



TECHNICAL APPENDIX 2: ENVIRONMENTAL ASSESSMENT

Kingston Solar Farm

07/02/2022



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Contents

Executive Summary	5
Introduction	7
Consultation	10
Legislation and Planning Policy Context	14
Methodology	22
Baseline Conditions	27
Impact Assessment.....	38
Cumulative Effects.....	62
Conclusion	64
Appendices	69

EXECUTIVE SUMMARY

- 2.1. An Ecological Assessment has been undertaken for a proposed solar farm and associated infrastructure (the “Proposed Development”) on lands circa 1.3km south of Gotham and c. 0.75km northwest of East Leake, Nottinghamshire (the “Application Site”). This is to assess the potential impacts on local ecology as a result of the Proposed Development. Baseline information within the ecological assessment comprises an initial desk-based assessment, an extended phase 1 habitat survey and a net gain baseline survey, which have been outlined within the relevant sections of this report.
- 2.2. The desk-based assessment identified that within 15km of the Application Site boundary there are no Special Areas of Conservation (“SACs”), no Special Protection Areas (“SPAs”), no possible SACs (“pSACs”), no potential SPAs (“pSPAs”) or Ramsar Sites. There are five Sites of Special Scientific Interest (“SSSIs”), no National Nature Reserves (“NNRs”) and seven Local Nature Reserves (“LNRs”) within 5km of the Application Site.
- 2.3. There is a total of twenty-six non-statutory Local Wildlife Sites (“LWSs”) located within 2km of the Application Site.
- 2.4. These designated sites have been assessed below. There will be **no adverse effects** on the integrity of any statutory designated sites as a result of the Proposed Development.
- 2.5. The statutory designated sites with connectivity to the Application Site are Rushcliffe Golf Course SSSI, Lockington Marshes SSSI, Attenborough Gravel Pits SSSI, Trent Meadows LNR, Rushcliffe Country Park LNR, Brecks Plantation LNR and Glapton Wood LNR. Non-statutory designated sites with connectivity are Crownend Wood (Western Assart) LWS, Rushcliffe, District Golf Course LWS, Leake New Wood Track LWS and Gotham Wood LWS. With the implementation of the recommended measures, it has been determined that there will be **no significant adverse effects** on any designated nature conservation site as a result of the Proposed Development.
- 2.6. A total of 18 habitat types were noted within the Ecological Study Area (“ESA”) during the extended phase 1 habitat survey undertaken in February and June 2021. During the survey visits, these habitats were assessed for their potential to support protected and notable species. Overall, the current site is considered to be of **relatively low ecological interest** in terms of habitats.
- 2.7. The construction of the Proposed Development will occur over land which has been identified primarily as arable and improved grassland habitat. Proposed security fencing will cross arable land, improved and poor semi-improved grassland, agricultural drainage ditches and native species-poor hedges.
- 2.8. From the survey findings and impact assessment conducted, it is considered that the Proposed Development is likely to have **no significant adverse effects** on local wildlife.

However, precautionary and mitigation measures have been outlined within this report to reduce any potential for effects upon local ecology.

- 2.9. Furthermore, a Biodiversity Management Plan (“BMP”) has been produced. This encompasses enhancement and compensatory measures to ensure the proposed solar farm will lead to a **net gain** for local wildlife. A Biodiversity Net Gain of 44.88% is expected for **habitats** within the Application Site Boundary, in addition to a 76.21% Biodiversity Net Gain for **hedgerows** within the Application Site. (see Appendices 2.2 and 2.3 of this report).

INTRODUCTION

Background

- 2.10. Neo Environmental Ltd has been appointed by Renewable Energy Systems (RES) Ltd (the “Applicant”) to complete an Ecological Assessment for a proposed 49.9MW solar farm with associated infrastructure (the “Proposed Development”) on lands circa 1.3km south of Gotham and c. 0.75km northwest of East Leake, Nottinghamshire (the “Application Site”).
- 2.11. Please see Figure 4 of Volume 2: Planning Application Drawings for the layout of the Proposed Development.
- 2.12. An extended phase 1 habitat survey report (Appendix 2.1), Biodiversity Management Plan (“BMP”; Appendix 2.2), net gain assessment (Appendix 2.3), Bird Hazard Management Plan (Appendix 2.4) and Ecology Construction Method Statement (Volume 3, Technical Appendix 8: OCEMP) have also been prepared for the Proposed Development. These should be read in conjunction with this Ecological Assessment.

Development Description

- 2.13. The Proposed Development will consist of the construction of a 49.9MW solar farm with bi-facial solar photovoltaic (PV) panels mounted on metal frames, new access tracks, underground cabling, perimeter fencing with CCTV cameras and access gates, 2No. temporary construction compounds, substation and all ancillary grid infrastructure and associated works.
- 2.14. The Proposed Development will result in the production of clean energy from a renewable energy resource (daylight) and will also involve additional landscaping including hedgerow planting and improved biodiversity management.

Site Description

- 2.15. The Application Site is located on lands circa 1.3km south of Gotham and c. 0.75km northwest of East Leake, Nottinghamshire; the approximate centre point of which is Grid Reference E453185, N328739. Comprising 16 agricultural fields and additional ancillary areas, the Application Site measures c. 80.65 hectares (ha) in total, with only c. 55.65 hectares accommodating the solar arrays themselves. See Figure 1 of Volume 2: Planning Application Drawings for details.
- 2.16. The Proposed Development Site is split into two sections, north and south, by an area of woodland, Leake New Wood. Both sections lie on elevated, gently undulating land ranging between 87 – 96m AOD. The northern section extends across several rectilinear agricultural

fields largely contained by existing mixed woodland providing good screening for the wider area. These include Gotham Wood to the north, Cuckoo Bush to the east, Leake New Wood to the south and Crownend Wood to the west. The southern section is also surrounded by pockets of woodland including Oak Wood, Crow Wood and Ash Spinney.

- 2.17. The Application Site is in an area with an existing industrial presence with a telecoms mast located on the southwestern boundary of Field 7, a wood pole line along the boundary between Fields 7 and 8 and within the southern section of Fields 4 and 5 and overhead lines located along the southern boundary of Field 16 and the eastern boundary of Field 15 (See Figure 3 of Volume 2: Planning Application Drawings for field numbers).
- 2.18. The surrounding area is semi-rural in nature with the site being surrounded by agricultural fields and woodland in most directions. The area is however punctuated by individual farmsteads and Rushcliffe Golf Club is located on the eastern boundary of Field 15 in the southern section of the site. There are also various industrial brownfield sites within the locality including Charnwood Truck Services located directly southwest of Field 4. Additionally, there is a large-scale power station located beyond the A453, circa 1.58km north of the site.
- 2.19. Recreational routes include a number of Bridleways (BW) which cross or abut the Site providing connectivity to the wider Kingston Estate. These include Gotham BW No. 10, 11 and 12 and West Leake BW's No. 5 and 13. West Leake BW No. 5, also known as the Midshires Way, is also a Long-Distance Walking Association (LDWA) Route bordering the southern boundary of Fields 15 and 16. While there are several field drains throughout the Application Site, it lies entirely within Flood Zone 1, an area described as having a "Low probability" of flooding.
- 2.20. The Application Site will be accessed from Wood Lane, which is an unadopted road. Delivery vehicles will exit the M1 at junction 24, signposted A453 Nottingham (S), onto the A453 and travel in a northeast direction for approximately 4.3km, before taking the exit onto West Leake Lane. This road will be travelled on in a southern direction for approximately 1.5km, before turning left onto Kegworth Road. Vehicles will travel northeast along this road for approximately 1.3km before turning right into Wood Lane.

Scope of the Assessment

- 2.21. An Ecological Assessment of the Application Site has been completed to inform the submission of a planning application to Rushcliffe Borough Council for a proposed solar farm development. The aims of this report are to:
- Determine the main habitat types within and immediately adjacent to the Application Site in relation to the Proposed Development footprint;
 - Identify any actual or potential habitat or species constraints pertinent to the development of the Application Site and to identify how the Proposed Development

can avoid, mitigate and, if necessary, compensate for impacts on these actual or potential constraints;

- Assess the potential impacts of the Proposed Development during the construction, operation and decommissioning phases;
- Provide mitigation to reduce the potential impacts of the activities undertaken during the various phases of the Proposed Development, and
- Identify potential opportunities for the Proposed Development to enhance and add to the biodiversity resource within the site.

Statement of Authority

- 2.22. The assessment has been conducted by ecologists registered with the Chartered Institute of Ecology and Environmental Management (“CIEEM”). Work has been carried out in line with the relevant professional guidance: CIEEM’s Guidelines for Ecological Impact Assessment in the UK and Ireland¹.
- 2.23. Daniel Flenley has 15 years of ecology experience including undertaking surveys and writing associated reports. A full member of CIEEM, Daniel has experience in undertaking and managing a range of surveys and assessments including Ecological Impacts Assessment (“EclA”), extended phase 1 habitat surveys, and ornithological and protected species surveys, for over 500 projects. These include a variety of development types such as energy, commercial, industrial and transport infrastructure. Daniel holds a GCN class licence and has worked as an accredited agent under bat and amphibian mitigation and reptile survey licences.
- 2.24. Kevin Johnson is a full Member of CIEEM and has several years of experience in environmental consultancy work. Kevin has always had an interest in the environment, with decades of experience in voluntary work for Lincolnshire Wildlife Trust, including helping to manage Linwood Warren Site of Special Scientific Interest (“SSSI”). Before changing career and becoming an environmental consultant, he was initially an Ecology and Environmental Lecturer at various Higher Education establishments and taught students how to carry out surveys. Kevin worked for a number of ecological consultancies, including Penny Anderson Associates, before setting up his own company.

¹ CIEEM (2019) Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Version 1.1.

CONSULTATION

- 2.26. The project team requested pre-application advice from Rushcliffe Borough Council in December 2020. Principal Area Planning Officer E. Dodd provided a formal response on 13th May 2021. This took into account advice from Natural England, and included the following comments on ecology:

"In terms of biodiversity there are a number of features that should be considered:

"Site 1 – To the north of fields 1,2 and 4 - Gotham Wood - 'Deciduous woodland with a notable shrub and ground flora'; To south of fields 5 and 6 – LWS Crownend Wood – 'A coarse grassland with an uncommon type of species-rich community' 'A herb-rich damp grassland with complementary scrub'.

"Site 2 – To north of field 13 – LWS West Leake Hills 'A site holding a butterfly species of high conservation priority in Nottinghamshire', To the north of field 11 – LWS Leake New Wood Track 'A herb-rich track' To the west of [field] 15 – LWS Ash Spinney Assart 'A meadow with an impressive association of higher flowering plant species'

"To east of Site 1 and northern boundary of site 3 - SSSI - Rushcliffe District Golf Course 'A site containing some of the best examples of calcareous and neutral grassland in Nottinghamshire, together with valuable mixed scrub and woodland'."

"The site is located within Gotham Hills, West Leake and Bunny Ridge Biodiversity Opportunity Focal Area, as identified within Rushcliffe Biodiversity Opportunity Mapping Report. Policy 38 of the Local Plan Part 2 states that development within these Biodiversity Opportunity Areas should retain and sympathetically incorporate locally valued and important habitats, including wildlife corridors and stepping stones and be designed in order to minimise disturbance to habitats and species. Local Plan Part 2 Appendix E specifically identifies woodland and grassland as predominant habitats that should be protected, restored, expanded and enhanced. Stating that the existing network of woodland and grassland can be enhanced and buffered. There is also potential for creating important links between existing habitats. Given the site's location within this ecological network of wooded and grassland habitats, any application should provide evidence that the proposal would improve the quantity, quality and connectivity of these habitats."

"A report setting out the measures to achieve biodiversity net gain should also be submitted."

*"Protected and priority species found on or close to the site include: Brown Hare; Bats and Badgers. The rare plants: *Gymnadenia conopsea sensu lato*; *Galium tricornutum*, *Gentianella amarella*; *Euphorbia exigua*; *Valerianella dentata*; *Carex pallescens*, *Parentucellia viscosa*, *Anacamptis morio* are recorded on or adjacent to the development site. The invasive species *Fallopia japonica* has been recorded on or nearby."*

"PV solar farms, have the potential to negatively impact on flying species, with some reports indicating they mistake them for water bodies. Additionally shade from panels can prevent ground flora. However, other reports have demonstrated a well-designed PV solar farm can provide many opportunities for enhancement if distances between panels allow the use of wildflower rich grassland underplanting and borders to fields and potential to support ground-nesting birds and brown hare's [sic]."

"A biodiversity net gain assessment, with a demonstrated gain should be provided as recommended by CIRIA (2019) Biodiversity Net Gain – Principles and Guidance for UK construction and developments, with the gains implemented and maintained in the long term,"

"An ecological construction method statement incorporating reasonable avoidance measures (RAMs), should be agreed and implemented, including [...]"

