary Ecological Appraisal (PEA) at land located off Station Road, Screddington, Sleaford (NG34 0AA, Grid reference: TF086410) for Lighthouse Development Consulting. The proposal based on current plans is to construct a Solar PV development and associated infrastructure. This report sets out the findings of an ecological desk study and field survey, carried out in May 2023.

The proposed development site comprises mainly of intensively managed arable land with frequent boundary hedgerows. Areas of broadleaved woodland are present bordering a number of the land parcels. North beck runs east to west, adjacent to land parcels two – four, on a southerly aspect.

Two statutory designated sites are present within 5 km of the proposed development, with a further two non-statutory designated sites of nature conservation present within 2 km of the proposed development, with these being Aswarby Thorns and Flower Pot Brick Pits. No impacts on any designated sites are considered likely as a result of the proposed development.

Habitats recorded on site include cereal crop, non-cereal crop, modified grassland, short rotation coppice, arable field margins, hedgerows, field drains and scattered deciduous trees.

Habitats on site were suitable for nesting birds, Badger, reptiles, and amphibians. Reasonable avoidance measures have been recommended with regards to Water Vole and reptiles.

Further surveys are recommended with regards to Great Crested Newt, Otter, wintering birds, and Badger. These surveys have now been commissioned for the site.

Landscape prescriptions have now been confirmed (November 2023), following confirmation of this information, previous recommendations requiring review by an ecologist, to inform the need for further survey, specifically in relation to Water Vole survey and bat activity surveys / further tree inspections are therefore deemed unnecessary, due to suitable buffer zones confirmed for all ecologically important features present on the site.

Opportunities to enhance the ecological value of the site in accordance with the local development plan and National Planning Policy Framework (NPPF) existed and recommendations have been made within this report.

Updates to this report have been made following the issue of confirmed site block plans.

Summary of Further Survey or Actions

The table below provides information on further surveys, mitigation measures and enhancement measures to be undertaken on site.

Survey/Action	Rationale	When
Breeding bird survey	Habitat on site may support notable species of ground nesting bird during the bird breeding season (March – August inclusive).	Six survey visits between March and July (one per month). (survey efforts for the site are now complete)
Wintering bird survey	Habitat on site may support notable overwintering bird assemblages. It is understood that the client has commissioned wintering bird surveys.	Four visits between November and February (one per month).
Nesting bird check	The site contains suitable habitat for common nesting birds, in the form of trees and scrub. Habitat for ground nesting species is also present.	Pre-construction: Checks are required for any vegetation removal undertaken between March and August inclusive, no more than 24 hours in advance.
Reptile / Water Vole Reasonable Avoidance Measures (RAMS)	Habitats on site, including hedgerows, scrub, and associated field margins, were considered suitable to support reptiles. However, the proposed development in general will likely enhance the site for this species group. North Beck was considered suitable to support Water Vole. However, following the confirmation of a minimum of a 10 m buffer from the waterbody, it is considered that risks to this species and its habitats can be managed under the terms of RAMS.	During construction
Badger survey	While no evidence of Badger setts was recorded during the field survey (field signs in the form of footprints were observed), offsite habitats (within 30 m) provided	Badger surveys can be undertaken at any time of year.

Survey/Action	Rationale	When
	<p>optimal conditions for sett construction.</p> <p>A survey is required to confirm the presence or likely of Badger setts within 30m of the proposed development boundary.</p> <p>It is understood that a Badger survey is planned for November 2023.</p>	
Great Crested Newt Habitat Suitability Assessment (HSI)	<p>Three ponds located within 250m of the site were not assessed during the field survey. Further assessment of these ponds is required to determine their suitability to support Great Crested Newt.</p> <p>A HSI assessment has been commissioned for the site.</p>	While a HSI assessment can be undertaken at any time of the year, where possible, this survey should be undertaken during the growing season to aid with botanical identification.
Otter Survey	<p>North Beck located adjacent to the proposed development boundary, provided habitat considered suitable to support Otter holts and other resting places.</p> <p>Works within close proximity to Otter resting places may result in an offence through disturbance. A survey is required to confirm the presence or likely absence of Otter holts / resting places along North Beck in proximity to the site.</p> <p>It is understood that an Otter survey is planned for November 2023.</p>	Otter survey can be undertaken at any time of year.
Sensitive lighting scheme during the construction and operation phase of the proposed development in relation to bats.	Boundary vegetation provided commuting and foraging opportunities for bats. The proposed development should implement a sensitive lighting strategy (if lighting is required) that avoids illuminating any of the in-field / boundary trees and hedgerows.	Design, Construction phase and operation phase.
Opportunities for biodiversity enhancement on site include the installation/construction of bat roost boxes, bird nest boxes,	In order to comply with local planning policy and provide positive enhancements for biodiversity.	During design and construction.

Survey/Action	Rationale	When
hedgerow planting, native tree / scrub planting and refugia creation		

1 Introduction

1.1 Background and Survey Objectives

ADAS was commissioned by Lighthouse Development Consulting to undertake a Preliminary Ecological Appraisal (PEA) of agricultural land located off Station Road, Screddington, Sleaford (NG34 0AA, Grid reference: TF086410), hereafter referred to as ‘the site’, in support of a planning application to construct an approximately 72 ha solar PV array across eight land parcels, together with associated infrastructure.

The aim of the Preliminary Ecological Appraisal is to identify ecological constraints to the proposed works and make recommendations for mitigation or opportunities for enhancement that can be incorporated into the design. The Preliminary Ecological Appraisal also makes recommendations for further surveys, as required.

The report has been prepared in accordance with guidance produced by the Chartered Institute of Ecology and Environmental Management (CIEEM 2017) and the British Standard 42020:2013.

The objectives of this report are:

- To identify designated nature conservation sites within the vicinity of the site;
- To identify any records and/or populations of protected, notable or scarce species in the vicinity of the site;
- To record habitats or features of ecological interest within or in immediate proximity to the site;
- To record the presence of, or potential for, protected or notable species;
- To make an ecological assessment and highlight potential ecological constraints;
- To outline any further survey work and potential protected species requirements if relevant; and
- To make suggestions for avoidance, mitigation compensation and enhancements in line with planning policies where appropriate.

1.2 Site Description

The site of approximately 72 ha was located on land situated off Station Road, Screddington, Sleaford (NG34 0AA, Grid reference: TF086410) and comprised of eight land parcels.

The site was set within an agricultural landscape, with much of the surrounding land managed as cropland. Scattered pockets of broadleaved woodland were present adjacent to the site and within the wider area, with most of the western section of the proposed development bordered by semi-natural and re-planted ancient woodland. North Beck runs east to west, adjacent to land parcels two – four, on a southerly

aspect. North Beck is fed by South-Forty Foot Drain, a main channel, which in turn is fed by the main tidal river The Haven, Boston. The entire site comprises of a mixture of arable grassland, featuring frequent boundary hedgerows, with part of the land being managed under an Energy Crops Scheme Agreement, with this being a short rotation coppice of Willow (*Salix* spp).

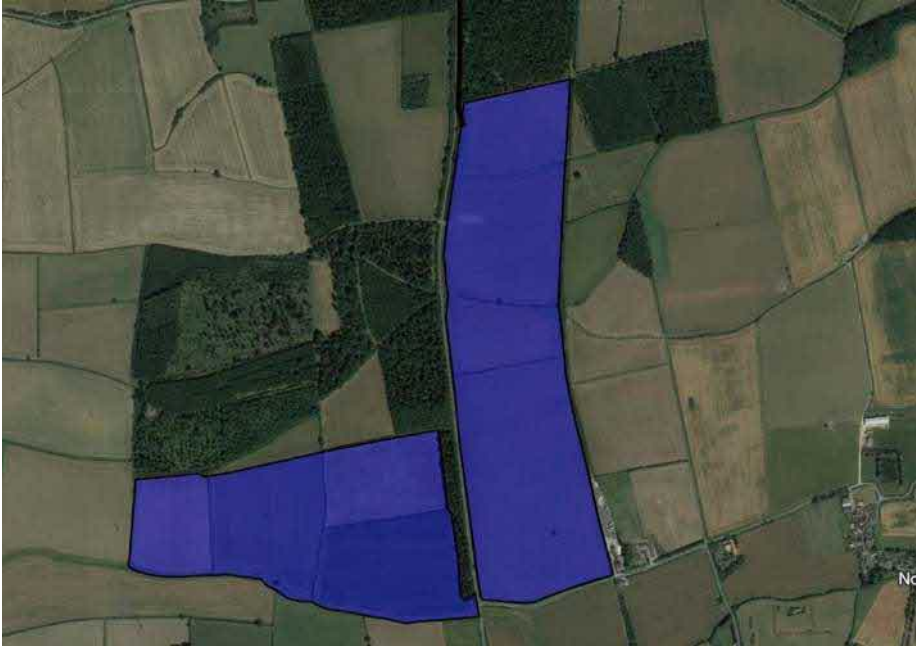


Figure 1. Site location and wider landscape (site indicated by blue area)
Imagery taken from Google Earth. September 2023.

1.3 Description of the Proposed Development

The proposed development comprises the construction of a 72-ha solar PV array, together with associated infrastructure. A cable route is also proposed to run from a substation located at the top of Mareham Lane, following the roadside verge. Access to the site can be gained through existing access tracks, off Station Road to the south for land parcels five - eight and off Mareham Lane for land parcels one - four. While final development plans have not yet been confirmed, it is expected that solar arrays will be constructed across the entire site with all boundary features retained. Following confirmation of landscape prescriptions, it is understood that all hedgerow, trees, watercourses and boundary woodland will be retained and protected by a suitable buffer (10 m + for main watercourses and minimum 5 m for drains and other ecological features). Landscape and management prescriptions have been provided but specifics are yet to be confirmed. Proposed prescriptions include maintenance and improvement of existing hedgerows, grassland improvement, picnic areas, native tree and hedgerow planting and wildflower planting. A proposed development plan is included in Appendix 1.

2 Methods

2.1 Desk Study

A desk study was carried out in August 2023 to identify statutory designated sites of nature conservation importance within a 5 km radius and non-statutory designated sites of nature conservation importance, together with known records of protected and other notable species, within a 2 km radius of the proposed development. The search radius was extended to 10 km for sites designated in relation to bats. Desk study maps can be found in Appendix 2.

Multi-Agency Geographic Information for the Countryside (MAGIC) was used to derive information relating to the location of statutory designated sites, priority habitats and waterbodies.

Greater Lincolnshire Nature Partnership (GLNP) Biological Record Centre provided details of non-statutory designated sites of nature conservation importance and records of protected and other notable species.

It is important to note that most species are greatly under-recorded and therefore a lack of records for a location should not be taken as an absence of the species concerned. Furthermore, a record for a particular habitat or species does not necessarily confirm its current presence.

2.2 Field Survey

2.2.1 UK Habitat Classification Survey

A UK Habitat Classification Survey was conducted on the 15th of May 2023, by Lauren Hadfield BSc (Hons), QCIEEM, a suitably experienced Ecological Consultant, based on the techniques and methodologies described in the UK Habitat Classification User Manual (Butcher et al., 2020) with plant species recorded following standard nomenclature (Stace 2019).

UKHab is based on a hierarchical primary habitat system with associated habitat codes. The primary habitat codes are followed by secondary codes. Secondary codes are designed to give information on the environment, management, and origin of habitats, to identify habitat mosaics and complexes and identify specific features within primary habitats.

The habitat survey was extended to include notes on fauna and habitats which could potentially support protected species. The presence of, or potential for, protected species was noted on the field map during the survey.

2.2.2 Ground Level Tree Assessment

A Ground Level Tree Assessment (GLTA) was carried out by Ecological Consultant Lauren Hadfield BSc (Hons) Qualifying member of CIEEM, on all trees that could potentially be affected by the proposed

development. The purpose of the assessments was to identify features in the trees that bats could use for roosting (Potential Roost Features or PRFs) and involved using close-focusing binoculars to inspect all aspects of the tree from the ground to the canopy looking for potential (bat) roost features, including:

- Natural holes
- Woodpecker holes
- Cracks and / or splits in major limbs
- Loose bark
- Hollows and / or cavities
- Dense epicormic growth (in which bats may roost)
- Bird and bat boxes

Assessments were based on the most recent guidance included in the Bat Conservation Trust’s Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, J (ed) 2016) and are detailed in Table 1 below.

Table 1: BCT classification of buildings and trees, according to their potential to support roosting bats.

Category (Bat Potential)	Description
Negligible value	Building, structure, or tree where surveyor has not identified any suitable potential roosting features, or where those that are present are of such poor quality or condition, such that bats are highly unlikely to use them.
Low value	Building, structure, or tree 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).
Moderate value	Building, 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 to support 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 value	Building, 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 signs of bats, such as droppings and / or feeding remains, found, or information provided via desk study which indicates a roost.



2.2.3 Pond Scoping Survey

Available online mapping and imagery was used to identify the locations of all (potential) ponds within approximately 250 m of the proposed development. Where access could be gained, these were then visited in the field to confirm their status and record their characteristics, with the locations of any other potentially suitable waterbodies not shown on the mapping and imagery also noted. Three waterbodies were present within 250 meters of the site, although due to access restrictions, could not be subject to further survey.

