

Gate Burton Energy Park Environmental Statement

Volume 3, Appendix 8-B: Preliminary Ecological Appraisal
Document Reference: EN010131/APP/3.3
January 2023

APFP Regulation 5(2)(l)
Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Prepared for:

Gate Burton Energy Park Limited

Prepared by:

AECOM Limited

© 2023 AECOM Limited. All Rights Reserved.

This document has been prepared by AECOM Limited ("AECOM") for sole use of our client (the "Client") in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

Table of Contents

1.	Introduction.....	1
1.1	Background.....	1
1.2	Description of The Scheme	1
1.3	Site Description.....	2
1.4	Report Objectives	3
2.	Legislation and Planning Policy	4
2.1	Relevant legislative context.....	4
2.2	National and Local Planning Policy.....	4
2.3	Other Guidance.....	10
2.4	Local Biodiversity Action Plan.....	11
3.	Methods.....	12
3.1	Desk Study	12
3.2	Field Survey.....	13
3.3	Desk Study and Field Survey Limitations.....	13
4.	Results	15
4.1	Nature Conservation Designations	15
4.2	Habitats	19
4.3	Notable Habitats	23
4.4	Protected and Notable Species	24
5.	Identification of Ecological Constraints and Recommendations.....	28
5.1	Approach to the Identification of Ecological Constraints.....	28
5.2	Constraints and Requirements for Further Survey: Designations	29
5.3	Constraints and Requirements for Further Survey: Species	30
6.	Conclusions	35
7.	References	41
8.	Annexes.....	43
Annex A	Legislation and Policy	44
Annex B	Local Biodiversity Action Plan habitats and species.....	48
Annex C	Target Notes and Photographs.....	60

Tables

Table 1	Desk study data sources	12
Table 2	Statutorily Designated Sites within 10km (international) and 2km (national) of the Site	15
Table 3	Non-Statutory Designated Sites within 2km of the Site.....	16
Table 4	Broad habitat types within the Site.....	20
Table 5	Notable habitat types within the Site	23
Table 6	Protected and Notable species relevant or potentially relevant to the Scheme	25
Table 7	Scale of Constraint to Development.....	29
Table 8	Summary appraisal of features of ecological constraints and recommended further requirements	36

1. Introduction

1.1 Background

- 1.1.1 Gate Burton Energy Park Limited (hereafter referred to as ‘the Applicant’) commissioned a Preliminary Ecological Appraisal (PEA) for the Gate Burton Energy Park (hereafter referred to as the ‘Scheme’). This PEA was commissioned to identify whether there are known or potential ecological receptors (nature conservation designations, protected and notable habitats and species and scheduled invasive non-native species) that may constrain or influence the design and implementation of the Scheme. The approach applied when undertaking this PEA accords with the Guidelines for Preliminary Ecological Appraisal published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017) (Ref 1). The PEA addresses relevant wildlife legislation and planning policy as summarised in Section 2 of this report and is consistent with the requirements of British Standard 42020:2013 Biodiversity. Code of Practice for Planning and Development (Ref 1).
- 1.1.2 The Scheme comprises the installation of solar photovoltaic (PV) generating panels and on-site energy storage facilities across a proposed site in Lincolnshire (hereafter referred to as the ‘Solar and Energy Storage Park’) and grid connection infrastructure (hereafter referred to as the ‘Grid Connection Corridor’). The entire Scheme, including both the Solar and Energy Storage Park and Grid Connection Corridor is referred to as the ‘Site’. Further information on the Scheme is provided in **ES Volume 1, Chapter 2: The Scheme [EN010131/APP/3.1]**.
- 1.1.3 The Site is located approximately 4 kilometres (km) south of Gainsborough with the Solar and Energy Storage Park, and the Grid Connection Corridor presented in **ES Volume 2: Figure 1-1 and Figure 1-2 [EN010131/APP/3.2]**.
- 1.1.4 **ES Volume 2: Figure 1-2 [EN010131/APP/3.2]** presents the expected maximum extent of land to be included within the application for a Development Consent Order (DCO), which includes all land being considered for the purposes of the Scheme. It should also be noted, **ES Volume 2: Figure 1-2 [EN010131/APP/3.2]** represents the maximum extent of the Site boundary based on all the options for Scheme elements that have been the subject of consultation.
- 1.1.5 The Scheme is defined as a Nationally Significant Infrastructure Project (NSIP) under Sections 14(1)(a) and 15(2) of the Planning Act 2008 (Ref 3) as an onshore generating station in England, exceeding 50MW.

1.2 Description of The Scheme

- 1.2.1 The principal infrastructure will be as follows:

- Solar PV modules;
 - PV module mounting structures;
 - Inverters;
 - Transformers;
 - An On-Site Substation;
 - Onsite cabling;
 - An energy storage system;
 - Onsite electrical compounds comprising of substations and control buildings;
 - A circa 6km electrical connection route to connect with the National Grid at Cottam Substation;
 - An off-site electrical compound comprising of a substation and control building;
 - A spare parts storage building or enclosure;
 - Fencing and security measures;
 - Access tracks; and
 - Landscaping and biodiversity enhancement.
- 1.2.2 During the construction phase, one or more temporary construction compound(s) will be required as well as temporary roadways to facilitate access to all land within the Solar and Energy Storage Park.
- 1.2.3 In areas around the PV arrays and on other land within the Solar and Energy Storage Park, opportunities for landscaping, biodiversity enhancements and habitat management will be explored.
- 1.2.4 The Ordnance Survey (OS) central grid reference for the Solar and Energy Storage Park is SK 84904 83646.
- 1.2.5 Further information on the Scheme is provided in **ES Volume 1, Chapter 2: The Scheme [EN010131/APP/3.1]**.

1.3 Site Description

- 1.3.1 The Scheme is located to the east of Gate Burton, Lincolnshire. The location of the Scheme is presented in **ES Volume 2: Figure 1-1 and Figure 1-2 [EN010131/APP/3.2]**. The Site covers an area of approximately 824 hectares (ha).
- 1.3.2 The Solar and Energy Storage Park (as defined in Section 1.2) covers an approximate area of 652ha and is dominated by arable fields with game crop strips and a few *Miscanthus* fields in the east of the Solar and Energy Storage Park. There are numerous mature trees and hedges within the Site, with woodlands and small wooded copses. The Solar and Energy Storage Park is surrounded by mainly arable and improved grassland livestock fields.
- 1.3.3 The Grid Connection Corridor (as defined in Section 1.2) covers an area of approximately 172ha and is dominated by arable fields. There are hedgerows and watercourses within the Grid Connection Corridor and the River Trent is crossed by the Grid Connection Corridor.

1.4 Report Objectives

- 1.4.1 In order to deliver the PEA, a desk study and an extended Phase 1 Habitat Survey were undertaken by appropriately experienced ecologists, to identify ecological features relevant to the Scheme and occurring within the wider potential zone of influence. The potential zone of influence was defined with reference to the red line boundary (the 'Site') as presented in **ES Volume 2: Figure 1-1 and Figure 1-2 [EN010131/APP/3.2]** and the type of development, as detailed in Section 1.2. Additional details on the methods used are provided in Section 3.
- 1.4.2 The purpose of the PEA was to:
- Identify and categorise habitats present within the Site and any areas immediately outside of the Site where there may be potential for direct or indirect effects (the "zone of influence");
 - Carry out an appraisal of the potential of the habitats recorded to support protected or notable species of fauna and flora; and
 - Provide advice on any potential ecological constraints and opportunities in the zone of influence that should be addressed to inform and support the planning application for the Scheme, including the identification (where relevant) of any requirements for follow-up habitat and species surveys and / or requirements for ecological mitigation.
- 1.4.3 The purpose of this report is to provide a preliminary high-level appraisal of the ecological risks and opportunities associated with the Scheme. The report identifies the scope of further work (where necessary) that would be required to support a planning application and to inform an Ecological Impact Assessment (EclA). Preliminary high-level recommendations are made on potential options for the avoidance, mitigation or compensation of the potential impacts of the Scheme (where known) on the identified ecological receptors and of potential enhancements to the biodiversity to achieve an overall gain.
- 1.4.4 This PEA report is presented as a technical appendix to accompany **Chapter 8: Ecology and Nature Conservation** of this **ES [EN010131/APP/3.1]** for the DCO application and provides preliminary baseline information of the Site, as of April 2022. As such, some information included within this report maybe outdated. As a result, any updates to surveys (such as Phase 1 surveys within areas not previously surveyed due to changes in the Site boundary) or other relevant information (such as updates to legislation and distances of the Site to designated sites), between April 2022 and September 2022 are not included within this report but are reflected and updated within **Chapter 8: Ecology and Nature Conservation** of this **ES [EN010131/APP/3.1]**. Therefore, where there are any discrepancies between information, please refer to Chapter 8: Ecology and Nature Conservation of the **Chapter 8: Ecology and Nature Conservation** of this **ES [EN010131/APP/3.1]** for the most relevant and up to date information. This report has been provided as part of the DCO submission, to provide context as to the Scheme's evolution and design progress and the process followed to determine the scope and extent of ecological survey work.

2. Legislation and Planning Policy

2.1 Relevant legislative context

2.1.1 The following wildlife legislation was considered when undertaking this PEA:

- Wildlife and Countryside Act (WCA) 1981 (as amended) (Ref 3);
- Countryside and Rights of Way (CROW) Act 2000 (Ref 5);
- Natural Environment and Rural Communities (NERC) Act 2006 (Ref 6);
- The Conservation of Habitats & Species Regulations 2017 (as amended) (the Habitats Regulations) (Ref 7-6);
- The Protection of Badgers Act 1992 (Ref 8);
- The Hedgerow Regulations 1997 (Ref 9);
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017(Ref 10); and
- Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref 11).

2.1.2 Compliance with the above legislation may require the attainment of relevant protected species licences prior to the implementation of the Scheme.

2.1.3 Further information on the requirements of the above legislation is provided in Annex A.

2.2 National and Local Planning Policy

National Planning Policy Framework

2.2.1 The National Planning Policy Framework (NPPF) (Ref 12) states the commitment of the UK Government to minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity.

2.2.2 It specifies the obligations that Local Authorities and the UK Government have regarding statutory designated sites and protected species under UK and international legislation and how this it to be delivered in the planning system. Protected or notable habitats and species can be a material consideration in planning decisions and may therefore make some sites unsuitable for certain types of development, or if development is permitted, mitigation measures may be required to avoid or minimise impacts on certain habitats and species, or where impact is unavoidable, compensation may be required.

2.2.3 The NPPF is clear that pursuing sustainable development includes moving from no net loss of biodiversity to achieving net gains for nature, and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution.

2.2.4 The latest revision of the NPPF came into being in July 2021. Section 15 of the NPPF relates specifically to 'Conserving and Enhancing the Natural Environment'. Relevant paragraphs from Section 15 are as follows:

2.2.5 Paragraph 174 states that '*Planning policies and decision should contribute to and enhance the natural and local environment by:*

- *protecting and enhancing valued, landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);*
- *recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;*
- *maintaining the character of the undeveloped coast, while improving public access to it where appropriate;*
- *minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*
- *preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, where possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and*
- *remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate*'.

2.2.6 Paragraph 175 states that '*Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; 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*'.

2.2.7 Paragraph 179 states that '*To protect and enhance biodiversity and geodiversity, plans should:*

- *identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and*
- *promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity*'.

2.2.8 Paragraph 180 states that '*When determining planning application, local planning authorities should apply the following principles:*

- *if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- *development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly*
- *outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
- *development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and*
- *development whose primary objective is to conserve or enhance biodiversity should be supported; while 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’.*

2.2.9 Paragraph 181 states that: ‘*The following should be given the same protection as habitats sites:*

- *potential Special Protection Areas and possible Special Areas of Conservation;*
- *listed or proposed Ramsar sites; and*
- *sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites’.*

2.2.10 Paragraph 182 states that ‘*The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site’.*

National Policy Statements

2.2.11 The following National Policy Statements (NPSs) are relevant to solar developments and these NPSs were ‘designated’ in 2011 and as far as they are applicable, are considered to be matters that will be important and relevant to the Secretary of State’s decision as to whether to grant planning permission for the Scheme. These NPSs are, as of September 2021, in the process of being updated and therefore, relevant sections of the draft NPSs are also included below, where relevant.

- 2.2.12 Overarching National Policy Statement for Energy (EN-1) (2011) (Ref 13), with particular reference to paragraphs 4.2.2 and 4.2.3, which provide national policy on what an ES for a Nationally Significant Infrastructure Project (NSIP) project should contain; paragraph 4.3.1 which states what the Secretary of State must, under the Conservation of Habitats and Species Regulations 2017 consider when granting a development consent order; and part 5 section 5.3 which sets out guidance on generic impacts relating to biodiversity for the applicant's assessment and decision-making on the application. The Draft Overarching National Policy Statement for Energy (EN-1) (Ref 14) (2021) includes guidance for biodiversity net gains in paragraphs 4.5.1 to 4.5.3 and generic impacts on biodiversity in Part 5.4 and that guidance has also been considered within this chapter.
- 2.2.13 The Draft National Policy Statement for Renewable Energy EN-3 (2021) (Ref 15) now includes Sections 2.47 to 2.54 (inclusive) which set out policy requirements specific to solar generation and these have been considered within this chapter.
- 2.2.14 Part 2.7 of the National Policy Statement for Electricity Networks Infrastructure (EN-5) (2011) (Ref 16) sets out generic impacts concerning biodiversity, although these are more relevant to considerations for birds and overhead lines. This is also the same of Part 2.8 and 2.10 of the Draft National Policy Statement for Renewable Energy EN-5 (2021) (Ref 17). However, paragraph 2.8.9 of EN-5 (2011) details biodiversity considerations when choosing an underground electricity line. This includes the environmental consequences, as underground cables can disturb sensitive habitats.

Local and Regional Plans

- 2.2.15 Local Planning policies that are relevant to the biodiversity for the Scheme are:
- Central Lincolnshire Local Plan 2012-2036 (Ref 18), adopted 24 April 2017, specifically Policies LP19: Renewable Energy Proposals, LP20: Green Infrastructure Network and Policy LP21: Biodiversity and Geodiversity; and
 - Bassetlaw District Council Core Strategy and Development Management Policies DPD (Ref 19), adopted 22 December 2011, specifically Policy DM9: Green Infrastructure, Biodiversity & Geodiversity, Landscape; Open Space & Sports Facilities.

