Chapter 7: Ecology and Biodiversity

Preliminary Environmental Information Report

Volume 1

Steeple Renewables Project

Land at Sturton le Steeple, Nottinghamshire

7. Ecology and Biodiversity

7.1 Introduction

7.1.1 This Preliminary Environmental Information Report (PEIR) chapter summarises the baseline biodiversity interest of the Site and biodiversity features within the Proposed Development's Zone of Influence (ZoI) based on baseline biodiversity information available at the time of writing. The baseline is evaluated in accordance with industry guidance. It also provides a preliminary assessment of the potential effects of the Proposed Development during construction, operation and decommissioning in relation to Ecology and Biodiversity. This is based on the current baseline information and the design information available at the time of writing. It considers measures to address potential impacts and likely significant effects to assess the significance of the potential residual biodiversity effects of the Proposed Development

7.1.2 A final assessment of the potential impacts of the Proposed Development on biodiversity, including updates to the baseline if required, will be reported in the Environmental Statement (ES) that will be submitted with the application for Development Consent.

7.1.3 Consultation responses and scoping opinions, based on the EIA Scoping Report at **Appendix 1.1** of this PEIR, and the on-going consultation and engagement with statutory and non-statutory bodies have been considered during the preparation of this chapter. Consideration is also given to other known projects and activities and specifically to the potential for interaction between the Proposed Development and other projects, potentially resulting in cumulative effects.

7.1.4 This PEIR chapter is supported by three appendices :

- Appendix 1: Recommended buffer zones and stand-off distances from ecological features.
- Appendix 2: Summary of written consultation responses with reference to Ecology.
- Appendix 3: Summary of Ecology consultation meetings.

7.1.5 The chapter is also supported by several separate Technical Appendices as follows:

- Appendix 7.1: Summaries of relevant policy, legislation and other instruments (to be included in the final ecology chapter of the ES)

- Appendix 7.2: Designated sites
- Appendix 7.3: Habitat report
- Appendix 7.4: Breeding bird report
- Appendix 7.5: Barn owl report (confidential)
- Appendix 7.6: Wintering bird report
- Appendix 7.7: Bat report
- Appendix 7.8: Badger report (confidential)
- Appendix 7.9: Otter and water vole report
- Appendix 7.10: Great crested newt report
- Appendix 7.11: Aquatic invertebrates report
- Appendix 7.12 Biodiversity Net Gain Report
- Appendix 7.13: Draft skylark mitigation report

Terms used in this chapter of the PEIR

7.1.6 For ease of reference the following will be terms referred to within the Ecology Chapter to define areas within the Site (refer to **Figure 2.1 'Construction Phase Parameter Plan'** and **Figure 2.2 Operational Phase Parameter Plan**):

- Proposed Solar Areas: all areas within the Site which have been provisionally identified within the Parameters Plans (see **Figures 4.1 and 4.2**) for locating the solar panels, battery storage, substations, access routes and other associated infrastructure.
- Biodiversity Mitigation Areas (Eastern and Western): areas of the Site that would not be used for development, and provisionally identified for use as biodiversity mitigation and enhancement.
- The Site: collectively including the Proposed Solar Areas and Biodiversity Mitigation Areas.

7.2 Legislation and Planning Policy

7.2.1 The main legislation and policy relating to habitats, species and protected biodiversity sites is set out in **Appendix 7.1**.

Legislation

- Environment Act 2021
- The Conservation of Habitats and Species Regulations 2017
- Wildlife and Countryside Act 1981

- Protection of Badgers Act 1992
- The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017/572).
- Protection of Badgers Act 1992
- Hedgerow Regulations 1997
- The Eels (England and Wales) Regulations 2009
- The Salmon and Freshwater Fisheries Act 1975
- The Animal Welfare Act 2006
- The Invasive Alien Species Order 2009

Policy

- Natural Environment and Rural Communities (NERC) Act 2006 - Habitats and species of principal importance (England)
- Bassetlaw Local Plan 2020 – 2034
    - POLICY ST37: Green and Blue Infrastructure
    - POLICY ST38: Biodiversity and Geodiversity
    - POLICY ST39: Trees, woodlands and hedgerows

7.3 Assessment Methodology

Methods of Evaluation and Impact Assessment

7.3.1 This chapter follows the general approach set out in the Ecological Impact Assessment (EcIA) guidance published by the Chartered Institute for Ecology and Environmental Management (CIEEM, 2024)[1]. The approach to evaluation of the importance of biodiversity features and the assessment of the significance of impacts and effects on those features, is summarised below. Although CIEEM (2024) is recognised as the industry standard for ecological assessment, the guidance is not prescriptive; rather, it aims to **"*provide guidance to practitioners for refining their own methodologies*".**

[1] CIEEM (2022) Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine [online] available at: https://cieem.net/wp-content/uploads/2018/08/EcIA-Guidelines-v1.3-Sept-2024.pdf [last accessed 7th November 2024].

Important Ecological Features

7.3.2 One of the first steps in EcIA is determination of which ecological features (habitats, species, ecosystems and their functions/processes) are important. Important ecological features should then be subject to detailed assessment if they are likely to be affected by a development. It is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to effects of a development, such that there is no risk to their viability.

7.3.3 Ecological features can be important for a variety of reasons. Importance may relate, for example, to the quality or extent of designated sites or habitats, to habitat/species rarity, to the extent to which they are threatened throughout their range, or to their rate of decline.

Evaluation: Determining Importance

7.3.4 The importance of an ecological feature is considered within a defined geographical context. The following frame of reference has been used in this case:

- International / European
- National (UK)
- Regional: East Midlands
- County: Nottinghamshire
- Local: i.e., broadly the area of land between Saundby (to the north) and Treswell / Cottam to the south, and between the River Trent to the east and Clarborough to the west (the wider local setting of the Site).
- The Site (and its immediate surrounds.
- Below Site level: negligible importance.

Characterising and Quantifying Effects and Assessing their Significance

7.3.5 The CIEEM guidelines suggest that ecological effects or impacts should be characterised in terms of ecosystem structure and function and reference should be made *where relevant* [author's emphasis] to: beneficial, adverse or 'no significant' (or 'neutral') effects; extent; magnitude; duration; reversibility; timing and frequency; and cumulative effects. The guidelines provide a list of ***"aspects of ecological structure and function to consider when predicting impacts and effects"***. The terms 'impact' and 'effect' are used in accordance with the following definitions (as provided by the guidelines):

> Impact: ***"Actions resulting in changes to an ecological feature. For example, the construction activities of a development removing a hedgerow".***
>
> Effect: ***"Outcome to an ecological feature from an impact. For example, the effects on a dormouse population from loss of a hedgerow".***

7.3.6 Following the characterisation of effects, an assessment of the ecological significance of those effects is made. The guidelines promote a transparent approach in which a beneficial or adverse effect is determined to be significant or not, in ecological terms, in relation to the integrity of the defined site or ecosystem(s) and/or the conservation status of habitats or species within a given geographical area, which relates to the level at which it has been valued. The decision about whether an effect is significant or not, is independent of the value of the ecological feature; the value of any feature that will be significantly affected is then used to determine the implications, in terms of legislation and / or policy.

7.3.7 Significance is a concept related to the weight that should be attached to effects when decisions are made. For this assessment, a 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features'. A significant effect is simply an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project. The CIEEM guidance states:

> ***"A significant effect does not necessarily equate to an effect so severe that consent for the project should be refused planning permission. For example, many projects with significant adverse ecological effects can be lawfully permitted following EIA procedures".***

7.3.8 In this Chapter, all of the effects are described to be either significant, or not significant, at the level set out (e.g., at the Site level; at the Local level at the County level; at the National level; at the International level) .

7.4 Assessment Assumptions and Limitations

7.4.1 This section summarises any assumptions and potential limitations relating to any difficulties encountered in compiling the baseline information, and assumptions made about data sources, baseline conditions or the assessment of effects. They are

considered in greater detail in the relevant Appendices (**Appendix 7.2 to 7.13**) and summarised here.

7.4.2 Since the ecological survey work was performed on the Site, additional areas have been included when compared to the boundary of the Site that was submitted with the EIA Scoping Opinion request on 19th April 2024. The additional areas of the Site when compared with the boundary that was submitted at the EIA Scoping stage comprise additional roads, and areas of the railway that traverses the western portion of the Site. As such, it is recognised that the detail on their associated habitats (i.e., road verges and railway embankments) have not been captured. This limited extent of habitat that has not been captured by the survey work is not anticipated to affect the conclusions of this chapter with respect to habitats, nor is it anticipated to materially change the preliminary BNG calculations at Appendix 7.12. The additional areas will be surveyed and included within the subsequent Ecology Chapter of the ES.

7.4.3 No significant baseline additional data gathering or methodological limitations have been identified. This is expanded upon in each of the Appendices 7.2 to 7.13.

7.5 Stakeholder Engagement

7.5.1 A Scoping Report was submitted to the Planning Inspectorate (PINS) on 19th April 2024. A response was received from PINS and other stakeholders, dated 3rd June 2024.

7.5.2 The Environment Agency (the EA) provided a separate Scoping Response, dated 6th August 2024.

7.5.3 The responses are summarised in Appendix 2 at the rear of this chapter, along with notes about how this Chapter has responded to the comments of PINS and the other consultees.

7.5.4 Further stakeholder consultation has been initiated with the following organisations:

- Natural England;
- Nottinghamshire County Council Ecology Team;
- Bassetlaw ecologist; and,
- Nottinghamshire Wildlife Trust.

7.5.5 A summary of the outcome of stakeholder engagement undertake to date is presented in Appendix 3, at the end of this chapter.

7.6 Baseline Conditions

7.6.1 Survey and desk study methods are summarised in Section 7.3 of this PEIR chapter. Detailed survey and desk study methods are set out in the relevant Appendices (7.2 to 7.11) and briefly summarised below.

Study Area and Surveys Undertaken

7.6.2 The extent of the ecological study area has been informed by published guidance, professional judgement and scoping responses from the Planning Inspectorate on other nearby nationally significant infrastructure project (NSIP) solar projects.

7.6.3 The Study Area methodology for the desk study is detailed within each of the Technical Appendices.

7.6.4 **Table 7.1** summarises the Survey Area and status of the ecology field surveys that have been undertaken or that are underway. It also summarises the methods of survey employed, which is expanded upon in each of the relevant survey Appendices.

Table 7.1 Summary of surveys carried out to date

Survey	Survey Area	Methodology	Dates	Status of work	Observations
Terrestrial habitats	The Site	UK Habitat Classification Definitions[2] . Habitat types and conditions recorded to aid descriptions and enable completion of the Statutory Biodiversity Metric. Hedgerow Survey Handbook (Defra, 2007) to allow assessment of importance against the wildlife and landscape criteria as specified in The Hedgerows Regulations (1997). A search for invasive non-native species was also undertaken.	January to August 2024	Completed and results included in the PEIR	No further survey proposed to establish baseline. All hedgerows that the arboricultural surveys identified as having five species or more along their entire length were surveyed by an ecologist to determine if they were species-rich or 'important', as detailed below. This is because the arboricultural survey produced counts of woody species for the entire length of the hedgerow, whereas species richness, in UKhab classifications, is determined by the average number of woody species per 30m sample section only. On this basis, survey of 51 hedgerows, covering 15.5 km of the total 69 km resource of hedgerow within the Site was completed.
Aquatic habitats: initial ditch and watercourse survey. Pond surveys.	The Site	UK Habitat Classification Definitions. A search for invasive non-native species was also undertaken.	April to June 2024	Completed and results included in the PEIR.	No further survey proposed to establish baseline.

[2] UKHab Ltd (2023). 'UK Habitat Classification Version 2.0'. [online] available at https://www.ukhab.org [last accessed 18 November 2024].

Survey	Survey Area	Methodology	Dates	Status of work	Observations
Aquatic habitats: Modular River Physical (MoRPh) survey	The Site	Condition assessments in line with the Statutory Biodiversity Metric User Guide[3] and its technical annex. Watercourses that require 'river condition assessment' will be subject to Modular River Physical (MoRPh) survey in accordance with Modular River Survey guidance[4] .	September / October 2024	Ongoing: Results not included in the PEIR.	Survey work required to determine site baseline for watercourse BNG. The MoRPh survey will be undertaken on qualifying watercourse features (i.e., not dry ditches). Results of the survey, interpretation and assessment will be included in the ES to confirm baseline.
Aquatic habitats: lake condition assessment survey	The Site	UK Habitat Classification Definitions. A search for invasive non-native species will also be undertaken.	September / October 2024	Ongoing. Results not included in the PEIR.	Work to be undertaken on Littleborough Lagoon only. No other Lake features present at the Site that require survey. Results of the survey, interpretation and assessment will be included in the ES to confirm baseline.

[3] Defra (2024); 'Statutory Biodiversity Metric User Guide'. Defra.
[4] Gurnell A. et al. (2022); 'A Guide to Assessing River Condition: Part of the Rivers and Streams Component of the Biodiversity Net Gain Metric. BM3.1 version, updated November 2022'. Modular River Survey

Survey	Survey Area	Methodology	Dates	Status of work	Observations
Breeding bird survey	The Site and immediate surrounding areas	Five morning surveys completed, one per month between March and July and one dusk / crepuscular survey in June. Methods with reference to Gilbert *et al*[5] and the Bird Survey & Assessment Steering Group[6] . Field data were analysed to create maps of breeding bird activity and to estimate the numbers of breeding pairs within the Site. This took account of recorded behaviour in the case of each bird registration recorded. More information about the approach to territory analysis is given in Appendix 7.4. Birds observed beyond the boundary of the Site or flying over the Site showing no apparent association with it were also noted to contextualise the information gained but those observations do not form part of the reported territory numbers.	March to July 2023 and March to July 2024	Completed and results included in the PEIR.	No further survey proposed to establish baseline. Full access to the Site was not available during the 2023 breeding bird surveys, and this work was limited to surveying from public rights of way only. There is an extensive network of public rights of way across the Site which allowed much of the Site to be accessed. The 2024 data, which was gathered across the whole of the Site with no significant restrictions on access, is used as the principal field survey baseline. The 2023 survey was subject to access restrictions and is considered to be a partial dataset that nonetheless provides useful context in some cases, for example for skylark *Alauda arvensis*.
Wintering bird survey	The Site and immediate surrounding areas	One visit per month, and with reference to methods suggested by the Bird Survey & Assessment Steering Group 2.	October 2023 to March 2024	Completed and results included in the PEIR.	No further survey proposed to establish baseline. Full access was not possible to two areas of Site and these were surveyed from public rights of way. During the surveys, these fields and boundaries were observed where possible using binoculars from the public rights of way which is considered to have reduced the potential significance of the limitation. These areas are largely unaffected by the Proposed Development and are identified for biodiversity enhancements.

[5] Gilbert, G., Gibbons, D.W. & Evans, J. (1998). 'Bird Monitoring Methods'. RSPB.
[6] Bird Survey & Assessment Steering Group. (2023). 'Bird Survey Guidelines for assessing ecological impacts, v.1.1.1'. [online] Available at https://birdsurveyguidelines.org [last accessed 20 November 2024].

Survey	Survey Area	Methodology	Dates	Status of work	Observations
Ground level assessments of on-site trees and buildings for bat and barn owl	Proposed Solar Areas	Ground level inspection of all trees and buildings for their suitability for roosting bats and roosting / nesting barn owl completed with reference to industry bat survey[7] and barn owl survey[8] guidance.	January to April 2024	Completed and results included in the PEIR.	No further survey proposed to establish baseline. Ground level inspection of all trees and buildings within the Proposed Solar Areas (i.e., areas impacted by the solar and associated infrastructure). Trees / buildings within the Biodiversity Mitigation Areas (Eastern and Western) were not surveyed as they are likely to be retained and unaffected. At this stage, only a preliminary investigation of potential nesting / roosting features has been undertaken. This work has been undertaken to inform the design of the Proposed Development, for example by seeking to retain and appropriately buffer trees with bat and barn owl suitability. Where potential impacts to a tree / building with potential for either species cannot be avoided or adequately mitigated, further detailed investigation would be required to determine the presence / likely absence of roosts / nests. Such survey could include internal building inspections, nocturnal surveys and aerial climbed tree inspections.
Ground level assessments of off-site trees and buildings for bat and barn owl	Off-site up to 50 m from the boundary of the Proposed Solar Areas (where considered to be appropriate and access can be secured).	Ground level inspection of all trees and buildings for their suitability for roosting bats and roosting / nesting barn owl completed with reference to industry bat survey and barn owl survey guidance.	January to November 2024	Ongoing. Available data are included in the PEIR.	Results of the survey, interpretation and assessment will be included in the ES to confirm baseline.

[7] Collins, J. (ed.) (2023); 'Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition)'. The Bat Conservation Trust, London
[8] Shawyer C (2012); 'Barn Owl Tyto alba Survey Methodology and Techniques for use in Ecological Assessment'. Wildlife Conservation Partnership.

Survey	Survey Area	Methodology	Dates	Status of work	Observations
Bat activity survey	Proposed Solar Areas	Bat activity survey work undertaken with reference to industry bat survey guidance and based on a 'moderate' habitat suitability. It is comprised of two survey methods: 1) Night-time bat walkover survey. One survey to be completed in spring (April / May), summer (June – August) and autumn (September / October) 2024. Currently proposed that five routes will be sampled across representative habitats. 2) Remote bat detector survey. Monthly surveys between April and October, deploying remote bat detectors for a period of at least five nights per month.	April to October 2024	Analysis of later results is ongoing. Survey results from April to June 2024 are included in the PEIR.	Analysis of later survey results ongoing and the PEIR includes an interim evaluation and assessment. Final results of all bat surveys, interpretation and assessment will be included in the ES. Surveys have not been undertaken in the Biodiversity Mitigation Areas (Eastern and Western) as there will not be any negative effects on bat foraging / commuting habitats.
Badger survey	The Site and off-site up to 50 m from the boundary of the Proposed Solar Areas (where considered to be appropriate and where access could be secured).	Completed with reference to industry standard survey methodology[9][10].	January to July 2024	Completed and results included in the PEIR	No further survey proposed to establish baseline. 50 m buffer not accessible in all locations but this is not considered a significant limitation. Incidental field signs of badger identified during field work for other ecology features were also collected and reviewed to determine the badger baseline. Additional badger field signs will continue to be collected (if present) during any ongoing field work for other features.

[9] Harris S, Cresswell P & Jefferies D (1989); 'Surveying Badgers –Occasional Publication No 9'. The Mammal Society.
[10] Neal, E., and C. Cheeseman (1996); 'Badgers'. T & AD Poyser Natural History Ltd, London.

Survey	Survey Area	Methodology	Dates	Status of work	Observations
Water vole survey	Proposed Solar Areas and off-site up to 10 m from the boundary of the Proposed Solar Areas (where considered to be appropriate and access can be secured).	Completed with reference to industry standard survey methodology[11][12]. Two separate survey visits were undertaken, one early season and one later season and timed least two months apart.	April and September 2024	Completed and results included in the PEIR	No further survey proposed to establish baseline. Surveys have not been undertaken in the Biodiversity Mitigation Areas (Eastern and Western) as there will not be any negative effects on potential water vole habitats.
Otter survey	Proposed Solar Areas and up to 100 m the boundary of the Proposed Solar Areas (where considered to be appropriate and access can be secured).	Suitable waterbodies and terrestrial habitat were surveyed with reference to industry standard survey methodology[13][14].	April and September 2024	Completed and results included in the PEIR	No further survey proposed to establish baseline. Surveys have not been undertaken in the Biodiversity Mitigation Areas (Eastern and Western) as there will not be any negative effects on potential otter habitats

[11] Dean, M., (2021); 'Water vole field signs and habitat assessment. A practical guide to water vole surveys'. Pelagic Publishing, Exeter.
[12] Strachan, R., et al. (2011); 'Water Vole Conservation Handbook: Third Edition'. Wildlife Conservation Unit, Oxford
[13] Chanin P. (2003). 'Monitoring the Otter Lutra lutra'. Conserving Natura 2000 Rivers Monitoring Series No.10 English Nature, Peterborough.
[14] Natural England (2014). 'Otters: surveys and mitigation for development projects'. Natural England and Department for Environment, Food & Rural Affairs, Worcester.

Survey	Survey Area	Methodology	Dates	Status of work	Observations
Great crested newt *Triturus cristatus* survey	The Site and up to 250 m off-site (where considered to be appropriate and access secured).	Waterbodies assessed for their suitability to supporting great crested newt using the Habitat Suitability Index (HSI) assessment[15]. Where suitable breeding waterbodies were identified during the HSI assessment, an eDNA survey with reference to industry standard methodology[16] .	mid-April to end- June 2024	Completed and results included in the PEIR	No further survey proposed to establish baseline. 18 waterbodies suitable for great crested newt (three ponds and seven ditches) were present within the Site that were subject to further survey. Nine off-site waterbodies within 250 m of the Site were scoped in for further survey. Of this number four were subject to further survey and access permission could not be secured to the other five waterbodies. A further two ponds were considered unlikely to support breeding great crested newt due to from pre-existing survey information (negative eDNA results from surveys undertaken by third-parties in 2022-2023).
Aquatic invertebrate survey	Targeted / selected watercourses within the Proposed Solar Areas and Eastern Biodiversity Mitigation Area	3 minutes netting using a 1 mm mesh hand net in each stretch of ditch to standardise the survey approach. Separate search (1 minute) to look for certain taxa (e.g. caddis-flies and leeches) fixed to woody debris / rocks and to sample surface water taxa such as whirligig beetles, pond skaters and water crickets. Physical habitat characteristics recorded.	June 2024	Ongoing. Results not included in the PEIR.	No further survey proposed to establish baseline. Analysis of the collected samples is current ongoing, and the results of the targeted aquatic invertebrate surveys are not presented within this report. This report will be updated at a later stage presenting the results and interpretation of the aquatic invertebrate surveys. The list of species derived from the aquatic invertebrate surveys will be analysed using the "Pantheon" database tool developed by Natural England and the Centre for Ecology and Hydrology[17].

[15] Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000); ' Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus)'. Herpetological Journal 10(4), 143-155.
[16] Biggs J., Ewald N., Valentini A., Gaboriaud C., Griffiths R.A., Foster J., Wilkinson J., Arnett A., Williams P., and Dunn F. (2014). 'Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA'. Freshwater Habitats Trust, Oxford.
[17] Webb, J., Heaver, D., Lott, D., Dean, H.J., van Breda, J., Curson, J., Harvey, M., Gurney, M., Roy, D.B., van Breda, A., Drake, M., Alexander, K.N.A. and Foster, G. (2018). 'Pantheon database'. [online] Available at: http://www.brc.ac.uk/pantheon/ [last accessed 20 November 2024].

Current baseline conditions and preliminary ecological evaluation

7.6.5 The Site is located around Sturton le Steeple (as shown on Figure 1.1'Site Location Plan') in a rural landscape characterised by agricultural land with occasional villages and individual properties. West Burton Power Station is located adjacent to the north of the Site and the River Trent bounds the Site to the east. Agricultural land is located to all aspects of the Site.

7.6.6 The Site extends to approximately 898hectares (ha) and comprises primarily large arable fields with boundary hedgerows and individual trees. There is a network of ditches and drains present and several ponds and waterbodies. There are occasional small woodland blocks, grassland pasture fields, and agricultural buildings.

Desk study

Species and habitats of importance

7.6.7 A data search for records of protected species, habitats and species of principal importance (SPI) and other notable species within 2km of the Site was requested from Nottinghamshire Biodiversity and Geological Records Centre (NBGRC) and Lincolnshire Environmental Records Centre (LERC) in March 2024.

7.6.8 Other sources such as the Nottinghamshire Local Biodiversity Action Plan (LBAP) have also been reviewed to identify habitats of local importance (Nottinghamshire Biodiversity Action Group, 2020).

7.6.9 Further detail on desk study methods for species and habitats is set out in the relevant feature appendix 7.2 to 7.11.

7.6.10 Desk study results for species and habitats are included in the relevant section of the PEIR and the appendices.

7.6.11 For most receptors, consideration of records up to twenty years old as of the request date is included within this report where relevant, as older records are less likely to be of relevance to the current baseline in the local area. Older records were reviewed as part of the desk study and are included where considered to be relevant to the Site, for example they occur on or adjacent to the Site.

Designated sites of nature conservation interest

7.6.12 Appendix 7.2 sets out in detailed the methods applied in the desk study for statutory and non-statutory designated sites of nature conservation interest.

7.6.13 A data search for records of non-statutory local designated sites within 2 km of the Site was requested from NBGRC LERC in March 2024.

7.6.14 The MAGIC application[18] was accessed to identify nationally designated statutory sites of nature conservation interest within 5 km of the Site and the location of Natural England's Impact Risk Zones (IRZ)[19] for statutory designated sites.

7.6.15 A search for internationally designated sites of nature conservation interest was undertaken within 10 km of the Site. The search was extended to 30 km for Special Protection Areas (SPAs)and Ramsar Sites, as well as any Special Areas of Conservation (SACs)that include bats as qualifying features.

7.6.16 The presence of ancient woodland within 2 km was also checked using the MAGIC application.

7.6.17 In the absence of prescriptive industry guidance on search areas, the CIEEM guidelines on determining Zones of Influence were considered, as was the potential for functional linkages between the Site and designated nature conservation sites.