2.3 Assessment and Evaluation

The importance of the features on site were assessed and defined in a geographical context (see Appendix 3). The frame of reference for the habitat features in terms of their geographical importance is in line with guidance set out in CIEEM, 2018.

Species, and the potential for habitats to support them, are assessed, where appropriate, against best practice guidelines.

As part of the evaluation further surveys may be recommended based on the suitability of habitats to support protected species, the habitats themselves and potential impacts posed by the proposed development and the legal protection afforded to both habitats and species.

2.4 Zone of Influence

The assessment conducted for this report has considered the area in which ecological features could be subject to significant effects from the proposed development. The area of the potential effects is often wider than the actual perimeter of the development site and is known as the Zone of Influence.

The Zone of Influence varies for different impacts and each designated site, habitat and species has been considered in relation to their sensitivity to the proposed development.

Special Areas of Conservation (SAC), Special Protection Areas (SPA), Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) Local Nature Reserves (LNR) – 10 km

Sites of Biological Importance (SBI) - 2km

Notable birds – 2km

Bat roosts and Water Vole (*Arvicola amphibius*) -site and surrounding land

Great Crested Newt (*Triturus cristatus*) (potentially suitable breeding ponds) - 250 m

Badgers (*Meles meles*) and Otters (*Lutra lutra*) - 50m

Other protected and notable species/habitat – site level only

2.5 Mitigation Hierarchy

The main aim of the Preliminary Ecological Appraisal is to inform the client of the potential impacts on ecological features and what next steps are needed to manage these. In order to achieve this aim the mitigation hierarchy should be adopted so that the following applies:

Avoidance - Ecological features of importance should be avoided in the first instance through the design process by either designing around them, alternative design or even an alternative location.

Mitigation – Adverse impacts that cannot be avoided should be adequately mitigated for to minimize negative impacts on the ecological features. Mitigation measures can either be implemented during the design process or construction phase.

Compensation – This should only be used in exceptional circumstances or as a last resort, after all options for avoidance and mitigation have been fully considered. Compensation therefore can be applied to any residual impacts that cannot be avoided or mitigated.

Enhancements - Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation.

2.6 Limitations

Three ponds were located within 250 meters of the site, identified using OS mapping and aerial imagery, with two associated with a pocket of broadleaved woodland / Local Wildlife Site towards the northern boundary of land parcel eight, one to the north of the proposed cable route. These waterbodies were not assessed during field survey.

The protected species assessment provides a preliminary view of the likelihood of such species occurring on the site. It should not be taken as providing a full and definitive survey of any protected species group.

The UK Habitat Classification Survey does not constitute a full botanical survey or provide accurate mapping of invasive non-native plant species.

Even where data for a particular species group are provided in the desk study, a lack of records of a defined geographical area does not necessarily mean that there is a lack of ecological interest; the area may simply be under recorded.

3 Baseline Ecological Conditions

3.1 Desk Study

A total of three statutory designated sites of nature conservation importance were recorded within 5 km of the site including two Local Nature Reserves (LNR), and one Site of Special Scientific Interest (SSSI).

There are a total of two non-statutory sites of nature conservation importance located within 2 km, with both these being Local Wildlife Sites (LWS).

No sites designated in relation to bats were identified within 10 km of the proposed development.

See Table 2 below and Appendix 3 for further details.

Table 2: Statutory and non-statutory designated sites within 5km and 2km of the survey site

Site Name	Description	Distance and direction from site
Statutory Designated Sites		
Mareham Pastures Local Nature Reserve LNR	11.39 ha of wildflower meadows, new woodland, hedgerows, open grassland supporting species such as butterflies and Barn Owl (<i>Tyto alba</i>).	2.7 km north
Lollycocks Field LNR	A 'Blue Green Corridor' a partnership scheme of work funded by the European Regional Development Fund, South Kesteven District Council, North Kesteven District Council, Environment Agency, and National Trust and designed to restore and reconnect each river and its corridors through the urban reaches of Grantham and Sleaford. The site has developed into a mosaic of rough semi-improved neutral and damp grassland, wetland including pond, scrape and fen with small areas of planted woodland and scrub. It is managed by Hill Holt Wood with the aim of maintaining public access to an attractive green space for quiet recreation and nature as well as conserving the broad range of biodiversity found on a relatively small urban site.	4.1 km north
Wilsford and Rauceby Warrens Site of Scientific Interest (SSSI)	Wilsford and Rauceby Warrens comprise the most extensive remaining areas of limestone grass heath in South Lincolnshire. The site's rich flora is best seen around the margins of the old sand pits in Rauceby Warren and on the roughs of the adjacent golf course. A large population of a nationally rare plant occurs. Great Crested Newts breed in one of the old water filled workings.	4.8 km west
Non-statutory Designated Sites		
Aswarby Thorns LWS	A large acid woodland surrounded by arable land. Parts are dominated by tall, straight Pedunculate Oak (<i>Quercus robur</i>), other areas have recently been felled. The edges are bounded by hedges and dense scrub which	Bordering east boundary of land parcels 1 – 2 and northern boundary of land parcel 4.

Site Name	Description	Distance and direction from site
	<p>supports a wider range of woody species including Field Maple (<i>Acer campestre</i>), Hazel (<i>Corylus avellana</i>), Blackthorn (<i>Prunus spinosa</i>) and Wych Elm (<i>Ulmus glabra</i>).</p> <p>The shrub layer is thin and appears to be cleared regularly but is dominated by Bramble (<i>Rubus fruticosus</i> agg.) with occasional Grey Willow (<i>Salix cinerea</i>), Elder (<i>Sambucus nigra</i>), Hawthorn (<i>Crataegus monogyna</i>) and Honeysuckle (<i>Lonicera periclymenum</i>). Away from areas of dense Bramble the ground flora appears to be good with abundant Tufted Hairgrass (<i>Deschampsia cespitosa</i>) and False Brome (<i>Brachypodium sylvatica</i>). Male Fern (<i>Dryopteris filix-mas</i>) and Large Scaly Male Fern (<i>Dryopteris affinis</i> 'cambrensis') are frequent.</p>	
Flower Pot Brick Pits LWS	<p>An old brick pit that is now flooded and currently used as a private fishing lake. The edges are dominated by Ash (<i>Fraxinus excelsior</i>) woodland with frequent Pedunculate Oak (<i>Quercus robur</i>) and occasional Silver Birch (<i>Betula pendula</i>) and Downy Birch (<i>Betula pubescens</i>). Field Maple (<i>Acer campestre</i>) is frequent in the shrub layer. Some Walnut (<i>Juglans regia</i>) and Copper Beech (<i>F. sylvatica purpurea</i>) trees have been planted. Both Apple (<i>Malus domestica</i>) and Crab Apple (<i>Malus sylvestris</i>) are rare on the eastern edge of the main lake. The shrub layer is dense in places; it is dominated by Hawthorn (<i>Crataegus monogyna</i>) with hybrid Hawthorn and occasional Red-osier Dogwood (<i>Cornus sericea</i>). The ground flora includes occasional Enchanter's Nightshade (<i>Circaea lutetiana</i>), Foxglove (<i>Digitalis</i> spp), Wild Strawberry (<i>Fragaria vesca</i>), Dog Violet (<i>Viola riviniana</i>) and Early Dog Violet (<i>Viola reichenbachiana</i>).</p> <p>The lake is stocked with Carp (<i>Cyprinus carpio</i>) and supports a variety of waterfowl including Mute Swan (<i>Cygnus olor</i>), Heron (<i>Ardea cinerea</i>), Mallard (<i>Anas platyrhynchos</i>), Canada Goose (<i>Branta canadensis</i>) and Greylag Geese (<i>Anser anser</i>). Swan Mussels (<i>Anodonta cygnea</i>) are present in the lake. Common Toad (<i>Bufo bufo</i>) and evidence of Badgers was also recorded on the site. The piles of bricks and old kilns on the western edge of the main lake have been reported to support reptiles (probably Grass Snake and Common Lizard) although the habitat is quite shaded in some areas which may reduce its suitability for these species. There were also juvenile Toads seen during the visit</p>	Bordering northern boundary of land parcel 8.

Site Name	Description	Distance and direction from site
	and the owners report having seen Water Vole on site.	

Table 3 presents a summary of the results of the biological records search provided by GLNP and available information obtained from additional sources including MAGIC Maps.

Table 3: Records of selected protected or notable species within 2km of the site

Species	Summary of Biological Records Search
Birds	<p>Nine records of species protected by special penalties at all times under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), were supplied, including (but not limited to) Barn Owl, Kingfisher (<i>Alcedo atthis</i>) Redwing (<i>Turdus iliacus</i>), Red Kite (<i>Milvus milvus</i>) Hen Harrier (<i>Circus cyaneus</i>), Peregrine (<i>Falco peregrinus</i>) and Hobby (<i>Falco subbueto</i>). Barn Owl was the closest Schedule 1 species record provided, associated with an agricultural field 0.8 km to the south.</p> <p>A large number of Section 41 (Natural Environment and Rural Communities (NERC) Act 2006) records were provided in addition to common bird species within 2 km of the site, including (but not limited to) Reed Bunting (<i>Emberiza schoeniclus</i>), Skylark (<i>Aluda arvensis</i>), Yellowhammer (<i>Emberiza schoeniclus</i>) Song Thrush (<i>Turdus philomelos</i>) House Sparrow (<i>Passer domesticus</i>) Dunnock (<i>Prunella modularis</i>), Linnet (<i>Linaria cannabina</i>) and Cuckoo (<i>Cuculus canorus</i>).</p>
Bats	<p>Twelve bat roost records were supplied, with most of these being unspecified Chiroptera spp or Common Pipistrelle (<i>Pipistrellus pipistrellus</i>). The closest roost record supplied was for Common Pipistrelle, located approximately 1.1 km to the southwest of the site, associated with a residential building. Other species recorded within 2 km of the site boundary included Brown Long-eared Bat (<i>Plecotus auritus</i>), Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>), and several unidentified Chiroptera spp.</p> <p>No European Protected Species Mitigation (EPSM) licences have been granted within 2 km of the site, with the closest one situated at 3.7 km to the west of the site (Barbastelle Bat (<i>Barbastelle barbastellus</i>) & Brown long-eared Bat).</p>
Badger	<p>Three records of Badger (<i>Meles meles</i>) within 2 km of the site were supplied by GLNP. No records for setts were returned but records are to remain confidential, and as such distances and locations will be kept classified.</p>
Water Vole	<p>One record for Water Vole (<i>Arvicola amphibius</i>) was supplied within 2 km of the site, with this being roughly 1 km away; however, the exact location was not provided.</p>
Otter	<p>No records for Otter (<i>Lutra lutra</i>) were supplied within 2 km of the site.</p>
Reptiles	<p>Three reptile records were provided within 2 km of the site with all these being for Grass Snake (<i>Natrix helvetica</i>). The closest record was located approximately 1.0 km from the site, although the exact location was not provided.</p>

Species	Summary of Biological Records Search
Amphibians	Ten records for common amphibian species were returned from the data search, including Common Frog (<i>Rana temporaria</i>) and Common Toad (<i>Bufo bufo</i>) with five of the provided records being historic. No records were provided for Great Crested Newt.
Invertebrates	<p>One record for Western Conifer Seed Bug (<i>Leptoglossus occidentalis</i>), a non-native species of true bug and two records for non-native beetles were returned from the data search.</p> <p>Six records for butterflies were returned within 2 km of the site, including Pearl Bordered Fritillary (<i>Boloria euphrosyne</i>), High Brown Fritillary (<i>Fabriciana adippe</i>), Grizzled Skipper (<i>Pyrgus malvae</i>), Dingy skipper (<i>Erynnis tages</i>), Small Heath (<i>Coenonympha pamphilus</i>), and Wall (<i>Lasiommata megera</i>), with all the aforementioned species being Section 41 species of principal importance under the NERC Act 2006 in England. The closest record of these was for High Brown Fritillary, associated with land parcel 3 within the red line boundary. All records were historic, with only one reported more recently in 2006, with this being for Small Heath, associated with the Local Wildlife Site Flower Pot Brick Pits to the north.</p>
White Clawed Crayfish	No records for White-clawed Crayfish (<i>Austropotamobius pallipes</i>) were supplied within 2km of the site.
Invasive Non-native Plant Species	Numerous records for invasive non-native species were returned, including 73 taxa for flowering plant and three taxa for Conifer. These records included Himalayan Balsam (<i>Impatiens glandulifera</i>), and Japanese Knotweed (<i>Fallopia japonica</i>), with Himalayan Balsam being the closest out of all provided records at 300 metres south of the site.

3.2 Field Survey

The primary habitats identified within the UK Habitat Classification Survey are listed and described below. All habitats are marked on the survey map in Appendix 4, with each habitat type illustrated with a photograph in Appendix 5.