Central Lincolnshire Local Plan 2012-2036

- 2.2.16 Policy LP19: Renewable Energy Proposals states that: *“Proposals for non-wind renewable technology will be assessed on their merits, with the impacts, both individual and cumulative, considered against the benefits of the scheme, taking account of the following:*
- *Proposals will be supported where the benefit of the development outweighs the harm caused and it is demonstrated that any harm will be mitigated as far as is reasonably possible.”*

- 2.2.17 Policy LP20: Green Infrastructure Network states that: *“The Central Lincolnshire Authorities will aim to maintain and improve the green infrastructure network in Central Lincolnshire by enhancing, creating and managing multifunctional green space within and around settlements that are well connected to each other and the wider countryside. Development proposals which are consistent with and help deliver the opportunities, priorities and initiatives identified in the latest Central Lincolnshire Green Infrastructure Study and Biodiversity Opportunity Mapping Study, will be supported. Proposals that cause loss or harm to this network will not be permitted unless the need for and benefits of the development demonstrably outweigh any adverse impacts. Where adverse impacts on green infrastructure are unavoidable, development will only be permitted if suitable mitigation measures for the network are provided. Development proposals should ensure that existing and new green infrastructure is considered and integrated into the scheme design from the outset. Where new green infrastructure is proposed, the design should maximise the delivery of ecosystem services and support healthy and active lifestyles. Development proposals must protect the linear features of the green infrastructure network that provide connectivity between green infrastructure assets, including public rights of way, bridleways, cycleways and waterways, and take opportunities to improve such features. Development will be expected to make contributions proportionate to their scale towards the establishment, enhancement and on-going management of green infrastructure by contributing to the development of the strategic green infrastructure network within Central Lincolnshire, in line with guidance set out in LP12”.*
- 2.2.18 Policy LP21: Biodiversity and Geodiversity states that: *“All development should: protect, manage and enhance the 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; minimise impacts on biodiversity and geodiversity; and seek to deliver a net gain in biodiversity and geodiversity. Development proposals that will have an adverse impact on a European Site or cause significant harm to a Site of Special Scientific Interest, located within or outside Central Lincolnshire, will not be permitted, in accordance with the NPPF. Planning permission will be refused for development resulting in the loss, deterioration or fragmentation of irreplaceable habitats, including ancient woodland and aged or veteran trees, unless the need for, and benefits of, the development in that location clearly outweigh the loss or harm. Proposals for major development should adopt an ecosystem services approach, and for large scale major development schemes (such as Sustainable Urban Extensions) also a landscape scale approach, to biodiversity and geodiversity protection and enhancement identified in the Central Lincolnshire Biodiversity Opportunity Mapping Study. Development proposals should create new habitats, and links between habitats, in line with Biodiversity Opportunity Mapping evidence to maintain a network of wildlife sites and corridors to minimise habitat fragmentation and provide opportunities for species to respond and adapt to climate change. 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 Lincolnshire Biodiversity Action Plan and Geodiversity Action Plan. Where development is within a Nature Improvement Area (NIA), it should contribute to the aims and aspirations of the NIA. 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. Any development which could have an adverse effect on sites with designated features and / or protected species, either individually or cumulatively, will require an assessment as required by the relevant legislation or national planning guidance. Where any potential adverse effects to the biodiversity or geodiversity value of designated sites are identified, the proposal will not normally be permitted. Development proposals will only be supported if the benefits of the development clearly outweigh the harm to the habitat and/ or species. In exceptional circumstances, where adverse impacts are demonstrated to be unavoidable, developers will be required to ensure that impacts are appropriately mitigated, with compensation measures towards loss of habitat used only as a last resort where there is no alternative. Where any mitigation and compensation measures are required, they should be in place before development activities start that may disturb protected or important habitats and species”.

Bassetlaw District Council Core Strategy and Development Management Policies DPD:

- 2.2.19 Policy DM9 states: *“Development proposals will be expected to support the Council’s strategic approach to the delivery, protection and enhancement of multi-functional Green Infrastructure, to be achieved through the establishment of a network of green corridors and assets (please refer to the Council’s Green Infrastructure work for a full list of Green Corridors and Nodes within, and running beyond, the District) at local, sub-regional and regional levels. Particular support will be given to proposals that will further the development of: The Idle Valley Project; The Trent Vale Partnership; Sherwood Forest Regional Park. Development proposals will be expected to demonstrate, in line with the Council’s Green Infrastructure work, that: i. they protect and enhance green infrastructure assets affected by the development and take opportunities to improve linkages between green corridors; ii. where they overlap with or will affect existing green infrastructure nodes or corridors, such assets are protected and enhanced to improve public access and use; iii. where opportunities exist, development proposals provide improvements to the green infrastructure network that benefit biodiversity through the incorporation of retained habitats and by the creation of new areas of habitat; and iv. they provide robust delivery mechanisms for, and means of ensuring the long-term management of, green infrastructure. Development that will result in the loss of existing green infrastructure may be supported where replacement provision is made that is considered to be of equal or greater value than that which will be lost. Where new development may have an adverse impact on green infrastructure, alternative scheme designs that minimise impact must be presented to the Council for consideration before the use of mitigation measures (e.g. off-site or through financial contributions for improvements elsewhere) is considered. Development proposals will be*

expected to take opportunities to restore or enhance habitats and species' populations and to demonstrate that they will not adversely affect or result in the loss of features of recognised importance, including: i. Protected trees and hedgerows; ii. Ancient woodlands; iii. Sites of Special Scientific Interest (SSSI); iv. Regionally Important Geodiversity Sites; Local Wildlife Sites (Sites of Importance for Nature Conservation (SINC)); vi. Local and UK Biodiversity Action Plan Habitats (including Open Mosaic Habitats on Previously Developed Land); and vii. Protected Species. Development that will result in the loss of such features may be supported where replacement provision is made that is considered to be of equal or greater value than that which will be lost and which is likely to result in a net gain in biodiversity. Where new development may have an adverse impact on such features, alternative scheme designs that minimise impact must be presented to the Council for consideration before the use of mitigation measures is considered. Where sufficient mitigation measures cannot be delivered, compensation measures must be provided as a last resort. New development proposals in and adjoining the countryside will be expected to be designed so as to be sensitive to their landscape setting. They will be expected to enhance the distinctive qualities of the landscape character policy zone in which they would be situated, as identified in the Bassetlaw Landscape Character Assessment. Proposals will be expected to respond to the local recommendations made in the Assessment by conserving, restoring, reinforcing or creating landscape forms and features accordingly."

2.3 Other Guidance

- 2.3.1 Additional guidance has been reviewed for its relevance to the Scheme and is summarised below.

The 25 Year Environment Plan

- 2.3.2 The 25-year environment plan (Ref 20) seeks to embed environmental net gain within the planning system in England and will be adopted by the UK Government as the first Environmental Improvement Plan (EIP).
- 2.3.3 The Environment Act (Ref 21) was originally published by the UK Government in October 2019 and was granted Royal Assent in November 2021.

The Environment Act 2021

- 2.3.4 The Environment Act 2021 sets out the UK Government's objectives to restore natural habitats and increase biodiversity and includes proposals to make Biodiversity Net Gain (BNG) a mandatory requirement within the planning system in England.

Natural England and Department for Environment, Food and Rural Affairs (Defra) Standing Advice (protected species)

- 2.3.5 Standing advice from Natural England and Defra (Ref 22) provides guidance on protected and notable species and includes reference to the best practice approaches to survey, mitigation and compensation. Guidance is also provided on the procedure for obtaining protected species licences.
- 2.3.6 This advice has informed the planning of surveys and the approach to mitigating impacts upon protected species, including where necessary the requirement for Natural England mitigation licences.

UK Post-2010 Biodiversity Framework

- 2.3.7 The UK Biodiversity Action Plan (UKBAP) was launched in 1994 and established a framework and criteria for identifying species and habitat types of conservation concern. From this list, action plans for priority habitats and species of conservation concern were published and have subsequently been succeeded by the UK Post-2010 Biodiversity Framework (July 2012) (Ref 23). The UK list of 943 priority species and 56 habitats, however, remains an important reference source and has been used to help draw up statutory lists of priority habitats and species in England, Scotland, Wales and Northern Ireland. For the purpose of this assessment, the UKBAP is still used as one of the criteria to assist in assigning national value to an ecological receptor.
- 2.3.8 The UK Post-2010 Biodiversity Framework is relevant in the context of Section 40 of the NERC Act 2006 (Ref 6), meaning that Priority Species and Habitats are material considerations in planning. These habitats and species are identified as those of conservation concern due to their rarity or a declining population trend.

2.4 Local Biodiversity Action Plan

- 2.4.1 The Site is located within the counties of Lincolnshire and Nottinghamshire. The Lincolnshire Biodiversity Action Plan (3rd edition) (Ref 24) and Nottinghamshire Biodiversity Action Plan (Ref 25) provide the local nature conservation strategy for identifying threats to species within each of the counties and set out the action plans necessary to conserve them. These action plans provide context to inform identification of threatened or uncommon species within the district and, or county. The plans also identify priorities for conservation and enhancement but confers no particular legislative or policy protection to the species identified, however in some cases this is provided through related legislation and local planning policy.
- 2.4.2 The Lincolnshire Biodiversity Action Plan sets out action plans for 26 habitat types and 231 species and the Nottinghamshire Biodiversity Action Plan sets out action plans for 19 habitat types and 19 species. A list of the habitats and species action plans for Lincolnshire and Nottinghamshire can be found in Annex B.

3. Methods

3.1 Desk Study

- 3.1.1 A desk study was undertaken to identify nature conservation designations and protected or notable habitats and species potentially relevant to the Scheme.
- 3.1.2 A stratified approach was taken when defining the desk study area, based on the likely zone of influence of the Scheme on different ecological receptors; and an understanding of the maximum distances typically considered by statutory consultees. Accordingly, the desk study identified any international nature conservation designations within 10km of the Site (as well as any Special Areas of Conservation (SACs) within 30km where bats are noted as the, or one of the, qualifying features); other statutory nature conservation designations within 2km of the Site; and, local non-statutory nature conservation designations and protected or notable habitats and species within 2km of the Site.
- 3.1.3 The desk study was undertaken using the data sources detailed in Table 1. Protected and notable habitats and species include those listed under Schedules 1, 5 and 8 of the WCA; Schedules 2 and 4 of the Habitats Regulations; species and habitats of principal importance for nature conservation in England listed under Section 41 (S41) of the NERC Act; and other species that are Nationally Rare, Nationally Scarce or listed in national or local Red Data Lists and Biodiversity Action Plans.
- 3.1.4 Only records up to ten years old were considered within the assessment, as any records older than ten years are unlikely to be still representative of species presence in the local area.

Table 1 Desk study data sources

Data Source	Accessed	Data Obtained
Multi-Agency Geographic Information for the Countryside (MAGIC) website (Ref 27)	October 2021	International statutory designations within 10km of the Site boundary. Other statutory designations within 2km of the Site boundary. Ancient woodlands and notable habitats within 2km of the Site boundary.
Ordnance Survey 1:2500 Pathfinder maps and aerial photography	October 2021	Information on habitats and habitat connections (based on aerial photography) relevant to interpretation of planning policy and assessment of potential protected and notable species constraints.
Lincolnshire Environmental Records Centre (LERC)	October 2021	Sites designated for their nature conservation value, such as County Wildlife Sites (CWS), Local Nature Reserves (LNRs) and Local Wildlife Sites (LWS) within 2km of the Site boundary. Protected and notable species within 2km of the Site boundary (records for the last ten years only).

Data Source	Accessed	Data Obtained
Nottinghamshire Biological and Geological Records Centre (NBGRC)	October 2021	Sites designated for their nature conservation value, such as County Wildlife Sites (CWS), Local Nature Reserves (LNRs) and Local Wildlife Sites (LWS) within 2km of the Site boundary. Protected and notable species within 2km of the Site boundary (records for the last ten years only).

3.1.5 Additionally, a review of other schemes and associated reports was undertaken to provide supporting ecological information which may be relevant to the Scheme.

3.2 Field Survey

Phase 1 Habitat Survey

3.2.1 The Phase 1 Habitat survey was undertaken in accordance with the standard survey method, developed by the Joint Nature Conservation Committee (JNCC) (Ref 27). Phase 1 Habitat survey is a standard method of environmental audit. It involves categorising different habitat types and habitat features within a survey area. The information gained from the survey can be used to determine the likely ecological value of a site, and to direct any more specific survey work which may need to be carried out prior to the submission of a planning application. The standard Phase 1 Habitat survey method can be ‘extended’ to record target notes on protected, notable and invasive species.

Appraisal of the Potential Suitability of Habitats for Protected and Notable Species

3.2.2 An appraisal was made of the potential suitability of the habitats present to support protected and notable species of plants or animals (as defined by legislation and planning policy in Section 2 of this report). Field signs, habitat features with potential to support protected species and any sightings or auditory evidence were recorded when encountered, but no detailed surveys were carried out for any particular species.

3.2.3 In addition, attention was given to identifying invasive non-native plant species that are listed under Schedule 9 of the Wildlife and Countryside Act 1981 (Ref 3) and those “widespread species” listed in the Invasive Alien species (Enforcement and Permitting) Order 2019 (Ref 11). Locations of plants or stands of any such invasive non-native plant species, if found, were recorded.

3.3 Desk Study and Field Survey Limitations

3.3.1 The aim of a desk study is to help characterise the baseline context of a scheme and provide valuable background information that would not be captured by a single site survey alone. Information obtained during the course of a desk study is dependent upon people and organisations having made and

submitted records for the area of interest. As such, a lack of records for a particular habitat or species does not necessarily mean that the habitats or species do not occur in the study area. Likewise, the presence of records for particular habitats and species does not automatically mean that these still occur within the area of interest or are relevant in the context of the Scheme.

- 3.3.2 Where habitat boundaries coincide with physical boundaries recorded on OS maps, the resolution is as determined by the scale of mapping. Elsewhere, habitat mapping is as estimated in the field and/or recorded by hand-held Samsung tablets using Collector software. Where areas of habitat are given they are approximate and should be verified by measurement on-site where required for design or construction. While indicative locations of trees are recorded, this does not replace requirements for detailed specialist arboriculture survey to British Standard 5837:2012 Trees in Relation to Design, Demolition and Construction.

4. Results

4.1 Nature Conservation Designations

Statutory Designations

- 4.1.1 The desk study identified two sites statutorily designated for their nature conservation value within the study areas as set out in Section 3.1. These sites, designated for biodiversity reasons, are summarised in Table 2 and are listed in descending order of distance from the Site. Designation details are taken from citation documents and published online by the Joint Nature Conservation Committee (JNCC) for the individual sites. The locations of statutory sites are presented in **ES Volume 2: Figure 8-1 [EN010131/APP/3.2]**.