Statutory designated sites

7.6.18 Within the search areas, there are six biological Site of Special Scientific Interest (SSSI)s, four SACs, one SPA and one Ramsar site, which are set out below. There are no sites within the search area for which bats are a qualifying feature.

7.6.19 The Site does not coincide with any internationally or nationally statutory designated sites.

7.6.20 The nearest internationally designated site is Birklands and Bilhaugh SAC which is 17 km[20] southwest from the Site. It is designated for its oak wood habitat, rich invertebrate fauna, and diverse fungal assemblage.

7.6.21 Thorne and Hatfield Moors SPA is 19.5 km northwest from Site. It is designated for its populations of European nightjar *Caprimulgus europaeus*, which is closely

[18] Multi-Agency Geographical Information in the Countryside (2024). [Online] Available from http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx [last accessed 20 November 2024].
[19] The Impact Risk Zones (IRZs) are a GIS tool developed by Natural England to make an initial assessment of the likely risk of impacts on SSSIs posed by developments. The IRZs tool comprises a series of zones around each SSSI and within each zone, the tool specifies the types of development which, at that distance, have the potential to have adverse impacts.
[20] All measurements taken within this report are approximate and from the nearest point of the Site.

associated with lowland heathland and felled or recently planted conifer plantations.

7.6.22 Hatfield Moor SAC is also 19.5 km northwest at its closest point and is designated for its bog habitat and invertebrate fauna.

7.6.23 The Humber Estuary Ramsar is 25.5 km north from the Site and supports internationally important assemblages of passage and wintering waders and waterfowl, as well as supporting aquatic and marine species.

7.6.24 The Humber Estuary SAC is 25.5 km north from the Site and is designated for its coastal habitats and marine fauna.

7.6.25 Thorne Moor SAC is more than 28 km north from the Site and is designated for its bog habitats and invertebrate fauna.

7.6.26 The closest nationally designated site is the Clarborough Tunnel SSSI, which is 40 m west of the Western Biodiversity Mitigation Area of the Proposed Development. This means that a small area of the Steeple Renewables Project (0.01 ha) falls within the IRZ of the SSSI. The SSSI is formed of four units (classed as calcareous grassland units), which were assessed as being in unfavourable-recovering condition, last assessed by Natural England in 2011[21]. A visit to the northeastern unit of the SSSI on 19th July 2024 confirmed that the SSSI is a mix of orchard, grassland, scrub and woodland. Sheep grazing is underway within the SSSI at low intensity (estimated 2-4 sheep/rams per ha at the time of the visit). Some damage to the grassland was observed from a recent campfire. A single grassland quadrat sample was undertaken within the SSSI to give an indication of species richness in comparison to the grasslands within the Site (noting that no calcareous grassland has been identified within the Site). Aerial imagery indicates that the proportion of open grassland within the SSSI is fairly low (ca. 0.8 ha out of the total 8.5 ha are of the SSSI), which was also evident during the walkover, and the quadrat sample indicates that the grassland supports ca. 12 species per m^2 (refer to Appendix 7.3: Habitat Report for further detail).

Non-statutory designated sites and ancient woodland

7.6.27 There are 30 non-statutory designated sites, one Ancient Semi-Natural Woodland (ASNW), and one Plantation on Ancient Woodland Site (PAWS) within the 2 km

[21] Natural England (undated) Designated Sites View – Clarborough Tunnel SSSI [online] available at: https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=s1000656 (last accessed 20 November 2024)

search area. Details of all non-statutory designated sites and ancient woodlands within the search area are provided in Appendix 7.2.

7.6.28 Five Local Wildlife Sites (LWS) are within the Site, and two LWSs are within 100 m of the Site. Details of their designations and current status is provided in Table 7.2 below.

7.6.29 The remaining LWSs are scoped out of further consideration on the basis of their distance from the Site and the nature of the Proposed Development which is unlikely to have a ZoI with respect to LWSs beyond their respective distances.

Table 7.2 Summary of Local Wildlife Sites at the Site and within 100 m

Site Name and Designation	Distance from Site	Feature(s) of interest
Blue Stocking Lane, Clarborough	Partially within the Site (Western Biodiversity Mitigation Area)	A green lane with species-rich grassland and hedgerows. The LWS extends northwards out of the Site, along a woodland edge. For the part of the LWS within the Site, the LWS citation lists the following species as present: meadow fescue *Schedonorus pratensis*, tor-grass *Brachypodium pinnatum* common knapweed *Centaurea nigra*, meadow vetchling *Lathyrus pratensis*, lady's bedstraw *Galium verum*, spiny restharrow *Ononis spinosa,* and meadowsweet *Filipendula ulmaria*. All species except meadow fescue and tor-grass were observed within the three grassland quadrat samples taken from the part of the LWS that falls within the Site in July 2024 (refer to Appendix 7.3: Habitat report). Meadow fescue and tor-grass were also not listed within the July 2023 survey data held by NBGRC. The quadrat samples indicate that the part of the LWS withing the Site includes otherer neutral grassland with 8-17 vascular plant species per m^2. The diversity is lower in the south of the LWS, as blackthorn scrub and meadowsweet begin to dominate the sward.
High House Road Verges, Sturton Le Steeple	Partially within the Site (Proposed Solar Areas)	A notable neutral grassland, ditch bank communities and species-rich hedgerow along a track. The LWS citation lists false oat-grass *Arrhenatherum elatius*, tall fescue *Schedonorus arundinaceus*, tor-grass *Brachypodium pinnatum* and cock's-foot *Dactylis glomerata*, agrimony *Agrimonia eupatoria*, common knapweed *Centaurea nigra*, cowslip *Primula veris,* meadow vetchling *Lathyrus pratensis,* greater stitchwort *Stellaria holostea*, hairy St John's-wort *Hypericum hirsutum* and primrose *Primula vulgaris* with wetter area at the eastern end supporting water figwort *Scrophularia auriculata*, water mint *Mentha aquatica* and common fleabane *Pulicaria dysenterica*. Three quadrat samples were taken from the part of the LWS that falls within The Site in July 2024 (refer to Appendix 7.3: Habitat report), and these suggest that the trackside verge diversity ranges from 6 to 12

Site Name and Designation	Distance from Site	Feature(s) of interest
		species per m^2, with the greatest diversity in the eastern part of the LWS, nearer the railway, but still within the Site.
Mother Drain, Upper Ings	Partially within the Site (Eastern Biodiversity Mitigation Area)	A drain of interest for water beetles. The LWS citation makes reference to a pond, which may be an offsite pond to the east of the LWS boundary. The drain is described as supporting an assemblage of local species such as water beetle *Limnebius nitidus*, and water bugs *Notonecta* maculata and *Notonecta viridis*. Aquatic invertebrate surveys were undertaken on 03 June 2024 to confirm the current status of the invertebrate assemblage (refer to Appendix 7.11: Aquatic invertebrates report for the full methodology) and the results, which are being analysed at the time of writing, will be provided within the Environmental Statement.
Thornhill Lane Drain, Littleborough	Within the Site (Eastern Biodiversity Mitigation Area and Proposed Solar Areas)	A drain of interest for water beetles. The LWS citation lists the following interests: 25 Water Beetle species and 5 water bug species have been recorded from the drain; including water beetles *Agabus uliginosus*, *Agabus didymus, Cercyon convexiusculus, Graptodytes pictus* and *Laccophilus hyalinus*. Water bugs recorded include Water scorpion *Nepa cinerea* and Water cricket *Velia caprai.* Aquatic invertebrate surveys were undertaken on 3 June 2024 to confirm the current status of the invertebrate assemblage (refer to Appendix 7.11: Aquatic invertebrates report for the full methodology) and the results of the surveys will be provided within the Environmental Statement.
Littleborough Lagoons	Within the Site (Eastern Biodiversity Mitigation Area)	A shallow lagoon with flood bank and drain of botanical and ornithological importance. The LWS citation lists species such as bulbous rush *Juncus bulbosus*, creeping yellow-cress *Rorippa sylvestris*, celery-leaved buttercup *Ranunculus sceleratus*, red goosefoot *Chenopodium rubrum*, water plantain *Alisma plantago-aquatica*, common spike-rush *Eleocharis palustris*, reed sweet-grass *Glyceria maxima* and greater yellow-cress *Rorippa amphibia* with willow *Salix* sp. and hawthorn *Crataegus monogyna* growing along the banks of the lagoon. The LWS is noted as having ornithological importance for wintering wildfowl and passage migrants. The wintering and breeding bird surveys undertaken by BSG Ecology during 2023 and 2024, found assemblages of wetland birds throughout the breeding and non-breeding seasons (refer to Appendix 7.4: Breeding bird report, Appendix 7.5: Wintering bird report).

Site Name and Designation	Distance from Site	Feature(s) of interest
West Burton Meadow	Off-site, adjacent north Site boundary.	An unimproved ridge and furrow grassland with an excellent species content.
Clarborough Tunnel	Off-site, 40 m west of the Western Biodiversity Mitigation Area	A fine example of species-rich calcareous grassland and scrub developed around the tunnel top and cuttings on an active railway line - a site of botanical and zoological interest. Also designated as Clarborough Tunnel SSSI detailed above.

Designated sites summary

7.6.30 The Site does not coincide with any internationally or nationally statutory designated sites. The closest nationally designated site is Clarborough Tunnel SSSI, which is 40 m southwest of part of the Site that forms the Western Biodiversity Mitigation Area. A small area of the Steeple Renewables Project (0.01 ha) falls within the IRZ of the SSSI.

7.6.31 Further consideration of internationally designated statutory sites will be given in a report to inform a Habitats Regulations Assessment (HRA), which will be provided as part of the application process. All other statutory designated sites are considered to be sufficiently distanced from the Site and are not considered to be in the ZoI of the Proposed Development.

7.6.32 Seven LWS intersect or are within 100 m of the Site. Four of these relate to the Biodiversity Mitigation Areas: Littleborough Lagoon LWS, Mother Drain LWS and Thornhill Drain LWS are located in the Eastern Biodiversity Mitigation Area, and Blue Stocking Lane, Clarborough LWS is partially within the Western Biodiversity Mitigation Area. The LWSs are cited for their aquatic invertebrate interest, botanical interest, or bird interest. Blue Stocking Lane, Clarborough LWS is cited for its grassland; these were confirmed via survey in 2024 to be species-rich, but it was noted that some areas of lower diversity occurred in the south of Blue Stocking Lane, Clarborough LWS, where hawthorn and blackthorn scrub were encroaching.

7.6.33 High House Road Verges, Sturton Le Steeple LWS is cited for its grass verges but was found to have low species diversity in places during field work performed in 2024. The verges currently appear of be subject to homogenous cutting, with fairly low diversity of forbs. An area of species-rich grassland was identified to the east of the

railway line, as a continuation of the track verges, but are not currently within the LWS boundary.

7.6.34 Mother Drain, Upper Ings, LWS and Thornhill Lane Drain, Littleborough LWS are within the Eastern Biodiversity Mitigation Area and cited for their aquatic invertebrate interest. The invertebrate assemblage is not yet reported, but the drains were found to have relatively low water levels, with Mother Drain including invasive non-native species (Canadian waterweed) and high cover of algae. Both drains were found to have moderate diversity of aquatic plans (<10 species per 20m section).

7.6.35 Littleborough Lagoons LWS is also in the Eastern Biodiversity Mitigation Area. It is cited for its botanical and bird interests. The lagoon is regularly flooded by the River Trent, which may introduce nutrients and seeds from offsite. Scrub is present along the northern banks of the lagoon, but there is little scrub cover in the south.

7.6.36 West Burton Meadow LWS and Clarborough Tunnel LWS are located off-site but within 100m of the Site boundary, both of which are designated on account of their habitat interest. Clarborough Tunnel LWS is also designated as SSSI.

Evaluation: designated sites of nature conservation interest

7.6.37 SACs, SPAs and Ramsar sites are evaluated as important at the **International level**.

7.6.38 SSSIs are evaluated as important at the **National level**.

7.6.39 LWSs are evaluated as important at the **County level**.

Habitats

7.6.40 Appendix 7.3 – Habitat Report provides detailed results, which are summarised below.

Desk study

7.6.41 Species recorded on or near the Site in the last 20 years that are on the Nottinghamshire Rare Plant Register[22] are presented in Appendix 7.3. Twenty-one such plants have been recorded within or near the boundaries of the Site in recent years.

7.6.42 Notable plant records and field observations are generally restricted to ditch features or field edges or are outside the Site. The exception is rye brome *Bromus*

[22] Wood, D. & Woods, M. (2021); 'Nottinghamshire Vice County 56 Rare Plant Register 3rd edition'. Nottingham City Council, Nottingham.

secalinus with records in field edges, but it was also observed amongst the crops during field survey. It is a nationally vulnerable species but is not considered to be scarce in Nottinghamshire (i.e. it is 'scattered' throughout the county in arable fields).

7.6.43 Priority habitat locations (traditional orchard and deciduous woodland) match those found on the Site. The coastal floodplain and grazing marsh records within the Site were found to be arable cropland but other examples of the habitat have been found on the Site.

7.6.44 There are no registered ASNWs, PAWS; or ancient wood pastures within the Site (inferred from Defra, 2024 and field survey at Appendix 7.3). The closest ancient woodland is 1.3km to the east of the Site (known as Burton Wood) and no ancient woodlands have direct habitat connectivity to the Site via hedgerows, other semi-natural habitat corridors, or footpaths.

Field survey summary description

7.6.45 The predominant habitat is arable cropland on large open fields bound by native hedgerows, field margins, or drainage ditches. A small number of fields appear to be managed as permanent pasture (near the River Trent, in the north of the Site, and in the southwest of the Site); or were grassland ley at the time of the surveys.

7.6.46 Wet ditches are more prevalent in the east of the Site, closer to the River Trent, and the large land drains (such as the Catchwater Drain and Mother Drain) are considered to be river/stream habitat based on their width, water flow and their function as tributaries to the River Trent. Two further streams are present: the Oswald Beck in the north of the Site, and an unnamed stream in the south-west of the Site. The River Trent does not form part of the Site (and it is more than 10m outside the Site boundary and is therefore outside of the scope of requiring assessment as part of the MoRPh survey).

7.6.47 A small area of the Site intersects the West Burton Power Station, which is currently being decommissioned. The power station is currently developed land, grassland (modified grassland/road verges and unmown other neutral grassland plots) with mature and semi-mature individual trees.

7.6.48 Mature trees are present within the hedgerows at sparse intervals. Some of the mature trees in hedgerows support veteran features (such as fungal growth, large cavities, deadwood, or broken main stems). However, these have been assessed by

arboricultural specialists and have not been recorded as veteran trees or ancient trees (refer to Appendix 3.1 'Arboricultural Survey Report' of the PEIR).

7.6.49 Woodland cover is generally low, covering less than 0.07% of the Site. The woodland is mainly along rail or watercourse corridors, in shelter-belt plantations, and in one copse (Fenton Gorse) that is considered to qualify as priority habitat (lowland deciduous woodland).

7.6.50 Other priority habitats include hedgerows, some of the arable field margins, a traditional orchard, and coastal and floodplain grazing marsh. The latter is a poor example of its habitat based on the lack of wet depressions and extensive ditch habitats. Part of this area includes the Littleborough lagoon, which has not yet been subject to detailed survey which is required to determine if the lake qualifies as priority habitat. At this stage it is mapped as provisionally qualifying as a priority habitat (see Figure 7.3.2 within Appendix 7.3).

7.6.51 The traditional orchard in the north of the Site includes ca. 40 mature apple *Malus* spp. and pear *Pyrus* spp. trees enclosed by hedgerows; the grassland below is the subject of sheep grazing.

7.6.52 Priority habitat arable field margins support tussocky grasses and have been confirmed as being under active management for wildlife by the tenants.

7.6.53 Approximately 69 km of hedgerows are present and over 80% of those hedgerows are assessed as species-poor, particularly those in the centre and east of the Site. Higher distinctiveness hedgerows are present as species-rich hedgerows, particularly in the northwest of the Site, or as hedgerows with trees or hedgerows associated with a ditch/bank, which are scattered across the Site. The hedgerows are typically formed of hawthorn and blackthorn, with other native species such as ash, elder and/or field maple. Most hedgerows appear to be cut annually in late winter. Further analysis of field data is to be undertaken to determine whether hedgerows are likely to qualify as ‘important’ under the Wildlife and Landscape Criteria of the Hedgerow Regulations.

7.6.54 Two small ponds and one lake are present. The ponds are wet depressions in field corners and are overgrown with trees or scrub and not considered to be of high ecological quality; and they not known to support protected species. Therefore, the ponds are not considered to qualify as priority habitat as they are unlikely to support notable species or exceptional assemblages of species due to the lack of aquatic vegetation, overshading, and visible turbidity. Littleborough lagoon is over

35,000m^2 of open water and cited as a LWS (refer to Appendix 7.2: Designated Sites). Observations throughout winter indicate that the lagoon is periodically inundated with floodwater from the River Trent. Further ecological assessment of the lake will be undertaken and reported in final ecology chapter of the ES.

7.6.55 Other habitats include developed land and bare ground such as roads/tracks, farmyards, and buildings; and small pockets of native scrub, ruderal vegetation and tall forbs, which are generally in field corners or under pylons where cultivation and mowing is less frequent.

7.6.56 Notable plant species are generally in offsite designated sites or are confined to field edges and ditches.

Local (Nottinghamshire) BAP priority habitats on or adjacent to the Site

7.6.57 The following habitats have been identified as Habitats of Conservation Concern in the Nottinghamshire LBAP, for which Habitat Action Plans have been developed (last updated March 2008):

- Ancient and/or species rich hedgerows.
- Arable fields.
- Cereal field margins.
- Ditches.
- Eutrophic standing waters.
- Mesotrophic lakes.
- Improved grassland.
- Lowland wet grassland.
- Oak-birch woodland.
- Reedbed; and,
- Rivers and streams.

Notable plants

7.6.58 Rye-brome *Bromus secalinus* is on the Nottinghamshire Rare Plant Register and it is scattered across the Site (mainly in the field margins of the southern areas of the Site). Although it is considered to be Near Threatened in England, the species is described as “scattered” in Nottinghamshire.

7.6.59 Spiny restharrow *Ononis spinosa* was observed on the Site on the verges of a bridleway within the Blue Stocking Lane, Clarborough LWS. It is listed as scarce on the Nottinghamshire Rare Plant Register, and near threatened in England. It was most prevalent in the more open verges of the LWS.

Invasive non-native plants

7.6.60 During the onsite field surveys, Canadian waterweed was observed within Mother Drain in the east of the Site. No other Invasive Non-Native Species (INNS) have been noted within the Site to date.

Evaluation

7.6.61 The habitats are typical of an agricultural landscape and are representative of the local area. Key habitats of ecological value include the priority habitats, which are mainly confined to field boundaries or Biodiversity Mitigation Areas.

7.6.62 The dominant arable crop land is a habitat of intrinsically low interest. The Site supports rye-brome and spiny restharrow which are scattered / scarce in Nottinghamshire and near threatened in England, but these are localised within the Site. Nonetheless the Site is large (over 850 ha) and this, and the presence of habitats of higher intrinsic interest (while confined to localised and discreet areas), elevate the overall habitat interest of the Site. The HPI habitats taken together are also typical of the local agricultural landscape but reasonably extensive but evaluated as important at the **Local level.**

Breeding birds

7.6.63 Appendix 7.4 - Breeding Bird Report provides the detailed results of the breeding bird survey, which are summarised below.

Desk study

7.6.64 There are three records of birds from within the Site boundary which all relate to Littleborough Lagoon in the Eastern Biodiversity Mitigation Area in May 2012, including: pochard *Aythya farina* (one pair), gadwall *Mareca strepera* (seven male, four female), shoveler *Spatula clypeata* (one male). There are 24 recent records of birds recorded during the breeding period adjacent to the southern boundary of the Eastern Biodiversity Mitigation Area at Littleborough. The descriptions provided with the records suggest that some of these records could relate to Littleborough Lagoon (which is within the Eastern Biodiversity Mitigation Area) and Out Ings (600 m north of the Eastern Biodiversity Mitigation Area), particularly water or wading bird species. Other bird records within the Littleborough area include cuckoo

Cuculus canorus, peregrine falcon *Falco peregrinus*, meadow pipit *Anthus pratensis* and yellow wagtail *Motacilla flava*; however, the records did not specify if these were breeding or non-breeding birds. A further 17 records are provided for Out Ings, typically for water and wading birds, but also for marsh harrier *Circus aeruginosus* (a non-breeding male bird) and red kite *Milvus milvus* (flying over the area).

7.6.65 The desk study provided 47 bird records associated with the West Burton Power Station site adjacent the Site to the north, between 2008 and 2019. This includes records of confirmed breeding peregrine falcon, turtle dove *Streptopelia turtur*, great spotted woodpecker *Dendrocopos major*, green woodpecker *Picus viridis*, skylark and sand martin *Riparia riparia*. Further records of breeding water and wading birds include mute swan *Cygnus olor*, mallard *Anas platyrhynchos* and little grebe *Tachybaptus ruficollis*.

7.6.66 Breeding bird surveys undertaken in support of the adjacent quarry application from March to June 2010 recorded 82 bird species of which 57 were considered to be breeding within the survey area. This included a number of species identified for conservation action including breeding quail *Coturnix coturnix*, skylark, curlew *Numenius Arquata*, dunnock *Prunella modularis*, yellow wagtail *Motacilla flava*, song thrush *Turdus philomelos*, lapwing *Vanellus vanellus*, tree sparrow *Passer montanus*, linnet *Linaria cannabina*, yellowhammer *Emberiza citrinella*, grey partridge *Perdix perdix*, and barn owl *Tyto alba*.

7.6.67 The Birds of Nottinghamshire Annual Report for 2020 (Nottinghamshire Birdwatchers, 2023) was reviewed to help establish provide context for birds recorded at the Site. It does not give population estimates for the species, but it does define levels of rarity in the county based on numbers of records (see Appendix 7.4). Nottinghamshire Birdwatchers were contacted in May 2024 and they confirmed the only source of bird population information in the county to be the Annual Report.

Field survey

7.6.68 During the 2024 breeding bird surveys, 100 species were recorded at the Site, of which 47 were confirmed or considered likely to be breeding. These included seven that are 'Red listed', 14 that are 'Amber listed' and one 'Green listed' species (barn owl) which is listed on Schedule 1 of The Wildlife and Countryside Act 1981. Seventeen of these are listed as SPI or are a Species of Conservation Concern in the

Nottinghamshire BAP. The remaining breeding bird species in the Site are all 'Green listed' or are non-native species and are of least conservation concern.

7.6.69 Breeding bird activity from species of conservation concern (i.e., those that are red and amber listed[23]) was widespread across the Site, with main habitat types used including:

- Open habitats, such as arable and grassland pasture fields. Arable habitats are widespread across the Site and locally and are typically used by skylark and occasionally yellow wagtail which are species of conservation concern. Skylark is discussed and assessed separately below. Six pairs of lapwing were also recorded as likely breeding in the Eastern Biodiversity Mitigation Area within wet grassland habitats, and flocks of 30 to 50 lapwing were recorded foraging in this area during June and July 2024. One pair of meadow pipit *Anthus pratensis* was likely breeding in the Eastern Biodiversity Mitigation Area. Wet grassland habitat is scarce within the Site beyond the Eastern Biodiversity Mitigation Area but is frequent in the local area along the River Trent corridor.
- Scrub, trees, woodland, hedgerows and associated grassland margins. These habitats are widespread across the Site and locally and are typically used for breeding by species of conservation concern such as yellowhammer *Emberiza citrinella*, linnet *Linaria cannabina*, grey partridge *Perdix perdix*, dunnock, reed bunting *Emberiza schoeniclus,* stock dove *Columba oenas,* whitethroat *Curruca communis*, wren *Troglodytes troglodytes*, willow warbler *Phylloscopus trochilus* and woodpigeon *Columba palumbus*. A wide variety of Green listed species also used these habitats for breeding.
- Wetland habitats such as waterbodies and drains / ditches are used by low numbers of mallard *Anas platyrhynchos* and moorhen *Gallinula chloropus* and several Green listed and non-native species. Wetland habitats scarce within the Site but are frequent in the local area along the River Trent corridor.

7.6.70 Several birds of prey species of conservation concern were recorded, with barn owl *Tyto alba* and kestrel *Falco tinnunculus* likely breeding at the Site within trees and

[23] Stanbury, A., at el. (2021). 'The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain'. British Birds 114: 723-747.

buildings. Tawny owl *Strix aluco* is likely breeding within a woodland block at the Site. Peregrine falcon *Falco peregrinus* was regularly recorded at the Site and is likely breeding on buildings within West Burton Power Station adjacent to the north of the Site, and these birds are likely to hunt within the Site as part of a wider feeding resource in the local area. Marsh harrier *Circus aeruginosus* and hobby *Falco Subbuteo* were recorded flying through / over the Site occasionally, probably hunting but not on a regular basis. Little owl *Athene noctua* is a non-native species that is likely breeding in trees or buildings at the Site.

Evaluation: general assemblage

7.6.71 The Site supports a typical breeding bird assemblage for the habitats present and the Site's geographic location. All the bird species of conservation concern found within the Site breed throughout the county and are noted to be 'common' or 'fairly common' within Nottinghamshire[24] apart from barn owl (discussed below). Except for skylark (discussed below) the Site is considered to be of **Local level** importance for breeding birds.