On site:

- Modified Grassland (g4) (59)
- Short rotation coppice (c1d6) (36, 56)
- Cereal crop (c1c) (11, 47, 75, 1012)
- Non cereal crop (c1d) (11, 47, 75, 1012)
- Hedgerows (priority habitat) (h2a) (47, 190, 191)
- Other rivers and streams (r2b) (41)

3.2.1 Habitats

3.2.1.1 Modified Grassland (g4)

Approximately 7 ha of modified grassland was present, located within land parcel 1 (Appendix 5: Land parcel numbers). This area was uniformly cropped short by high levels of cattle grazing, with low levels of poaching visible and dominated by *Poa* spp. The area was not fully surveyed due to the presence of cattle within this field, and as such a definitive species list cannot be provided. This area was bounded by hedgerows and deciduous woodland on the eastern boundary, adjacent to Mareham Lane (Appendix 5: Photograph 1)

Secondary codes: 59 (cattle grazed)

3.2.1.2 Short rotation coppice (c1d6)

Approximately 9 ha of short rotation coppice was present in land parcel 2, with this being dominated entirely by Willow (*Salix* spp). This area is managed under an Energy Crops Scheme Tranche 2, which provides established grants for approved energy crops (Appendix 5: Photograph 2).

Secondary codes: 36 (plantation) 56 (young trees-planted)

3.2.1.3 Cereal crop (c1c)

Approximately 9 ha of cereal crop was present, associated with land parcel three to the west of the proposed development. The crop was comprised entirely of Barley (*Hordeum vulgare*). Unmanaged strips of grassland were present around much of this habitat, with some of these margins being associated with hedgerows. The largest field margins were present bordering the southern boundary of land parcels three and four, and the eastern boundary of land parcel three with these being approximately 4-6 m in width. The field margin along the eastern boundary was dominated by False Oat-grass (*Arrhenatherum elatius*), frequent Blackthorn (*Prunus spinosa*) saplings, occasional Yorkshire Fog (*Holcus lanatus*), with rare Crested Dogs-tail (*Cynosurus cristatus*). The remainder of the arable field margins were composed of similar species but lacked the presence of Blackthorn saplings. (Appendix 5: Photograph 3 - 4).

Two mature scattered trees were associated with this habitat, with both species being Sessile Oak (*Quercus petraea*).

Secondary codes: 75 (active management) 1012 (arable) 11 (scattered trees) 47 (native)

3.2.1.4 Non-cereal crop (c1d)

The remainder of the land parcels appeared to be managed for silage production (Appendix 6: Photographs 12-15) which was lush at the time of survey and intersected / bounded by hedgerows,

separating the land parcels. Land parcel four was approximately 5 ha in size, with this land parcel being used to grow Broad Bean (*Vicia faba*). (Appendix 5: Photograph 5-6)

One mature tree was associated with this habitat, located in land parcel 5, with this species being Sessile Oak.

Secondary codes: 75 (active management) 1012 (arable) 11 (scattered trees) 47 (native)

3.2.1.5 Hedgerows (priority habitat) (h2a)

Two lengths of the ten hedgerows present on site are classified as a Habitat of Principle Importance (priority habitat) under the NERC Act 2006 and qualified as 'important' under the ecological criteria of the Hedgerow Regulations 1997, due to structure and species composition. Species included Common Ash, Alder (*Alnus glutinosa*), Buddleia (*Buddleja davidii*), Hawthorn and Blackthorn (Appendix 4: Photograph 4).

Eight hedgerows present within the site are classified as a Habitat of Principle Importance (priority habitat) under the Natural Environment and Rural Communities Act 2006 but due to structure and species composition, do not qualify as 'important' under the ecological criteria of the Hedgerows Regulations 1997. The hedgerows were largely species poor, dominated by Hawthorn and occasionally featured Blackthorn. The structure and condition of the hedgerows on site varied significantly, with some lengths comprising occasional gaps (gaps measured less than 20 m) with a poor vertical structure and some having been previously flailed. Others were dense, intact and unmanaged, and / or associated with wet ditches. No notable ground layer was associated with any of the species poor hedgerows. (Appendix 5: Photograph 6-12).

Secondary codes: 47 (native) 190 (hedgerows with trees) 191 (ditch)

3.2.1.6 Other rivers and streams (r2b)

North Beck runs east - west, along the southern boundary of land parcels two, three and four. (Appendix 6: Photograph 3). The bankings of North Beck were steep and densely vegetated in areas, with clear water and good levels of aquatic vegetation also present in areas. The stream was approximately 2 m wide and 1 m deep. This waterbody is fed by the South Forty Foot Drain to the east, which was given moderate ecological status by the Environment Agency.

Field drains are present, associated with the eastern and southern boundary of land parcel 5. Both of these field drains were associated with a species poor hedgerow and lacked any notable aquatic or marginal vegetation. (Appendix 5: Photograph 13-14)

Secondary codes: 41 (fresh water - natural)

3.2.2 Species

3.2.2.1 Birds

Habitat on site provided optimal nesting and foraging opportunities for both common birds and those listed as species of principle importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006, including those identified within the desk study and on site, which favour 'woody' habitats for nesting, such as Dunnock or Linnet. The site also has the potential to support notable ground nesting species of Conservation Concern, during the breeding season (March - August inclusive) such as Skylark and Lapwing (*Vanellus vanellus*). The unmanaged field margins may be valuable to lowland breeding birds such as Yellowhammer (*Emberiza citronella*) and Whitethroat (*Sylvia communis*), both of which were heard on site. This habitat may also be of value as a foraging resource to wintering and migratory birds such as Fieldfare (*Turdus pilaris*), Redwing (*Turdus iliacus*), Meadow Pipit (*Anthus pratensis*), Brambling (*Fringilla montifringilla*) and Starling (*Sturnus vulgaris*).

The site was considered largely unsuitable as breeding habitat for a number of species, which were returned within the desk study, that are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), which require quite specific habitat requirements for breeding e.g. Barn Owl, which require suitable nest voids in mature trees. The site boundaries / scattered trees were considered suitable to support Red Kite during nesting, which were heard on site. This species is known to utilise tree forks for nesting, with a few Red Kites seen circling over the site on numerous site visits.

Species seen and/or heard at the time of survey (but not limited to) include Whitethroat, Eurasian Blackcap (*Sylvia atricapilla*), Skylark, Yellowhammer, Swift (*Apus apus*), Swallow (*Hirundo rustica*), House Martin (*Delichon urbica*), Willow Warbler (*Phylloscopus trochilus*), Lapwing and Wren (*Troglodytes Troglodytes*).

3.2.2.2 Bats

The arable fields and grassland which dominates the site are considered of low value to bats as a foraging resource, with large expanses of uniform crop and species poor grassland unlikely to provide an insect rich feeding habitat or to facilitate movement to better quality foraging areas in the wider area. Boundary hedgerows and associated field margins on site provide greater foraging opportunities and some may form important commuting routes to and from suitable feeding habitat in the wider area, including woodland compartments located adjacent to the site.

A Ground level Tree Assessment (GLTA) of mature trees on site was undertaken, where possible, to identify potential roost features (PRF) for bats. This assessment only includes trees located within the red line boundary. Table 4 below shows the results from the Ground Level Tree Assessment.

Table 4: Ground Level Tree Assessment

Tree Code	Species	Location	Likely to be removed?	Potential Roosting features	Bat Potential Assessment
T1	Sessile Oak	TF087410 Appendix 5: Photograph 23	Unknown	Woodpecker Holes	Moderate
T2	Ash (associated with hedgerow)	TF086408 Appendix 5: Photograph 24	Unknown	No obvious bat roost potential features	Negligible
T3	Ash (associated with hedgerow)	TF075411 Appendix 5: Photograph 25	Unknown	Entire tree death / large amounts of deadwood (likely Ash dieback)	Moderate
T4	Sessile Oak	TF079408 Appendix 5: Photograph 26	Unknown	Loose bark / cracks and gaps	Moderate
T5	Sessile Oak	TF079408 Appendix 5: Photograph 27	Unknown	No obvious bat roost potential features	Negligible
T6	Sessile Oak (associated with hedgerow)	TF080412 Appendix 5: Photograph 28	Unknown	Shallow crack in bark	Negligible

Potential roost features were also identified in a handful of other boundary trees, although were not included in the GLTA table, due to being outside the redline boundary.

3.2.2.3 Badgers

Although considered sub-optimal, arable farmland and grassland pasture provides foraging opportunities for Badger. Hedgerows located on the boundaries of the site provided suitable conditions for sett construction. The site in general was also connected with suitable off-site habitat for Badger in the form of woodland compartments. However, no setts or field signs such as hairs, latrines or feeding remains associated with Badgers were identified during the field survey on site.

However, large quantities of suitable habitat were present adjacent to the site in the form of linear woodland compartments and large pockets of woodland associated with Aswarby Thorns and Flower Pot Brick Pits. A thorough assessment of these habitats which are located within 30 m of the proposed development site could not be undertaken during the field survey and therefore the presence of Badger in offsite habitat (but within 30 m) cannot currently be discounted.

3.2.2.4 Otters and Water Voles

North Beck which runs adjacent to proposed development was considered suitable to support Water Vole. The profile of the banks provided opportunities for burrow construction, combined with suitable food resources, in the form of grasses and herbs, along the stretch of the brook. This watercourse was also fast flowing and provided good connectivity to the wider area, such as South Beck towards the south and Cliff Beck to the North.

North Beck was considered suitable to support foraging and commuting Otter and provided areas potentially suitable for holt construction with dense vegetation and undercut banks in areas. The presence of Otter and their associated resting places at North Beck cannot currently be discounted.

3.2.2.5 Other mammal species

The site was considered potentially suitable for Hedgehog (*Erinaceus europaeus*) with a network of habitats present, such as hedgerows and woodland bordering the site / in the wider area. The site was also considered suitable for Brown Hare (*Lepus europaeus*), due to the open nature of the site, along with woodland edges. Since much of the habitat on site is homogeneous it is considered likely that Brown Hare could utilize the entire site.

3.2.2.6 Reptiles

The site presented areas of suitable habitat for reptiles, particularly the grassland interface and associated hedgerows. These areas presented refugia, basking locations and foraging for common reptiles including Slow-worm (*Anguis fragilis*) and Common Lizard (*Zootoca vivipara*), whilst field drains / streams are considered suitable to support Grass Snake. A large pile of brash was also present in land parcel three, situated between two of the Sessile Oak trees, adjacent to a strip of unmanaged grassland that was present surrounding the cereal crop.

3.2.2.7 Amphibians

Arable fields which comprise much of the site were considered sub-optimal terrestrial habitat to support amphibians, including Great Crested Newt. However, hedgerow boundaries provide some foraging, refuge, and hibernation opportunities for Great Crested Newt along with other notable amphibian species such as Common Toad and may facilitate connectivity to areas of suitable terrestrial habitat in the wider area. Three ponds were identified within 250 m of the site, both associated with the deciduous woodland towards the northern end of land parcel eight. No waterbodies were assessed during the field survey, due to access restrictions.

3.2.2.8 Invertebrates

Arable farmland is considered unlikely to support notable invertebrate assemblages and the site in general was considered generally poor-quality habitat for invertebrates. However, field margins associated with much of the proposed development land parcels, may provide better quality habitat for a range of commoner species. Hedgerows on site may also support a range of common invertebrates, in particular species rich hedgerows.

Whilst no notable invertebrates were observed during the survey, a number of common assemblages were observed.

3.2.2.9 White-clawed Crayfish

Suitable areas of in channel refugia and eroding banks were present within North Beck, along with suitable foraging habitat as well as favored areas of shelter suitable for this species. The water was fast flowing and clear, which is preferred by White-clawed Crayfish.

3.2.2.10 Non-native invasive plants

No evidence of any invasive non-native plant species being present was found during the field survey.

4 Planning Policy and Legislation

4.1 Local Planning Policy

Table 5 details the policies within the Central Lincolnshire Local Plan which are relevant to the ecological features on site.

