Fosse Green Energy

Preliminary Environmental Information Report

VOLUME

1

Chapter 8: Ecology and Nature Conservation

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Prepared for:

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8.1 Introduction

8.1.1 This chapter of the Preliminary Environmental Information (PEI) Report presents the findings of a preliminary assessment of the likely significant effects of the construction, operational (including maintenance), and decommissioning phases of the Proposed Development on ecology and nature conservation (collectively referred to as biodiversity). The preliminary assessment follows the methods outlined in the **Scoping Report** (**PEI Report Volume 3, Appendix 1-A**) and is based on information on biodiversity obtained to date through desk studies and field surveys. The indicative design is presented in **PEI Report Volume 2, Figure 3-2-A** and **3-2-B** and described in **PEI Report Volume 1, Chapter 3: The Proposed Development**.

8.1.2 This chapter:

a. provides a preliminary evaluation of relevant important ecological receptors (including nature conservation designations, priority habitats, protected species and invasive non-native species (INNS) associated with the Proposed Development, with each being assigned a nature conservation value (sensitivity value);

b. identifies the Proposed Development's potential direct and indirect impacts and effects on important ecological features (IEFs) and their conservation status, inter-relationships, and contribution to local (and if appropriate county, regional and national) biodiversity; and

c. identifies and proposes measures to address the potential impacts and likely significant effects of the Proposed Development on biodiversity, during the construction, operation, and decommissioning phases;

d. takes into account impact avoidance design measures and management activities to identify and describe the significance of potential effects.

8.1.3 Effects on biodiversity from infrastructure projects can arise from direct and indirect impacts upon designated sites, habitats and, or species, and be of a temporary or permanent nature. Indirect effects can occur through pollution of air and water and via changes in lighting, noise, or hydrology. This chapter is therefore supported by information contained within the following chapters within **PEI Report Volume 1**:

a. **Chapter 6: Climate Change**;

b. **Chapter 9: Water Environment** (which includes hydrology and water pollution);

c. **Chapter 10: Landscape and Visual Amenity** (which includes lighting);

d. **Chapter 11: Noise and Vibration**; and

e. **Chapter 14: Other Environmental Topics** (including air quality).

8.1.4 This chapter should also be read in conjunction with **PEI Report Volume 1, Chapters 1** to **5**, which include a description of the Proposed Development (Chapter 3), alternatives and design evolution of the Proposed Development (Chapter 4), and the EIA Methodology and Consultation (Chapter 5).

8.1.5 This chapter is supported by the following figures in **PEI Report Volume 2**:

a. **Figure 8-1: Sites statutorily designated for nature conservation value**;

b. **Figure 8-2: Sites non-statutorily designated for their biodiversity value**;

c. **Figure 8-3: Location of Ancient Woodland and Priority Habitats identified during the desk study**; and

d. **Figure 8-4: Phase 1 Habitat Map**.

8.1.6 This chapter is supported by the following technical appendices (**PEI Report Volume 3**):

a. **Appendix 8-A: Ecology Policy and Legislation**;

b. **Appendix 8-B: Preliminary Ecological Appraisal (PEA)**;

c. **Appendix 8-C: Aquatic ecology baseline**;

d. **Appendix 8-D: Terrestrial invertebrates**;

e. **Appendix 8-E: Great Crested Newt**;

f. **Appendix 8-F: Reptiles and Common Toad**;

g. **Appendix 8-G: Breeding Birds**;

h. **Appendix 8-H: Non-Breeding Birds**;

i. **Appendix 8-I: Riparian Mammals**;

j. **Appendix 8-J: Badger**; and

k. **Appendix 8-K: Habitats Regulations Assessment (HRA) Pre-Screening Report**.

8.1.7 The baseline report for Badger *Meles meles* is not included in full within this PEI Report, owing to the sensitivities of detailing information on the location of Badger setts and risk of illegal persecution. Therefore, the results, evaluation and conclusions section of **PEI Report Volume 3, Appendix 8-J: Badger** will be provided confidentially to relevant stakeholders, including the Planning Inspectorate. Similarly, where specially protected breeding bird species (owing to inclusion on Schedule 1 of the Wildlife and Countryside Act (WCA), 1981 (Ref 8-1)) were recorded, then the locations of these have been plotted onto a separate figure which will also be provided confidentially to the relevant stakeholders.

8.1.8 As part of the Environmental Statement (ES) that will be submitted with the Development Consent Order (DCO) Application, a Framework Construction Environmental Management Plan (CEMP), Framework Operational Environmental Management Plan (OEMP) and a Framework Decommissioning Environmental Management Plan (DEMP) will be

prepared, to describe management of environmental effects of the Proposed Development and to demonstrate compliance with environmental legislation. A **Framework CEMP** is provided as **PEI Report Volume 3 Appendix 3-A**.

8.1.9 A Framework Landscape and Ecology Management Plan (LEMP) will also be prepared and submitted as part of the DCO application, the purpose of which will be to set out the key measures required to avoid, mitigate and compensate for impacts and effects to biodiversity (and landscape) from the construction and operation of the Proposed Development. Completed biodiversity surveys will inform the development of this document. The Framework LEMP will provide management prescriptions aimed at ensuring the Proposed Development delivers a net gain for biodiversity over the long term and will include targeted landscape and biodiversity mitigation that will be incorporated into the Proposed Development design. This will be an ongoing iterative process, with environmental specialists actively involved in its development, using the mitigation hierarchy to avoid impacts, incorporating mitigation for those that cannot be avoided and incorporating opportunities for enhancement at the earliest possible stage.

8.1.10 The assessment within this chapter reports on the biodiversity baseline and Proposed Development design information available at the time of publication of this chapter (October 2024). A final assessment of the potential impacts of the Proposed Development on biodiversity, including any updates to the baseline, will be undertaken as part of the Environmental Impact Assessment (EIA) and will be reported in the ES that will be submitted with the DCO application.

8.2 Legislation and Planning Policy

8.2.1 A summary of applicable legislation, planning policy and other guidance documents relating to biodiversity and relevant to the Proposed Development is provided below.

8.2.2 Full details of the legislation, policy, and guidance of relevance to the assessment of significant biodiversity effects of the Proposed Development is provided in full in **PEI Report Volume 3 Appendix 8-A: Ecology Policy and Legislation**.

Legislation

8.2.3 The following legislation is relevant to the Proposed Development and biodiversity:

a. Habitats Directive – Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Ref 8-2);

b. Birds Directive - Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (Ref 8-3);

c. Regulation (EU) 1143/2014 of the European Parliament and of the Council on the prevention and management of the introduction and spread of invasive alien species (Ref 8-4);

d. Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ref 8-5);
e. Wildlife and Countryside Act 1981 (as amended) (Ref 8-1);
f. Environment Act 2021 (Ref 8-6);
g. Countryside and Rights of Way (CRoW) Act 2000 (Ref 8-7);
h. The Conservation of Habitats & Species Regulations 2017 (as amended) (Ref 8-8);
i. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (Ref 8-9);
j. The Natural Environment and Rural Communities (NERC) Act 2006 (Ref 8-10);
k. Protection of Badgers Act 1992 (Ref 8-11);
l. The Hedgerows Regulations 1997 (Ref 8-12);
m. Animal Welfare Act 2006 (Ref 8-13);
n. Salmon and Freshwater Fisheries Act 1975 (Ref 8-14);
o. The Eels (England and Wales) Regulations 2009 (Ref 8-15);
p. The Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref 8-16); and
q. The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Ref 8-17).

8.2.4 As part of the assessment, it is necessary to determine whether the Proposed Development is likely to have a significant effect on European sites, which include Special Protection Areas (SPA), Special Areas of Conservation (SAC), potential SPAs (pSPA) and possible SACs (pSAC). Additionally, Ramsar sites and proposed Ramsar sites, which are designated under international convention are also included. Therefore, Likely Significant Effects (LSE's) have been considered further, with relation to European sites, and are presented in **PEI Report Volume 3 Appendix 8-K: Habitat Regulations Assessment (HRA) Pre-Screening Report**.

National Planning Policy

8.2.5 This chapter of the PEI Report considers relevant National Policy Statements (NPS) for energy, including relevant sections for solar and biodiversity. These NPSs set out national policy for energy infrastructure and provide guidance and the legal framework for planning decisions. They comprise the government's objectives for the development of nationally significant infrastructure and take account of government policy relating to the mitigation of, and adaptation to, climate change. Therefore, the following NPSs, which were released in November 2023, and which came into force on 17 January 2024, have been reviewed and are relevant to the Proposed Development and biodiversity:

a. Overarching National Policy Statement for Energy (NPS EN-1) (Ref 8-18);

b. NPS for Renewable Energy Infrastructure (NPS EN-3) (Ref 8-19); and

c. NPS for Electricity Networks Infrastructure (NPS EN-5) (Ref 8-20).

8.2.6 The National Planning Policy Framework (NPPF) (Ref 8-21) sets out the United Kingdom (UK) Government's planning policies for England and how these are expected to be applied. While the NPPF does contain specific policies for Nationally Significant Infrastructure Projects (NSIPs) like those in the above NPS's, it remains a relevant matter for consideration as to the Government's general directions in respect of planning. The NPPF with particular reference to Section 15 (conserving and enhancing the natural environment) states that the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity.

8.2.7 The NPPF (Ref 8-21) is clear that pursuing sustainable development includes moving from a net loss of biodiversity to achieving net gains for nature, and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution.

8.2.8 The NPPF (Ref 8-21) also specifies the obligations that the Local Authorities and the UK Government have regarding sites statutorily designated for their biodiversity value and otherwise protected or notable habitats and protected species under UK and international legislation and how this is to be delivered in the planning system.

8.2.9 Protected or notable habitats and species are of material consideration in planning decisions and may therefore make some sites unsuitable for particular types of development, or if development is permitted and significant harm to biodiversity cannot be avoided, then adequate mitigation measures (or as a last resort, compensation) will be required to avoid or minimise impacts on certain habitats and species.

Local Planning Policy

8.2.10 Local planning policies that are relevant to inform the preliminary assessment on biodiversity are:

a. Central Lincolnshire Local Plan (Adopted April 2023) (Ref 8-22), Section 11: Natural Environment and specifically:

   i. Policy S60: Protecting Biodiversity and Geodiversity;

   ii. Policy S61: Biodiversity Opportunity and Delivering Measurable Net Gains; and

   iii. Policy S66: Trees, Woodland and Hedgerows.

b. Thorpe on the Hill Neighbourhood Plan 2016–2036 (Ref 8-23), specifically:

   i. Policy 3: Biodiversity; and

   ii. Policy 4: Green Spaces and Green Infrastructure.

Other Guidance

8.2.11 Other guidance documents that have informed the preliminary assessment of the potential impacts of the Proposed Development on biodiversity include:

a. Guidelines for Ecological Impact Assessment in the UK and Ireland Terrestrial, Freshwater, Costal and Marine (Ref 8-24);
b. Environmental Improvement Plan 2023 (Ref 8-25);
c. Biodiversity 2020: A strategy for England's Wildlife and Ecosystem Services (Ref 8-26);
d. Biodiversity Guidance for Solar Developments (Ref 8-27);
e. Natural England (NE) and Department for Environment, Food and Rural Affairs (DEFRA) Standing Advice (protected species) (Ref 8-28);
f. The UK Biodiversity Action Plan (BAP) list of priority habitats and species (Ref 8-29), succeeded by the UK Biodiversity Framework (Ref 8-30);
g. The International Union for Conservation of Nature (IUCN) Red List of Threatened Species (Ref 8-31);
h. Mitigating biodiversity impacts associated with solar and wind energy development: Guidelines for project developers (Ref 8-32);
i. NE's evidence review of the impacts of solar farms on birds, bats and general ecology (Ref 8-33);
j. NE's Technical Information Note TIN101 Solar parks: Maximising Environmental Benefits (Ref 8-34);
k. Greater Lincolnshire Biodiversity Opportunity Mapping (Ref 8-35);
l. Central Lincolnshire Green Infrastructure Strategy (Ref 8-36);
m. Lincolnshire Biodiversity Action Plan (LBAP) (3rd edition) (Ref 8-37), succeeded by the Greater Lincolnshire Local Nature Recovery Strategy (Ref 8-38);
n. Witham and Humber Drainage Board Nature Strategy (Ref 8-39);
o. The Guidelines for the Selection of Biological SSSI (Ref 8-40)
p. Local Wildlife Site Guidelines for Greater Lincolnshire (Ref 8-41); and
q. State of Nature 2023 report (Ref 8-42).

8.2.12 Technical guidance that has been used to define the survey methods for habitats and species is included in **Table 8-1** and within the methods section of the relevant technical appendices of this PEI Report.

8.3 Scoping Opinion and Consultation

8.3.1 A request for an EIA Scoping Opinion was sought from the Secretary of State, through the Planning Inspectorate, as part of the EIA Scoping Process.

8.3.2 The Scoping Report (**PEI Report Volume 3, Appendix 1-A**) was submitted to the Planning Inspectorate in June 2023 and records the findings of the scoping exercise and details the technical guidance, standards, best practice and criteria to be applied in the assessment to identify and evaluate the likely significant effects of the Proposed Development on biodiversity.

8.3.3 The Scoping Opinion (**PEI Report Volume 3, Appendix 1-B**) was received from the Planning Inspectorate in July 2023. A high-level summary of the relevant stakeholders' responses, in relation to biodiversity, is presented in **PEI Report Volume 3, Appendix 1-C**.

8.4 Assumptions, Limitations and Uncertainties

8.4.1 The preliminary assessment is made for the construction, operation (and maintenance), and decommissioning phases of the Proposed Development and is based upon the maximum parameters of design for the Proposed Development and the preliminary design information (refer to **PEI Report Volume 1, Chapter 3: The Proposed Development**). The construction period is anticipated be 24 months or phased over 30 months and, subject to being granted consent, construction is anticipated to start in 2031 to enable completion for the currently agreed connection date in 2033. A final assessment will be undertaken as part of the EIA and will be reported in the ES that will be submitted with the DCO application.

8.4.2 This preliminary assessment considers the aspects predicted to represent the worst-case scenario within this construction period. This will differ depending on the construction activity and ecological feature involved. For example, a 30-month construction period will likely encompass three breeding seasons for birds, instead of two for a 24-month construction period. A longer duration may, therefore, create disturbance over a longer period for the general breeding bird assemblage, but not necessarily individuals. Conversely, a shorter, but more intense, construction period may result in greater levels of disturbance to individual breeding birds but reduce exposure to the wider assemblage. In general, the impact on flora is not affected by the duration of activity but rather the change or loss of any habitats.

8.4.3 The preliminary assessment presented in this chapter of the PEI Report reflects the information obtained and evaluated at the time of reporting (August 2024) and has referenced published data, records and web-based information obtained to date.

8.4.4 Habitat and species information referenced in this preliminary assessment has been collected from existing sources of data and site surveys undertaken on land within and around the Site between January 2023 and August 2024, where permission to access the land was obtained from landowners. Where access was not permitted within the relevant survey areas, then a precautionary approach was taken for the purposes of this PEI Report and when defining the potential impacts of the Proposed Development on Important Ecological Features (IEFs).

8.4.5 Where surveys are still to be completed, ecological field surveys will continue into 2025 to characterise the ecological baseline within the relevant Survey Areas. Where any survey data are currently incomplete or limited, and further work is required to inform the assessment, these are presented within **Table 8-1**, which presents a summary of work that will be completed for the ES.

8.4.6 Specific assumptions and limitations relevant to each survey, including how any limitations have been overcome, are included within the relevant technical reports presented in **PEI Report Volume 3, Appendices 8-B** to **8-J**. There are no constraints to the collection of data that represent a significant limitation or data gap and the baseline that has been established is suitably robust

8.4.7 Ecological surveys undertaken to date have noted the presence of Brown Hare *Lepus europaeus* within the Site, but no species-specific surveys for any mammals listed in accordance with Section 41 of the NERC Act (Ref 8-10) (e.g. Brown Hare, Hedgehog *Erinaceus europaeus*, Polecat *Mustela putorius* and Harvest Mouse *Micromys minutus*) will be undertaken as part of the assessment. Instead, where the Site is within the known geographical range for these species, if there are desk study records of any such species occurring within 2km of the Site and there is suitable habitat on site to support them, then they are assumed to be present. Consideration for any embedded mitigation required for relevant Species of Principal Importance (SPI) is described in section 8.10 of this PEI Report and will be refined and updated in the ES, submitted as part of the DCO application. It is anticipated that the proposed landscape design for the Proposed Development will be largely beneficial for any such mammal species present.

8.4.8 Water bodies and ditches located within and close to the Site may support common and widespread amphibian species (e.g. Common Frog *Rana temporaria* and Smooth Newt *Lissotriton vulgaris*) and the Site also offers suitable terrestrial habitats for these species in the form of hedgerows, scrub, semi-improved grassland and woodland. Surveys are not required for such species and have not been specifically undertaken for these species, but observations of these species have been recorded and will continue to be recorded during ecological surveys. These species receive limited legislative protection, but embedded mitigation described in section 8.10 (e.g. for reptiles) of this PEI Report will ensure that there is no injury or killing of such species (if present) during construction of the Proposed Development.

8.4.9 Existing and forthcoming surveys will be used to inform the Biodiversity Net Gain (BNG) report, which will be prepared as a technical appendix to the ES and submitted as part of the DCO application (see also **Table 8-1** and paragraphs 8.5.17 to 8.5.23 of this PEI Report). The BNG report is not available at this stage as the design for the Proposed Development continues to evolve.

8.5 Assessment Methods

8.5.1 This section sets out the scope and assessment methods for the preliminary assessment of the potential impacts of the Proposed Development on biodiversity.

Characterising the Baseline

8.5.2 Within this PEI Report, the following terminology is used when referring to the geographic areas within which assessments were made:

a. Study Area – the Proposed Development area and an appropriate radius (as defined in paragraph 8.5.6) which was subject to collection of background information e.g., the location of non-statutorily designated sites within 2km of the Site;

b. Zone of Influence (ZoI) – the area over which biodiversity features may be affected by biophysical changes as a result of the Proposed Development and associated activities (Ref 8-24) and based on:

   i. the nature of the project (a solar farm, and associated BESS), associated project activities, and the potential for effects at all development stages (construction, operation (including maintenance) and decommissioning);

   ii. the nature of the current land use (minimum 80% arable) and habitats in the vicinity (majority being arable), their connectivity (e.g. through hedgerows, ditches or grassland margins), and how they may be used by different species;

   iii. the presence and assemblages of species which may be in the area based on the location of the Proposed Development and desk study data; and

   iv. the different habits, behaviours and preferences of different species that could be affected, and how these vary both spatially and seasonally.

   v. using the criteria above and proportionate to the Proposed Development's potential to impact on each feature. Through review of likely impacts of the Proposed Development and results of the desk study, the scope of field surveys was then defined; and

c. Survey Area – the area within which field survey work was, or will be, undertaken.

Site and Study Area

8.5.3 The land within which the Proposed Development will be located (hereafter, the Site), referred to within this PEI Report, includes the Principal Site (to include solar arrays, battery storage and associated infrastructure) and the Cable Corridor (as defined in **PEI Report Volume 1, Chapter 3: The Proposed Development**). The Site is within the administrative county of Lincolnshire, however this chapter (and appendices) of the PEI Report recognises that key aspects of biodiversity are coordinated and managed

within the geography of Greater Lincolnshire, for example the Nature Strategy for the Greater Lincolnshire Nature Partnership.

8.5.4 The Study Area has captured all designated sites, sensitive habitats, and species of importance that occur within the relevant ZoI of the Proposed Development. The boundaries and zones for the Study Area reflect standard good practice and were informed by published guidance and professional judgement. Review of ecological features within the Study Areas then enabled the identification of Survey Areas (see **Table 8-1**), which are specific to a given species, group of species or habitat. The Study Areas and Survey Areas defined are the maximum distances that statutory consultees would typically expect to be considered, and these Survey Areas were presented within the EIA Scoping Report (**PEI Report Volume 3, Appendix 1-A**), with no scoping responses received in any disagreement of this.

8.5.5 The extent of the Survey Area varies according to the ecological feature in question and with regards to the precautionary principle i.e. if there is doubt as to whether or not an area should be surveyed it is included within the Survey Area. Accordingly, the Survey Areas used in this assessment ensured sufficient data were gathered to meet any design iterations which may change the likely ZoI used to undertake the impact assessment.