Evaluation: skylark

7.6.72 Skylark territories were recorded across the Site at a relatively consistent density, primarily within arable fields and occasionally in grassland fields. This comprised peak counts of 105 territories within the Proposed Solar Areas in 2023 (90 in 2024), 17 in the Western Biodiversity Mitigation Area (in both 2023 and 2024) and 13 in the Eastern Biodiversity Mitigation Area in 2024 (11 in 2023 but in a slightly smaller survey area). There is no skylark population data available for Nottinghamshire, although the Nottinghamshire 2020 bird report notes the species is a 'common resident' and it is likely that it is widespread and well-represented within suitable habitat. A review of aerial photography (Google Earth Pro, accessed August 2024) shows that there are extensive areas of large arable fields within the district area (Bassetlaw) and county (Nottinghamshire) which are likely to support breeding populations of skylark at similar densities to those present at the Site. Further extensive areas of arable land are also present beyond the River Trent to the east of the Site within Lincolnshire.

[24] Nottinghamshire Birdwatchers. (2023). 'The Birds of Nottinghamshire Annual Report for 2020'. Nottinghamshire Birdwatchers

7.6.73 Given the area of land covered by the Site and the number of likely breeding territories present, the Site is considered to be of **District level** importance for breeding skylark.

Barn owl

7.6.74 Appendix 7.5 Barn Owl Report (published as a confidential document) provides detailed results, which are summarised below.

Desk study

7.6.75 The desk study records from local biological data centres provided no records of barn owl within the Site, but over 90 records were returned within 2 km; none were of confirmed nesting / breeding sites. Pre-existing survey data for the adjacent quarry planning application in 2010 included a record of a barn owl nest site in a tree-mounted nest box within the Eastern Biodiversity Mitigation Area.

Field survey

7.6.76 The ground level assessment identified 15 trees, three groups of trees and two buildings within the Proposed Solar Areas which provide potential features to support nesting barn owl. Evidence of recent use by barn owl, such as pellets and observations of owls, was associated with several of these features, but no nests were confirmed during the preliminary survey. The breeding status of barn owl activity at each potential feature is unconfirmed at this stage. Further detail will be provided within the subsequent ES.

7.6.77 Barn owls were frequently recorded during bird surveys, with activity spread across the Proposed Solar Areas. Overall, it is estimated that the Proposed Solar Areas support at least two regularly used barn owl territories. Building 3 was found to be a regular roosting site for barn owl, as well as a potential nest site. It is also considered likely that tree(s) along access tracks in the east of the Proposed Solar Areas (including Cross Common Lane and Upper Ings Lane) also support roosting (and possibly nesting) barn owl.

7.6.78 Additional barn owls are likely to be roosting / nesting within the Biodiversity Mitigation Areas and in off-site barns close to the Proposed Solar Areas, and birds from the nest / roost locations will likely forage within the Site as part of a landscape-scale resource.

7.6.79 Optimal foraging habitat for barn owl is typically rough grassland that has low frequency management and has formed grass tussocks and a layer of thatch on the

ground[25] ; such habitat will support higher densities of small mammals (field vole *Microtus agrestis* and common shrew *Sorex araneus*) upon which they prey. Many of the arable field margins and drains present throughout the Site support rough grassland and are likely to be used for foraging.

7.6.80 The arable fields which form the majority of the Site are sub-optimal habitat for foraging barn owl. The grassland pasture fields within the Proposed Solar Areas are largely sub-optimal due to their short sward height from grazing, which reduces their suitability to support small mammals. The grassland fields in the Eastern Biodiversity Mitigation Area are also grazed, but in some areas has a more varied and taller sward height and may offer better foraging.

Evaluation

7.6.81 Barn owl is listed in Schedule 1 of the Wildlife and Countryside Act 1981 and on Nottinghamshire LBAP as a Species of Conservation Concern. It is likely to breed at the Site, and there is the resource of mature trees and buildings that provide a variety of suitable roost / nesting opportunities. The majority of habitat within the Site (arable land) is suboptimal for foraging but there is a network of rough grassland field margins and drain embankments that provide optimal foraging habitat. A review of aerial photography (Google Earth Pro, accessed August 2024) indicates that similar habitats are common off-site in the local area.

7.6.82 On the assumed basis of at least two pair of breeding barn owls within the Site and the largely sub-optimal foraging habitats present (i.e., arable fields), the Site is considered to be of **Local level** importance for barn owl.

Wintering birds

7.6.83 Appendix 7.6 – Wintering Bird Report provides detailed results, which are summarised below.

Desk study

7.6.84 There were no wintering records from within the Site. A summary of nearby records of bird species identified for conservation action, and of those which are associated with the Humber Estuary Ramsar Site is provided below.

7.6.85 There are 18 records of wintering birds adjacent to the southern boundary of the Eastern Biodiversity Mitigation Area at Littleborough (2009 to 2019). Typically, these

[25] Shawyer C (2012); 'Barn Owl Tyto alba Survey Methodology and Techniques for use in Ecological Assessment'. Wildlife Conservation Partnership.

were water or wading bird species, including: little egret *Egretta garzetta*, common shelduck *Tadorna tadorna*, green sandpiper *Tringa ochropus*, Eurasian wigeon *Mareca penelope*, cormorant *Phalacrocorax carbo*, Bewick's swan *Cygnus columbianus bewickii,* mute swan, whooper swan *Cygnus cygnus*, dunlin *Calidris alpina*, European golden plover *Pluvialis apricaria* and lapwing. Short-eared owl *Asio flammeus* was also recorded.

7.6.86 Records from the villages of Sturton-le-Steeple, Fenton and Leverton dated between 2012 and 2020 which included several wading bird species and great grey shrike *Lanius excubitor*, lesser spotted woodpecker *Dendrocopos minor*, peregrine falcon *Falco peregrinus*, starling *Sturnus vulgaris*, fieldfare *Turdus pilaris* and whinchat *Saxicola rubetra*. Further details of wintering bird desk study results are presented in Appendix 7.6 – Wintering Bird Report.

7.6.87 Four wintering bird surveys were undertaken in support of the adjacent quarry application (one per month from November 2009 to February 2010). In total, 70 bird species were recorded within the survey area of the quarry application. This included a number of species identified for conservation action including peregrine falcon, wigeon, skylark, starling, fieldfare, song thrush, kingfisher *Alcedo atthis*, snipe *Gallinago gallinago*, herring gull *Larus argentatus*, dunnock, lapwing and willow tit *Poecile montanus*. It was noted that flocks of wading and waterbirds were present in the wetland areas adjacent the River Trent including Out Ings LWS north of the Eastern Biodiversity Mitigation Area of the Proposed Development.

Field survey

7.6.88 A total of 86 bird species were recorded at the Site during the wintering bird survey. Of this total, 46 species are of conservation concern (red / amber listed), are identified for conservation action at national level or local level (SPI or Nottinghamshire Biodiversity Action Plan species) or are listed on Schedule 1 of the Wildlife and Countryside Act. Nine are also associated with the Humber Estuary Ramsar Site as part of the wintering bird assemblages it supports.

7.6.89 A total of 68 bird species were recorded within the Proposed Solar Areas with 42 of the species being red/amber listed, and/or having local BAP status, and/or having S.41 status, and/or being of Ramsar site interest.

7.6.90 The Western Biodiversity Mitigation Area had a total count of 51 species with 32 being red/amber listed, local BAP, S.41, or of Ramsar site interest.

7.6.91 The Eastern Biodiversity Mitigation Area had a total count of 65 species with 42 being red/amber listed, local BAP, S.41, or of Ramsar site interest.

7.6.92 Wintering bird activity was widespread across the Site, with main habitat types used including:

- Open habitats, such as arable and grassland pasture fields. These habitats are widespread across the Site and locally, and were used by flocks of skylark, starling, fieldfare, linnet, woodpigeon and gull species. Lapwing were regularly recorded in the arable stubble and grassland fields in the Eastern Biodiversity Mitigation Area only, particularly where the fields had been flooded and water levels were receding.
- Scrub, trees, woodland, hedgerows and associated grassland margins. These habitats are widespread across the Site and locally and are used by species such as fieldfare, redwing, linnet, barn owl and yellowhammer.
- Waterbodies, ditches, inundated arable and grassland fields. These habitats are primarily within the Eastern Biodiversity Mitigation Area and supported a greater diversity of wetland birds and waders such as wigeon, greylag goose, lapwing, gull species, swan species and duck species, particularly on Littleborough Lagoons LWS.

7.6.93 A range of bird of prey species was recorded during the wintering bird survey, typically individuals and small numbers of hen harrier, marsh harrier, short-eared owl, merlin, sparrowhawk, barn owl and kestrel. Barn owl and kestrel were regularly recorded hunting for small mammals in the grassland margins along arable fields and watercourses throughout the Site. Hen harrier, marsh harrier, peregrine, merlin, short-eared owl and sparrowhawk were considered likely to be exploiting the presence of flocks of overwintering birds within the Site for hunting purposes, particularly the wetland habitats in the Eastern Biodiversity Mitigation Area. It is likely that they use the habitats at the Site as part of network of similar habitats that are used by overwintering birds within the local area, particularly along the River Trent corridor where there are further waterbodies and areas that are likely flood through the winter. Barn owl and kestrel are also likely to use other grassland habitats in the local area, which are well-represented along field boundaries and watercourses.

Evaluation

7.6.94 The Site supports a typical wintering bird assemblage for the habitats present and the Site's geographic location. The areas of the Site closer to the River Trent, particularly the wetland and adjacent farmland habitats in the Eastern Biodiversity Mitigation Area, supported a greater species diversity and higher numbers of birds, typically waders and waterbirds but also hunting birds of prey. Most of the bird species of conservation concern recorded within the Site are common and well-represented species throughout Nottinghamshire[26] . Those that are less common within Nottinghamshire, such as merlin, hen harrier, marsh harrier, short-eared owl, peregrine, curlew, and whooper swan, were recorded in low numbers and / or infrequently during the surveys. Larger numbers of starling and fieldfare were recorded throughout the Site and across most surveys; it is likely that the Site provides a good foraging resource for these species locally. The Site is considered to be of **Local level** importance for wintering birds.

Bats

7.6.95 Appendix 7.7 - Bat Report provides detailed results, which are summarised below. Field work is ongoing for bats. The field survey results and evaluation below are based on the period April to June 2024 (inclusive).

Desk study

7.6.96 The data search of MAGIC identified no European Protected Species Licence granted by Natural England for bats within 2 km of the Site.

7.6.97 The data search with NBGRC and LERC provided 331 records of bats. Records comprised the following species: common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, Nathusius' pipistrelle *Pipistrellus nathusii*, noctule *Nyctalus noctula*, Leisler's bat *Nyctalus leislerii*, Daubenton's bat *Myotis daubentonii*, brown long-eared bat, Natterer's bat *Myotis nattereri*, *Plecotus auritus* and whiskered bat *Myotis mystacinus* or Brandt's bat *Myotis brandtii*.

7.6.98 Other notable desk study records include a record of a *Myotis* species emerging from a tree within the Eastern Biodiversity Mitigation Area at the Site in 2010 (grid reference SK 81744 83374) during field surveys in support of the adjacent quarry application. Additionally, Littleborough church, situated adjacent to the southern boundary of the Eastern Biodiversity Mitigation Area, has records of brown long

[26] Nottinghamshire Birdwatchers. (2023). 'The Birds of Nottinghamshire Annual Report for 2020'. Nottinghamshire Birdwatchers

eared bat droppings and a grounded bat (also brown long eared), as well as common pipistrelle droppings, from 2018.

7.6.99 Records of four roosts were provided associated with unspecified buildings within West Burton Power Station situated immediately north of the Site; three common pipistrelle roosts (up to two bats per roost; all recorded in 2023) and a brown long eared roost (single bat, recorded in 2006).

Field survey

7.6.100 See Appendix 7.7 for detailed results of work completed up to and including June 2024. Further data analysis work has been ongoing, the results and interpretation of the work will be included within the subsequent Ecology Chapter of the ES.

7.6.101 Bat surveys have not been undertaken in the Eastern and Western Biodiversity Mitigation Areas (unless such areas are in the zone of influence) as no intrusive development works are proposed, and therefore impacts to bats are not expected.

Roosts

7.6.102 Roosting opportunities for bats are present throughout the Proposed Solar Areas and along the boundaries, comprising numerous trees, several buildings, and railway bridges / bridges over field drains. Further trees with roosting suitability are likely to be present in the Eastern and Western Biodiversity Mitigation Areas but unaffected by development.

7.6.103 The preliminary ground level tree assessment identified 71 trees and four groups of trees with PRF-M features (Potential roosting features are suitable for multiple bats and may therefore be used by a maternity colony), 47 trees and one group of trees with PRF-I features (Potential roosting features only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats).

7.6.104 The tree roost features recorded have the potential to support roosting of a range of bat species, in particular tree cavity and crevice dwelling species amongst open habitats. Based on the results of the bat activity surveys undertaken between April and June 2024, the large size of the Site and the presence of suitable roost features it is possible that the Site supports roosts of species such as common pipistrelle, soprano pipistrelle, noctule, Leisler's and *Myotis* (assumed Daubenton's, Natterer's, whiskered and / or Brandt's bat).

7.6.105 Within or at the boundaries of the Proposed Solar Areas at the Site, there are nine buildings, two railway bridges, eight small bridges and two brick culverts along field drains. There is one part-open sided agricultural barn that has high potential to support roosting bats and scattered bat droppings (unidentified species) were seen inside; it is unknown whether bats roost within the building, or if they use it for foraging / as a sheltered feeding perch. One building and one railway bridge have moderate roosting potential, and the other buildings / structures have either low or negligible roost potential. Survey work is ongoing for off-site trees / buildings within the zone of influence.

7.6.106 All potential roosting features are fairly common in the local area given the abundance of arable fields lined by hedgerows containing trees, as well as buildings in villages, agricultural buildings and field drains / bridges in the surrounding landscape.

Activity surveys

7.6.107 During the April, May and June 2024 static bat detector surveys, at least eight species of bat were recorded within the Proposed Solar Areas. Common pipistrelle accounted for the majority of bat activity (74% of all passes), with a *Myotis* species (likely Daubenton's, Natterer's, Brandt's and / or whiskered bats) and soprano pipistrelle commonly present. Leisler's, noctule, brown long eared, Nathusius' pipistrelle and barbastelle each accounted for 1% or under of all bat activity. Commuting and foraging bat activity was fairly evenly distributed throughout the Proposed Solar Areas, predominantly recorded in association with the hedgerows, field drains and small pockets of woodland. Paired bat detectors have been used to record activity from within three arable field locations and an associated field boundary hedgerow; low levels of bat activity were recorded from the interior of arable fields relative to the nearby hedgerows on field margins.

7.6.108 During the May and June 2024 Night-time Bat Walkover (NBW) surveys, low numbers of bat passes were recorded within the Proposed Solar Areas during both surveys, and a total of five species of bat were recorded. Bat activity recorded during the surveys was typically from individual, or small numbers of bats. Activity was sporadic, but typically recorded along access tracks (each lined with two hedgerows), the vegetated railway and field drains, with increased activity also found along field boundary hedgerows. Low levels of activity associated with the open arable fields was recorded.

Evaluation

7.6.109 The majority of the Site is open arable farmland of limited value for bats. The woodlands, hedgerows, dense scrub, waterbodies and watercourses provide more suitable bat foraging and commuting habitat and there is habitat connectivity with the surrounding landscape in all directions.

7.6.110 Field survey work is ongoing, but on the basis of the work undertaken to-date, the bat activity levels are considered to be typical for the habitats present, i.e., activity is largely associated with field boundary hedgerows, watercourses and woodlands, and the open arable fields do not appear to be regularly used for foraging or commuting. Most species recorded are widespread within Nottinghamshire. Barbastelle, Leisler's and Nathusius pipistrelle are less common within the county, but activity from these species to-date has been low.

7.6.111 It is possible that the Site supports roosts within buildings and trees, but no evidence has been recorded to-date that suggests significant roosts are present.

7.6.112 The habitats and potential roosts present at the Site and within the Proposed Solar Areas are well-represented in the local area and are on a preliminary basis the Site is likely to be of **Local level** importance.

Badger

7.6.113 Appendix 7.8 - Badger Report (published as a confidential document) provides detailed results, which are summarised below.

7.6.114 The desk study, including those of ecological surveys for adjacent planning applications and local biological data records, show that badger have historically been present across the Site. A number of the records are consistent (or within the area of) setts identified during the 2024 field surveys for this assessment. Badger have been active within parts of the Site over the past 20 years, although the locations of setts and levels of activity appears to have changed during that time.

7.6.115 The Site provides predominantly 'secondary foraging habitat types', such as rough grassland, arable, scrub, and broadleaved woodland[27] and extensive areas of habitat suitable for sett building. The main habitats where activity and setts were recorded within the Site include woodland, along bank sides and bank tops of ditches, base of hedgerows, and arable field margins/rough, ungrazed grassland.

[27] Badger Trust, (2023); 'Badger Protection: Best Practice Guidance for Developers, Ecologists and Planners (England)'. Badger Trust.

7.6.116 Badgers are a highly mobile species, and where currently not known to be present, can create new badger setts in suitable habitats quickly, as well as re-occupying disused setts and reducing use or abandoning setts recorded to be in current use, depending on conditions prevailing at the time.

Evaluation

7.6.117 Badgers are protected primarily for welfare reasons and the species is not one of nature conservation concern. It is also widespread in the locality. For this reason, it is not formally evaluated. Notwithstanding this, it is a protected species and measures to protect badger within the development and avoid actions that could give rise to an offence under the Protection of Badgers Act (1992) are outlined in later sections of this report.

Otter

7.6.118 Appendix 7.9 – Otter and Water Vole Report provides detailed results, which are summarised below.

Desk study

7.6.119 The desk study returned 15 records relating to otter between 2009 and 2023. One record of field signs (prints and spraint) from 2010 relates to a dry ditch, Z27 (see Figure 7.9.1 within Appendix 7.9), in the southeast of the Site. A further record of prints and feeding remains from 2016 is located approximately 170 m from the Site, northeast of ditch ED4 (see Figure 7.9.1 within Appendix 7.9). The remaining records are relating to the River Trent, adjacent the eastern mitigation area of the Site.

Field survey

7.6.120 All watercourses including some dry ditches within the Site are suitable for commuting otter, but there is limited foraging habitat and limited potential for resting sites within or close to watercourses for otter on the Site.

7.6.121 The highest suitability watercourses for otter foraging and resting sites are in the eastern mitigation area and the centre and southwest of the Site. Six areas of land within the Survey Area (i.e., the Proposed Solar Areas and up to 100 m from the boundary of the Proposed Solar Areas where considered to be appropriate and where access can be secured) were identified as having potential to support otter resting sites. No holt sites were confirmed within the Survey Area and with the lack of field signs, it is considered unlikely that there are any otter natal sites present within the Site boundary. One otter spraint was identified on the Catchwater drain

in the north of the Site and a second spraint was recorded incidentally, outside the Survey Area, on the Catchwater drain (upstream of the Site).

7.6.122 Mammal paths were identified across the Site during the September 2024 survey. However, these were all attributed to other mammal species using the Site, including badger and deer species. No definitive otter overland paths were recorded during the surveys.

Evaluation

7.6.123 Although the desk study returned historical records of otter from close by, very limited evidence of otter have been found on the Site and no evidence of resting sites have been located. Positive field signs are two otter spraints (one offsite and one on the Site in the North); and two freshwater mussels were found. It is possible that these had been predated by otter – the shells had been pulled onto the bank of the Catchwater drain. However, it is also possible that grey heron was responsible for the catch and a grey heron was observed within the drain and heron footprints were present on the channel bed.

7.6.124 The Site is used by otters, but it seems that the level of use is quite low, and this is in the local landscape of the Trent Valley that has a continuous presence of drains and ditches, as well as the River Trent itself which is where most of the desk study records originate.

7.6.125 Much of the Site is of limited value for otters and although most of the Site's watercourses and ditches could be used by otter, there is only limited evidence of this, and the Site is evaluated as important at the **Local level** for otters**.**

Water vole

7.6.126 Appendix 7.9 - Otter and Water Vole Report provides detailed results, which are summarised below.

Desk study

7.6.127 The desk study returned 125 records relating to water vole and reported sightings of individuals, latrines, and burrows between 2004 and 2023. 15 of the records relate to ditches across the eastern half of the Site within the Proposed Solar Areas. An additional 14 records are within 100 m of the Site on connecting ditches and habitat typically to the south of the Proposed Solar Areas and Eastern Biodiversity Mitigation Area.

7.6.128 One previous ecological survey undertaken in support of the adjacent sand and gravel extraction planning application, dated 2005, identified a single dead water vole in the north of the Proposed Solar Areas, and a live water vole recorded along a ditch which is connected[28] .

Field survey

7.6.129 Onsite watercourses and ditches that have optimal suitability for water vole account for approximately 4% of the total length; good suitability accounts for approximately 28%; and suitable but with poor cover accounts for approximately 13%. Approximately 55% of all watercourses and ditches at the Site, are of negligible suitability, including dry ditches.

7.6.130 Although there is a range of watercourses and ditches onsite with optimal, good and suitable but poor water vole habitat suitability, no confirmed water vole field signs were recorded during the surveys in 2024. Several other mammal signs were recorded – see Appendix 7.9.

Evaluation

7.6.131 The desk study returned historical records of water vole within and surrounding the Site, most recently from 2023, within 100 m of the Site and 2014 from within the Site, and there are a number of suitable watercourses within the Site. However, no confirmed field evidence was identified.

7.6.132 American mink *Neovison vison* is a non-native species that has become established and now breeds throughout the United Kingdom. Mink is a significant predator of water voles and a contributory factor to the declines in water vole populations[29] . No evidence of mink was found at the Site, but the desk study returned a number of mink records including two from watercourses within the Site dated 2016 and 2019; and there were a further ten records in the search area from 2015 to 2021. It is therefore possible that the presence of American mink locally has negatively impacted upon water vole populations at the Site, and potentially caused extinction or reduced them to such low levels that they were not detected during the 2024 surveys.

[28] ESL Ltd. (2010). 'Ecological Baseline Update Survey, Sturton-Le-Steeple, Nottinghamshire'. [Unpublished planning application ecology survey report]
[29] Dean, M., (2021); 'Water vole field signs and habitat assessment. A practical guide to water vole surveys'. Pelagic Publishing, Exeter.

7.6.133 Taking into account the historical records at the Site, and the suitability of some of the drains and ditches, a precautionary evaluation is made on the basis that water vole may be present at very low densities. The Site is precautionarily evaluated as important at the **Site level** for water vole.

Great crested newt

7.6.134 Appendix 7.10 - Great Crested Newt Report provides detailed results, which are summarised below.

Desk study

7.6.135 The desk study identified no records of great crested newt within the Site. The closest record was located 200 m from the Site boundary. Breeding populations of great crested newt are known to be present in the wider landscape, including ponds 750 m to the north of the Site associated with West Burton Power Station.

7.6.136 The Site predominantly provides sub-optimal terrestrial habitat for great crested newt (arable fields) with a few small pockets of woodland, hedgerow, grassland field margins and scrub present which provide some isolated pockets of suitable terrestrial habitat.

Field survey

7.6.137 Three ponds and seven wet ditches within the Site provide potential suitable breeding habitat for great crested newt (including a pond and wet ditch within the Eastern Biodiversity Mitigation Area), with up to 11 additional off-site ponds within 250 m of the Site. The eDNA survey confirmed that no waterbodies within the Site are likely to support great crested newt.

7.6.138 Of the 11 off-site ponds, eDNA survey confirmed that great crested newt were likely absent from four ponds. A further four ponds were considered unlikely to support breeding great crested newt from pre-existing survey information (negative eDNA results from surveys undertaken by third parties in 2022-2023).

7.6.139 The remaining three off-site ponds were not accessible for HSI assessment or eDNA survey and no desk study information was available. The closest of these is 185 m from the Site boundary, situated east of Sturton le Steeple village.

7.6.140 Overall, no populations of great crested newts were found to be present within the Site, although it is possible that populations are present in off-site waterbodies within 250 m of the Site boundaries. Should the un-surveyed off-Site ponds support breeding great crested newts, it is unlikely that terrestrial great crested newts would

be present within the Site given their distances from the Site boundaries (185 m), the limited good terrestrial habitat at the Site within 250 m of the ponds, and the poor terrestrial habitat connectivity between the ponds and the Site[30] [31]. However, the possibility of terrestrial great crested newts within the Site in small numbers cannot be ruled out.

Evaluation

7.6.141 The majority of the Site and surrounding landscape is dominated by arable fields which are subject to intrusive agricultural pressures such as regular tilling and spraying and offer few opportunities for great crested newts. Within the Site, there are some small pockets and narrow strips of potential terrestrial habitat including hedgerows and grassland field margins within 250 m of the un-surveyed off-site ponds; these could provide potential foraging and shelter opportunities for terrestrial great crested newt, should they be present.

7.6.142 Approximately 2.6 ha of the Proposed Solar Areas fall within 250 m of the un-surveyed off-site ponds, of which the majority is sub-optimal terrestrial habitat in the form of buildings and hardstanding within West Burton Power Station (c. 1.3 ha) or mown modified grassland (c. 1 ha). Up to c. 0.2 ha of arable field margins and other neutral grassland and c. 237 m of hedgerow) are within this 250 m of the ponds.