Table 5: Summary of relevant local planning policy – Central Lincolnshire Local Plan 2023

Policy	Description
<p>Policy S60: Protecting Biodiversity and Geodiversity</p>	<p>All development should:</p> <ul style="list-style-type: none"> a) protect, manage, enhance and extend the ecological network of habitats, species and sites of international, national and local importance (statutory and non-statutory), including sites that meet the criteria for selection as a Local Site; b) minimise impacts on biodiversity and features of geodiversity value; c) deliver measurable and proportionate net gains in biodiversity in accordance with Policy S61; and d) protect and enhance the aquatic environment within or adjoining the site, including water quality and habitat. <p>Part Two: Species and Habitats of Principal Importance All development proposals will be considered in the context of the relevant Local Authority's duty to promote the protection and recovery of priority species and habitats. Development should seek to preserve, restore and re-create priority habitats, ecological networks and the protection and recovery of priority species set out in the Natural Environment and Rural Communities Act 2006, Lincolnshire Biodiversity Action Plan, Lincolnshire Geodiversity Strategy and Local Nature Recovery Strategy.</p> <p>Where adverse impacts are likely, development will only be supported where the need for and benefits of the development clearly outweigh these impacts. In such cases, appropriate mitigation or compensatory measures will be required.</p> <p>Part Three: Mitigation of Potential Adverse Impacts Development should avoid adverse impact on existing biodiversity and geodiversity features as a first principle, in line with the mitigation hierarchy. Where adverse impacts are unavoidable, they must be adequately and proportionately mitigated. If full mitigation cannot be provided, compensation will be required as a last resort where there is no alternative. Development will only be supported where the proposed measures for mitigation and/or compensation along with details of net gain are acceptable to the Local Planning Authority in terms of design and location and are secured for the lifetime of the development with appropriate funding mechanisms that are capable of being secured by condition and/or legal agreement. If significant harm to biodiversity resulting from development cannot be avoided, adequately mitigated, or, as a last resort, compensated for, then planning permission will be refused.</p>
<p>Policy S61: Biodiversity Opportunity and Delivering Measurable Net Gains</p>	<p>Following application of the mitigation hierarchy, all development proposals should ensure opportunities are taken to retain, protect and enhance biodiversity and geodiversity features proportionate to their scale, through site layout, design of new buildings and proposals for existing buildings with consideration to the construction phase and ongoing site management.</p> <p>Development proposals should create new habitats, and links between habitats, in line with Central Lincolnshire Biodiversity Opportunity and Green Infrastructure Mapping evidence, the biodiversity opportunity area principles set out in Appendix 4 to this Plan and the Local Nature Recovery Strategy (once completed), to maintain and enhance a network of wildlife sites and corridors, to minimise habitat fragmentation and provide opportunities for species</p>

Policy	Description
	<p>to respond and adapt to climate change. Proposals for major and large scale development should seek to deliver wider environmental net gains where feasible.</p> <p>Biodiversity Net Gain</p> <p>The following part of the policy applies unless, and until, subsequently superseded, in whole or part, by national regulations or Government policy associated with the delivery of mandatory biodiversity net gain arising from the Environment Act 2021. Where conflict between the policy below and the provisions of Government regulations or national policy arises, then the latter should prevail.</p> <p>All qualifying development proposals must deliver at least a 10% measurable biodiversity net gain attributable to the development. The net gain for biodiversity should be calculated using Natural England’s Biodiversity Metric.</p> <p>Biodiversity net gain should be provided on-site wherever possible. Off-site measures will only be considered where it can be demonstrated that, after following the mitigation hierarchy, all reasonable opportunities to achieve measurable net gains on-site have been exhausted or where greater gains can be delivered off-site where the improvements can be demonstrated to be deliverable and are consistent with the Local Nature Recovery Strategy.</p> <p>All development proposals, unless specifically exempted by Government, must provide clear and robust evidence for biodiversity net gains and losses in the form of a biodiversity gain plan, which should ideally be submitted with the planning application (or, if not, the submission and approval of a biodiversity gain plan before development commences will form a condition of any planning application approval), setting out:</p> <ol style="list-style-type: none"> a) information about the steps to be taken to minimise the adverse effect of the development on the biodiversity of the onsite habitat and any other habitat; b) the pre-development biodiversity value of the onsite habitat; c) the post-development biodiversity value of the onsite habitat following implementation of the proposed ecological enhancements/interventions; d) the ongoing management strategy for any proposals; e) any registered off-site gain allocated to the development and the biodiversity value of that gain in relation to the development; and f) exceptionally any biodiversity credits purchased for the development through a recognised and deliverable offsetting scheme. <p>Demonstrating the value of the habitat (pre and post-development) with appropriate and robust evidence will be the responsibility of the applicant. Proposals which do not demonstrate that the post-development biodiversity value will exceed the pre-development value of the onsite habitat by a 10% net gain will be refused. Ongoing management of any new or improved onsite and offsite habitats, together with monitoring and reporting, will need to be planned and funded for 30 years after completion of a development.</p>
<p>Policy S66: Trees, Woodland and Hedgerows</p>	<p>Development proposals should be prepared based on the overriding principle that:</p> <ul style="list-style-type: none"> • the existing tree and woodland cover is maintained, improved and expanded; and • opportunities for expanding woodland are actively considered and implemented where practical and appropriate to do so. <p>Existing Trees and Woodland</p> <p>Planning permission will only be granted if the proposal provides evidence that it has been subject to adequate consideration of the impact of the development on any existing trees and woodland found on-site (and off-site, if there are any trees near the site, with ‘near’ defined as the distance comprising 12 times the stem diameter of the off-site tree). If any</p>

Policy	Description														
	<p>trees exist on or near the development site, ‘adequate consideration’ is likely to mean the completion of a British Standard 5837 Tree Survey and, if applicable, an Arboricultural Method Statement. Where the proposal will result in the loss or deterioration of:</p> <p>a) ancient woodland; and/or</p> <p>b) the loss of aged or veteran trees found outside ancient woodland, permission will be refused, unless and on an exceptional basis the need for, and benefits of, the development in that location clearly outweigh the loss. Where the proposal will result in the loss or deterioration of a tree protected by a Tree Preservation Order or a tree within a Conservation Area, then permission will be refused unless:</p> <p>c) there is no net loss of amenity value which arises as a result of the development; or</p> <p>d) the need for, and benefits of, the development in that location clearly outweigh the loss.</p> <p>Where the proposal will result in the loss of any other tree or woodland not covered by the above, then the Council will expect the proposal to retain those trees that make a significant contribution to the landscape or biodiversity value of the area, provided this can be done without compromising the achievement of good design for the site.</p> <p>Mitigating for loss of Trees and Woodland</p> <p>Where it is appropriate for higher value tree(s) (category A or B trees (BS5837)) and/or woodland to be lost as part of a development proposal, then appropriate mitigation, via compensatory tree planting, will be required. Such tree planting should be on-site wherever possible and should:</p> <p>e) take all opportunities to meet the six Tree Planting Principles (see supporting text); and</p> <p>f) unless demonstrably impractical or inappropriate, provide the following specific quantity of compensatory trees:</p> <table border="1" data-bbox="454 1167 1422 1406"> <thead> <tr> <th>Trunk diameter(mm) at 1.5m above ground of tree lost to development</th> <th>Number of replacement trees required, per tree lost*</th> </tr> </thead> <tbody> <tr> <td>75 - 200</td> <td>1</td> </tr> <tr> <td>210 - 400</td> <td>4</td> </tr> <tr> <td>410 - 600</td> <td>6</td> </tr> <tr> <td>610 - 800</td> <td>9</td> </tr> <tr> <td>810 - 1000</td> <td>10</td> </tr> <tr> <td>1000+</td> <td>11</td> </tr> </tbody> </table> <p>* replacement based on selected standards 10/12 cm girth at 1m</p> <p>New Trees and Woodland</p> <p>Where appropriate and practical, opportunities for new tree planting should be explored as part of all development proposals (in addition to, if applicable, any necessary compensatory tree provision). Where new trees are proposed, they should be done so on the basis of the five Tree Planting Principles. Proposals which fail to provide practical opportunities for new tree planting will be refused.</p> <p>Planting schemes should include provision to replace any plant failures within five years after the date of planting. Planting of trees must be considered in the context of wider plans for nature recovery which seeks to increase biodiversity and green infrastructure generally, not simply planting of trees, and protecting / enhancing soils, particularly peat soils. Tree planting should only be carried out in appropriate locations that will not impact on existing ecology or opportunities to create alternative habitats that could deliver better enhancements for people and wildlife, including carbon storage. Where woodland habitat creation is appropriate, consideration should be given to the economic and ecological benefits that can be achieved through natural regeneration. Any tree planting should use native and local provenance tree species suitable for the location.</p> <p>Management and Maintenance</p>	Trunk diameter(mm) at 1.5m above ground of tree lost to development	Number of replacement trees required, per tree lost*	75 - 200	1	210 - 400	4	410 - 600	6	610 - 800	9	810 - 1000	10	1000+	11
Trunk diameter(mm) at 1.5m above ground of tree lost to development	Number of replacement trees required, per tree lost*														
75 - 200	1														
210 - 400	4														
410 - 600	6														
610 - 800	9														
810 - 1000	10														
1000+	11														

Policy	Description
	<p>In instances where new trees and/or woodlands are proposed, it may be necessary for the council to require appropriate developer contributions to be provided, to ensure provision is made for appropriate management and maintenance of the new trees and/or woodland.</p> <p>Hedgerows</p> <p>Proposals for new development will be expected to retain existing hedgerows where appropriate and integrate them fully into the design having regard to their management requirements. Proposals for new development will not be supported that would result in the loss of hedges of high landscape, heritage, amenity, or biodiversity value unless the need for, and benefits of, the development clearly outweigh the loss and this loss can be clearly demonstrated to be unavoidable. Development requiring the loss of a hedgerow protected under The Hedgerow Regulations will only be supported where it would allow for a substantially improved overall approach to the design and landscaping of the development that would outweigh the loss of the hedgerow. Where any hedges are lost, suitable replacement planting or restoration of existing hedges, will be required within the site or the locality, including appropriate provision for maintenance and management.</p>

4.2 National Planning Policy Framework

The National Planning Policy Framework (NPPF) July 2021, is an update to the previous version issued in February 2019, and is a policy framework document which provide a range of important principles. Paragraph 174 of the NPPF states that decisions should contribute to and enhance the natural local environment by:

‘Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.’

Paragraph 175 goes on to state:

‘... take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.’

When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles (paragraph 180):

‘opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.’

4.3 Relevant Legislation

4.3.1 National Legislation

4.3.1.1 The Wildlife and Countryside Act 1981

The Wildlife and Countryside Act 1981 (as amended) consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the conservation of wild birds (Birds Directive) in Great Britain.

4.3.1.2 Natural Environment & Rural Communities Act 2006

Section 40 of the NERC Act 2006 places a duty upon all local authorities in England to promote and enhance biodiversity in all of their functions. Section 41 lists habitats and species of principal importance to the conservation of biodiversity. Fifty-six habitats and 943 species of Principal Importance for Conservation are included on the Section 41 list and draws upon the UK BAP List of Priority Species and Habitats.

4.3.1.3 The Conservation of Habitats and Species Regulations 2017 (as amended)

The Conservation of Habitats and Species Regulations 2017 (as amended) transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law and transpose elements of the EU Wild Birds Directive in England and Wales. The Regulations provide for the designation and protection of a national site network including Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), the protection of 'European protected species', and the adaptation of planning and other controls for the protection of other sites, such as Ramsars.

4.3.1.4 The Environment Act 2021

Para 2 (3) of Schedule 14 of The Environment Act 2021 makes it mandatory for all new developments (with some limited exceptions) to achieve a biodiversity net gain (BNG) of at least 10% by the time the development is completed compared to the pre-development biodiversity value of the onsite habitat. This percentage may be amended in the future by the Secretary of State. Please note that some Local Policies stipulate a higher target than this.

The Bill allows three methods for securing biodiversity net gains:

1. enhancement of the biodiversity of land to which the planning permission relates;
2. the allocation of registered offsite biodiversity gain to any development for which the planning permission is granted; and
3. the purchase of biodiversity credits for any such development.

A biodiversity gain statement must set out whether, and if so how, the biodiversity gain objective applies in relation to development where the onsite habitat is irreplaceable, how the development will minimise any adverse effects to the onsite habitat, and what the evidence must be produced to show how the biodiversity net gain has been met upon completion of the development.

Biodiversity gains will need to be maintained for at least 30 years after the development is completed.

4.3.2 Species Specific Legislation

4.3.2.1 Badgers

The Protection of Badgers Act (1992) (as amended) affords protection to badgers and their setts. This legislation, as well as outlawing the persecution of badgers, also makes it an offence, amongst others, to disturb badgers whilst they are using a sett or to damage or block a sett.

4.3.2.2 Bats

Bats are protected under the Wildlife and Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2017 (as amended). Under the Wildlife and Countryside Act 1981 it is illegal to:

Kill or injure bats;

Cause disturbance at their resting places; or

To block access to, damage or destroy their roost sites.

Under the Conservation of Habitats and Species Regulations 2017 (as amended) it is an offence to:

Deliberately capture or kill a bat;

To damage or destroy a breeding site or resting place of any bat. (This is an absolute offence and intent or recklessness does not have to be proved); and

Deliberately disturb a bat (this applies anywhere, not just at its roost).

4.3.2.3 Birds

Breeding wild birds are protected under the Wildlife and Countryside Act 1981 (as amended). Under the Wildlife and Countryside Act, a wild bird is defined as any bird of a species that is resident in or is a visitor to the European Territory of any member state in a wild state. Game birds however are not included in this definition (except for limited parts of the Act). They are covered by the Game Acts, which fully protect them during the close season.