Table 2 Statutorily Designated Sites within 10km (international) and 2km (national) of the Site

Statutory Site Name and Designation	Description	Distance and direction from the closest point of the Site
Ashton's Meadow Site of Special Scientific Interest (SSSI)	<p>The reserve is an ancient meadow and has not been chemically treated or ploughed in recent times. The ancient ridges and furrows are clearly visible. This traditional meadow has a variety of flowers and grasses, including Cowslips <i>Primula veris</i>, Green-winged Orchid <i>Anacamptis morio</i>, Oxeye Daisy <i>Leucanthemum vulgare</i> and Yellow Rattle <i>Rhinanthus minor</i>.</p> <p>It is maintained by a traditional method of allowing the grassland to grow throughout the spring and early summer, before cutting it back for hay in July. The livestock on site then keep the grass short through late summer and autumn before being removed just before Christmas, a method that maintains a wide variety of flora, moths and butterflies on the reserve.</p> <p>The grassland also offers a home for moths and ground-based species of butterfly like the Meadow Brown <i>Maniola jurtina</i>, Ringlet <i>Aphantopus hyperantus</i> and Gatekeeper <i>Pyronia tithonus</i>.</p> <p>The hedgerows around the SSSI are another important habitat, supporting bird species such as Yellowhammer <i>Emberiza citrinella</i>.</p>	1.5km to the west of the Site.
Lea Marsh SSSI	<p>Lea Marsh is an important area of unimproved floodplain meadow and wet pasture adjacent to the River Trent in north-west Lincolnshire. The site lies on seasonally-inundated alluvial soils and includes an unusually large area of a nationally rare grassland type. Populations of two nationally scarce plants with a restricted distribution in the East Midlands are particularly notable, whilst breeding waders provide additional interest.</p>	1.7km to the north-west of the Site.

Non-statutory Designations

4.1.2 The desk study identified fourteen sites non-statutorily designated for nature conservation within 2 km of the Site (as per the method in Section 3.1 of this report). These are presented in **ES Volume 2: Figure 8-2 [EN010131/APP/3.2]**. These sites have been designated as Local Wildlife Sites (LWS) for their biodiversity value at a local level and are known to have supporting value to a wide variety of protected and ecologically important species and/or habitats. These sites are detailed in Table 3 and are listed in ascending order of distance from the Site.

Table 3 Non-Statutory Designated Sites within 2km of the Site

Non-statutory site name and designation	Area - (ha)	Description	Distance (km / m) and direction from the Site
Cow Pasture Lane Drains LWS	0.446	<p>This LWS comprises a drain which runs alongside Broad Lane and southwards beside a track, Cow Pasture Lane. Meadowsweet <i>Filipendula ulmaria</i> grows abundantly in the ditch while a defunct rich hedgerow behind supports mature Ash <i>Fraxinus excelsior</i> trees and species including Dogwood <i>Cornus sanguinea</i> and Field Maple <i>Acer campestre</i>.</p> <p>The drain is deeper and wider along Cow Pasture Lane containing a variety of plants. These include Branched Bur-reed <i>Sparganium erectum</i>, Amphibious Bistort <i>Persicaria amphibia</i>, Blunt-fruited Water-starwort <i>Callitriche obtusangula</i> and stands of Reed Sweet-grass. The lower reaches of the bank support Wild Angelica, False Fox-sedge <i>Carex otrubae</i> and Meadowsweet.</p>	Within the Site
Coates Wetland LWS	18.948	<p>The River Trent meanders around this LWS, comprising a mosaic of habitats including wetland, developing woodland and grassland enclosed within a flood bank.</p> <p>The eastern half of the LWS is dominated by grassland and tall ruderal vegetation with abundant False Oat-grass <i>Arrhenatherum elatius</i> and stands of Creeping Thistle <i>Cirsium arvense</i> interspersed with patches of Wild Angelica <i>Angelica sylvestris</i> and Purple Loosestrife <i>Lythrum salicaria</i> on damper soils. To the north a developing woodland is dominated by a variety of Willow <i>Salix</i> sp. species.</p> <p>Damper areas on the western side of the LWS include a seasonally wet area but supporting a number of plant species typical of a Trentside inundation community. These include Marsh Yellow-cress <i>Rorippa palustris</i>, Pink Water-speedwell <i>Veronica catenata</i> and Marsh Dock <i>Rumex palustris</i>. To the south a small, deeper pond is edged by species such as Greater Pond-sedge <i>Carex riparia</i>, Reed Sweet-grass <i>Glyceria maxima</i> and Yellow Iris <i>Iris pseudacorus</i>.</p> <p>The LWS is bounded to the west by a flood bank with an area of marshy grassland/tall ruderal vegetation and a drainage channel containing locally dominant Branched</p>	Immediately adjacent to the Site

Non-statutory site name and designation	Area - (ha)	Description	Distance (km / m) and direction from the Site
		Bur-reed <i>Sparganium erectum</i> , Gypsywort <i>Lycopus europaeus</i> and Water-plantain <i>Alisma plantago-aquatica</i> .	
Knaith Park Wood LWS	6.4	Located on the north side of Knaith Park, this LWS comprises Moor Plantation and Stag Wood. The latter is ancient woodland, although it is only Moor Plantation that has a canopy of old deciduous trees. In contrast, the western half of Stag Wood is mature Corsican pine plantation, while the eastern half was felled a few decades ago, but is not yet mature.	Approximately 15m from the Site
Cottam Wetlands LWS	88.557	This large wetland mosaic, adjacent to and including a stretch of the River Trent, comprises a number of lakes and lagoons, ditches, damp cattle-grazed grassland, swamp and marshland. It is botanically very rich supporting a diverse flora. The LWS boundary encompasses part of the Cottam Power Station site and a connected disused mineral railway, which is now wooded. The wetlands support an interesting and varied selection of plants including Purple Loosestrife, Fine-leaved Water-dropwort <i>Oenanthe aquatica</i> , Water Horsetail <i>Equisetum fluviatile</i> , Yellow Iris, Pink Water-speedwell, Slender Tufted-sedge <i>Carex acuta</i> , Water Mint <i>Mentha aquatica</i> and Skullcap <i>Scutellaria galericulata</i> . They provide breeding habitat for amphibians, Odonata and many other insect species and are an important site for birds providing nesting sites and habitat for both breeding birds and wintering wildfowl and feeding opportunities for passage migrants in spring and autumn.	Approximately 335m from the Site
Littleborough Lagoons LWS	5.821	This lagoon, surrounded by sheep-grazed pasture, is situated beside the River Trent near the historic hamlet of Littleborough. The relatively shallow water supports an interesting aquatic flora although water levels are sometimes low in hot weather and eutrophic with much algae and expanses of exposed mud. Despite this, Bulbous Rush <i>Juncus bulbosus</i> grows in the lagoon, while muddy areas support typical Trentside annual plants including Creeping Yellow-cress <i>Rorippa sylvestris</i> , Celery-leaved Buttercup <i>Ranunculus sceleratus</i> and Red Goosefoot <i>Chenopodium rubrum</i> .	Approximately 360m from the Site
Out Ings LWS	12.477	Adjacent to the River Trent, Out Ings LWS is a floristically rich site comprising a diverse mosaic of grassland, willow carr, open water and wetland. Stands of Common Reed <i>Phragmites australis</i> and Reed Sweet-grass grow around the wetland margins with Willow Salix sp. carr dominating the central area.	Approximately 400m from the Site
Thurlby Wood LWS	38	This LWS, to the south-east of Gainsborough, is contiguous with Caistor's Wood to the north. Most is semi-natural ancient woodland, and all parts are of significant botanical interest.	Approximately 420m from the Site

Non-statutory site name and designation	Area - (ha)	Description	Distance (km / m) and direction from the Site
Cottam Ponds LWS	5.038	Not known	Approximately 480m from the Site
Torksey Ferry Road Ditch LWS	0.138	Trackside ditch with waterlogged decomposing grasses including Reed Canary-grass <i>Phalaris arundinacea</i> and rush (a species of <i>Juncus</i>), supporting the near threatened water beetle <i>Agabus uliginosus</i> . Three Local B water beetle species <i>Cercyon convexiusculus</i> , <i>Cymbiodyta marginellus</i> and <i>Ilybius montanus</i> have also been recorded.	Approximately 620m from the Site
Broad Lane Grassland, North Leverton LWS	0.831	This small neutral grassland is bordered by Hawthorn <i>Crataegus monogyna</i> and Blackthorn <i>Prunus spinosa</i> hedgerows and a linear broadleaved woodland, separating it from a railway line. The sward contains a good selection of grasses with Yellow Oat-grass <i>Trisetum flavescens</i> , Yorkshire-fog <i>Holcus lanatus</i> , Sweet Vernal Grass <i>Anthoxanthum odoratum</i> , Meadow Barley <i>Hordeum secalinum</i> and Meadow Fescue <i>Schedonorus pratensis</i> with locally dominant Common Bent <i>Agrostis capillaris</i> and False Oat-grass. Among the forbs Meadow Buttercup <i>Ranunculus acris</i> is scattered across the site with numerous patches of Great Burnet <i>Sanguisorba officinalis</i> , Lady's Bedstraw <i>Galium verum</i> and Meadow Vetchling <i>Lathyrus pratensis</i> . Other species include Pepper-saxifrage <i>Silaum silaus</i> , Red Clover <i>Trifolium pratense</i> , Lesser Stitchwort <i>Stellaria graminea</i> and Common Bird's-foot-trefoil <i>Lotus corniculatus</i> .	Approximately 800m from the Site
Mother Drain, Upper Ings LWS	2.123	A long length of drainage ditch/channel with Spiked Milfoil <i>Myriophyllum spicatum</i> and marginal Reed Sweet-grass, Reed canary-grass, Creeping Bent <i>Agrostis stolonifera</i> and Duckweed <i>Lemna species</i> . Fourty-six Water Beetle species and 11 water bug species have been recorded. The nationally near threatened <i>Hydrochus elongates</i> at it's only Nottinghamshire location and Nationally scarce <i>Hygrotus quinquelineatus</i> are recorded from the site. The drain also supports an assemblage of local species, some of which have a high local conservation interest including a Local A water beetle <i>Limnebius nitidus</i> together with 15 Local B species. Notably Local B <i>Notonecta maculate</i> and <i>Notonecta viridis</i> water bugs are also recorded from the drain.	Approximately 915m from the Site
Priory Farm LWS	12.9	This area is predominantly wooded, but with a partially open southern fringe. At the northern end there is an east-west track bisecting a strip of pasture that has a shallow ditch on its northern edge	Approximately 985m from the Site
Ashton's Meadow LWS	3.566	See also Ashton's Meadow SSSI in Table 4-1. This meadow, bordered by hedgerows and trees, is a SSSI, owned and managed by the Nottinghamshire Wildlife Trust. The sward is unimproved and species-rich with a	Approximately 1.5km to the west of the Site

Non-statutory site name and designation	Area - (ha)	Description	Distance (km / m) and direction from the Site
		range of characteristic grasses and forbs. Among the grasses Upright Brome <i>Bromopsis erecta</i> and Quaking-grass <i>Briza media</i> grow abundantly with other species including Meadow Barley <i>Hordeum secalinum</i> and Yellow Oat-grass <i>Trisetum flavescens</i> . Forbs include abundant Meadow Vetchling <i>Lathyrus pratensis</i> , Common Knapweed <i>Centaurea nigra</i> , Rough Hawkbit <i>Leontodon hispidus</i> and Yellow-rattle <i>Rhinanthus minor</i> . Fairy Flax <i>Linum catharticum</i> , Pyramidal Orchid <i>Anacamptis pyramidalis</i> , Bee Orchid <i>Ophrys apifera</i> and Ox-eye Daisy <i>Leucanthemum vulgare</i> are among the many other species found.	
Thornhill Lane Drain, Littleborough LWS	0.135	This stretch of drain meanders through intensively farmed arable land. It supports a variety of aquatic plants including Blunt-fruited Water-starwort <i>Callitriche obtusangula</i> and the county-rare Opposite-leaved Pondweed <i>Groenlandia densa</i> . Among the marginal species are Branched Bur-reed <i>Sparganium erectum</i> , Reed Sweet-grass and Reed Canary-grass. The drain supports a number of rushes <i>Juncus</i> sp., along with Pink Water-speedwell, Water-cress <i>Nasturtium officinale</i> and Amphibious Bistort.	Approximately 1.6km to the north of the Site

4.2 Habitats

- 4.2.1 The area surveyed encompassed all safely accessible parts of the Site and adjacent habitats to a maximum distance of 50m, where access permission had been granted in advance of survey, or the land was visible from within the Site or from public rights of way, or other publicly accessible areas.
- 4.2.2 Typical and notable plant species were recorded for different habitat types and reflect the conditions at the time of survey. This was not intended to be a detailed inventory of the plant species present in the survey area, as this is not required for the purposes of Phase 1 Habitat survey.
- 4.2.3 The Phase 1 Habitat survey was undertaken on the 31st August and 6th, 8th, 9th and 10th September 2021; and 11th to 13th April 2022 (see also Section 1.4.4) by suitably qualified AECOM ecologists who recorded and mapped all habitat types present within the survey area, along with any associated relevant ecological receptors observed. The Phase 1 Habitat map for the Scheme is presented in **ES Volume 2: Figure 8-3 [EN010131/APP/3.2]**. Where relevant ecological receptors were present, target notes were recorded and the positions of these, where recorded, are also presented in **ES Volume 2: Figure 8-3 [EN010131/APP/3.2]**. Target notes and associated reference photographs are provided in Annex C.
- 4.2.4 The broad habitat types present within the Site are presented in Table 4.

Table 4 Broad habitat types within the Site

Habitat	Area (ha) / length (km)
A1.1.1 - Broadleaved woodland - semi-natural	21.78 ha
A1.1.2 - Broadleaved woodland - plantation	0.66 ha
A1.3.2 - Mixed woodland - plantation	1.17 ha
A2.1 - Scrub - dense/continuous	7.05 ha
A2.2 - Scrub - scattered	4.11 ha
B1.2 - Acid grassland - semi-improved	0.36 ha
B2.2 – Neutral grassland – semi-improved	111.86 ha
B4 – Improved grassland	48.19 ha
B5 - Marsh/marshy grassland	0.37 ha
B6 - Poor semi-improved grassland	38.80 ha
C1.1 - Bracken - continuous	0.13 ha
C1.2 - Bracken - scattered	0.08 ha
C3.1 - Other tall herb and fern - ruderal	7.33 ha
F1 - Swamp	0.29 ha
G1 - Standing water	0.09 ha
G2 – Running water	14.43 ha
Hardstanding	12.70 ha
J1.1 - Cultivated/disturbed land - arable	952.67 ha
J1.2 - Cultivated/disturbed land - amenity grassland	0.44 ha
J3.6 - Buildings	0.41 ha
J4 - Bare ground	2.10 ha
J5 - Other habitat – game cover crop	5.53 ha
J5 - Other habitat – manure heap / bailed straw	10.51 ha
J5 - Other habitat	0.17 ha
Unclassified	181.62 ha
A3.1 - Broadleaved parkland/scattered trees	0.18 km
G2 - Running water	10.20 km
Intact hedgerows	44.37 km
Defunct hedgerows	3.28 km
Hedge with trees	11.31 km
J2.4 - Fence	0.97 km
J2.6 - Dry ditch	13.34 km

Arable

- 4.2.5 The large majority of the Site is used as arable farmland. In two locations the arable weed Dwarf Spurge *Euphorbia exigua* was growing.