7.6.143 Although the presence of great crested newt within the Site and Proposed Solar Areas cannot be entirely discounted, any potential use is likely to be by small numbers of newts and the Site is unlikely to form a significant habitat resource for this species. The Site is considered on a precautionary basis to be of **Site level** importance for great crested newt.

Aquatic invertebrates

7.6.144 Appendix 7.11 – Aquatic Invertebrate Report for detailed methods. The sample analysis from the aquatic invertebrate surveys at the Site in 2024 is ongoing. The results and interpretation of the work will be included within the Ecology Chapter of the ES.

[30] Jehle (2000); 'The terrestrial summer habitat of radio tracked great crested newts (Triturus cristatus and marbled newts (Triturus marmoratus)'. The Herpetological Journal 10: 137-143.
[31] Cresswell and Whitworth (2004); 'An assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt'. English Nature Research Report No. 576.

Desk study

7.6.145 The desk study included data search for aquatic invertebrates from the local biological records centres within 2 km of the Site. Other sources such as the LBAP[32] and Nottinghamshire LWS Criteria[33] have also been reviewed to identify invertebrate species of local importance.

7.6.146 Further information on designated sites with entomological interest is provided in Appendix 7.2: Designated Sites. In summary, a section of Mother Drain, Upper Ings LWS is within the Eastern Biodiversity Mitigation Area and the LWS citation states it supports an assemblage of locally notable aquatic invertebrate species such as water beetle *Limnebius nitidus*, and water bugs *Notonecta maculate* and *Notonecta viridis*. Thornhill Lane Drain, Littleborough LWS is located at the boundary of the Proposed Solar Areas and Eastern Biodiversity Mitigation Area and the LWS citation states it supports 25 water beetle species and five water bug species including various water beetles. The water bugs included water scorpion *Nepa cinerea* and water cricket *Velia caprai.*

Field survey

7.6.147 Surveys for aquatic invertebrates have been undertaken at the Site in June 2024. There are three ditches within the Site (FD8, GD2 and HD5a) that are component parts of two LWS named as 'Thornhill Lane Drain, Littleborough LWS' and 'Mother Drain, Upper Ings LWS' which were designated on account of aquatic invertebrates; these ditches were included within the aquatic invertebrate work to provide a current baseline on the aquatic invertebrate species assemblages. Other wet ditches and drains across the Site were selected for aquatic invertebrate survey where they were considered potentially suitable to support notable aquatic invertebrates and assemblages, and included ED5, ED11, FD5, FD1, FD8, GD2, and HD5a; professional judgement by an experienced aquatic invertebrate ecologist was applied, based on the findings of the desk study and habitat survey work and considered factors such as the water levels and aquatic plant communities present.

[32] Nottinghamshire Biodiversity Action Group, (2020); 'Nottinghamshire Local Biodiversity Action Plan'. [Online] Available at https://nottsbag.org.uk/lbap/ [last accessed 20 November 2024].
[33] Crouch, N.C. (2018); 'Nottinghamshire LWS Handbook – Guidelines for the selection of Local Wildlife Sites in Nottinghamshire. Part 2A – Local Wildlife Sites selection criteria: species. 2nd Edition'. Nottinghamshire Biological and Geological Records Centre, Nottingham.

Evaluation

7.6.148 At this stage the bulk of the Site's aquatic invertebrate interest cannot be evaluated, but the ditches within the Site that have been designated as LWS for their aquatic invertebrate interest are evaluated as important at the **County level**.

Terrestrial invertebrates

7.6.149 NBGRC provided records for a range of terrestrial invertebrates including moths, butterflies and dragonflies, none of which related to the Site; small heath *Coenonympha pamphilus* (an SPI and LBAP species) was the only species identified that has a conservation designation. LERC provided 1,110 records of terrestrial invertebrate species with conservation designations from the last twenty years, including of 44 species of moth, three species of butterfly and one beetle; the records are all over 1 km from the Site.

7.6.150 The habitats within the Site are common and widespread in the local area and are unlikely to be of high importance for notable invertebrate species. The grassland pasture fields typically have a short sward height and limited floristic diversity, and pesticides are likely to be regularly applied to the arable fields. Some of the arable field margins have increased botanical diversity and are likely to be of some increased suitability for a range of invertebrate species. There are several dead trees and many large trees in hedgerows and the orchard which provide a resource of deadwood, which is likely to be a value for a range of saproxylic invertebrates. The habitat features with the increased suitability for terrestrial invertebrates at the Site are likely to be retained and potential impacts can be designed-out, and therefore further surveys have not been undertaken.

Evaluation

7.6.151 On the basis of that habitats for terrestrial invertebrates are largely suboptimal and are typical of those present in the local area, the Site is considered to be of **Site level** importance for terrestrial invertebrates.

Reptiles

7.6.152 The desk study returned 16 records of reptiles within the last twenty years, all of which are for grass snake *Natrix Helvetica* and dated between 2006 and 2022. The nearest record to the Site is for a juvenile grass snake recorded in 2010 on an arable field margin 500 m north. There are three grass snake records within the West Burton Power Station site, all located over 1 km from the Site. All other records are located over 1.2 km from the Site.

7.6.153 There is a historic record of adder *Vipera berus* dated 1987 from Clarborough TunnelLWS / SSSI, approximately 150 m west of the Site (but see below – it is now considered to be extinct in Nottinghamshire). Historic records of slow worm *Anguis fragilis* were provided from 1993 from North Leverton; the precise location was not provided but the village is adjacent to the Site's southern boundary.

7.6.154 The arable and grassland pasture fields at the Site have a low level of suitability for reptiles due to the lack of favourable habitat structure / cover and likely low levels of prey items, as well as levels of disturbance from agricultural management. The grassland field margins, watercourse embankments, hedgerow bases, ponds and the edges of the woodland and dense scrub are more suitable for reptiles and provide vegetation cover and opportunities for basking. Some of these habitats are well-connected to off-site habitats with high suitability for reptiles such as the railway line and River Trent corridor.

7.6.155 No field survey for reptiles has been undertaken at the Site as part of this assessment (the need to survey was discounted and agreed with PINS through the scoping process – this was on the basis that habitat that is suitable for reptiles will largely be retained, with no significant negative impacts expected, refer to **Appendix 1.2 Scoping Opinion**). Incidental records of reptiles during field survey for other ecology features were collected and low numbers of grass snake were observed at the Site, including:

- Two adult grass snakes observed on 30 April 2024 basking separately along hedgerow margins in the Eastern Biodiversity Area.
- One adult grass snake briefly observed on 13 August 2024 along a hedgerow margin centrally in the Proposed Solar Areas.

7.6.156 The riparian vegetation along watercourses at the Site are the most suitable habitat for grass snake, offering opportunities for hunting amphibians and providing habitat connectivity through the landscape, but this species will also use hedgerow bases and the associated grassland margins for commuting.

7.6.157 Other reptile species that are present in Nottinghamshire such as slow worm and common lizard *Zootoca vivipara* may be present in suitable habitats at the Site, but if present are likely to be found only in low densities because of the relatively small total amount of optimal habitat. Adder is unlikely to be present at the Site, as this species is now considered to be extinct within Nottinghamshire (Worthington-Hill, 2016).

Evaluation

7.6.158 Grass snake has been recorded on the Site and on the basis that habitats for reptiles are largely suboptimal and that any reptile populations are most likely to be at low densities, the Site is considered on a precautionary basis to be of **Site level** importance for reptile species.

Fish

7.6.159 The desk study returned seven records of European eel *Anguilla Anguilla* within the Site dated 2012 to 2023; four records were at Catchwater Drain within the Proposed Solar Areas, two at Mother Drain in the Eastern Biodiversity Mitigation Area, and one at drain ED10 that runs parallel to Littleborough Road in the Proposed Solar Area. Further records of eel were returned for Catchwater Drain adjacent to the Site boundary and to the north close to the River Trent and the Mother Drain to the north and south of the Site. Records of eel were also returned over 1 km from the Site for other drains that connect into the River Trent. There are two records of bullhead *Cottus gobio* within the search area; one is within the Site in Catchwater Drain in the north of the Proposed Solar Areas dated 2012, and the second is associated with Wheatley Beck dated 2013, which is 1.1 km north of the Site. European eel is an SPI and local BAP priority species; bullhead is a local BAP priority species. It was assessed for The IUCN Red List of Threatened Species in 2023 as being of Least Concern.

7.6.160 Within the Site, there are shallow flowing watercourses suitable for fish such as Mother Drain and Catchwater Drain, and a network of unnamed wet ditches. Littleborough Lagoon is a large, permanent waterbody of unknown depth in the Eastern Biodiversity Mitigation Area adjacent to the River Trent, which floods into the lagoon; it is likely that the lagoon supports a range of fish species, including species that are present in the river. The smaller ponds elsewhere in the Site are isolated, and often ephemeral and are therefore unlikely to support fish.

7.6.161 The habitat features with the increased suitability fish at the Site are likely to be retained and potential impacts can be designed-out, and therefore fish surveys have not been undertaken.

Evaluation

7.6.162 Given the presence of suitable habitats and desk study records at the Site, the presence of European eel and bullhead is assumed within the main drains and their tributaries where suitable conditions are present. Similar drains and wet ditches

supporting other fish species are likely to be present locally along the River Trent corridor, and as such the assumed fish population at the Site is likely to be **Site, possibly Local level** importance, assessed on a precautionary basis.

Dormouse

7.6.163 In the EIA Scoping Report (see Appendix 1.1) it was concluded that the Site has poor habitat connectivity to known dormouse populations, which were extinct in the county until reintroduction attempts in three woodlands in the 1990s and 2000s[34]. The closest such woodland is 2.6 km south (Treswell Woods).

7.6.164 Monitoring by the Nottinghamshire Dormouse Group suggests that populations of dormice in the dormouse-release woodlands are now relatively stable, and work in the 2020s shows some evidence of modest dispersal to other suitable woodland habitats nearby that have good habitat connectivity with the reintroduction sites.

7.6.165 Habitat connectivity between Treswell Woods to existing dormouse populations is suboptimal – examination of aerial photography shows several intervening minor roads, a minor watercourse and a railway line. Many of the hedges appear to be low and tightly mown which is less favourable for dormice.

7.6.166 Habitats at the Site are sub-optimal for dormouse due to the low cover of suitable woodland habitats, and the unfavourable management of the hedgerows. In addition, impacts on hedgerows during the construction phase of the Proposed Development will be limited to widening of existing hedgerow gaps and a small number of new gaps around 5-6 m wide. Such impacts would be very minor and low risk in terms of killing / injury of individual dormice should they colonise the Site. Over 25% of hedges are considered gappy at the canopy with either one extended gap or several smaller gaps and all hedges appear to be cut annually to varying degrees. Approximately one quarter are less than 1.5 m tall after cutting and roughly one third are less than 1.5 m wide.

7.6.167 At this stage, given the distance of Treswell Woods, the intervening habitat quality and the condition of hedgerows on the Site, dormouse are presumed to be absent. However, further information will be sought from the dormouse group about when dispersal from Treswell Woods was detected, how far from the woods they have

[34] Nottinghamshire Dormouse Group, (2020); 'Nottinghamshire's Dormice'. [Online] Available at https://nottsdormousegroup.uk/nottinghamshires-dormice/ [last accessed 20 November 2024].

been recorded and in what direction (and in what habitat they have been recorded), and this assessment will be updated.

7.6.168 Dormouse are assumed to be absent but with potential to colonise the Site as time passes; this approach has been agreed in principle with Nottinghamshire County Council and Bassetlaw District Council (see Appendix 3). They are not evaluated at this stage.

Other SPI animals

7.6.169 Other animals that are SPI and Species of Conservation Concern in the Nottinghamshire BAP, and that are potentially present (or have been confirmed) at the Site include common toad *Bufo bufo,* brown hare *Lepus europaeus,* hedgehog *Erinaceus europaeus*, harvest mouse *Micromys minutus* and polecat *Mustela putorius*. Field surveys specifically for these species have not been undertaken, and are not proposed, but where observed during field surveys for other ecology features, they have been recorded as incidental records.

7.6.170 There are desk study records of common toad at Littleborough Lagoon and, further off-site, records at Out Ings LWS and West Burton Power Station, both over 600 m to the north. Common toad may use on-site waterbodies and wet ditches for breeding; and grassland field margins, scrub and hedgerow for foraging and shelter throughout the year. It is assumed that common toad is present within suitable waterbodies and associated terrestrial habitats at the Site, which are relatively restricted. On the basis that other suitable breeding and terrestrial habitat for common toad is present across the local area and the Site itself does not have many breeding opportunities and is low in cover of terrestrial habitat, common toad is assessed on a precautionary basis as likely to be important at the **Site level**.

7.6.171 There are nine desk study records of brown hare from within the Proposed Solar Areas and Eastern Biodiversity Mitigation Area, and there are further off-site records that are widespread in the local area. Brown hare has been regularly recorded within the Site, typically within arable fields and on grassland field margins, and it is assumed to be widespread and present within suitable habitats in the locality. Suitable habitats for brown hare are well-represented in the local area, and the species is likely to be widespread locally. The Site is evaluated as important at the **Site level, and possibly at the Local level** on a precautionary basis for brown hare.

7.6.172 One record of hedgehog was returned from within the Site during the desk study; this was associated with a hedgerow in the Proposed Solar Areas. Further hedgehog

records are widespread around the Site, typically associated with villages and as road-casualties. Within the Site, suitable habitat for hedgehogs is present along hedgerows and the grassland field margins, scrub, woodland and grassland margins of the watercourses, as these would likely provide foraging and shelter opportunities. It is assumed that hedgehog is present within suitable habitats at the Site. Other suitable habitat for hedgehog is present within the local area, and the species is likely to be widespread. On this basis the Site is considered likely to be of **Site level, and possibly Local level** importance for hedgehog on a precautionary basis.

7.6.173 Three records of harvest mouse were returned during the desk study, none of which relate to the Site. The nearest record is 750 m east of the Site, near to Gate Burton. There is suitable habitat for harvest mouse at the Site in hedgerows, woodland, scrub; and in grassland areas alongside watercourses and arable field margins where the grassland is taller and less regularly managed. It is assumed that hedgehog is present within suitable habitats at the Site. Other suitable habitat for harvest mouse is likely to be present within the local area. On this basis the Site is considered likely to be of **Site level, and possibly Local level** importance for on a precautionary basis. for harvest mouse.

7.6.174 Two records of polecat were returned during the desk study, none of which relate to the Site. The nearest record is 1km north of the Site, near to North Wheatley.

7.6.175 Within the Site, suitable habitat for polecat is present along hedgerows and the grassland field margins, scrub, woodland and grassland margins of the watercourses, as these would be likely to provide hunting and shelter opportunities. Similar habitat for polecat is present within the local area and the Site is considered likely to be of **Site level, and possibly Local level** importance for on a precautionary basis.

Ecological evaluation summary

7.6.176 Table 7.3 summarises the ecological evaluation of the current baseline conditions, and identifies the important ecological features based upon the available survey information at this time. All ecological features considered to be important will be carried through to assessment of effects.

Table 7.3 Summary of ecological evaluation

Ecological feature	Evaluation	Important ecological feature
All SPA, SAC, Ramsar designated sites within the desk study area	International	Yes
All SSSI designated sites within the desk study area	National	Yes
LWS within and adjacent the Site within 100m	County	Yes
All other LWS within the desk study area	County	No
HPI habitats at the Site	Local	Yes
Non-HPI habitats at the Site	Site	No
Breeding birds: general assemblage	Local	Yes
Breeding birds: skylark	District	Yes
Barn owl	Local	Yes
Wintering bird assemblage	Local	Yes
Bats	Local	Yes
Badger	Not evaluated	No
Otter	Local	Yes
Water vole	Site (precautionary) but is a protected species	Yes
Great crested newt	Site (precautionary) but is a protected species	Yes
Aquatic invertebrates	County (LWSs drains only; rest of Site not yet evaluated)	Yes
Terrestrial invertebrates	Site (precautionary)	No
Fish	Site, possibly Local (precautionary)	Yes
Dormouse	Assumed absent but may colonise. Not evaluated at this time	Yes
Other SPI animals	Site to Local (precautionary)	Yes
Invasive species	N/A	N/A

7.6.177 Identification of further important ecological features will be determined by the ongoing field surveys and assessment, as well as through further consultation and, if appropriate, will be presented in the ES.

7.7 Designed-in Mitigation and Other Measures

7.7.1 Ecological input has been provided throughout the evolution of the Proposed Development by BSG Ecology. This input has contributed to a range of 'designed-in'

primary ecological mitigation, compensation and enhancement measures that are part of the design of the Proposed Development. Biodiversity features have been considered iteratively as the detail of the Proposed Development has evolved, and the incorporated biodiversity measures form an integral part of the Proposed Development, designed specifically to avoid or reduce biodiversity effects wherever possible, and to build biodiversity enhancement into the Proposed Development.

7.7.2 The principal designed-in measure is the retention / enhancement of key habitats *in situ*, informed by ongoing baseline survey. Building in the retention of key habitats by limiting or targeting the extent of development addresses the first step (avoidance) in the mitigation hierarchy as explained in Natural Environment Guidance.[35] [36]

7.7.3 These designed-in measures are identified on the basis of the baseline and post-development conditions at the time of reporting. Further measures may be designed into the development design following the outcome of ongoing work, and this would be reflected in the final ES documents.

Summary of designed-in measures

- Within the Proposed Solar Areas, priority habitats (such as hedgerows, trees, arable field margins, woodland, watercourses, ponds and scrub) will be retained where possible and incorporated into semi-natural habitat buffers. A schedule of proposed buffers to these habitats is provided in Appendix 1 of this chapter. This will retain habitat for protected / notable species, and ensure retention of habitat connectivity through the Proposed Development and the local landscape.
- Arable habitats where the solar arrays will be placed will be converted to modified grassland. Field margins around the solar arrays will be retained / created to neutral grassland with appropriate wildflower mixes used if necessary to increase floristic diversity.
- Clarborough Tunnel SSSI is adjacent to the Site's southern boundary and the part of the Site adjoining the SSSI will be excluded from development and

[35] Ministry of Housing, Communities, and Local Government (2016) Natural Environment Guidance [online] available at: https://www.gov.uk/guidance/natural-environment [last accessed 7th November 2024].

[36] **Avoidance**: Can significant harm to wildlife species and habitats be avoided; for example by locating on an alternative site with less harmful impacts? **Mitigation**: Where significant harm cannot be wholly or partially avoided, can it be minimised by design or by the use of effective mitigation measures that can be secured by, for example, conditions or planning obligations? **Compensation** Where, despite mitigation, there would still be significant residual harm, as a last resort, can this be properly compensated for by measures to provide for an equivalent or greater value of biodiversity?

incorporated into the Western Biodiversity Mitigation Area for enhancement to species-rich grassland. This create / enhance existing habitats that would complement the SSSI and improve ecological connectivity.

- Buildings and trees with bat and barn owl suitability will be retained, thereby avoiding direct impacts upon potential bat roosts.
- All main badger setts will be retained, within a suitable buffer during construction, operation and decommissioning phases.
- Protective fencing will be installed around sensitive important ecological features.
- Mammal gaps will be incorporated into security fencing within the Proposed Solar Areas to allow access by badger and other SPI mammals.
- Directional drilling will be employed for cabling beneath watercourses and hedgerows during construction, to avoid damage to linear habitats.

7.7.4 In addition to the designed-in measures that are summarised above, the impact assessment (set out in Section 7.9) gives rise to a series of further measures (both mitigation and enhancement). These are summarised below for convenience.

Additional mitigation, the detail of which will be informed by the final design layout and construction programme:

- Where access crossing points on ditches / drains are required, these will be clear span structures.
- Production of an appropriate lighting strategy for all phases of development.
- Standard measures for pollution prevention and dust management incorporated into the CEMP for the construction and decommissioning phase.
- Appropriate timing of certain works to avoid impacts on features, for example favouring vegetation clearance outside of the bird nesting period.
- Precautionary methods of working to avoid disturbance, damage, killing / injury, such as precautionary vegetation clearance methods in areas suitable for reptiles.
- Securing and implementing protected species licences, such as for bats or badgers, where impacts to avoid an offence under the relevant legislation cannot be avoided.
- Mitigation measures for great crested newt (if required).
- Measures in the Western and Eastern Biodiversity Mitigation Areas that will mitigate impacts on ground nesting birds, primarily skylark.

Enhancement measures

- Habitat creation in the Eastern Biodiversity Mitigation Area, which may include wildflower grassland, species-rich hedgerows, scrub, and ponds or ditches.
- Habitat improvements such as infilling of gaps in hedgerows, and improvements to plant species diversity by additional planting / seeding in retained habitats.
- Improved management of retained habitats, such as grasslands within the nearby LWS where feasible, management of hedgerows to favour breeding birds and to increase their potential for dormouse, management of ditches (subject to local flood authority consultation), management of woodlands to improve their biodiversity value.
- Installation of other wildlife features such as bat and bird boxes.

7.7.5 Details of work necessary to retain, create and manage retained and new ecological features during and after construction will be provided in a Construction Environmental Management Plan (CEMP) and Landscape and Environmental Management Plan (LEMP) for the Proposed Development.

7.8 Preliminary Assessment of Likely Significant Effects

7.8.1 This section considers the potential effects of the Proposed Development on the identified important ecological features (i.e., designated sites, habitats and species). Impacts are assessed in the absence of mitigation (but taking into account any designed-in mitigation – above).

7.8.2 Residual effects are then described for each ecological feature that is considered, taking into account the measures designed into the development and any further mitigation, compensation or enhancement measures that would be secured by way of planning conditions or other appropriate agreement.

7.8.3 The following types of impacts have been identified as potentially occurring during the three phases of the Proposed Development and may result in significant effects (either adverse or beneficial). Potential impacts are considered at each of three phases:

- Construction phase
- Operation phase
- Decommissioning phase

7.8.4 All further mitigation measures that are relevant to the construction phase of development will be included in a CEMP or similar document. Creation and

management of new habitat and enhancement / management of retained habitat will be included in a LEMP or similar document.

Construction

7.8.5 Impacts that may occur during construction are likely to include:

- Habitat loss. Agricultural land (arable and grassland pasture) which will be cleared for the footprint of the Proposed Development. Some minor loss of hedgerow and grassland field margins is likely to occur.
- Habitat gains. Conversion of areas of arable land underneath solar arrays to permanent grassland. Habitat creation or enhancement elsewhere such as woodland and hedgerows.
- Temporary habitat loss / disturbance. Arable farmland with crops to be cleared for construction activities (e.g., laydown areas and compounds). Hedgerow and field margins where underground cable routes cross (using cut and cover or other measures not including horizontal directional drilling).
- Habitat damage / degradation. Direct and indirect damage (temporary or permanent) to retained features such as trees, and hedgerows adjacent to works, from soil compaction or damage from vehicles.
- Disturbance of species within the Site and in retained habitats adjacent to the Site, from noise, light, vibration and the presence of vehicles and people.
- Damage, destruction, killing or injuring of ecology features such as badger setts and active bird nests.
- Contamination / pollution. Potential ground, water and air pollution from spillages, dust and vehicles.

Operational

- Fragmentation of habitats and species populations. Indirect impacts of the Proposed Development causing barrier effects to certain species such as from security fencing or installation of built infrastructure.
- Disturbance of species within the Site and in retained habitats adjacent to the Site, from noise, light and the presence of vehicles and people.
- Changes to foraging and commuting behaviours. Installation of solar arrays could result in avoidance / attraction by bats, birds, and invertebrate species.

- Beneficial effects from increased habitat diversity and reduction of pesticide application as the Site transitions from intensive arable management to less intensive grazing. This would benefit a range of invertebrate species and other species that prey upon them (i.e., bats, birds).

Decommissioning

7.8.6 At this PEIR stage no information is available about the detail of decommissioning and a detailed receptor-by-receptor impact assessment has not been attempted. The future baseline will be given more consideration at the ES stage and a receptor-by-receptor decommissioning impact assessment will be provided.

7.8.7 Notwithstanding, many potential impacts during decommissioning are likely to be similar to those during construction, albeit access / road infrastructure will already be in place so no impacts arising from construction of such infrastructure would arise.

7.8.8 Removal of solar panels and associated infrastructure will cause temporary habitat disturbance (primarily of permanent grassland) as well as disturbance of some of the fauna in a similar way that disturbance impacts will arise during the construction phase.

7.8.9 The Site's biodiversity baseline will change during the operational phase and the Site will support a modified range of habitats and species requiring consideration, and this will be considered further as information becomes available about how the Site will be decommissioned, and what agricultural habitats are intended, post-operational phase.

Designated sites

Construction phase impacts

Statutory designated sites

7.8.10 Due the nature of the Proposed Development and its separation from internationally designated sites, direct impacts for example as a result of land-take will not arise. Indirect impacts from lighting or from pollution, are also considered to be highly unlikely.