- Advising all workers of the potential for protected species. If protected species are found during works, work should cease until a suitable qualified ecologist has been consulted.*
- No works or storage of materials or vehicle movements should be carried out in or immediately adjacent to ecological mitigation areas or sensitive areas (including ditches).*
- All work impacting on vegetation or buildings used by nesting birds should avoid the active bird nesting season, if this is not possible a search of the impacted areas should be carried out by a suitably competent person for nests immediately prior to the commencement of works. If any nests are found work should not commence until a suitably qualified ecologist has been consulted.*
- Best practice should be followed during building work to ensure trenches dug during works activities that are left open overnight should be left with a sloping end or ramp to allow animal that may fall in to escape. Also, any pipes over 200mm in diameter should be capped off at night to prevent animals entering. Materials such as netting and cutting tools should not be left in the works area where they might entangle or injure animals. No stockpiles of vegetation should be left overnight and if they are left then they should be dismantled by hand prior to removal. Night working should be avoided.*
- Root protection zones should be established around retained trees / hedgerows so that storage of materials and vehicles, the movement of vehicles and works are not carried out within these zones.*

- *Pollution prevention measures should be adopted*
- *It is recommended that consideration should be given to management of waste during and post construction and the use of recycled materials and sustainable building methods."*

"Other recommendations include:

- *The use of external lighting (during construction and post construction) should be appropriate to avoid adverse impacts on bat populations, see <https://www.bats.org.uk/news/2018/09/new-guidanceon-bats-and-lighting> for advice and if lighting is required a wildlife sensitive lighting scheme should be developed and implemented.*
- *New wildlife habitats should be created where appropriate, including wildflower rich neutral grassland, hedgerows, trees and woodland, wetlands and ponds.*
- *Any existing hedgerow / trees should be retained and enhanced, any hedge / trees removed should be replaced. Any boundary habitats should be retained and enhanced.*
- *Where possible new trees / hedges should be planted with native species (preferably of local provenance and including fruiting species). See https://www.rushcliffe.gov.uk/conservation/trees/hedgesandlandscaping/landscaping_andtreeplanting/plantingonnewdevelopments/ for advice including the planting guides (but exclude Ash (Fraxinus excelsior))*
- *Sustainable Urban Drainage schemes (SUDs) where required should be designed to provide ecological benefit."*

2.27. The advice also lists relevant planning policies, and details the number and names of nearby designated sites. Policy considerations include potential harm to the Green Belt, including *"adverse effects on [...] ecological assets."*

2.28. The Application Site lies circa 9km from East Midlands Airport. Neo Environmental therefore consulted MAG Airport Limited in August 2020. An email response from Diane Jackson, Group Aerodrome Safeguarding Officer at MAG, stated:

"When the formal planning application is submitted, you will need to include [...] a bird hazard management plan to ensure that the array does not become a haven for species of birds that are hazardous to aircraft."

- 2.29. An Environmental Impact Assessment (“EIA”) screening request for the Proposed Development was submitted to the Council in March 2021. The response (received on 26th April 2021) indicated that no EIA was necessary.
- 2.30. Meetings to discuss pre-application advice for other disciplines were held in May and June 2021, but did not affect ecology to any great degree.
- 2.31. The ecology points arising from the consultation have been addressed as follows:
- Consideration of the biodiversity features identified above,
 - Design of layout to accord with recommendations for Biodiversity Opportunity Areas,
 - Production of BMP (**Technical Appendix 2.2**) to enable net gains and show that the proposal would improve the quantity, quality and connectivity of woodland and grassland,
 - Assessment of net gains in **Technical Appendix 2.3: Net Gain Assessment**,
 - Production of Outline Environmental Construction Method Statement (see **Volume 3, Technical Appendix 8: OCEMP**) covering the points requested,
 - Development of a wildlife-sensitive lighting scheme to avoid adverse impacts on bats,
 - Creation of new wildflower rich neutral grassland, locally-sourced native hedgerow and tree and woodland habitats, proposed in the BMP (**Technical Appendix 2.2**) and LEMP (**Figure 1.14, Technical Appendix 1, Volume 3**),
 - Design of Sustainable Urban Drainage schemes (“SUDs”) to provide ecological benefit, and
 - Provision of Bird Hazard Management Plan (**Appendix 2.4**).

LEGISLATION AND PLANNING POLICY CONTEXT

International Legislation

2.32. International legislation relevant to the Proposed Development is outlined within Table 2-1 below.

Table 2--1: Relevant International Legislation

Directive	Main Provisions
Bern Convention	The Bern Convention ² came into force in 1982, with the principal aims to ensure conservation and protection of wild plant and animal species and their natural habitats (listed in Appendices I and II of the Convention), to increase cooperation between contracting parties, and to regulate the exploitation of those species (including migratory species) listed in Appendix III.
Bonn Convention	The Bonn Convention ³ came into force in 1985. Contracting Parties work together to conserve migratory species and their habitats by providing strict protection for endangered migratory species (listed in Appendix I of the Convention), concluding multilateral Agreements for the conservation and management of migratory species which require or would benefit from international cooperation (listed in Appendix II), and by undertaking cooperative research activities.
Ramsar Convention	The Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention) ⁴ came into force in 1975. It is an international treaty for the conservation and wise use of wetlands.

National Legislation

Wildlife & Countryside Act 1981 / Conservation of Habitats and Species Regulations 2017

2.33. The Wildlife and Countryside Act 1981⁵ (as amended), formerly used to implement EU legislation, has more recently been strengthened by the Conservation of Habitats and Species Regulations 2017. This consolidates and amends existing national legislation, making it an offence to:

² Available at: <https://www.coe.int/en/web/bern-convention>

³ Available at: <https://www.cms.int/en/convention-text>

⁴ Available at: <https://www.ramsar.org/about-the-convention-on-wetlands-0>

⁵ Parliament of the United Kingdom, 1981. Wildlife and Countryside Act 1981 (as amended). Available at: <http://www.legislation.gov.uk/ukpga/1981/69>

- *“Intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting*
- *Intentionally kill, injure or take any wild animal listed under Schedule 5 of the Act; intentionally damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 of the Act; disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection*
- *Pick or uproot any wild plant listed under Schedule 8 of the Act”*

Environment Act 2021

- 2.34. This Act introduced a legally binding target on species abundance for 2030, aiming to reverse declines of key wild species. It creates a requirement for 10% net biodiversity gain as part of development projects, and for a series of Nature Recovery Strategies to cover England. The new Act makes minor amendments to the 1981 Act and 2017 Regulations (see above). It expands measures taken against illegal deforestation, enshrines a legal duty for water companies to reduce adverse impacts from storm overflow discharge, and gives statutory effect to conservation covenants. To assist in the above, it also creates an Office for Environmental Protection.
- 2.35. The Environment Act supersedes the former UK Post-2010 Biodiversity Framework and UK Biodiversity Action Plan (“BAP”). While certain provisions of the Act are only likely to enter force in 2022 and 2023, some are already current. The BMP and Net Gain Assessment at Technical Appendices 2.2 and 2.3 aim to demonstrate how the Proposed Development will assist in achieving the Act’s net gain targets.

Natural Environment and Rural Communities Act 2006

- 2.36. The Natural Environment and Rural Communities (“NERC”) Act⁶ places a duty on planning authorities to have due regard for biodiversity and nature conservation during operations, ensuring that biodiversity is a key consideration in the local planning process.
- 2.37. Section 41 of the NERC Act lists a number of habitats and species of principal importance for the conservation of biodiversity in England.

⁶ Available at <https://www.legislation.gov.uk/ukpga/2006/16/contents>

Hedgerows Regulations 1997

2.38. Under the Hedgerows Regulations 1997, certain hedgerows⁷ are classified as ‘Important’ based on factors such as the presence of a certain number of woody native plant species. Subject to certain exceptions, the removal of an ‘Important’ hedgerow is prohibited.

2.39. ‘Removal’ includes uprooting all or part of the hedgerow, as well as any acts that could lead to the hedgerow’s destruction. Removal is permitted under Section 6 of the Act under a small number of exemptions, including:

“for carrying out development for which planning permission has been granted or is deemed to have been granted, except development for which permission is granted by article 3 of the Town and Country Planning General Permitted Development Order 1995 in respect of development of any of the descriptions contained in Schedule 2 to that Order other than Parts 11 (development under local or private Acts or orders) and 30 (toll road facilities).”

Protection of Badgers Act

2.40. The Protection of Badgers Act 1992⁸ makes it illegal to kill, injure or take a badger or to intentionally or recklessly interfere with a badger sett. Sett interference includes disturbing badgers whilst they are occupying a sett or obstructing access to it.

Planning Policy

National Planning Policy Framework (2021)

2.41. The National Planning Policy Framework (NPPF)⁹ sets out the government planning policies for England and how they should be applied. With regards to ecology and biodiversity, Chapter 15 “Conserving and Enhancing the Natural Environment”, paragraph 174, states that planning policies should:

- Minimise impacts on, and provide net gains in, biodiversity.
- Recognise the wider benefits of natural capital and ecosystem services.

2.42. Under these aims, paragraph 175 stresses the need to plan for natural capital at a catchment or landscape scale, across local authority boundaries. Paragraph 180 sets out the principles that local planning authorities should apply when determining planning applications. These

⁷ Available at <https://www.legislation.gov.uk/ukxi/1997/1160/contents/made>

⁸ Parliament of the United Kingdom (1992). Protection of Badgers Act 1992. Available at <http://www.legislation.gov.uk/ukpga/1992/51/contents>

⁹ Department for Housing, Communities and Local Government (2021). National Planning Policy Framework

include refusing planning permission if significant harm cannot be avoided, adequately mitigated or compensated, and requiring design to incorporate biodiversity improvement opportunities in and around developments (especially where this can secure measurable net gains for biodiversity).

Biodiversity Action Plans

- 2.43. The UK Biodiversity Action Plan (“UKBAP”; 1994)¹⁰ was organised to fulfil the Rio Convention on Biological Diversity in 1992, to which the UK is a signatory. Lists of national Priority species and habitats were produced, with all having specific action plans prepared to define measures required to ensure their conservation.
- 2.44. While the UKBAP has since been superseded by the Environment Act (see above), regional and local BAPs have been produced and remain in place. The Nottinghamshire BAP¹¹ contains a list of Priority habitats including, among others, arable fields, cereal field margins, ditches, mixed ash dominated woodland, oak-birch woodland and planted coniferous woodland.
- 2.45. A large number of Priority species are also listed, including 272 species of beetle alone. The Nottinghamshire Priority species most relevant to the habitats within the Application Site and/or the local area of the Application Site include great crested newt, skylark, meadow pipit, linnet, stock dove, corn bunting, yellowhammer, reed bunting, kestrel, red kite, house sparrow, grey partridge, dunnock, bullfinch, turtle dove, song thrush, mistle thrush, barn owl, lapwing, marbled white butterfly, common hawk dragonfly, goatcheese webcap and snakeskin brownie mushrooms, brown hare, hedgehog, dormouse, noctule, Leisler’s bat, soprano pipistrelle, otter, black mustard, wild cabbage, rye brome, cornflower, chamomile, Good-King-Henry and corn parsley.

Rushcliffe Local Plan

- 2.46. The *Rushcliffe Local Plan Part 1: Core Strategy*¹² was adopted in December 2014 and is the current Local Plan for the borough in which the Application Site falls. In support of the Core Strategy, development management policies with additional details are set out in the *Local Plan Part 2: Land and Planning Policies*¹³, adopted in October 2019. The relevant policies set out within the Plan include the following ecological provisions.

¹⁰ Available at <https://data.jncc.gov.uk/data/cb0ef1c9-2325-4d17-9f87-a5c84fe400bd/UKBAP-BiodiversityActionPlan-1994.pdf>

¹¹ Available at: <https://nottsba.org.uk/lbap/lbap-introduction-and-sections-1-to-6/>

¹² [Local Plan Part 1 Rushcliffe Core Strategy.pdf](#)

¹³ [Rushcliffe LP Part 2 Adoption version.pdf](#)

Core Strategy Policy 16: Green Infrastructure, Landscape, Parks and Open Spaces

- 2.47. Policy 16 stresses the importance of green infrastructure and open space in the borough. Among other points, it notes that developments will only be approved where *“existing and potential Green Infrastructure corridors and assets are protected and enhanced”*.

Core Strategy Policy 17: Biodiversity

- 2.48. Policy 17 has been put in place to achieve biodiversity net gain over the Core Strategy period. The Council aim to do this by:

“a) protecting, restoring, expanding and enhancing existing areas of biodiversity interest, including areas and networks of priority habitats and species listed in the UK and Nottinghamshire Local Biodiversity Action Plans;

b) ensuring that fragmentation of the Green Infrastructure network is avoided wherever possible and improvements to the network benefit biodiversity, including at a landscape scale, through the incorporation of existing habitats and the creation of new habitats;

c) seeking to ensure new development provides new biodiversity features, and improves existing biodiversity features wherever appropriate;

d) supporting the need for the appropriate management and maintenance of existing and created habitats through the use of planning conditions, planning obligations and management agreements; and

e) ensuring that where harm to biodiversity is unavoidable, and it has been demonstrated that no alternative sites or scheme designs are suitable, development should as a minimum firstly mitigate and if not possible compensate at a level equivalent to the biodiversity value of the habitat lost.”

- 2.49. The policy also stipulates:

“Designated national and local sites of biological [...] importance for nature conservation will be protected in line with the established national hierarchy of designations and the designation of further protected sites will be pursued.”

“Development on or affecting other, non-designated sites or wildlife corridors with biodiversity value will only be permitted where it can be demonstrated that there is an overriding need for the development and that adequate mitigation measures are put in place.”

Local Plan Part 2 Policy 16: Renewable Energy

- 2.50. This policy states that *“Proposals for renewable energy schemes will be granted planning permission where they are acceptable in terms of [various areas including]:*

c) ecology and biodiversity”.

Local Plan Part 2 Policy 21: Green Belt

- 2.51. Policy 21 simply states: “Applications for development in the Green Belt will be determined in accordance with the National Planning Policy Framework.”
- 2.52. As Paragraph 140 of the National Planning Policy Framework (NPPF) 2021 notes: “*Green Belt boundaries should only be altered where exceptional circumstances are fully evidenced and justified*”. During consultation, the Council have made it clear that justification for the Proposed Development should cover the avoidance of adverse effects on ecological assets.

Local Plan Part 2 Policy 34: Green Infrastructure and Open Space Assets

- 2.53. Policy 34 states:

“Where a proposal would result in the loss of Green Infrastructure which is needed or will be needed in the future, this loss should be replaced by equivalent or better provision in terms of its usefulness, attractiveness, quantity and quality in a suitable location. Replacement Green Infrastructure should, where possible, improve the performance of the network and widen its function.”

Local Plan Part 2 Policy 36: Designated Nature Conservation Sites

- 2.54. This policy covers the criteria for accepting or rejecting proposals that are likely to have a direct or indirect adverse effect on nationally and locally designated sites.