Game bird strips

- 4.2.6 These areas are located on the edge of a number of arable fields, species present included Yellow Bristle Grass *Setaria pumila*, Sunflower *Helianthus sp.*, Great Millet *Sorghum bicolor*, Cockspur *Echinochloa crus-galli*, Buckwheat *Fagopyrum esculentum*, Common Orache *Atriplex patula* and Lacy Phacelia *Phacelia tanacetifolia*.

Semi-improved acid grassland

- 4.2.7 This habitat is present in one field in the west of the Solar and Energy Storage Park Site, adjacent to the A156 and this field is of a very sandy substrate and contains a mosaic of tall ruderal and semi-improved acid grassland. Species present within this habitat were Common Bent *Agrostis capillaris*, Sheep's Sorrel *Rumex acetosella*, Cocksfoot *Dactylis glomerata*, Flattened Meadow-Grass *Poa compressa*, Musk Thistle *Carduus nutans*, Broom *Cytisus scoparius*, Harebell *Campanula rotundifolia*, Hairy Sedge *Carex hirta* and Lady's Bedstraw *Galium verum*.

Semi-improved neutral grassland

- 4.2.8 This habitat is present on both road verges along Clay Lane which is located in the south of the Solar and Energy Storage Park Site this is a fairly thin habitat between the lane and the hedges along with planted trees. The species present included Red Fescue *Festuca rubra*, Common Knapweed *Centaurea nigra*, Lady's Bedstraw, Oxeye Daisy *Leucanthemum vulgare*, Cocksfoot, Doves-foot Cranesbill *Geranium molle*, Perennial Rye Grass *Lolium perenne*, Red Clover *Trifolium pratense* and Smooth Meadow-Grass *Poa pratensis*.

Poor semi-improved grassland

- 4.2.9 There are a number of areas of this habitat across the Solar and Energy Storage Park Site including along some of the arable fields. Species present are Red Fescue, Smooth Meadow-grass, Timothy *Phleum pratense*, Perennial Rye-Grass, Creeping Bent *Agrostis stolonifera*, Oxeye Daisy, White Clover *Trifolium repens*, Bristly Oxtongue *Helminthotheca echioides*, Curled Dock *Rumex crispus*, Dandelion *Taraxacum officinale agg.* and Doves-foot Cranesbill.

Marshy grassland

- 4.2.10 There are two areas with marshy grassland present, including a small area in a field in the west of the Solar and Energy Storage Park Site, with Soft Rush *Juncus effusus*, Hard Rush *Juncus inflexus*, Tufted Hair-Grass *Deschampsia cespitosa*, Creeping Buttercup *Ranunculus repens*, Yorkshire Fog *Holcus lanatus*, Sweet Vernal Grass *Anthoxanthum odoratum*, Meadow Cranesbill *Geranium pratense* and Greater Birdsfoot Trefoil *Lotus pedunculatus*. The

other areas are small parts of the same field which contains a pond, species here include Compact Rush *Juncus conglomeratus*, Hard Rush, Creeping Bent, Creeping Cinquefoil *Potentilla reptans*, Sealfheal *Prunella vulgaris* and Creeping Buttercup.

Broad-leaved woodland

- 4.2.11 There are two large woodlands in the west of the Solar and Energy Storage Park, species within these include Pedunculate Oak *Quercus robur*, Ash *Fraxinus excelsior* along with Hawthorn *Crataegus monogyna*, Blackthorn *Prunus spinosa*, Field Maple *Acer campestre* and Elder *Sambucus nigra*.

Broad-leaved plantation

- 4.2.12 There are two small areas of broad-leaved plantation containing Pedunculate Oak, Ash and Sycamore *Acer pseudoplatanus*.

Mixed woodland plantation

- 4.2.13 There are two small areas of mixed planation which contain Sycamore, Ash, Black Pine *Pinus nigra* and Scot's Pine *Pinus sylvestris*.

Hedgerows

- 4.2.14 There are many hedges across the Site from species poor to species rich, the woody species recorded in the hedges included Ash, Hawthorn, Blackthorn, Dog Rose *Rosa canina agg.*, Field Maple, Buckthorn *Rhamnus cathartica*, Midland Hawthorn *Crataegus laevigata*, a Willow *Salix sp.*, Pedunculate Oak, Horse Chestnut *Aesculus hippocastanum*, Crab Apple *Malus sylvestris*, Sweet Chestnut *Castanea sativa*, Wild Privet *Ligustrum vulgare*, Guelder Rose *Viburnum opulus*, Sycamore, Wild Cherry *Prunus avium*, Elm sp. *Ulmus sp.*, Elder, Wych Elm *Ulmus glabra* and a planted Tibetan Cherry *Prunus serrula*.

Scrub

- 4.2.15 There are a number of small areas of scattered scrub throughout the Site with long lengths of continuous scrub adjacent to the railway line running through the site, species include many areas of dense Bramble *Rubus fruticosus agg.* along with Hawthorn and Blackthorn.

Tall ruderal

- 4.2.16 This habitat is scattered over the Site and contains species including Great Willowherb *Epilobium hirsutum*, Burdock sp. *Arctium sp.*, Yorkshire Fog, Hemlock *Conium maculatum*, Prickly Sow-thistle *Sonchus asper*, Spear Thistle *Cirsium vulgare*, Broad-leaved Dock *Rumex obtusifolius*, Common Nettle *Urtica dioica*, False Oat Grass *Arrhenatherum elatius* and Welled Thistle *Carduus crispus*.

Standing water

- 4.2.17 There are numerous ponds within and surrounding the Site and one pond located in the north-east of the Solar and Energy Storage Park contains very

little aquatic vegetation with the only species present being a species of Milfoil *Myriophyllum sp.*, emergent species included Common Clubrush *Schoenoplectus lacustris*.

Swamp

4.2.18 This vegetation surrounding the pond within the Solar and Energy Storage Park includes Common Reedmace *Typha latifolia* and Common Reed *Phragmites australis*.

Running water

4.2.19 There is a stream running through a ditch on the eastern side of the Solar and Energy Storage Park, this contains species including Reed Sweet-grass *Glyceria maxima*, Reed Canary-grass *Phalaris arundinacea*, Common Duckweed *Lemna minor*, Common Valerian *Valeriana officinalis*, Meadowsweet *Filipendula ulmaria*, Great Willowherb, Bur-reed sp. *Sparganium sp.*, Brooklime *Veronica beccabunga*, Pink Water Speedwell *Veronica catenata* and Fool's Watercress *Helosciadium nodiflorum*.

4.3 Notable Habitats

4.3.1 Table 4 provides a summary of notable habitats recorded within the Site, based on the results of the Phase 1 Habitat survey (up to April 2022) and with reference to guidance for the recognition of NERC Act S41 (Ref 6) and the relevant Local Biodiversity Action Plans (LBAPs), as detailed in Section 2.4 of this report.

Table 5 Notable habitat types within the Site

Habitat	NERC Act	Lincolnshire BAP	Nottinghamshire BAP	Supporting Comments
Ancient and/or species rich hedgerows	✓	✓	✓	Hedgerows are present across the Site. Impacts to hedgerows are unlikely to occur and the Scheme can be designed to avoid potential impacts. However, further investigation would be required to determine their value if impacts are likely.
Ancient woodland	✓	-	-	Five areas of ancient woodland were recorded from the desk study, from within 2km of the Site. Burton Wood is within the Solar and Energy Storage Park and Stag Wood is approximately 195m to the north of the Site. Thurlby /Caistor's Wood is approximately 835m north of the Site and Lea Wood and an unnamed woodland (which both include replanted woodland) are approximately 1.9km to the north of the Site. One woodland within the Solar and Energy Storage Park is listed as ancient and is

Habitat	NERC Act	Lincolnshire BAP	Nottinghamshire BAP	Supporting Comments
				likely to fulfil the criteria of priority habitat. No woodland is likely to be affected by the Scheme and suitable buffer zones (>15m) would be part of the embedded mitigation. Although it is not an LBAP habitat in either county, it is a priority habitat that adds to the wider local resource. All ancient woodland will be retained with buffers of a minimum of 15m.
Lowland Dry Acid Grassland	✓	✓	✓	Semi-improved acid grassland is present in one field in the west of the Solar and Energy Storage Park, adjacent to the A156 and this field is of a very sandy substrate and contains a mosaic of tall ruderal and semi-improved acid grassland.
Running Water	✓	✓	✓	The stream in the east of the Solar and Energy Storage Park is likely to fulfil the criteria of this priority habitat type.
Standing Open Waters / Ponds	✓	✓	✓	There are a number of waterbodies within 500m of the Site and further investigation will be required to determine their value. Indirect impacts to species using riparian habitats such as Great Crested Newts are likely to occur. It is recommended that waterbodies are avoided, where possible. Where not possible, suitable buffer zones (>20m) would be part of the embedded mitigation.
Arable Field Margins	✓	✓	✓	An indicator species of scarce arable plants was noted during the survey and arable field margins present within the Site may fulfil the criteria for this priority habitat type.
Lowland Mixed Deciduous Woodland	✓	✓	✓	Broad-leaved woodland is present within the Site and further investigation will be required to determine their value. However, no woodland is likely to be affected by the Scheme.

4.4 Protected and Notable Species

4.4.1 Table 6 provides a summary of potentially relevant species identified through a combination of desk study and field survey. The table summarises the

conservation status of each species and provides comment on the likelihood of presence.

- 4.4.2 Where species are identified in Table 6 as likely or possible, they are likely to represent legislative constraints or may be material to determination of the planning application. Further surveys will or may be required to determine presence or probable absence of species (see Section 5).

Table 6 Protected and Notable species relevant or potentially relevant to the Scheme

Species (or species group)	Supporting Comments
Flora / plants	<p>The desk study identified records of scarce and 'near threatened' plants, occurring within the study area, including <i>Juncus compressus</i>, <i>Persicaria mitis</i>, <i>Callitriche trunca</i> and Bluebell <i>Hyacinthoides non-scripta</i> as well as arable plants including Venus's-looking-glass <i>Legousia hybrida</i>, Cornflower <i>Centaurea cyanus</i>, Dwarf Spurge <i>Euphorbia exigua</i>, Common Fumitory <i>Fumaria officinalis</i>, Prickly Poppy <i>Papaver dubium</i>, Shepherd's needle <i>Scandix pectan-veneris</i>, Night-flowered catchfly <i>Silene noctiflora</i> and Narrow-fruited Cornsalad <i>Valerianella dentata</i>.</p> <p>The field survey did not record any notable or protected plant species. However, further investigation of the arable field margins and other notable habitats will be required to determine their value.</p>
Terrestrial Invertebrates	<p>The data search returned records of several invertebrate species, including two species of beetle; three butterfly species (Small Heath <i>Coenonympha pamphilus</i>, Wall <i>Lasiommata megera</i> and White-Letter Hairstreak <i>Satyrrium w-album</i>), three molluscs and 35 moth species, all occurring within the study area.</p> <p>There are grassland margins and scrub habitats present across the Site that may support protected and notable invertebrate species.</p>
Aquatic Invertebrates	<p>The data search returned no records of aquatic invertebrates.</p> <p>There are aquatic habitats present with the Site (e.g. ponds and watercourses) with potential to support notable aquatic invertebrate species and assemblages.</p>
Amphibians	<p>The desk study identified four amphibian species (Great Crested Newt <i>Triturus cristatus</i>, Smooth Newt <i>Lissotriton vulgaris</i>, Common Frog <i>Rana temporaria</i>, and Common Toad <i>Bufo bufo</i>) occurring within the study area.</p> <p>Further investigation of ponds relevant to the Scheme will be required to determine their potential suitability for Great Crested Newt and other amphibians.</p>
Reptiles	<p>The data search returned seven records of Grass Snake <i>Natrix helvetica</i> within 2 km of the Site.</p> <p>Reptile habitat is limited across the Site, but small pockets of habitat suitable for reptiles do exist comprising uncropped field margins, hedgerows, woodland edge habitats and ditches.</p>

Species (or species group)	Supporting Comments
Breeding birds	<p>The desk study identified at least 66 bird species within the study area, including Peregrine <i>Falco peregrinus</i>, Hobby <i>Falco subbuteo</i>, Golden Plover <i>Pluvialis apricaria</i>, Barn Owl <i>Tyto alba</i>, Cetti's Warbler <i>Cettia cetti</i>, Kingfisher <i>Alcedo atthis</i> and Red Kite <i>Milvus milvus</i>.</p> <p>Surveys of breeding birds, undertaken between April and June 2021 on Site by Landscape and Science Consultancy¹ recorded breeding species including Lapwing <i>Vanellus vanellus</i> and Skylark <i>Alauda arvensis</i>.</p> <p>During the Phase 1 Habitat survey in August 2021, Barn Owl and Hobby were observed within the Solar and Energy Storage Park. Habitats such as trees, hedgerows and arable fields present within the Site are likely to support nesting birds during the breeding season, including those of conservation concern and associated with such habitats.</p>
Non-breeding (wintering and passage) birds	<p>Trees, scrub and arable fields occurring within the Site have the potential to support birds during the non-breeding season, including those of conservation concern, such as Linnet <i>Linaria cannabina</i>, Redwing <i>Turdus iliacus</i> and Fieldfare <i>Turdus pilaris</i>.</p>
Bats	<p>The data search returned records of at least six bat species (Brown Long-eared <i>Plecotus auritus</i>, Common Pipistrelle <i>Pipistrellus pipistrellus</i>, Noctule <i>Nyctalus noctule</i>, Natterer's bat <i>Myotis nattereri</i>, Soprano Pipistrelle <i>Pipistrellus pygmaeus</i>, Daubenton's bat <i>Myotis daubentonii</i>, and <i>Myotis</i> sp).</p> <p>Surveys of bat activity, undertaken in May and August/September 2021 within the Solar and Energy Storage Park by the Landscape and Science Consultancy², recorded six bat species: Common Pipistrelle, Soprano Pipistrelle, Noctule, Brown Long-eared, Leisler's <i>Nyctalus leisleri</i> and <i>Myotis</i> sp.</p> <p>The Site contains trees, woodlands and buildings which have the potential to support roosting bats. The habitat within the Site also provides connectivity and foraging resources for bats.</p>
Badger <i>Meles meles</i>	<p>The data search returned a number of records of Badger within 2km of the Site. Several field signs of Badger activity were recorded within the Site during the Phase 1 survey.</p>
Otter <i>Lutra lutra</i>	<p>The data search returned records of Otter within the study area and the watercourses and waterbodies occurring on the Site and within the Zol have the potential to support Otter.</p>
Water Vole <i>Arvicola amphibius</i>	<p>The data search returned records of Water Vole within 2km of the Site.</p> <p>Evidence of Water Vole was found on the Site during the Phase 1 Habitat survey, in one location.</p>

¹ Landscape and Science Consultancy Ltd (2021). *Proposed Solar Farm Site Gate Burton, Gainsborough: Breeding Bird Survey Report*

² Landscape and Science Consultancy Ltd (2021). *Proposed Solar Farm site Gate Burton, Gainsborough: Bat Transect Report*

Species (or species group) Supporting Comments

Invasive Non-native Species (INNS)	The data search returned records of five invasive species, including Mitten Crab <i>Eriocheir sinensis</i> , American Mink <i>Mustela vison</i> , New-Zealand Pigmyweed <i>Crassula helmsii</i> , Himalayan Balsam <i>Impatiens glandulifera</i> and Japanese Knotweed <i>Reynoutria japonica</i> .
	No invasive non-native species were recorded within the Site during the survey. However, there is potential for invasive non-native species to be present within the Site.