7.8.11 The breeding and wintering bird surveys undertaken in 2023 / 24 have not identified any significant activity at the Site from qualifying bird species of the European sites. The initial assessment is that the Site is not functionally linked to the internationally designated sites, i.e., it is not likely to provide an important role in maintaining or

restoring the population of qualifying species at favourable conservation status. It is therefore highly unlikely that significant adverse impacts on international designated sites arising from habitat modification or loss, or the introduction of a solar development arise any phase of the Proposed Development. A formal report to inform a HRA will be provided as part of the application for development consent.

7.8.12 Clarborough Tunnel SSSI is adjacent to the Site's southern boundary and the part of the Site adjoining the SSSI has been identified for enhancement to species-rich grassland as part of the designed-in measures. The nearest area of development is over 750 m from the SSSI. Due to the nature of the Proposed Development and the separating distance from any areas of development within the Site, no direct or indirect impacts on the interest of Clarborough Tunnel SSSI are anticipated.

7.8.13 All other nationally designated sites are over 1.6 km from the Site, and there would be **no direct or indirect impacts** upon them.

Non-statutory designated sites

7.8.14 There are five non-statutory designated LWS either wholly or partially within the Site, and two within 100 m. These include terrestrial and wetland habitats. No direct impacts in terms of habitat loss are anticipated as these will be retained and buffered by an appropriate stand-off where they are within or adjacent to development areas, as part of the designed in measures of the Proposed Development.

7.8.15 The two watercourses at the Site that are designated as LWSs on account of their aquatic invertebrate interest (Thornhill Lane Drain, Littleborough LWS and Mother Drain, Upper Ings LWS) are to be retained and incorporated into semi-natural habitat buffers. Access crossings to these LWSs will be avoided as part of designed-in measures to prevent physical damage. In the absence of further mitigation measures, there is a risk of accidental pollution or soil sediment discharge into these watercourses which could cause adverse effects on aquatic invertebrates for which they are designated for.

7.8.16 High House Road Verges LWS is an area of species-rich grassland that is located along a road on the boundary of the Proposed Solar Areas and is to be retained and incorporated into a semi-natural habitat buffer. In the absence of further mitigation during the construction phase, construction traffic could potentially damage the LWS, and there may be additional dust deposition, which may result in degradation of the grassland.

7.8.17 The other two LWS within the Site (Blue Stocking Lane, Clarborough LWS, Littleborough Lagoon LWS) are in the Eastern and Western Biodiversity Areas where no development is proposed. They will be retained and no adverse effects from the construction phase are anticipated.

7.8.18 West Burton Meadow LWS is off-site but adjacent to the northern boundary of the Proposed Solar Areas. No direct impacts are anticipated. In the absence of mitigation, indirect effects from vehicles movements during construction (dust, emissions) could occur.

7.8.19 Clarborough Tunnel LWS is a composite part of Clarborough Tunnel SSSI and is within 100 m of the Site boundary but over 750 m from any construction works. Due to the nature of the Proposed Development and the separating distance from any areas of development within the Site, no direct or indirect impacts on the interest of Clarborough Tunnel LWS are anticipated.

7.8.20 In the absence of further mitigation, the development could impact LWSs such that the ecological features that are reasons for their designation are compromised. **Potential adverse effects on non-statutory designated sites may be significant at up to County level.**

Operation phase impacts

7.8.21 Further significant adverse effects are not expected to occur to designated sites during the operational phase.

7.8.22 The changes in land management, and the reduction of agricultural chemical use and run-off into watercourses and waterbodies will benefit the non-statutory designated sites that are hydrologically connected to the Site. The significance of this long-term beneficial impact is difficult to assess with certainty but it would be at least the **Site level.**

Mitigation and enhancement

7.8.23 Potential adverse impacts from pollution incidents and soil sediment discharge will be avoided by implementing standard measures for pollution prevention, dust suppression and soil erosion and run-off.

7.8.24 Measures such as fencing and toolbox talk briefings will be implemented during construction to prevent accidental damage to non-statutory sites such as by encroachment of vehicles.

7.8.25 Habitat enhancement within the Eastern and Western Biodiversity Mitigation Areas will include measures that complement the interest of designated sites within and adjacent to the Site. The design of these areas is being developed but it is expected to include enhancement of arable, arable field margins, watercourses, standing water, flood-plain grassland, hedgerows and other habitats. Opportunities for new areas of wetland, species-rich grassland, woodland and hedgerows are being explored.

Residual effects

7.8.26 Taking into account all of the construction phase mitigation as well as the likely extent of operational phase habitat creation and enhancement measures that will benefit LWSs within and adjacent the Site, and the reduction in agricultural run-off into watercourses, it is considered that there will be **beneficial effects on non-statutory designated sites, significant at the Site level**.

Habitats

Construction phase impacts

7.8.27 The Proposed Development will be located on arable fields and grassland pasture fields, with notable habitats (HPIs) largely retained and incorporated into semi-natural habitat buffers. Mature trees, including those that have 'veteran' features, will be retained and protected in appropriate semi-natural habitat buffers that will be informed by root protection area recommendations from the arboricultural consultants. The schedule of proposed ecological buffers forming part of the Proposed Development is shown in Appendix 1 to this chapter of the PEIR.

7.8.28 Within the Proposed Solar Areas, all arable fields will be replaced by permanent grassland over the 24-month construction programme. There will be some permanent loss of arable, modified grassland pasture to install the footings of the solar array frames, access routes and the BESS with associated infrastructure. Where arable and modified grassland are replaced with hardstanding, this would represent a minor loss in terms of ecological value. Arable land will be replaced with other habitats such as permanent grassland.

7.8.29 Construction is likely to result in the loss of small sections of native hedgerow including a small amount of widening of existing gaps; as well as small losses of HPI arable field margins to facilitate access and some cabling. Loss will be minimised by using existing access gaps (such as field gateways) where practical. Some hedgerow

loss could also occur to facilitate the substation, BESS and associated infrastructure.

7.8.30 Physical impacts to watercourses will be avoided by design, through the creation of semi-natural buffers and use of clear-span bridges where vehicle access is required, and horizontal directional drilling for cabling beneath watercourses during construction. In the absence of further mitigation measures, there is a risk of accidental pollution or sediment discharge into retained watercourses which could cause adverse effects to retained watercourses.

7.8.31 Habitats within the Eastern and Western Biodiversity Mitigation Areas will be used for delivering biodiversity mitigation, and are not anticipated to be negatively impacted by the Proposed Development.

7.8.32 In the absence of further mitigation there is the potential for retained habitats on and immediately offsite being damaged during the construction phase, such as via physical damage, soil compact, dust or pollution spills; such impacts are likely to be to be **adverse, and significant at the Site level**.

Operation phase impacts

7.8.33 Once the construction phase moves into the operational phase, **further significant adverse effects, in addition to those anticipated to arise during the construction phase, are not expected** . Improved management during the operational phase of retained and created habitats, such as hedgerows and woodland within the Proposed Solar Areas, are anticipated to result in beneficial effects given the size of the Site and the potential for locally important improved habitat connectivity.

7.8.34 As habitats develop and mature during the operational phase, landscape-scale habitat connectivity improvements would be expected, for instance through the creation of larger, more diverse grassland field margins and watercourse margins across the 850+ ha of the Site.

Mitigation and enhancement

7.8.35 The Proposed Development includes the enhancement of the retained field margins around the solar arrays with appropriate wildflower mixes used if necessary to increase floristic diversity.

7.8.36 All hedgerow loss will be compensated for through the enhancement of retained hedgerows and creation of new species-rich hedgerow. Loss of arable field margins

will be offset through the creation of wider arable margins in the Western Biodiversity Mitigation Area. Where appropriate the HPI field margins will be enhanced with additional planting to increase the extent and diversity of the habitat, such as by infilling hedgerow gaps with diverse species planting, or by improving habitat structure such as adding scrub areas with an informal edge adjacent to woodlands.

7.8.37 Harm arising from direct damage and soil compaction to retained trees and hedgerows will be avoided by installing tree protection fencing where appropriate during the construction phase. Where hedgerows require breaking through to create access for the construction and operation phases, tree protection would also be used to safeguard the exposed hedgerow where it abuts the working corridor to avoid accidental incursion beyond the agreed working corridor. Other potential effects from dust and pollution incidents will be avoided by implementing standard measures for pollution prevention and dust management.

7.8.38 Mitigation for impacts on retained habitats during the construction phase, as described above, would be controlled via an appropriate CEMP. Creation of new habitat areas and enhancement of retained areas is to be detailed within an appropriate LEMP.

Residual effects

7.8.39 Given the likely extent of the habitat creation and enhancement measures including wildflower grassland, scrub and hedgerow planting, the improvement of local structural vegetation connectivity, and conversion from an arable-dominated landscape to one dominated by permanent grassland with no significant agricultural runoff to watercourses, it is considered that there will be **beneficial effects on HPI habitats, significant at the Site level**.

7.8.40 As the scheme develops, habitat impacts will be assessed further, including using the relevant biodiversity metric, to ensure that a Biodiversity Net Gain (BNG) is delivered in-line with relevant legislation and policy, and the outcomes presented appropriately. A separate preliminary BNG assessment is provided as Appendix 7.12 , and this indicates that the Proposed Development will deliver biodiversity gains.

Breeding birds

Construction phase impacts

7.8.41 The key adverse impact on breeding birds will be loss of arable fields. In addition, small sections of hedgerows will be temporarily lost disturbed. Breeding birds could

also be disturbed by development activities, depending on the time of year. Construction works during the breeding season could result in the loss of active nests.

General assemblage

7.8.42 Habitats supporting the majority of the general breeding bird assemblage (i.e., not including ground-nesting birds) within the Proposed Solar Areas, such as hedgerows and woodland areas will be retained and give rise to minimal impacts on breeding birds.

7.8.43 There is the potential for temporary disturbance impacts to occur to breeding birds using retained habitats within the Proposed Solar Areas, from nearby construction activities during the bird breeding season (typically March to August, although there is some variation depending on the species and the prevailing weather conditions at the time). It is possible that some birds using the retained habitats will be displaced temporarily, potentially resulting in reduced breeding on-site during the construction phase. Such disturbance during construction will be temporary and, because the Site will be developed progressively, not all breeding bird territories would be subject to disturbance.

7.8.44 It is likely that small amounts of hedgerow will need to be removed. If this is undertaken during the bird nesting season without mitigation, there is a risk that an active bird nest could be damaged or destroyed. The loss of small amounts of hedgerow will lead to a very minor reduction in nesting habitat in the absence of further mitigation.

7.8.45 Construction activities in arable and grassland fields have the potential to disturb, damage or destroy nests of skylark (assessed separately below) as well as yellow wagtail and grey partridge if undertaken during the bird nesting period.

7.8.46 The habitats in the Eastern and Western Biodiversity Areas will not be subject to development works, and breeding bird territories in these areas will not be adversely impacted.

7.8.47 In the absence of mitigation, there is likely to be an **adverse effect on the bird assemblage that is significant at the Site level.**

Skylark

7.8.48 The arable and grassland fields throughout the Proposed Solar Areas support ground-nesting skylark with an estimated 90 territories recorded in 2024 and 105

territories in 2023. The arable fields will be converted to permanent grassland where the solar arrays will be installed, and the existing grassland retained but with solar infrastructure installed during the construction phase. Some areas of arable fields will be permanently lost for the creation of other development infrastructure such as the BESS. These works if undertaken during the bird nesting period have the potential to disturb, damage or destroy skylark nests.

7.8.49 The construction of the solar array on arable and grassland pasture farmland will reduce the available nesting habitat for skylark. Skylark are deterred from locating their nest in areas that are overlooked by tall structures, both natural ones such as woods, mature trees and tall hedges and man-made ones such as buildings and the arrays of solar panels. This arises from their predator avoidance behaviour – such tall structures can either conceal ground predators or provide perches for avian predators (Donald et al., 2001). The evidence available on the use of solar farms by breeding skylark is that while they may be deterred from nesting beneath solar arrays (Solar Energy UK, 2023) they will continue to forage there amongst the sown grassland (Shotton, 2018).

7.8.50 As a result of the nesting deterrence effect of structures, it is predicted that all skylark territories within the Proposed Solar Areas identified from the field survey will be displaced. The habitats in the Eastern and Western Biodiversity Areas will not be subject to development works, and breeding bird territories in these areas will not be negatively impacted.

7.8.51 Aspects of the Proposed Development, such as the creation of wildflower rich grassland on the Site will offer significantly improved foraging opportunities for skylark nesting locally, as the grassland habitats will support a larger biomass of insect prey items than the arable land they will replace.

7.8.52 In the absence of further mitigation, there is likely to be an **adverse effect on skylark that is significant at the District level**.

Operation phase impacts

7.8.53 Significant adverse impacts are not anticipated to occur on the assemblage of breeding birds during the operational phase. There may be some disturbance of habitats within which birds may nest from noise, light and the presence of vehicles and people, however this is likely to be infrequent and localised, and unlikely to be significant.

7.8.54 In the absence of further mitigation, there is likely to be a **neutral effect on the breeding bird assemblage**.

7.8.55 As habitats develop and mature during the operational phase, there would be an increase in the availability of nesting resources for birds that typically nest in hedgerows, trees, woodland, scrub and field margins, which would be beneficial for those species, albeit not to a significant level.

7.8.56 In the absence of further mitigation, there is likely to be a **beneficial effect on skylark that is not significant**, following construction as a result of increased foraging resource.

Mitigation and enhancement

7.8.57 Clearance of potential bird nesting habitat should be avoided in the bird nesting season (typically March to August as a guide, but can be affected by factors such as the prevailing weather conditions). Given the scale of the project and the likely length of the construction period, it is likely that some habitat clearance will need to take place during or close to the breeding season; habitat clearance during the nesting period should only proceed once a suitably experienced ecologist has checked the area and confirmed that nesting birds are not present. If nesting birds are found, they will need to be retained in a suitable buffer until any young have fledged, or the nest becomes inactive. These measures would be formalised within a CEMP.

7.8.58 Potential bird nesting habitats for the majority of species (such as the hedgerows, woodland, and wetlands (the drains and Littleborough Lagoon)) will be retained. Further habitat for birds will be created including wildflower grassland and hedgerows which will benefit a range of bird species for nesting and foraging. This will ensure continued nesting opportunities for some species of conservation concern including linnet, reed bunting, wren, dunnock and yellowhammer.

7.8.59 The loss of small amounts of hedgerow will be compensated through further hedgerow creation and the enhancement of existing hedgerows.

7.8.60 An appropriate lighting strategy for all phases of development will be produced and implemented.

7.8.61 Further measures to mitigate the potential operational effects of the Proposed Development on skylark in the Eastern and Western Biodiversity Mitigation Areas

will increase the local potential of these area to support increased densities of nesting territories and the number of broods an individual pair can raise each year.

7.8.62 The draft skylark mitigation strategy is presented in Appendix 7.13 which shows further details and the locations of the measures at the Site which include:

- Skylark plots within large arable fields.
- Enhanced arable field margins to create wildflower grassland of increased width.

7.8.63 It is estimated that the further mitigation measures could increase the skylark nesting densities in the Eastern and Western Biodiversity Mitigation Areas by 50 territories; this will mitigate approximately 48% (against the 2023 total of 105 territories) to 55% (against the 2024 total of 90 territories) of the territories likely to be displaced from the Proposed Solar Areas. Further areas of grassland creation that would not be impacted by solar development and are of a suitable size for nesting skylark are likely to be present at the Site during the operational phase. It is not proposed to create these specifically for skylark nesting mitigation, but they are likely to provide secondary biodiversity benefits such as to nesting skylark, thereby increasing the total number of post-development territory opportunities.

7.8.64 In addition to the creation of skylark plots as described above, the Mitigation Areas will be managed optimally for skylark in the long-term. This is different to the current situation which is led by agricultural requirements. Long-term optimal management would then be expected to increase the number of skylark broods in any given year which will improve the effect of creating the skylark plots.

7.8.65 Further habitat enhancement within the Eastern and Western Biodiversity Mitigation Areas is likely, that will provide wider benefits to nesting birds beyond skylark. The design of these areas is being developed but in addition to the arable enhancement for skylark, it is expected to include enhancement of watercourses, standing water, flood-plain grassland, hedgerows and other habitats. Opportunities for new areas of wetland, species-rich grassland, woodland and hedgerows will be explored.

7.8.66 Bird boxes suitable for a range of species are to be installed on retained mature trees at the Site in order to provide enhanced bird nesting opportunities.

Residual effects

7.8.67 Residual effects on the general bird assemblage (excluding skylark) are considered likely to be **not significant, and with the potential for Site level beneficial effects** overall as habitat creation and enhancement measures mature.

7.8.68 For skylark, the proposed mitigation is anticipated to reduce any adverse effects, although approximately half (40 to 55 territories) of the baseline territories at the Site would likely be displaced. Skylark is an SPI and Red listed species of conservation concern nationally, and within Nottinghamshire, skylark is listed on the Local Biodiversity Action Plan as a 'species of conservation concern', and given its conservation status and population declines it is considered that there will be an **adverse residual effect on skylark, significant at a Local level**.

Barn owl

Construction phase impacts

7.8.69 No buildings, nest boxes or trees supporting barn owl would likely be lost or directly impacted during construction. Should any works that would directly impacts upon barn owl features, and potential effects cannot be avoided, further survey would be undertaken.

7.8.70 Habitat buffers will be applied around all trees and buildings with suitability for barn owl or where likely presence is confirmed as part of the designed-in mitigation. This will avoid potential accidental damage to suitable features and most disturbance impacts (including noise, vibration and human presence) to barn owl during construction phase. In the absence of further mitigation, construction works may be undertaken close to nesting locations during the barn owl breeding period, which could cause disturbance impacts (a potential offence under Schedule 1 of the Wildlife and Countryside Act 1981) resulting in unsuccessful breeding.

7.8.71 The majority of suitable barn owl foraging habitat such as the grassland hedgerow and drain margins will be retained. There could be indirect negative effects upon these retained habitats and potential / confirmed roost features in trees or buildings if they are artificially illuminated during construction, for example by security lighting. This could result in avoidance of these features by barn owl.

7.8.72 Given the likely localised extent of unmitigated disturbance and lighting during construction, and the overall resource of other suitable foraging and roost features elsewhere in the Site and locally, in the absence of further mitigation , these impacts

would result in a **temporary adverse effect during construction, significant at the Site level**.

Operation phase impacts

7.8.73 Permanently activated lighting is unlikely to be required during the operational phases, and it is expected that no lighting will be necessary in most areas. Where areas of lighting are proposed, in the absence of mitigation, this could illuminate barn owl nest / roost locations, and foraging habitats and lead to abandonment / avoidance of such features.

7.8.74 In the absence of further mitigation, impacts from lighting are likely to be highly localised and not impact upon a high number of the overall nest / roost locations or foraging habitats, and therefore result in an **adverse effect, significant at the Site level**.

Mitigation and enhancement

7.8.75 The habitat creation forming part of the Proposed Development will increase the grassland resource and will be of benefit to foraging barn owls as such habitats would support greater numbers of small mammals upon which they feed.

7.8.76 Mitigation measures include timing of construction works near nest / roost locations outside of the main barn nesting period (typically March to August- although it should be noted that barn owl can nest earlier and later during the year). Prior to the commencement of works that could give rise to disturbance impacts on barn owls, the features, should be inspected by a barn owl-licensed ecologist to ensure that no nesting behaviour, or dependant young are present; should they be present, the risk to barn owls, and the need for further mitigation, should be reviewed by a suitably experienced ecologist.

7.8.77 Where artificial lighting is required, further mitigation may be required such as the avoidance of light spill onto foraging habitats or onto potential / confirmed nest or roost locations.

7.8.78 Barn owl nest boxes will be installed on retained mature trees at the Site in order to provide enhanced nesting opportunities.

Residual effects

7.8.79 Overall, because of the increase in foraging opportunities inherent in the habitat enhancement measures, the residual effect on the local barn owl population is likely to be **beneficial, significant at a local level**.

Wintering birds

Construction phase impacts

7.8.80 The majority of the bird species of conservation concern / SPI bird species found within the Proposed Solar Areas are common and well-represented wintering species throughout the county.

7.8.81 The Proposed Development seeks to retain the majority of the hedgerows, woodland, trees and watercourses will maintain the overwintering habitat used by birds of conservation concern / SPI bird species recorded within the Site including fieldfare, redwing, linnet, various birds of prey and yellowhammer.

7.8.82 It is possible that some birds using the retained habitats will be displaced temporarily during the construction phase as a result of disturbance. Permanent displacement of overwintering species that prefer an open landscape, including skylark, starling and gull species, could arise. Construction during the winter period could also result in the temporary disturbance of adjacent off-site habitats.

7.8.83 The areas of the Site closer to the River Trent, particularly the wetland and adjacent farmland habitats in the Eastern Biodiversity Mitigation Area, support a greater species diversity and higher numbers of birds, typically waders and waterbirds and birds of prey hunting; the Proposed Development would retain these areas, and they will be unaffected during construction. The Eastern and Western Biodiversity Areas would absorb some of the birds potentially displaced by construction in the Proposed Solar Areas (but not all) and be available for continued winter roosting and foraging.

7.8.84 It is likely that the habitats at the Site are used as part of an inland network of habitats for wintering birds, particularly along the River Trent corridor.

7.8.85 As the Site is very typical of the farmed landscape in this locality and many opportunities for wintering birds are present throughout, the effect of impacts arising from the Proposed Development are likely to be relatively localised. In the absence of mitigation, there is likely to be an **adverse effect on the wintering bird assemblage that is significant at the Site level**.

Operation phase impacts

7.8.86 **Significant adverse impacts are not expected to occur to wintering birds during the operational phase**. The landscape will change in character but this will already have taken place at the construction stage.

Mitigation and enhancement

7.8.87 Habitat enhancement within the Eastern and Western Biodiversity Mitigation Areas will provide wider benefits to wintering birds. The design of these areas is being developed but it is expected to include enhancement of arable land, arable field margins, watercourses, standing water, flood-plain grassland, hedgerows and other habitats. Opportunities for new areas of wetland, species-rich grassland, woodland and hedgerows are being explored. An appropriate lighting strategy for all phases of development will be produced and implemented.

Residual effects

7.8.88 Taking into account the habitat creation and long-term management of the Eastern and Western Biodiversity Mitigation Areas, which are likely to bring about benefits to the wintering bird population that would offset adverse effects of the Proposed Development, residual effects on the wintering bird assemblage are considered likely to be **not significant.**

Bats

Construction phase impacts

7.8.89 Trees and buildings with confirmed and potential roosts are a priority to be retained and protected through semi-natural habitat buffers as part of the Proposed Development. This will avoid potential accidental damage to suitable features (such as from vehicle movements) and most disturbance impacts during construction phase. Should it be necessary to directly impact potential bat roost features, and potential effects cannot be avoided, further survey would be undertaken.

7.8.90 In the absence of mitigation, construction works may be undertaken close to bat roost locations, which could cause disturbance impacts on bats of a magnitude that could trigger an offence under the legislation that protects bats and their roosts. Depending on the severity / timing / duration of the impact, this could cause roost avoidance or abandonment.

7.8.91 Arable fields will be converted to permanent grassland and solar arrays will be installed on these areas and several other existing grassland fields. There is likely to be some arable field and hedgerow loss during the construction phase. The paired-detectors deployed as part of the bat activity survey work between April and June (see Appendix 7.7 for further detail) indicates that bat activity is significantly lower in the central areas of the arable fields, and that the field boundary hedgerows are

of greater importance for foraging and commuting. The loss of arable habitats is unlikely to have a significant effect on local bat populations.

7.8.92 The majority of suitable bat foraging and commuting habitat such as the hedgerows, woodlands and watercourses will be retained and protected and enhanced through semi-natural habitat buffers as part of the designed-in mitigation. There could be indirect negative impacts upon these retained habitats and potential / confirmed roost features in trees or buildings if they are artificially illuminated during construction, for example by security lighting. This could result in avoidance of these features by bats.

7.8.93 Given the likely localised extent of unmitigated disturbance and lighting during construction, but taking into account the retained resource of other suitable foraging and roost features elsewhere in the Site and locally, in the absence of mitigation, these potential impacts would result in a **temporary adverse effect during construction, significant at the Site level**. This is a preliminary assessment on the basis of the activity surveys presented in the PEIR (April to June), and the additional surveys will be analysed and interpreted, which will be included in the ES.

Operation phase impacts

7.8.94 Permanently activated lighting is unlikely to be required across most of the Site throughout the Proposed Development during the operational phases, and it is expected that no lighting will be necessary in most areas. Where areas of lighting are proposed, in the absence of mitigation, this could illuminate roost locations, and foraging / commuting habitats.

7.8.95 The potential impact of solar arrays and panels to foraging bats will be considered further and included in the ES.

7.8.96 In the absence of mitigation, impacts from lighting are likely to be highly localised and not impact a high number of the potential overall roost locations or foraging / commuting habitats. **A localised adverse effect could arise, significant at the Site level**.

Mitigation and enhancement

7.8.97 The habitat creation associated with the Proposed Development will increase the habitat resource for bats including enhanced and new hedgerows. This would also

benefit foraging barn owls as such habitats would support greater numbers of small mammals upon which they feed.

7.8.98 Prior to the commencement of works that could give rise to significant disturbance impacts to potential or confirmed bat roosts, further survey may be appropriate to inform specific mitigation measures, depending on the final design / operational parameters of the development. Otherwise, avoidance of potential roost features will be avoided wherever possible.