Local Plan Part 2 Policy 37: Trees and Woodlands

- 2.55. This policy covers adverse impacts on mature trees and justified replacement of trees. Provisions include:

“2. Planning permission will not be granted for development which would adversely affect an area of ancient, semi-natural woodland or an ancient or veteran tree, unless the need for, and public benefits of, the development in that location clearly outweigh the loss.

“3. Wherever tree planting would provide the most appropriate net-gains in biodiversity, the planting of additional locally native trees should be included in new developments. To ensure tree planting is resilient to climate change and diseases a wide range of species should be included on each site.”

Local Plan Part 2 Policy 38: Non-Designated Biodiversity Assets and the Wider Ecological Network.

- 2.56. This policy states:

“Where appropriate, all developments will be expected to preserve, restore and re-create priority habitats and the protection and recovery of priority species in order to achieve net gains in biodiversity”.

- 2.57. Policy 38 also specifies design principles for development within Biodiversity Opportunity Areas.
- 2.58. The Ecological Assessment of the Proposed Development will consider each of the policies outlined above.

Guidance Documents

BS 42020:2013 Biodiversity

- 2.59. The British Standards Institute has published *BS 42020:2013 Biodiversity¹⁴. Code of Practice for Planning and Development* which offers a coherent methodology for biodiversity management. This document seeks to promote transparency and consistency in the quality and appropriateness of ecological information submitted with planning applications and applications for other regulatory approvals.

CIEEM Guidelines

- 2.60. CIEEM have produced guidance on Ecological Impact Assessment¹⁵ and Ecological Report Writing¹⁶.
- 2.61. Ecological Impact Assessment is a process of identifying, quantifying and evaluating potential effects from certain activities on habitats, species and ecosystems. Assessing activities related to development falls within this remit. CIEEM guidelines cover scoping the matters to be addressed, establishing the baseline, identifying ecological features of particular importance, assessing impacts on these (considering also mitigation, compensation and enhancement) and explaining the legal and policy implications.
- 2.62. CIEEM’s report writing guidance covers a broader range of ecological report types. The guidance covers the structure and language appropriate to professional reporting. It also emphasises the importance of reports being in proportion to the predicted risk to ecology.
- 2.63. Whilst this Ecological Assessment is not a full Ecological Impact assessment, CIEEM guidance for EclA and report writing still contains relevant elements that are applicable to this report.

¹⁴ BS 42020:2013 Biodiversity. Code of Practice for Planning and Development

¹⁵ CIEEM (2019) Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Version 1.1.

¹⁶ CIEEM (2017) Guidelines for Ecological Report Writing

Natural England Guidelines

- 2.64. Natural England have published standing advice for various protected species and habitats in England. The advice covers accepted and recommended survey, avoidance, mitigation and compensation standards for development affecting these ecological features. These advice documents have been borne in mind where relevant to the Proposed Development.

METHODOLOGY

Zone of Influence

2.65. The Zone of Influence (“Zoi”) is the area encompassing all predicted adverse ecological effects from a Proposed Development and is informed by the habitats present within the Application Site and the nature of the Proposed Development. Due to the scale and nature of the Proposed Development, the Zoi outlined in Table 2-2 below was considered appropriate for the gathering of information to inform the desk study.

Table 2-2: Zone of Influence for Ecological Features

ECOLOGICAL FEATURE	Zone of Influence (Zoi)
International statutory designations	15km (or beyond in the case of significant hydrological influence)
National statutory designations	5km
Non-statutory designations	2km
Protected and Priority species	2km
Extended phase 1 habitat survey	50m

2.66. In some cases, adverse effects can occur over 15km from a development. However, owing to the benign nature of solar farms in ecology terms, adverse effects beyond 15km are considered likely to be negligible. The 15km threshold has been set based on guidance used widely in the UK and Ireland for the related procedure of appropriate assessment¹⁷.

Desk Study

2.67. A desk-based assessment was undertaken to collate available ecological information for the Application Site and the surrounding area. This included a search of statutory designated sites within a 5km radius of the Proposed Development, including: Special Protection Areas (“SPAs”), Special Areas of Conservation (“SACs”), Ramsar Sites, National Nature Reserves (NNRs) and Local Nature Reserves (“LNRs”). The description of each of these sites was obtained utilising the Multi-Agency Geographic Information for the Countryside (“MAGIC”) website¹⁸.

¹⁷ Scott Wilson, Levett-Therivel Sustainability Consultants, Treweek Environmental Consultants & Land Use Consultants (2006) Appropriate Assessment of Plans.

¹⁸ Available at - <https://magic.defra.gov.uk/>

- 2.68. A data search was conducted through Nottinghamshire Biological and Geological Records Centre (“NBGRC”) to obtain information regarding protected/Priority species within 2km of the Application Site boundary. The site boundary has since changed slightly; however, given that circa 2,700 records were received, it is considered that a robust level of baseline information has been received.

Field Survey

Extended Phase 1 Habitat Survey

- 2.69. An extended phase 1 habitat survey of the majority of the Application Site was undertaken on 26th February 2021 by Kevin Johnson BSc Pgd PGCE MCIEEM. The remainder of the site was surveyed on 29th June 2021 by Daniel Flenley BSc (Hons) MPhil MCIEEM. The Ecological Survey Area (“ESA”) covered all land within the Application Site and a 50m buffer around the entire site.
- 2.70. Survey work was carried out in accordance with the Joint Nature Conservation Committee (JNCC) guidelines (2010)¹⁹ in order to produce an extended phase 1 habitat map. This habitat classification method provides a standardised system to record and map semi-natural vegetation and other wildlife habitats in order to assess their potential importance for nature conservation.

Species Scoping Survey

- 2.71. A species scoping survey was carried out to identify the presence of protected species, or the potential of the Application Site to support protected species. The aim of the survey was to provide an overview of the Application Site and determine any further survey work required. Table 2-3 below outlines the relevant habitat and field signs that indicate the potential presence of protected or Priority species within the ESA.

Table 2-3: Indicative Habitats and Field Signs of Protected Species

Taxon	Indicative Habitat(s)	Field Signs (In Addition to Sightings)
Bats	Roosts – trees, buildings, bridges, caves, etc. Foraging areas – e.g. parkland, water bodies, streams, wetlands, woodland edges and hedgerow.	In or on potential roost sites: droppings stuck to walls, urine spotting in roof spaces, oil from fur staining round roost entrances, feeding remains (e.g. moth wings under a feeding perch).

¹⁹ JNCC (2010). Handbook for Phase 1 Habitat Survey

Taxon	Indicative Habitat(s)	Field Signs (In Addition to Sightings)
	Commuting routes – linear features (e.g.) hedgerows, water courses, tree lines).	
Badger	Found in most rural and many urban habitats.	Excavations and tracks: sett entrances, latrines, hairs, well-worn paths, prints, scratch marks on trees.
Dormouse	Deciduous woodland, overgrown/species-rich hedgerows and associated scrub.	Nests, feeding remains (distinctively marked hazelnut shells).
Birds	Trees, scrub, hedgerow, field margins, grassland, buildings.	Nests, droppings below nest sites (especially in buildings of trees), tree holes.
Common reptiles	Rough grassland, log and rubble piles.	Sloughed skins.

Weather Conditions

- 2.72. The weather conditions at the time of the surveys can be found in Table 1 of Appendix 2.1: Extended Phase 1 Habitat Survey Report.

Limitations

- 2.73. Results of the assessment undertaken by Neo Environmental are representative of the time that surveying was undertaken.
- 2.74. The absence of records returned during the data search does not necessarily indicate absence of a species or habitat from an area; rather, that these have not been recorded or are perhaps under-recorded within the search area.
- 2.75. An extended phase 1 habitat survey does not aim to produce a full botanical or faunal species list or provide a full protected species survey, but enables competent ecologists to ascertain an understanding of the ecology of the site in order to carry out a sufficient assessment of the Proposed Development.
- 2.76. At the time of the survey, access was only permitted within the landownership boundary. Parts of the adjacent land did fall within the ownership boundary. However, areas of land in the ESA that were not within the landownership boundary were viewed from field boundaries,

with the use of binoculars, where needed. Given the habitats present across the landscape, it is considered that the limited access to some areas of land directly adjacent to the Application Site has not impacted significantly upon the findings of the habitat or species scoping surveys.

- 2.77. The first part of the survey was performed outside the optimal season for botanical surveys (which is April to September). However, given the habitats present in the area covered, it is not considered that this places a significant constraint on the interpretation of the Application Site's ecological interest.

Adopted Design Principles

- 2.78. Where possible, measures have been implemented as part of the iterative design process. Integral measures incorporated into the Proposed Development design include the following:
- 2m drainage ditch buffer
 - 5m buffer from hedgerows
 - 8.6m OHL corridor (4.3m buffers)
 - Various PRoW Buffers (See PRoW Management Plan in Volume 3, Technical Appendix 11)
 - 6m gas pipeline corridor (3m buffers)
 - Tree buffers
 - 10m woodland buffer
 - 12-15m buffers between PV panels and locally designated sites
 - 10cm gaps at the bottom of security fencing
- 2.79. Some of these have specifically been informed by the ecological baseline to prevent the Proposed Development affecting sensitive ecological features.

Impact Assessment

- 2.80. The impact assessment process involves:
- identifying and characterising impacts and their effects;
 - incorporating measures to avoid and mitigate negative impacts and effects;
 - assessing the significance of any residual effects after mitigation;

- identifying appropriate compensation measures to offset significant residual effects;
 - identifying opportunities for ecological enhancement.
- 2.81. The terms ‘impact’ and ‘effect’ are used commonly throughout ecological reports. Impact is defined as a change experienced by an ecological feature, while effect is defined as the outcome to an ecological feature from an impact. Impacts and effects can be positive, adverse or neutral.
- 2.82. Assessment of potential impacts and effects needs to consider on-site, adjacent and more distant ecological features, including habitats, species and statutory and ecological designated sites.
- 2.83. This Ecological Assessment has been concluded by an experienced ecologist following CIEEM guidance²⁰.

Assessing the Magnitude of Change

- 2.84. Determining the magnitude of any likely effects requires an understanding of how the ecological features are likely to respond to the Proposed Development. This change can occur during construction or operation of the Proposed Development.
- 2.85. Effect magnitude refers to changes in the extent and integrity of an ecological receptor. A definition of ecological ‘integrity’ relevant across the UK states that:
- “The integrity of a site is the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified”.*
- 2.86. Effects can be adverse, neutral or positive. Five levels of spatial sensitivity (international, national, regional, local and negligible) and five levels of temporal effect magnitude (very high, high, medium, low and negligible)²¹ have been used.

²⁰ CIEEM (2019) Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Version 1.1.

²¹ Neo Environmental (2021) Technical Appendix 2: Ecological Impact Assessment. Derril Water Solar Farm. Available at: https://publicaccess.torridge.gov.uk/online-applications/files/9A8592878D4FC23BB22044E078E568E6/pdf/1_0249_2021_FULM-ECOLOGICAL_IMPACT_ASSESSMENT-1144659.pdf

BASELINE CONDITIONS

Desk-based Study

Designated Sites

- 2.87. The Application Site does not lie within any statutory designated environmental sites.
- 2.88. Within 15km of the Application Site boundary there are no internationally designated sites. There are five Sites of Special Scientific Interest (“SSSIs”) within 5km of the Application Site, namely Rushcliffe Golf Course SSSI (adjacent), Gotham Hill Pasture SSSI, Lockington Marshes SSSI, Attenborough Gravel Pits SSSI and Holme Pit SSSI. There are seven Local Nature Reserves (“LNRs”), but no National Nature Reserves (“NNRs”), within 5km.
- 2.89. The Application Site is directly adjacent to five non-statutory designated environmental sites. Rushcliffe District Golf Course Local Wildlife Site (“LWS”) borders the Application Site along the northeastern boundary of Field 15. The Gotham Wood LWS borders the northern boundaries of Fields 1 and 2 and extends east to the Application Site’s access track. The Crownend Wood (Western Assart) LWS borders the southwestern field boundary of Field 7. The West Leake Hills LWS is directly adjacent to the western boundary of Field 12 in the Application Site. In total, 26 non-statutory designated environmental sites (all Local Wildlife Sites (“LWSs”)) are present within 2km of the Application Site.
- 2.90. Each of these sites is outlined in Table 2-4 below. Statutory sites are detailed within Appendix 2A, Figure 2.1. The closest non-statutory sites to the Application Site are shown in Appendix 2A, Figure 2.2. The site descriptions and qualifying features are derived from the NBGRC data search and the original site citations available from JNCC²² and MAGIC²³.