Brown Hare <i>Lepus europaeus</i>	The data search returned records of Brown Hare within the study area. The species has the potential to occur across the Site within the arable fields.
--------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------

West European Hedgehog <i>Erinaceus europaeus</i>	The data search returned records of Hedgehog occurring within the study area. The species has the potential to occur across the Site within the grassland and scrub habitats.
------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Species present on site are those for which recent direct observation or field signs confirmed presence. Species which are possibly present are those for which there is potentially suitable habitat based on the results of the Phase 1 Habitat survey, or this combined with desk study records.

Legally protected species are those listed under Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended); and, Schedules 2 and 4 of The Conservation of Habitat & Species Regulations 2017 (as amended).

Species of Principal Importance as those listed under Section 41 of the NERC Act. Planning Authorities have a legal duty under Section 40 of the same Act to consider such species when determining planning applications.

Other notable species include native species of conservation concern listed in the LBAP (except species that are also of Principal Importance), those that are Nationally Rare, Scarce or Red Data List, and non-native controlled weed species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

5. Identification of Ecological Constraints and Recommendations

5.1 Approach to the Identification of Ecological Constraints

- 5.1.1 Relevant ecological receptors that may represent constraints to the Scheme, or that provide opportunities to deliver ecological enhancement in accordance with planning policy, are identified in Section 4.
- 5.1.2 The NPPF and local planning policy (summarised in Section 2 of this report) specify requirements for the protection of features of importance for biodiversity. Planning policy is a material consideration when determining planning applications.
- 5.1.3 Compliance with planning policy requires that the Scheme considers and engages the following mitigation hierarchy where there is potential for impacts on relevant ecological receptors:
1. Avoidance - actions taken to avoid causing impacts to the environment prior to beginning development (for example, moving the development to a different location).
 2. Minimisation - measures taken to reduce the duration, intensity, extent and/or likelihood of the unavoidable environmental impacts caused by development (for example, adapting the development design to minimise impacts).
 3. Restoration or rehabilitation - actions taken to repair environmental degradation or damage following unavoidable impacts caused by development.
 4. Offsets - measures taken to compensate for any adverse environmental impacts caused by development which cannot be avoided, minimised and/or restored (e.g. including habitat creation to offset losses).
- 5.1.4 This hierarchy requires the highest level to be applied where possible. Only where this cannot reasonably be adopted should lower levels be considered. The rationale for the proposed mitigation and/or compensation should be provided with planning applications, including sufficient detail to show that these measures are feasible and would be provided.
- 5.1.5 In pursuance of the objectives within the NPPF and Environment Act of providing net gains in biodiversity, consideration should be given to the scope for enhancement as part of the Scheme. This should represent biodiversity gain over and above that achieved through mitigation and compensation. Enhancement could be achieved on and/ or off the Site.

- 5.1.6 The likelihood of the relevant ecological receptors constraining the Scheme has been assessed with reference to the scale described in Table 7. The higher the importance of the ecological receptor for the conservation of biodiversity at national and local scales, the more likely it is to be a material consideration during determination of the planning application for the Scheme.
- 5.1.7 There may be scope for ecological enhancement where existing habitat features could be improved or enhanced within the Scheme as designed, or with only minor amendment to the design of the Scheme. Ecological enhancement may not be possible where there is little scope to accommodate enhancement within the Scheme, e.g. due to a lack of utilisable space, or where land is required for essential mitigation. Consideration could be given to enhancing biodiversity in the vicinity of the Site.

Table 7 Scale of Constraint to Development

Likelihood	Definition
High	An actual or potential constraint that is subject to relevant legal protection and is likely to be a material consideration in determining the planning application (e.g. statutory nature conservation designations and European/nationally protected species). Further survey likely to be required (as detailed in this report) to support a planning application.
Medium	An actual or potential constraint that is covered by national or local planning policy and, depending on the level of the potential impact as a result of the Scheme, may be a material consideration in determining the planning application. Further survey may be required (as detailed in this report) to support a planning application.
Low	Unlikely to be a constraint to development or require further survey prior to submission of a planning application. Mitigation is likely to be covered under a Framework Construction Environmental Management Plan (CEMP) or precautionary working method statement (e.g. generic requirements for the management of nesting bird risks).

5.2 Constraints and Requirements for Further Survey: Designations

Statutory Designated Sites

- 5.2.1 The desk study identified two statutory sites for nature conservation within the study areas set out in Section 3.1 and presented in Table 2.
- 5.2.2 Both sites, which are SSSIs designated for habitats, are over 1.5km from the Site. The Scheme will not result in any direct impacts (i.e. through habitat loss) to these SSSIs and there are no direct ecological links between the Scheme and these sites. No indirect impacts (e.g. from lighting, noise or air quality) are likely during construction or operation based on the distance between the Scheme and the sites. A Framework Construction and Environmental Management Plant (CEMP) will be developed to ensure best practice guidance is followed during construction and to ensure direct and indirect

impacts do not occur. Therefore, there are no impact pathways that are likely to affect these SSSIs and no further action is required.

Non-statutory Sites

- 5.2.3 The desk study identified 14 non-statutory sites designated for nature conservation within the study area set out in Section 3.1.3 of this report and presented in Table 3.
- 5.2.4 One area of ancient woodland (Burton Wood) is within the Site but will be retained and appropriate offsets included within the design to avoid development within at least 15m of Burton Wood (and other woodland / trees). No indirect impacts (e.g. from lighting, noise or air quality) are likely to impact upon other LWS identified within 2km of the Site, during construction or operation, with appropriate mitigation (such as dust suppression, directional lighting) formalised into the Framework CEMP to ensure best practice guidance is followed.

Constraints and Requirements for Further Survey: Habitats

- 5.2.5 Notable habitats within the Site, potentially affected by the Scheme include arable field margins, acid grassland and woodland as identified in Table 5. Further investigation of other habitats is required to determine their quality and extent and whether they meet the relevant criteria to qualify as suitable priority habitats. As such, further surveys will be undertaken across the Site to help determine this.
- 5.2.6 However, the Scheme will avoid, protect and retain notable habitats. Furthermore, tree Root Protection Zones will be erected around retained trees, in line with British Standard BS 5837: Trees in relation to design, demolition and construction – Recommendations (BSI, 2012) and offsets of at least 15m from existing boundary features (woodlands, trees and hedgerows with trees), should be included in the design and 5m from hedgerows without trees. A minimum offset of 10m from the banks of the watercourses will be required (as per Environment Agency guidelines) and at least 20m from water bodies (such as ponds).
- 5.2.7 A Landscape and Biodiversity Management Plan (or similar document) is likely to be required to integrate green infrastructure and biodiversity into the Scheme to meet requirements under the NPPF and Local Planning Policy.

5.3 Constraints and Requirements for Further Survey: Species

Flora

- 5.3.1 Protected or notable flora species have the potential to occur on the Site, such as those associated with arable field margins (see target notes 21 and 14). Further investigation of these habitats is required to determine the presence of notable plant species. As such, further Phase 2 botanical surveys will be

undertaken across the Scheme to identify species and any areas of notable flora communities.

Terrestrial Invertebrates

- 5.3.2 The Site comprises habitats that may support protected and notable terrestrial invertebrates or invertebrate communities, identified as being present within the wider Zone of Influence during the desk study. Based on the habitats and species recorded during the desk study, any potentially important habitats (i.e. woodland) are unlikely to be impacted by the Scheme (through retention of such habitats) and would be suitably buffered to avoid unnecessary damage during construction and therefore impacts to terrestrial invertebrates. Therefore, detailed surveys for terrestrial invertebrates are not required, based on the current proposals for the Scheme.

Aquatic Invertebrates

- 5.3.3 There are some aquatic habitats present on the Site with the potential to support notable aquatic invertebrate species and assemblages. These include the stream on the eastern edge of the Site and a waterbody in the centre of the Solar and Energy Storage Park (see target note 30). There is potential for direct and indirect impacts to these habitats.
- 5.3.4 Further investigation of watercourses and water bodies will be required to determine the presence of notable aquatic invertebrate species and assemblages.

Amphibians

- 5.3.5 The desk study identified 64 water bodies within 500m of the Site. The data search returned a number of records of Great Crested Newt occurring within 2km of the Site, along with other amphibian species.
- 5.3.6 Further investigation of the water bodies within or close to the Site (see target note 30) where potential impacts are likely as a result of the Scheme will be required in relation to Great Crested Newt and other amphibians. In the first instance, a Habitat Suitability Index (HSI) assessment will be undertaken to categorise the suitability of the water bodies for Great Crested Newt. The HSI survey will determine whether further surveys are required to confirm presence or absence of Great Crested Newt.

Reptiles

- 5.3.7 The data search returned records of Grass Snake within 2km of the Site. Habitat potentially suitable to support reptiles was recorded on the Site, including streams and ditches for Grass Snake and grassland areas suitable for other reptile species (such as Common Lizard *Zootoca vivipara*) (see target notes 02, 22, 33). Therefore, further surveys, following standard guidelines³, are recommended to determine the presence or absence of reptiles.

³ Gent T and Gibson S (2003). *Herpetofauna Workers Manual*. JNCC, Peterborough.

Depending on the outcomes of these surveys, mitigation may be required to avoid injuring or harming reptiles during construction.

Birds

- 5.3.8 The desk study returned records of Schedule 1 bird species (Ref 3) occurring within 2km of the Site, two of which (Barn Owl and Hobby) were recording during the Phase 1 Habitat survey.
- 5.3.9 Trees, scrub and arable fields on site are likely to support nesting birds during the breeding season and wintering birds, including those of conservation concern (see target notes 01, 03, 04, 09, 12, 13, 16, 18, 23, 24, 31).
- 5.3.10 The Scheme has the potential to result in the direct loss of habitat used by protected and notable bird species. Further surveys of the general breeding bird assemblage, including targeted surveys for Barn Owl, are required to determine the requirement for appropriate avoidance measures and mitigation. This would include habitat clearance work to avoid the breeding bird season (the breeding season is defined as March to August inclusive) or have measures in place to avoid disturbance of active nests/breeding sites during this breeding season. This would include buffer zones, from 10m to 100m, depending on the species.
- 5.3.11 Surveys of the non-breeding population (wintering) are also required to determine the species and assemblages using the Site, the results of which will be used to determine appropriate mitigation.

Bats

- 5.3.12 The data search returned of bat records of six species within 2km of the Site. The Site contains trees, woodlands, hedgerows and buildings which have the potential to support roosting bats and provide connectivity and foraging resources for a wide variety of bat species (see target notes 04- 07, 09, 11, 12, 15, 17, 18, 23-27). The Site is assessed as being of low suitability for commuting and foraging bats, based on the intensively managed arable fields and other low value habitats. The woodland habitats, majority of hedgerows and trees which offer suitable commuting and foraging habitat will be retained and avoided.
- 5.3.13 The Scheme could have an adverse effect on bat species both in terms of loss of roost sites (where this cannot be avoided) and connectivity, commuting and foraging habitat. Therefore, further surveys to determine the presence of potential roost features and surveys of bat activity, in line with current best practice guidelines⁴ will be required.
- 5.3.14 If key bat flight lines are identified, these should be retained or mitigated for (if lost). Buffer zones around roosts or potential roosts is also recommended (>15m from the roost feature).

⁴ Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists Good Practice Guidelines* 3rd Edition. The Bat Conservation Trust, London.

Badger

- 5.3.15 The field survey recorded Badger activity within the Site (see target notes 08,19,28,32).
- 5.3.16 Owing to legislative provisions under the Protection of Badger Act 1992, further surveys (following standard guidelines⁵) are required to determine the full extent of Badger presence across the Site and in the wider zone of influence (up to 30m from the Site). The findings of these surveys will determine the potential constraints and whether mitigation and/or relevant licences are required to avoid impacts to Badgers or their setts.

Otter

- 5.3.17 The data search returned three records of Otter within 2km of the Site. During the Phase 1 Habitat survey, there were no signs of Otter associated with the pond and wet ditch on the Site and they would appear mostly unsuitable for Otter. However, the stream running along the eastern edge of the Site has the potential to support Otter.
- 5.3.18 An assessment of water bodies and watercourses where direct or indirect impacts could occur should be undertaken for the presence of Otter.
- 5.3.19 To assess suitability of water bodies within the Scheme area for Otter, along with the potential for Mink to be present, further surveys of all suitable water bodies and watercourses within the Site are required.

Water Vole

- 5.3.20 The data search returned thirteen records of Water Vole within 2km of the Site. The pond within the Solar and Energy Storage Park, though isolated in a field, does have suitable vegetation around it that could support Water Vole. One ditch, which was mostly dry, contained one small wet section where Water Vole activity was recorded. The eastern stream also has potential for Water Vole (See target notes 02 and 10).
- 5.3.21 To assess the suitability of water bodies within the Scheme for Water Vole to be present, further surveys of all suitable water bodies and watercourses within the Site are required. This should be extended up to 100m from the Site along the eastern stream.

Non-native Invasive Species

- 5.3.22 The data search returned records of American Mink, Chinese Muntjac, Himalayan Balsam and Japanese Knotweed which are within 2km from the Site. No INNS were recorded on the Site during the survey. However, if found to be present during ongoing ecological surveys, biosecurity measures will need to be put in place during construction to prevent the spread of INNS into and away from the Scheme. An INNS management plan should also be

produced to establish the approach to management and eradication of INNS found to be present.

Other species

- 5.3.23 Records of Brown Hare and Hedgehog were received during the data search and these species are likely to be present throughout the Site. Brown Hare and Hedgehog receive limited legal protection but are Species of Principal Importance on S41 of the NERC Act (Ref 6). As such, precautions are recommended to ensure they are not harmed during construction through a Framework Construction Environmental Management Plan (CEMP) or precautionary working method statement.
- 5.3.24 It is recommended that the Scheme is planned to take account of likely mitigation requirements for these species. This will include timing of any site clearance to avoid Brown Hare during their breeding season. This is concordant with the requirements for nesting birds. As such, it is recommended that site clearance and preparatory works would be undertaken over the autumn/winter period between September and February.