All birds, their nests and eggs are protected and it is thus an offence, with certain exceptions to:

intentionally kill, injure or take any wild bird;

intentionally take, damage or destroy the nest of any wild bird whilst it is in use or being built;

intentionally take or destroy the egg of any wild bird;

have in one's possession or control any wild bird, dead or alive, or any part of a wild bird, which has been taken in contravention of the Act or the Protection of Birds Act 1954;

have in one's possession or control any egg or part of an egg which has been taken in contravention of the Act or the Protection of Birds Act 1954;

use traps or similar items to kill, injure or take wild birds; and

have in one's possession or control any bird of a species occurring on Schedule 4 of the Act unless registered, and in most cases ringed, in accordance with the Secretary of State's regulations.

Additionally for some species listed in Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) it is an offence to intentionally or recklessly disturb the adults while they are in and around their nest or intentionally or recklessly disturb their dependent young.

4.3.2.4 Great Crested Newt

Great Crested Newts are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended). Under the Wildlife and Countryside Act 1981 (as amended) it is illegal to:

- Kill or injure Great Crested Newts;
- Cause disturbance at their resting places; or
- To block access to, damage or destroy their place of shelter.

Under the Conservation of Habitats and Species Regulations 2017 (as amended) it is an offence to:

- Deliberately capture or kill a Great Crested Newt; To damage or destroy a breeding site or resting place of a Great Crested Newt. (This is an absolute offence and intent, or recklessness does not have to be proved).

4.3.2.5 Otter

Otters are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended). Under the Wildlife and Countryside Act 1981 it is illegal to:

- Kill or injure an Otter;
- Cause disturbance at their resting places; or
- To block access to, damage or destroy their resting place.

Under the Conservation of Habitats and Species Regulations 2017 (as amended), it is an offence to:

- Deliberately capture or kill an Otter;
- To damage or destroy a breeding site or resting place of any Otter (this is an absolute offence and intent, or recklessness does not have to be proved); and
- Deliberately disturb an Otter.

4.3.2.6 Reptiles

Adder (*Vipera berus*), Slow-worm, Grass Snake (and Common Lizard are protected under the Wildlife and Countryside Act 1981 (as amended). It is illegal to kill or injure them.

Smooth snake (*Coronella austriaca*) and sand lizard (*Lacerta agilis*) also receive legal protection under the Conservation of Habitats and Species Regulations 2017. The following is prohibited:

deliberate capturing, injuring or killing

deliberate disturbance; Disturbance of animals includes in particular any disturbance which is likely- (i) to impair their ability to survive, to breed or reproduce or to rear or nurture their young; or (ii) to impair the ability of hibernating or migratory species, to hibernate or migrate; or (iii) to affect significantly the local distribution or abundance of the species to which they belong;

deliberate taking or destroying the eggs of such an animal; or

damaging or destroying a breeding site or resting place of such an animal and/or (ii) intentionally or recklessly - (a) disturbing any such animal while it is occupying a structure or place which it uses for shelter or protection; or (b) obstructing access to any structure or place which any such animal uses for shelter or protection.

5 Evaluation of Ecological Features/ Further Survey

Table 6 below provides an evaluation of the ecological features, identifying which are of sufficient importance to be taken forward. Any ecological feature that is identified as negligible importance will not be considered further, where there is insufficient evidence further surveys will be recommended to be able to assess the ecological importance of that feature in relation to the site and the proposed development. In some instances, a level of site importance has been identified for features which have a very localized scale.

Table 6: Evaluation of ecological Feature

Ecological Feature	Justification	Level of Importance
Modified grassland	A common and widespread habitat of little ecological importance.	Negligible importance
Scattered trees (secondary habitat code 11, not primary habitat in UK Habitat Classification but still included in evaluation)	Scattered trees on site comprised of mature native species. No notable understory was associated with any of the scattered trees present within the site boundary, although two trees were associated with a brash pile within land parcel three. This habitat adds to the mature tree resource for the local area.	Local importance
Short rotation coppice	Although lacking in species diversity, it is considered to enrich the diversity of habitats at the site level and enhance the ecological value of the adjacent features (hedgerows and boundary woodland).	Site importance
Cereal crop	A common and widespread habitat of little ecological importance.	Negligible importance
Non-cereal crop	A common and widespread habitat of little ecological importance.	Negligible importance
Hedgerow (Priority habitat)	Hedgerows were present on site which qualify as a Habitat of Principle Importance under the NERC Act 2006 and would be likely classified as 'important' under the ecological criteria of the Hedgerows Regulations 1997 due to species composition and structure.	Local importance
Other rivers and streams	North Beck runs within 10 m of the proposed development, adjacent to land parcels two – four. This stream is fed by South Forty Foot Drain, providing connectivity across the wider landscape. The water was clear and fast flowing, with moderate amounts of aquatic vegetation present. This feature is considered to be of local importance.	Local Importance
Other rivers and streams	Field drains on site were generally in poor condition, no notable aquatic vegetation was associated with any of the field drains, although both drains were associated with species poor hedgerows.	Site Importance
Birds	The dominant habitats on site (cropland, pasture, and associated margins) may support notable ground nesting birds during the breeding season (March –	Unknown – Further surveys being undertaken in the form of breeding bird surveys

Ecological Feature	Justification	Level of Importance
	<p>August inclusive). This habitat may also be of value as a foraging resource to wintering and migratory birds.</p> <p>Hedgerows on site provide optimal nesting (March – August inclusive) and foraging (all year) habitats for common birds and potentially notable species listed as Species of Principle Importance under the NERC Act 2006.</p> <p>The site is also considered to have a low potential to support those birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), namely Red Kite.</p>	
Bats	<p>Arable fields on site (the dominant habitats) were considered sub-optimal habitat for foraging and commuting bats.</p> <p>Hedgerows and field margins on site provide a foraging and commuting resource for the local bat population which also allow movement off site and to potentially better-quality feeding grounds.</p> <p>A number of trees on site were assessed as having low – high bat roost potential and will need further consideration if to be removed / subject to resilience works.</p>	Unknown - Further consideration required
Badger	<p>The site provided foraging and sett creation opportunities for Badger. Field signs of Badgers in the form of footprints within land parcel 5, were identified during the field visit.</p> <p>Significant areas of suitable habitat are present immediately adjacent and within 30 m of the proposed development boundary including linear woodland and hedgerows. Woodland was not surveyed as part of this assessment and therefore the presence of Badger setts within 30 m of the proposed development site cannot, at this stage, be discounted.</p>	Unknown - further survey required.
Otter	<p>North Beck running along the southern boundary of land parcels two – four, was considered suitable for commuting and foraging Otter and in some area's holt creation. Development in proximity to this watercourse may impact Otter and</p>	Unknown – further survey / consideration required

Ecological Feature	Justification	Level of Importance
	<p>their associated resting place(s) through disturbance, if present.</p> <p>This watercourse was also considered suitable to support Water Vole with optimal bank angles for burrow creation present, clear fast water and a foraging resource, however, a buffer of at least 10 m from the watercourse and the development has been confirmed so further survey for this species is not considered necessary.</p>	
White-Clawed Crayfish	North Brook was considered potentially suitable to support White-Clawed Crayfish, with suitable in channel refugia present and clean, fast flowing water preferred by this species.	Unknown – further survey required
Reptiles	<p>Suitable habitat for reptiles on site was limited to hedgerow / arable field boundaries. The hedgerows on site also allow connectivity to potentially suitable habitat in the wider area.</p> <p>Large expanses of arable crop which dominates the site are considered sub-optimal to support reptiles. Given the extent of suitable habitat present, the site is considered of low value to reptiles.</p>	Likely low value – further consideration required
Amphibians	<p>Terrestrial habitat considered suitable to support Great Crested Newt was limited to hedgerow boundaries. The dominant habitat on site (cropland) provides sub-optimal refuge and foraging opportunities.</p> <p>Three ponds are present within 250m of the proposed development; however, these ponds were not assessed during the field survey and therefore, at this stage, their suitability to support Great Crested Newt (or other amphibians) is unknown. The presence of this species within suitable terrestrial habitat on the section of the site associated with Flower Pot Bricks cannot currently be discounted.</p>	Unknown – further survey required.
Invertebrates	The site had suitability to support common insects present in the area; however, given the dominant habitat types (arable and heavily grazed pasture), the site was considered unlikely	Site importance

Ecological Feature	Justification	Level of Importance
	<p>to be valuable to notable invertebrate assemblages.</p> <p>While field margins present on site may provide better opportunities for invertebrates, given their extent and likely species composition, the value of this habitat is considered limited.</p>	
Non-native invasive species	No non-native invasive plant species were identified on site.	Negligible Importance

6 Ecological Constraints, Opportunities and Recommendations

6.1 Designated Sites

A total of three statutory designated sites of nature conservation importance were recorded within 5 km of the site with the closest statutory designated site being Mareham Pastures Local Nature Reserve, at 2.7 km north of the site. Given the proximity of the proposed development to the Local Nature Reserve and the features for which the site is designated (biological, including priority habitat traditional orchards and deciduous woodland), impacts as a result of the proposed development are considered unlikely. The proposed development site is geographically separated from any statutory designated sites. No hydrological connectivity nor any other impact pathways have been identified. Therefore, statutory designated sites are not considered further in this appraisal.

There are a total of two non-statutory sites of nature conservation importance located within 2 km, both of which are located adjacent to the proposed development. Given the change in land use proposed, no significant impacts are considered likely on any non-statutory designated site as a result of the proposed development.

6.2 Habitats

Cropland and modified grassland which dominate the site are considered of negligible ecological importance. It is understood following confirmation of landscape prescriptions in November 2023, that scattered trees, hedgerows, field drains and waterbodies will be preserved and protected with a minimum of a 10 m buffer for main watercourses and a minimum of a 5 m buffer from field drains, trees and hedgerows on site. Proposed prescriptions for the site include maintenance and improvement of existing hedgerows, grassland improvement, picnic areas, native tree and hedgerow planting and wildflower planting. Specific prescriptions and management have yet to be confirmed, e.g. specific seed mixes used for improvement of grassland between the arrays.

The hedgerows on-site provide valuable ecological corridors, with three hedgerows out of the total ten on site likely to be categorized as Habitats of Principal Importance. It is understood that all hedgerows are to be retained as part of the proposed development. In the event that hedgerow removal is required, it is recommended that a sufficient level of habitat compensation is included within proposed landscape plans, which may include the planting of additional lengths of hedgerow on site. In addition, it is possible to enhance existing (and retained) hedgerows around the site through supplementary planting of native species to increase their overall diversity and to establish better-quality marginal habitats between the current boundaries and proposed solar array. This may be in the form of 'species rich' grassland or rank grassland in relation to species specific biodiversity enhancement.

Irrespective of direct impacts, a full hedgerow and tree protection plan should be developed and maintained during construction to avoid accidental or incidental damage. The root protection zone of trees must be considered under The British Standard 5837.

Given the proximity of North Beck, forming part of the southern boundary of land parcels two – four, to the proposed development, it is considered that without appropriate mitigation there is a significant risk that the feature could be adversely affected by both the construction and operational phases of the proposed development. Potential impacts could arise from disturbance to the stream during construction, from the accidental / incidental deposition of materials during construction, or from run-off of pollutants from both construction and operational traffic. Furthermore, any such effects could manifest themselves further downstream from the actual location of the proposed development. Therefore, all relevant government advice concerning the prevention of pollution during both the construction and operation of the proposed development must be followed.

The same advice applies for drains associated with boundary features and while the current value of the drains present on site is considered limited and of importance at the site level only, it is understood that all drains on site are to be retained and protected with a suitable buffer (minimum of 5 m). Any proposals regarding the existing drains on site should be informed by assessment from a specialist contractor.

It is expected that the proposed development will result in the loss of the existing unmanaged arable field margins (these areas are not managed specifically for wildlife and are just areas where the intensive management of the land parcels end and have been given chance to grow) to some extent. To compensate for the loss of this habitat, it is recommended that grassland beneath, between and around the proposed solar array is created, which is often the case with these types of development. An appropriate seed mix would be required dependent on the area of establishment e.g., shade tolerant seed mix will be required beneath the solar panels. It is recommended that where possible, and in suitable areas of the site, a species rich seed mix is sown to enhance the biodiversity value of the site. The creation of species rich grassland as opposed to the existing arable crop / pasture would improve the biodiversity value of the site in relation to habitats and sufficiently compensate for loss of existing habitats. It is recommended that a management plan for all proposed habitat enhancement and creation is compiled.

6.3 Species and Species Groups

6.3.1 Birds

Any works or disturbance to hedgerows, scattered trees or vegetation and arable grassland on site as part of the development should be implemented outside of the breeding bird season (March to August) to ensure minimal disturbance to ground nesting and nesting birds within the site and within near proximity to the development. If this is not possible, a nesting bird and a ground nesting bird check by a suitably

qualified ecologist should be undertaken of the area proposed for disturbance at a maximum of 48 hours prior to the development works. If any active nests are found on site, the nests and their contents must be adequately protected from harm until any chicks have fledged.

Breeding bird surveys have been carried out for the site, in which evidence of breeding bird activity for the site is logged, and breeding territories mapped, with the last survey undertaken in July 2023. The results of the breeding bird survey and any appropriate recommendations will be delivered in a separate report and not considered further.