²² Available at <https://sac.jncc.gov.uk/>

²³ Available at <https://magic.defra.gov.uk/magicmap.aspx>

Table 2-4: Designated Sites

Site Code	Site Name	Qualifying Features	Distance & Direction	Potential Connectivity with the Application Site
SSSI (5km)				
1002917	Rushcliffe Golf Course	<ul style="list-style-type: none"> • Calcareous and neutral grassland • Species rich grassland on calcareous loam soils 	0.0km east	Ecological and hydrological connectivity
1002890	Gotham Hill Pasture	<ul style="list-style-type: none"> • Mixed pastures and associated grassland • Species-rich grassland developed on calcareous and neutral clays 	1km north	None
1003043	Lockington Marshes	<ul style="list-style-type: none"> • Willow carr woodland • Diverse complex of wetland habitat • Important invertebrate fauna with nationally scarce species 	3.2km northwest	Hydrological connectivity approximately 9.2km downstream from the Application Site
1002867	Attenborough Gravel Pits	<ul style="list-style-type: none"> • Lowland eutrophic open waters with emergent vegetation 	3.5km north northwest	Ornithological connectivity, hydrological connectivity approximately

		<ul style="list-style-type: none"> • Wet floodplain woodland • Unimproved floodplain grassland • Breeding bird assemblage • Shoveler <i>Anas clypeata</i> (wintering) • Bittern <i>Botaurus stellaris</i> (wintering) 		9.2km downstream from the Application Site
1002892	Holme Pit	<ul style="list-style-type: none"> • Marsh • Reedswamp • Open water 	4.4km north	None
LNR (5km)				
1008905	Forbes Hole	<ul style="list-style-type: none"> • Carr to dry woodland • Habitat diversity including grassland, scrubland and mature hedgerow 	3.87km northwest	None
1481631	Trent Meadows	<ul style="list-style-type: none"> • Nature and Wildlife 	3.48km northwest	Hydrological connectivity 13.4km downstream of the Application Site
1009542	Sutton Bonnington Spinney & Meadows	<ul style="list-style-type: none"> • Grassland • Woodland 	4.42 southwest	None

		<ul style="list-style-type: none"> • Dyke and pond 		
1481547	Rushcliffe Country Park	<ul style="list-style-type: none"> • Wildflower meadows • Extensive native broadleaved planting • Bird assemblage • Mammal assemblage 	4.5km northeast	Ecological connectivity
1481524	Brecks Plantation	<ul style="list-style-type: none"> • Broadleaved woodland • Common woodland birds 	4.5km northeast	Negligible ornithological connectivity
1009745	Clifton Grove, Clifton Woods and Holme Pit Pond	<ul style="list-style-type: none"> • Sedimentary rock formation • Veteran trees • Ancient woodland • Willow carr • Cypress sedge (<i>Carex pseudocyperus</i>) • Bladder sedge (<i>Carex vesicaria</i>) 	4.5km north	None
1481525	Glapton Wood	<ul style="list-style-type: none"> • Mixed woodland • Wildflower grassland • Common woodland birds 	4.6km northeast	Negligible ornithological connectivity
LWS (2km)				

1/17	Crownend Wood (Western Assart)	<ul style="list-style-type: none"> • Semi-natural species-rich grassland 	0.0km west	Ecological and hydrological connectivity
1/21	Rushcliffe District Golf Course	<ul style="list-style-type: none"> • Mature scrub • Diverse species-rich grasslands • Seasonally wet seepages and scrub 	0.0km east	Ecological and hydrological connectivity
2/43	Leake New Wood Track	<ul style="list-style-type: none"> • Herb-rich track 	0.0km west	Ecological and hydrological connectivity
2/45	Gotham Wood	<ul style="list-style-type: none"> • Ancient deciduous woodland • Notable shrub and ground flora 	0.0km north	Ecological and hydrological connectivity
5/264	Crownend Wood Ride	<ul style="list-style-type: none"> • Woodland ride between pine plantation and deciduous woodland 	0.02km west	None
1/64	Ash Spinney Assart	<ul style="list-style-type: none"> • Unimproved, species-rich grassland 	0.1km east	None
5/3378	Court Hill Grassland	<ul style="list-style-type: none"> • Species-rich calcareous grassland 	0.1km east	None
1/18	Crownend Wood (Eastern Assart)	<ul style="list-style-type: none"> • Grassland species • Woodland • Tall herb communities 	0.2km west	None

		<ul style="list-style-type: none"> Recent native broadleaved tree plantation across the site 		
5/2198	West Leake Hills	<ul style="list-style-type: none"> Grizzled Skipper 	0.2 km west	None
5/3377	Cuckoo Bush	<ul style="list-style-type: none"> Species-rich unimproved calcareous grassland Developing scrub Large colony of the county-rare Autumn Gentian (<i>Gentianella amarella</i>) 	0.3km east	None
5/2298	Hill Road Grassland, Gotham	<ul style="list-style-type: none"> Calcareous grassland Developing broadleaved woodland Dense scrub 	0.5km northeast	None
2/65	Gotham Hill Woods	<ul style="list-style-type: none"> Mixed plantations Semi-natural deciduous woodland 	0.5km north	None
2/41	Gotham Disused Railway	<ul style="list-style-type: none"> Calcareous grassland Dense scrub 	0.6km northeast	None
2/844	Ratcliffe on Soar Pond	<ul style="list-style-type: none"> Small pond Broadleaved tree plantation 	0.6km northeast	None

2/850	Copse, Kingston on Soar	<ul style="list-style-type: none"> Deciduous woodland 	0.6km east	None
5/3465	Ratcliffe-on-Soar Flyash Grassland	<ul style="list-style-type: none"> Flyash grassland 	0.6km east	None
2/44	West Rushcliffe District Disused Railway	<ul style="list-style-type: none"> Diverse flora Butterflies such as Grizzled Skipper <i>Pyrgus malvae</i> Unimproved calcareous grassland Scrub 	0.8km east	None
1/27	Gotham Hill Pasture	<ul style="list-style-type: none"> Cattle-grazed pasture with areas of scrub Butterflies including Brown Argus <i>Aricia agestis</i> and Small Heath <i>Coenonympha pamphilus</i> 	1km northwest	None
5/3464	Ratcliffe-on-Soar Flyash Grassland 1	<ul style="list-style-type: none"> Flyash grassland 	1.3km west	None
5/11	Long Spinney, Gotham	<ul style="list-style-type: none"> Broadleaved woodland 	1.3km north	None
2/42	Hotchley Hill	<ul style="list-style-type: none"> Unmanaged mature scrub Coarse grassland Gorse 	1.4km east	None

2/860	Long Spinney Pastures	<ul style="list-style-type: none"> • Grazed pasture • Scattered scrub • Large population of the county-rare Small-flowered Buttercup (<i>Ranunculus parviflorus</i>) 	1.5km north	None
5/3463	Ratcliffe-on-Soar Flyash Track Grassland	<ul style="list-style-type: none"> • Flyash grassland 	1.6km west	None
5/260	East Leake Bridleway Verges	<ul style="list-style-type: none"> • Hedgerows/green lane • Calcareous grassland 	1.8km east	None
2/47	Pithouse Lane Marsh	<ul style="list-style-type: none"> • Marshland and pasture • Marshland plants supporting bees 	1.8km southwest	None
5/266	Thrumpton Park	<ul style="list-style-type: none"> • Deciduous woodland • Species-rich scarp grassland • Parkland 	1.8km northwest	None

2.91. Table 2-5 below summarises the most relevant protected, Priority and invasive non-native species recorded within the search area, and their potential to be present within the Application Site.

Table 2-5: Summary of Biological Records

Species	Number of Records	Field Signs or Sightings within ESA	Potential for Species within Application Site
MAMMALS			
West European Hedgehog (<i>Erinaceus europaeus</i>)	7	No	Yes
Badger (<i>Meles meles</i>)	68	No	Yes
Northern Water Vole (<i>Arvicola amphibius</i>)	2	No	Low
European Otter (<i>Lutra lutra</i>)	43	No	Yes
Common Pipistrelle (<i>Pipistrellus pipistrellus</i>)	150	No	Yes
Leisler's Bat (<i>Nyctalus leisleri</i>)	3	No	Yes
Brown Hare (<i>Lepus europaeus</i>)	69	Yes	Yes
Harvest Mouse (<i>Micromys minutus</i>)	6	No	Low
AMPHIBIANS			
Common Frog (<i>Rana temporaria</i>)	26	No	Yes
Common Toad (<i>Bufo bufo</i>)	13	No	Yes
Great Crested Newt (<i>Triturus cristatus</i>)	24	No	Yes
REPTILES			
Grass Snake (<i>Natrix natrix / helvetica</i>)	9	No	Yes
BIRDS			

Corn Bunting (<i>Emberiza calandra</i>)	13	No	Yes
Barn Owl (<i>Tyto alba</i>)	28	No	Yes
Grey Partridge (<i>Perdix perdix</i>)	30	No	Yes
Common Cuckoo (<i>Cuculus canorus</i>)	16	No	Yes
Yellow Wagtail (<i>Motacilla flava</i>)	32	No	Yes
Yellowhammer (<i>Emberiza citronella</i>)	47	Yes	Yes
Skylark (<i>Alauda arvensis</i>)	41	Yes	Yes
Pink-footed Goose (<i>Anser brachyrhynchus</i>)	4	No	Yes
Hen Harrier (<i>Circus cyaneus</i>)	3	No	Yes
Common Snipe (<i>Gallinago gallinago</i>)	51	No	Yes
FLORA			
Himalayan Balsam (<i>Impatiens glandulifera</i>)	29	No	Yes
Japanese Knotweed (<i>Fallopia japonica</i>)	8	No	Yes

Habitat Survey

2.92. The extended phase 1 habitat survey undertaken in February and June 2021 identified 18 habitat types within the ESA. Each of these are listed below, with the relevant Phase 1 codes beforehand.

- A1.1.2 Broadleaved Semi-natural Woodland,
- A1.2.2 Coniferous Plantation Woodland,
- A2.1 Dense Scrub,
- A3.1 Broadleaved Parkland / Scattered Trees,

- B4 Improved Grassland,
- B5 Marshy Grassland,
- B6 Poor Semi-improved Grassland,
- C3.1 Tall Ruderal,
- J1.1 Arable,
- J1.2 Amenity Grassland,
- J2.1.2 Intact Hedge - Species-poor,
- J2.2.2 Defunct Hedge - Species-poor,
- J2.3.2 Hedge with Trees - Species-poor,
- J2.4 Fence,
- J2.6 Dry Ditch,
- J3.6 Buildings,
- J4 Bare Ground,
- J5 Other Habitat (Garden).

- 2.93. Overall, the site is considered to be of low intrinsic ecological value in terms of habitats. The primary habitat interest within the ESA derives from the presence of hedgerows and adjacent broadleaved woodland.
- 2.94. Suitable potential habitat within and adjacent to the survey area is present for otter, badger, bats, hedgehog, brown hare, amphibians and reptiles, breeding and wintering birds and invertebrates.
- 2.95. Bluebell *Hyacinthoides non-scriptus* is present occasionally within the ESA. This includes an onsite cluster adjacent to the hedgerow on the western edge of Field 5 (see Figure 3 of Volume 2: Planning Application Drawings). Bluebell is listed on Schedule 8 of the Wildlife and Countryside Act (1981). It is illegal to collect this native bluebell species from the wild for sale.
- 2.96. Spanish bluebell *Hyacinthoides hispanica*, sometimes considered an invasive non-native species in the UK, was the only non-native invasive or protected plant species identified during the survey. The species was encountered at rare locations within the ESA.

IMPACT ASSESSMENT

Best Practice Pollution Prevention Measures

- 2.97. Standard best practice pollution prevention measures will be adhered to, which will reduce the potential for impacts on ecology during the construction stage. As these are standard requirements, they are separate to mitigation measures (outlined later in this report).
- 2.98. Relevant measures include but are not limited to:

Pollution Prevention

- Hydrocarbons, greases and hydraulic fluids will be stored in a secure compound area;
- All plant machinery will be properly serviced and maintained, thereby reducing risk of spillage or leakage;
- All waste produced from construction will be collected in skips with the construction site kept tidy at all times;
- Excavated soil will be stored on site or removed by a licensed waste disposal unit;
- All materials and substances used for construction will be stored in a secure compound and all chemicals will be stored in secure containers to avoid potential contamination.
- Location of spill kit to be known by all construction workers and implemented in the event of spillage or leakage.

Waste Management

- Skips are to be used for site waste/debris at all times and collected regularly or when full;
- All hydrocarbons and fluids are to be collected in leak-proof containers and removed from site for disposal or recycling;
- All waste from construction is to be stored within the site confines and removed to a permitted waste facility.

Environmental Monitoring

- Contractor to nominate member of staff as the environmental officer with the responsibility to ensure best practice measures are implemented and adhered to, with any incidents or non-compliance issues being reported to project team;
- Any incidents or non-compliance issues being reported to project team.

Monitoring Practices

- 2.99. Potential impacts for ecological features associated with an International designated site from the construction and operation of a residential development may occur from the contamination of surface and/or ground waters. Those features (species) which are ecologically connected to a development site, and are mobile, may be impacted upon through disturbance as well as loss of habitat through contamination of surface waters.
- 2.100. Species and Habitats within the Application Site may be sensitive to pollution/contamination of surface waters. Pollution can result from any of the following entering a body of surface or groundwater:
- Poisonous, noxious or polluting matter;
 - Waste matter (including silt, cement, concrete, oil, petroleum spirit, chemicals, solvents, sewage and other polluting matter);
 - Other harmful activities detrimentally affecting the status of a waterbody.
- 2.101. There will be limited waste produced during the construction of the Proposed Development and the site contractor will be responsible for the monitoring and appropriate disposal of waste from the site.

Designated Sites

Statutory Sites

- 2.102. Within the ZOI surrounding the Application Site, there are no Special Areas of Conservation ("SACs") or Special Protection Areas ("SPAs").
- 2.103. At its closest point, Rushcliffe Golf Course SSSI is located immediately east of the southern section of the Proposed Development site. Rushcliffe Golf Course SSSI is notified as it contains some of the best examples of calcareous and neutral grassland remaining in Nottinghamshire, and is representative of species-rich grassland on calcareous loam soils in Central and Eastern England. It also supports an interesting bird fauna. Due to this proximity, there is therefore potential ecological connectivity between the site and this SSSI. The two are also potentially hydrologically connected through movement of ground and/or surface water.