8.5.6 In defining individual Study Areas, consideration was given to the geographic location, nature, and scale of the Proposed Development (refer to **PEI Report Volume 1, Chapter 3: The Proposed Development**). For the Proposed Development, the Study Area, for which data were searched and collated through a desk study, is within the Site and up to:

a. 10km from the Site for European sites, extended to 20km from the Site where birds (e.g. Pink-footed Goose or Golden Plover) are noted as a qualifying feature and 30km from the Site for any SAC where bats are noted as the, or one of, the qualifying features. In addition, a search beyond these distances was undertaken to determine whether the Site is hydrologically connected to any European sites;

b. 5km from the Site for sites statutorily designated for their biodiversity value at a National level, e.g. Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) and Local Nature Reserves (LNRs);

c. 2km from the Site for sites non-statutorily designated for their biodiversity value, e.g. Local Wildlife Sites (LWSs), Sites of Importance for Nature Conservation (SINC);

d. 2km from the Site for Ancient Woodland, veteran trees and Priority Habitats;

e. 2km from the Site for records (from the preceding ten years) of protected and notable species;

f. 2km from the Site for aquatic species records. However, where relevant records of notable aquatic species were available from connected water bodies, a wider search area was utilised to consider connectivity for migratory species (e.g., fish);

g. 2km from the Site for any applications for European Protected Species Licences and agri-environment schemes, e.g. Countryside Management Schemes; and

h. 2km from the Site for the status of water bodies subject to the Water Framework Directive (WFD) (Ref 8-17) which are assessed in **PEI Report Volume 1, Chapter 9: Water Environment** and informed by the assessment of aquatic ecology receptors presented here. As impacts may propagate downstream in hydrologically linked surface water bodies, the Study Area was extended beyond 2km where data was not available within 2km.

Sources of Information

8.5.7 The Study Areas used for the desk study is defined in paragraph 8.5.6 of this PEI Report.

8.5.8 Greater Lincolnshire Nature Partnership (GLNP) manage the Lincolnshire Environmental Records Centre (LERC) and was contacted in April 2023 to obtain pre-existing ecological information the location of non-statutorily designated sites and for records of protected and notable habitats, species and INNS from the preceding ten years.

8.5.9 Protected and notable habitats and species are those listed under:

a. Schedules 1, 5 and 8 of the WCA 1981 (as amended) (Ref 8-1);

b. Schedules 2, 4 and 5 of The Conservation of Habitats and Species Regulations 2017 (Ref 8-8); or

c. Section 41 (S41) of the NERC Act 2006 (Ref 8-10) which lists Species of Principal Importance (SPI) and Habitats of Principal Importance (HaPI) for nature conservation in England.

8.5.10 Other habitats and species, such as those included in national, regional or local Red Data Books and Lists but not protected by legislation (this is consistent with the requirements of relevant planning policy) were also considered and have been assessed on a case-by-case basis.

8.5.11 Records of INNS, as listed under Schedule 9 of the WCA 1981 (as amended) (Ref 8-1) and The Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref 8-16) have also been taken into account when assessing potential constraints on the Proposed Development.

8.5.12 Online data resources that were reviewed include:

a. the Ramsar Sites Information Service (RSIS) website (Ref 8-43) for site information and designation details of any Ramsar's identified within the relevant Study Area (refer to paragraph 8.5.6);

b. the NE website (Ref 8-44) for information on sites statutorily designated for their biodiversity value and to confirm reasons for designation and their condition;

c. the Joint Nature Conservation Committee (JNCC) website (Ref 8-45), for site information and designation details of SACs and SPAs (including pSPAs and pSACs) identified within the relevant Study Areas;

d. the Multi-Agency Geographic Information Centre (MAGIC) (Ref 8-46), to identify the location (and details) of sites statutorily designated for their biodiversity value, Priority Habitats; any for any granted European Protected Species Licence applications and any agri-environment schemes within the relevant Study Areas;

e. NE's Ancient Woodland (England) inventory (Ref 8-47) for the location of Ancient Woodland within 2km of the Site;

f. Woodland Trust's ancient tree inventory (Ref 8-48), for details of ancient, veteran or notable trees within the Study Area;

g. National Biodiversity Network (NBN) Atlas (Ref 8-49) for open-source details on any protected and, or notable species recorded within 2km of the Site;

h. Defra and Environment Agency (EA) Ecology and Fish Data Explorer for species records of fish, macroinvertebrate and macrophytes (Ref 8-50);

i. Defra and EA Catchment Data Explorer for data on WFD water bodies and water catchments (Ref 8-51); and

j. records published in relevant documents, such as county bird reports.

Field Surveys

8.5.13 The requirement for ecological field surveys was determined following the Preliminary Ecological Appraisal (PEA) (included as **PEI Report Volume 3, Appendix 8-B: PEA Report**) which consisted of three components:

a. a desktop study data review (as presented in paragraphs 8.5.7 to 8.5.12);

b. a Phase 1 Habitat survey, to record the broad habitats within the Site; and

c. a protected species scoping survey, to inform on the likelihood of the habitats on Site supporting protected species and other species of conservation concern.

8.5.14 The PEA led to the recommendation of field surveys for relevant protected or notable habitats and species, as presented in **PEI Report Volume 3, Appendix 8-B: PEA Report**.

8.5.15 An aquatic scoping walkover survey and aquatic macroinvertebrate sampling were completed to assess the quality of targeted aquatic habitats (watercourses and ditches) within the Site where potential impacts were considered likely and these surveys were used to assess the potential for water bodies to support protected or notable species (included within **PEI Report Volume 3, Appendix 8-C: Aquatic ecology baseline**).

8.5.16 Table 8-1 presents details of the coverage, methods and survey periods (either when completed, or proposed) within the relevant Survey Areas.

Where surveys have been completed and data available to inform the characterisation of the baseline in this chapter, this is identified in Table 8-1. Table 8-1 also identifies those remaining surveys that are still in progress or are planned for within the appropriate survey windows across the Site. The data gathered from these surveys will be used to inform the final assessment presented in the ES.

Table 8-1: Ecological surveys that have been, or will be, undertaken to characterise the baseline conditions within the Site

Survey	Survey Method	Survey Area	Supporting Notes	Information available for inclusion within this PEI Report?	Further information required for the ES?
Phase 1 Habitat	Walkover survey recording habitat types and boundary features, following the standard JNCC method (Ref 8-52).	The land within the Site and a zone of 50m (where visible from within the Site or accessible).	Using professional judgement, 50m is an appropriate Survey Area, acknowledging that habitats that are likely to be directly impacted by the Proposed Development are within the Site itself. The 50m buffer is appropriate in evaluating adjacent habitats and informing on the potential presence, or otherwise, of protected species within the vicinity of the Proposed Development.	Yes, this survey was undertaken within the Survey Area between June and November 2023 and May to July 2024.	No, unless any land use changes observed prior to ES submission.
Terrestrial Habitats and Flora (including INNS)	Surveys for important arable flora species involve walking arable field boundaries to record notable species as listed in Great Britain (Ref 8-53, Ref 8-54) and England (Ref 8-55). Grassland surveys (including roadside verges) involve surveying such areas in more detail (i.e.: species lists with	The Site.	Using professional judgement, areas of terrestrial habitat to be surveyed in further detail are those within the Site and with the potential to be impacted by the Proposed Development, informed by the desk study and as identified from the initial Phase 1 Habitat survey. The surveys will identify any areas of notable habitats or important for flora and inform any required avoidance, mitigation or enhancement.	No detailed survey information is included. However, this PEI Report does include desk study data and high-level habitat data (from the Phase 1 survey) to inform the preliminary assessment of the potential	Yes, targeted surveys will be completed by September 2024, the results of which will be included in the ES.

Survey	Survey Method	Survey Area	Supporting Notes	Information available for inclusion within this PEI Report?	Further information required for the ES?
	abundance ratings) for notable species and species composition with the rarity of higher plants given based on 'New Flora of the British Isles' (Ref 8-56).			impacts on arable flora and grassland.	
Habitat Condition Assessment for BNG	Identification of the UKHab type (Ref 8-57), a habitat condition assessment, modular river surveys and hedgerows condition assessments (see also paragraph 8.5.17 of this PEI Report) will be undertaken where required for the purpose of BNG assessment.	The Site.	As required for the purpose of a BNG assessment.	Not required at this stage.	Yes, surveys (as required) will be completed by September 2024, the results of which will be included in the ES.
Hedgerows	Hedgerows will be surveyed in accordance with the methodology as outlined in DEFRA's Hedgerow Survey Handbook (Ref 8-58), to assess their 'importance' against the	The Site.	Using professional judgement, surveying all hedgerows within the Site is appropriate, acknowledging that those hedgerows that are likely to be impacted by the Proposed Development are within the Site itself. Hedgerows outside the Site	No detailed information is included on the importance of hedgerows. However, this PEI Report does include a	Yes, surveys (as required) will be completed by September 2024, the results of which will be included in the ES.

Survey	Survey Method	Survey Area	Supporting Notes	Information available for inclusion within this PEI Report?	Further information required for the ES?
	Wildlife and Landscape Criteria, detailed in the Hedgerows Regulations (Ref 8-12) and to determine whether a hedgerow is species-poor or species-rich. A habitat condition assessment will also be undertaken for the purpose of BNG assessment.		will remain intact and unaffected by Proposed Development.	preliminary assessment of the potential impacts on hedgerows, given their known presence within the Site from the desk study and Phase 1 survey.	
Aquatic habitat walkover (scoping) survey: fish, macroinvertebrate and macrophyte surveys, including aquatic and riparian INNS	Accessible and safe stretches of water body banks were walked, noting physical habitat features such as riparian cover, channel substrate, habitat type, modifications, and in-stream vegetation to assess the potential for water bodies to support protected or notable species and inform further survey work. Survey method for streams and ditches	Water bodies identified during the aquatic scoping survey and desk study for further survey within the Site, based on likely impacts to ordinary watercourses and ditches. Main rivers (River Witham and River Brant) were scoped out due to the commitment to cross these watercourses	The land within the Site is an appropriate Survey Area to determine any potential impacts arising from the Proposed Development both upstream and downstream (also informed by desk study, which assesses a wider 2km ZoI). Fish surveys were scoped out as sufficient information to inform the assessment was obtained from desk study data alone. Pond surveys were scoped out due to the commitment to maintain a minimum buffer zone of 10m from	Yes, desk study data and results of surveys completed within the Site in May, June and August 2023.	No, unless any land use changes observed prior to ES submission.

Survey	Survey Method	Survey Area	Supporting Notes	Information available for inclusion within this PEI Report?	Further information required for the ES?
	followed the aquatic macroinvertebrate sampling procedures (Ref 8-59, Ref 8-60).	by non-intrusive techniques.	ponds, and for ponds to remain unaffected.		
Terrestrial Invertebrate scoping survey	A walkover survey, undertaken by a specialist entomologist, to identify areas of likely greater importance to terrestrial invertebrates, followed by sample-surveying to appraise the broad level of terrestrial invertebrate interest within such areas.	The Survey Area is within the Principal Site.	Using professional judgement, surveying habitat within the Principal Site only is appropriate, acknowledging that habitats that have the potential to be permanently impacted (i.e. lost) by the Proposed Development and potentially supporting notable terrestrial invertebrates or assemblages are within this area. The surveys will identify any areas likely to be important for terrestrial invertebrates and inform any required avoidance, mitigation or enhancement. No surveys will be undertaken for terrestrial invertebrates within the Cable Corridor as the temporary nature of the installation of the cable will not significantly impact upon any terrestrial invertebrates, or their habitats, in these areas.	Yes, desk study data and results of surveys completed within the Site between March and April 2023.	No, unless any land use changes observed prior to ES submission.

Survey	Survey Method	Survey Area	Supporting Notes	Information available for inclusion within this PEI Report?	Further information required for the ES?
Great Crested Newt *Triturus cristatus*	Habitat Suitability Index (HSI) surveys to evaluate the suitability of ponds and their potential to support Great Crested Newt (Ref 8-61). Further to the HSI assessment, suitable (as defined by the results of the HSI survey) and accessible water bodies identified within the Survey Area will then be scoped in for Environmental DNA (eDNA) survey (Ref 8-62) to determine presence or absence of Great Crested Newt.	Where possible, HSI surveys will, or have been, undertaken on water bodies within 250m of the Site and, where further survey was identified as being required (based on the HSI score), using eDNA methods.	With reference to published guidance, habitats within and up to 250m of the Site could constitute significant foraging areas, hibernation or resting sites for Great Crested Newt, which typically utilise terrestrial habitat up to 500m from their breeding ponds (Ref 8-63). However, 250m is an appropriate Survey Area from the Site for HSI and eDNA surveys, acknowledging that there is a notable decrease in abundance of Great Crested Newt beyond a distance of 250m from a breeding pond (Ref 8-64).	Yes, desk study information is included and from surveys undertaken within the Site between March and April 2023 and May to June 2024.	Yes, surveys (as required) will be completed in Spring 2025.
Reptiles (and Common Toad *Bufo bufo*)	Surveys of terrestrial habitats for reptiles and Common Toad to record species presence (or absence) using artificial refugia and observations of	Suitable habitat for reptiles and Common Toad (such as grassland or field margins) within the Principal Site that is potentially directly	With reference to published guidance, the Survey Area provides sufficient information on reptile and amphibian presence within the Site, acknowledging that habitats that have the potential to be permanently impacted (i.e. lost) by the Proposed	Yes, desk study data and results of surveys completed within the Site in May, August and September 2023	Yes, surveys (as required) will be completed by September 2024, the results of which will be included in the ES.

Survey	Survey Method	Survey Area	Supporting Notes	Information available for inclusion within this PEI Report?	Further information required for the ES?
	species in accordance with standard guidance for survey (Ref 8-65, Ref 8-66). Surveys of aquatic habitats, which take place from the edges of water bodies, making observations and sightings of amphibians in the water, including tadpoles and spawn.	impacted by the Proposed Development.	Development and potentially supporting reptiles and Common Toad are within this area.	and additional habitats in May to June 2024 (due to Site boundary changes and access to the Cable Corridor).	
Non-breeding birds (including farmland birds)	Non-breeding bird surveys, using an adapted walkover survey method, including frequent stopping points to view and observe bird behaviour (Ref 8-67, Ref 8-68).	The land within the Site and to a maximum of 50m from the Site will be surveyed.	Whilst standardised survey zones for assessing the impacts of development on bird populations do not exist, the Survey Area provides information on the non-breeding bird population within the area immediately surrounding and contiguous with the Site, where birds may potentially be adversely affected, either directly or indirectly. Therefore, the Survey Area is sufficient to determine the likely impacts of the Proposed Development on non-breeding bird species occurring or likely to occur in the area.	Yes, desk study results and inclusion of results of surveys for non-breeding birds undertaken within the Survey Area between November 2023 and March 2024.	No, unless any significant land use changes observed prior to ES submission.

Survey	Survey Method	Survey Area	Supporting Notes	Information available for inclusion within this PEI Report?	Further information required for the ES?
Breeding birds (including farmland birds)	Surveys for breeding birds are based on a standard territory mapping method for surveying breeding birds (Ref 8-67, Ref 8-68) and were adapted where necessary to include species-specific methods (as detailed in 'Bird Monitoring Methods' (Ref 8-67)) for other species, as required.	For the general breeding bird assemblage, the Survey Area is the land within the Site and up to 50m from the Site. For species of greater conservation value and/ or higher sensitivity to potential noise or visual disturbance, where any such species were recorded, the survey area was extended up to 200m from the Site.	Standardised survey zones for assessing the impacts of development on bird populations do not exist, however, the Survey Areas provide information on the breeding birds within the area immediately surrounding and contiguous with the Site, where birds may potentially be adversely affected. Published guidance (Ref 8-69) on disturbance distances for specially protected species e.g. those listed on Schedule 1 of the WCA (Ref 8-1) was used to define the Survey Area for any such species likely to be present.	Yes, desk study results and inclusion of results of surveys for breeding birds undertaken within the Survey Area between April and July 2023; and April and early September 2024.	Yes, minor update to include additional surveys for specially protected species, to be completed in September 2024, the results of which will be included in the ES.
Bats – Daytime Bat Walkover (DBW) Survey.	Trees to be impacted or subject to disturbance (above existing levels) will be subject to a DBW survey in accordance with The Bat Conservation Trust guidance (Ref 8-70).	Relevant features (i.e. trees) within the Site and up to 15m from the Site, where accessible and likely to be impacted by the Proposed Development.	Information collated on the location of trees that are suitable for roosting bats will inform design and offset buffers to avoid direct effects upon potential roost sites (and avoidance of trees and woodland with higher ecological value irrespective of bats which should be avoided). Furthermore, the information will	No detailed survey information is included. However, this PEI Report does include desk study data and high-level data to	Yes, targeted surveys will be completed by September 2024, the results of which will be included in the ES.

Survey	Survey Method	Survey Area	Supporting Notes	Information available for inclusion within this PEI Report?	Further information required for the ES?
			form the basis of the scope for roost surveys (as detailed below).	inform the preliminary assessment of the potential impacts on roosting bats.	
Bats – Roost Surveys including Ground Level Tree Assessment (GLTA) and aerial survey	Where tree removal has been confirmed prior to ES submission, undertake a GLTA and aerial survey and/ or bat emergence surveys in accordance with standard survey guidance (Ref 8-70).	Features with bat roost suitability identified during the DBW and GLTA that will be impacted by the Proposed Development (i.e. if the design cannot avoid the loss of trees).	Based on the Proposed Development design, it is anticipated that impacts to potential roosts are likely to be avoided and that any further survey work, if required is likely to be minor (i.e. possibly a few individual trees) and on a precautionary basis.	No detailed survey information is included. However, this PEI Report does include desk study data and high-level data to inform the preliminary assessment of the potential impacts on roosting bats.	Yes, targeted surveys (where required) will be completed by September 2024, the results of which will be included in the ES.
Bats – Night-time Bat Walkover (NBW)	Walked transect routes, to cover suitable areas of affected habitats within the Site; each transect surveyed once in spring, summer and autumn. The survey	Ten transects sampling representative habitats within the Site.	Using professional judgement and with reference to published guidance, the Survey Area provides sufficient information on bat activity (commuting and foraging) of the Site and where impacts are predicted, assessing commuting and foraging	No detailed survey information is included. However, this PEI Report does include desk	Yes, targeted surveys will be completed by September 2024, the results of

Survey	Survey Method	Survey Area	Supporting Notes	Information available for inclusion within this PEI Report?	Further information required for the ES?
	methodology is based upon published guidance available in Spring 2023 (Ref 8-71), tailored as necessary to suit the Principal Site. The surveys have been supplemented by the deployment of static bat detectors, i.e. at least one per transect.		habitat and nearby roosts, and enabling determination of impacts on bat populations occurring within, or adjacent to, the Site, acknowledging that any impacts within the Cable Corridor will be temporary and loss of important features (such as hedgerows) minimised/ avoided.	study data and high-level data to inform the preliminary assessment of the potential impacts on foraging and commuting bats.	which will be included in the ES.
Riparian mammals (Water Vole *Arvicola amphibius*, Otter *Lutra lutra* and the INNS, Mink *Mustela vison*)	A Habitat Suitability Assessment was undertaken to determine the suitability of each watercourse or water body for riparian mammals. Watercourses and water bodies, deemed suitable for riparian mammals were then surveyed for evidence of riparian mammals, following standard guidance for surveying Water Vole (Ref 8-72, Ref 8-73) and for Otter	All water bodies and watercourses within the Site (and to a maximum of 10m from the Site where access is permitted), identified as being potentially suitable for Water Vole. Note that where suitable habitat for Otter is present then the survey extended 200m upstream and downstream (where accessible). Additional surveys of	With reference to published guidance and using professional judgement, surveying riparian habitats up to 10m (Water Vole) and 200m (Otter) from the Site is sufficient to determine presence or absence of riparian mammals within, or adjacent to, the Site as it covers the appropriate avoidance buffers around Water Vole burrows or Otter holts (which may be present outside of the Site).	Yes, desk study data and survey data available for surveys undertaken on watercourses within the Principal Site in May and September 2023; and May 2024.	Yes, surveys to confirm the current status of the potential Otter holt are required, although this PEI Report has taken a precautionary principle and assumed presence of a non-breeding Otter.

Survey	Survey Method	Survey Area	Supporting Notes	Information available for inclusion within this PEI Report?	Further information required for the ES?
	(Ref 8-74, Ref 8-75, Ref 8-76). Any evidence of Mink was also recorded, using these survey methods.	woodland in the vicinity of water courses were also checked for Otter holts.			
Badger	A walkover survey, searching for signs of Badger activity (such as setts and latrines), and following standard survey guidance (Ref 8-77, Ref 8-78).	Within the Site and to a maximum of 50m from the Site, where viewable from within the Site or where access was permitted.	With reference to published guidance and applying professional judgement, 50m beyond the Site is an appropriate Survey Area as it covers the 30m distance of avoidance around setts at which direct or indirect effects on Badger setts could occur.	Yes, desk study data and survey data available for the Principal Site only, where accessed during surveys undertaken between October and December 2023, with some observations made during other ecological surveys.	Yes, surveys (will be completed in September/ October 2024, the results of which will be included in the ES.
Invasive non-native species (INNS)	INNS species observations will be recorded when noted during other ecological surveys. Plants will include notes on	Site wide observations of any INNS species will be recorded throughout pre-construction surveys, and during construction.	INNS will be recorded to avoid and reduce the spread of any INNS species before, during and after construction.	Desk study results available and any observations of INNS from during ecology surveys (e.g. aquatic surveys)	Yes, any INNS identified in surveys scheduled to be undertaken in 2024 / 2025 between PEI Report and ES will

Survey	Survey Method	Survey Area	Supporting Notes	Information available for inclusion within this PEI Report?	Further information required for the ES?
	precise location and stand size. Aquatic and riparian INNS will be surveyed for as part of the aquatic ecology baseline			undertaken within the Site.	be submitted with the ES.