7.8.99 Bat roost boxes will be installed on retained mature trees at the Site to provide enhanced roosting opportunities.

7.8.100 Where artificial lighting is required, mitigation will be required to ensure avoidance of light spill onto foraging habitats and potential / confirmed roost locations. The lighting scheme for the Proposed Development would be designed such that new bat roosting features are not directly illuminated and that retained on and off-site bat foraging habitats (such as hedgerows, watercourses and woodland) remain sufficiently dark with reference to bats and lighting guidance[37].

Residual effects

7.8.101 With the control of lighting and disturbance of potential roost features, and given the increase in foraging and commuting opportunities inherent in the designed-in habitat enhancement measures, the residual effect on the local bat population is likely to be **beneficial at a Local level**. This is a preliminary assessment on the basis of the activity surveys presented in the PEIR (April to June), and consideration of residual effects with reference to the full suite of surveys will be included in the subsequent ES.

Badger

Construction phase impacts

7.8.102 The Proposed Development will retain the habitats of highest value as a foraging resource for badgers, such as woodland, field margins and hedgerows and will maintain habitat continuity for badgers across the Site.

7.8.103 The Proposed Development will seek to retain all setts within appropriate buffers, with the intention of fully protecting them during construction.

[37] Institute of Lighting Professionals (ILP) & Bat Conservation Trust (BCT) (2023); 'Bats and artificial lighting at night. Guidance Note 08/23'. Institute of Lighting Professionals Publication, Rugby.

7.8.104 In the absence of mitigation, accidental encroachment of vehicles into buffer areas that damages badger setts and tunnels may occur during the construction phase. The construction phase may give rise to some fragmentation of habitat used by badgers.

7.8.105 The installation of security fencing may result in the fragmentation of clan territories and the loss of access to foraging habitats.

7.8.106 Open excavations during construction could trap and injure badgers.

Operation phase impacts

7.8.107 Adverse impacts are not expected to occur to badger during the operational phase.

Mitigation and enhancement

7.8.108 The Proposed Development will increase the areas of hedgerows and grassland and will be of benefit to foraging badgers. Foraging enhancement will be provided within the habitat buffers that will include native fruit bearing species. The conversion of arable fields to grassland will provide greater areas of suitable foraging habitat.

7.8.109 Where potential impacts to a badger sett are unavoidable, those setts will be temporarily closed under a Natural England badger development licence for the duration of the construction works. This would be secured by submitting a licence application to Natural England following granting of necessary planning consents.

7.8.110 The buffer zones around retained badger setts will be clearly demarcated with Heras fencing and appropriate signage to ensure construction works do not encroach into these areas.

7.8.111 To reduce the potential impacts of fragmentation of foraging habitat due to the installation of security fencing, small gaps in the fencing will be created to allow continued movement throughout the Proposed Solar Areas. Gaps of approximately 35 cm x 35 cm at ground level would allow for continued use. Access gaps will be strategically sited where existing mammal paths are present, and periodically elsewhere.

7.8.112 During construction, deep excavations will be provided with a means of escape for mammals (e.g., a ramp of compacted soil) to ensure that any badgers (or other wildlife) do not become trapped in excavations overnight. No operational phase measures are considered necessary at this stage.

7.8.113

Otter

Construction phase impacts

7.8.114 No evidence of potential holts / resting sites has been recorded on or adjacent to the Site. There are some areas of suitable habitat that could be used for rest or shelter, such as areas of scrub and woodland near to watercourses, and these habitats will be retained as part of the designed-in measures.

7.8.115 The evidence suggests that otter occasionally pass through the Site along the drains, and potentially overland in some areas, most likely as part of a wider territory associated with the River Trent. The Proposed Development will retain watercourses in the Proposed Solar Areas and incorporate them into semi-natural habitat buffers that extend 10 m from each bank top. These measures will reduce potential disturbance of commuting otter during construction and will maintain habitat connectivity through Site during the construction and operational phases.

7.8.116 Physical impacts to watercourses will be avoided by semi-natural buffers and using clear-span bridges where vehicle access is required, and horizontal directional drilling for cabling beneath watercourses during construction, all forming part of the Proposed Development

7.8.117 In the absence of mitigation measures, **no significant adverse impacts on otters are likely to arise**.

Operation phase impacts

7.8.118 **Significant adverse impacts are not expected** to occur to otter during the operational phase.

Mitigation and enhancement

7.8.119 An updated otter survey may be required prior to certain construction works commencing near to watercourses (for example access routes across these features) that may cause disturbance impacts to otter to ensure the continued absence of holts.

7.8.120 Otter habitat is likely to benefit from the changes in land management, and reduction of agricultural chemical run-off into watercourses and waterbodies. Opportunities for further aquatic / wetland habitats suitable for otter will be considered as part of the overall Site design.

7.8.121 Where access crossing points on ditches / drains are required, these will be clear span structures.

7.8.122 An appropriate lighting strategy for all phases of development will be produced and implemented.

Residual effects

7.8.123 **No significant adverse impacts on otters are likely to arise.**

Water vole

Construction phase impacts

7.8.124 On a precautionary basis, it is considered possible that water vole may be present at very low densities the Site, including within the watercourses in the Proposed Solar Areas.

7.8.125 The Proposed Development will retain watercourses in the Proposed Solar Areas and incorporate them into semi-natural habitat buffers that extend 10 m from each bank top. These measures will reduce potential for damaging water voles or their burrows (if present) during construction and will maintain habitat connectivity through Site during the construction and operational phases.

7.8.126 Physical impacts to watercourses will be avoided by semi-natural buffers and using clear-span bridges where vehicle access is required, and horizontal directional drilling for cabling beneath watercourses during construction, all forming part of the Proposed Development. However, in the absence of mitigation, there is a risk that water voles could be impacted during the construction of watercourse access crossings (if required). Any such impacts would be **highly localised and significant at the Site level**, based on precautionary assumption of a very low level of presence.

Operation phase impacts

7.8.127 **Significant adverse impacts are not expected** to occur to water vole during the operational phase.

Further mitigation and enhancement

7.8.128 An updated check for water vole presence will be undertaken in advance of certain construction works commencing near to watercourses (for example access routes across these features) to determine the status of water vole activity at that time, as well as to assess their potential to be impacted. Appropriate mitigation measures, informed by the survey work and professional judgement, would be implemented, if required. Where access crossing points on ditches / drains are required, these will be clear span structures.

7.8.129 Water vole habitat is likely to benefit from the changes in land management, and reduction of agricultural chemical run-off into watercourses and waterbodies. Opportunities for further aquatic / wetland habitats suitable for water vole will be considered as part of the Proposed Development.

Residual effects

7.8.130 Residual effects on water vole are considered likely to be not significant if water voles are present; but with the potential for **beneficial effects overall, significant at the Site level**.

Great crested newt

Construction phase impacts

7.8.131 Great crested newt presence has not been recorded in on-site waterbodies, or in any off-site waterbodies that could be accessed for survey. Access was not granted to five off-site ponds within 250 m of the Proposed Solar Areas.

7.8.132 As set out earlier in this Chapter, the presence of great crested newt within the majority of the Proposed Solar Areas is highly unlikely as only a very small proportion of habitat is located within 250 m of the off-site ponds. Where suitable habitat is present at a pond that supports great crested newts, the majority of a population will use terrestrial habitats within 50m of the breeding pond[38] . Research commissioned by Natural England[39] , has shown that great crested newt densities are very low over 100 m from the breeding pond and that a majority occur within 50 m of the pond. The same research found that it is inefficient to put in place any significant mitigation measures for those ponds more than 250 m away from a development footprint, as most newt movements are within 250 m of breeding ponds.

7.8.133 If great crested newt is present within the off-site ponds that could not be surveyed, there is the possibility that small numbers of this species could be killed or injured during construction.

7.8.134 Most of the terrestrial habitats in the Site within 250 m of these ponds is sub-optimal for great crested newt, as it is largely arable land that is regularly disturbed and damaged by agricultural activities, although small areas of more suitable habitats

[38] Jehle (2000). The terrestrial summer habitat of radio tracked great crested newts (Triturus cristatus and marbled newts (Triturus marmoratus). The Herpetological Journal 10: 137-143.
[39] Cresswell and Whitworth (2004). 'An assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt'. English Nature Research Report No. 576.

such as hedgerow and grassland field margins are also present. Some areas would permanently lost during construction.

7.8.135 Given the likely localised extent of unmitigated terrestrial habitat damage during construction, and the overall resource of other habitat elsewhere in the Site and locally, in the absence of mitigation, impacts on individual great crested newts cannot be discounted at this stage, and could result in an **adverse effect, significant at the Site level**.

7.8.136 An appropriate licence may need to be secure for work potentially affecting great crested newt.

Operation phase impacts

7.8.137 The designed-in habitat creation and enhancement proposals, particularly the conversion of arable fields to permanent grassland, and the creation and management of field margins to improve their structural diversity, will result in an overall increase in the extent and value of terrestrial habitats for great crested newt and other amphibian species that may be present. Waterbodies suitable for amphibian breeding may also be provided which would improve breeding opportunities.

7.8.138 In the absence of further mitigation / enhancement this has the potential to give rise to a beneficial effect on the local great crested newt population, significant at the Site level.

Further mitigation and enhancement

7.8.139 At this stage, the extent and approach to mitigation for great crested newt is still to be determined. As the Proposed Development plans progress, the approach to mitigation will be refined and further details presented in the ES.

7.8.140 Enhancement for amphibians such as log and brash piles and hibernacula will also be considered.

Residual effects

7.8.141 With appropriate mitigation in place, adverse impacts on great crested newt are unlikely to arise. The overall amount of arable land to be converted to permanent grassland and the potential for further waterbodies to be created, **could give rise to a beneficial effect on great crested newt (if present) and other amphibians**. A beneficial effect, if it arose, would be slight and not significant.

Aquatic invertebrates

7.8.142 The sample analysis from the aquatic invertebrate surveys at the Site in 2024 is ongoing. The results, interpretation and assessment of likely significant effects on aquatic invertebrates will be included within subsequent version of the Ecology Chapter of the ES. A preliminary assessment of likely significant effects based is included below.

Construction phase impacts

7.8.143 The two watercourses at the Site that are designated as LWS on account of their aquatic invertebrate interest are to be retained and incorporated into semi-natural habitat buffers as part of the Proposed Development. Access crossings to these LWSs will be avoided as part of designed-in measures to prevent physical damage.

7.8.144 All other watercourses in the Proposed Solar Areas will be retained and incorporated into semi-natural habitat buffers as part of the Proposed Development.

7.8.145 Physical impacts to watercourses will be avoided by semi-natural habitat buffers and using clear-span bridges where vehicle access is required, and horizontal directional drilling for cabling beneath watercourses during construction, forming part of the Proposed Development.

7.8.146 In the absence of mitigation measures, there is a temporary risk of accidental pollution or soil sediment discharge into retained watercourses which could cause adverse effects on aquatic invertebrates.

7.8.147 Drains, wet ditches and waterbodies in the Eastern and Western Biodiversity Areas are to be retained and there will be no negative effects from the construction phase.

7.8.148 Given the presence of ditches within the Site that have been designated as LWS on account of their aquatic invertebrate interest, in the absence of further mitigation, **adverse effects on aquatic invertebrates may be significant at up to County level**.

Operation phase impacts

7.8.149 Aquatic invertebrates are likely to benefit from the changes in land management, and reduction of agricultural chemical run-off into watercourses and waterbodies.

7.8.150 The potential attraction of aquatic invertebrates to solar panels will be considered further and included in the ES.

7.8.151 At this stage operational phase effects are considered likely to be **neutral.**

Mitigation and enhancement

7.8.152 Potential adverse effects from pollution incidents and soil sediment discharge will be avoided by implementing standard measures for pollution prevention and soil erosion and run-off. These will be specified in the CEMP.

7.8.153 Opportunities for the creation and management of aquatic / wetland habitats that are suitable for aquatic invertebrates will be considered as part of the overall design.

7.8.154 The need for further mitigation will be considered in light of the results of the survey work and the emerging design. Where necessary these will be presented in the ES.

Residual effects

7.8.155 With a reduction in agricultural run-off and the creation of vegetated watercourse stand-off zones / buffers and new wetland habitats, residual effects on aquatic invertebrates are considered likely to be **neutral, and with the potential for beneficial effects overall**, albeit to a level that is not considered to be significant.

Terrestrial invertebrates

Construction phase impacts

7.8.156 The main impacts during construction will be the loss of arable fields which are poor habitat for terrestrial invertebrates due to their limited floristic diversity and the application of pesticides.

7.8.157 The habitats within the Site are common and widespread in the local area and are unlikely to be of high importance for notable invertebrate species. Those that have increased potential, such as more floristically diverse arable field margins and trees with deadwood, are largely retained and incorporated into semi-natural habitat buffers as part of the Proposed Development. As the habitats to be adversely affected are suboptimal for terrestrial invertebrates, any **adverse impact on terrestrial invertebrates would not be significant**.

Operation phase impacts

7.8.158 During the operation phase there will be no habitat loss or disruption and significant adverse effects are not expected to arise.

7.8.159 As the enhanced and created habitats mature and become established during the operation phase, the increase in species and structural diversity will result in **benefits to a range of terrestrial invertebrate species, albeit to a level that is not considered to be significant**.

Mitigation and enhancement

7.8.160 Woody material felled during hedgerow section removal (if required) will be retained and used to create log / brash piles within habitat buffers as an enhancement. This will benefit a range of invertebrate species.

Residual effects

7.8.161 Residual effects on terrestrial invertebrates are considered likely to be **neutral, and with the potential for beneficial effects overall, albeit to a level that is not considered to be significant**.

Reptiles

Construction phase impacts

7.8.162 The majority of suitable reptile habitats would be retained as part of the Proposed Development.

7.8.163 Small amounts of habitat suitable for reptiles will be lost during the construction phase, such as removal of sections of hedgerows and associated grassland margins to allow for access. There is a minor risk of killing / injury of individual reptiles (if present) if work in these habitats is undertaken without further mitigation. In the absence of further mitigation, these impacts would result **adverse effect during construction significant at the Site level (if reptiles are present).**

Operation phase impacts

7.8.164 **Significant adverse impacts are not expected** to occur during the operational phase, given that potential impacts to suitable reptile habitat would be limited to habitat management.

Mitigation and enhancement

7.8.165 A precautionary method of working, involving appropriate timing of work and progressive removal of vegetation, will be adopted in the limited areas of suitable habitat likely to be impacted during construction. Ongoing management of suitable reptile habitats during operation phase would be undertaken at an appropriate time of year and using appropriate methods. This will mitigate the risk to reptiles, if present. All such measures would form part of the CEMP.

7.8.166 Woody material felled during hedgerow section removal (if required) will be retained and used to create log / brash piles within habitat buffers, that could be used for shelter and / or hibernation, which would increase the potential of the Site to support reptiles

Residual effects

7.8.167 Residual effects on reptiles (if present) are considered **likely to be neutral**, but with the potential for **beneficial effects, at a level that is not significant**

Fish

Construction phase impacts

7.8.168 All watercourses in the Proposed Solar Areas will be retained and incorporated into semi-natural habitat buffers as part of the Proposed Development. Suitable habitat for fish in the Eastern and Western Biodiversity Areas are to be retained and there will be no negative effects from the construction phase.

7.8.169 Physical impacts to watercourses will be avoided by semi-natural habitat buffers and using clear-span bridges where vehicle access is required, and directional drilling for cabling beneath watercourses during construction, forming part of the Proposed Development.

7.8.170 The Site will move from intensive arable management to permanent grassland, with a reduction in agricultural run-off which is likely to improve watercourse water quality.

7.8.171 In the absence of mitigation measures, there is a risk of accidental pollution or soil sediment discharge into retained watercourses which could cause adverse effects to fish at the Site, and potentially off-site in connected watercourses. Because of this, in the absence of further mitigation, **adverse effects on fish may be significant at up to Local level**.

Operation phase impacts

7.8.172 Significant adverse effects are not expected to occur during the operational phase. Fish are likely to benefit from the changes in land management, and reduction of agricultural chemical run-off into watercourses and waterbodies, which would **be beneficial and significant at the Site level**.

Mitigation and enhancement

7.8.173 Potential adverse effects on fish from pollution incidents and soil sediment discharge will be avoided by implementing standard measures for pollution prevention and soil erosion and run-off. Where access crossing points on ditches / drains are required, these will be clear span structures.

7.8.174 Opportunities for further aquatic / wetland habitats suitable for fish are being considered as part of the evolving design.

Residual effects

7.8.175 Residual effects on fish are considered likely to be **beneficial at the Site level.**

Dormouse

Construction phase impacts

7.8.176 At this stage, dormouse are considered likely to be absent from the Site. Notwithstanding this, the Site does have some potential for dormouse to colonise in the long-term and this will be dependent on maintenance of continuous vegetation around and within the Site. Hedgerow loss is very minor / negligible, and there are breaks in habitat connectivity already within the Site. On this basis, there is unlikely to be an adverse impact on long-term habitat continuity for dormouse.

Operation phase impacts

7.8.177 If the Site is colonised by dormouse in the longer-term, then the operational phase is unlikely to give rise to an adverse impact on dormouse taking into account the measures for other species (such as control of lighting to benefit bats, for example).

7.8.178 Designed-in measures include the development of better connected, structurally more diverse and species-richer habitats including hedges and hedgerow verges. This would be achieved through new hedgerow planting, the enhancement of existing hedgerows and implementation of appropriate management. This will enhance the potential of the Site to support dormice in the long-term. However, no significant effects are anticipated.

Further mitigation and enhancement

7.8.179 Operational phase management of hedgerows would benefit dormouse if they were to colonise the Site. Further detail will follow in the subsequent ES. An appropriate lighting strategy for all phases of development will be produced and implemented.

Residual effects

7.8.180 The potential of the Site to support dormice will be increased and if dormice were to colonise the Site then the increase in habitat quality and extent would give rise to a long-term benefit for the species. The significance of this is not possible to determine at this stage.

Other SPI animals

Construction phase impacts

7.8.181 Habitats such as hedgerows, grassland field margins, woodlands and scrub, which are likely to be of the highest value to SPI mammal species that could be present at the Site, will largely be retained and incorporated into semi-natural habitat buffers

as part of the Proposed Development. Only small amounts of suitable habitat are likely to be removed. Brown hare also use the arable fields, which will be converted to permanent grassland, which is also a suitable habitat for the species and therefore significant adverse impacts are unlikely.

7.8.182 Suitable aquatic and terrestrial habitats (drains, ditches, ponds, hedgerows, woodland, scrub and grassland field margins) for common toad will be retained and incorporated into semi-natural habitat buffers as part of the Proposed Development.

7.8.183 In the absence of mitigation, there is a minor risk of SPI animals being killed / injured during clearance of suitable habitats or being trapped in excavations during the construction phase.

7.8.184 There is a risk of accidental pollution spillage into retained watercourses / waterbodies which could cause adverse effects to common toad at the Site, and potentially off-site in connected watercourses.

7.8.185 The installation of security fencing may result in the fragmentation and the loss of access to foraging habitats for SPI mammals such as brown hare.

7.8.186 In the absence of further mitigation measures, potential **adverse effects during construction to SPI animals would likely be significant at the Site level**.

Operation phase impacts

7.8.187

7.8.188 The creation of new grassland, hedgerows and other habitats will benefit a range of SPI species. Woody material felled during hedgerow section removal would be retained and used to create log / brash piles within habitat buffers; this will benefit to common toad and hedgehog by providing further areas of shelter and potential use for hibernation.

7.8.189 The proposed sheep grazed grassland and cessation of intensive arable farming within the Proposed Solar Areas is likely to benefit SPI animals, due to reduced levels of disturbance. Some fragmentation of habitat could arise in the absence of further mitigation. Operational phase impacts in the absence of mitigation are **not significant**.

Mitigation and enhancement

7.8.190 Mitigation measures proposed for other features including installation of mammal gaps in security fencing, precautionary methods of habitat clearance, escape

measures from excavations and pollution control would be appropriate to mitigate potential adverse effects on SPI animals.

Residual effects

7.8.191 Residual effects on SPI animals are considered likely to be **not significant**.

Invasive non-native species

7.8.192 No works are intended to take place in the water and the spread of Canadian pondweed is therefore highly unlikely to take place. Further consideration will be given to other invasive non-native species such as those highlighted by the Environment Agency in their scoping response.

7.8.193 Notwithstanding this, the CEMP will include a section on the species measures to avoid accidental spread.

Table 7.4 Summary of preliminary impact assessment

Receptor	Evaluation	Construction phase impacts significance	Operation phase impacts significance	Preliminary assessment of significance level of residual effect
All SPA, SAC, Ramsar designated sites within the desk study area	International	Neutral	Neutral	Neutral
All SSSI designated sites within the desk study area	National	Neutral	Neutral	Neutral
LWS within and adjacent the Site within 100m	County	Adverse up to County level	Neutral	Beneficial, Site Level
All other LWS within the search area	County	N/A	N/A	Scoped out
HPI habitats at the Site	Local	Adverse site level	Neutral	Beneficial, Site Level
Non-HPI Habitats	Local	N/A	N/A	Scoped out
Breeding birds assemblage (not skylark or barn owl)	Local	Adverse Site level	Neutral	Not significant, with potential to be beneficial at Site level
Skylark	District	Adverse District level	Beneficial, not significant	Adverse, Local level
Barn owl	Local	Adverse Site level	Adverse Site level	Beneficial, Local level
Wintering birds	Local	Adverse Site level	Neutral	Not significant

Receptor	Evaluation	Construction phase impacts significance	Operation phase impacts significance	Preliminary assessment of significance level of residual effect
Bats	Local	Adverse Site level	Adverse Site level	Beneficial, Local level
Badgers	N/A	N/A	N/A	N/A
Otter	Local	Neutral	Neutral	No significant adverse effect
Water vole	Site (precautionary evaluation)	Adverse Site level (if present)	Neutral	Not significant, if present, with potential to be beneficial at Site level
Great crested newts	Site (precautionary evaluation)	Adverse Site level (if present)	Beneficial (not significant) if present	Beneficial (not significant) if present
Aquatic invertebrates	County (LWS drains only)	Adverse County level	Neutral	Beneficial (not significant)
Terrestrial invertebrates	Site (precautionary evaluation)	Neutral	Beneficial (not significant)	Beneficial (not significant)
Reptiles	Site (precautionary evaluation)	Adverse Site level (if present)	Neutral	Neutral / possibly beneficial (not significant) if present
Fish	Site, possibly Local on a precautionary basis	Adverse Site level	Beneficial (Site level)	Neutral, potential to be beneficial at Site level
Dormouse	Assumed absent but may colonise. Not evaluated at this time	N/A	N/A	Potential of Site will increase - beneficial if dormouse colonise the Site in the long-term
Other SPI animals	Site to Local (precautionary)	Neutral	Neutral	Not significant

7.9 Cumulative and In-combination Effects

7.9.1 Table 2.9 of Chapter 2 'EIA Methodology' of the PEIR provides details of identified projects that have the potential to result in cumulative effects with the Proposed Development. This will be reviewed to determine the residual effects of the Proposed Development having 'in-combination' effects (i.e., two or more combined effects from the Proposed Development, e.g., noise and transport and access) and 'cumulative effects' (i.e., effects arising from the Proposed Development and other schemes in the locality e.g., transport), following implementation of all mitigation

and enhancement measures, and how those projects could interact with the potential residual effects arising from the Proposed Development.

7.9.2 At this stage, work is ongoing to determine the potential significance of cumulative and in-combination effects to important ecological features at the Site, and a full assessment will be provided as part of the ES. All important ecological features will be considered for potential effects as part of the assessment, but at this time the ecological features at the Site that are considered most likely to be at risk of cumulative adverse effects are:

- Skylark and ground nesting birds, primarily due to the local proximity of several projects that are likely to displace ground nesting birds.
- Designated sites, primarily due to the potential for direct and indirect impacts to arise from several developments.

7.10 Summary

Introduction

7.10.1 This chapter provides a preliminary assessment of the potential impacts and effects of the Proposed Development on ecology and nature conservation during the construction, operational, and decommissioning phases.

7.10.2 It includes assessment of potential direct and indirect effects on sites designated for nature conservation, important habitats, and protected species onsite and offsite. Habitat creation, retention of trees and buildings, avoidance of sensitive habitat, and other measures have been incorporated into the design of the scheme to avoid and minimise significant ecological effects and to provide ecological enhancement ("designed-in" measures). The chapter also considers further mitigation and enhancement measures where these are needed; as well as identifying where long-term management will be required to ensure mitigation and enhancement.

7.10.3 Extended habitat survey including aquatic habitats have been completed (MoRPh surveys of watercourses to be completed) as have breeding and wintering bird surveys, and ground level assessments of on-site trees and buildings for bat and barn owl. Bat activity surveys are complete, with survey data analysis to be completed. Badger, water vole, otter and great crested newt surveys are complete, as are aquatic invertebrate surveys (with identification and data analysis to be completed).

Baseline Conditions

7.10.4 The Site extends to 898 ha and is set within an agricultural landscape in the Trent Valley. It is primarily large arable fields with boundary hedgerows and individual trees. There is a network of ditches and drains and several ponds and waterbodies. There are occasional small woodland blocks, grassland pasture fields, and agricultural buildings.