- 2.104. Lockington Marshes SSSI lies 3.2km from the Application Site, and has been designated for its willow carr woodland and diverse wetland habitats. Field drains from the Application Site feed into the Kingston Brook, which in turn enters the River Soar 6.6km downstream of their confluence. The Lockington Marshes SSSI is located 34m west of the River Soar, a combined distance of 9.4km downstream of the Application Site.
- 2.105. Attenborough Gravel Pits SSSI is a site of importance for its lowland eutrophic open waters with emergent vegetation, wet floodplain woodland, unimproved floodplain grassland, a rich assemblage of breeding birds, and wintering shoveler and bittern. The majority of the waterbird and breeding bird species associated with this SSSI would not find the habitats within the Application Site favourable for breeding. There are a small number of species known to occupy the SSSI that use grassland, arable land, hedgerows and woodland associated with the Application Site for nesting or foraging. Of these, one (common cuckoo) has a range size large enough that SSSI individuals could make use of the Application Site. Therefore, there is possible ornithological connectivity between the Application Site and the Attenborough Gravel Pits SSSI. In addition, there is the potential for hydrological connectivity with the Application Site as the SSSI is 14.5km downstream (via drainage ditches, Kingston Brook, the River Soar and the River Trent).
- 2.106. Holme Pit SSSI contains valuable marshland habitat for a variety of passage, wintering and breeding bird species, while the reedbeds are a valuable bird roosting area. These habitats are not found within the Application Site boundary. Whilst there is a small area of marshy grassland within the 50-metre extended survey area outside of the redline boundary, this is not directly connected with the SSSI (or considered large enough to attract marshland bird species from it). As such, this SSSI has been dismissed from further assessment.
- 2.107. The Trent Meadows LNR has the potential to be hydrologically connected to the Application Site via drainage ditches that feed into the Kingston Brook, into the River Soar and eventually into the River Trent. This provides a pathway of connectivity to the LNR approximately 13.4km downstream of the Application Site.
- 2.108. Rushcliffe Country Park Local Nature Reserve ("LNR") is located 4.5km northeast of the Application Site boundary and contains grasslands, wildflower meadows, native broadleaved woodland, a lake and reed beds. These habitats support a range of waterfowl and other bird and mammal species. Of the bird species mentioned in Natural England's webpage for the LNR²⁴, none are likely to rely on habitats within the Application Site boundary at this distance. The hedgerows, grassland and arable land within the Application Site boundary, and the neighbouring woodland and plantation areas surrounding the site, offer suitable foraging habitat for mammal species such as red fox observed within the LNR. As such, there is the potential for ecological connectivity between Rushcliffe Country Park LNR and the Application Site.

²⁴ Available at: <https://designatedsites.naturalengland.org.uk/SiteLNRDetail.aspx?SiteCode=L1481547>

- 2.109. Potential presence of barbastelle bat (which has a Core Sustainance Zone of 6km)²⁵ in Rushcliffe Country Park LNR and/or the Application Site has also been considered. Barbastelle is a rare woodland bat species. In Nottinghamshire, this species appears to be restricted to a few locations outside the East Leake area²⁶. Moreover, the data search returned 400 results of bat species, none of which relate to barbastelles. The species is therefore not considered further in this assessment.
- 2.110. The habitat available within the Brecks Plantation LNR (predominantly broadleaved woodland) is likely to support an array of common woodland birds. Great spotted woodpecker and spotted flycatcher are known to utilise the LNR. Similarly, Glapton Wood LNR holds an area of woodland which is known to support common woodland birds. However, spotted flycatcher²⁷ is a UK summering species that breeds at densities of one pair or more per km². Great spotted woodpeckers²⁸ and other common woodland species also tend to have territory sizes of less than or equal to this, although some less-common species such as red kite²⁹ have a core foraging zone as large as 4km. As such, ornithological connectivity between these two LNRs and the Application Site is considered negligible.
- 2.111. No connectivity with any other statutory designated sites listed above in Table 2-4 has been identified. These have therefore been dismissed from further assessment.

Non-statutory Sites

- 2.112. In total, 26 non-statutory designated environmental sites (all Local Wildlife Sites (“LWSs”) are present within 2km of the Application Site. The Application Site is directly adjacent to five of these LWSs.
- 2.113. Rushcliffe District Golf Course LWS borders the Application Site along the northeastern boundary of Field 15. The Gotham Wood LWS borders the northern boundaries of Fields 1 and 2 and extends east to the Application Site’s access track. The Crownend Wood (Western Assart) LWS borders the southwestern field boundary of Field 7. The West Leake Hills LWS is directly adjacent to the western boundary of Field 12 in the Application Site. As these five LWSs are directly adjacent to the Application Site, their proximity suggests there is potential for both ecological and hydrological connectivity with the Application Site.
- 2.114. West Rushcliffe District Disused Railway LWS and West Leake Hills LWS are both sites of importance for butterflies such as grizzled skipper. There is an abundance of Broadleaved

²⁵ Collins, J. (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines. 3rd edition. Bat Conservation Trust, London.

²⁶ <https://insideecology.com/2018/01/22/the-nottinghamshire-barbastelle-project/>

²⁷ Stevens, D.K. (2008) The breeding ecology of the Spotted Flycatcher *Muscicapa striata* in lowland England. PhD thesis, University of Reading.

²⁸ Salvati, L. *et al.* (2001) Wood occupation and area requirement of the Great Spotted Woodpecker *Picoides major* in Rome (Central Italy). *Acta Ornithologica* 36:1, 19-23.

²⁹ Scottish Natural Heritage (2016) Assessing Connectivity with Special Protection Areas (SPAs): Guidance. Version 3.

Semi-natural Woodland and Coniferous Plantation Woodland habitats that are favoured by the Grizzled Skipper within the 50m Zol. Due to the availability of suitable habitat and the proximity of these two LWSs to the Application Site, there is superficial potential for ecological connectivity for both LWSs and the Application Site. However, the potential grizzled skipper habitat within the Application Site appears too narrow and lacks in all the necessary perennial larval foodplants to support the species. Together with their separation distance from the Application Site, these two LWSs are not considered ecologically connected to it for this reason.

- 2.115. It is considered there is no connectivity between the Application Site and the other non-statutory designated sites. This is as a result of distance, lack of direct habitat connection and/or lack of habitat to support species of interest. As a result, there are no pathways for potential impacts on these sites from the Proposed Development. They have therefore been dismissed from further assessment.

In the Absence of Mitigation

- 2.116. This section discusses assessment of possible impacts the Proposed Development may have on Designated Sites, habitats and species prior to implementation of any mitigation or enhancement measures which are set out later in this report.

Rushcliffe Golf Course SSSI / Rushcliffe District Golf Course LWS

- 2.117. Rushcliffe Golf Course SSSI is located adjacent to the Application Site along the northeastern field boundary of Field 15. This SSSI is designated for its species-rich calcareous and neutral grasslands, although these habitats are not present in or immediately adjacent to the Application Site. There is also additional interest from areas of mixed scrub; these attract a variety of breeding bird species. Rushcliffe District Golf Course LWS covers a similar, overlapping area and has the equivalent connectivity.
- 2.118. Given their immediate proximity, the Application Site is considered ecologically connected with the SSSI/LWS. The sites are also hydrologically connected through potential movement of ground and surface water.
- 2.119. Furthermore, due to the design of the project, the Proposed Development is a minimum of 15m from these designated sites. No development of any kind will occur in this zone. This will help reduce any potential adverse impacts the proposed application may have on the neighbouring sites.
- 2.120. Table 2-6 below (adapted from Ciria guidance³⁰) details common water pollutants and their effect on the aquatic environment.

³⁰ Ciria (2015) Environmental good practice on site guide, 4th edition

Table 2-6: Common Water Pollutants and their Effects on the Aquatic Environment

Common Water Pollutants	Adverse Effect on Aquatic Environment
Silt	Reduces water quality, clogs fish gills, covers aquatic plants, impacts aquatic invertebrates, leads to a reduction in prey for insectivorous/carnivorous species, leads to degradation of habitat
Bentonite (very fine silt)	Reduces water quality, clogs fish gills, covers aquatic plants, impacts aquatic invertebrates, leads to a reduction in prey for species including otter, leads to degradation of habitat
Cement or concrete wash water (highly alkaline)	Changes the chemical balance, is toxic to fish and other wildlife. This can lead to direct impacts for aquatic species, or indirect impacts through loss of prey resources
Detergent	Removes dissolved oxygen, can be toxic to wildlife present within the aquatic environment
Hydrocarbons (e.g. oil, diesel)	Suffocates aquatic life, damaging to wildlife (e.g. aquatic birds) and to water supplies including industrial abstractions
Sewage	Reduces water quality, is toxic to aquatic wildlife, and damages water supplies

- 2.121. The potential occurrence of these contaminants and their capability of affecting water quality has been considered during the various phases of the Proposed Development. Potential contaminants are capable of undermining water quality and impacting the qualifying species occurring within the Zol of the Proposed Development.
- 2.122. Operations and activities that have the potential to impact on the water environment will be regularly monitored throughout the construction of the Development. This is to ensure compliance with planning conditions and environmental regulations.
- 2.123. The Proposed Development will incorporate Sustainable Drainage System (“SuDS”). It has been demonstrated that the Proposed Developments’ impact on surface water runoff is minimal due to the small amount of impermeable infrastructure (0.6% of the overall

Application Site Area) proposed. However, drainage in the form of SuDS has been proposed so the post-development site discharges surface water at the greenfield run-off rate (QBar). Such preventative measures will have the effect of controlling the movement of surface waters within and from the Application Site. For further detail see **Technical Appendix 4: Flood Risk Assessment / Drainage Impact Assessment** in Volume 3 of this application.

- 2.124. The Proposed Development will be subject to mandatory pollution prevention measures under the Control of Pollution Act 1974 (as amended)³¹. Measures have been included within the development design to prevent dust and other pollution entering any nearby watercourses via drainage ditches within the site or through ground water contamination. The recommended **standard pollution prevention measures** can be secured through a suitably-worded planning condition requesting a Construction Environmental Management Plan ("CEMP"). An Outline CEMP ("OCEMP") has been produced as part of this application (see **Technical Appendix 8: OCEMP** in Volume 3 of this application).
- 2.125. With implementation of measures included in the Proposed Development design, best practice measures implemented during the Proposed Development and the management outlined above, there will be **no significant adverse effects** through groundwater contamination or hydrological connectivity between the Application Site and the SSSI/LWS.
- 2.126. The SSSI's designated grassland habitats appear to lie at closest 10-25m from the Application Site, beyond a unit of woodland³². The SSSI has been in unfavourable condition since 1997. Current management includes grassland mowing along the fairway, but not cut closely enough to the woodland edge. Scrub has therefore continued to encroach into the grassland.
- 2.127. With the pollution prevention measures that will be taken, impacts on the qualifying grassland are considered unlikely. The majority of any residual dust and other particulate pollutants would likely be absorbed by the intervening woodland and scrub. There is therefore considered to be **no likelihood of significant effects** on this qualifying habitat and, by extension, the SSSI/LWS.

Lockington Marshes SSSI / Attenborough Gravel Pits SSSI

- 2.128. Lockington Marshes SSSI is a designated site circa 3.2km from the Application Site; the Attenborough Gravel Pits SSSI lies approximately 3.5km from the Application Site.
- 2.129. The Attenborough Gravel Pits SSSI is of importance for its lowland eutrophic open waters with emergent vegetation, wet floodplain woodland, unimproved floodplain grassland, a rich assemblage of breeding birds, and wintering shoveler and bittern. There are a small number of species known to occupy the SSSI that use grassland, arable land, hedgerows and woodland

³¹ <https://www.legislation.gov.uk/ukpga/1974/40/part/III/crossheading/construction-sites>

³² It is noted that the MAGIC portal was not fully functional at the time of assessment, and management units could not be viewed spatially. However, the distinction between grassland and woodland (the site's two management units) is relatively clear from aerial imagery.

associated with the Application Site for nesting or foraging. However, the only species identified with a home range size at all likely to overlap the Application Site is common cuckoo³³.

- 2.130. The two SSSI's above both have the potential to be hydrologically connected with the Application Site via field drains that feed into the Kingston Brook, on into the River Soar, and (in the case of the Attenborough Gravel Pits SSSI) flowing on into the River Trent. It is worth noting that the Lockington Marshes SSSI is not directly adjacent to the Trent River, with a gap of grassland spanning approximately 34 metres. As the marshes drain into the river, water is considered unlikely to move to the marshes except when the river is in flood. Therefore, a significant hydrological connectivity is unlikely. Given the project design and dilution factor of any escaping contaminants, any adverse impacts on the features for which the SSSIs are designated would be negligible at the above distances.
- 2.131. Whilst various habitats within the Application Site are suitable for common cuckoo, no cuckoos were observed during survey work. The loss of a relatively small area of suitable habitat is not likely to have a significant adverse impact on these bird species. This is due to the availability of similarly suitable habitat in the land between the designated sites and the Application Site. The proposals also involve compensatory habitat provision (e.g. species-rich grassland) for birds. Therefore, the Proposed Development is **unlikely to result in any significant adverse effect** on the bird species that rely upon the Attenborough Gravel Pits SSSI.
- 2.132. Each of several potential contaminants outlined in **Table 2-9** above has been considered and assessed for their potential occurrence during the different phases of the overall development. The proposed protection measures referred to in connection with the Rushcliffe Golf Course SSSI/ the Rushcliffe District Golf Course LWS will also be implemented. As noted above in connection with the SSSI/LWS, the Proposed Development will be subject to mandatory pollution prevention measures under the Control of Pollution Act 1974 (as amended)³⁴. Furthermore, a 2m buffer from all field drains have been incorporated into the design of the Proposed Development (i.e. not as mitigation). Considering the development design and implementation of appropriate measures as outlined in the OCEMP (see **Technical Appendix 8: OCEMP**), it can be concluded that the Proposed Development is **likely to have no adverse effect** on the qualifying habitats of Lockington Marshes SSSI and the Attenborough Gravel Pits SSSI via a hydrological connection.

Rushcliffe Country Park LNR

- 2.133. Rushcliffe Country Park LNR lies 4.5km northeast of the Application Site boundary. This LNR contains grasslands, wildflower meadows, native broadleaved woodland, a lake and reed beds. These habitats support a range of waterfowl, other birds and mammal species. Due to

³³ Moskát, C. *et al.* (2019), Bimodal habitat use in brood parasitic Common Cuckoos (*Cuculus canorus*) revealed by GPS telemetry. *The Auk* 136:2. Available at: <https://doi.org/10.1093/auk/uky019>

³⁴ <https://www.legislation.gov.uk/ukpga/1974/40/part/III/crossheading/construction-sites>

the distances involved and lack of hydrological connectivity, there will be no adverse impact on the integrity of the habitats within the LNR. However, due to the proximity of the Application Site it is possible that a wide-ranging mammal species (red fox) from the LNR may be using suitable habitat within the Application Site boundary. Signs of fox were observed on site.