The site boundaries / scattered trees were considered suitable to support Red Kite during nesting, which were heard / seen on site. This species is known to utilize tree forks for nesting. Red Kite which are a Schedule 1 species under the Wildlife and Countryside Act 1981 (as amended). In the event a Red Kite nest is confirmed as present (during the checks detailed above), a suitable buffer zone (and appropriate mitigation) will be advised by the ecologist where works cannot be undertaken until chicks have fledged.

The habitats on site have potential to be of value to important / notable assemblages of overwintering birds. Given the dominant habitat present on site (cropland and pasture), the extent of the proposed development and the change in land use, it is recommended that breeding and wintering bird surveys are undertaken to determine the site's overall value to birds. The results of these surveys and associated impact assessment will inform the requirement for mitigation / compensation in relation to birds.

Wintering bird surveys should involve four survey visits, one per month between November – February. On each visit bird species and their behaviour should be mapped and an assessment made of the significance of the species present and value of the site for wintering birds. It is understood that wintering bird surveys are being undertaken on the site.

Short rotation coppice comprised a relatively small area of the proposed development and is managed for energy production, meaning the habitat is subject to high levels of disturbance. Whilst it lacked species diversity, high numbers of Willow Warbler were heard utilizing this area. It is therefore recommended that all vegetation clearance should be undertaken outside of the breeding bird season and any habitat loss should be appropriately compensated for.

6.3.2 Bats

Bats could have the potential to be impacted by the development in a number of ways; tree clearance or management could result in loss of roosts, and the creation of large (>10 m wide) gaps in hedgerows, or lighting along the site boundaries, could result in obstruction of access to a roost through disturbance to flight lines. Lighting (if required) could also directly impact roosts by illuminating roost entrances (both on and offsite) causing bats to either not leave a roost, or not return to a roost. Such impacts would be in

contravention of the Conservation of Habitats and Species Regulations 2017 (as amended), and Wildlife and Countryside Act 1981 (as amended).

The arable fields which dominate the site are considered of low value to bats as a foraging and commuting resource. Boundary hedgerows and associated field margins on site provide greater foraging opportunities for bats and in some locations, may form important commuting routes to and from suitable feeding habitat in the wider area, including woodland compartments located adjacent to the site. However, it is understood that all trees and hedgerows are to be retained and no further surveys are recommended in regards to roosting, foraging and commuting bats. If at any time this changes, an Ecologist must be consulted.

In any case, the proposed development should implement a sensitive lighting strategy (if lighting is required) which considers the impact of the development on bats. The scheme should follow the protocols outlined in the Institute for Lighting Professionals Guidance note 08/18 “Bats and Artificial Lighting at Night” (2023) to minimize disturbance, light spill, and sky-glow across the site and particularly towards hedgerows. It is recommended that a 5 to 10 m buffer/dark corridor is left around any retained hedgerows.

6.3.3 Badgers

While no Badger setts (field signs in the form of footprints were observed in land parcel five) were identified during the field survey on site, optimal habitat located offsite but within 30 m of the proposed development boundary was present including Aswarby Thorns and Flower Pot Brick Pits. Linear woodland compartments were not fully assessed and therefore it is currently not possible to discount a potential impact to Badger and their setts as a result of the proposed development, if present. It is therefore recommended that a Badger survey is undertaken to determine the current status of this species on and within 30 m of the site. The results of this survey will inform the requirement for further assessment and / or mitigation in relation to Badger.

It is understood that a Badger survey has been commissioned for the site.

6.3.4 Water Vole and Otter

North Beck provided optimal habitat for Water Vole and if present, the construction phase of the proposed development has potential to impact this species (and result in an offence) through disturbance of individuals and / or damage of resting places. However, following confirmation of a suitable buffer from the waterbody to the proposed development (10m +), it is considered that any risk of potential harm to Water Vole in those potentially suitable habitats to be affected by the scheme could be managed under the terms of Reasonable Avoidance Measures (RAMS), without any requirement for survey. Field drains on site were considered unsuitable for this species, lacking preferred depth and food sources, but in any

case these features are to be protected and retained with a suitable buffer. The following recommendation is therefore made and should be adhered to: Reasonable Avoidance Measures (RAMS) should be compiled by a suitably experienced ecologist prior to the construction phase of the proposed development, which describes the measures that are to be implemented during construction to minimize the risks of harm to Water Vole and its habitats.

North Beck was also considered potentially suitable for commuting and foraging Otter and in some areas, holt creation / resting places. The construction phase of the proposed development has potential to impact Otter through disturbance, dependent on the proximity of the proposed development to the waterbody and if a resting place for Otter is present. It is recommended that an Otter survey is undertaken to identify any signs or resting places of this species. The results of this survey would inform the requirement for further survey and / or mitigation in relation to Otter.

It is understood an Otter survey has been commissioned for the site.

6.3.5 White-clawed Crayfish

Suitable habitat for White-clawed Crayfish was present on site. North Beck provided aquatic vegetation, clean water, resources, and shelter; however, if precautionary methods are implemented to avoid pollution into any watercourses on site is considered unlikely the proposed development will directly affect the waterbody or any of the associated features suitable for this species. As such, no further surveys are recommended. See Pollution Prevention Guidelines (PPG5) for more information regarding precautionary working methods for working in or near water. In any case, an ecologist should be consulted to determine the requirement for further survey, following confirmation of proposed development and landscape plans.

6.3.6 Reptiles

Suitable habitats for reptiles were present within the survey area (mainly limited to field boundaries and hedgerow); however, given the limited area of suitable habitat for reptiles available, the dominant habitat on site being considered sub optimal for these species and the nature of the proposed works, no further surveys for reptiles were recommended.

Clearance of vegetation should instead follow a method statement that would be produced prior to works commencing and will detail measures to ensure reptiles are not adversely impacted by the proposed development. The precautionary measures will be detailed in a Risk Avoidance Measures report, (RAMs) to be produced prior to works commencing.

6.3.7 Amphibians

Suitable terrestrial habitat for amphibians, including Great Crested Newts (in the form of hedgerow (on site) and woodland (off site, within 250 m) and aquatic habitat for Great Crested Newts was present 250m

of the site in the form of ponds. Further surveys in the form of Habitat Suitability Index (HSI) assessments of all waterbodies within 250 m of the site should be carried out to determine their suitability to support Great Crested Newts. Where ponds are identified as suitable for breeding Great Crested Newts, ponds should be subject to eDNA analysis to test the water for the presence of Great Crested Newt DNA to determine the presence/likely absence of Great Crested Newts. Although HSI assessment can be carried out at any time of the year, eDNA surveys can only be carried out between mid-April and the end of June. The results of this survey will inform the requirement for further survey and / or mitigation in relation to this species.

It is understood that further survey in the form of Habitat Suitability Index (HSI) assessment has been commissioned.

6.4 Other Enhancement Opportunities

Although not expected to become compulsory until January 2024 a Biodiversity Net Gain assessment may be requested by the Local Authority and required in order to comply with the Environment Act 2021, the National Planning Policy Framework (NPPF) July 2021, and to satisfy Policy S61 of the Central Lincolnshire Local Plan 2023.

Additional enhancement options on site include:

- Provision of bat roost boxes and bird nest boxes on retained trees on site.
- Incorporation of an invertebrate hotel and bumblebee boxes.
- Creation of reptile refugia / hibernacula in suitable locations in retained areas of the site to encourage reptiles (and amphibians) onto the site.
- Field margin planting, with a basic general-purpose meadow mixture (EM1) containing common species such as Yarrow (*Achillea millefolium*), Common Knapweed (*Centaurea nigra*) and Common Bent (*Cynosurus cristatus*). This will enhance the ecological value and encourage invertebrates to the site.

7 Conclusions

The proposed development included within this assessment essentially comprises the erection of an approximately 72 ha solar PV array and associated infrastructure on agricultural land located off Station Road, Screddington, Sleaford. The site predominately comprises intensively managed arable land with frequent boundary hedgerows. Areas of broadleaved woodland are present just outside the redline boundary, running adjacent to a number of the land parcels,. North beck runs east to west, adjacent to land parcels two – four, on a southernly aspect.

Three statutory designated sites of nature conservation importance are present within 5 km of the proposed development. A further two non-statutory designated sites of nature conservation are located within 2 km of the proposed development. No impacts to any designated sites are envisaged as a result of the proposed development.

Hedgerows on site were considered of local ecological importance. It is understood that these habitats are to be retained and protected as part of the proposed development. If hedgerow removal is required, it is recommended that a sufficient level of habitat compensation is included within proposed landscape plans and an Ecologist consulted.

Reasonable avoidance measures have been recommended in relation to Water Vole, White-clawed Crayfish and reptiles. It is understood that wintering bird surveys have been commissioned for the site.

North beck was considered potentially suitable for commuting and foraging Otter and in some places, holt creation. Given the proximity of the proposed development, to North beck it is recommended that an Otter survey is undertaken to confirm the presence or likely absence of Otter resting places / holts within 50 m of the proposed development. The results of this survey will inform the requirement for further survey and / or mitigation in relation to this species, it is understood that an Otter survey has been commissioned.

North beck was also considered suitable for Water Vole, however, following the confirmation of a minimum of a 10 m buffer from the watercourse, it is recommended that construction is undertaken under the terms of Reasonable Avoidance Measures for this species.

To confirm the presence or likely absence of Badger setts on and within 30 m of the site's boundaries, it is recommended that a Badger survey is undertaken. The results of this survey will inform the requirement for further assessment and/or mitigation in relation to this species. A Badger survey has been commissioned for the site.

To determine the likelihood of Great Crested Newt presence within suitable terrestrial habitat on site, it is recommended that a Habitat Suitability Index Assessment is undertaken on waterbodies within 250 m. The results of this survey will inform the requirement for further survey and / or mitigation in relation to this species. A Habitat Suitability Index Assessment has been commissioned for the site.

Subject to the adoption of all the recommendations outlined in this report, it is considered that the proposed works would accord with relevant wildlife legislation.

A Biodiversity Net Gain assessment may be required to comply with the Environment Act 2021 which although is not currently a legal requirement (expected to become law in January 2024), many Local Authorities have adopted associated policies including Biodiversity Net Gain. The adoption of biodiversity enhancements as part of the design of the proposed development has been discussed and is recommended to comply with national / local planning policy.

8 References

British Standards Institution (2012). BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations. BSI, London.

Chartered Institute of Ecology and Environmental Management (2017). Guidelines for Ecological Preliminary Ecological Appraisal. Technical Guidance Series. www.cieem.net

Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Technical Guidance Series HUwww.cieem.net

Collins, J. (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines. 3rd Edition

Collins, J. (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines. 4th Edition

Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidelines Series). Eds Fiona Mathews and Paul Chanin. The Mammal Society, London

JNCC (2010). Handbook for Phase 1 Habitat Survey. A technique for environmental audit (reprint). Joint Nature Conservation Committee, Peterborough.


Stace, C. (2019). New British Flora of the British Isles. 4th Edition. Cambridge University Press.

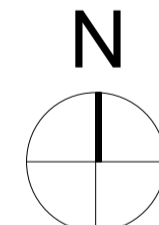
Appendix 1: Proposed Plans



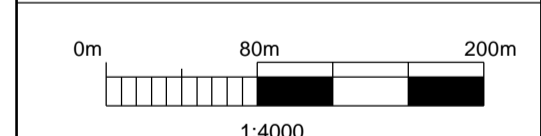
APPLICATION BOUNDARY
Scale 1:25000 @ A1

This drawing is copyright of Lighthouse Development Consulting based upon the Ordnance Survey Map with the sanction of the Controller Crown Copyright Reserved O.S. LICENCE No 010001873. This plan is of Her Majesty's Stationery Office.

Legend:
 Application Boundary
NOTE:
 Site Area = 75.677Ha / 187.0 Acres



Do not scale from this drawing unless for Planning purposes. Illustrated dimensions only are to be used.
 All dimensions must be checked on site by the contractor prior to the commencement of any building works.
 Where applicable, dimensions and details are to be read in conjunction with specialist consultants' drawings or available information, with any discrepancy between drawings brought to the attention of the project manager prior to the commencement of any fabrication or building works.