7.10.5 The Site does not coincide with any internationally or nationally statutory designated sites although Clarborough Tunnel SSSI is 40 m west of the Western Biodiversity Mitigation Area. Five Local Wildlife Sites (LWS) are within the Site, and two LWS are within 100 m of the Site.

7.10.6 Breeding bird activity is widespread across the Site. There is a typical breeding bird assemblage for the habitats and location. Most recorded bird species of conservation concern breed throughout the county and are 'common' or 'fairly common' within Nottinghamshire. Skylark breeds on open habitat across the Site and barn owl is also present – these two species are considered separately in the PEIR chapter.

7.10.7 There is also a typical wintering bird assemblage, with the parts of the Site closer to the River Trent (particularly the wetland and adjacent farmland habitats in the Eastern Biodiversity Mitigation Area) supporting higher species diversity and numbers of birds, typically waders and waterbirds, as well as hunting birds of prey

7.10.8 Most of the Site is of limited value for bats. The woodlands, hedgerows, dense scrub, waterbodies and watercourses provide more suitable bat foraging and commuting habitat and there is habitat connectivity with the surrounding landscape in all directions. To date, bat activity levels are typical for the habitats and the open arable fields do not appear to be regularly used for foraging or commuting. Most species are widespread in Nottinghamshire or have been recorded infrequently. It is possible that the Site supports bat roosts within buildings or trees, but no evidence has been recorded to-date that suggests significant roosts are present.

7.10.9 Much of the Site is of limited value for otters and although most of the Site's watercourses and ditches could be used by otter, there is only limited evidence of this. There are historical records of water vole at the Site, and some of the drains and ditches have suitable habitat. It is possible that water vole may be present at very low densities.

7.10.10 No great crested newts have been recorded on the Site. Some offsite ponds within 250 m could support great crested newts. Regular tilling and spraying give rise to few opportunities for great crested newts, apart from small pockets and narrow strips of hedgerows and grassland field margins. If the offsite ponds support newts then approximately 2.6 ha of the Proposed Solar Areas (the pink shaded areas in **Figures 2.1 'Construction Phase Parameter Plan' and 2.2 'Operational Phase Parameter Plan'** fall within 250 m and most of this is sub-optimal terrestrial habitat. At this stage great crested newt in the Site cannot be discounted, but the Site is unlikely to form a significant habitat resource.

7.10.11 Aquatic invertebrate survey has been undertaken in targeted watercourses including component parts of LWSs with aquatic invertebrate interest. Identification work is ongoing.

7.10.12 Terrestrial invertebrate interest is assessed on a habitat quality and desk study basis as likely to be limited. Reptiles are also assessed on a habitat quality and desk study basis and are likely to be of limited conservation interest if/where present. Fish have not been surveyed but have been considered on a habitat quality basis, and taking into account desk study information, as likely to be of limited conservation interest. Dormouse are present offsite to the south but are assumed to be absent (but with potential to colonise the Site as time passes). Other faunal species of principal importance are considered, and on a precautionary basis are assumed to be present in low numbers for the purposes of mitigation.

Likely Significant Effects

7.10.13 Unmitigated construction phase impacts are likely to include:

- Habitat loss (agricultural land, minor loss of hedgerow and grassland field margins); temporary loss / disturbance (e.g. for laydown areas and compounds; hedgerow and field margins where cut and cover cabling is used); habitat damage / degradation (to retained features such as trees and hedgerows adjacent to works, from soil compaction or damage from vehicles).
- Habitat gains (e.g. conversion of arable land underneath solar arrays to permanent grassland, creation or enhancement elsewhere such as woodland and hedgerows).

- Disturbance of species (within and adjacent to the Site, from noise, light, vibration and the presence of vehicles and people; damage, destruction, killing or injuring (for instance badger setts and active bird nests).
- Contamination / pollution (potential ground, water and air pollution from spillages, dust and vehicles).

7.10.14 Unmitigated operational phase impacts are likely to include:

- Fragmentation (of habitats and species populations); barrier effects (to certain species from security fencing / installation of built infrastructure).
- Disturbance of species (within and adjacent to the Site, from noise, light and the presence of vehicles and people); changes to foraging and commuting behaviours (installation of solar arrays could result in avoidance / attraction by bats, birds, and invertebrate species).
- Beneficial effects (from increased habitat diversity and reduction of pesticide application as the Site transitions from intensive arable management to less intensive grazing. This would benefit a range of aquatic and terrestrial invertebrate species and other species that prey upon them).

7.10.15 At this stage no information is available about the detail of decommissioning and a detailed receptor-by-receptor impact assessment has not been attempted. The future baseline will be given more consideration at the ES stage.

Mitigation and Enhancement

7.10.16 Mitigation measures include clear span structures on ditches / drains where required; a lighting strategy for all phases of development; measures for pollution prevention and dust management (incorporated into the CEMP for the construction and decommissioning phase); timing of works to avoid impacts; for example favouring vegetation clearance outside of the bird nesting period; precautionary methods of working to avoid disturbance, damage, killing / injury (such as precautionary vegetation clearance methods in areas suitable for reptiles); securing and implementing protected species licences as required, such as for bats or badgers; measures in the Western and Eastern Biodiversity Mitigation Areas to mitigate impacts on skylark.

7.10.17 Enhancement measures include habitat creation in the Eastern Biodiversity Mitigation Area, such as wildflower grassland, species-rich hedgerows, scrub, and ponds or ditches; habitat improvements such as infilling of gaps in hedgerows, and

improvements to plant species diversity by additional planting / seeding in retained habitats; improved management of retained habitats, such as grasslands within the nearby LWS; management of hedgerows to favour breeding birds and to increase their potential for dormouse; management of ditches and woodlands to improve their biodiversity value; installation of other wildlife features such as bat and bird boxes.

Cumulative and In-Combination Effects

7.10.18 Work is ongoing to determine the potential significance of cumulative and in-combination effects to important ecological features at the Site, and a full assessment will be provided as part of the ES. At this time the ecological features considered most likely to be at risk of cumulative adverse effects are skylark and ground nesting birds; and designated sites.

Conclusion

7.10.19 With mitigation in place, no significant adverse effects on designated nature conservation sites or important habitats are likely. Most species-impacts are scoped out, or are likely to be neutral, not significant, or slightly beneficial in the long-term. Effects on skylark are assessed as adverse (locally significant).

Appendices

Appendix 1: Table 7.5 Recommended buffer zones and stand-off distances from ecological features

Ecology Feature	Recommended minimum semi-natural habitat buffer[40]	Rationale
Hedgerow without ditch	5 m or to the extent of the existing grassland field margin, whichever is larger	Provides a sufficient stand off to allow for ecological enhancement and maintain habitat connectivity and allow for maintenance of boundary features. Buffer zones for specific trees should be led by shading and tree root zone protection. This should be advised by an arboriculturist
Hedgerow with ditch	8 m or to the extent of the existing grassland field margin, whichever is larger	A wider buffer zone compared to other hedgerows is proposed to provide stronger protection to features of higher value and/or provide robust biodiversity benefits in terms of the variety of habitats to be promoted and habitat connectivity.
Woodland and traditional orchard	15 m	15 m is the distance Natural England currently promotes for buffer zones to ancient woodland sites (no ancient woodland is present at or adjacent the Site). It is recommended that this is adopted for the woodland at the Site. Advice should be sought from the arboriculturist who may advise that a larger buffer is appropriate, in which case that should be applied.
Mature trees	Variable depending on shade polygon, canopy and need to protect root zone	Buffer zones for specific trees should be led by shading and tree root zone protection. This should be advised by an arboriculturist.
Wet ditches, streams/rivers	10 m	EA / drainage board typically requires 9 m from top of bank for maintenance purposes. The Water vole Mitigation Handbook proposes 5 m from top of bank, but acknowledges it may need to be more depending on nature of the works and extent of burrowing. No guidance is available from Natural England on otter. Otter mitigation guidance from Northern Ireland recommends 10 m buffer zones either side of the watercourse. As such it is proposed the outer buffer zone be implemented if possible.
Dry ditches	5 m	Provides a sufficient stand off to allow for ecological enhancement and maintain habitat connectivity and allow for maintenance of boundary features.
Pond that supports Great Crested Newt	50 m	50 m is recognized as the core terrestrial habitat for GCN. Note GCN can and will travel further than this so

[40] Where the buffer relates to a liner feature (i.e., hedgerow, ditch, watercourse) the buffer will be applied to both sides.

Ecology Feature	Recommended minimum semi-natural habitat buffer[40]	Rationale
(GCN) or presence / likely absence has not been confirmed.		this buffer alone would not necessarily avoid the need for a licence for construction purposes, but would protect the core terrestrial habitat area.
Ponds (GCN absent)	10 m	Provides a sufficient stand off to allow for ecological enhancement and allow for maintenance.
Local Wildlife Site (LWS) habitat	15m	A wider buffer zone is proposed to provide stronger protection to features of higher value and opportunities to create / enhance habitats that would complement the LWS and improve ecological connectivity.
Clarborough Tunnel SSSI (notified on account of its species-rich calcareous grassland). Located off-site but adjacent the south-west boundary.	50 m	A wider buffer zone is proposed to provide stronger protection to features of higher value and opportunities to create / enhance habitats that would complement the SSSI and improve ecological connectivity.
Badger Sett	30 m	This is the widely accepted distance from a badger sett beyond which construction is unlikely to cause damage to setts or result in disturbance to badgers. Certain works can be accommodated inside this buffer, such as vegetation management and small-scale engineering work, but this would need to be assessed for each case and each sett. The 30m is a starting point.
Barn owl: trees / buildings with confirmed barn owl presence	Dependent upon species and a case-by-case assessment will be needed.	The Wildlife and Countryside Act 1981, Schedule 1 list bird species (including barn owl) for which disturbance of birds on nests, raising young or with dependent young is an offence. Disturbance from construction activity may affect these species at varying distances depending on the species and the work being undertaken. The buffer would also need to consider the type of development feature to be installed (solar arrays, access roads, battery storage etc) as some are likely to generate greater levels of disturbance than others.
Barn owl: trees / buildings with barn owl suitability but presence not confirmed (this includes all nearby offsite	15 m	This is a precautionary buffer. However, disturbance from construction activity may affect these species at varying distances depending on the species and the work being undertaken. The buffer would also need to consider the type of development feature to be installed (solar arrays, access roads, battery storage

Ecology Feature	Recommended minimum semi-natural habitat buffer[40]	Rationale
buildings regardless of suitability [not yet assessed] but not offsite trees as yet)		etc) as some are likely to generate greater levels of disturbance than others.
Bats: trees / buildings with confirmed bat roost presence	Dependent upon species and a case-by-case assessment will be needed.	Disturbance from construction activity may affect these species at varying distances depending on the species, type of roost, and the work being undertaken. The buffer would also need to consider the type of development feature to be installed (solar arrays, access roads, battery storage etc) as some are likely to generate greater levels of disturbance than others.
Bats: buildings with roost suitability but presence not confirmed.	15 m	This is a precautionary buffer. However, disturbance from construction activity may affect these species at varying distances depending on the species and the work being undertaken. The buffer would also need to consider the type of development feature to be installed (solar arrays, access roads, battery storage etc) as some are likely to generate greater levels of disturbance than others.
Bats: tree with PRF-M (high roost suitability)	15 m	Buffer zones for specific trees should be led by shading and tree root zone protection. This should be advised by an arboriculturist. 15 m would be a minimum buffer applied to these features. This is a precautionary buffer. However, disturbance from construction activity may affect these species at varying distances depending on the species and the work being undertaken. The buffer would also need to consider the type of development feature to be installed (solar arrays, access roads, battery storage etc) as some are likely to generate greater levels of disturbance than others.
Bats: tree with PRF-I (low roost suitability)	10 m	Buffer zones for specific trees should be led by shading and tree root zone protection. This should be advised by an arboriculturist. 10 m would be a minimum buffer applied to these features. This is a precautionary buffer. However, disturbance from construction activity may affect these species at varying distances depending on the species and the work being undertaken. The buffer would also need to consider the type of development feature to be installed (solar arrays, access roads, battery storage etc) as some are likely to generate greater levels of disturbance than others.
Other retained habitat features	Case by case,	These are habitats with a 'distinctiveness' of 'medium' or higher in the Biodiversity Gain Assessment, and

Ecology Feature	Recommended minimum semi-natural habitat buffer[40]	Rationale
	Likely a 2m buffer to ensure habitat is retained fully and not damaged	therefore require consideration to avoid or minimise loss in line with biodiversity principals. Most will not need buffers beyond the retention of the habitat itself.

Appendix 2: Table 7.6 Summary of written consultation responses with reference to Ecology

Consultee	Summary of comment from Scoping Opinion	Applicant response
Planning Inspectorate	Dormouse survey. *'The Scoping Report states that the Proposed Development Site has poor habitat connectivity to known dormouse populations.* *Table 8B.1 of the Habitat Survey (Appendix 8B) indicates that woodlands (priority and non-priority) and 88 km of hedgerows are within and/or adjacent to the Proposed Development Site.* *The Inspectorate would expect to see this matter considered as part of the assessment or evidence provided to conclude that this species is absent from the Proposed Development Site. This could include information confirming that no suitable habitat is present through relevant habitat surveys or further evidence to support the assertion that there is poor habitat connectivity to existing dormouse populations by identifying the location of the nearest populations and providing confirmation of their absence in local records. Effort should be made to gain agreement on this matter with relevant consultation bodies.'*	Consideration of the potential presence of dormouse is presented in the PEIR. It is considered that dormouse is unlikely to be present at the Site at this time although further consultation to clarify more detail about the spread of dormouse locally will be sought. The need for survey remains scoped out at this point although the potential for colonisation of the Site is recognised and favourable management of hedges would benefit this. Scoping out of survey has been agreed in principle with Nottinghamshire County Council and Bassetlaw District Council ecologists during an online meeting on 7 November 2024.

Consultee	Summary of comment from Scoping Opinion	Applicant response
Planning Inspectorate	Study Area – Zone of Influence (ZoI). *'The ES should provide information explaining how the relevant ZoI for each receptor has been determined for the assessment.* *The ES should ensure the study area reflects the project's ZoI rather than being based on a fixed distance. Effort should be made to agree the study area(s) with relevant consultation bodies and with reference to relevant guidance.'*	Agreement on Zones of Influence will be sought with relevant consultees and further information provided in the ES.
Planning Inspectorate	Bats – study area. *'The ES should justify how this search area applies to all potentially affected bat species and make effort to agree the study area and approach to assessment with relevant consultation bodies.'*	Agreement on the approach to study area will be sought with relevant consultees and further information provided in the ES.

Consultee	Summary of comment from Scoping Opinion	Applicant response
Planning Inspectorate	Bat – activity. *'The ES should justify why the Applicant concludes that significant effects are unlikely for bats beyond the proposed Order Limits. Agreement on the study area should be sought from NE and relevant consultation bodies.* *The ES should consider the potential for impacts on international sites designated for bats within a 30km study area or provide evidence to demonstrate the absence of a LSE.'*	Agreement on the approach to study area will be sought with relevant consultees and further information provided in the ES. There are no international sites designated for bats within 30km of the Site.
Planning Inspectorate	Great crested newts (GCN). *'The ES should include information to demonstrate whether the Proposed Development is located within a risk zone for GCN and whether the Proposed Development is likely to have a significant effect on GCN.* *If the Applicant intends to obtain a licence through the Natural England (NE) District Level Licensing (DLL) scheme for GCN any licence requirements should be discussed with NE and agreed prior to completion of the ES, if possible.'*	A full assessment of the potential impacts of the Proposed Development on GCN, and the need for further mitigation will be established as the design evolves and will be included in the ES. A preliminary assessment is provided in the PEIR.
Planning Inspectorate	Wintering bird surveys post March 2024. *'Dependent on the timescales between scoping and submission of the ES, the Applicant should consider whether surveys are current, and should agree the scope and timing of surveys with relevant consultation bodies.'*	Currently, no further wintering bird surveys are proposed during the winter of 2024 / 25 on the basis that the previous survey work is considered to be robust and did not identify any activity that indicates the presence of functionally linked land that could be affected by the Proposed Development. Agreement on the approach to further wintering bird surveys will be sought with relevant consultees and further information provided in the ES.

Consultee	Summary of comment from Scoping Opinion	Applicant response
Planning Inspectorate	Functionally linked land - European sites / internationally designated sites. *'The breeding and wintering bird surveys undertaken in 2023/24 have not identified any significant activity at the Proposed Development Site from qualifying bird species of the identified European sites.* *The initial assessment is that the Proposed Development Site is not functionally linked to the internationally designated sites and the Applicant considers that it is highly unlikely that any significant adverse effects will occur indirectly to statutory sites at any phase of the Proposed Development.* *The ES should provide evidence to demonstrate that no potential significant effects are likely for any qualifying bird species or key features of internationally designated/European sites through functionally linked land.'*	Preliminary consideration of functionally linked land is provided within the PEIR. The breeding and wintering bird surveys undertaken in 2023 / 24 have not identified any significant activity at the Site from qualifying bird species of the European sites. The preliminary assessment is that the Site is not functionally linked to the internationally designated sites. Agreement on the assessment of functionally linked land will be sought with relevant consultees and further information provided in the ES.
Planning Inspectorate	Disturbance to breeding birds during construction. *'The ES should assess disturbance impacts to bird species breeding in field boundaries during construction and explain how existing hedgerows will be retained. The ES should outline the measures to be taken to mitigate disturbance impacts in any removal of existing field boundary habitats.'*	Preliminary consideration of disturbance impacts to breeding birds during construction is provided within the PEIR. Further information will be provided in the ES.
Planning Inspectorate	Veteran trees. *'Veteran trees are identified in the Habitat Survey (Table 8B.1, Appendix 8B) under the heading of 'potential irreplaceable habitats'. The ES should identify and assess impacts to veteran trees where significant effects are likely to occur. Where mitigation measures are required, the ES should describe these measures and signpost where they are secured through the DCO.'*	Potential veteran trees at the Site are a priority for retention and protection, and preliminary consideration is provided within the PEIR. An Arboricultural Impact Assessment will be prepared as part of the submission by an arboricultural consultant.
Planning Inspectorate	Lighting disturbance – mitigation. *'The ES should assess impacts on ecological receptors from lighting where significant effects are likely to occur, and demonstrate measures taken to avoid disruption of ecological corridors such as hedgerows that provide flight-lines for bats.* *The ES should clearly explain how the measures will avoid or limit lighting impacts on ecological receptors.'*	Preliminary consideration of lighting impacts and mitigation is provided within the PEIR for various features such as bats and barn owls. Further information will be provided in the ES.

Consultee	Summary of comment from Scoping Opinion	Applicant response
Planning Inspectorate	Potential mitigation and enhancement measures – landscape and ecological management. *'The ES should be supported by a draft landscape and ecological management and monitoring plan and set out how the Applicant intends to deliver biodiversity enhancements.* *The ES should distinguish between measures intended to avoid or reduce the potential for LSEs, and those which have been identified for enhancement only. The ES should state how these measures will be secured through the DCO.'*	The Ecology chapter of the PEIR includes preliminary details of mitigation and enhancement measures and a draft outline LEMP is included within the PEIR. These documents will be updated with further detail for the ES submission.
Planning Inspectorate	Mitigation - vegetation disturbance. *'The ES should explain how phasing and methods of vegetation clearance will avoid disturbance of protected species. Relevant measures should be secured by a DCO requirement.'*	Preliminary consideration of impacts and mitigation is provided within the PEIR for various features such as nesting birds and reptiles. Further information will be provided in the ES.
Planning Inspectorate	Mitigation - invasive non-native species. *'The Inspectorate notes the potential for impacts resulting from the spread of invasive species during construction and decommissioning of the Proposed Development. Any necessary eradication and/or control measures should be detailed in the ES and any LSEs assessed.'*	Noted and will be included in the ES.
Planning Inspectorate	Horizontal Directional Drilling (HDD) – impacts on aquatic species. *'Trenchless HDD methods are likely to be used for laying any cables beneath existing watercourses. This has potential to cause impacts on aquatic species due to breakout from drilling fluids and vibration within the riverbed. The Inspectorate notes that the Applicant proposes to submit a drilling fluid breakout plan.* *The ES should include a description of the sensitivity of relevant watercourses and any seasonal constraints on such crossings, assessing LSEs on riverine species where they are likely to occur from such impacts.* *Potential impacts from noise, vibration, lighting or sediment breakout from the Proposed Development on aquatic species should be assessed.'*	Noted and will be included in the ES if appropriate and once locations of Horizontal Directional Drilling (HDD) are confirmed and can be considered in detail.

Consultee	Summary of comment from Scoping Opinion	Applicant response
Planning Inspectorate	New bridges or culverts. *'The Scoping Report states that any new bridges and culverts will be designed to ensure flow capacity is retained and access to watercourse for maintenance is retained. No information is provided in relation to the scale and dimensions of these structures or detail of the nature of any associated construction works.* *The ES should describe where bridge/ culvert structures are proposed and demonstrate that there is sufficient detail regarding the design as to inform a meaningful assessment of effects on watercourse hydraulics and ecology.'*	Crossings of watercourses will be kept to a minimum, and where they are necessary they will be clear span to mitigate potential impacts. These measures are designed-in and included in the PEIR. Currently, the locations of crossings are not known. Further details, once known, such as locations and specification will be provided and an assessment of potential impacts will be provided in the ES.
Planning Inspectorate	Dust impacts on receptors. 'The ES should include an assessment of whether the Proposed Development would result in LSE on ecology as a result of dust emissions to air during construction and decommissioning, or demonstrate agreement with the relevant consultation bodies and the absence of LSE.'	Preliminary consideration of impacts from dust is provided for various features in the PEIR in the Ecology and Air Quality chapters. The preliminary assessment indicates that standard construction methods to control dust (and other pollutants) are likely to be adequate to mitigate adverse effects to ecology features. Agreement on the assessment and mitigation will be sought with relevant consultees and further information provided in the ES.
Planning Inspectorate	Security fencing. *'Security fencing is proposed around the operational areas of the site. The ES should assess any impacts associated with the security fencing on ecological receptors where significant effects are likely to occur. Any necessary mitigation measures, such as mammal gates, should be described'.*	Preliminary consideration of impacts and mitigation such as appropriate sized gaps in fencing are provided within the PEIR for various features such as badgers and brown hare.

Consultee	Summary of comment from Scoping Opinion	Applicant response
Planning Inspectorate	Confidential Annexes. *'Public bodies have a responsibility to avoid releasing environmental information that could bring about harm to sensitive or vulnerable ecological features.* *Specific survey and assessment data relating to the presence and locations of species such as badgers, rare birds and plants that could be subject to disturbance, damage, persecution, or commercial exploitation resulting from publication of the information, should be provided in the ES as a confidential annex.'*	Noted. Confidential baseline reports to the PEIR for badger and barn owl have been provided. Information within the Ecology chapter on these species has been provided that excludes details that may allow for their locations to be identified at the Site. This approach will be taken forward for the ES too.
Environment Agency	Fish. *'The Catchwater Drain and Mother Drain are both hydrologically connected to the River Trent and the Oswald Beck may provide suitable habitat for fish. It is known the European eel inhabit such ditches/drains and small watercourses. European eel are listed as critically endangered on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species, they are listed as a species of principal importance under Section 41 of the Natural Environment and Rural communities (NERC) Act 2006. They are also protected under The Eels (England and Wales) Regulations 2009. It is recommended that fish surveys are conducted on ditches/drains across the site. The results should then form part of the baseline data for the EIA.'* And *'The effects on fish have only been scoped in as being neutral and with beneficial effects overall. Activities during construction, operation and decommissioning have the potential to negatively impact fish. Such impacts may include damaging fish spawning habitat from increased surface runoff of pollutants and fine sediment, behavioural impacts on fish from noisy construction activities and loss of habitat from waterbody crossings. Therefore, the potential impacts on fish from construction, operation and decommissioning should be scoped in and be assessed in the ES.* *Mitigation should be included within the Construction Environmental Management Plan.'*	The presence of European eel and other fish is assumed within suitable watercourses and waterbodies at the Site. Designed-in measures will mitigate for most potential adverse effects (i.e., retention of watercourses, habitat buffers, clear span bridges), and residual effects can likely be managed by further mitigation (e.g., appropriate working methods during construction). Preliminary assessment and mitigation for fish is included in the PEIR and further details will be provided in the ES. On this basis, LSE on fish are unlikely and surveys for fish have not been undertaken and are not proposed.
Environment Agency	Legislation. *'The Salmon and Freshwater Fisheries Act 1975 has not been included in the list of legislation that is relevant to biodiversity. The legal responsibility on the applicant pertaining to this fish specific legislation has not been considered. This act should be* *listed as relevant in the Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES).'*	Noted. This legislation has been included in the PEIR and will be in the ES.