- 2.134. Foxes themselves are not protected for reasons of rarity or conservation status, but add interest to the Local Nature Reserve. Impacts arising from the Proposed Development include the removal and temporary disruption of access to these. However, this is unlikely to have a significant adverse impact on foxes associated with the LNR. This is due to the availability of abundant suitable habitat in the land between the designated sites and the Application Site. The proposals also involve habitat enhancements for mammal species, including shelter areas and measures that benefit fox prey species.
- 2.135. In light of the above, the proposals are considered likely to have **no significant effect** on Rushcliffe Country Park LNR.

Trent Meadows LNR

- 2.136. The Trent Meadows LNR has the potential to be hydrologically connected to the application Site via drainage ditches which feed into the Kingston Brook, into the River Soar and eventually into the River Trent. Again, given the long pathway of connectivity (13.4km) it is likely that any adverse impacts on the LNR via hydrological means will be **negligible**.

Crownend Wood (Western Assart) LWS

- 2.137. As part of the design, the closest PV panels have been kept 12m from this LWS. The LWS designation relates to grassland, with no mobile species listed.
- 2.138. For the reasons set out in relation to Rushcliffe Golf Course SSSI / Rushcliffe District Golf Course LWS above, it is concluded that the Proposed Development is **likely to have no adverse effect** on the qualifying habitats of the LWS via a hydrological connection. Indirect impacts of disturbance (e.g. dust) from nearby agricultural activities will also be reduced during the operational phase. The operational solar farm will be subject to lower levels of ground disturbance than the current agricultural farming activities such as ploughing, planting etc., which would previously have resulted in a higher production of dust.
- 2.139. The Proposed Development will be subject to mandatory pollution prevention measures under the Control of Pollution Act 1974 (as amended)³⁵. Due to the above, the development design and the implementation of appropriate measures outlined in the OCEMP (see Technical Appendix 8: OCEMP in Volume 3), there will be **no likely significant adverse effects**

³⁵ <https://www.legislation.gov.uk/ukpga/1974/40/part/III/crossheading/construction-sites>

upon Crownend Wood (Western Assart) LWS. This abides with **Local Plan Part 2 Appendix E**, which specifically refers to buffering and protection of grassland.

Leake New Wood Track LWS / Gotham Wood LWS

2.140. As part of the design, the closest PV panels have been kept 30m from Leake New Wood Track LWS. The LWS designation relates to its herb-rich track, with no mobile species listed.

2.141. The Gotham Wood LWS designation relates to woodland and flora, with no mobile species listed. The closest PV panels have been kept 21m from this LWS. The ancient woodland habitat has been buffered from all development by 15m+. This accords with the buffer distance recommended by Natural England:

“For ancient woodlands, you should have a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, you’re likely to need a larger buffer zone. For example, the effect of air pollution from development that results in a significant increase in traffic.”

2.142. For the reasons set out in relation to Rushcliffe Golf Course SSSI and related sites above, it is concluded that the Proposed Development will have no adverse effect on the qualifying habitats of these LWSs via a hydrological connection. Lighting on the LWS qualifying features will not be increased, and disturbance impacts (e.g. dust from agricultural activities) will be reduced during the operational phase.

2.143. There will be a temporary but not significant increase in traffic during the construction phase. This will amount to a peak of 20 deliveries to site per day, but the majority of these will remain far removed from the ancient woodland. Further details can be found in **Technical Appendix 5: Construction Traffic Management Plan**. There will be no overall increase in public access or traffic during the operational phase. The Proposed Development will be subject to mandatory pollution prevention measures, as noted above.

2.144. Due to this, the development design and the implementation of appropriate measures outlined in the OCEMP (see **Technical Appendix 8: OCEMP in Volume 3**), there will be no likely significant adverse effects upon Leake New Wood Track LWS or Gotham Wood LWS. The above abides with **Local Plan Part 2 Appendix E**, which specifically refers to buffering and protection of woodland and grassland.

Recommended Mitigation and Enhancement Measures

Rushcliffe Golf Course SSSI / Rushcliffe District Golf Course LWS

2.145. The 15m buffer around these designated sites abutting the Application Site will be clearly demarcated. Note, however, that this is not relied on as mitigation (being adopted for the Proposed Development during project design).

- 2.146. The creation of new tree, hedgerow and species-rich grassland areas (see **Appendix 2.2: Biodiversity Management Plan**) will strengthen the green infrastructure connecting and buffering these and other local designated sites. Soil inversion will also be used to encourage lower-fertility conditions, complementing grassland within the SSSI/LWS. These measures accord with Core Strategy Policies 16 and 17 of the Rushcliffe Local Plan.
- 2.147. Standard best practice pollution prevention measures (see above) will be adhered to in order to reduce potential impacts on ecology during the construction phase.

Lockington Marshes SSSI / Attenborough Gravel Pits SSSI / Trent Meadows LNR

- 2.148. Although not relied upon as mitigation, the 2m buffer around drainage ditches will be clearly demarcated on site.

Crownend Wood (Western Assart) LWS / Leake New Wood Track LWS / Gotham Wood LWS

- 2.149. The 12m-30m buffers around these non-statutory designated sites will be clearly demarcated on site. Again, note that this is not relied upon as mitigation; the measure has been adopted for the during project design.
- 2.150. As a precautionary measure, development work between 15m and 30m from the ancient woodland in Gotham Wood LWS will be supervised by a suitably experienced Ecological Clerk of Works ("ECoW").
- 2.151. The creation of new tree, hedgerow and species-rich grassland areas (see **Appendix 2.2: Biodiversity Management Plan and Figure 1.14 of Technical Appendix 1, Volume 3: Landscape and Ecological Management Plan**) will strengthen the green infrastructure connecting these local wildlife sites. This accords with Core Strategy Policies 16 and 17 of the Rushcliffe Local Plan.
- 2.152. As noted above, standard best practice pollution prevention measures will be adhered to in order to reduce any potential impacts on ecology during the construction phase.

Residual Effects

- 2.153. With the implementation of the above mitigation measures and the ecological enhancements designed as part of the Proposed Development (see **Appendix 2.2: Biodiversity Management Plan**), adverse effects will be minimised, counterbalanced or outweighed by beneficial effects. It is therefore considered that, overall, Rushcliffe Golf Course SSSI, Lockington Marshes SSSI, Attenborough Gravel Pits SSSI, Trent Meadows LNR, Rushcliffe District Golf Course LWS, Crownend Wood (Western Assart) LWS, Leake New Wood Track LWS and Gotham Wood LWS will experience no adverse effects as a result of the Proposed Development.

Habitats

In the Absence of Mitigation

- 2.154. The construction of the Proposed Development will occur over land which has been identified primarily as improved grassland. This habitat is generally of low ecological value and currently offers very limited potential to support wildlife in this area of England. Only arable land and improved grassland are present under the proposed solar panels.
- 2.155. Proposed security fencing and access tracks will also cross these habitats plus two dry ditches, eight native species-poor hedges with trees and eight intact native species-poor hedges. None of these hedges will be classified as 'Important' under the Hedgerows Regulations 1997³⁶. Breaks of circa 1.5m, totalling 23 breaks across these 16 hedges, will be created where needed. However, existing gaps will be used where possible.
- 2.156. A new section of permissive path will require the removal of circa 13m of hedges along the site's southern boundary. This will be lost from two of the above native species-poor hedges with trees, and two of these intact native species-poor hedges.
- 2.157. A total of 11m of hedgerow will be trimmed (but retained) and 152m realigned (i.e. initially lost) to create improve visibility at road access points. This will be from a single intact species-poor hedgerow.
- 2.158. A total of 199.5m of the current hedgerows will therefore be lost. Construction will not involve the removal of any other trees or sections of hedgerow.
- 2.159. The relatively minor extent of habitat loss in a local context where these habitats are frequent is **not considered to be significant** in terms of the Application Site's intrinsic habitat interest.
- 2.160. As part of the design proposals (rather than as ecological mitigation), hedgerow sections lost will be replaced with new native species-rich hedges. **Figure 1.14 of Technical Appendix 1** shows the location of the proposed planting. However, in the absence of mitigation, the hedgerow breaks will still constitute loss of small amounts of a Priority habitat. This will lead to effects of **low to negligible spatial** and **medium-term temporal** magnitude, i.e. negligible to minor and **not significant** effects. These magnitudes have been assigned because the loss of hedgerow length will be much less than 10% and, although the new hedges will provide increased biodiversity net gain in the long term, it will be a number of years until they attain the value of the existing hedges.
- 2.161. The Proposed Development is designed in such a way to avoid significant losses of agricultural land during the operational stage, with a 5.33% ground level footprint. Agriculture can continue on the other 94.67% of the land. It is noteworthy that the consent is temporary and therefore reversible.

³⁶ Available at <https://www.legislation.gov.uk/uksi/1997/1160/contents/made>

- 2.162. The main habitat loss will occur under the Proposed Development footprint in regard to structures such as access tracks, cable trenches and hardstanding for buildings and inverters. Solar panels will be mounted on frames which will be pile driven into the ground in a similar way to fence posts, therefore limiting soil disturbance. The site can be fully restored upon the cessation of the solar farm.
- 2.163. The native bluebells within the site fall within the buffer zone associated with the adjacent hedgerow. They will therefore be safeguarded from development.
- 2.164. With the implementation of the Biodiversity Management Plan (“BMP”; Appendix 2.2) and the Landscape and Ecological Management Plan (“LEMP”; Figure 1.14 of Technical Appendix 1, Volume 3), where new habitats will be created using native species appropriate to the Application Site, biodiversity value will increase by 44.88% for habitats and 76.21% for hedgerow on site (See Appendix 2.3: Net Gain Assessment). This is in line with Core Strategy Policy 17 of the Rushcliffe Local Plan.
- 2.165. It is therefore considered that the loss of habitat from the Proposed Development will not be significant.

Recommended Enhancement Measures

- 2.166. The proposed wildlife enhancements designed into the Proposed Development (see Appendix 2.2: Biodiversity Management Plan and Figure 1.14 of Technical Appendix 1, Volume 3: Landscape and Ecological Management Plan) include the following habitat measures:
- Creation of new species-rich grassland, hedgerows, scrub and trees;
 - Creation of habitat interest features for protected species (e.g., herptile hibernacula and hedgehog houses; see below).

Residual Effects

- 2.167. With the implementation of the Proposed Development’s design measures, best practice measures implemented during the construction phase, and the habitat management outlined, there will be **positive effects** on habitats.
- 2.168. With the correct management in place during the 40-year lifespan of the Proposed Development, the potential of the Application Site to support wildlife is likely to be increased. The supporting BMP (see Appendix 2.2) outlines the management proposals to enhance the Application Site’s ecological value, therefore increasing its potential to support local wildlife. With the implementation of these proposed enhancement measures, it is anticipated there will be a **net gain for habitat biodiversity of 44.88% and 76.21% net gain for hedgerows** (see Appendix 2.3), in line with Core Strategy Policy 17 of the Rushcliffe Local Plan.

Protected and Notable Species

In the Absence of Mitigation

- 2.169. The sections below detail the potential impacts and effects in the absence of mitigation for protected and notable species. This covers the construction phase (approximately six months) and operational phase (40 years) of the Proposed Development.
- 2.170. In accordance with CIEEM guidelines³⁷, the duration of disturbance during construction is considered to be short term for the species groups below (except invertebrates). All groups except invertebrates live for several years in the UK. However, it is noted that short-term impacts can lead to long-term effects if e.g. they cause breeding failure in a given year. Invertebrates are assessed in line with their specific life history characteristics.
- 2.171. In compliance with the information provided in the pre-application consultation in December 2020, Best practice should be followed during building work to ensure trenches dug during works activities that are left open overnight should be left with a sloping end or ramp to allow any animal that may fall in, to escape.
- 2.172. In addition, any pipes over 200mm in diameter should be capped off at night to prevent animals entering. Materials such as netting and cutting tools should not be left in the works area where they might entangle or injure animals. No stockpiles of vegetation should be left overnight, if they are, these should be dismantled by hand prior to removal and any night working should be avoided.
- 2.173. These measures are applicable to ensure safety of all fauna mentioned below should they gain access to the application site during the construction phase.

Badger

- 2.174. There were no observations of badger or its field signs during the phase 1 habitat survey. Arable and improved grassland habitat covers the majority of this site. Given the proposals for creating species-rich grassland within the site, the operational phase of the Proposed Development will not lead to a significant adverse effect on the local badger population through loss of foraging habitat. The implementation of the BMP will also create new and enhanced hedgerows within the Application Site, improving the foraging resource for badgers and leading to a positive effect.
- 2.175. However, all the hedge banks and nearby woodland areas are considered suitable for sett-building. Whilst no evidence of badger was observed within the Application Site during extended phase 1 habitat surveys, they are a highly mobile species and therefore could move

³⁷ CIEEM (2019) Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Version 1.1.

in from the wider local area. New setts may be built prior to construction. Therefore, in the absence of mitigation, there is the potential for the disturbance or injury of badger during the construction phase. During the construction phase, the Proposed Development can cause undue stress if accidentally trapped within any exposed excavations left overnight, however this should be avoided if measures outlined above are incorporated.

- 2.176. During the operation phase the security fencing used around the perimeter of the Application Site could affect access to foraging areas which are part of a clan's territory. However, deer fencing used at the Proposed Solar Farm will have a 10cm gap at the bottom to allow continued potential for badger movement (see Figure 13 of Volume 2: Planning Application Drawings). This will prevent the Proposed Development affecting access to foraging areas within the Application Site that may potentially be part of a clan's territory. This measure has been designed into the development, and therefore is not relied upon as mitigation.
- 2.177. In the absence of mitigation, there is the potential for effects of low spatial and long-term temporal magnitude. This could lead to **moderate significant effects on badger** (a nationally protected species) as a result of the Proposed Development.