Biodiversity Net Gain (BNG)

8.5.17 Surveys to inform the Biodiversity Net Gain (BNG) assessment have been, or will be, undertaken as appropriate to record the area (or length) of each habitat measured along with a habitat condition assessment in line with UKHab (Ref 8-57) and guidance for river and ditch condition assessment (Ref 8-79, Ref 8-80). Biodiversity metrics provide a measure of overall biodiversity value based on habitat type, area, condition, strategic significance and distinctiveness. The current approved metric is Defra's Statutory Biodiversity Metric Tool (Ref 8-81) that allows a value to be measured, in this case biodiversity, which is calculated pre- and post-development for three habitat components: habitats, watercourses, (rivers and streams) and hedgerows. The change in biodiversity units is calculated for each component and indicates either a net loss, a net gain or no change in biodiversity.

8.5.18 BNG is a quantitative process applied to development and the Chartered Institute for Ecology and Environmental Management (CIEEM) defines BNG (Ref 8-82) as "*development that leaves biodiversity in a better state than before"* and involves *"an approach where developers work with local governments, wildlife groups, landowners and other stakeholders in order to support their priorities for nature conservation*". BNG is achieved when measurable improvements for biodiversity are delivered in association with a development through the creation of new habitats or enhancement and management of existing habitats. Whilst BNG allows for these measures to be provided within the Site, outside of this, or in combination, the Proposed Development will deliver BNG within the Principal Site, through the implementation of measures such as field boundary enhancements and planting appropriate seed mixes.

8.5.19 Compliance with planning policy in the NPPF (Ref 8-21) requires that the Proposed Development considers and engages a mitigation hierarchy, requiring the highest level to be applied, where practicable. The mitigation hierarchy is also fundamental to BNG and there are four sequential steps that must be taken throughout the lifecycle of a project, where there is potential for impacts on relevant ecological features:

a. Avoidance – actions taken to avoid causing impacts to the environment prior to beginning development (e.g. moving part of the development to a different location).

b. Minimisation – measures taken to reduce the duration, intensity, extent and/ or likelihood of the unavoidable environmental impacts caused by development (e.g. adapting the development design to minimise impacts).

c. Restoration or rehabilitation – actions taken to repair environmental degradation or damage following unavoidable impacts caused by development.

d. Offsets – measures taken to compensate for any adverse environmental impacts caused by development which cannot be avoided, minimised and/ or restored (e.g. including habitat creation to offset losses).

8.5.20 Schedule 15 of the Environment Act, 2021 (Ref 8-6) makes provision for BNG in relation to development consent for NSIP. Although the requirement for a minimum 10% gain in biodiversity for NSIPs will not become mandatory until a future date (anticipated to be November 2025), the Proposed Development has aspired to achieve at least this level of net gain in all habitat units within the baseline (i.e., area, linear and river habitats where applicable (as set out in the incoming legislation)).

8.5.21 NPS EN-1 (Ref 8-18) also sets out how BNG should be addressed for Energy NSIP proposals stating that "*proposals should seek opportunities to contribute to and enhance the natural environment by providing net gains for biodiversity, where possible*"; and that "*biodiversity net gain should be applied after compliance with the mitigation hierarchy* [as presented in paragraph 8.5.18] *and does not change or replace existing environmental obligations"*.

8.5.22 The BNG assessment has not been undertaken at this stage as the design for the Proposed Development continues to evolve. However, the BNG assessment will be submitted with the ES as part of the DCO application. Prescriptions for the establishment, long term management and monitoring of habitat creation measures will be included within the Framework LEMP.

8.5.23 The BNG assessment, therefore, will identify the opportunities of the Proposed Development, contributing to BNG, in line with the requirements of the Environment Act 2021 (Ref 8-6), NPS EN-1 (Ref 8-18), the NPPF (Ref 8-21), CIEEMs Good Practice Guidance (Ref 8-82) and local planning policy (see paragraph 8.2.10).

Impact Assessment Method

Assessment Criteria

8.5.24 The preliminary environmental assessment has been undertaken in accordance with best practice guidance for Ecological Impact Assessment (EcIA), issued by CIEEM (the CIEEM guidelines) (Ref 8-24). The aims of the assessment are to:

a. identify IEFs (i.e., designated sites, habitats, species or ecosystems) which may be impacted by the Proposed Development;

b. provide a scientifically rigorous and transparent assessment of the likely ecological impacts and resultant effects of the Proposed Development. Impacts and effects may be positive or negative;

c. facilitate scientifically rigorous and transparent determination of the consequences of the Proposed Development in terms of national, regional and local policies relevant to nature conservation and biodiversity, where the level of detail provided is proportionate to the scale of the development and the complexity of its potential impacts; and

d. set out what steps will be taken to adhere to legal requirements relating to the relevant ecological features concerned.

8.5.25 The principal steps involved in the CIEEM approach can be summarised as determining:

a. ecological features that are both present and might be affected by the Proposed Development are identified (both those likely to be present at the time works begin and those predicted to be present at a set time in the future) through a combination of targeted desk-based study and field survey work to determine the relevant baseline conditions;

b. the importance of the identified ecological features is evaluated, placing their relative nature conservation importance into geographic context, which is then used to define the relevant biodiversity features that need to be considered further;

c. the changes or perturbations predicted to result as a consequence of the Proposed Development (i.e., the potential impacts) and which could potentially affect relevant ecological features are identified and their nature described. Established best-practice, legislative requirements or other incorporated design measures to minimise or avoid impacts are also described and are taken into account;

d. the likely effects (positive or negative) on relevant ecological features are then assessed, and where possible quantified;

e. measures to avoid or reduce any predicted significant effects, if practicable, are then developed in conjunction with other elements of the design (including mitigation for other environmental disciplines) and if necessary, measures to compensate for effects on features of nature conservation importance are also included; and

f. any residual effects of the Proposed Development.

8.5.26 It is not necessary in the assessment to address all habitats and species with potential to occur in the relevant Study Areas and instead the focus is on those that are “relevant” i.e., ecological features that are considered to be important (IEFs) and potentially affected by the Proposed Development. This does not mean that efforts should not be made to safeguard wider biodiversity and requirements for this have been considered, where appropriate.

Determining Importance

8.5.27 To support a focussed assessment, there is a need to determine the scale at which the relevant ecological features identified through the desk studies and field surveys undertaken for the Proposed Development are of value. The value of each relevant ecological feature has been defined with reference to the geographical level at which it matters, informed through relevant planning policy and legislation (see **PEI Report Volume 3, Appendix 8-A: Legislation, Policy and Guidance**) which is important in demonstrating how the Proposed Development will comply with statutory requirements and policy objectives for biodiversity, in accordance with Section 4.3 of the CIEEM guidelines (Ref 8-24).

8.5.28 Species populations are valued on the basis of their size, recognised status (such as through published lists of species of conservation concern and designation of BAP status) and legal protection. For example, bird populations exceeding 1% of published data for national populations are considered to be of national importance, and so on.

8.5.29 In assigning values to species populations, it is important to take into account the status of the species in terms of any legal protection. However, it is also important to consider other factors such as its distribution, rarity, population trends and the size of the population which would be affected. For example, whilst the Great Crested Newt is protected as a European protected species under the relevant legislation and therefore conservation of the species is of significance at an international level, this does not mean that every population of Great Crested Newt is internationally important. It is important to consider the particular population in its context. Therefore, in assigning values to species, the geographic scale at which they are important has been considered. The assessments of value rely on the professional opinion and judgment of experienced ecologists.

8.5.30 Plant communities are assessed both in terms of their intrinsic value and as habitat for protected species whose habitat is also specifically protected and for species of nature conservation concern which are particularly associated with them.

8.5.31 Due regard will also be paid to the legal protection afforded to species during the development of mitigation and compensation measures to be implemented for the Proposed Development. For European protected species there is a requirement that the Proposed Development should not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

8.5.32 For the purposes of the assessment within this chapter, only ecological features of at least Local importance are considered as IEFs that require assessment for potential significant effects. Whilst consideration of impacts at all geographic scales is important, features of less than Local importance (i.e. of Site importance) are common and widespread (therefore of no local value) and are not legally protected or included within local planning policy. The CIEEM guidelines (Ref 8-24) make it clear that there is no need to "*carry out detailed assessment of ecological features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable*".

8.5.33 Assessing the value of features requires consideration of both existing and future predicted baseline conditions. Therefore, the description and valuation of ecological features takes account of any likely changes, such as trends in the population size or distribution of species, likely changes to the extent of habitats and the effects of other developments or land use changes, as described in Section 8.8 of this PEI Report.

8.5.34 A summary of the value (importance) of ecological receptors and the geographical frames of reference used for this assessment, based on Section 4.7 in the CIEEM guidelines (Ref 8-24), is presented in **Table 8-2**.

Table 8-2: Summary of sensitivity of ecological receptors, according to geographic context

Sensitivity (Value)	Geographic Frame of Reference	Examples
Very High	International (or European)	European sites, such as SACs (including candidate SACs), SPAs (including potential SPAs), normally within the geographic area of Europe. Ramsar sites (including proposed sites), which are designated under international convention) are also included. Areas of habitat that would meet the selection criteria for designation as a European Ramsar site. Species occurring in numbers approaching that of international importance (i.e., >1% of a biogeographic population) that would meet the selection criteria for designation as a European or Ramsar site. Qualifying species connected to an SAC (such as bats).
High	UK or National (Great Britain), but considering the potential for certain ecological features to be more notable (of higher value) in England, with context relative to Great Britain as a whole)	Statutorily designated site, such as a SSSI or NNR. HaPI (Ref 8-10), considering factors such as its size, distribution and the size of the habitat which would be affected. This would include Ancient Woodland and ancient or veteran trees. Species occurring in numbers approaching that of national importance (i.e., >1% of the UK population) that would meet the relevant SSSI selection criteria (Ref 8-40).
Medium / High	Regional (East Midlands)	Species, including SPI (Ref 8-10), occurring in numbers of greater geographical importance than within the county of Lincolnshire but does not reach the threshold to be of National importance.
Medium	County (Lincolnshire) and/or District (North Kesteven)	Non-statutorily designated sites, such as LWSs. HaPI (Ref 8-10) not representing a nationally important habitat but recognised as a habitat which would or may fulfil the criteria for selection as a LWS (Ref 8-41). Species occurring in numbers approaching that of county or district importance (i.e., >1% of the county or district (if known) population).
Low	Local	Areas of habitat that do not meet criteria for selection as LWS in Lincolnshire (Ref 8-41) but are considered to enrich the local area.

Sensitivity (Value)	Geographic Frame of Reference	Examples
		Species of conservation interest (e.g. SPI, red-listed or legally protected species) that are common and widespread but contribute to the local biodiversity.
Negligible	Site	Species that are common and widespread and are not legally protected or included within local planning policy (e.g. Field Vole *Microtus agrestis*). Areas of habitat that are widespread and of no local value (such as a fence-line or hard-standing).

Characterising Ecological Features

8.5.35 In accordance with Section 1.21 in the CIEEM guidelines (Ref 8-24), the terminology used within the assessment draws a clear distinction between the terms 'impact' and 'effect'. For the purposes of this chapter these terms are defined as follows:

a. Impact – actions resulting in changes to an ecological feature. For example, construction activities of a development removing a hedgerow; and

b. Effect – outcome resulting from an impact acting upon the conservation status or structure and function of an ecological feature e.g., the effects on a population of bats as a result of the loss of a bat roost.

8.5.36 When describing potential impacts (and where relevant the resultant effects) consideration is given to the following characteristics likely to influence this:

a. Positive or negative - i.e., is the change likely to be in accordance with nature conservation objectives and policy and is that change:

   i. Positive - a change that improves the quality of the environment, or halts or slows an existing decline in quality e.g., increasing the extent of a habitat of conservation value; or

   ii. Negative - a change that reduces the quality of the environment e.g., destruction of habitat.

b. Spatial extent - the spatial or geographical area or distance over which the impact or effect may occur under a suitably representative range of conditions;

c. Magnitude - the 'size', 'amount' or 'intensity' and 'volume' of an impact - this is described on a quantitative basis where possible;

d. Duration - the time over which an impact is expected to last prior to recovery or replacement of the resource or feature. Consideration has been given to how this duration relates to relevant ecological characteristics such as a species' lifecycle. However, it is not always appropriate to report the duration of impacts in these terms. The duration of an effect may be longer than the duration of an activity or impact;

e. Timing and frequency - i.e., consideration of the point at which the impact occurs in relation to critical life-stages or seasons; and

f. Reversibility - i.e., is the impact temporary or permanent. A temporary impact is one from which recovery is possible or for which effective mitigation is both possible and enforceable. A permanent effect is one from which recovery is either not possible or cannot be achieved within a reasonable timescale i.e., the 60-year lifespan of the Proposed Development (in the context of the feature being assessed).

8.5.37 Combined, these characteristics form the magnitude criteria for effects of the Proposed Development on IEFs as summarised in **Table 8-3**.

Table 8-3: Magnitude criteria for impacts and effects

Magnitude	Magnitude Criteria
High	Changes to the ecological feature pre-development (baseline) condition that almost always have an effect (positively or negatively) on its integrity or conservation status. Such changes may be long-term, permanent and/or irreversible.
Medium	Changes to the ecological feature baseline condition that in some circumstance may affect (positively or negatively) its integrity or conservation status. Although such changes may be long-term, they are potentially reversible.
Low	Changes to the ecological feature baseline condition that do not usually affect the baseline condition and are often short-term and/or reversible.
Very low	There is no noticeable change to the ecological feature baseline condition.

Significance Criteria

8.5.38 For each ecological feature, only those characteristics relevant to understanding the ecological effect of the Proposed Development and determining the significance are described. The determination of the significance of effects has been made based on the predicted effect on the structure and function, or conservation status, of relevant ecological features, as follows:

a. Not significant - no effect on structure and function, or conservation status; and

b. Significant - structure and function, or conservation status is affected.

8.5.39 Sections 5.24 to 5.28 in the CIEEM guidelines (Ref 8-24) state that effects should be determined as being significant (a 'significant effect') when "*an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g., for a designated site) or broad (e.g., national / local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local. A significant effect is 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. In broad terms, significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution)".

8.5.40 Using this information and professional judgement, it is determined whether the effects will be 'significant' or 'not significant' on the structure and integrity of site or ecosystems or conservation status of habitats and, or species of each ecological feature and the impact significance is determined at the appropriate geographical scale, as presented in **Table 8-2**.

8.5.41 There are a number of approaches for determining the significance of effects on ecological features. Whilst the CIEEM guidelines (Ref 8-24) recommend the avoidance of the use of the matrix approach for categorisation (major, moderate and minor), in order to provide consistency of terminology within this chapter, the terminology used in the CIEEM guidelines for impact assessment have been translated into the classification of effects scale, as outlined in **Table 8-4**, but still remain consistent with the CIEEM guidelines.

8.5.42 As a rule, major and moderate effects are considered to be significant, whilst minor and neutral/ negligible effects are considered to be not significant. However, professional judgement will be applied, including taking account of whether the effect is permanent or temporary, its duration and frequency, whether it is reversible, and/or its likelihood of occurrence. Within this PEI Report, ecological effects are only described as being either significant or not significant and the level of effect, as set out in **Table 8-4** is not given at this stage, as the full ecology surveys and data analysis are not yet complete.

8.5.43 Beneficial effects, as described in **Table 8-4**, are assessed as those where there has, or will be, a change from the ecological baseline that improves (e.g. an increase in habitat or species population). Adverse effects are assessed as those where there will be a change from the ecological baseline that worsens (e.g. a reduction in habitat or decline in species population).

Table 8-4: Significance criteria for effects

Effect classification terminology	Equivalent CIEEM terminology
Major beneficial (positive)	1) Beneficial effect on structure / function or conservation status at a regional, national or international level; and 2) The extent, magnitude, frequency, and/or timing of an impact positively affects the integrity or key characteristics of the resource.
Moderate beneficial (positive)	1) Beneficial effect on structure/ function or conservation status at a county level; and 2) The extent, magnitude, frequency, and/or timing of an impact positively affects the integrity or key characteristics of the resource.

Effect classification terminology	Equivalent CIEEM terminology
Minor beneficial (positive)	1) Beneficial effect on structure / function or conservation status at a local level; and 2) The extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.
Negligible	No effect on structure / function or conservation status.
Minor adverse (negative)	1) Adverse effect on structure / function or conservation status at a local level; and 2) The extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.
Moderate adverse (negative)	1) Adverse effect on structure / function or conservation status at a county level; and 2) The extent, magnitude, frequency, and/or timing of an impact negatively affects the integrity or key characteristics of the resource.
Major adverse (negative)	1) Adverse effect on structure / function or conservation status at a regional, national or international level; and 2) The extent, magnitude, frequency, and/or timing of an impact negatively affects the integrity or key characteristics of the resource.

8.6 Baseline Conditions

8.6.1 This section identifies and describes the existing and future baseline conditions for Proposed Development, based on desk study and field surveys undertaken as of August 2024.

Sites Statutorily Designated for their Biodiversity Value

8.6.2 There are no sites statutorily designated for their biodiversity value at an international or European level within 10km of the Site. The only European site within 30km of the Proposed Development is Birklands and Bilhaugh SAC, which is approximately 23km from the Site and is designated for its habitats. There are no European sites within 30km of the Site for which birds or bats are a qualifying feature.

8.6.3 Beyond the 30km Study Area, the River Witham and minor watercourses connected to it are linked to the Wash SPA/Ramsar and Along the River Witham, The Wash and North Norfolk Coast SAC is approximately 70km downstream of the Proposed Development. At this distance, there are no potential impacts arising and the Proposed Development will not have a likely significant effect upon these sites. Additionally, the design of the Proposed Development includes a minimum 10m buffer from the River

Witham, avoiding any adverse impacts to this watercourse and in turn any European sites connected at any distance to this watercourse (see also **PEI Report Volume 3, Appendix 8-K: Habitat Regulations Assessment (HRA) Pre-Screening Report**).

8.6.4 As concluded in **PEI Report Volume 3, Appendix 8-K: Habitat Regulations Assessment (HRA) Pre-Screening Report**, there will be no likely significant effects on European sites arising from the Proposed Development.

8.6.5 One site, statutorily designated for its biodiversity value at a national level is within 1km of the Site. This is Whisby Nature Park LNR which is approximately 340m north of the Site. Swanholme Lakes LNR and SSSI is 4km from the Site.

8.6.6 Designation details of all statutorily designated sites within the relevant Study Areas are summarised in **Table 8-5** and are presented in ascending order, with those closest to the Site listed first. The locations of these statutorily designated sites, relevant to the Proposed Development, are presented in **PEI Report Volume 2, Figure 8-1: Sites statutorily designated for nature conservation value**.

Table 8-5: Sites statutorily designated for their biodiversity value within 10km (international) and 5km (national) of the Site

Statutorily designated site name and designation	Area – hectares (ha)	Description of statutory site	Approximate distance (metres (m)) and direction from closest point of the Site
Whisby Nature Park LNR	110.6	A complex of small, medium and large flooded gravel pits, with one flowing stream, the Pike Drain, a small agricultural channel that runs east-west across the southern part of the LNR. Some former pits support wet Willow *Salix species* scrub, one has subsequently been cleared and developed into clay grassland. Others are undergoing systematic coppicing to maintain more open scrub conditions. Dense Willow and Birch *Betula species* scrub occurs over wide areas in the north on spoil in between the pits and is gradually developing tall canopy scrub resembling woodland. A small Oak *Quercus sp.* woodland of some maturity lies alongside a railway crossing. Dry, open expanses of gravel-pit waste are developing interesting plant communities. Some more orthodox	340m north of the Principal Site

Statutorily designated site name and designation	Area – hectares (ha)	Description of statutory site	Approximate distance (metres (m)) and direction from closest point of the Site
		grasslands, both dry and wet, support a variety of flowering plants, and the richest of these is the orchid glade.	
Swanholme Lakes LNR / SSSI	57.5	Formed from flooded sand and gravel pits, the open water supports several uncommon species of submerged plants and is surrounded by a species-rich mosaic of habitats. The sandy heath, willow carr and *Sphagnum* bog form an area of county importance for amphibians and reptiles and support several invertebrate groups, including grasshoppers and crickets, bumblebees and solitary wasps. Important species, found within this LNR / SSSI include several pondweeds (species of *Potamogeton*) and Water Soldier *Stratiotes aloides*. The lakes also support many aquatic invertebrate species, including 17 species of dragonfly and damselfly. Three species (Red-eyed Damselfly *Erythroma najas*, Variable Damselfly *Coenagrion pulchellum* and Ruddy Darter *Sympetrum sanguineum* are rare in Lincolnshire.	4km north east of the Principal Site

Sites Non-Statutorily Designated for their Biodiversity Value

8.6.7 There are 29 sites that are non-statutorily designated for their biodiversity value within 2km of the Site (as per the Study Area in paragraph 8.5.6 of this PEI Report) and these are presented in **Table 8-6** and listed in ascending order, with those closest to the Site listed first. These sites have been designated as Local Wildlife Sites (LWS) for their biodiversity value at a county level and are known to have supporting value to a wide variety of protected and ecologically import species and/ or habitats.