Consultee	Summary of comment from Scoping Opinion	Applicant response
Environment Agency	Impacts of culverts on fish. '*Any culverting of a watercourse or waterbody that contains fish can impact on lifecycle migration, both locally and more long distant. Culverting also impacts on fish habitat and spawning habitat by decreasing the quality of substrate. Therefore, we are opposed to the culverting of any watercourse and would prefer the installation of a clear full span crossing that maintains the natural substrate and allows free passage of fish.*'	Noted. New culverting of watercourses is unlikely to be required, and any access crossings will be clear span to avoid these impacts. This is included in the PEIR as designed-in measures and will be carried forward to the ES.
Environment Agency	Invasive non-native species. *'We agree in general with all ecological features 'Scoped In' with regards to Aquatic Biodiversity, along with the deemed potential likely significant effects.* *We note that an Invasive Non-Native Species (INNS) search is planned. We hold multiple records for INNS on and around the site, including Least Duckweed and Chinese mitten crab (recorded on ordinary watercourses within the central section),* *Nuttall's water-weed (recorded in the eastern section on Mother Drain) and Himalayan balsam (recorded across the different sections of the site, and just outside the site boundary.* *Other INNS recorded just outside the site boundary within or near connected watercourses include Japanese knotweed, Canadian waterweed and waterfern.* *Therefore, we strongly suggest that INNS are 'Scoped In'. We recommend that the applicant submits a Biosecurity Method Statement and Invasive Species Management Plan alongside the DCO application for the proposed development.'*	Preliminary consideration of invasive non-native species is provided in the PEIR. Further information and approach to mitigation will be provided in the ES.

Consultee	Summary of comment from Scoping Opinion	Applicant response
Environment Agency	Biodiversity Net Gain. *'Biodiversity Net Gain (BNG) BNG will become a legal requirement for NSIPs in November 2025 and we would like to have the opportunity to comment on this report, if possible, particularly with regards to the Water Metric element. It is positive to read that the applicant has conducted a habitat survey using the U.K. Habitats Classification System (UK HABs) (1.1.4, Appendix 8B), which provides more accurate habitat identification data for the BNG Metric, and plans to verify the habitat classifications in a later survey (1.1.7, Appendix 8B). The applicant should use the latest statutory (official) version of the biodiversity metric tool to calculate BNG, and we would also encourage the use of the Watercourse Metric.* *There is no reference to the applicant's intended BNG target. It will become a legal requirement to deliver at least 10% BNG, but we would encourage the applicant to provide more. It is noted that habitat enhancement may take place after construction.* *However, the biodiversity metric rewards units if enhancements are delivered early. Therefore, we would encourage habitat enhancements to be delivered earlier to provide wetland habitat ahead of project completion.'*	The applicant will seek to deliver at least 10% biodiversity gain at the Site with reference to relevant legislation. An outline BNG report is provided in the PEIR (**Appendix 7.12**) which indicates that the Proposed Development is likely to deliver a minimum of over 10% of terrestrial biodiversity gain. Work is ongoing to establish a strategy for delivering a minimum of 10% biodiversity gain for rivers / watercourses. Ecology input into the Proposed Development design has been undertaken and will continue during the various stages. As the Proposed Development design evolves, further BNG work will be undertaken and will be presented as part of the ES. Agreement on the approach to rivers / watercourse BNG will be sought with relevant consultees, including the Environment Agency.
Environment Agency	Habitat Regulations Assessment. *'A Habitats Regulations Assessment (HRA) will be completed as part of the application process to consider any potential impacts to designated sites. Although this is within the remit of Natural England, we would like to note that functionally linked watercourses (such as Catchwater Drain and Mother Drain) should be included in the assessment.* *The applicant should refer to the following: 'Habitats Regulations Assessment relevant to nationally significant infrastructure projects' published by the Planning Inspectorate. Nationally Significant Infrastructure Projects - Advice Note Ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects - GOV.UK (www.gov.uk)'*	Noted. These features and the linked guidance will be considered as part of a report to inform HRA work.

Consultee	Summary of comment from Scoping Opinion	Applicant response
Environment Agency	Habitat buffers. *'The designed-in mitigation proposes the retention of semi-natural buffers to protect habitats and species. We recommend the provision of a 10-metre buffer from watercourse bank-tops as a minimum, to effectively protect the watercourse from sediments, enable bank stabilisation through vegetation establishment and allow space for commuting by mammals.* *However, where natural geomorphic processes take place (such as lateral channel migration), we advise the applicant to consider buffers greater than 10-metres in some locations where watercourse migration is identified.'*	Preliminary details of habitat buffers are included in the PEIR, which states that a minimum buffer of 10 m is recommended for wet ditches, streams/rivers. Consideration will be given to watercourse migration and appropriate habitat buffers with input from the project hydrologists as part of ongoing design work. Where relevant, this would be included in the ES.
Environment Agency	Water Framework Directive. *'We note that a WFD Assessment has been 'Scoped-In' during the construction phase. This should include an assessment of any potential impacts (such as, but not limited to, sediment pollution) to watercourses on-site and the potential to impact hydrologically linked watercourses, which may therefore also impact the biodiversity that relies on these watercourses.'*	The WFD work is being led by the project hydrologists. Further details will be provided as part of the ES.

Consultee	Summary of comment from Scoping Opinion	Applicant response
Environment Agency	Design recommendations. *'In relation to the Eastern Biodiversity Mitigation Area, the habitat survey found coastal and floodplain grazing marsh and reedbed habitats present near the River Trent (1.2.3, Appendix 8). A large assemblage of wetland birds was also found. We strongly recommend that the Landscape Ecological Management Plan (LEMP) considers the maintenance and potential enhancement of these habitats, and habitats that support the recorded species, as part of the planning and design.'* And *'It is positive to read that the applicant will consider potentially enhancing the Local Wildlife Sites (LWS) on-site. We recommend that the Nottinghamshire Wildlife Trust are consulted with regards to assessing impacts to these LWS.'*	Since the submission of the Scoping Report, an area of the Eastern Biodiversity Mitigation Area has been removed from the Site boundary in response to the findings of survey work. The remaining areas of the Eastern Biodiversity Mitigation Area, includes various wetland habitats which along with other habitats within the Eastern and Western Biodiversity Mitigation Areas will be used for delivering biodiversity benefits, and will not be negatively impacted by the Proposed Development. The design of these areas is being developed but is expected to enhance retained habitats and explore the creation of new habitat. The LWS at the Site will be retained and protected by designed-in measures, and further enhancements will be explored. Significant adverse effects to the LWS's are not expected. These preliminary measures have been included in the PEIR and once further details are developed will be included in the ES and a LEMP. Consultation with local consultees is ongoing, that seeks their input and agreement on potential impacts to LWS's and opportunities for enhancement.

Consultee	Summary of comment from Scoping Opinion	Applicant response
Natural England	Cumulative and in-combination effects. *'The ES should fully consider the implications of the whole development proposal. This should include an assessment of all supporting infrastructure.* *An impact assessment should identify, describe, and evaluate the effects that are likely to result from the project in combination with other projects and activities that are being, have been or will be carried out. The following types of projects should be included in such an assessment (subject to available information):* *a. existing completed projects.* *b. approved but uncompleted projects.* *c. ongoing activities.* *d. plans or projects for which an application has been made and which are under consideration by the consenting authorities; and* *e. plans and projects which are reasonably foreseeable, i.e. projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects.* *Plans or projects that Natural England are aware of that might need to be considered in the ES:* *Springwell Solar Farm* *North Humber to High Marnham Electricity Transmission* *Cottam Solar* *West Burton* *Great North Road Solar Project* *Gate Burton* *Tillbridge Solar Farm'*	Noted. It is intended that an assessment of cumulative and in-combination effects will be included in the ES.

Natural England	Designated nature conservation sites International and European sites. *'The ES should thoroughly assess the potential for the proposal to affect internationally designated sites of nature conservation importance / European sites. This includes Special Protection Areas (SPA), Special Areas of Conservation (SAC), listed Ramsar sites, candidate SAC and proposed SPA.* *Article 6 (3) of the Habitats Directive requires an appropriate assessment where a plan or project is likely to have a significant effect upon a European Site, either individually or in combination with other plans or projects.* *Section 8.3.9 of the EIA Scoping Report notes that internationally designated sites will be scoped in, which is welcomed. Appendix 8a also notes that Natural England's Impact Risk Zones have been used to inform the desk study; Natural England consider the search radius and methodology suitable.* *The following European/internationally designated nature conservation site(s) are located within 30km of the proposed development site, as identified within Appendix 8a.* ***The Humber Estuary SPA, Ramsar, and SAC.*** *The Humber Estuary sites are located approx. 26.5km North of the development site. Section 8.2.9 of the EIA Scoping report only makes reference to the Humber Estuary Ramsar. Consideration must also be given to the SPA and SAC designation within the ES.* *Impacts to the passage and wintering birds associated within the SPA and Ramsar Designations are most relevant, largely due to the mobile & migratory nature of the notified species. Impacts to species associated with these sites must be considered within the ES, including via loss or disturbance to Functionally Linked Land. Natural England welcome the consideration of wintering birds, as noted in EIA Scoping Report section 8.2.29, as well as discussion at section 8.3.6, which notes no significant activity from SPA/Ramsar birds has been recorded at the site in the survey effort reviewed to date (October–December 2023). It is also noted that this will be considered in full within the Report to inform the HRA, which is welcomed.* *Natural England advise that where this initial year's survey indicates very low levels of use by SPA/Ramsar species, this survey effort may be satisfactory for this project, however, where there remains any doubt about the use of the site by these species, further survey is likely to be required over a 2nd winter. Natural England have produced standing advice for bird survey guidance for the Humber Estuary and Lower Derwent Valley Functionally Linked Land, see annex C attached. The most recent list of component species should be considered in assessment of impacts to the Humber Estuary SPA, see annex B attached.* *Despite the physical separation of the development site to the SAC, consideration should be given within the Report to Inform the HRA to rule out any impacts to the features of the SAC too.*	All noted. A full assessment on the potential impacts to relevant statutory designated sites within 30 km of the Site will be included in the ES and Report to Inform the HRA. With regards to Natural England's comment that consideration must also be given to the SPA and SAC designation of the Humber Estuary, it should be noted that the Humber Estuary SPA is 37 km from the Site, although the boundaries of the SAC and Ramsar designations are within 30 km. Given that the SPA is outside of the 30 km buffer for which potential impacts on internationally designated sites are generally considered, it has been excluded from the assessment and the rationale has been included in the PEIR. Currently, no further wintering bird surveys are proposed during the winter of 2024 / 25 on the basis that the previous survey work is considered to be robust and did not identify any activity that indicates the presence of functionally linked land that could be affected by the Proposed Development. Agreement on the approach to further wintering bird surveys will be sought with relevant consultees and further information provided in the ES.

Consultee	Summary of comment from Scoping Opinion	Applicant response
	Thorne & Hatfield Moors SPA, Thorne Moor SAC, and Hatfield Moor SAC *The Thorne & Hatfield Moors designations lie approximately 19.5km North-West of the development site. The SPA is designated primarily for it's Nightjar interest; whilst the development site is significantly further than the usually considered 2km Impact Risk Zone for this species, Natural England consider the ES should consider any possible impacts, including via loss or disturbance to Functionally Linked Land.* *Impacts to the features of the two SAC designations are considered unlikely due to the physical and hydrological separation, however, this should still be assessed and considered within the Report to Inform the HRA.* ***Birklands and Bilhaugh SAC*** *Birkland and Bilhaugh SAC lies approx. 17km South-West of the development site and is designated primarily for it's ancient woodland interest. Impact to this site are considered unlikely due to the physical and hydrological separation from the development site.'*	

Consultee	Summary of comment from Scoping Opinion	Applicant response
Natural England	Nationally designated sites -Sites of Special Scientific Interest. *'The ES should include a full assessment of the direct and indirect effects of the development on the features of special interest within any nearby SSSIs, including setting out why impacts can be screened out within the ES, and identify appropriate mitigation measures to avoid, minimise or reduce any adverse significant effects.* *Section 8.3.9 of the EIA Scoping Report notes that Statutorily designated sites will be scoped in, which is welcomed. Appendix 8a also notes that Natural England's Impact Risk Zones have been used to inform the desk study; consider the search radius and methodology suitable.* *A number of SSSIs lie within 5km of the proposed development, as set out in Table 8.A.1 of Appendix 8a, including Clarborough Tunnel, Lea Marsh, Ashton's Meadow, Sutton and Lound Gravel Pits, Chesterfield Canal and Treswell Wood.* *Clarborough Tunnel SSSI lies adjacent to the development site in the South-West corner; as such may be susceptible to impacts from the proposed development, for example from direct disturbance, dust mobilisation and vehicle emissions during construction. These impacts should be considered in full within the ES. It is noted that air quality impacts during construction have been scoped into the ES; Natural England note that sensitive ecological receptors, including Clarborough tunnel SSSI, should be included in this assessment.* *In addition to the above, Natural England note the potential for enhancement of the habitat in proximity to Clarborough Tunnel SSSI and welcome the intention for the closest area of the site to be used for biological mitigation and enhancement.* *Section 8.3.8 states that impacts to other SSSIs can be ruled out, due to the distance (minimum 1.6km) from the development site. None of the relevant SSSI Impact Risk Zones are triggered by the development in this location; as such, Natural England consider impacts to other sites unlikely. Nonetheless, rationale should be included within the ES as to why impacts to these sites can be ruled out.'*	Noted. A full assessment on the potential impacts of the Proposed Development on relevant nationally designated statutory sites and the need for further mitigation will be established as the design evolves and will be included in the ES. Preliminary assessment and mitigation are provided in the PEIR.

Consultee	Summary of comment from Scoping Opinion	Applicant response
Natural England	Regionally and locally important designated sites. *'The ES should consider any impacts upon local wildlife and geological sites, including local nature reserves. Local Sites are identified by the local wildlife trust, geo-conservation group or other local group and protected under the NPPF (para 180). The ES should set out proposals for mitigation of any impacts and if appropriate, compensation measures and opportunities for enhancement and improving connectivity with wider ecological networks. Contact the relevant local body for further information.* *Natural England welcome the scoping in of Local Nature Conservation Sites within the EIA Scoping Report.'*	A full assessment of the potential impacts of the Proposed Development on local designated sites and the need for further mitigation will be established as the design evolves and will be included in the ES. Preliminary assessment and mitigation are provided in the PEIR.
Natural England	Natural England provided general comment on protected species, priority habitats and species, and ancient woodland, ancient and veteran trees. The general comments relate to the need for appropriate survey, assessment and mitigation of these features (with reference to Natural England standing advice) to be presented in the ES.	A full assessment on the potential impacts of the Proposed Development on relevant ecology features and the need for further mitigation will be established as the design evolves and will be included in the ES. Preliminary details of survey results, assessment and mitigation are provided in the PEIR.

Consultee	Summary of comment from Scoping Opinion	Applicant response
Natural England	Biodiversity Net Gain. *'The Environment Act 2021 includes NSIPs in the requirement for Biodiversity Net Gain (BNG), with the biodiversity gain objective for NSIPs defined as at least a 10% increase in the pre-development biodiversity value of the on-site habitat. It is the intention that BNG should apply to all terrestrial NSIPs accepted for examination from November 2025.* *The EIA Scoping report section 8.3.18 states that measures to enhance the overall biodiversity of the site will be implemented, however, no specific reference is made to the Statutory Biodiversity Metric, nor a target for biodiversity net gain delivery. Natural England advise that the project should include a commitment to at least 10% Biodiversity Net Gain, as is the intention of the Environment Act. Ideally, the opportunity provided by the application should enable delivery of significantly more than this 10%.* *In order to maximise nature recovery and target habitat enhancement where it will have the greatest local benefit it is recommended that locally identified opportunities should be acknowledged and incorporated into the design of BNG (both on and off -site). This should include any locally mapped ecological networks and priority habitats identified within and close to the development site. The Nottinghamshire Biodiversity Opportunity Mapping may be a useful resource. Natural England also recommend consultation with the Nottinghamshire Biodiversity Action group, Nottinghamshire Wildlife Trust, and any other local bodies, who may be able to provide invaluable local knowledge to help steer the mitigation and enhancement proposed at the site.* *In addition, Local Nature Recovery Strategies (LNRS) are a new mandatory system of spatial strategies for nature established by the Environment Act 2021 which will contribute to the National Nature Recovery Network (NRN). Work is currently underway to develop these strategies, which will identify strategic priorities for nature protection, recovery, and enhancement. Given the size and scale of the project, there are opportunities not only for enhancing biodiversity in the locality, but also to create and enhance ecological connectivity in the area, contributing to the Nature Recovery Network and climate change resilience.*	The Applicant will seek to deliver at least 10% biodiversity gain at the Site with reference to relevant legislation. An outline BNG report using the Statutory Biodiversity Metric is provided in the PEIR (see **Appendix 7.12**) which indicates that the Proposed Development is likely to deliver a minimum of over 10% of terrestrial biodiversity gain. Work is ongoing to establish a strategy for delivering a minimum of 10% biodiversity gain for rivers / watercourses. Ecology input into the Proposed Development design has been undertaken and will continue during the various stages. As the Proposed Development design evolves, further BNG work will be undertaken and will be presented as part of the ES. During design work, consideration is being given to local biodiversity strategies and other large-scale development projects nearby to seek to enhance local landscape habitat connectivity. Agreement on the approach to rivers / watercourse BNG will be sought with relevant consultees, including the Environment Agency.

Consultee	Summary of comment from Scoping Opinion	Applicant response
Nottinghamshire County Council – ecology	*'The proposed scope of Chapter 8 of the EIA Scoping Report looks appropriate, subject to the following minor points:* • *In Nottinghamshire, SINCs (Sites of Importance for Nature Conservation) are now called LWSs (Local Wildlife Sites).* • *It is believed that Curlew breed (or have recently bred) on Out Ings, and whilst this is outside the application site, the proposed Eastern Biodiversity Mitigation Area has the potential to be designed and managed for this species (and potentially other ground nesting birds), noting that Curlew is now a very rare breeding species in the Trent Valley.* • *Impacts on Skylark in particular will need careful consideration and mitigation, with consideration given to the potential need for off-site measures such as the provision of Skylark plots on adjacent land.'*	All noted. With regard to skylark mitigation, an outline skylark strategy is provided with the PEIR. Agreement on the approach to skylark mitigation and the general design of the Mitigation Areas at the Site (noting the comment on curlew) has been sought with the relevant local consultees (see below Table).
Bassetlaw District Council	'*<u>Non-statutory Designated Sites</u>* *Further details should be provided about the scope for additional/incidental management of any of these sites as part of the management regime of the wider site.* *<u>Habitats</u>* *Further details should be provided on the seeding/planting in the Solar Areas, the timing of management (noting probable presence of nesting birds, leverets, herpetofauna etc.) and the approach towards use of chemical control of vegetation on site given the vast scale of the project and proximity to major watercourse.* *<u>Badger</u>* *Further details on protections for retained/created setts from machinery operating on site etc. during the operational phase.'*	The Ecology chapter of the PEIR includes preliminary details of mitigation and enhancement measures and a draft outline Landscape Strategy is included within the PEIR. These documents will be updated with further detail for the ES submission

Consultee	Summary of comment from Scoping Opinion	Applicant response
Bassetlaw District Council	*'Bats* *Further details are required on what compensation and enhancement for bats will be made available beyond any licencing requirements. For example, it is expected that identified commuting routes will be bolstered, main foraging areas retained and enhanced, but will new roosting provisions be provided?'*	Designed-in measures will mitigate for potential adverse effects on bat foraging / commuting by the retention, and enhancement, of habitats used by bats, and those that have greatest suitability, including hedgerows, trees, woodlands, and watercourses. Designed-in measures will seek to retain all trees / buildings with bat roost suitability. Further roost enhancements such as bat boxes are proposed. Preliminary assessment and mitigation is included in the PEIR and further details will be provided in the ES.
Bassetlaw District Council	*'Birds* *Proposals for the inclusion of gaps in fencing for badger are admirable however it may be prudent for ground nesting birds, such as skylark, if these gaps were not present in all sectors and larger mammals such as badger, fox and hedgehog were excluded at least from some of the mitigation areas, if not some of the solar areas as well. The losses of skylark breeding territories to the scheme are substantial and clarification on exactly what bespoke compensation for this red listed species will be provisioned is needed.* *Noted that access wasn't possible to the proposed Eastern Mitigation Area, and this will be surveyed in 2024. Further details of which species breed here is needed and further information on what if any improvements can be made to this habitat for it to be a 'Mitigation Area'.* *Further details are required on the Habitat Management and Monitoring Plan for the whole site and how this will consider nesting birds (this will likely also have beneficial effects on other species). Although much research pertains to skylark in Solar Farms, other species such as meadow pipit, linnet etc. may be prevalent and nest in the sward in and around panels.'*	All noted. With regard to skylark mitigation, an outline skylark strategy is provided with the PEIR. Agreement on the approach to skylark mitigation and the general design of the Mitigation Areas at the Site (noting the comment on curlew) has been sought with the relevant local consultees (see below table). Further information on habitat management and monitoring will be provided with the ES.

Consultee	Summary of comment from Scoping Opinion	Applicant response
Bassetlaw District Council	*'Reptiles* *Further details on the mitigation and compensation for these species is required. It would be unfortunate to see these species scoped out when opportunities exist to bolster local populations and provide enhanced landscape connectivity.'*	Potential effects on reptiles have been scoped-in to the PEIR and ES. Preliminary consideration of impacts, mitigation and enhancement is provided within the PEIR and further information will be provided in the ES.
Bassetlaw District Council	*'Great crested newts* *Further details on the mitigation and compensation for this species are required.* *Water vole* *Further details on the mitigation and compensation for this species are required.* *Terrestrial invertebrates* *Further details on enhancements for these species is required.* *Aquatic invertebrates* *The separation between the solar areas and the River Trent is very much welcomed given the research into solar farms and Ephemeroptera etc.'*	Preliminary consideration of impacts, mitigation and enhancement is provided within the PEIR for these features. Further information will be provided in the ES.
Bassetlaw District Council	In combination effects Several other proposed solar developments similar in scope and scale and in proximity to or even bounding the site are emerging and these will doubtless be considered. Further details are required on communication between project teams and how habitat connectivity across these sites will be achieved. A lack of coherent connection between significant landscape features on the sites will represent a substantial loss for biodiversity in the region and ecology as a profession.	Noted. Work is currently ongoing and it is intended that a full assessment of cumulative and in-combination effects will be included in the ES.

Consultee	Summary of comment from Scoping Opinion	Applicant response
Bassetlaw District Council	The response stated 'No comment' relating to: Statutory Designated Sites; Otter; Other SPI mammals; and hazel dormouse.	N/A
Mansfield District Council	*'Section 8 – This considers Ecology and Biodiversity issues. As part of this, a range of designated sites have been identified as part of the baseline position.* *This includes the Birklands and Bilhaugh SAC at paragraph 8.2.7, Table 8.A.1 of Appendix 8A and Figure 8.A.1 of Appendix 8A. Whilst this is located within the adjoining district of Newark and Sherwood it is also in relatively close proximity to Mansfield. Therefore, the identification of this site is welcomed and supported. It is noted that table 8.A.1 states that the Birklands and Bilhaugh SAC is 19.5km north of the NSIP site. The SAC is in fact located to the south-west of the site. It is felt that this error should be corrected in future documents where reference to the SAC is made.* *Section 8 – In terms of data sources, it is recommended that information be sought from the relevant Wildlife Trusts and Nottinghamshire Biological Records data (https://nottsbag.org.uk/recording/biological-recording-innottinghamshire.'*	All noted. As part of the PEIR and ES desk study, the Nottinghamshire Wildlife Trust and Nottinghamshire Biological and Geological Record Centre have been consulted.

Appendix 3: Table 7.7 Summary of Ecology consultation meetings

Attendees and date	Summary of matters discussed
Natural England (NE) Applicant: BSG Ecology, RES and Pegasus Online meeting 29.05.24	Introductory pre-contract meeting. • Introduction to the project and the Site. • NE set out their role in the process and contract options for engagement.

Nottinghamshire County Council (NCC) and **Bassettlaw District Council (BDC)**
 	
Applicant:
BSG Ecology, RES and Pegasus
 	
Online meeting 07.11.24
	Introductory meeting.
	Note: Prior to the meeting, BSG sent a document that introduced the project, summarised the ecology work undertaken to-date, and preliminary assessment of potential impacts on ecology features. A draft skylark mitigation strategy document was also sent.
	
	• Introduction to the project and the Site.
	• Survey work and the ecology baseline, with emphasis on the likely importance ecological features such as habitats of principal importance, birds, bats.
	  ○ No concerns raised by the consultees on the scope of survey work undertaken, but reserve further comment until full details have been reviewed following submission of the PEIR.
	  ○ NCC in agreement that dormouse presence is unlikely at the Site currently, but may be present in the future during operational and decommissioning phases, and this should be considered.
	• Schedule of ecological buffers and other designed-in measures.
	  ○ Consultees provided feedback that the proposed schedule of buffers appeared to be adequate but that larger buffers should also be considered where there may be a specific need, such as high levels of bat activity.
	• Potential adverse effects to skylark and proposed mitigation.
	  ○ NCC noted that any residual adverse effect will need to be clearly set out in the ES.
	• Biodiversity net gain (BNG) approach at this stage.
	  ○ NCC confirmed that Nottinghamshire Local Nature Recovery Strategy is still in production.
	  ○ NCC provided high-level advice on approach to BNG.
	• Potential adverse effects to designated sites.
	  ○ NCC satisfied that adverse effects to designated sites can likely be designed out, but further detail needed.
	• NCC highlighted the need for consideration of cumulative effects with other nearby projects.
	• BDC requested that enhancements such as bird boxes, barn owl boxes and habitat piles are proposed.