Bats

- 2.178. The Application Site contains no built structures that would be suitable for roosting bats. Numerous mature trees were recorded within hedges, along tree lines as well as throughout the woodlands surrounding the Application Site. Some of these trees contain features of low potential roosting suitability for bats. The Application Site offers a number of optimal habitats for commuting and foraging bats overall, with good habitat connectivity both within the site and linking it to adjacent areas. Key habitat features include hedges, tree-lined corridors, woodlands and woodland edges.
- 2.179. Many species of bat in England commute and forage along linear features, such as a hedgerow or woodland edge that feature within the Application Site boundary. However, on occasion they will cross open features (particularly true of species such as Leisler's bat (*Nyctalus leisleri*) that use strong echolocation).
- 2.180. It is noted that the arable land is a sub-optimal commuting and foraging feature for most bat species. Arable land offers sub-optimal foraging habitat for bat species due to limited prey abundance. The loss of this habitat under the Proposed Development footprint will not lead to a significant reduction in foraging habitat for local bats.
- 2.181. A minor loss of more suitable foraging/commuting habitat is predicted from the construction of the Proposed Development. Proposed security fencing, access tracks and a permissive path will cross eight native species-poor hedges with trees and eight intact native species-poor hedges. Existing gaps will be used where possible, though in places new gaps of circa 1.5m will be created (see above).

- 2.182. A total of 199.5m of the current hedgerows will be lost, for the above purposes and to create improve visibility at road access points. A total of 11m of hedgerow will be trimmed (but retained) from a single intact species-poor hedgerow. No trees with bat roosting potential will be lost.
- 2.183. It can be concluded that no significant fragmentation of habitats will occur. The fencing could potentially disrupt commuting routes along these, but the proposed fence height of 2.4m is unlikely to cause significant disruption.
- 2.184. Given the likely presence of foraging and commuting bats, there is potential for lighting used during construction to disturb bats. However, it is anticipated that there will be minimal need for construction lighting (if any), as the vast majority of works will be undertaken in daylight. During the winter months, some construction lighting may be needed, but bats are generally in hibernation during this period.
- 2.185. The completed development will only feature infrared emergency lighting and motion-sensitive security lighting. This will be directed to where it is needed and will only operate when triggered due to an emergency (i.e., the Application Site will be unlit for the majority of the time). Light spillage on bat habitats within and adjacent to the Application Site will therefore be negligible.
- 2.186. There will be a buffer between boundary hedges and the rows of solar panels of 5m as an adopted design principle. In some areas the buffer will be larger than this, and 10m and 15m+ buffers (from woodland and ancient woodland) have also been designed. This will help reduce potential risk of collision of bats with the panels, providing a protective corridor.
- 2.187. Through the removal of agricultural machinery and chemical crop treatments, the operational phase will lead to a decrease in disturbance below current levels. With the implementation of the supporting BMP (Appendix 2.2) and LEMP (Figure 1.14, Technical Appendix 1, Vol 3), which outline measures to increase the diversity of flora species within the Application Site, faunal diversity including prey species for foraging bats will also increase. Please note these measures are not provided by way of mitigation, but as an integral part of the Proposed Development design.
- 2.188. It is therefore considered that the Proposed Development will have a **positive effect** on bats that may be present in the area post-construction.

Otter

- 2.189. No signs of otter were noted during the habitat survey. The agricultural drainage ditches within the Application Site are considered to offer, at best, very limited opportunities for these species. When taking into account the design measures put in place (such as a 2m drainage ditch buffer) and the best practice pollution prevention measures detailed above, it

is unlikely that, in the absence of mitigation, the Proposed Development would lead to an adverse effect on otter in the area.

Other Mammals

- 2.190. The Application Site offers suitable sheltering / foraging habitat for hedgehog in the form of hedgerows and adjacent woodland. The site also offers suitable arable and grassland habitat for brown hare, which was observed during the site visit.
- 2.191. Hedgehog and brown hare are UK and England Priority species³⁸. Both are also Nottinghamshire Priority species.
- 2.192. No signs of water vole were noted. The agricultural drainage ditches within the site are considered to offer at best limited opportunities for these species. **No significant effect** upon water vole is predicted.
- 2.193. No evidence of other protected or Priority mammals was noted. It is expected that the site supports an assemblage of common small mammal species.
- 2.194. Signs of rabbit, European mole and red fox were also noted. These are known to utilise the hedgerow, grassland and/or adjacent woodland habitat available in the ESA, as would common shrew and grey squirrel (observed during the habitat survey).
- 2.195. Roe deer and muntjac deer were also observed during the survey. The site design includes almost 10km of deer fencing at 2.4 metres high in order to reduce the possibility of deer becoming trapped or injured within the Application Site boundary. A deer corridor will also be maintained around the site perimeter. This will be formed of a minimum 5m gap between fences and hedgerows / woodland / other boundary features. In places, this will expand to 15m+. The author has observed deer using similar linear corridors elsewhere in the UK.
- 2.196. There will be negligible loss and fragmentation of the grassland, woodland and hedgerow habitats. Arable habitat will be lost, but will be replaced by species-rich grassland. Impacts on hedgehog, brown hare and other mammal species mentioned above are therefore likely to be limited largely to dust, noise and vibration disturbance during the construction phase of the Proposed Development.
- 2.197. However, the current baseline includes periodic disturbance of a smaller but not incomparable magnitude from agricultural activities several times a year. The limited human disturbance during the operational phase (constituting activities such as security checks and habitat management operations) will be an improvement on the current situation for these two species.

³⁸ See <https://hub.incc.gov.uk/assets/98fb6dab-13ae-470d-884b-7816afce42d4>

- 2.198. Security fencing used at the Proposed Development Site will contain 10cm gaps at the bottom to allow continued hare, hedgehog, and other mammal movement (see **Figure 13 of Volume 2: Planning Application Drawings**). This will prevent the Proposed Development affecting access to foraging areas within the Application Site. This measure has been designed into the development, and therefore is not relied upon as mitigation.
- 2.199. **Minor (non-significant) effects** are anticipated upon brown hare in the absence of mitigation.
- 2.200. Habitats will be significantly enhanced for hedgehog and common small mammals by the creation of new hedgerows and species-rich grassland as part of the proposed BMP (**Appendix 2.2: Biodiversity Management Plan**).
- 2.201. **Positive effects** are anticipated for hedgehog in the absence of mitigation.

Herptiles

- 2.202. Suitable aquatic habitats for great crested newt ("GCN") and other amphibians do not exist within the ESA. The ditches within the ESA were observed to be agricultural drains and considered unlikely to support breeding great crested newts. There are three ponds within 500m of the Application Site boundary that offer suitable aquatic habitat for herptile species. Access to Pond 1 was withheld, therefore ecological assessment of the pond was not possible during the survey. Pond 2 (see **Figure 2.1.1**) is considered to have poor habitat suitability for GCN. Pond 3 provides good habitat for GCN. It is therefore possible that GCN utilise terrestrial habitats within the site. Please see **Appendix 2.1** for further information on the surveys carried out.
- 2.203. The Application Site contains hedgerows and woodland habitats which would offer suitable terrestrial habitat for herptiles. Much of the site is considered unsuitable for these species due to being intensively managed for grazing or cultivated crops. While some areas of the site included hedgerows noted to be fairly heavily shaded by dense shrubs, there are pockets of suitable habitat including some hedge margins that provide some opportunities for basking.
- 2.204. In the absence of mitigation, GCN may be significantly affected by the Proposed Development. Adverse effects would be classed as of **moderate spatial** and **medium-term temporal** magnitude. The removal of hedgerow sections at any time of year could lead to disturbance, injury or mortality of GCN or other sheltering herptiles. Any herptiles using ditches crossed by the proposed access track and/or security fencing may also be disturbed by construction activities.
- 2.205. The operational phase would, however, lead to reduced disturbance when compared with the baseline level. The proposed enhancements (see **Appendix 2.2: BMP**) would also lead to **significant gains** due to the creation of new species-rich grassland and scrub, new tree planting and herptile hibernacula, leading to increased prey abundance and shelter opportunities within the Application Site.

Birds

- 2.206. Main impacts on bird species from developments include:
- Direct loss or deterioration of habitats;
 - Indirect habitat loss as a result of displacement by disturbance.
- 2.207. Breeding birds are highly susceptible to disturbance. The trees and hedgerows within the Application Site are likely to support a variety of common nesting birds during the breeding season, as are the adjacent woodland areas. The assemblage recorded within the ESA includes two farmland birds of conservation concern (skylark and yellowhammer).
- 2.208. There will be a buffer between boundary hedges and the rows of solar panels of 5m as an adopted design principle. In some areas the buffer will be larger. Together with the 10m woodland buffer and 15m ancient woodland buffer, this will help reduce any potential risk of collision of birds with the panels, providing a protective corridor.
- 2.209. In addition, construction works will be temporary and restricted to the daytime. Whilst these bird species may experience disturbance through noise and vibration during this phase, the duration of the disturbance is not considered to have a significant effect on bird species utilising the site long term.
- 2.210. The construction phase may therefore have a temporary adverse impact on breeding birds within and adjacent to the Application Site. This would result in an effect of **low** spatial and **short-term** temporal magnitude. The effect may continue beyond a single bird generation, but is expected to be sufficiently small for the local population to recover relatively soon. This effect would be **minor and not significant** for the commoner species, but could be **moderate (significant)** for Priority species and birds of conservation concern.
- 2.211. The Proposed Development is to be constructed on land that is subject to a level of disturbance from current agricultural activities. However, in the absence of mitigation there is **potential for significant effects** on breeding birds if construction works are undertaken between the months of March and August inclusive.
- 2.212. Post construction, it is considered that implementation of the **BMP** will increase the ecological value of the Application Site for birds. Disturbance during the operational phase is likely to be lower than the level currently experienced from crop treatments, and from noise and physical disturbance from agricultural machinery. Given this, **net positive effects** are anticipated for these species during the operational phase.
- 2.213. Further information regarding potential hazards to bird species utilising the habitat within the Application Site boundary can be found in **Appendix 2.4: Bird Hazard Management Plan**.

Invertebrates

- 2.214. The vast majority of the Application Site (arable grass ley / improved grassland) is considered to be of very limited value to invertebrates as it is species-poor, with high levels of herbicide and fertilizer inputs. However, hedgerows, tree lines and adjacent areas of broadleaved woodland are all considered likely to support a more diverse invertebrate assemblage. The agricultural field drains within the ESA are likely to support a modest assemblage of aquatic invertebrates.
- 2.215. Impacts on these species are likely to be limited to dust and other pollution emitted during the construction phase of the Proposed Development. However, the current baseline includes periodic disturbance of a smaller, but not incomparable, magnitude from agricultural activities several times a year. **No significant effect** is anticipated during the construction phase.
- 2.216. Habitats will be significantly enhanced for invertebrates by new hedgerow, species-rich grassland and tree planting as part of the proposed BMP (Appendix 2.2: Biodiversity Management Plan) also visible in the LEMP (Figure 1.14 of Technical Appendix 1, Volume 3). Overall, these species are deemed likely to experience **significant positive effects** in the absence of mitigation.

Mitigation and Enhancement Measures and Further Survey

Otter

- 2.217. It is unlikely that otter would be utilising the habitat available within the Application Site. However, in the unlikely event otter were to enter the site during the construction phase there could be potential for them to become trapped in trenches excavated during works. In line with construction best practice, all excavations during the construction phase of the Proposed Development will be covered securely; this will therefore prevent the accidental trapping of otters.
- 2.218. Standard best practice measures in regard to pollution prevention (as identified above and in Technical Appendix 8: Outline Construction Environmental Management Plan) will be implemented. This is to prevent contamination of the aquatic environment during the construction phase of the Proposed Development. Please note that this does not qualify as mitigation.

Badger

- 2.219. Given that badger is a highly mobile species and may be present within the Application Site, it is recommended that a pre-construction badger survey is undertaken to assess the

presence of badger immediately before construction. Any necessary mitigation will then be designed in accordance with relevant ecological guidance and legislative requirements.

- 2.220. During the construction process, all dug ground should be levelled and compacted wherever possible. All excavations are to be covered or closed off securely at the end of each working day to prevent the accidental trapping of badgers.
- 2.221. Enhancements designed into the Proposed Development (see Appendix 2.2: Biodiversity Management Plan) include the following measure for badgers:
- Creation of hedgerow and tree planting, providing new sett-building habitat.

Bats

- 2.222. It is not proposed that any trees with bat roost potential ("BRP") will be removed at the Application Site. If any mature tree ultimately requires removal, it will need to be surveyed for BRP prior to removal. In line with Bat Conservation Trust guidelines³⁹, further surveys will be required should this BRP check determine the tree to be of medium or high bat roosting potential. If low potential exists, soft felling techniques will be used. This technique is used to ensure that no cavities are cut through. Branches or trunk pieces with cavities are lowered carefully to the ground and left with the access hole upward facing over night to allow any bats to leave.
- 2.223. The enhancements designed into the Proposed Development (see Appendix 2.2: Biodiversity Management Plan) include the following measures for bats:
- Installation of bat boxes on retained trees of suitable size and location (including designs suitable for locally-present bat species identified by the desk study);
 - Creation of new hedgerows, species-rich grassland and tree planting, providing new bat foraging opportunities;
 - Measures to increase invertebrate numbers, increasing potential bat prey availability.

Other Mammals

- 2.224. No further survey is considered necessary in connection with other mammal species.
- 2.225. Although not relied on as mitigation, a 10cm gap will be included at the bottom of all security boundary fencing to allow the free movement of any small mammal into, out of and within the Application Site.

³⁹ Collins, J. (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines. 3rd edition. Bat Conservation Trust, London.

- 2.226. The enhancements designed into the Proposed Development (see **Appendix 2.2: Biodiversity Management Plan**) include the following measures for hedgehog:
- Creation of new hedgerow and species-rich grassland habitat.
 - Provision of hedgehog houses;
 - Measures to increase invertebrate numbers, increasing potential hedgehog prey availability.