6. Conclusions

- 6.1.1 Overall, the PEA identified notable habitats and species as detailed in Sections 4.2 and 4.3.
- 6.1.2 A summary appraisal of ecological constraints and the recommended further requirements can be found in Table 8 below.

Table 8 Summary appraisal of features of ecological constraints and recommended further requirements

Receptor	Scale of constraint	Further requirements	Number of survey visits required	Survey period	Driver	When is action likely to be required?		
						To inform design	Before planning application	Pre-construction
Designated Sites	High	No direct impacts (habitat loss) would occur to designated sites as all are outside of the Scheme. However, appropriate buffers will need to be included within the design to protect indirect impacts from occurring (see also Section 5.2)	N/A	N/A	Habitat Regulations (2017) WCA 1981,	✓	✓	✓
Habitat – condition assessment, River Morph surveys to inform Biodiversity Net Gain Assessment	Medium / High	A survey to determine the condition of habitats and any other assessments required (such as River Morph surveys) to inform the BNG Assessment.	Initially one survey visit to each water body	May to August	Environment Act 2021	✓	✓	✓
Habitat / Plants (including hedgerows)	Medium / High	A Phase 2 botanical survey and arable plant survey to identify the presence and extent of any potential notable habitats and protected/notable plant species. The surveys will focus on potential priority habitat within the Scheme. Arable plant surveys will involve walking field boundaries and comparable areas of marginal habitat only.	Two survey visits	May to July (flora) May to September (hedgerows)	WCA 1981, LBAP, UKBAP, NERC Act 200	✓	✓	✓

Receptor	Scale of constraint	Further requirements	Number of survey visits required	Survey period	Driver	When is action likely to be required?		
						To inform design	Before planning application	Pre-construction
Aquatic Habitats	Medium	A scoping assessment of any aquatic habitats potentially directly or indirectly affected by the Scheme. This will include an assessment of the potential for aquatic habitats to support protected/notable species. Surveys of selected field ponds and the River Trent are likely to be required and will be determined following the scoping survey.	One survey visit	Any time of year, but April to May for scoping in advance of any further surveys that may be required between May and September	LBAP, UKBAP, NERC Act 200	✓	✓	✓
Great Crested Newt	High	Undertake HSI assessment of all waterbodies within 500m (where accessible) for their suitability to support Great Crested Newt. Following this, surveys to determine presence or absence of Great Crested Newt within suitable waterbodies (either by eDNA or 4 survey visits at night). Depending on the outcomes of these surveys further surveys are required to determine the population size and evidence of breeding may be required).	One survey visit for HSI assessment and, where required, followed by presence/absence survey (eDNA or 4 survey visits) and then up to a total of six survey visits for population survey.	March to June	Habitat Regulations (2017), WCA 1981, NERC Act 2006, UKBAP, LBAP	✓	✓	✓

Receptor	Scale of constraint	Further requirements	Number of survey visits required	Survey period	Driver	When is action likely to be required?		
						To inform design	Before planning application	Pre-construction
Reptiles	Medium	Surveys to identify the presence or absence of reptile species across suitable habitats within the Site.	One survey visit required to place the reptile refugia followed by seven survey visits to check for reptiles.	April to June and / or September to October.	WCA 1981, LBAP, UKBAP, NERC Act 2006	✓	✓	✓
Breeding birds	High	Surveys required to determine the breeding bird assemblage across the Scheme, including species listed on WCA Schedule. 1.	Six survey visits for a territory mapping survey.	March to June (breeding bird assemblage); April to August (e.g. Barn Owls).	Birds Directive, WCA 1981, LBAP, UKBAP, NERC Act 2006	✓	✓	✓
Non-breeding birds	Medium / High	Surveys required to determine the non-breeding (wintering) bird assemblage across the Site.	Six survey visits.	October to March.	Birds Directive, WCA 1981, LBAP, UKBAP, NERC Act 2006	✓	✓	✓
Bats - roosting	High	Surveys to identify potential features on trees and buildings that may support bat roosts. Depending on the findings of this survey and risk to these features, further surveys may be required to determine whether bats are present.	One survey visit required to undertake preliminary roost feature assessment across the Scheme.	Anytime for PRA (ideally when trees not in leaf, January to February). May to September for roost characterisation (if required)	Habitat Regulations (2017), WCA 1981, LBAP, UKBAP, NERC Act 2006	✓	✓	✓
Bats - foraging	Medium / High	Bat activity surveys to assess use of the Site by foraging/commuting bat species will be required to assess the impacts on commuting	Bat activity surveys, one visit in spring, summer and autumn.	April to September	Habitat Regulations (2017), WCA 1981, LBAP,	ü	✓	x

Receptor	Scale of constraint	Further requirements	Number of survey visits required	Survey period	Driver	When is action likely to be required?		
						To inform design	Before planning application	Pre-construction
		and foraging bat species and inform any specific mitigation.			UKBAP, NERC Act 2006			
Otter	Low	Undertake a presence / absence survey for both species on watercourses that may be affected by the Scheme.	At least two survey visits	Spring is best, but the survey can be undertaken at any time of year	WCA 1981	✓	✓	✓
Water Vole	High	Undertake a presence / absence survey for both species on watercourses that may be affected by the Scheme.	Two survey visits	April to June and July to September	WCA 1981	✓	✓	✓
Badger	Medium / High	Survey to record all evidence of Badger activity across the Scheme to identify setts to avoid or that require mitigation.	One survey visit	Any time of year, ideally when vegetation not in leaf (November to February)	Protection of Badger Act 1992	✓	✓	✓
Invasive Non-native Species	High	No further investigation is required. If located a management plan should be produced to manage and eradicate where required.	Ongoing	April to September	WCA 1981, Invasive Alien Species Order 2019	✓	✓	✓
Hedgehog and Brown Hare	Low	No further survey required, but mitigation and enhancement delivered as part of the Scheme should look to avoid disturbance to these species, retain habitats and	N/A	-	NERC Act 2006	✓	✓	✓

Receptor	Scale of constraint	Further requirements	Number of survey visits required	Survey period	Driver	When is action likely to be required?
						To inform design Before planning application Pre-construction
		ensure that connectivity is maintained throughout the Scheme and into the wider area. All species are likely to benefit from a reduction in intensively managed agricultural land.				

7. References

- Ref 1. CIEEM. (2017) Guidelines for Preliminary Ecological Appraisal.
h [REDACTED].
- Ref 2. British Standards Institution. (2013) BSI Standards Publication 42020:2013. Biodiversity – Code of practice for planning and development.
- Ref 3. HMSO (2008) The Planning Act 2008. Available at:
https://www.legislation.gov.uk/ukpga/2008/29/pdfs/ukpga_20080029_en.pdf
- Ref 4. HMSO. (1981). Wildlife & Countryside Act 1981 (as amended).
<https://www.legislation.gov.uk/ukpga/1981/69>.
- Ref 5. HMSO. (2000). Countryside and Rights of Way Act 2000.
<https://www.legislation.gov.uk/ukpga/2000/37/contents>.
- Ref 6. HMSO. (2006). Natural Environment and Rural Communities Act 2006.
<https://www.legislation.gov.uk/ukpga/2006/16/contents>.
- Ref 7. HMSO. (2018). Conservation of Habitats and Species Regulations 2017 (as amended). HMSO, London. <http://www.legislation.gov.uk/uksi/2017/1012/contents/made>.
- Ref 8. HMSO. (1992). Protection of Badgers Act 1992.
<https://www.legislation.gov.uk/ukpga/1992/51/contents>.
- Ref 9. HMSO. (1997). Hedgerow Regulations 1997.
<http://www.legislation.gov.uk/uksi/1997/1160/contents/made>.
- Ref 10. HMSO. (2017). The Water Environment (Water Framework Directive) (England and Wales) Regulations <https://www.legislation.gov.uk/uksi/2017/407/contents/made>.
- Ref 11. HMSO. (2019). The Invasive Alien Species (Enforcement and Permitting) Order 2019
<https://www.legislation.gov.uk/uksi/2019/527/contents/made>.
- Ref 12. National Planning Policy Framework 2021. Available at:
<https://www.gov.uk/government/publications/national-planning-policy-framework--2>
- Ref 13. Department of Energy and Climate Change (DECC), (2011) National Policy Statement for Energy (EN-1), Available at: <https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure>.
- Ref 14. DECC (2021) Draft Overarching National Policy Statement for Energy (EN-1), available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1015233/en-1-draft-for-consultation.pdf
- Ref 15. DECC (2021) Draft National Policy Statement for Renewable Energy Infrastructure (EN-3), Available at:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1015236/en-3-draft-for-consultation.pdf.
- Ref 16. DECC (2011) National Policy Statement for Electricity Networks Infrastructure (EN-5), Available at: <https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure>.
- Ref 17. DECC (2021) Draft National Policy Statement for Electricity Networks Infrastructure (EN-5), available at
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1015238/en-5-draft-for-consultation.pdf.
- Ref 18. Central Lincolnshire Local Plan. (2012-2036) <https://www.n-kesteven.gov.uk/residents/planning-and-building/planning-policy/central-lincolnshire-local-plan/>.
- Ref 19. Bassetlaw District Council. (2011). Core Strategy and Development Management Policies DPD <https://www.bassetlaw.gov.uk/media/1543/cs1adoptedcorestrategy.pdf>.
- Ref 20. HMSO. (2018). A Green Future: Our 25 Year Plan to Improve the Environment. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf.
- Ref 21. HMSO. (2021). The Environment Act. Available at:
<https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>

- Ref 22. Natural England and the Department for Environment, Food and Rural Affairs (2016) Protected species: how to review planning applications.
<https://www.gov.uk/guidance/protected-species-how-to-review-planning-applications>.
- Ref 23. UK Post-2010 Biodiversity Framework. Joint Nature Conservation Committee and Department for Environment, Food and Rural Affairs (2012).
http://jncc.defra.gov.uk/pdf/UK_Post2010_Bio-Fwork.pdf.
- Ref 24. Lincolnshire Biodiversity Action Plan. (2012-2020) 3rd edition.
<http://www.southkesteven.gov.uk/CHttpHandler.ashx?id=7371&p=0>
- Ref 25. Nottinghamshire Biodiversity Action Group (2008) Local Biodiversity Action Plan.
- Ref 26. [REDACTED]
- Ref 27. Defra, Multi-Agency geographical information for the countryside (MAGIC) map. Available at: <https://magic.defra.gov.uk/MagicMap.aspx> [Date Accessed November 2021].

8. Annexes

Annex A Legislation and Policy

The Conservation of Habitats & Species Regulations 2017 (as amended)

The Habitats Regulations consolidate all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994 in respect of England and Wales. The 1994 Regulations transposed Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law. The Regulations came into force on 30th October 1994. In Scotland the Habitats Directive is transposed through a combination of the Habitats Regulations 2010 (in relation to reserved matters) and the 1994 Regulations. The Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) transpose the Habitats Directive in relation to Northern Ireland.

From 1st January 2021 changes have been made to the Conservation of Habitats and Species Regulations 2017 (as amended) “the 2017 Regulations”. The changes are made by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 “the 2019 Regulations”. Most of these changes involved transferring functions from the European Commission to the appropriate authorities in England and Wales. All other processes or terms in the 2017 Regulations remain unchanged and existing guidance is still relevant. The obligations of a competent authority in the 2017 Regulations for the protection of sites or species do not change.

The 2017 Regulations (Regulation 9(1)), as amended by the 2019 Regulations, require the Secretary of State and Welsh Ministers to secure compliance with the requirements of the Habitats Directives. Any new powers in the 2019 Regulations must be exercised in line with the Directives and retained EU case law up to 1 January 2021.

The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites.

Under the Regulations, competent authorities i.e. any Minister, Government department, public body, or person holding public office, have a general duty, in the exercise of any of their functions, to have regard to the EC Habitats Directive.

The Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species (listed in Annexes I and II of the Habitats Directive respectively) to the European Commission. Once the Commission and EU Member States have agreed that the sites submitted are worthy of designation, they are identified as Sites of Community Importance (SCIs). The EU Member States must then designate these sites as Special Areas of Conservation (SACs) within six years. The Regulations also require the compilation and maintenance of a register of European sites, to include SACs and Special Protection Areas (SPAs) classified under Council Directive 79/409/EEC on the Conservation of Wild Birds (the Birds Directive). These sites form a network termed Natura 2000.

The Regulations enable the country agencies to enter into management agreements on land within or adjacent to a European site, in order to secure its conservation. If the agency is unable to conclude such an agreement, or if an agreement is breached, it may acquire the interest in the land compulsorily. The agency may also use its powers to make byelaws to protect European sites. The Regulations also provide for the control of potentially damaging operations, whereby consent from the country agency may only be granted once it has been shown through Appropriate Assessment that the proposed operation will not adversely affect the integrity of the site. When considering potentially damaging operations, the country agencies apply the precautionary principle' i.e. consent cannot be given unless it is ascertained that there will be no adverse effect on the integrity of the site.

In instances where damage could occur, the appropriate Minister may, if necessary, make special nature conservation orders, prohibiting any person from carrying out the operation. However, an operation may proceed where it is or forms part of a plan or project with no alternative solutions, which must be carried out for reasons of overriding public interest. In such instances the Secretary of State must secure compensation to ensure the overall integrity of the Natura 2000 system. The country agencies are required to review consents previously granted under the Wildlife and Countryside Act 1981 for land

within a European site, and may modify or withdraw those that are incompatible with the conservation objectives of the site.

The Regulations make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4. However, these actions can be made lawful through the granting of licenses by the appropriate authorities. Licenses may be granted for a number of purposes (such as science and education, conservation, preserving public health and safety), but only after the appropriate authority is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on wild population of the species concerned.

The Regulations make special provisions for the protection of European marine sites, requiring the country agencies to advise other authorities of the conservation objectives for a site, and also of the operations which may affect its integrity. The Regulations also enable the establishment of management schemes and byelaws by the relevant authorities and country agencies respectively, for the management and protection of European marine sites.

Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981 is the major domestic legal instrument for wildlife protection in the UK, and is the primary means by which the following are implemented:

- The Convention on the Conservation of European Wildlife and Natural Habitats ('the Bern Convention'); and The Council Directive 79/409/EEC on the Conservation of Wild birds (the 'Bird Directive')

Wild Birds

The Act makes it an offence (with exception to species listed in Schedule 2) to intentionally:

- Kill, injure, or take any wild bird,
- Take, damage or destroy the nest of any wild bird while that nest is in use or being built (also [take, damage or destroy the nest of a wild bird included in Schedule ZA1] under the Natural Environment and Rural Communities Act 2006), or
- Take or destroy an egg of any wild bird.