8.6.8 Site information descriptions are summarised in **Table 8-6** and are taken from non-statutory site descriptions received as part of the desk study through LERC. The locations of these non-statutorily designated sites, relevant to the Proposed Development, are presented in **PEI Report Volume 2, Figure 8-2: Non-statutory sites designated for their biodiversity value**.

Table 8-6: Sites non-statutorily designated for their biodiversity value within 2km of the Site

Non-statutorily designated site name and designation	Area – hectares (ha) / length (km)	Description of non-statutorily designated site	Approximate distance (metres (m)) and direction from closest point of the Site
Navenby Heath Road Verges	2.8km	Verge made up of calcareous grassland.	Within the Cable Corridor.
Navenby, Green Man Road Verges	6km	Verge made up of calcareous grassland.	Within the Cable Corridor.
River Witham, Aubourn to Beckingham	11.8km	The banks are managed through grazing or mowing. Aquatic plants occurring are Water-starwort *Callitriche stagnalis*, Spiked Water-milfoil *Myriophyllum spicatum*, River Water-crowfoot *Ranunculus fluitans*, Fennel Pond Weed *Stuckenia pectinata* and Unbranched Bur-weed *Sparganium emersum*.	Within the Principal Site.
Tunman Wood (including Stocking Wood)	38.2ha	A managed, ancient woodland with a mosaic of high forest trees, cleared areas with scrub and invading saplings with intermediate stands. However, a relatively poor ground flora.	Adjacent to the Principal Site.
Tunman Wood North	15.4ha	This site is the northern part of Tunman Wood LWS, located close to Whisby Nature Park LNR. Planted trees occur throughout, although it is the network of rides that is of most interest for flora and fauna. Corsican Pine *Pinus nigra* is the dominant plantation tree here, with smaller numbers of Scots Pine *Pinus sylvestris*, Beech *Fagus sylvatica* and Pedunculate Oak *Quercus robur*.	Adjacent to the Principal Site.
Gorse Lane	1.3km	A narrow lane, running north from Gorse Hill Lane (TF014563), east of Wellingore, to a minor road (TF013576) connecting Navenby to the A15. It is separated from arable fields on the west side by a thick, unmanaged hedge. On the east side, the southern half merges into Gorse Hill Covert, a small mainly deciduous wood, and the northern half is	Within 5m of the Cable Corridor, to the south.

Non-statutorily designated site name and designation	Area – hectares (ha) / length (km)	Description of non-statutorily designated site	Approximate distance (metres (m)) and direction from closest point of the Site
		separated from arable fields by a hedge along most of its length.	
High Dike, Coleby Mill to Harmston Verges	2.1km	Verges made up of calcareous grassland.	310m north of the Cable Corridor.
Whisby Nature Park, Whisby Pits Complex	110.6ha	Also, an LNR; see Table 8-5.	340m north of the Principal Site.
Boothby Graffoe Road Verges	0.4ha	Calcareous grassland verge that slopes down from the south side of the B1202. Plants that it supports include Small Scabious *Scabiosa columbaria*, Common Bird's-foot-trefoil *Lotus corniculatus*, Burnet Saxifrage *Pimpinella saxifrage*, Salad Burnet *Sanguisorba minor*, Greater Knapweed *Centaurea scabiosa*, Lady's Bedstraw *Galium verum* and Upright Brome *Bromus erectus*.	595m north of the Cable Corridor.
A15, Green Man Road to Cuckoo Lane	3.2km	Strip of calcareous grassland.	665m east of the Cable Corridor.
Green Man Lane	3.5km	Verge made up of calcareous grassland. Calcareous grassland indicator species are numerous in this verge, but their distribution is patchy. The grassland is interspersed by coarse, dense vegetation such as Bramble *Rubus fruticosus*.	705m east of the Cable Corridor.
Brant Plantation	10.7ha	Plantation that is largely dominated by Poplar *Populus* aggregate and Sycamore *Acer pseudoplatanus*. Other woody species that grow across the plantation include Aspen *Populus tremula*, Pedunculate Oak, Silver Birch *Betula pendula*, Downy Birch *Betula pubescens* and Honeysuckle *Lonicera* aggregate The lower canopies and ground flora comprises of Male-fern *Dryopteris filix-mas*, Wood Millet *Milium effusum*, False Brome *Brachypodium sylvaticum*, Buckler Ferns *Dryopteris dilatate*,	760m north of the Principal Site.

Non-statutorily designated site name and designation	Area – hectares (ha) / length (km)	Description of non-statutorily designated site	Approximate distance (metres (m)) and direction from closest point of the Site
		Herb-Robert *Geranium robertianum*, Red Campion *Silene dioica*, Foxglove *Digitalis purpurea* and Three-veined Sandwort *Moehringia trinervia*. The area which is closest to the river has the greatest diversity and includes species such as Creeping-Jenny *Lysimachia nummularia*, Soft Rush *Juncus effusus*, Ragged-Robin *Silene flos-cuculi*, Marsh Bedstraw *Galium palustre* and Silverweed *Potentilla anserina*. There is a long grass area to the eastern margin of the wood, supporting species such as Tufted Vetch *Vicia cracca* and Common Bird's-foot-trefoil. A range of bird and invertebrates occupy the plantation including Bullfinch *Pyrrhula pyrrhula*, Willow Tit *Poecile montanus*, Wren *Troglodytes troglodytes*, Migrant Hawker *Aeshna mixta*, Common Darter *Sympetrum striolatum* and Emerald Damselfly *Lestes sponsa*.	
Hykeham Railway Line, Whisby Nature Park	3.2ha	A section of active railway line running through Whisby Nature Park. Vegetation cover is largely concentrated in a narrow (c.1-2m wide) belt on both sides of the railway, adjacent to the fence line. This mainly comprises Bramble, scrub and tall ruderal vegetation, including species such as Rosebay Willowherb *Chamaenerion angustifolium*, Nettle *Urtica dioica*, Field Horsetail *Equisetum arvense* and, occasionally, Common Hemp-nettle *Galeopsis tetrahit*. There are also some small patches of semi-improved neutral grassland vegetation dominated by False Oat-grass *Arrhenatherum elatius*, Couch *Elymus repens* and other tall coarse grass species. Occasional patches of shorter turf occur and feature species such as Common Bent *Agrostis capillaris* and Sheep's Sorrel *Rumex acetosella*.	790m north of the Principal Site.

Non-statutorily designated site name and designation	Area – hectares (ha) / length (km)	Description of non-statutorily designated site	Approximate distance (metres (m)) and direction from closest point of the Site
		Occasional shrubs and trees occur on the fence line, including Silver Birch, Pedunculate Oak, Hawthorn *Crataegus monogyna*, Gorse *Ulex europaeus* and Hazel *Corylus avellana*. A short section of ditch occurs adjacent to the southern boundary towards the eastern end of the section.	
Ski World, Whisby Pits Complex	25.2ha	Three eutrophic lakes (flooded gravel pits) dominated by Canadian Pondweed *Elodea canadensis* and a significant amount of Blanketweed *Cladophora glomerata*, with smaller amounts of Fennel-leaved Pondweed *Potamogeton pectinatus* and Curled Pondweed *Potamogeton crispus*. Much of the surrounding land is managed as a caravan and camping site with large areas of improved grassland and amenity planting, however remnants of the original heath/dry grassland survive in very limited areas.	805m north of the Principal Site.
Mr Nevile's Pits West, Whisby Pits Complex	7.2ha	A flooded sand and gravel pit bordered by Willow woodland.	830m north of the Principal Site.
Norton Big Wood	36.1ha	A large area of woodland, the majority of which is ancient semi-natural, comprising a mix of planted conifers and hardwoods and longer established native broadleaves.	850m west of the Principal Site.
Mr Nevile's Pits East, Whisby Pits Complex	11.4ha	A large lake (flooded gravel pit) with numerous smaller peripheral, seasonally flooded, hollows. The open water is surrounded by Silver Birch and Grey Willow *Salix cinerea* woodland. Mature Ash *Fraxinus excelsior* and Oak occur towards the edges where the woodland is more open, grading into discrete areas of rough grassland and acid scrub. Nearer the water's edge, the only truly	950m north of the Principal Site.

Non-statutorily designated site name and designation	Area – hectares (ha) / length (km)	Description of non-statutorily designated site	Approximate distance (metres (m)) and direction from closest point of the Site
		aquatic species recorded was Duckweed *Lemna minor*.	
North Hykeham Gravel Pit	94.2ha	Made up of two areas - Cemex Angling Lake and Millennium Green. Cemex Angling Lake is formed of gravel pits with three small islands covered in woodland. The lake itself supports limited flora, including Nuttall's Pondweed *Elodea nuttallii* and Spiked Water-milfoil. Other emergent species such as Yellow Flag Iris *Iris pseudacorus* and Bulrush *Typha latifolia* are also present. There is a fragment of woodland on the northern edge which is dominated by mature Pedunculate Oak and Silver Birch. Hazel, Alder Buckthorn *Frangula alnus* are most frequent in the understories. On the southern edge of the lake a peninsula (SK925662) is covered by Birch woodland. To the south of this peninsula lie ridges of sand which have been colonised by Broom *Cytisus scoparius*. Juniper Haircap Moss *Polytrichum juniperinum*, Sand Fibrecap (a fungi) *Inocybe arenicola* and a species of *Cladonia* lichen are also noted here. An area of wet scrub and semi-improved neutral grassland can be found to the south of the lake supporting a variety of species. Millennium Green's main habitat is a large lake. Other habitats, flora and fauna are similar to those of in Cemex Angling Lake.	1,035m north of the Principal Site.
Butt Lane Pit	2.2ha	Flooded pit which is used as an angling lake and surrounded by acid woodland. Spiked Water-milfoil dominates the aquatic flora with occasional clumps of Common Water-crowfoot *Ranunculus aquatilis* and Common Water-starwort. Very small areas of acid grassland around the edge of the lake support Common Centaury *Centaurium erythraea*,	1,077m west of the Principal Site.

Non-statutorily designated site name and designation	Area – hectares (ha) / length (km)	Description of non-statutorily designated site	Approximate distance (metres (m)) and direction from closest point of the Site
		Wood Small Reed *Calamagrostis epigejos*, Cat's-ear *Hypochaeris radicata*, Leafy Hawkweed *Hieracium umbellatum*, and Sheep Sorrel *Rumex acetosella*. Area of acid woodland is dominated by Pedunculate Oak, Silver Birch and Downy Birch. Other species include Wild Cherry Prunus avium, Aspen, Alder and Gorse. Rhododendron *Rhododendron ponticum* has invaded the woodland. Fauna species noted in this area include birds, Migrant Hawker and Speckled Wood *Pararge aegeria*.	
Coleby, Heath Road Verges	2.2km	Verge made up of calcareous grassland.	1,250m north of the Cable Corridor.
Gorse Hill Lane Verges	0.4km	Verge made up of calcareous grassland.	1,250m south of the Cable Corridor.
High Dike, Long Lane to Navenby Verges	5.8km	Verge made up of calcareous grassland.	1,280m west of the Cable Corridor.
Eagle Hall Wood	55ha	Ancient, replanted woodland supporting Pedunculate Oak and Ash that are dominant across the site and some ancient trees remain, as do old, coppiced Hazel. Wet areas in the north east of the site are dominated by dense scrub and rides in the woodland have ditches along them.	1,350m west of the Principal Site.
Brant Washlands	36.5ha	Two fields comprising wet woodland wet pasture, ponds and scrapes that are both rich in flora and fauna.	1,400m north of the Principal Site.
Teal's Lake, Whisby Pits Complex	32.8ha	Large, flooded gravel pit surrounded by areas of grazing marsh/damp grassland scrub and small patches of remnant dry and acid grassland. Canadian Pondweed dominates the open water. Margins support stands of Common Reed *Phragmites australis* and Bulrush. New Zealand Pigmyweed *Crassula helmsii,* an	1,510m north of the Principal Site.

Non-statutorily designated site name and designation	Area – hectares (ha) / length (km)	Description of non-statutorily designated site	Approximate distance (metres (m)) and direction from closest point of the Site
		invasive plant, dominates the marginal zones of the entire lake. Much of the lake is bordered by a dense Willow and Birch woodland. Dry acid grassland fragments around the perimeter of the site support such species as Wormwood *Artemisia absinthium*, Broom and Vipers Bugloss *Echium vulgare*.	
Hawdin's Wood	49.8ha	A large area of damp acid woodland, forming part of a more extensive woodland. The site is a former conifer plantation, supporting Scot's Pine and Larch *Larix decidua*. A good number of ancient woodland indicator species are present including Wood Anemone *Anemone nemorosa*, Wood Sedge *Carex sylvatica*, Scaly Male Fern *Dryopteris affinis* and Bluebell *Hyacinthoides non-scripta*. Damp acid rides support a typical flora with abundant common forbs. Large areas of the site are dominated by a vigorous community of Bracken *Pteridium aquilinum* and Bramble. There is a pond near the centre of the area.	1,550m west of the Principal Site.
Wellingore Heath Road Verges	0.8km	Verge made up of calcareous grassland.	1,700m west of the Cable Corridor.
Harmston Quarry	9.4ha	An active limestone quarry lying within an arable landscape. Small areas of calcareous grassland along the site's northern boundary with the road.	1,885m north of the Cable Corridor.
Stapleford Moor	128.1ha	Largely coniferous plantation of Scots Pine with Silver Birch with Rowan *Sorbus aucuparia* and broadleaved woodland on the edges and in discrete patches in the north and south-east. Very limited areas of acid grassland/heath exist in small clearings in the north of the wood which support a good diversity of species typical of this habitat type.	1,950m west of the Principal Site.

Non-statutorily designated site name and designation	Area – hectares (ha) / length (km)	Description of non-statutorily designated site	Approximate distance (metres (m)) and direction from closest point of the Site
		The soil across most of the site is a layer of peaty humus over sand. Many of the smaller paths are largely fringed by Purple Moor-grass *Molinia caerulea*, which is also frequent under the trees in some places. The clearings are dominated by Sheep's Fescue *Festuca ovina* which forms a low tussocky sward.	

8.6.9 In addition, the desk study identified three areas of Ancient Woodland within 2km of the Site (as presented in **PEI Report Volume 2, Figure 8-3: Location of Ancient Woodland and Priority Habitats identified during the desk study**), these being:

a. Tunman / Housham Woods (part of Tunman Wood LWS and also including Stocking Wood), which is immediately adjacent to the Principal Site;

b. Hawdin's / Norton Big Wood (part of Norton Big Wood) which is approximately 850m west of the Cable Corridor; and

c. Great Low Wood, which is approximately 1.35km north-west of the Principal Site.

Habitats

8.6.10 As part of the desk study, a review of the MAGIC website (Ref 8-46) identified Habitats of Principal Importance (HaPI) (Ref 8-10) as being present or likely to be present within the Study Area (see further on for details of any priority habitats that occur within the Site):

a. Coastal and Floodplain Grazing Marsh;

b. Deciduous woodland;

c. Lowland calcareous grassland;

d. Lowland dry acid grassland;

e. Lowland heathland;

f. Reedbeds; and

g. Traditional Orchard.

8.6.11 The locations of these HaPI, relevant to the Proposed Development are presented in **PEI Report Volume 2, Figure 8-3: Location of Ancient Woodland and Priority Habitats identified during the desk study**.

8.6.12 Field surveys identified that the land within the Site (approximately 1,420ha) is flat and dominated by arable agriculture (minimum 90%), with the fields being intersected by a network of drainage ditches within the catchment of the River Witham and River Brant. Other habitat includes improved grassland fields (9.29ha / 0.65%), mature trees and hedges (approximately 75km), small, wooded copses (approximately 18ha / 1-2%) and 16 ponds. The surrounding habitat is mainly arable (minimum 90%), with small pockets of mature broad-leaved woodland (plantation and semi-natural). There are individual and clusters of residential properties located adjacent to the Site.

8.6.13 The terrestrial habitats present within the Site were identified during the Phase 1 Habitat survey, undertaken in June, August, September and November 2023; and May 2024. These habitats are the broad habitat types found within the Site and are presented in **Table 8-7**, alongside area calculations that are taken from digitised maps of the Phase 1 habitats. The locations of these habitats are presented in **PEI Report, Volume 2, Figure 8-4: Phase 1 Habitat Map** and further information is included within **PEI Report Volume 3, Appendix 8-B: Preliminary Ecological Appraisal (PEA)**.

8.6.14 For the EIA that informs the DCO application, these habitats will be further defined by the detailed habitat surveys set out in **Table 8-1**. Combined, these habitat data will also be utilised to calculate the biodiversity net gain or net loss to ensure a comprehensive baseline of data for the BNG assessment.

Table 8-7: Broad habitat types within the Site, alongside preliminary assessment of biodiversity importance of ecological features

Broad habitat type and Phase 1 habitat code (Ref 8-52)	Summary description	Area (ha) or length (km)	% of Site area	Conservation designation	Preliminary biodiversity importance	Supporting notes
A1.1.1 – Broadleaved woodland – Semi-natural	There are numerous areas of broadleaved woodland within and outside of the Site, including areas of Ancient Woodland outside of the Site (as checked on the Ancient Woodland inventory (Ref 8-47)), but no Ancient Woodland within the Site. Species composition of the broadleaved woodland include Ash and Oak.	12.92ha	0.9	HaPI – Lowland Mixed Deciduous Woodland and Wet Woodland. LBAP habitat	District	Small copses of non-designated mature semi-natural woodland within and adjacent to the Site, but unlikely to meet County importance due to small extent within the Site, does not meet LWS selection criteria within Lincolnshire (Ref 8-41) and that this habitat is present more widely beyond the ZoI in the local area. Three woodlands outside of the Site, but within 2km, are listed as Ancient Woodland (see also, paragraph 8.6.9).
A1.1.2 – Broadleaved woodland – plantation	Numerous small copses of broadleaved plantation woodland within the Site, with species including Oak, Birch, Ash, Lime and Goat Willow *Salix caprea*.	3.38ha	0.2	None	Site	Not a HaPI
A1.2.2 – Coniferous woodland – plantation	Small extent of this habitat within and adjacent to the Site.	0.26ha	<0.1	None	Site	Not a HaPI
A1.3.2 – Mixed woodland – plantation	Predominantly outside of the Site, with small extents within the Site.	1.45ha	0.1	None	Site	Not a HaPI

Broad habitat type and Phase 1 habitat code (Ref 8-52)	Summary description	Area (ha) or length (km)	% of Site area	Conservation designation	Preliminary biodiversity importance	Supporting notes
A2.1 / A2.2 – Scrub – dense / continuous / scattered	Small areas of scrub are found throughout the Site.	1.17ha / 0.12km	<0.1	None	Site	Not a HaPI
A3.1 – Broadleaved parkland / scattered trees	Lines of trees that delineate some of the field boundaries or standalone trees.	0.05ha / 2.39km	<0.01	Wood Pasture and Parkland, which includes ancient and veteran trees, is a LBAP habitat.	District	Individual trees are not a HaPI. However, veteran or ancient trees are of greater value. Individual trees can provide suitable habitat for protected and notable species, including bats and Barn Owl. The desk study identified veteran and ancient trees within the Study Area, but none from within the Site (Ref 8-48). Furthermore, field surveys have identified a number of likely veteran trees and / or ancient trees with veteran features or ancient features within the Site.
B2.2 – Neutral grassland – semi-improved	Semi-improved grassland, some of which is historically grazed (Coastal and Floodplain Grazing Marsh). Species include Cat Grass *Dactylis glomerata*, False Oat-grass *Arrhenatherum elatius*, Tufted Hair Grass *Deschampsia cespitosa*, Creeping Thistle *Cirsium arvense*, Butter Dock *Rumex obtusifolius* and	20.91ha	1.5	Coastal and Floodplain Grazing Marsh is a HaPI and Grazing Marsh is an LBAP habitat Lowland meadows and upland hay meadows is a HaPI.	County (only where it identified as Coastal and Floodplain Grazing Marsh)	Lowland meadow and upland hay meadows does not occur within the Site or the Study Area (as identified through field surveys and through MAGIC (Ref 8-46)). Neutral grassland is not a HaPI. However, the desk study identified that semi-improved neutral grassland associated with the River Witham, Aubourn to Beckingham LWS is classified as Coastal and Floodplain Grazing Marsh, a HaPI, as identified on MAGIC (Ref 8-46)