Herptiles

- 2.227. Due to health and safety constraints, further GCN pond surveys are not possible. No further surveys are required for herptile species. Further Detail regarding this can be found in **Appendix 2.1: Extended Phase 1 Habitat Survey Report**.
- 2.228. All works affecting GCN habitats will be undertaken using a non-licensed method statement. Insofar as possible, construction works affecting sheltering habitats will be undertaken during the active season (March to September). Works in other areas will be undertaken outside this season. This will reduce risks to GCN during winter dormancy by avoiding habitats where they may be present. However, it is recognised that this is not always practical from a construction perspective. Wherever this is not possible, works affecting GCN habitats will be overseen by a suitably qualified and experienced Ecological Clerk of Works ("ECoW").
- 2.229. Where sections of hedgerow are to be removed, this should occur in suitable weather conditions using hand tools (see **Table 2-11**). Any strimming or other removal of vegetation during the herptile active season should be carried out in phases, towards retained habitat. The initial phase should involve cutting the vegetation to a height of 150mm, followed by a second phase of cutting down to ground level if necessary. This method allows any reptiles or amphibians present to move out of the area ahead of works. If the work needs to occur between October and February, dismantling/removal will be overseen by a suitably qualified and experienced ECoW.
- 2.230. Any amphibians or reptiles found should be moved carefully by an ecologist to suitable retained habitat in the vicinity or, if already present, to one of the herptile hibernacula to be created within the Application Site (see **Appendix 2.2: Biodiversity Management Plan** and **Figure 1.14 of Volume 3, Technical Appendix 1**).
- 2.231. Enhancements designed into the Proposed Development include the following measures for herptiles:
- Creation of new hedgerow and species-rich grassland over existing arable habitat, providing new shelter and foraging resources;
 - Creation of herptile hibernacula;

- Measures to increase invertebrate numbers, increasing potential herptile prey availability.

Birds

- 2.232. As the constructive phase may have a significant impact on breeding birds within and adjacent to the Application Site, mitigation measures have been recommended to ensure that no significant impacts occur.
- 2.233. Where works are to commence during the breeding season (March to August inclusive), pre-commencement checks of possible nesting sites should be undertaken by a suitably experienced ecologist prior to works commencing. An appropriate buffer zone must be established around nesting birds until the young have fully fledged.
- 2.234. Proposed enhancements (see **Appendix 2.2: Biodiversity Management Plan**) include the following measures for birds:
- Planting of new hedgerows, species-rich grassland and trees, providing new nesting and foraging resources;
 - Measures to increase invertebrate numbers, increasing potential prey availability for insectivorous birds;
 - Erection of bird boxes, including a design suitable for the Nottinghamshire priority species barn owl.

Invertebrates

- 2.235. No further survey or mitigation is considered necessary in connection with invertebrates.
- 2.236. The enhancements designed into the Proposed Development (see **Appendix 2.2: Biodiversity Management Plan**) include the following measures benefitting invertebrates:
- Planting of new hedgerows, species-rich grassland and trees, increasing invertebrate habitat interest;
 - Provision of invertebrate boxes/hotels;
 - Creation of bee banks;
 - Creation of herptile hibernacula, doubling as a dead wood resource for saproxylic invertebrates.

Residual Effects

- 2.237. With the implementation of pre-commencement surveys and the proposed mitigation measures, it is considered that there will be **no significant adverse effects** upon protected or notable species during the construction phase. The BMP (Appendix 2.2: Biodiversity Management Plan) and LEMP (Figure 1.14 of Volume 3, Technical Appendix 1) propose a number of habitat creation and enhancement measures centred around new hedgerows, species-rich grassland, tree and scrub planting, herptile hibernacula and bird and bat boxes. With the implementation of these, **the potential of the Application Site to support local wildlife will increase** and the Proposed Development will lead to a **significant positive effect** on a number of protected species during the operational phase.
- 2.238. Residual effects on otters are considered **negligible**.
- 2.239. Residual effects on badgers are considered to be **minor positive**.
- 2.240. Residual effects upon bats are envisaged to be **significant and positive**.
- 2.241. Residual effects on hedgehog and common small mammals are considered **significant and positive**.
- 2.242. Residual effects on other mammals including brown hares are considered **minor (non-significant)**.
- 2.243. Residual effects upon herptiles are envisaged to be **significant and positive**.
- 2.244. Residual effects upon birds are considered to be **significant and positive**.
- 2.245. Residual effects upon invertebrates are considered to be **significant and positive**.

CUMULATIVE EFFECTS

- 2.246. As well as singular effects, cumulative effects also need to be considered. The Conservation of Habitats and Species Regulations 2017 state that any plan or project that may, either alone or in combination with other plans or projects, significantly affect an international designated site should be the subject of an Appropriate Assessment.
- 2.247. Cumulative impacts can be an issue when the Proposed Development has a small impact on international sites or other sensitive ecological receptors. If other proposals have a small impact, the combined result can have a significant impact on these features.
- 2.248. A search of the Rushcliffe Borough Council, North West Leicestershire District Council, Erewash Borough Council, Broxtowe Borough Council and Nottingham City Council online planning portals was undertaken to identify any projects or developments within 5km which could impact any international sites, sensitive habitats or protected/notable species, either alone or in combination with the Proposed Development. Table 2-7 below shows the relevant developments.

Table 2-7 Developments for Cumulative Assessment

Application Reference Number	Name	Development	Status	Distance & Direction from the Site
Consented				
21/00703/FUL	Sharpley Hill, East Leake Solar Farm, Nottinghamshire	A 4MW Solar Farm comprising fixed PV arrays with associated infrastructure including internal access track, substation, power station plus security fencing and CCTV	Consented 02/12/2021	1.3km east of field 16
In Planning				

21/02163/SCR EIA	Glebe Farm Nottingham	Solar Farm and Battery Storage Facility with associated infrastructure	In planning	1.5km east of access track and 0.7km northwest of access track
21/02038/SCR EIA	Land At Church Farm Gotham Road On Soar Nottinghamshire	Solar photovoltaic farm and other associated infrastructure	In planning	1.3km west of Field 1

- 2.249. Similar minor impacts on brown hare would be predicted for the above Glebe Farm Solar Farm and Church Farm Solar Farm developments as a result of habitat loss (if the species is present). However, the effect of this loss can be minimised by appropriate landscape design in these schemes.
- 2.250. **No significant cumulative adverse effect** is therefore anticipated upon brown hare (or any other species or designated site) as a result of the Proposed Development. The Council are advised to satisfy themselves that these upcoming schemes are designed appropriately.
- 2.251. The Ecological Impact Assessment and Planning Report Documents submitted for the consented Sharpley Hill, East Leake Solar Farm conclude that, without mitigation, there could be a moderate adverse impact on mammal species. However, this appears to derive solely from potential harm to badgers. Moreover, with mitigation measures, there would be a 'Neutral to Minor Beneficial' impact on mammals.
- 2.252. In addition to this, further 'Minor Beneficial Impact' is expected if the enhancement measures detailed in the report, such as supplementary hedgerow planting and creation of permanent calcareous wildflower grassland, are included in the Development's construction. Furthermore, there were no known cumulative impacts outlined within the report.
- 2.253. As a result, it has been concluded **there will be no significant adverse cumulative effects** arising from the consented Sharpley Hill, East Leake Solar Farm and proposed Kingston Solar Farm if all relevant mitigation and enhancement measures outlined are adhered to.

CONCLUSION

- 2.254. To minimise potential impacts on local wildlife, protective measures have been incorporated into the Proposed Development as part of the iterative design process. These include buffers from potentially sensitive ecological receptors (see Table 2-8 below). Standard best practice pollution prevention measures for the construction stage have also been outlined and considered as part of the impact assessment, prior to mitigation. These measures are outlined in Table 2-8.
- 2.255. A total of 18 habitat types were noted during the extended phase 1 habitat survey undertaken in February and June 2021. The main impacts during the construction phase include the direct loss of habitat under the Proposed Development footprint, and indirect loss of habitat due to noise and vibration disturbance, dust and water pollution. **The loss of these primarily intensive agricultural habitat areas is considered to be of negligible significance** to nature conservation interest within the local area.
- 2.256. The desk-based assessment identified that within 15km of the Application Site boundary there are no Special Areas of Conservation (“SACs”), no Special Protection Areas (“SPAs”), no possible SACs (“pSACs”) and no potential SPAs (“pSPAs”) or Ramsar Sites. There are five Sites of Special Scientific Interest (“SSSIs”), no National Nature Reserves (“NNRs”) and seven Local Nature Reserves (“LNRs”) within 5km of the Application Site. In addition, there is a total of 26 non-statutory Local Wildlife Sites (“LWSs”) located within 2km.
- 2.257. These designated sites have been assessed and it is concluded that there will be **no adverse effects** on the integrity of any statutory designated sites as a result of the Proposed Development.
- 2.258. The only statutory designated sites with connectivity to the Application Site are Rushcliffe Golf Course SSSI, Lockington Marshes SSSI, Attenborough Gravel Pits SSSI, Trent Meadows LNR, Rushcliffe Country Park LNR, Brecks Plantation LNR and Glapton Wood LNR. Non-statutory designated sites with connectivity are Crownend Wood (Western Assart) LWS, Rushcliffe District Golf Course LWS, Leake New Wood Track LWS and Gotham Wood LWS. With the implementation of the recommended measures, it has been determined that there will be **no significant adverse effects** on any designated nature conservation site as a result of the Proposed Development.
- 2.259. Recommendations for further survey work have been provided within this report as part of the relevant mitigation measures. Please refer to Table 2-8 below for these.
- 2.260. It is considered that the short-term disturbance resulting from the Proposed Development **will not be significant** if the recommended mitigation is undertaken. With the implementation of pre-commencement surveys and the proposed mitigation measures, it is considered that there will be **no significant adverse effects** upon protected or notable species during the

construction phase. The BMP and LEMP (Appendix 2.2: Biodiversity Management Plan and Figure 1.14 of Volume 3, Technical Appendix 1: Landscape and Ecological Management Plan) propose a number of habitat creation and enhancement measures centred around new hedgerows, species-rich grassland, tree planting, hibernacula, and bird, mammal and invertebrate houses/boxes. With the implementation of these, **the potential of the site to support local wildlife will increase**. The Proposed Development is likely to lead to a **significant positive effect** on a number of protected or Priority species during the operational phase.

- 2.261. The Proposed Development conserves and enhances biodiversity, minimising impacts, providing net gains (see Appendix 2.3: Net Gain Assessment) and strengthening existing and retained green infrastructure. Biodiversity Net Gain of 44.88% for habitats is expected in addition to a Biodiversity Net Gain of 76.21% for hedgerows. This accords with national planning policy, and with Rushcliffe Local Plan Policies 16, 17 and 38 and Local Plan Part 2 Appendix E.

Table 2-8: Integral Design Measures and Standard Best Practice

Receptor	Potential Development Impacts	Phase of Development	Measures Implemented
INTEGRAL DESIGN MEASURES			
Aquatic environment	Pollution	Construction	Avoidance of all surface water areas including ponding
Habitats	Pollution and damage / destruction	Construction	Avoidance of hedgerows, watercourses/field drains, woodland and trees 15m+ buffer from ancient woodland
Designated sites		Construction	Limitation to less distinctive and lower-quality areas 12-30m buffers between PV panels and locally designated sites
Badger, brown hare, hedgehog	Exclusion from foraging habitat	Operational	Security fencing to have 10cm gap at base to allow free movement of badger through the site
STANDARD BEST PRACTICE MEASURES			
Habitats (hedgerows, woodland)	Habitat loss	Pre-construction	5m buffer from hedgerows 10m buffer from woodland
Aquatic environment	Pollution	Construction	Best practice pollution prevention measures implemented prior to and throughout the construction phase to prevent contaminants entering the aquatic environment and reduce potential groundwater contamination
Badger, deer, other mammals	Accidental trapping within fences or excavations	Construction	All excavations should be securely covered at the end of each working day An escape ramp should be provided if excavations unavoidably need to be left open

			<p>9.88km of security fencing at 2.4m high with a 10cm gap at the bottom to be erected</p> <p>Any pipes over 200mm in diameter should be capped off at night to prevent animals entering</p> <p>Materials such as netting and cutting tools should not be left in the works area where they might entangle or injure animals</p> <p>No stockpiles of vegetation should be left overnight and if they are left then they should be dismantled by hand prior to removal</p> <p>Night working should be avoided.</p>
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Table 2-9: Recommended Mitigation Measures

Receptor	Potential Development Impacts	Phase of Development	Measures Implemented
MITIGATION MEASURES			
Badger	Destruction of badger setts	Pre-construction	Pre-commencement survey (Measures dependent on survey findings)
Bats	Habitat disturbance/destruction	Pre-construction	Bat Roost Potential survey of any tree to be removed (Measures dependent on survey findings)
Birds	Habitat disturbance/destruction of nesting habitat (Only if works are undertaken between March and August inclusive)	Pre-construction	Pre-construction nesting bird check (only if works are undertaken between March and August inclusive) (Measures dependent on survey findings)

<p>Herptiles</p>	<p>Habitat disturbance/destruction and minor hedgerow loss</p>	<p>Construction</p>	<p>Any vegetation removal from March to September to be carried out directionally towards retained habitat, in two stages</p> <p>Careful removal of hedgerow performed with hand tools, only when air temperature is above 10°C, and not after long dry spells. Ecologist to be contacted if herptiles are found</p> <p>Construction works affecting hedgerows to be undertaken during the active season (March to September) where possible</p> <p>If such works are needed between October and February, removal will be overseen by a suitably qualified and experienced Ecological Clerk of Works</p> <p>Works in other areas (open habitats) to be undertaken from October to February where possible</p>
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APPENDICES

Appendix 2A – Figures

- Figure 2.1 – Statutory Environmental Designations
- Figure 2.2 – Non-Statutory Environmental Designations
- Figure 2.3 – Habitat Map

Appendix 2.1 – Extended Phase 1 Survey Report

Appendix 2.2 – Biodiversity Management Plan

Appendix 2.3 – Net Gain Assessment

Appendix 2.4 – Bird Hazard Management Plan