Special penalties are available for offences related to birds listed on Schedule 1, for which there are additional offences of disturbing these birds at their nests, or their dependent young. The Secretary of State may also designate Areas of Special Protection (subject to exceptions) to provide further protection to birds. The Act also prohibits certain methods of killing, injuring, or taking birds, restricts the sale and possession of captive bred birds, and sets standards for keeping birds in captivity.

Other Animals

The Act makes it an offence (subject to exceptions) to intentionally kill, injure or take any wild animal listed on Schedule 5, and prohibits interference with places used for shelter or protection, or intentionally disturbing animals occupying such places. The Act also prohibits certain methods of killing, injuring, or taking wild animals.

Flora, Fungi and Lichens

The Act makes it an offence (subject to exceptions) to intentionally pick, uproot or destroy:

- Any wild plant listed in Schedule 8, or
- Unless an authorised person, to intentionally uproot any wild plant not included in Schedule 8,
- To sell, offer or expose for sale, or possess (for the purposes of trade), any live or dead wild plant included in Schedule 8, or any part of, or anything derived from, such a plant.

Non-native Species

The Act contains measures for preventing the establishment of non-native species which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in Schedule 9 in England and Wales. It also provides a mechanism making any of the above offences legal through the granting of licences by the appropriate authorities.

Countryside and Rights of Way (CRoW) Act 2000

The Countryside and Rights of Way Act 2000 applies to England and Wales only. Part III of the Act deals specifically with wildlife protection and nature conservation.

The Act places a duty on Government Departments and the National Assembly for Wales to have regard for the conservation of biodiversity and maintain lists of species and habitats for which conservation steps should be taken or promoted, in accordance with the Convention on Biological Diversity.

Schedule 9 of the Act amends the SSSI provisions of the Wildlife and Countryside Act 1981, including increased powers for their protection and management of SSSIs. The provisions extend powers for entering into management agreements; place a duty on public bodies to further the conservation and enhancement of SSSIs; increase penalties on conviction where the provisions are breached; and include an offence whereby third parties can be convicted for damaging SSSIs.

Schedule 12 of the Act amends the species provisions of the Wildlife and Countryside Act 1981, strengthening the legal protection for threatened species. The provisions make certain offences 'arrestable', include an offence of reckless disturbance, confer greater powers to police and wildlife inspectors for entering premises and obtaining wildlife tissue samples for DNA analysis, and enable heavier penalties on conviction of wildlife offences.

Natural Environment and Rural Communities (NERC) Act 2006

The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Section 41 (S41) of the Act required the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The list was drawn up in consultation with Natural England, as required by the Act.

The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

Fifty-six habitats of principal importance are included on the S41 list. These are all the habitats in England that were identified as requiring action in the (now withdrawn) UK Biodiversity Action Plan (UK BAP) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework. They include terrestrial habitats such as upland hay meadows to lowland mixed deciduous woodland, and freshwater and marine habitats such as ponds and subtidal sands and gravels.

There are 943 species of principal importance included on the S41 list. These are the species found in England which were identified as requiring action under the (now withdrawn) UK BAP and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework. In addition, the hen harrier has also been included on the list because without continued conservation action it is unlikely that the hen harrier population will increase from its current very low levels in England.

Protection of Badgers Act 1992

Badgers and their setts (burrows) are protected under the Act. This makes it an offence to kill or take a badger, to cruelly ill-treat a badger, or to interfere with a badger sett, including disturbing a badger while it is occupying a sett.

Licences to permit otherwise prohibited actions can be granted under section 10 of the Act for various purposes. This includes licences to interfere with a badger sett for the purpose of development as defined by section 55(1) of the Town and Country Planning Act 1990.

Licences may be granted in order to close down setts, or parts of setts, prior to development or to permit activities close to a badger sett that might result in disturbance. A licence will be required if a sett is likely to be damaged or destroyed in the course of development or if the badger(s) occupying the sett will be disturbed.

Licences can be applied for at any time, but a licence for development will not normally be issued unless full planning permission has been granted. The closure of setts under licence is normally only permitted during July to November, inclusive.

The Hedgerow Regulations 1997

The intention of the Act is to protect important countryside hedges from destruction or damage. The Act does not apply where planning permission has been granted. There are various other exemptions under the Act, including:

- To make a new opening in substitution for an existing one that gives access to land. For example, a gate. However, the old opening must be filled in within 8 months;
- To obtain access to land where other means are not available or are only available at disproportionate cost; and
- For the proper management of the hedgerow. This means real management, such as coppicing. But if the hedgerow is deliberately 'over-managed' this might qualify as removal.

If the proposed works are not exempt or subject to a current planning permission then the landowner must serve a Hedgerow Removal Notice in writing on their local planning authority. The authority then has 42 days (which period can be extended if the applicant agrees) to determine whether or not the hedge is considered 'important' under the regulations, and if so, whether or not to issue a Hedgerow Retention Notice. The local authority does not have to issue a Retention Notice, even if the hedgerow counts as important. If they do not issue a notice for an important hedge this is often on condition that certain things are done, e.g. reinstatement or replanting to a certain standard, or creation of an equivalent boundary elsewhere.

Water Framework Directive (WFD) 2017

The Water Framework Directive (WFD) (2000/60/EC) introduced a comprehensive river basin management planning system to help protect and improve the ecological health of our rivers, lakes, estuaries and coastal and groundwaters. This is underpinned by the use of environmental standards to help assess risks to the ecological quality of the water environment and to identify the scale of improvements that would be needed to bring waters under pressure back into a good condition.

Annex B Local Biodiversity Action Plan habitats and species

Lincolnshire Biodiversity Action Plan

Habitats

Coastal and Marine:

- Coastal Sand Dunes;
- Peat and clay exposures
- *Sabellaria spinulosa* reefs
- Saline lagoons
- Saltmarsh

Farmland and Grassland:

- Arable field margins
- Grazing marsh
- Hedgerows and hedgerow trees
- Lowland calcareous grassland
- Lowland meadows

Heathland and Peatland:

- Heathland and peatland
- Lowland dry acid grassland

Rivers and Wetlands:

- Chalk streams and blow wells
- Fens
- Ponds, lakes and reservoirs
- Reedbeds and bittern
- Rivers, canals and drains
- Springs and flushes

Trees and Woodland:

- Lowland mixed deciduous woodland
- Traditional orchards
- Wet woodland
- Wood-pasture and parkland

Urban:

- Brownfield
- Churchyard and cemeteries
- Gardens and allotments
- Parks and open spaces

Species

Common Name

Scientific Name

a fungus (non lichenised)

Mycena renati

a fungus (non lichenised)

Podoscypha multizonata

a lichen

Anaptychia ciliaris ciliaris

Common Name	Scientific Name
a lichen	<i>Lecanora sublivescens</i>
Starry stonewort	<i>Nitellopsis obtusa</i>
Tassel stonewort	<i>Tolypella intricata</i>
Great tassel stonewort	<i>Tolypella prolifera</i>
Sea bryum	<i>Bryum warneum</i>
Rusty fork-moss	<i>Dicranum spurium</i>
Pitted frillwort	<i>Fossombronia foveolata</i>
Man orchid	<i>Aceras anthropophorum</i>
Ribbon-leaved water-plantain	<i>Alisma gramineum</i>
Tall thrift	<i>Armeria maritima elongata</i>
Purple milk-vetch	<i>Astragalus danicus</i>
Flat-sedge	<i>Blysmus compressus</i>
Slender hare's-ear	<i>Bupleurum tenuissimum</i>
Divided sedge	<i>Carex divisa</i>
Rare spring-sedge	<i>Carex ericetorum</i>
Basil thyme	<i>Clinopodium acinos</i>
Frog orchid	<i>Coeloglossum viride</i>
Deptford pink	<i>Dianthus armeria</i>
Glandular eyebright	<i>Euphrasia anglica</i>
Chalk eyebright	<i>Euphrasia pseudokernerii</i>
Red hemp-nettle	<i>Galeopsis angustifolia</i>
Early gentian	<i>Gentianella anglica</i>
Sea barley	<i>Hordeum marinum</i>
Marsh clubmoss	<i>Lycopodiella inundata</i>
Pennyroyal	<i>Mentha pulegium</i>
Fine-leaved sandwort	<i>Minuartia hybrida</i>
Bird's-nest	<i>Monotropa hypopitys hypophegea</i>

Common Name	Scientific Name
Tubular water-dropwort	<i>Oenanthe fistulosa</i>
Burnt orchid	<i>Orchis ustulata</i>
Pillwort	<i>Pilularia globulifera</i>
Sharp-leaved pondweed	<i>Potamogeton acutifolius</i>
Grass-wrack pondweed	<i>Potamogeton compressus</i>
Pasqueflower	<i>Pulsatilla vulgaris</i>
Corn buttercup	<i>Ranunculus arvensis</i>
Prickly saltwort	<i>Salsola kali kali</i>
Shepherd's needle	<i>Scandix pecten-veneris</i>
Annual knawel	<i>Scleranthus annuus</i>
Greater water-parsnip	<i>Sium latifolium</i>
Small cord-grass	<i>Spartina maritima</i>
Marsh stitchwort	<i>Stellaria palustris</i>
Spreading hedge parsley	<i>Torilis arvensis</i>
a bryozoan	<i>Lophopus crystallinus</i>
Mud pond snail	<i>Omphiscola glabra</i>
Depressed (or compressed) river mussel	<i>Pseudanodonta complanata</i>
Witham orb mussel	<i>Sphaerium solidum</i>
Norfolk hawker	<i>Aeshna isosceles</i>
Thorne pin-palp	<i>Bembidion humerale</i>
Scarce four-dot pin-palp	<i>Bembidion quadripustulatum</i>
Necklace ground beetle	<i>Carabus monilis</i>
Hazel pot beetle	<i>Cryptocephalus coryli</i>
Six-spotted beetle	<i>Cryptocephalus sexpunctatus</i>
Mire pill-beetle	<i>Curimopsis nigrita</i>
Brush-thighed seed-eater	<i>Harpalus froelichi</i>
Oxbow diving beetle	<i>Hydroporus rufifrons</i>

Common Name	Scientific Name
Stag beetle	<i>Lucanus cervus</i>
Set-aside downy-back	<i>Ophonus laticollis</i>
Mellets downy-back	<i>Ophonus melletii</i>
Oolite downy-back	<i>Ophonus stictus</i>
Crucifix ground beetle	<i>Panagaeus cruxmajor</i>
Yellow pogonus	<i>Pogonus luridipennis</i>
Chequered skipper	<i>Carterocephalus palaemon</i>
Small heath	<i>Coenonympha pamphilus</i>
Large heath	<i>Coenonympha tullia</i>
Small blue	<i>Cupido minimus</i>
Dingy skipper	<i>Erynnis tages</i>
Duke of Burgundy	<i>Hamearis lucina</i>
Grayling	<i>Hipparchia semele</i>
Wall	<i>Lasiommata megera</i>
White admiral	<i>Limenitis camilla</i>
Silver-studded blue	<i>Plebejus argus</i>
Grizzled skipper	<i>Pyrgus malvae</i>
White letter hairstreak	<i>Satyrrium w-album</i>
Brown hairstreak	<i>Thecla betulae</i>
Grey dagger	<i>Acronicta psi</i>
Knot grass	<i>Acronicta rumicis</i>
The forester	<i>Adscita statices</i>
Flounced chestnut	<i>Agrochola helvola</i>
Brown-spot pinion	<i>Agrochola litura</i>
Beaded chestnut	<i>Agrochola lychnidis</i>
Green-brindled crescent	<i>Allophyes oxyacanthae</i>
Ear moth	<i>Amphipoea oculea</i>

Common Name	Scientific Name
Mouse moth	<i>Amphipyra tragopoginis</i>
Large nutmeg	<i>Apamea anceps</i>
Dusky brocade	<i>Apamea remissa</i>
Deep-brown dart	<i>Aporophyla lutulenta</i>
Garden tiger	<i>Arctia caja</i>
The sprawler	<i>Asteroscopus sphinx</i>
Centre-barred sallow	<i>Atethmia centrago</i>
Marsh moth	<i>Athetis pallustris</i>
Dark brocade	<i>Blepharita adusta</i>
Minor shoulder-knot	<i>Brachylochia viminalis</i>
Mottled rustic	<i>Caradrina morpheus</i>
Haworth's minor	<i>Celaena haworthii</i>
The crescent	<i>Celaena leucostigma</i>
The streak	<i>Chesias legatella</i>
Latticed heath	<i>Chiasmia clathrata</i>
The concolorous	<i>Chortodes extrema</i>
Oak lutestring	<i>Cymatophorima diluta</i>
Small square-spot	<i>Diarsia rubi</i>
Figure of eight	<i>Diloba caeruleocephala</i>
Small phoenix	<i>Ecliptopera silaceata</i>
September thorn	<i>Ennomos erosaria</i>
Dusky thorn	<i>Ennomos fuscantaria</i>
August thorn	<i>Ennomos quercinaria</i>
Galium carpet	<i>Epirrhoe galiata</i>
Autumnal rustic	<i>Eugnorisma glareosa</i>
The spinach	<i>Eulithis mellinata</i>
Scarce pug	<i>Eupithecia extensaria occidua</i>

Common Name	Scientific Name
Garden dart	<i>Euxoa nigricans</i>
Double dart	<i>Graphiphora augur</i>
Small emerald	<i>Hemistola chrysoprasaria</i>
Ghost moth	<i>Hepialus humuli</i>
The rustic	<i>Hoplodrina blanda</i>
Rosy rustic	<i>Hydraecia micacea</i>
Brindled beauty	<i>Lycia hirtaria</i>
The lackey	<i>Malacosoma neustria</i>
Dot moth	<i>Melanchra persicariae</i>
Broom moth	<i>Melanchra pisi</i>
Pretty chalk carpet	<i>Melanthia procellata</i>
Rosy minor	<i>Mesoligia literosa</i>
Shoulder-striped wainscot	<i>Mythimna comma</i>
Scarce vapourer	<i>Orgyia recens</i>
Oblique carpet	<i>Orthonama vittata</i>
Barberry carpet	<i>Pareulype berberata</i>
Dark spinach	<i>Pelurga comitata</i>
Grass rivulet	<i>Perizoma albulata albulata</i>
Pale shining brown	<i>Polia bombycina</i>
Chalk carpet	<i>Scotopteryx bipunctaria</i>
Shaded broad-bar	<i>Scotopteryx chenopodiata</i>
White ermine	<i>Spilosoma lubricipeda</i>
Buff ermine	<i>Spilosoma luteum</i>
Hedge rustic	<i>Tholera cespitis</i>
Feathered gothic	<i>Tholera decimalis</i>
Blood-vein	<i>Timandra comae</i>
Pale eggar	<i>Trichiura crataegi</i>