Broad habitat type and Phase 1 habitat code (Ref 8-52)	Summary description	Area (ha) or length (km)	% of Site area	Conservation designation	Preliminary biodiversity importance	Supporting notes
	Spear Thistle *Cirsium vulgare*.			Lowland meadows is a LBAP habitat		
B4 – Improved grassland	Small grassland compartments within and outside of the Site.	9.29ha	0.6	None	Site	Not a HaPI
B6 – Poor semi-improved grassland	Semi-improved grassland, some of which may be set-aside grassland.	36.19ha	2.5	None	Site	Not a HaPI
C3.1 – Other tall herb and fen - ruderal	Tall ruderal habitats, dominated by Hogweed *Heracleum sphondylium*, with frequent Bramble *Rubus fruticosus* aggregate and occasional Hairy Willowherb *Epilobium hirsutum*.	1.59ha	0.1	None	Site	Not a HaPI
F1 - Swamp	Swamp habitat included species such as Reed Canary Grass *Phalaris arundinacea*, Creeping Bent *Agrostis stolonifera* and Tufted Hairgrass.	0.30ha	<0.1	Upland Flushes, Fens and Swamps is a HaPI. Reedbeds is a LBAP habitat	District	Very small extent of swamp habitat within the Site, which meets the criteria of a HaPI. This habitat is present within a large pond in the Site and alongside the River Witham and Brant.
G1 – Standing water	There are 16 water bodies (ponds) within the Principal Site, six of which are	0.82ha	0.1	Ponds of certain criteria are a HaPI	Site	Ponds can be defined as permanent (or seasonal) water bodies up to 2ha in extent and qualify as being a HaPI if they meet

Broad habitat type and Phase 1 habitat code (Ref 8-52)	Summary description	Area (ha) or length (km)	% of Site area	Conservation designation	Preliminary biodiversity importance	Supporting notes
	permanently dry. There are no water bodies within the Cable Corridor. The majority of the ten (wet) water bodies (ponds) within the Principal Site had little to no aquatic vegetation (submerged, floating or emergent) and had little other ecological value (Great Crested Newt confirmed as absent through eDNA).			and LBAP habitat.		one or more criteria for UKBAP classification, including supporting species of high conservation importance. Water bodies within the Site are not a stand-alone habitat, as similar habitat can be found in the wider area. Therefore, the water bodies within the Site do not reach the required level to fulfil the criteria of a priority habitat and are considered as being of no more than Local importance.
G2 - Running water	The River Witham (also an LWS) runs north to south in the eastern section of the Principal Site. The River Brant runs north to south within the Cable Corridor.	4.54ha / 1.29km	0.3	Importance due to the LWS designation (River Witham) and connectivity to the Wash SAC (River Brant)	Up to County	The River Brant qualifies as HaPI due to the presence of Annex II species (Ref 8-2) Spined Loach *Cobitis taenia*; the River Witham is designated as a LWS; both are therefore of County importance. Other watercourses on the Site do not qualify as HaPI and are therefore of Local importance.
J1.1 – Cultivated / disturbed land - arable	Over 90% of the Site is cultivated and used for the production of arable crops, including Brassica sp. and wheat.	c.1,314ha	92.3	Arable field margins are a HaPI and LBAP habitat.	Likely importance of County – to be confirmed when flora	Intensively managed arable farmland is not a HaPI but some arable fields have field margins which could support notable flora (to be confirmed through an arable

Broad habitat type and Phase 1 habitat code (Ref 8-52)	Summary description	Area (ha) or length (km)	% of Site area	Conservation designation	Preliminary biodiversity importance	Supporting notes
					surveys of arable field margins are complete.	flora survey) and arable field margins are a HaPI.
J1.2 – Cultivated / disturbed land – amenity grassland	This refers to open areas, used for amenity (such as parklands or gardens) and are typically intensively managed with very few plant species.	0.06ha	<0.01	None	Site	Not a HaPI
J1.3 – Cultivated / disturbed land – ephemeral / short perennial	These comprise areas of disturbed ground/set-aside within arable fields in the southern part of the Solar PV Site with no signs of recent cultivation. Species present here include Nettle, Umbellifer species *Daucus* sp. Mayweed species and Cleavers *Galium aparine*.	0.28ha	0.1	None	Site	Not a HaPI
J2.1 - Hedgerows – intact without trees	There are hedgerows along field boundaries throughout the Site, with Hawthorn or Blackthorn *Prunus spinosa* dominating and most have some evidence of current management. A few of the	33.95km	n/a	HaPI. LBAP habitat	County	HaPI, legally protected under the Hedgerows Regulations (Ref 8-12).
J2.2 - Hedgerows – defunct without trees		1.53km	n/a			
J2.3 - Hedgerows – with trees		38.74km	n/a			

Broad habitat type and Phase 1 habitat code (Ref 8-52)	Summary description	Area (ha) or length (km)	% of Site area	Conservation designation	Preliminary biodiversity importance	Supporting notes
	hedges are more diverse than others; supporting a number of woody species, including Ash, Dog Rose *Rosa canina* and Oak standards.					
J2.4 – Fence-lines	Along field edges, as boundary features.	0.24km	n/a	None	Site	Not a HaPI
J2.5 – Wall	Walls along field edges, as boundary features.	1.64km	n/a	None	Site	Not a HaPI
J2.6 – Dry ditch	Drainage ditches are associated with every hedgerow, scattered tree line and field edge within the Principal Site.	9.82km	n/a	None	Site	Not a HaPI
J4 - Bare Ground / Hardstanding	Small areas mainly along tracks / paths and an area around a small water body towards the centre of the Site.	16.58ha	1.2	None	Site	Not a HaPI
J5 – Other habitat	A small area of Clover mix.	0.07ha	<0.01	None	Site	Not a HaPI

Protected and Notable Species and INNS

8.6.15 The data search, obtained in April 2023 from GLNP, returned records of protected and notable species within the 2km search radius from the Site and from the preceding ten years. These protected and notable species, including species of conservation importance, can be reviewed in **PEI Report Volume 3, Appendix 8-B: Preliminary Ecological Appraisal (PEA)**.

8.6.16 **Table 8-8** presents a summary of protected or notable plant and animal species, including invasive non-native species (INNS), that have been identified (as of August 2024) during the desk study and completed ecological surveys as present, or potentially present, within the Site and relevant ZoI (see **Table 8-1**) alongside an evaluation of each feature's importance / value (sensitivity).

8.6.17 The preliminary assessment of biodiversity importance of ecological features has been made for the entirety of the Site, where surveys have been undertaken and completed as of August 2024. This assessment will be further updated by ongoing surveys throughout the relevant survey windows in 2024 / 2025. Where the biodiversity importance of a feature is specific to a particular area of the Site (e.g., occurring within the Principal Site only), then this is specified with population size or specific species in **Table 8-8**.

Table 8-8: Summary of baseline details for legally protected, notable plant and animal species (including INNS), alongside preliminary assessment of biodiversity importance of ecological features

Ecological feature and relevant technical appendix	Baseline detail	IEFs identified	Preliminary assessment of biodiversity importance	Supporting notes
Aquatic macroinvertebrates (see **PEI Report, Volume 3, Appendix 8-C: Aquatic ecology baseline**)	**Desk Study**: There were no records of notable macroinvertebrate species identified within the Study Area between 2013 and 2023. Although protected and notable aquatic invertebrate records were absent from the Study Area, it should be noted that for the Witham – confluence with Cringle Brook to confluence with River Brant WFD Water Body (WFD: GB105030056780) and River Brant Lower Water Body (WFD: GB105030056770), aquatic invertebrates were classified as High status for macroinvertebrates. **Field Survey:** The field survey identified six locally or regionally notable species within an otherwise common macroinvertebrate assemblage. Vagrant Darter *Sympetrum vulgatum* was identified in a single watercourse within the Site.	Vagrant Darter dragonfly in a single water body within the Principal Site.	Local	As Vagrant Darter is a vagrant species from Central Europe, it does not qualify for evaluation against IUCN red list criteria (Ref 8-31) and therefore it is considered of Local conservation value.
Aquatic macrophytes (see **PEI Report, Volume**	**Desk Study**: There were no records of notable aquatic macrophytes identified	Opposite-leaved Pondweed was recorded through	Local	This threatened species has a Vulnerable status on the England Red List of vascular plants (Ref 8-55) but

Ecological feature and relevant technical appendix	Baseline detail	IEFs identified	Preliminary assessment of biodiversity importance	Supporting notes
3, Appendix 8-C: Aquatic ecology baseline)	within the Study Area between 2013 and 2023. **Field Survey**: Opposite-leaved Pondweed *Groenlandia densa* is present in two drains within the Site.	field surveys in two water bodies within the Site.		does not receive specific legal protection. In Lincolnshire, this species has a patchy distribution, where it is mostly found in smaller water bodies such as streams, canals, ditches and ponds (Ref 8-83).
Fish (desk study results included in **PEI Report, Volume 3, Appendix 8-C: Aquatic ecology baseline**)	**Desk Study:** Records of European Bullhead *Cottus gobio*, European Eel *Anguilla anguilla* in the River Witham from the preceding ten years. **Field Survey**: None undertaken as desk study data was sufficient.	Presence of protected / notable fish potentially present in all water bodies within the Site, due to their connectivity to the River Witham and River Brant.	Likely importance of County, based on desk study data	Desk study data has identified the potential for European Eel, protected under the Eels (England and Wales) Regulations (Ref 8-15) and European Bullhead (a common and widespread species listed in Annex II (Ref 8-2) and a UKBAP species (Ref 8-30)) to be present.
Flora / plants (desk study results included in **PEI Report Volume 3, Appendix 8-B: Preliminary Ecological Appraisal (PEA)**).	**Desk Study:** The desk study identified records of notable plants occurring within the Study Area in the last ten years, including Bluebell *Hyacinthoides non-scripta* and Penny Royal *Mentha pulegium.* **Field Survey:** Surveys for protected or notable flora will be completed in September 2024.	Desk study records indicate that there are a limited number of notable plants occurring within the Study Area. The potential for notable plants to be present within the Site will be confirmed	Likely importance of Local, based on desk study data, to be confirmed when surveys are completed between PEI Report and ES	A small number of records of notable or protected plants were identified during the desk study and surveys will be completed in 2024, during the appropriate season. Regardless, a preliminary assessment of the potential impacts to notable flora is included in **Table 8-12**, in consideration of embedded mitigation measures described in Section 8.10.

Ecological feature and relevant technical appendix	Baseline detail	IEFs identified	Preliminary assessment of biodiversity importance	Supporting notes
		following surveys in 2024.		
Hedgerows (desk study results included in **PEI Report Volume 3, Appendix 8-B: Preliminary Ecological Appraisal (PEA)**).	**Desk Study**: Hedgerows were visible within the Site, from aerial imagery. **Field Survey**: Surveys as of August 2024 have identified intact and defunct hedgerows within the Site (see **Table 8-7**), some of which include trees. Surveys are ongoing to classify which hedgerows are species-rich or 'important' under the Wildlife and Landscape criteria of the Hedgerows Regulations (Ref 8-12).	Hedgerows within the Site	Likely importance of County, based on importance of this habitat to a wide range of fauna, to be confirmed when surveys are completed between PEI Report and ES.	HaPI, legally protected under the Hedgerows Regulations (Ref 8-12). LBAP habitat in Lincolnshire (Ref 8-37).
Terrestrial invertebrates (see **PEI Report Volume 3, Appendix 8-D: Terrestrial invertebrates**)	**Desk Study**: The data search returned six records of two species of butterfly: Purple Emperor *Apatura iris* and White-letter Hairstreak *Satyrium w-album*. No other records of terrestrial invertebrates were identified. **Field Survey**: There is habitat within the Principal Site (including grassland, ditches, woodland and mature trees), amounting to 2% of the Site, that is of potentially more value to terrestrial invertebrates. However, during targeted sampling in March / April 2023, no legally protected terrestrial invertebrate	Based on the walkover survey, there are areas of potentially more value to terrestrial invertebrate species and assemblages within the Principal Site.	District	Habitat of potentially more value to terrestrial invertebrates within the Principal Site and likely across the Site, but no legally protected terrestrial invertebrate species recorded. Notable species could occur across the Site.

Ecological feature and relevant technical appendix	Baseline detail	IEFs identified	Preliminary assessment of biodiversity importance	Supporting notes
	species or SPI recorded. Two Nationally Scarce species of beetle, both associated with woody vegetation and dead wood, recorded within the Site.			
Great Crested Newt (see **PEI Report Volume 3, Appendix 8-E: Great Crested Newt**).	**Desk Study**: Two records of Great Crested Newt presence within the Study Area and six records of confirmed absence. The closest negative eDNA record to the Site (confirming Great Crested Newt absence) was from approximately 40m west of the Site, in 2021. **Field Survey**: 76 ponds within the ZoI of the Proposed Development and 16 within the Site. Of the 16 ponds on Site, six are dry, four are unsuitable for Great Crested Newt and this species is absent (confirmed through eDNA) from six suitable ponds. Off-site ponds were scoped out for various reasons, including barriers to movement or their suitability to support this species (see **PEI Report Volume 3, Appendix 8-E: Great Crested Newt**).	None, Great Crested Newt absent	Great Crested Newt is absent from the Site and a 250m buffer	Notwithstanding the International and National legislation that protects this species, Great Crested Newt is absent from the ZoI of the Proposed Development.
Reptiles and Common Toad (see **PEI Report Volume**	**Desk Study:** Three species of reptile (Grass Snake *Natrix helvetica*, Common Lizard *Zootoca vivipara* and	Grass Snake	Local	Reptiles are protected from intentional injuring or killing under the WCA (Ref 8-1) and a SPI in England

Ecological feature and relevant technical appendix	Baseline detail	IEFs identified	Preliminary assessment of biodiversity importance	Supporting notes
3, Appendix 8-F: Reptiles and Common Toad).	Slow-worm *Anguis fragilis*) and Common Toad recorded within the Study Area. **Field Survey**: Single Grass Snake recorded within three survey locations and Common Toad within two locations in the Principal Site.			(Ref 8-10). Low population of Grass Snake are present in three areas within the Principal Site.
		Common Toad	Local	Common Toad is a SPI in England (Ref 8-10). Low population of this SPI, recorded in two areas within the Principal Site.
Breeding birds (see **PEI Report Volume 3, Appendix 8-G: Breeding birds**).	**Desk Study:** The desk study identified records of 50 specially protected and/or notable species of bird (as detailed in **PEI Report Volume 3, Appendix 8-G: Breeding birds (Confidential Annex A)**. **Field Survey**: Surveys of breeding birds recorded 73 birds using the Site and a breeding assemblage of 57 species, including SPI (Ref 8-10) such as Lapwing *Vanellus vanellus,* Skylark *Alauda arvensis* and Yellowhammer *Emberiza citrinella*.	Assemblage of breeding birds, including specially protected species (Ref 8-1) and SPI (Ref 8-10), within the Site.	Species Diversity is of County importance	No species are present within the Site in numbers of national significance, i.e., 1% or more of the UK population.
			Population of Lapwing and Skylark is of District importance	Population of Lapwing and Skylark is considered to be of District Importance.
			Territories of one specially protected species within the Cable Corridor is of District importance	Three species recorded within the Survey Area that are listed on Schedule 1 of the WCA, 1981 (as amended) (Ref 8-1).
			Territories of two specially protected species within the Principal Site are of up to District importance.	

Ecological feature and relevant technical appendix	Baseline detail	IEFs identified	Preliminary assessment of biodiversity importance	Supporting notes
Non-breeding birds (see **PEI Report Volume 3, Appendix 8-H: Non-breeding birds**).	**Desk Study:** The desk study identified records of 50 specially protected and/or, notable species of bird (as detailed in **PEI Report Volume 3, Appendix 8-G: Breeding birds (Confidential Annex A)**. **Field Survey**: Surveys of non-breeding birds recorded 84 bird species, of which 77 species were utilising the Site (i.e. using the Site for foraging or resting). An assemblage of non-breeding birds recorded within the Site, includes SPI (Ref 8-10) (such as Skylark).	Assemblage of non-breeding birds within the Site.	Species diversity is of County importance. Populations of farmland bird species (including Grey Partridge, Skylark, Linnet, Yellowhammer and Corn Bunting); and Whooper Swan are of District importance.	No non-breeding bird population approaches the 1% level of the national population, which would constitute a nationally significant non-breeding bird population. Ten species, listed in Annex I of the Birds Directive (Ref 8-2) were recorded within the Survey Area. 16 SPI (Ref 8-10) were recorded within the Survey Area. 26 species, included on the Birds of Conservation Concern (BoCC) Red List (Ref 8-84) and 31 species, included on the BoCC Amber list (Ref 8-84), were recorded within the Survey Area.
Bats – roosts (desk study results included in **PEI Report Volume 3, Appendix 8-B: Preliminary Ecological Appraisal (PEA)**).	**Desk Study:** The desk study identified nearly 400 records of bats of 11 species within the Study Area in the last ten years. Species comprise Brandt's bat *Myotis brandtii*, Common Pipistrelle *Pipistrellus pipistrellus*, Daubenton's bat *Myotis daubentonii*, Leisler's bat *Nyctalus leisleri*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Nathusius' Pipistrelle *Pipistrellus nathusii*, Natterer's bat *Myotis nattereri*, Barbastelle *Barbastella barbastellus*,	Potential for roosts of widespread, rarer or species with restricted distribution within and adjacent to the Site.	Up to County – to be confirmed for each species of bat when surveys are complete.	All bat species and their roosts are legally protected in the UK under the WCA, 1981 (as amended) (Ref 8-1) and The Conservation of Habitats and Species Regulations 2017 (Ref 8-8), which implement the EC Directive 92/43/EEC (Ref 8-2). Seven bat species are also included as SPI (Ref 8-10). The Site is unlikely to support significant roost sites, for example

Ecological feature and relevant technical appendix	Baseline detail	IEFs identified	Preliminary assessment of biodiversity importance	Supporting notes
	Brown long-eared bat *Plecotus auritus*, Whiskered bat *Myotis mystacinus* and Noctule *Nyctalus noctula*. The data search included roost data for Brown long-eared Bat, Common Pipistrelle, Natterer's Bat and Soprano Pipistrelle from within the Study Area, but none are from within the Site. A review of MAGIC (Ref 8-46) identified Natural England licences that have been granted within the Study Area, but none from within the Site. **Field Survey**: As of August 2024, the daytime bat walkover (DBW) has identified over 500 trees within the Principal Site as having the potential to support bat roosts or require further assessment. These trees mostly form tree lines/hedgerows along field boundaries. Surveys are ongoing.			maternity or hibernation roosts for rarer species due to the lack of habitats such as buildings and underground sites and geographical location. Bat emergence surveys and/ or aerial climb and inspect surveys will be completed where trees with moderate or high suitability for roosting bats will be directly affected by the Proposed Development, or where the potential for disturbance (above existing levels) is identified. This data will inform the ES and mitigation strategy. However, it is anticipated that the vast majority of mature trees will be retained and protected, and disturbance impacts can be mitigated for.
Bats – commuting / foraging (desk study results included in **PEI Report Volume 3, Appendix 8-B: Preliminary Ecological Appraisal (PEA)**).	**Field Survey:** Species recorded on the activity surveys (combined activity transects and static bat detectors) in 2023 comprised at least nine species comprising: Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, Noctule, Leisler's bat, unknown *Myotis* species (Daubenton's	Foraging / commuting activity of widespread and rarer bat species within and adjacent to the Site.	Likely importance of County – to be confirmed when surveys complete	All bat species and their roosts are legally protected in the UK under the WCA, 1981 (as amended) (Ref 8-1) and The Conservation of Habitats and Species Regulations 2017 (Ref 8-8), which implement the EC Directive 92/43/EEC (Ref 8-2). Seven bat

Ecological feature and relevant technical appendix	Baseline detail	IEFs identified	Preliminary assessment of biodiversity importance	Supporting notes
	Bat, Natterer's bat and/ or other species), Serotine *Eptesicus serotinus*, Barbastelle and Brown Long-eared bat.			species are also included as SPI (Ref 8-10). The biodiversity importance of commuting and foraging habitat for bats is based on species rarity, habitat types/features habitat reliance and roost types. The bat activity survey data collated during the ongoing surveys will inform the ES and mitigation strategy.
Riparian mammals (see **PEI Report Volume 3, Appendix 8-I: Riparian mammals**).	**Desk Study**: The data search returned records of Water Vole and Otter within 2km of the Site, with the majority of records for both species related to Whisby Pits, located 339m to the north of the Site. There were two Otter records from within the Site, along the River Witham near Bassingham. There were no records of Water Vole within the Site. **Field Survey**: Four watercourses were scoped in for detailed riparian mammal surveys during the habitat suitability assessment survey, to determine presence, or absence of either Water Vole or Otter. Riparian mammal surveys	Presence of Otter along the River Brant and River Witham, including a potential Otter holt within the Site on the River Witham.	District	Otter is protected under various legislation in the UK (Ref 8-1, Ref 8-8). Otters have an estimated British population of 11,000, are increasing in population size and range (Ref 8-85) and can be found throughout Lincolnshire (Ref 8-86). They are of International Union for the Conservation of Nature (IUCN) Least Concern status in England (Ref 8-31). The presence of a potential holt within the Site and activity levels along the River Witham means the Site is likely to support an Otter population of District Importance.