DRAFT

Rev:	Date:	Issue:	By:

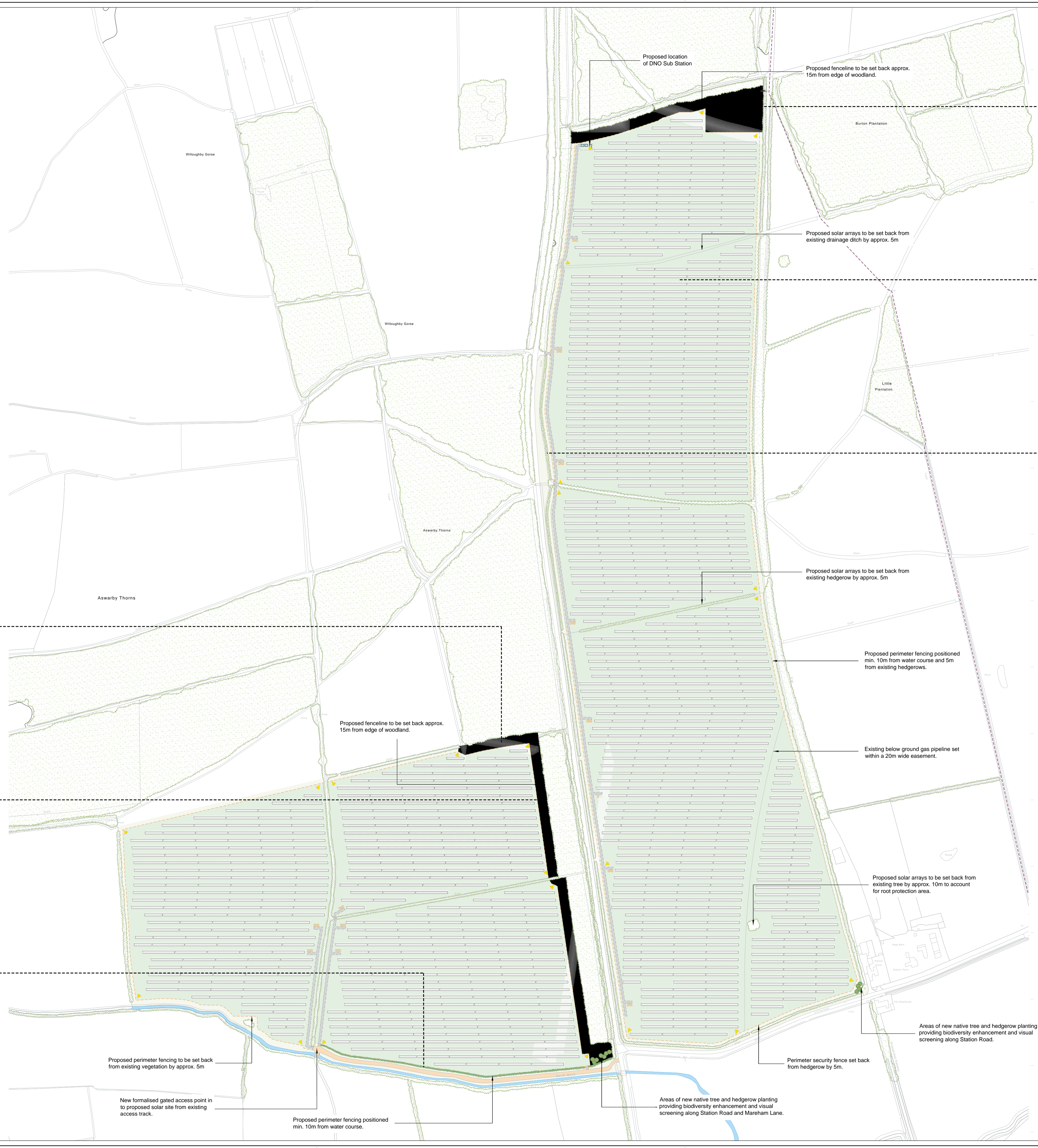
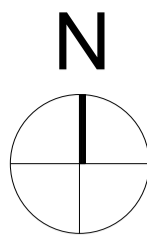
Draft: 21/11/23 First Issue ICS

Mareham Solar Project Limited



Web: <https://www.lighthouse-dc.co.uk/>

Site: Mareham Lane, Aswarby			
Drawing Title: Site Location Plan			
Drawing No or Client Ref:	Revision:	Scale:	
Figure 2	-	1:4000 @ A1	
Drawn:	Approved By:	Date:	CAD Ref:
ICS	NB	21.11.23	Mareham Lane - Fig 2 Site Area



PROPOSED PICNIC AREAS



IMPROVED GRASSLAND UNDER SOLAR ARRAYS



EXISTING HEDGEROWS MAINTAINED AND IMPROVED THROUGH INCREASED MANAGEMENT



WILDFLOWER AREAS



PROVISION OF 15M WIDE BUFFER AREAS TO EXISTING WOODLAND

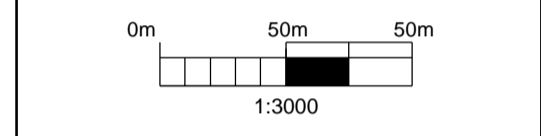


NEW TREE AND HEDGEROW PLANTING TO ENHANCE EXISTING BOUNDARY VEGETATION

This drawing is copyright of Lighthouse Development Consulting based upon the Ordnance Survey Map with the sanction of the Controller, Crown Copyright Reserved O.S. LICENCE No 010001873. The plan is of Her Majesty's Stationery Office.

- Legend:**
- Existing Vegetation Retained
 - Existing PRow
 - Existing Improved Grassland
 - Proposed scattered native tree and shrub planting
 - Proposed Improved Grassland and Native Grass Seed Mix
 - Proposed biodiversity enhancement areas, including species rich grass, wildflower planting, and biodiversity corridors.
 - Proposed Native Hedgerow Planting
 - Proposed Solar Panels
 - Perimeter Security Fence
 - Proposed Sub-Station
 - Internal Access Track
 - Proposed Transformer / Inverter
 - Proposed CCTV
 - Existing Access Track
 - Proposed Seating / Picnic Area

Do not scale from this drawing unless for Planning purposes. Illustrated dimensions only are to be used.
All dimensions must be checked on site by the contractor prior to the commencement of any building works.
Where applicable, dimensions and details are to be read in conjunction with specialist consultants drawings or available information, with any discrepancy between drawings brought to the attention of the project manager prior to the commencement of any fabrication or building works.



Rev.	Date	Notes	By
Draft	21-10-2023	Second Issue	ICS
Draft	18-10-2023	First Issue	ICS

Kimblewick Solar Limited
DRAFT



Site: **Mareham Lane, Aswarby**

Drawing Title: **Site Block Plan - Proposed**

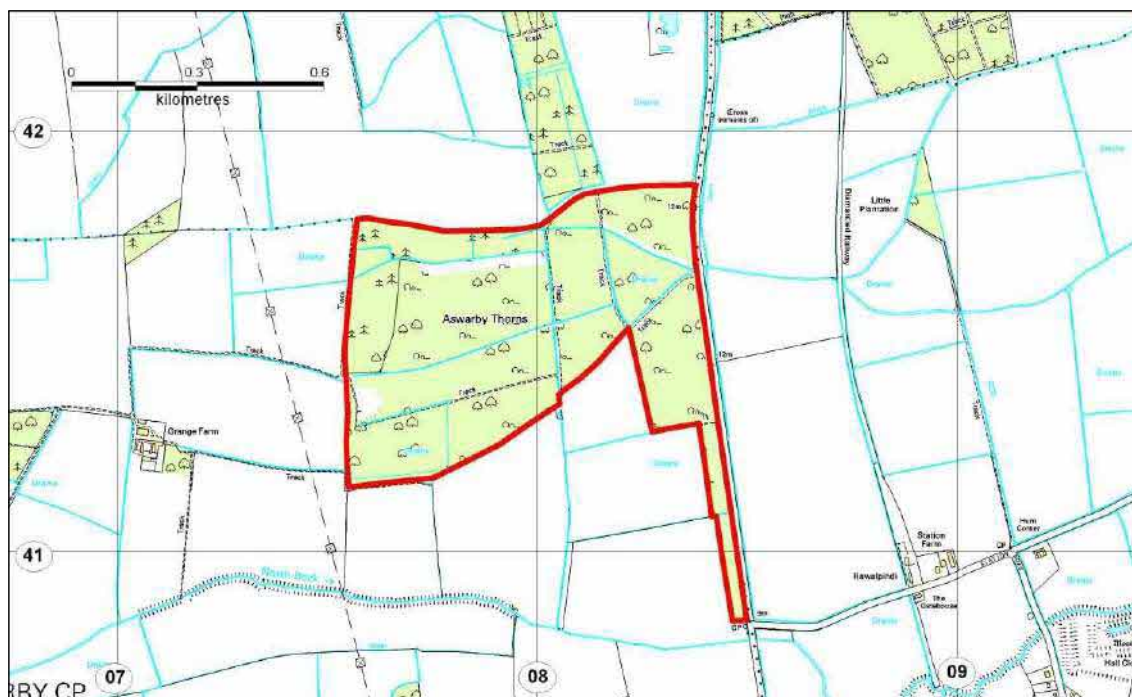
Drawing No or Client Ref	Revision	Scale
Figure 1	-	1:3000 @ A1

Drawn	Approved By	Date	CAD Ref
ICS NB		08.10.2023	LH Mareham Lane CAD

Appendix 2: Designated Sites Maps

See following page.

Aswarby Thorns



OS copyright No. AL100016739, Banovallum House, Manor House Street, Horncastle, Lincolnshire. LN9 5HF

Grid ref: TF077413
Area: 46.1 ha

Survey: 15 May, 5 November 2009
Surveyor: A.Prendergast

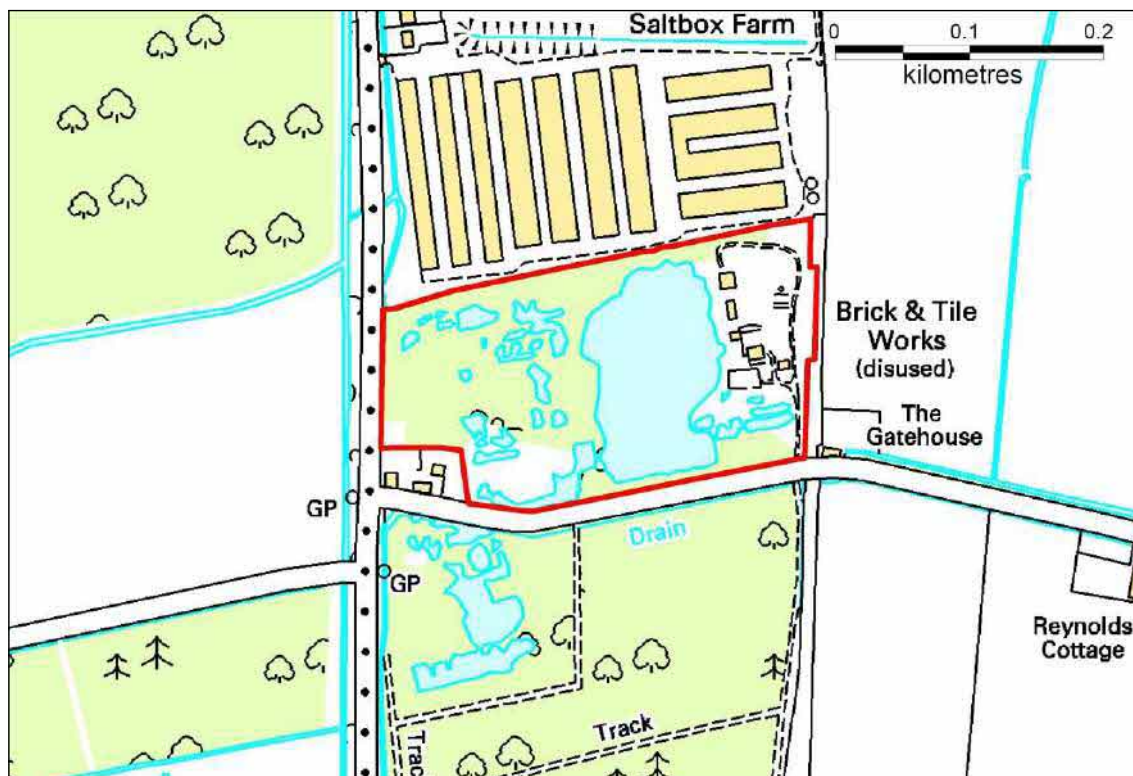
Main habitat: Woodland
Additional features: Standing/fallen dead wood, Sap runs on/holes in trees, Seasonally wet/damp areas

A large acid woodland surrounded by arable land. Parts are dominated by tall, straight pedunculate oak *Quercus robur*, others areas have recently been felled. The edges are bounded by hedges and dense scrub which supports a wider range of woody species including field maple *Acer campestre*, hazel *Corylus avellana*, blackthorn *Prunus spinosa* and wych elm *Ulmus glabra*. The shrub layer is thin and appears to be cleared regularly but is dominated by bramble *Rubus fruticosus* agg. with occasional grey willow *Salix cinerea*, elder *Sambucus nigra*, hawthorn *Crataegus monogyna* and honeysuckle *Lonicera periclymenum*.

Away from areas of dense bramble the ground flora appears to be good with abundant tufted hair grass *Deschampsia cespitosa* and false brome *Brachypodium sylvatica*. Male fern *Dryopteris filix-mas* and large scaly male fern *Dryopteris affinis* 'cambrensis' are frequent.