Common Name	Scientific Name
The cinnabar	<i>Tyria jacobaeae</i>
Four-spotted moth	<i>Tyta luctuosa</i>
Oak hook-tip	<i>Watsonalla binaria</i>
Dusky-lemon sawfly	<i>Xanthia gilvago</i>
The sawfly	<i>Xanthia icteritia</i>
Dark-barred twin-spot carpet	<i>Xanthorhoe ferrugata</i>
Northern yellow splinter	<i>Lipsothrix errans</i>
Hairy canary fly	<i>Phaonia jaroschewskii</i>
Shining guest ant	<i>Formicoxenus nitidulus</i>
Moss carder-bee	<i>Bombus muscorum</i>
Large garden bumblebee	<i>Bombus ruderatus</i>
a mining bee	<i>Colletes halophilus</i>
Ruby-tailed wasp	<i>Chrysis fulgida</i>
White-clawed crayfish	<i>Austropotamobius pallipes</i>
Lagoon sand-shrimp	<i>Gammarus insensibilis</i>
a money spider	<i>Saaristoa firma</i>
River lamprey	<i>Lampetra fluviatilis</i>
Sea lamprey	<i>Petromyzon marinus</i>
Common skate	<i>Dipturus batis</i>
Tope shark	<i>Galeorhinus galeus</i>
Thornback ray	<i>Raja clavata</i>
European eel	<i>Anguilla anguilla</i>
Herring	<i>Clupea harengus</i>
Spined loach	<i>Cobitis taenia</i>
Cod	<i>Gadus morhua</i>
Halibut	<i>Hippoglossus hippoglossus</i>
Whiting	<i>Merlangius merlangus</i>

Common Name	Scientific Name
Smelt	<i>Osmerus eperlanus</i>
Plaice	<i>Pleuronectes platessa</i>
Atlantic salmon	<i>Salmo salar</i>
Brown/sea trout	<i>Salmo trutta</i>
Mackerel	<i>Scomber scombrus</i>
Sole	<i>Solea solea</i>
Common toad	<i>Bufo bufo</i>
Natterjack toad	<i>Epidaleia calamita</i>
Great crested newt	<i>Triturus cristatus</i>
Slow worm	<i>Anguis fragilis</i>
Grass snake	<i>Natrix natrix</i>
Adder	<i>Vipera berus</i>
Common lizard	<i>Zootoca vivipara</i>
Skylark	<i>Alauda arvensis arvensis/scotica</i>
Tree pipit	<i>Anthus trivialis</i>
Scaup	<i>Aythya marila</i>
Bittern	<i>Botaurus stellaris</i>
Dark-bellied brent goose	<i>Branta bernicla bernicla</i>
Nightjar	<i>Caprimulgus europaeus</i>
Lesser redpoll	<i>Carduelis cabaret</i>
Linnet	<i>Carduelis cannabina autochthona/cannabina</i>
Twite	<i>Carduelis flavirostris bensonorum/pipilans</i>
Hawfinch	<i>Coccothraustes coccothraustes</i>
Common cuckoo	<i>Cuculus canorus</i>
Bewick's swan	<i>Cygnus columbianus bewickii</i>
Lesser spotted woodpecker	<i>Dendrocopos minor comminutus</i>
Corn bunting	<i>Emberiza calandra calandra/clanceyi</i>

Common Name	Scientific Name
Yellowhammer	<i>Emberiza citrinella</i>
Reed bunting	<i>Emberiza schoeniclus</i>
Herring gull	<i>Larus argentatus argenteus</i>
Black-tailed godwit	<i>Limosa limosa limosa</i>
Grasshopper warbler	<i>Locustella naevia</i>
Woodlark	<i>Lullula arborea</i>
Yellow wagtail	<i>Motacilla flava flavissima</i>
Spotted flycatcher	<i>Muscicapa striata</i>
Curlew	<i>Numenius arquata</i>
House Sparrow	<i>Passer domesticus</i>
Tree Sparrow	<i>Passer montanus</i>
Grey partridge	<i>Perdix perdix</i>
Wood warbler	<i>Phylloscopus sibilatrix</i>
Willow tit	<i>Poecile montanus Kleinschimdti</i>
Marsh tit	<i>Poecile palustris palustris/dresseri</i>
Dunnock	<i>Prunella modularis occidentalis</i>
Common bullfinch	<i>Pyrrhula pyrrhula pileata</i>
Arctic skua	<i>Stercorarius parasiticus</i>
Turtle dove	<i>Streptopelia turtur</i>
Starling	<i>Sturnus vulgaris vulgaris</i>
Song thrush	<i>Turdus philomelos clarkei</i>
Ring ouzel	<i>Turdus torquatus</i>
Lapwing	<i>Vanellus vanellus</i>
Water vole	<i>Arvicola amphibius</i>
Barbastelle	<i>Barbastella barbastellus</i>
Common dolphin	<i>Delphinus delphis</i>
Hedgehog	<i>Erinaceus europaeus</i>

Common Name	Scientific Name
Atlantic white-sided dolphin	<i>Lagenorhynchus acutus</i>
White-beaked dolphin	<i>Lagenorhynchus albirostris</i>
Brown hare	<i>Lepus europaeus</i>
Otter	<i>Lutra lutra</i>
Harvest mouse	<i>Micromys minutus</i>
Dormouse	<i>Muscardinus avellanarius</i>
Polecat	<i>Mustela putorius</i>
Noctule	<i>Nyctalus noctula</i>
Common seal	<i>Phoca vitulina</i>
Harbour porpoise	<i>Phocoena phocoena</i>
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>
Brown long-eared bat	<i>Plecotus auritus</i>

Nottinghamshire Biodiversity Action Plan

Habitats

Woodland:

- Hedgerows (Including ancient and/or species-rich hedgerows)
- Mixed ash-dominant woodland
- Oak-birch woodland
- Parkland and wood pasture
- Planted coniferous woodland
- Wet broadleaved woodland

Wetland:

- Canals
- Ditches
- Eutrophic and mesotrophic standing waters
- Fens, marshes and swamps
- Reedbed
- Rivers and streams

Open:

- Farmland (arable farmland, arable field margins and improved grassland)
- Lowland calcareous grassland

- Lowland dry acid grassland
- Lowland heathland
- Lowland neutral grassland
- Lowland wet grassland
- Urban and post-industrial habitats

Species




Common Name

Scientific Name

Common Name	Scientific Name
Black Poplar	<i>Populus nigra</i>
Deptford Pink	<i>Dianthus armeria</i>
Nottingham autumn crocus	<i>Crocus nudiflorus</i>
Nottingham spring crocus	<i>Crocus vernus</i>
Dingy Skipper	<i>Erynnis tages</i>
Green Hairstreak	<i>Callophrys rubi</i>
Grizzled Skipper	<i>Pyrgus malvae</i>
Hazel Pot Beetle	<i>Cryptocephalus coryli</i>
White-clawed Crayfish	<i>Austropotamobius pallipes</i>
Atlantic Salmon	<i>Salmo salar</i>
Barn Owl	<i>Tyto alba</i>
Daubenton's Bat	<i>Myotis daubentoni</i>
Brandt's Bat	<i>Myotis brandti</i>
Whiskered Bat	<i>Myotis mystacinus</i>
Natterer's Bat	<i>Myotis nattereri</i>
Pipistrelle	<i>Pipistrellus pipistrellus</i>
Noctule Batt	<i>Nyctalus noctula</i>
Leisler's Bat	<i>Nyctalus leisleri</i>
Brown long-eared Bat	<i>Plecotus auritus</i>
Serotine	<i>Eptesicus serotinus</i>
Dormouse	<i>Muscardinus avellanarius</i>

Common Name	Scientific Name
Harvest mouse	<i>Micromys minutus</i>
Hedgehog	<i>Erinaceus europaeus</i>
Nightjar	<i>Caprimulgus europaeus</i>
Otter	<i>Lutra lutra</i>
Slow-worm	<i>Anguis fragilis</i>
Water Vole	<i>Arvicola terrestris</i>
Willow Tit	<i>Poecile montanus</i>

Annex C Target Photographs Notes and

Target Notes	Target Note Information	Photograph
01	Barn Owl box on adjacent land	
02	Stream has potential for Water Voles, water and bankside vegetation has potential for reptiles especially Grass Snake	
03	Large hole in the trunk of ash tree suitable for Barn Owl, a couple of areas of whitewash on tree	

04

Tree has four knot holes and broken branch in large ash moderate potential for Bats, also potential for Barn Owl roost



05

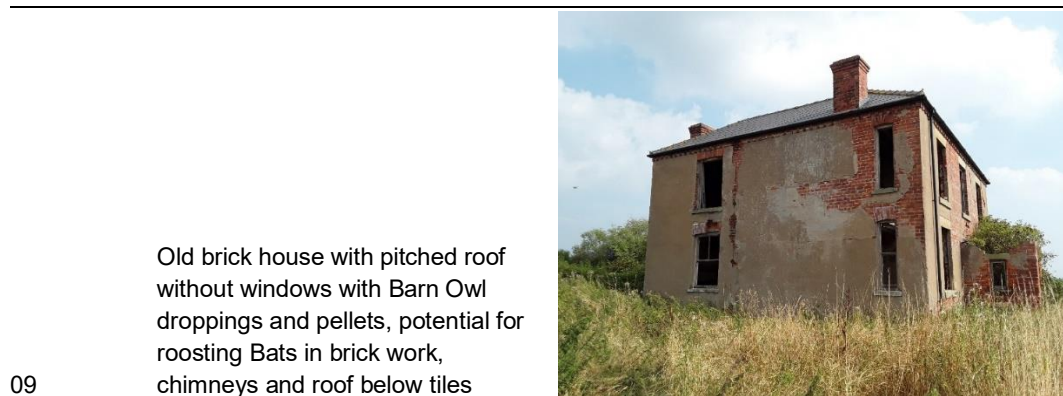
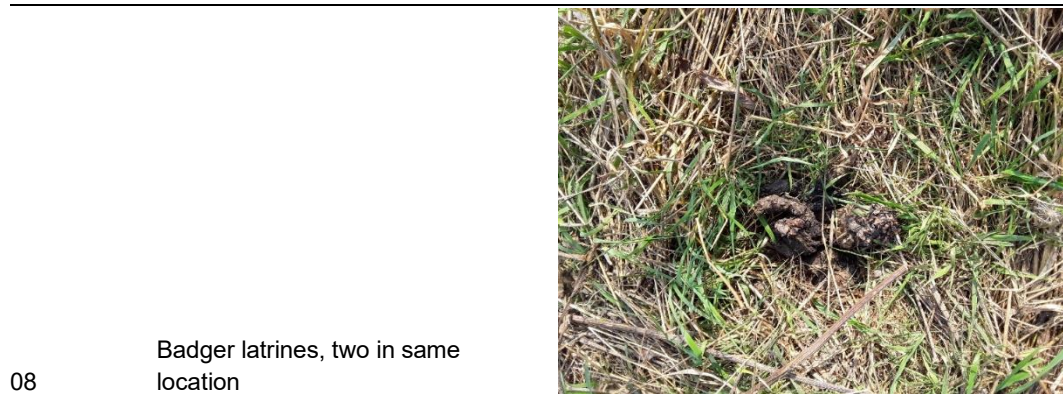
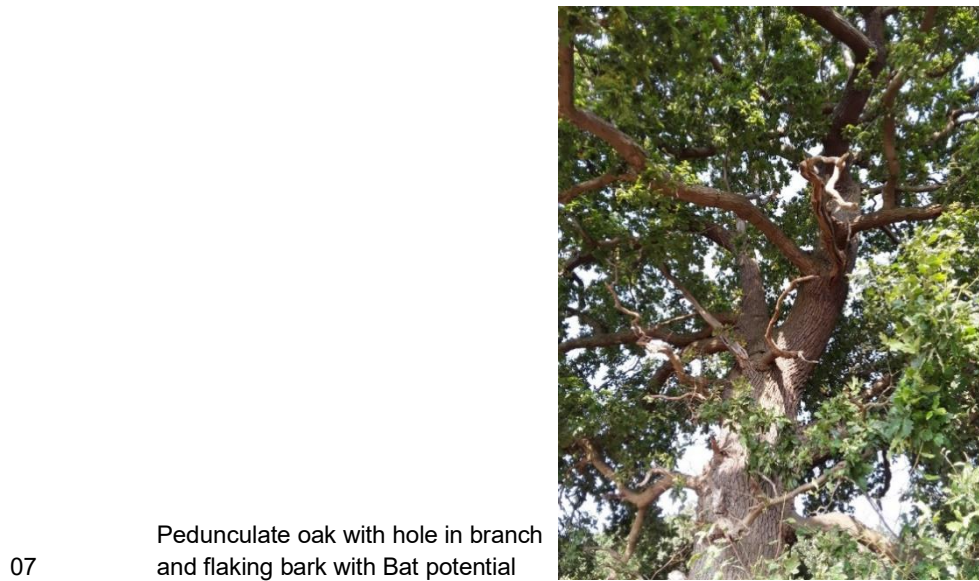
Tree with knot hole with low potential for Bats



06

Ash with slit in trunk, hole in branch, moderate Bat potential





10

Water Vole latrines present, only water in the ditch appears to be by bridge and the rest is dry



11

Pedunculate Oak with Bat potential, loose bark on large areas of the tree and gaps in knot holes



12

Pedunculate Oak with Woodpecker holes and knot holes suitable for roosting Bats



13

Large Ash with holes in the trunk one large with potential for Barn Owl and low potential for Bats

No photo

14

Dwarf Spurge present, possibly other arable weeds



15

Ash with cracked trunk, flaking bark with Bat potential




16


Ash with large hole in trunk Barn Owl potential, white wash and downy feathers around entrance, also low Bat potential



17 Ash with broken branches and cracked bark with Bat potential



18 Ash with large hole in trunk, Barn Owl and Bat potential



19 Badger latrine, 2 present



20 The verges on either side of road is semi improved neutral grassland, Common Knapweed, Lady's Bedstraw **No photo**

21 Dwarf Spurge present may be more
arable weeds present



22 Habitat suitable for reptiles present



23 Ash with large cavity in the trunk
and broken crown suitable for Barn
Owl and roosting Bats



24

Ash with broken split branch,
Woodpecker and knot holes
suitable for roosting Bats



25

Alder with broken trunk with holes
and flaking bark suitable for roosting
Bats



26

Pedunculate Oak with large broken
branch and smaller rotting branch,
flaking bark suitable for roosting
Bats, large diameter tree >1.5m



27

Pedunculate Oak with dead
branches suitable for roosting Bats



28

Disused Badger sett, one hole
currently used by Rabbits



30

Pond with potential for Great
Crested Newts. Hard Rush,
Common Clubrush, Common
Reedmace, Compact Rush,
Common Reed



31

Barn Owl was roosting in Ash tree
and flew out



32

Badger latrines present with a total
of seven present



33

Habitat suitable for reptiles present