Ecological feature and relevant technical appendix	Baseline detail	IEFs identified	Preliminary assessment of biodiversity importance	Supporting notes
	identified evidence of Otter on the River Brant and the River Witham and a potential Otter holt in woodland to the east of the River Witham. Evidence of Water Vole was found along the River Witham.	Presence of Water Vole along the eastern end of the Principal Site on the River Witham	District	Water Vole are protected under Schedule 5 of the WCA, 1981 (Ref 8-1). Water Vole have an estimated British population of 132,000 but are decreasing in population size and range and are considered Endangered in England (Ref 8-87). The limited number of records of Water Vole, suitable habitat and absence of Mink, which predate Water Vole, means the Site is likely to support a population of District importance, in consideration of this species' declining status in a national and county context.
Badger (see **PEI Report Volume 3, Appendix 8-J: Badger**).	**Desk Study**: The data search returned records of Badger, including setts, occurring within the Study Area and within the last ten years. **Field Survey**: The Site supports areas of woodland, grassland, scrub, hedgerows, and ponds which provide suitable commuting, foraging and watering habitat for Badger and evidence of this species was recorded within the Site.	Presence of this species within or in the vicinity of the Site.	Local	Protected under The Protection of Badgers Act 1992 (Ref 8-11). However, they remain common and widespread both nationally and in Lincolnshire (Ref 8-86).

Ecological feature and relevant technical appendix	Baseline detail	IEFs identified	Preliminary assessment of biodiversity importance	Supporting notes
Brown Hare (desk study results included in **PEI Report Volume 3, Appendix 8-B: Preliminary Ecological Appraisal (PEA)**).	**Desk Study**: The data search did not return any records of Brown Hare within the Study Area and occurring within the last ten years. **Field Survey**: This species has been recorded within the Site during ecological surveys.	Presence of this species within the Site.	Local	SPI in England (Ref 8-10) and local BAP species in Lincolnshire (Ref 8-37). Brown Hare has been recorded in arable land during ecological surveys undertaken within the Site.
Hedgehog (desk study results included in **PEI Report Volume 3, Appendix 8-B: Preliminary Ecological Appraisal (PEA)**).	**Desk Study**: The data search did not return any records of Hedgehog within the Study Area and occurring within the last ten years. **Field Survey**: This species has not been recorded within the Site during ecological surveys, although hedgerows, woodland and scrub habitat could support this species.	Assumed presence within the Site.	Local	SPI in England (Ref 8-10) and Local BAP species in Lincolnshire (Ref 8-37) and likely to occur in hedgerows, woodland and scrub habitat across the Site.
Other mammals, listed on S41 of the NERC Act (such as Polecat and Harvest Mouse) (desk study results included in **PEI Report Volume 3, Appendix 8-B: Preliminary**	**Desk Study**: The data search did not return any records of other mammals that are listed as SPI (Ref 8-10). **Field Survey**: At the time of drafting this PEI Report, no mammals that are listed as SPI have been recorded within the Site.	Possible presence of Harvest Mouse	Local	Polecat and Harvest Mouse are SPI under Section 41 of the NERC Act (Ref 8-10). Polecat is a rare species outside of its known distribution range (Ref 8-86) and historical records of Polecat show a widespread but scarce distribution in the northern half of Lincolnshire (Ref 8-86). Therefore, given the paucity of records of this species

Ecological feature and relevant technical appendix	Baseline detail	IEFs identified	Preliminary assessment of biodiversity importance	Supporting notes
Ecological Appraisal (PEA)).				within the Study Area and this species' rarity within Lincolnshire, Polecat is likely to be absent from the Site. Harvest Mouse, although not recorded within the Study Area during the desk study, is likely to be a widespread (but under-recorded) species within Lincolnshire, based on its known (or likely) distribution in Lincolnshire (Ref 8-86). Furthermore, the Site does offer suitable habitat for this species, which can be found in tall grassland, farmland and hedgerows.
Invasive non-native species (INNS) (desk study results included in **PEI Report Volume 3, Appendix 8-B: Preliminary Ecological Appraisal (PEA)** and aquatic INNS included in **PEI Report Volume 3,**	**Desk Study**: Two potentially invasive non-native species of macroinvertebrate found outside of the Site and downstream of it, these being: Mud-snail *Potamopyrgus antipodarum* and Northern River Cragonyctid *Crangonyx pseudogracilis* / Florida Crangonyctid *Crangonyx floridanus*. Two invasive non-native plant species found outside of the Site and downstream of it, these being: Nuttall's Waterweed *Elodea nuttallii* and	Presence of INNS macrophytes and macroinvertebrates in water bodies.	Not applicable	Nuttall's Waterweed is listed in Schedule 9 of the WCA (Ref 8-1) and in the Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref 8-4). These legislations make it an offence to plant, or otherwise cause to grow (including allowing to spread) listed plant species in the wild. Mitigation including biosecurity measures will need to be implemented during construction in areas where these species may be

Ecological feature and relevant technical appendix	Baseline detail	IEFs identified	Preliminary assessment of biodiversity importance	Supporting notes
Appendix 8-C: Aquatic ecology baseline)	Canadian Waterweed *Elodea canadensis*. Six records of Feral Ferret *Mustela putorius* were returned within the Study Area, the closest of which was approximately 300m from the Site, with another record returned from the A15, which runs immediately adjacent to the Site (although there is no exact location given for this record). **Field Surveys**: Canadian Pondweed and Nuttall's Waterweed were recorded within the Principal Site. Non-native (but not statutory INNS) macroinvertebrates were also recorded in most water bodies. Mink was absent from the Site and no other INNS animal species have been recorded.			present to prevent their spread, which would constitute an offence under the associated legislation.

8.7 Summary of Important Ecological Features

8.7.1 **Table 8-9** summarises the known IEFs that are relevant to the Proposed Development, based on desk study and survey data collected between January 2023 and August 2024. Based on CIEEM guidelines (Ref 8-24) and using professional judgement, features of Site importance i.e. less than Local importance, are not considered further in the assessment process, unless legislation requires their consideration. Therefore, in recognition of the protected status of species occurring at a local level (e.g. Badger), the Proposed Development will embed appropriate mitigation (see section 8.10 of this PEI Report) to minimise or avoid impacts in line with the relevant legislation.

8.7.2 The identification of further IEFs will be determined by the ongoing field surveys during 2024 / 2025 and updated baseline information will be presented in the ES, submitted as part of the DCO application.

Table 8-9: Summary of Important Ecological Features (IEFs) as of August 2024

IEFs	Geographic Importance	Reason for valuation of IEFs
Whisby Nature Park LNR	National	Statutorily designated site of nature conservation value and therefore qualifies as **High** importance.
Swanholme Lakes LNR / SSSI	National	Statutorily designated of nature conservation value and therefore qualifies as **High** importance.
29 sites of county importance (LWSs – see **Table 8-6**)	County	Non-statutorily designated site of nature conservation value, qualifying as **Medium** importance.
Habitat – broadleaved woodland (semi-natural)	District	Habitat of ecological importance, supporting a wide range of fauna and included as a HaPI, although small extent within the Site, qualifying as being of **Medium** importance.
Habitat – veteran / ancient trees	District	Ancient and veteran trees are notable for their potential biodiversity value. Therefore, this habitat qualifies as being of **Medium** importance.
Habitat – neutral grassland (semi-improved) within the Cable Corridor	Up to County (only where it identified as Coastal and Floodplain Grazing Marsh)	Coastal and Floodplain Grazing Marsh associated with the River Witham, Aubourn to Beckingham LWS qualifies as a habitat of ecological importance included as a HaPI and LBAP habitat. Therefore, this habitat qualifies as being of **Medium** importance.
Habitat – swamp	District	HaPI and LBAP habitat, but very small extent within the Site. Therefore, this habitat qualifies as being of **Medium** importance.

IEFs	Geographic Importance	Reason for valuation of IEFs
Habitat – running water	Up to County	River Witham and the River Brant both qualify as **Medium** importance.
Habitat – arable field margins	County	At this stage, pending further surveys this habitat has been assessed as being of up to **Medium** importance.
Habitat – hedgerows	County	The network of hedgerows across the Site will be of value to birds, bats and other fauna, therefore hedgerows qualify as being of **Medium** importance.
Aquatic macroinvertebrates – Vagrant Darter	Local	Vagrant species and therefore does not qualify for IUCN red-list criteria but therefore qualifies as being of **Low** importance.
Aquatic macrophytes – Opposite-leaved Pondweed	Local	Opposite-leaved Pondweed does not receive legal protection but does have patchy distribution in Lincolnshire and therefore qualifies as being of **Low** importance.
Fish	County	European Eel and European Bullhead are both protected, but both species are relatively widespread in central and eastern England and therefore these species would qualify as being of **Medium** importance.
Terrestrial invertebrates	District	No legally protected terrestrial invertebrate species or SPI recorded, but areas of habitat (amounting to 2% of the potential developable area of the Principal Site) that qualify as being of potentially more value to terrestrial invertebrates. Therefore, qualifies as being of **Medium** importance.
Grass Snake	Local	Presence of a low population of Grass Snake in three areas in the Principal Site. Therefore, qualifies as being of **Low** importance.
Common Toad	Local	Presence of a low population of Common Toad in two areas in the Principal Site. Therefore, qualifies as being of **Low** importance.
Breeding Birds (General breeding bird assemblage)	County	Populations of common and notable breeding bird species, of up to County importance, and therefore qualifies as being of **Medium** importance.
Breeding birds – territories of Lapwing and Skylark within the Site	District	Population of Lapwing and Skylark within the Site qualifies as being of **Medium** importance.

IEFs	Geographic Importance	Reason for valuation of IEFs
Breeding birds – territories of specially protected species within the Site	Up to County	Population of one species included on Schedule 1 of the Wildlife and Countryside Act, 1981 (Ref 8-1) qualifies as being of **Low** importance. However, population of two species is of **Medium** importance.
Non-breeding birds	Up to County	Species diversity and populations of non-breeding farmland bird species within the Site, as well as population of Whooper Swan within the Survey Area qualifies as being of **Medium** importance.
Bats – roosts	Up to County	Potential for bat roosts within and close to the Site, including those identified in the desk study. Roosts of would qualify as being of **Low** or **Medium** importance (depending on the species).
Bats – commuting / foraging	County	The biodiversity importance of commuting and foraging habitat for bats is based on species rarity, habitat types / features, habitat reliance and roost types. At this stage, pending further surveys, based on this preliminary assessment the commuting / foraging habitat would qualify as being of **Medium** importance.
Otter	District	Presence of Otter on the River Witham (including a potential holt) and River Brant would qualify as being of **Medium** importance.
Water Vole	District	Presence of this species on the Principal Site boundary qualifies as being of **Medium** importance due to localised population recorded and in consideration of National and County declines of this species.
Badger	Local	Badgers occurring within the Site are of **Low** importance.
Other mammals (Brown Hare, Hedgehog and Harvest Mouse)	Local	Presence of Brown Hare confirmed within the Solar PV Site and presence likely across the Site for Hedgehog and Harvest Mouse, with all species qualifying as being of Low Importance.
INNS	Not applicable	There are statutory constraints regarding the potential spread of INNS, as presented in **PEI Report Volume 3, Appendix 8-A: Legislation, Policy and Guidance**.

8.8 Future Baseline

8.8.1 The future baseline (i.e. no development) scenarios are set out in **PEI Report Volume 1, Chapter 5: EIA Methodology & Consultation**. However, this section considers those changes to the ecological baseline conditions, described above, that might occur in the absence of the Proposed Development and during the time period over which the Proposed Development would be in place (60 years).

No Development

8.8.2 In the short to medium term, in the absence of the Proposed Development, habitats within the Site (such as arable fields (cropped on rotation), mature trees, hedgerows, ponds and woodland) have and will continue to provide a number of species with potential habitat for foraging and reproduction, such as arable farmland for ground-nesting breeding birds. In the long term, in the absence of the Proposed Development, habitats within the Principal Site will be under agricultural management and therefore the concerningly low biodiversity of this landscape and the damaged soil, poor water quality and artificially low water tables will remain, making recovery of these ecosystems harder to achieve. The distribution of some species will change in response to changes in crop type, whilst the assemblages are likely to remain broadly the same. Any changes to the baseline between now and the future scenario have been taken into account in this preliminary assessment and when determining likely mitigation measures.

8.8.3 Irrespective of whether the Proposed Development were to proceed or not, the current national, regional and local trend is for a decline in species diversity and abundance e.g., farmland birds. These declines are likely to continue in the landscape surrounding the Proposed Development throughout its duration.

Construction Period (assumed to be 2031-2033)

8.8.4 Based on current trends, in the absence of the Proposed Development, species abundance and diversity are likely to remain similar to the existing baseline conditions during the construction period, although the trajectory for the majority of species is continued decline.

8.8.5 If the Proposed Development did not proceed, the majority of existing habitats are likely to continue being present, although some changes in habitat extent, composition and structure will occur as a result of ecological succession e.g., the gradual establishment of tree and shrub seedlings within woodland areas and along hedgerows. These resultant gradual changes in habitat composition are unlikely to materially alter the ecological baseline and therefore the habitats and species present are very unlikely to undergo significant change prior to 2031 and up to 2033.

Opening and Operation (assumed to be 2033-2093)

8.8.6 Based on current projections, the long-term i.e., the next 60 years, will see extreme weather conditions due to climate change (see **PEI Report Volume**

1, Chapter 6: Climate Change) to which the arable landscape has low resilience. For example, heavy and prolonged rainfall would exacerbate loss of soil and sedimentation of ditches, drains and rivers. There would be a continued decline in biodiversity, including species associated with the baseline conditions present within the Site.

8.8.7 National and local planning policy targeted at halting and reversing these declines is presented in **PEI Report Volume 3, Appendix 8-A: Legislation, Policy and Guidance**.

8.8.8 If the Proposed Development did not progress, based on available information, whilst there is likely to be an overall decline in biodiversity, there are no reasons to expect that there would be any marked change in the broad habitat types within the Site between opening in 2033 and decommissioning in 2093 (based on an estimated 60-year operation). Habitats such as broad-leaved trees and scrub will be more mature but are likely to support a broadly similar species assemblage and arable farmland will also be managed accordingly, maintaining broadly similar species assemblages.

Decommissioning (assumed to be from 2093)

8.8.9 The future baseline conditions in 2093 are currently unknown and more difficult to predict given the time period that would need to lapse between now and then. Habitats such as plantation woodland would have matured, though some may have been felled or partially cropped. Species assemblages are also likely to have changed in accordance with the site conditions, with changes in biodiversity likely to occur if climate change continues at its current pace. Effects could include changes in species habitats and compositions and consequently changes in species assemblages and distribution.

8.9 Potential Impacts

8.9.1 Prior to the implementation of any mitigation, the Proposed Development has the potential to affect biodiversity (positively or negatively) during construction, operation and decommissioning in the following ways:

Construction (assumed to be 2031-2033)

8.9.2 Impacts on biodiversity features during construction of the Proposed Development are likely to include:

a. Habitat loss or gain – direct impacts associated with changes in land use resulting from the Proposed Development, for example temporary works associated with site clearance, and permanent land-take (mainly arable land) associated with the installation of the Proposed Development;

b. Fragmentation of populations or habitats – indirect impacts due to the Proposed Development dividing a habitat, group of related habitats, site or ecological network, or the creation of partial or complete barriers (e.g. culverts) to the movement of species, with a consequent impairment of ecological function;

c. Disturbance – indirect impacts resulting from a change in normal conditions (e.g., light, noise, vibration and human activity) that result in individuals or populations of species changing behaviour or range;

d. Habitat degradation – direct or indirect impacts resulting in the reduction in the condition of a habitat and its suitability for some or all of the species it supports, for example changes in chemical water quality, increased sedimentation and dust deposition, or changes in surface flow or groundwater;

e. Species mortality – direct impacts on species populations associated with mortalities due to construction activities, for example site clearance; and

f. Introduction and, or, spread of invasive species, due to the movement of personnel, equipment and plant machinery, potentially facilitating the introduction of invasive species.

Operation (assumed to be 2033-2093)

8.9.3 Impacts on biodiversity features during operation of the Proposed Development are likely to include:

Negative impacts:

a. Potential avoidance by species using the Site, such as bats and birds, due to indirect impacts through, for example, operational lighting;

b. Disturbance of sensitive species during operational maintenance activities; and

c. Fragmentation of habitats causing a barrier effect e.g., due to fencing.

Beneficial impacts:

a. Increases in permanent habitat of greater floristic diversity than arable farmland, increasing invertebrate assemblages and abundance;

b. Increased connectivity across the Site and into the wider area, through planting of trees and hedgerows;

c. Potential contribution to nature recovery in Lincolnshire;

d. Undeveloped fields and margins that provide permanent (and undisturbed) nesting and foraging habitats for farmland birds, small mammals and reptiles;

e. Potential attraction and increases in species foraging around the Site, such as bats and birds, from increases in prey items (i.e., flying insects);

f. Potential increases in abundance and distribution of species, due to lack of human disturbance and changes in habitat (such as agricultural practices) within the Site; and

g. Indirect beneficial impacts through a possible reduction of agricultural chemical inputs to watercourses / reduction in pesticide use on crops within the local area resulting in an increase in invertebrate abundance and diversity.

Decommissioning (assumed to be from 2093)

8.9.4 Impacts on ecological features during decommissioning of the Proposed Development are likely to be the same as those during the construction phase. Field surveys would be required in advance of decommissioning to define the ecological baseline at the time of decommissioning and to ensure that impacts on ecological features are identified, avoided and, or, mitigated. Upon decommissioning, the above-ground physical infrastructure will be removed and the Site returned to landowners in the condition as at the end of operation, including the established habitats.

8.10 Embedded Mitigation Measures

8.10.1 This section described the avoidance, and embedded mitigation measures relevant to biodiversity that are already incorporated into the Proposed Development design, as described in **PEI Report Volume 1, Chapter 3: The Proposed Development**. At this stage, this is a preliminary list of committed embedded mitigation measures and is not intended to be definitive or comprehensive.

8.10.2 Embedded avoidance and mitigation measures are incorporated into the Proposed Development, in line with national and local planning policy (as presented in **PEI Report Volume 3, Appendix 8-A: Legislation, Policy and Guidance**). As a first principle, the Proposed Development has sought to avoid IEFs and where this has not been practicable, then embedded mitigation measures have been added to form an integral, committed and deliverable part of the Proposed Development design that does not comprise standard construction practices. They are assumed to be implemented (to be formalised into the CEMP, secured through the DCO) and are therefore factored into the determination of significant effects.

8.10.3 A summary of the avoidance and mitigation measures embedded into the Proposed Development to minimise impacts on biodiversity are presented below. These measures are provided on the basis of baseline conditions known at the time of reporting (August 2024). The ongoing baseline surveys are likely to record further IEFs, which will need consideration for the final design of the Proposed Development and, if required, the Proposed Development design will be further refined to include more embedded mitigation, as appropriate. Should forthcoming baseline data suggest more embedded mitigation is required or would be advantageous, then the specifics and quantity of any further appropriate mitigation will be informed by the baseline surveys and incorporated into the design submitted with the DCO application.

Proposed Development Design and Construction

8.10.4 Details of how the Proposed Development's design's embedded avoidance and construction-related mitigation measures interact with IEFs are presented in Table 8-10. This embedded mitigation is needed to successfully integrate the Proposed Development within the context of the existing landscape and prevent or reduce any adverse effects on ecological features.

8.10.5 Embedded measures are taken into account prior to the assessment of effects in order to avoid considering assessment scenarios that are unrealistic in practice i.e. effects do not take account of measures even though they are likely to be standard practice and/or form part of the Proposed Development design. These have been followed through into the assessment to ensure that realistic likely environmental effects have been identified.

Table 8-10: Summary of embedded avoidance and mitigation measures

IEF	Embedded avoidance and mitigation measures
Designated Sites – Whisby Nature Park LNR and Swanholme Lakes LNR / SSSI	**Proposed Development design**: Whisby Nature Park LNR is 340m north of the Site and Swanholme Lakes LNR / SSSI is 4km north-east of the Site. The Proposed Development avoids direct impacts to both of these statutorily designated sites as they are outside of the Site.
	Construction: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to statutorily designated sites.
Designated sites – Navenby Heath Road Verges LWS	**Proposed Development design**: The Proposed Development has to unavoidably cross this LWS to facilitate the Cable Corridor. Whilst construction methods for the Cable Corridor are not fully defined; the Proposed Development will seek to minimise impacts on this LWS and avoid the need for direct loss of habitat associated with this LWS.
	Construction: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to the LWS. Additionally, to minimise impacts to this LWS: • A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into the LWS. The fence design will include gaps to allow mammals, including small deer, Badger, Brown Hare and Hedgehog, to pass underneath at strategic locations to maintain ecological connectivity. The final locations of these mammal passes will be determined following pre-commencement surveys. • Any access that is required for construction of the Cable Corridor will utilise existing access points, such as those already used by agricultural machinery. Vegetation clearance in these areas will also be minimised as much as is practicable.