Criteria passed: WD1, WD1a
Recommended as a Local Wildlife Site: 24 March 2010

Flower Pot Brick Pits



OS copyright No. AL100016739, Banovallum House, Manor House Street, Horncastle, Lincolnshire. LN9 5HF

Grid ref: TF085427
Area: 5.2 ha

Survey: 9 September 2008
Surveyor: A.Prendergast, T.Simpson

Main habitat: Semi-natural woodland
Additional habitat: Wet woodland, dense scrub, standing water
Additional features: Planted specimen trees, standing/fallen dead wood, tussocky vegetation, structural diversity, bare ground, areas with frequent/prolonged flooding, seasonally wet/damp areas

This old brick pit is now flooded and is currently used as a private fishing lake. The edges are dominated by ash woodland with frequent pedunculate oak and occasional silver birch and downy birch. Field maple is frequent in the shrub layer. Some walnut and copper beech trees have been planted. Both apple and crab apple are rare on the eastern edge of the main lake. The shrub layer is dense in places; it is dominated by hawthorn with hybrid hawthorn and occasional red-osier dogwood. The ground flora includes occasional enchanter's nightshade, foxglove, wild strawberry, dog violet and early dog violet.

Areas of wet woodland with scattered small pools and dominated by goat willow scrub occur across the eastern part of the site. Here the ground flora includes occasional tufted hair-grass, broad buckler fern, male fern and water mint. This area is likely to be of increasing value to wildlife as it matures.

Hornwort is present in the large main lake. The margins support some good stands of lesser bulrush as well as common bulrush and common reed. Marsh bedstraw, mare's-tail and gypsywort are occasional.

Some dry grassland species remain in the lighter areas of the site such as around the car park and the bank of the ditch on the eastern edge of the site. These species include cowslips, teasel, common knapweed and common centaury.

Appendix 3: Frame of Reference for Geographical Context

Geographical context	Examples
International and European	<p>Ramsar Sites, Special Protection Areas, Biosphere Reserves, Special Areas of Conservation. Sites supporting populations of internationally important species.</p> <p>Any regularly occurring population of an internationally important species, which is threatened or rare in the UK. i.e. it is a UK Red Data Book species or listed as occurring in 15 or fewer 10km squares in the UK (categories 1 and 2 in the UK BAP) or of uncertain conservation status or of global conservation concern in the UK BAP.</p> <p>A regularly occurring, nationally significant population/number of any internationally important species.</p>
National	<p>SSSIs or non-designated Sites meeting SSSI selection criteria, NNRs, Marine Nature Reserves, NCR Grade 1 Sites. Sites containing viable areas of key habitats identified in the UK Biodiversity Action Plan.</p> <p>Any regularly occurring population of a nationally important species which is threatened or rare in the region or county (see local BAP).</p> <p>A regularly occurring, regionally or county significant population/number of any nationally important species.</p>
Regional	<p>Sites containing viable areas of threatened habitats listed in a Regional BAP (or some Natural Areas), comfortably exceeding SINC criteria, but not exceeding SSSI criteria.</p> <p>Any regularly occurring, locally significant population of a species listed as being nationally scarce which occurs in 16-100 10km squares in the UK or in a Regional BAP or relevant Natural Area on account of its regional rarity or localisation;</p> <p>A regularly occurring, locally significant number of a regionally important species.</p>
County / Metropolitan	<p>Sites meeting the criteria for county or metropolitan designation (SINC, CWS, etc.). Ancient semi-natural woodland, LNRs or viable areas of key habitat types listed in county BAPs/Natural Areas.</p> <p>Any regularly occurring, locally significant population of a species which is listed in a County/Metropolitan “red data book” or BAP on account of its regional rarity or localisation;</p> <p>A regularly occurring, locally significant number of a County/Metropolitan important species.</p>
Local	<p>Undesignated Sites or features considered to appreciably enrich the habitat resource in the District or Borough or within a zone of influence.</p> <p>A population of a species that is listed in a District/Borough BAP because of its rarity in the locality or in the relevant Natural Area profile because of its regional rarity or localisation;</p> <p>A regularly occurring, locally significant number of a District / Borough important species during a critical phase of its life cycle.</p>

Appendix 4: UK Habitat Classification map










See following page.



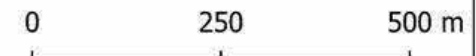
Lighthouse Development Consulting

Scredington, Sleaford, NG34 0AA

UK Habitat Classification Map

-  Boundary
-  Modified Grassland (g4)
-  Short Rotation Coppice (c1d6)
-  Cereal Crop (c1c)
-  Non Cereal Crop (c1d)
-  Scattered Deciduous Trees (sceondary habi)
-  Hedgerow (h2a, priority habitat)
-  Other Rivers and Streams (r2b)
-  Access Track (s)

Drawn by Lauren Hadfield, 07.08.23
Reviewed by Simon Fawcett



Contains Bing maps © Microsoft 2023
For reference purposes only. No further copies may be made.

ADAS, 14 Beecham Court, Wigan
WN3 6PR Tel +44(0)1942 493255



Appendix 5: Photographs

See following page.





Photograph 1: Modified grassland, Land Parcel one



Photograph 2: Land parcel two, short rotation coppice



Photograph 3: Cereal crop, land parcel three



Photograph 4: Cereal crop, land parcel three



Photograph 5: Non-cereal crop



Photograph 6: Non-cereal crop



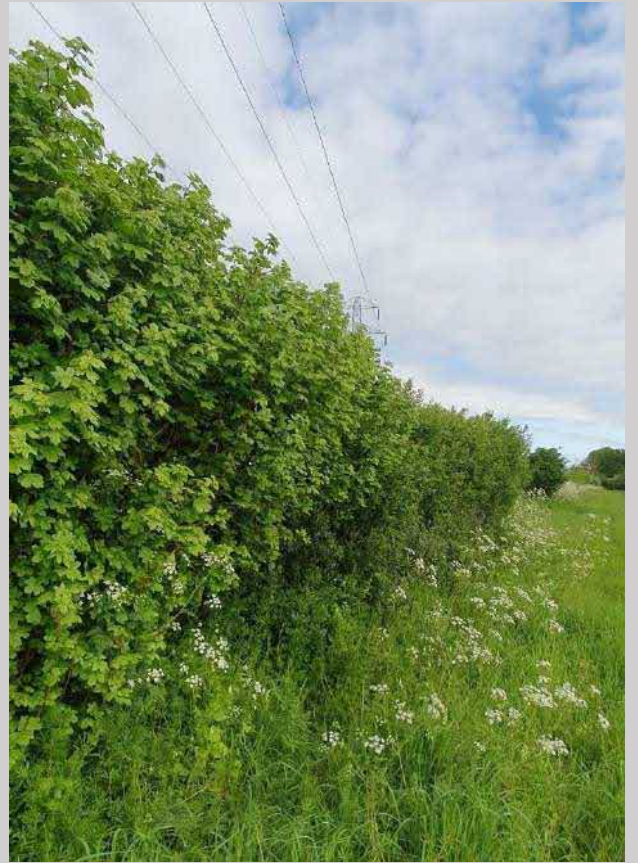
Photograph 5: Hedgerow one, associated with wet ditch at northern end.



Photograph 6: Hedgerow one continued, featuring arable field margin.



Photograph 7: Hedgerow two, bisecting land parcel three and four.



Photograph 8: Hedgerow three running alongside western boundary of land parcel four.



Photograph 9: Hedgerow four, land parcel one to north side and land parcel two to south. Facing east.



Photograph 10: Hedgerow five, featuring Ash tree. Associated with wet ditch.



Photograph 11: Hedgerow six located along eastern boundary of land parcel five - eight.



Photograph 12: Land parcel five facing east. Hedgerow seven to the left.



Photograph 13: Land parcel three and four with North beck running along the southern boundary.



Photograph 14: Land parcel three and four with North beck running along the southern boundary.



Photograph 15: Woodland bordering the northern boundary of land parcel four and three



Photograph 16: Brash pile associated with two mature trees, in land parcel three.



Photograph 17: Land parcel six. Woodland bordering land eastern boundary of land parcels one and two, to the left. Mareham Lane separating land parcels. Hedgerow eight with trees in background.



Photograph 18: Land parcel seven, facing north. Hedgerow ten to left, priority habitat.



Photograph 19: Land parcel eight, woodland bordering the north to background. Hedgerow ten to left.



Photograph 20: Hedgerow six to the right, bordering eastern boundary of land parcel five. Associated with wet ditch.



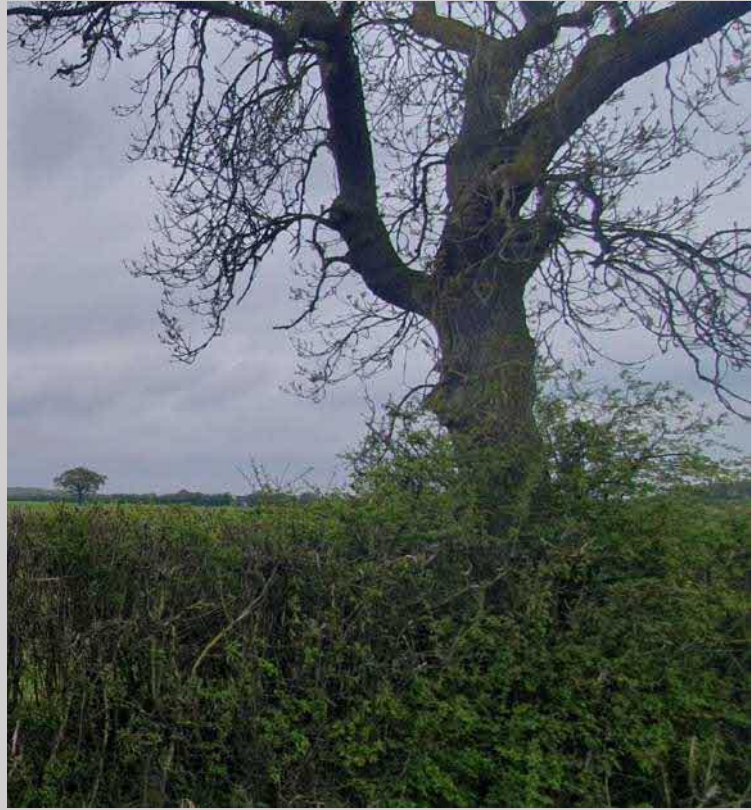
Photograph 21: Hedgerow six, wet ditch.



Photograph 22: Badger footprints running alongside hedgerow in land parcel five.



Photograph 23: T1 showing woodpecker holes. (PRF's)



Photograph 24: T2, associated with hedgerow 5



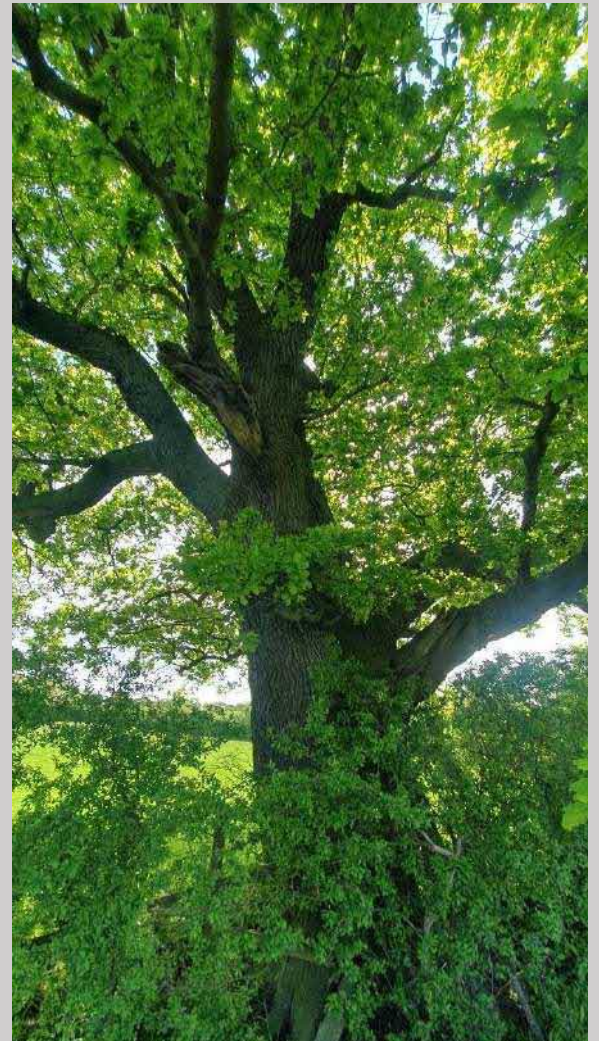
Photograph 25: T3, likely suffering from Ash dieback. Hedgerow two, defunct, species poor.



Photograph 26: T4 and T5



Photograph 27: T5



Photograph 28: T6 associated with hedgerow one.

Appendix 6: Land Parcel Numbers

See following page





© RSK ADAS Ltd.

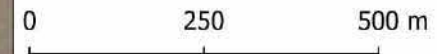
Lighthouse Development Consulting

Scredington, Sleaford, NG34 0AA

Land Parcel Numbers Map

-  LP Numbers
-  Boundary

Drawn by Lauren Hadfield 06.10.23



Contains Bing maps © Microsoft 2023
For reference purposes only. No further copies may be made.

ADAS, 14 Beecham Court, Wigan
WN3 0PR Tel +44(0)1942 493255