IEF	Embedded avoidance and mitigation measures
	• The laying of cabling will be undertaken using non-intrusive methods, with launch and exit pits outside of the LWS to protect habitats. The setting back of these works will mitigate for potential hazards such as chemical spills, thus avoiding potential direct impacts to the LWS. • Construction compounds will be setback from the LWS, with security fencing implemented at an early stage to ensure incursion into this LWS does not occur.
Designated sites – Navenby Green Man Road Verges LWS	**Proposed Development design**: The Proposed Development has to unavoidably cross this LWS to facilitate the Cable Corridor. Whilst construction methods for the Cable Corridor are not fully defined; the Proposed Development has been designed to minimise impacts on this LWS to avoid the need for direct loss of habitat associated with this LWS. **Construction**: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to the LWS. Additionally, to minimise impacts to this LWS: • A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into the LWS. The fence design will include gaps to allow mammals, including small deer, Badger, Brown Hare and Hedgehog, to pass underneath at strategic locations to maintain ecological connectivity. The final locations of these mammal passes will be determined following pre-commencement surveys. • Any access that is required for construction of the Cable Corridor will utilise existing access points, such as those already used by agricultural machinery. Vegetation clearance in these areas will also be minimised as much as is practicable. • The laying of cabling will be undertaken using non-intrusive methods, with launch and exit pits outside of the LWS to protect habitats. The setting back of these works will mitigate for potential hazards such as chemical spills, thus avoiding potential direct impacts to the LWS. • Construction compounds will be setback from the LWS, with security fencing implemented at an early stage to ensure incursion into this LWS does not occur.

IEF	Embedded avoidance and mitigation measures
Designated sites – River Witham, Aubourn to Beckingham LWS	**Proposed Development design**: The Proposed Development has been designed to ensure that the River Witham is crossed using trenchless methods (e.g. Horizontal Directional Drilling (HDD)), which will include launch and exit pits outside of the LWS. **Construction**: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to the LWS. These standard environmental protection measures will also prevent the runoff of sediment and pollutants to running water, as detailed in **PEI Report Volume 1, Chapter 9: Water Environment**. Additionally, to minimise impacts to this LWS: • A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into the LWS. The fence design will include gaps to allow mammals, including small deer, Badger, Brown Hare and Hedgehog, to pass underneath at strategic locations to maintain ecological connectivity. The final locations of these mammal passes will be determined following pre-commencement surveys. • Any access that is required for construction of the Cable Corridor will utilise existing access points, such as those already used by agricultural machinery. Vegetation clearance in these areas will also be minimised as much as is practicable. • The laying of cabling will be undertaken using non-intrusive methods, with launch and exit pits outside of the LWS (and the Coastal and Floodplain Grazing Marsh, HaPI) to protect habitats. This will mitigate for potential hazards such as chemical and soil spills, thus avoiding potential direct impacts to the LWS. • Construction compounds will be setback from the LWS, with a minimum 10m from the bank-top of the watercourse and outside of HaPI (Coastal and Floodplain Grazing Marsh), with security fencing implemented at an early stage to ensure incursion into this LWS does not occur. • Any construction within the vicinity of this LWS may require temporary lighting, which has the potential to spill into adjacent watercourses. Artificial lighting of these habitats may disrupt species' movements. Therefore, any lighting that is required for the construction of the Proposed Development will be directed away from existing retained and sensitive habitats to minimise light disturbance to species associated with these habitats. Any requirements for task-specific lighting during construction will be designed to be downward directional and will only be used for the

IEF	Embedded avoidance and mitigation measures
	duration of the task. All temporary lighting will need to satisfy health and safety requirements, as well as minimising potential effects on the surrounding areas by minimising sky glow, glare, and light spillage
Designated sites – 26 non-statutorily designated sites outside of the Site	**Proposed Development design**: There are 26 non-statutorily designated sites that are outside of the Site (including Tunman Wood LWS (including Stocking Wood) and Tunman Wood North LWS, which are adjacent to the Site), and the Proposed Development has been designed to avoid impacts on these sites, e.g. now excluding Stocking Wood from the Site.
	Construction: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to any LWS. Additionally, a security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into any LWS. The fence design will include gaps to allow mammals, including small deer, Badger, Brown Hare and Hedgehog, to pass underneath at strategic locations to maintain ecological connectivity. The final locations of these mammal passes will be determined following pre-commencement surveys.
Habitat – broadleaved woodland (including Ancient Woodland and individual trees (including ancient / veteran trees))	**Proposed Development design**: The Site has been refined to exclude significant areas of broad-leaved woodland, such as Stocking Wood, which is now outside of the Site. The Proposed Development design includes undeveloped areas of at least 15m between woodlands, veteran trees and the Proposed Development, thereby avoiding any direct impact on this habitat type.
	Construction: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard embedded good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to this habitat. Additionally, to minimise impacts to this habitat:

IEF	Embedded avoidance and mitigation measures
	• Woodland and trees will be protected, in line with British Standard Recommendations (Ref 8-88) with undeveloped buffers of at least 15m from the boundary of woodlands and concordant with the requirements for each individual tree within tree lines, both within and outside the Site. These areas will be protected by clearly defined root protection areas to prevent damage/compaction of roots by plant and other machinery and prevent direct or indirect impacts to trees. • A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into retained habitats. The fence design will include gaps to allow mammals, including small deer, Badger, Brown Hare and Hedgehog, to pass underneath at strategic locations to maintain ecological connectivity. The final locations of these mammal passes will be determined following pre-commencement surveys.
Habitat – neutral grassland (semi-improved) within the Cable Corridor – Coastal and Floodplain Grazing Marsh	**Proposed Development design**: The Proposed Development has to unavoidably cross this habitat, which is located to the west of the River Witham, to facilitate the Cable Corridor (as presented in **Figure 8-3: Location of Ancient Woodland and Priority Habitats identified during the desk study**). Whilst construction methods for the Cable Corridor are not fully defined; the Proposed Development has been designed to avoid the need for direct loss of habitat through use of non-intrusive crossing methods to cross the River Witham and locating launch and exit pits outside of this habitat. **Construction**: The Framework CEMP (included as **PEI Report Volume 3, Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to this habitat. Additionally, to minimise impacts to this LWS: • A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into the LWS. The fence design will include gaps to allow mammals, such as Otter, to pass underneath at strategic locations to maintain ecological connectivity. The final locations of these mammal passes will be determined following pre-commencement surveys.

IEF	Embedded avoidance and mitigation measures
	• Any access that is required for construction of the Cable Corridor will utilise existing access points, such as those already used by agricultural machinery and will not intrude into this habitat. Vegetation clearance in these areas will also be minimised as much as is practicable. • The laying of cabling will be undertaken using non-intrusive methods, with launch and exit pits outside of the Coastal and Floodplain Grazing Marsh) to protect habitats. This setback will mitigate for potential hazards such as chemical and soil spills, thus avoiding potential direct impacts to habitats. • Construction compounds will be outside of Coastal and Floodplain Grazing Marsh, with security fencing implemented at an early stage to ensure incursion into this habitat does not occur. • Any construction within the vicinity of watercourses may require temporary lighting, which has the potential to spill into adjacent watercourses. Artificial lighting of these habitats may disrupt species' movements. Therefore, any lighting that is required for the construction of the Proposed Development will be directed away from existing retained and sensitive habitats to minimise light disturbance to species associated with these habitats. Any requirements for task-specific lighting during construction will be designed to be downward directional and will only be used for the duration of the task. All temporary lighting will need to satisfy health and safety requirements, as well as minimising potential effects on the surrounding areas by minimising sky glow, glare, and light spillage.
Habitat – swamp	**Proposed Development design**: The Proposed Development has been designed to ensure standing water habitats (and the Swamp habitat that is within it) are outside of the developable areas. The Proposed Development design includes undeveloped areas of at least 20m between standing water and the Proposed Development, thereby avoiding any direct impact on this habitat type. Therefore, this habitat will be retained, and measures taken to avoid direct or indirect impacts. **Construction**: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to swamp habitats. These standard environmental protection measures will also prevent the runoff of sediment and pollutants to standing water (and Swamp), as detailed in **PEI Report Volume 1, Chapter 9: Water Environment**. A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into retained habitats. The fence design will include gaps to allow mammals,

IEF	Embedded avoidance and mitigation measures
	including small deer, Badger, Brown Hare and Hedgehog, to pass underneath at strategic locations to maintain ecological connectivity. The final locations of these mammal passes will be determined following pre-commencement surveys.
Habitat – running water	**Proposed Development design**: The Proposed Development has been designed to ensure running water habitats are outside of the developable areas as much as is practicable, with main rivers such as the River Witham and River Brant avoided completely. The Proposed Development design includes undeveloped areas of at least 10m from the bank-top of any watercourse (extended to a minimum of 100m from the River Witham where the Interconnecting Cable Corridor is proposed) and the Proposed Development, to protect the riparian habitats associated with running water and thereby avoiding any direct or indirect impact on this habitat type. **Construction**: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to running water habitats. These standard environmental protection measures will also prevent the runoff of sediment and pollutants to running water, as detailed in **PEI Report Volume 1, Chapter 9: Water Environment**. Additionally, to minimise impacts to this habitat: • A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into the riparian habitats of running water (a minimum 10m from the bank-top of the watercourse). The fence design will include gaps to allow mammals, including small deer, Badger, Brown Hare and Otter, to pass underneath at strategic locations to maintain ecological connectivity. The final locations of these mammal passes will be determined following pre-commencement surveys. • Any access that is required for construction of the Cable Corridor, where it crosses running water habitats, will utilise existing access points, such as those already used by agricultural machinery. Vegetation clearance in these areas will also be minimised as much as is practicable. There will be no access over the River Witham or River Brant. • The laying of cabling will be undertaken using non-intrusive methods, with launch and exit pits outside of main rivers (River Witham and River Brant). This will mitigate for potential hazards such as chemical and soil spills, thus avoiding potential direct impacts to running water.

IEF	Embedded avoidance and mitigation measures
	• All cables will be installed at a minimum of 2m below the bed of watercourses, excluding the River Witham and River Brant where cables will be installed by trenchless methods (e.g. HDD) at a minimum of 5m below the bed to prevent disturbance to fish species using running water habitats. The combination of sealed cabling and buried depth of at least 5m below the bed of the River Witham and River Brant is adequate to mitigate any potential impact of Electromagnetic Fields (EMFs) on fish transiting along these rivers (see also fish, below). • Construction compounds will be setback from running water habitats, with a minimum 10m from the bank-top of the watercourse (as described above), with security fencing implemented at an early stage to ensure incursion into the riparian habitats of running water does not occur. • Any construction within the vicinity of watercourses may require temporary lighting, which has the potential to spill into adjacent watercourses. Artificial lighting of these habitats may disrupt species' movements. Therefore, any lighting that is required for the construction of the Proposed Development will be directed away from existing retained and sensitive habitats to minimise light disturbance to species associated with these habitats. Any requirements for task-specific lighting during construction will be designed to be downward directional and will only be used for the duration of the task. All temporary lighting will need to satisfy health and safety requirements, as well as minimising potential effects on the surrounding areas by minimising sky glow, glare, and light spillage.
Habitat – arable field margins	**Proposed Development design**: The Proposed Development has been designed to retain and avoid development within the majority of arable margins within the Site. The embedded buffers around existing vegetation features, such as hedgerows, ensure that any uncultivated margins currently present are retained.
	Construction: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to arable field margins. A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into retained habitats, as far as is practicable. The fence design will include gaps to allow mammals, including small deer, Badger, Brown Hare and Hedgehog, to pass underneath at strategic locations to maintain ecological connectivity. The final locations of these mammal passes will be determined following pre-commencement surveys.

IEF	Embedded avoidance and mitigation measures
Habitat – hedgerows	**Proposed Development design**: The Proposed Development has been designed to minimise hedgerow loss with the majority of hedgerows across the Site retained. The Proposed Development will seek to retain any hedgerows deemed 'important' under the Wildlife and Landscape criteria of the Hedgerows Regulations (Ref 8-12). **Construction**: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to hedgerows. Additionally, to minimise impacts to this habitat: • Hedgerows will be protected, in line with British Standard Recommendations (Ref 8-88) with undeveloped buffers of at least 5m from the boundary of hedgerows without trees and a wider buffer, concordant with the requirements for each individual tree, for any hedgerows with trees. These areas will prevent damage/compaction of roots by plant and other machinery and prevent direct or indirect impacts to hedgerows. • A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into retained habitats. The fence design will include gaps to allow mammals, including small deer, Badger, Brown Hare and Hedgehog, to pass underneath at strategic locations to maintain ecological connectivity. The final locations of these mammal passes will be determined following pre-commencement surveys.
Aquatic macroinvertebrates and macrophytes	**Proposed Development design**: The Proposed Development has been designed to ensure standing water habitats, supporting aquatic macroinvertebrates and macrophytes, are outside of the developable areas. The Proposed Development design includes undeveloped areas of at least 10m from the bank-top of any watercourse (and 20m from any standing water), to protect the riparian habitats that may support aquatic macroinvertebrates and macrophytes, thereby avoiding any direct or indirect impacts. **Construction**: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures,

IEF	Embedded avoidance and mitigation measures
	formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to habitats supporting aquatic macroinvertebrates and macrophytes. These standard environmental protection measures will also prevent the runoff of sediment and pollutants to standing water (and therefore removing impacts to aquatic macroinvertebrates and macrophytes), as detailed in **PEI Report Volume 1, Chapter 9: Water Environment**. A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into retained habitats.
Fish	**Proposed Development design**: The Proposed Development design retains and avoids development within the majority of habitats of value to fish, notably the River Witham, River Brant and their tributaries. Undeveloped areas of a minimum of 10m from the bank-top of watercourses are included within the design of the Proposed Development to protect riparian habitats and to mitigate for potential hazards such as chemical and soils spills into watercourses and avoid potential direct impacts to watercourses and any species using them, including fish.
	Construction: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard embedded good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to running water habitats supporting fish. These standard environmental protection measures will also prevent the runoff of sediment and pollutants to running water, as detailed in **PEI Report Volume 1, Chapter 9: Water Environment**. Additionally: • Where any culverts are proposed, these will be designed to allow continued connectivity and fish passage along the watercourse, with a natural bed and no drop inlet or outlet. For cable crossings, the avoidance of intrusive trenching techniques will minimise impacts on fish species and maintain connectivity of habitats for fish, e.g., Eels. However, fish rescue may be required during construction where de-watering or over-pumping is required. • During activities where there are direct impacts to watercourses or water bodies, for example through drain-down, culverting, or open-trenching, the following best practice methods will be followed:

IEF	Embedded avoidance and mitigation measures
	• avoidance of key fish migration timings wherever practicable e.g., avoiding key fish migration seasons (e.g., April to June for European Eel); • where practicable, construction will be undertaken during daylight hours to avoid the need for artificial light; • all cables will be installed at a minimum of 2m below the bed of watercourses, excluding the River Witham and River Brant where cables will be installed by trenchless methods (e.g. HDD) at a minimum of 5m below the bed to prevent disturbance to fish species. The combination of sealed cabling and buried depth of at least 5m below the bed of the River Witham and River Brant is adequate to mitigate any potential impact of EMFs on fish transiting along these rivers. These inherent design features (cable sealing) and embedded installation techniques (buried depth) are sufficient to reduce EMFs to levels that are unlikely to be perceivable to fish species; and • if required, fish rescue and / or translocation during drain-down of watercourses or water bodies, and during the installation of culverts or over-pumping for open trenching through watercourses / ditches.
Terrestrial invertebrates	**Proposed Development design**: The Proposed Development has been designed to retain and avoid direct and indirect impacts to habitats of greatest value to terrestrial invertebrates within the Site, including woodland, grassland margins, ditches, scrub and hedgerows.
	Construction: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to retained habitats of greater value to terrestrial invertebrates. A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into retained habitats.
Grass Snake and Common Toad	**Proposed Development design**: The Proposed Development has been designed to retain and avoid the majority of habitats of value to reptiles and amphibians, including woodland, grassland margins, ditches, scrub and hedgerows within the Site.
	Construction: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to

IEF	Embedded avoidance and mitigation measures
	mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to retained habitats supporting Grass Snake and Common Toad. A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into retained habitats. Additionally: • Pre-construction surveys will be undertaken to support the baseline survey findings, the purpose of which is to ensure mitigation during the construction phase is based on the latest protected species information and Proposed Development design. Should there have been any changes to the Proposed Development design which could impact upon Grass Snake and Common Toad, where found within the Site, then mitigation measures will be updated accordingly. • Vegetation clearance throughout the Site will be undertaken in advance of construction and at an appropriate time of year so as to avoid incidental injuring or killing of reptiles (and also Common Toad), concordant with the requirements for other species, such as nesting birds and Brown Hare. Vegetation supporting reptiles will be cut in a phased approach, firstly cutting to 30cm, then, following a period of no less than 24 hours, to 15cm and then to ground level, after another 24 hours. In areas where Grass Snake (and Common Toad) have been identified, any habitat features within such areas which may conceal sheltering Grass Snake (and Common Toad) such as log piles, rubble mound bunds will not be dismantled during their inactive season (November to February inclusive). There will be no need to undertake any relocation of reptiles within the Site. • Any excavations will be covered, or a means of escape (such as a ramp) will be implemented to prevent reptiles and amphibians becoming trapped. No excavations will remain open overnight.
Breeding birds	**Proposed Development design**: The Proposed Development has been designed to retain and avoid the majority of habitats of value to breeding birds, including woodland, grassland margins, ditches, scrub and hedgerows within the Site.
	Construction: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures,

IEF	Embedded avoidance and mitigation measures
	formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to retained habitats supporting breeding birds. A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into retained habitats. Additionally, the Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) specifies the requirements for pre-construction vegetation clearance to avoid the nesting bird period, where practicable i.e., March to August (inclusive). Should any vegetation clearance be required within the nesting bird period then this will be checked, prior to vegetation removal, for the presence of nesting birds, by a suitably qualified ornithologist. If active nests are found, then these will be avoided with appropriate buffer zones put in place and the area monitored until the young birds have fledged and/ or the nesting attempt has ceased. Pre-construction surveys will be undertaken to support the baseline survey findings and identify the locations of specially protected bird species, the purpose of which is to ensure mitigation during the construction phase is based on the latest information. Should there have been any changes to the Proposed Development design which could impact upon nesting Schedule 1 species, then mitigation measures will be updated accordingly.
Non-breeding birds	**Proposed Development design**: The Proposed Development has been designed to retain and avoid the majority of habitats of value to non-breeding birds, including woodland, grassland margins, ditches, scrub and hedgerows within the Site.
	Construction: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to retained habitats supporting non-breeding birds. A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into retained habitats.
	Proposed Development design: The design of the Proposed Development retains and avoids peripheral and boundary habitats, such as woodland, hedgerows, grassland margins, ditches that are used by commuting and foraging

IEF	Embedded avoidance and mitigation measures
Bats (foraging / commuting and roosting)	bats. Habitats such as mature trees and woodland within the Site, potentially supporting roosting bats, will also be avoided and suitably buffered (>15m) from the developable areas of the Proposed Development. At this stage, all woodland and trees identified within the Site are assumed to contain bat roosts and, where potential impacts have been identified to such features, will be scoped out as required following completion of surveys for bats. **Construction**: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to retained habitats, potentially supporting roosting or commuting / foraging bats. A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into retained habitats. Additional measures to minimise impacts to roosting and commuting / foraging bats will include: • Pre-construction surveys will be undertaken to support the baseline survey findings, the purpose of which is to ensure mitigation during the construction phase is based on the latest protected species information and Proposed Development design. Should there have been any changes to the design which could impact upon roosting bats, where found within the Site, then Natural England licences will be sought (if required) and mitigation measures updated accordingly. • Where lighting is required, it will be temporary in nature and will conform to best practice guidelines with respect to minimising light spill into retained habitats to prevent or reduce the impact on bats and will be minimised to that required for safe site operations and security and directed towards the middle of the Site rather than towards the boundaries. • Where any temporary work is required within 15m of any tree with the potential to support roosting bats, such as enabling works or clearance for construction, then a precautionary working method statement would be provided to avoid potential impacts. This would include the use of an Ecological Clerk of Works (ECoW).
Riparian mammals (Water Vole and Otter)	**Proposed Development design**: The Proposed Development has been designed to ensure running water habitats that support riparian mammals are outside of the developable areas of the Proposed Development. Undeveloped areas of a minimum of 10m from the bank-top of watercourses (extended to a minimum of 100m from the River Witham where the Interconnecting Cable Corridor is proposed) are also included within the design to protect riparian habitats, some of

IEF	Embedded avoidance and mitigation measures

which (such as the River Witham) support Water Vole and Otter. These buffers and undeveloped zones will mitigate for potential hazards such as chemical and soils spills into watercourses and avoid potential direct impacts to watercourses and any protected species using them.

Construction: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to aquatic habitats supporting riparian mammals. These standard environmental protection measures will also prevent the runoff of sediment and pollutants to running water, as detailed in **PEI Report Volume 1, Chapter 9: Water Environment**.

A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into retained habitats.

Additional measures to minimise impacts to riparian mammals will include:

- Pre-construction surveys will be undertaken to support the baseline survey findings (as presented in this chapter) where intrusive crossing methods of watercourses are proposed within the Site. The purpose of these pre-construction surveys is to ensure mitigation during the construction phase is based on the latest protected species information. Where there have been any changes to Otter or Water Vole distribution within the Site (or the status of the potential Otter holt), mitigation measures (such as non-intrusive crossing for cabling) will be updated accordingly and the relevant Natural England protected species licence application would be applied for if disturbance to breeding Otter was unavoidable.
- The crossing of the River Witham and River Brant will be undertaken using trenchless techniques (e.g. HDD) that would not disturb the watercourse, with the depth of the cable below the bed of these rivers to be a minimum of 5m, to avoid impacts to watercourses and bankside vegetation (riparian habitats) and also including launch and exit pits setback from the banktop of the watercourse to protect riparian habitats. Where the Interconnecting Cable Corridor is proposed to cross the River Witham, this setback will be extended to a minimum of 100m in recognition of the presence of a potential Otter holt.
- Measures to avoid animals being injured or killed within construction working areas, through excluding them from such areas (e.g., fencing) will prevent animals from falling into and becoming trapped in excavations. Furthermore,

IEF	Embedded avoidance and mitigation measures
	any excavations will be covered, or a means of escape (such as a ramp) will be implemented. No excavations will remain open overnight. • Construction in the Interconnecting Cable Corridor within 100m of the River Witham will only be undertaken during daylight hours and will avoid two hours after sunrise and two hours before sunset, reduced to one hour between November and February (inclusive) because of the limited daylight hours. This will prevent disturbance to any resting Otter in the River Witham.
Badger	**Proposed Development design**: The Proposed Development can be designed to avoid Badger setts within the Site. Any setts within the Principal Site will have an appropriate exclusion zone of 30m around the sett to prevent disturbance and accidental damage. The Cable Corridor is sufficiently wide that the final route for the cable laying can be micro-sited to avoid any Badger setts, including a 30m exclusion zone around setts.
	Construction: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to retained habitats, potentially supporting roosting or commuting / foraging bats. A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into retained habitats. Additional measures to minimise impacts to Badger will include: • Pre-construction surveys will be undertaken to support the baseline survey findings (as presented in this chapter). The purpose of these pre-construction surveys is to ensure mitigation during the construction phase is based on the latest protected species information. Should there have been any changes to Badger distribution within the Site, Natural England licences will be sought (if required) and mitigation measures will be updated accordingly. • Measures to avoid animals being injured or killed within construction working areas, through excluding them from such areas (e.g., fencing) will prevent animals from falling into and becoming trapped in excavations. Furthermore, any excavations will be covered, or a means of escape (such as a ramp) will be implemented. No excavations will remain open overnight.

IEF	Embedded avoidance and mitigation measures
Other mammals (Brown Hare, Hedgehog and Harvest Mouse)	**Proposed Development design**: The Proposed Development has been designed to ensure the majority of habitats that support protected or notable mammals are outside of the developable areas of the Proposed Development. This includes woodland, grassland margins, ditches, scrub and hedgerows within the Site and undeveloped buffers from these habitats. **Construction**: The Framework CEMP (included as **PEI Report Volume 3 Appendix 3-A: Framework CEMP**) outlines the standard good practice measures that will be implemented during construction of the Proposed Development to mitigate construction-related effects associated with dust deposition, air pollution, pollution incidents (including the safe storage of chemicals / other hazardous materials), water quality, lighting, noise and vibration. These measures, formalised in the CEMP, will be secured through a requirement attached to the DCO ensuring that the prescribed measures are effectively communicated and implemented and therefore ensuring that there are no impacts to retained habitats. A security perimeter fence will be implemented early in the construction phase to secure the Site and prevent construction activity from intruding into retained habitats. Additional measures to minimise impacts to other mammals will include: • Vegetation clearance will be undertaken in advance of construction and at an appropriate time of year to avoid incidental injuring or killing of animals, such as Brown Hare and concordant with the requirements for other species such as nesting birds and reptiles. • Any excavations will be covered, or a means of escape (such as a ramp) will be implemented. No excavations will remain open overnight.
Invasive non-native species (INNS)	**Proposed Development design**: The Proposed Development has been designed to ensure that INNS are not spread off-site, into the Site or within the Site. This will be mediated through the production of a Biosecurity Management Plan. **Construction**: Pre-construction surveys will be undertaken to provide an update on the presence and location of any INNS plant species, the findings of which will inform the implementation of measures to prevent their spread into the wild. These surveys will inform the production of a Biosecurity Management Plan which will set out procedures to ensure that no INNS plant species are brought onto the Site (e.g., Wildlife and Countryside Act 1981 (as amended) (Ref 8-1) Schedule 9 species) and will be formalised in the detailed CEMP, secured through the DCO. In the event that any future infestations of INNS are identified prior to and or during the development process, exclusion zones will be established around them, and an ECoW contacted for advice as required.

Operation and Maintenance

8.10.6 The general principles to be followed during operation and maintenance of the Proposed Development to minimise impacts are presented below. These will be formalised through the Framework OEMP which will be submitted with the DCO application.

8.10.7 During the operational phase, activity within the Proposed Development will be minimal and will be restricted principally to vegetation management, equipment maintenance and servicing, replacement of any components that fail, Solar PV Panel cleaning and monitoring. There will also be a requirement for the washing of the solar panels, although this is expected to be once every two years. This will use clean water with no added chemicals, sourced from local potable water suppliers (refer to **PEI Report Volume 1, Chapter 9: Water Environment** for further information.

8.10.8 During operation, it is anticipated that the number of access points will be reduced from construction, with removal of track materials and re-instatement of vegetation at locations no longer required during operation.

8.10.9 Along the Cable Corridor, operational activity will consist of routine inspections (schedule to be determined) and any reactive maintenance such as where a cable may have been damaged.

8.10.10 During operation and maintenance of the Proposed Development there is no requirement for artificial lighting in areas of solar PV other than during temporary periods of maintenance/repair. Where lighting is required during operation and maintenance, it will conform to good practice guidelines with respect to minimising light spill into adjacent habitats and prevent disturbance to bats and other species.

8.10.11 Outside of core working hours passive infrared sensor (PIR) controlled lights (motion sensors) will be used. Any compounds for the on-site substation will have inward facing PIR controlled security lighting installed at each corner of the compound. Field station units and the control buildings for the on-site substation will likely require some internal lighting (to be manually activated when needed), but light spillage would be minimal (through doorways when open).

8.10.12 The surface water drainage strategy will include measures to manage surface water runoff during operation and maintenance and will reduce the likelihood and severity of potential pollution incidents and flooding affecting watercourses and the local ditch network to reduce or eliminate adverse effects for aquatic and riparian species and habitats. A Framework Surface Water Drainage Strategy will be provided with the ES, with a detailed Surface Water Drainage Strategy being prepared by the contractor post-consent (as secured by DCO Requirement).

8.10.13 The creation and subsequent management of habitats will be determined by the characterisation of the existing baseline. However, management will seek to maximise floristic diversity, which will require low density and short

frequency, sheep grazing (conservation grazing) or an appropriate, sensitive mowing regime.

8.10.14 Any required management of vegetation within the Proposed Development will be undertaken in accordance with legislative requirements associated with breeding birds e.g. undertaken outside of the bird nesting season (typically March to August inclusive). The management of grassland habitats will be undertaken in a manner that increases biodiversity value, with sensitive management regimes taking into account flora and fauna sensitivities, e.g. nesting birds and the presence of reptiles and amphibians. It is likely that localised management of trees and hedgerows will be required, but again this will be consistent with legislative requirements and the provisions for maximising biodiversity value. This will be set out in the Framework LEMP.

8.10.15 A programme of monitoring will be established prior to operation and maintenance to ensure that biodiversity measures are implemented according to plan with necessary remediation.

Decommissioning

8.10.16 The general principles to be followed in the decommissioning of the Proposed Development will include measures to mitigate likely significant decommissioning related effects on biodiversity. These will be formalised through the Framework DEMP which will be submitted with the DCO application. Whilst the majority of mitigation measures will be similar to those during construction (as above), monitoring undertaken during the operation and maintenance phase and pre-decommissioning surveys will inform any mitigation and protected species licencing, as required at the time of decommissioning. A detailed DEMP will be prepared and agreed with the relevant authorities at the time of decommissioning, in advance of the commencement of decommissioning works.

8.11 Screening for Potential Impacts and Effects

8.11.1 An initial screening of the potential for impacts and effects to arise from the construction, operation and maintenance, and decommissioning phases of the Proposed Development (as described in **PEI Report Volume 1, Chapter 3: The Proposed Development**) on the IEFs identified in **Table 8-9** is provided in **Table 8-11** and **Table 8-12**, to focus the potential impact pathways likely to require further detailed assessment.

8.11.2 This initial screening is based on the characterisation of the baseline conditions known to date, in the absence of any mitigation over and above that which is currently embedded in the design. As such the ‘worst case assessment’ presented is reflective of the current baseline information held and associated professional judgement applied to the assessment of effects.

8.11.3 The further surveys identified in **Table 8-1** may identify additional IEFs to those presented in **Table 8-9**. In addition, once the baseline conditions are fully defined and with consideration of the embedded avoidance and mitigation measures set out in section 8.10, it is likely that there will be a

number of additional beneficial effects on IEFs to that presented in this PEI Report, including benefits from a change in land management away from intensive agriculture (including the use of pesticides and fertilisers) to permanent low input grasslands and sympathetically managed boundary features e.g. hedgerows.

8.11.4 Accordingly, where the current characterisation of the baseline and assessment have identified that potential or reasonable likely presence of an IEF, but this is either not confirmed or the extent of any presence fully established yet, **Table 8-11** and **Table 8-12** set out how the Proposed Development has either already embedded mitigation to avoid a potential effect occurring or identifies whether further additional mitigation may be required (subject to outcomes of detailed surveys confirming there is in fact an IEF which may be affected).

Sites Statutorily and Non-Statutorily Designated for their Biodiversity Value

8.11.5 The statutorily and non-statutorily designated sites that have been assessed, based on the baseline data identified during the desk study, are presented in **Table 8-11**. Where there is the potential for effects to occur on designated sites, then this is stated and the relevant features assessed throughout section 8.11 of this PEI Report to determine the significance of that effect.

Table 8-11: Determination of potential impacts and effects on IEFs – Designated Sites

IEF	Importance (see Section 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
Whisby Nature Park LNR (located 340m north of the Principal Site)	High	**Construction**: This LNR (primary designation being wetland, grassland and woodland habitats) is 0.3km to the north of the Principal Site and there are no ecological connections (there are roads and settlements between the Proposed Development and the LNR) or hydrological (there are no connecting watercourses, as reviewed from OS mapping) links between this LNR and the Site (see also **PEI Report, Volume 1, Chapter 9: Water Environment**). As the LNR is 340m outside of the Site, there will be no direct impacts on habitat within the LNR; no fragmentation of habitats, or of populations of species using habitats and no species mortality of any species associated with Whisby Nature Park LNR. Embedded mitigation measures (see Table 8-10), formalised in the Framework CEMP, will ensure no impact on the integrity or the functioning of Whisby Nature Park LNR (through use of standard environmental protection measures. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon the integrity or functioning of Whisby Nature Park LNR.	No
		Operation and Maintenance: During operation and maintenance of the Proposed Development, there are no pathways (e.g. habitat loss or disturbance to designated site features (such as through noise, water quality, air quality, lighting or visual) which could affect this LNR. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon the integrity or functioning of Whisby Park LNR during operation and maintenance of the Proposed Development.	No
		Decommissioning: As with construction, there will be no disturbance or direct impact to this LNR, fragmentation of habitats, habitat degradation or	No

IEF	Importance (see Section 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		species mortality arising from decommissioning activities and any impacts at the time of decommissioning would be mitigated fully in line with relevant legislative and policy requirements. Measures to remove or reduce impacts during decommissioning will be included within the Framework DEMP, secured as part of the DCO Requirements.	
Swanholme Lakes LNR / SSSI (located 4km north east of the Principal Site)	High	**Construction**: This LNR / SSSI (primary designation being wetland habitats) is 4km to the north east of the Principal Site and there are no ecological connections (there are roads and settlements between the Proposed Development and the LNR / SSSI) or hydrological (there are no connecting watercourses) links between this LNR / SSSI and the Site. As this designated site is 4km outside of the Site, there will be no direct impacts on habitat within the LNR / SSSI; no fragmentation of habitats, or of populations of species using habitats and no species mortality of any species associated with Swanholme Lakes LNR / SSSI. Embedded mitigation measures (see Table 8-10), formalised in the Framework CEMP, will ensure no impact on the integrity or the functioning of Swanholme Lakes LNR / SSSI (through use of standard environmental protection measures. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon the integrity or functioning of Swanholme Lakes LNR / SSSI.	No
		Operation and Maintenance: Given the distance and lack of pathways between the LNR / SSSI and the Site it is not considered that there are any impacts arising during operation and maintenance of the Proposed Development that could affect Swanholme Lakes LNR / SSSI.	No
		Decommissioning: As with construction, there are no impact pathways, either directly or indirectly, that would impact upon the integrity or functioning	No

IEF	Importance (see Section 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		of Swanholme Lakes LNR / SSSI during decommissioning activities of the Proposed Development.	
Navenby Heath Road Verges LWS	Medium	**Construction**: Navenby Heath Road Verges LWS is within the footprint of the Cable Corridor. During construction, access will be required across the LWS to access the Cable Corridor. Whilst details of construction access is yet to be refined, where practicable, this will use any existing farm access, avoiding the need for further encroachment into the LWS. However, while the road at Navenby Heath Road Verges LWS is within the access route for vehicles associated with the Cable Corridor installation and where practicable existing farms accesses have been used to avoid the requirement for incursion into the LWS, the need for temporary passing places for construction traffic will be updated for the ES to determine whether facilitating movement of construction vehicles would likely lead to the removal of any grassland associated with the LWS to provide a temporary construction passing place. Laying of cabling will directly impact on habitat within this LWS, along a working area of approximately 30m. Such an incursion would fragment habitats within the LWS. The exact route and construction methods to be used are yet to be defined but measures to remove or reduce impacts on the LWS will be included within the Framework CEMP submitted as part of the DCO application. Embedded mitigation measures, as presented in section 8.10, will ensure there is no impact on the integrity or the functioning of the LWS (through dust generation, noise or visual disturbance); that no construction related pollution would affect this LWS and consequently that there will be no species mortality of any species using these LWS. These standard environmental protection measures will be adopted during construction and formalised in the Framework CEMP, secured as part of the DCO Requirements.	Yes – subject to refinement of Cable Corridor construction methods

IEF	Importance (see Section 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		Operation and Maintenance: During operation and maintenance of the Proposed Development, there are no pathways (e.g. habitat loss or disturbance to designated site features (such as through noise, water quality, air quality, lighting or visual) which could affect this LWS within the Site. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon the integrity or functioning of this LWS during operation and maintenance of the Proposed Development.	No
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and any impacts at the time of decommissioning would be mitigated fully in line with relevant legislative and policy requirements. The mode of decommissioning for cables within the Cable Corridor would be dependent upon government policy and good practice at that time (as presented in **PEI Report Volume 1, Chapter 3: The Proposed Development**). Whilst it is preferred to leave cabling *in situ*, as this avoids disturbance to overlying land and habitats, cabling can be removed by opening up the ground at regular intervals and pulling through to an extraction point, avoiding the need to open up the entire length of the Cable Corridor. Therefore, dependent on the decommissioning methods used within the Cable Corridor, it should be possible to avoid siting extraction points within LWS's which will avoid any impact pathways to these sites. Measures to remove impacts to LWS's during decommissioning will be included within the Framework DEMP, submitted with the ES as part of the DCO application and will include siting extraction points away from LWS's (if cabling is to be removed) and pollution control.	No
Navenby, Green Man Road Verges LWS	Medium	**Construction**: Navenby, Green Man Road Verges LWS is within the footprint of the Cable Corridor. During construction, access will be required across the LWS to access the Cable Corridor. Whilst details of construction access is yet to be refined,	Yes - subject to refinement of Cable Corridor construction methods

IEF	Importance (see Section 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		where practicable, this will use any existing farm access, avoiding the need for further encroachment into the LWS. However, while the road at Navenby, Green Man Road Verges LWS is within the access route for vehicles associated with the Cable Corridor installation and where practicable existing farms accesses have been used to avoid the requirement for incursion into the LWS, the need for temporary passing places for construction traffic will be updated for the ES to determine whether facilitating movement of construction vehicles would likely lead to the removal of any grassland associated with the LWS to provide a temporary construction passing place. Laying of cabling will directly impact on habitat within this LWS, along a working area of approximately 30m. Such an incursion would fragment habitats within the LWS. The exact route and construction methods to be used are yet to be defined but measures to remove or reduce impacts on the LWS will be included within the Framework CEMP submitted as part of the DCO application. Embedded mitigation measures, as presented in section 8.10, will ensure there is no impact on the integrity or the functioning of the LWS (through dust generation, noise or visual disturbance); that no construction related pollution would affect this LWS and consequently that there will be no species mortality of any species using these LWS. These standard environmental protection measures will be adopted during construction and formalised in the CEMP, secured as part of the DCO Requirements.	
		Operation and Maintenance: During operation and maintenance of the Proposed Development, there are no pathways (e.g. habitat loss or disturbance to designated site features (such as through noise, water quality, air quality, lighting or visual) which could affect this LWS within the Site. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon the integrity or functioning of this LWS during operation and maintenance of the Proposed Development.	No

IEF	Importance (see Section 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and any impacts at the time of decommissioning would be mitigated fully in line with relevant legislative and policy requirements. The mode of decommissioning for cables within the Cable Corridor would be dependent upon government policy and good practice at that time (as presented in **PEI Report Volume 1, Chapter 3: The Proposed Development**). Whilst it is preferred to leave cabling *in situ*, as this avoids disturbance to overlying land and habitats, cabling can be removed by opening up the ground at regular intervals and pulling through to an extraction point, avoiding the need to open up the entire length of the Cable Corridor. Therefore, dependent on the decommissioning methods used within the Cable Corridor, it should be possible to avoid siting extraction points within LWS's which will avoid any impact pathways to these sites. Measures to remove impacts to LWS's during decommissioning will be included within the Framework DEMP, submitted as part of the DCO application and will include siting extraction points away from LWS's (if cabling is to be removed) and pollution control.	No
River Witham, Aubourn to Beckingham LWS		**Construction**: The River Witham, Aubourn to Beckingham LWS is within the Principal Site (see **PEI Report Volume 2, Figure 8-2: Sites non-statutorily designated for their biodiversity value**), but the design of the Proposed Development ensures that this LWS is avoided and outside of the developable areas of the Proposed Development with appropriate setbacks of >10m, as presented in **PEI Report Volume 2, Figure 3-2-A: Indicative Site Layout**. Cable crossings within the Cable Corridor will be installed by non-intrusive techniques (HDD) with no access proposed over the River Witham and appropriate setbacks of 10m from the bank-top of the river to protect riparian habitats. HDD at insufficient depths can generate the potential effect of sediment mobilisation and disturbance of the bed of any watercourse,	No

IEF	Importance (see Section 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		however, cables will be buried at a minimum depth of 5m below the bed of the River Witham through HDD and this embedded mitigation removes this potential impact. Embedded mitigation measures, as presented in section 8.10, will ensure there is no impact on the integrity or the functioning of LWS (through dust generation, noise or visual disturbance); that no construction related pollution would affect this LWS and consequently that there will be no species mortality of any species using this LWS. These standard environmental protection measures will be adopted during construction and formalised in the CEMP, secured as part of the DCO Requirements. Therefore, through the design and embedded mitigation measures, there are no impact pathways, either directly or indirectly, that would impact upon the integrity or functioning of this LWS.	
		Operation and maintenance: During operation and maintenance of the Proposed Development, there are no pathways (e.g. habitat loss or disturbance to designated site features (such as through noise, water quality, air quality, lighting or visual) which could affect this LWS. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon the integrity or functioning of River Witham, Aubourn to Beckingham LWS during operation and maintenance of the Proposed Development. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **PEI Report, Volume 1 Chapter 9: Water Environment** will ensure no hydrological impacts occur and that there are consequently no impacts upon this LWS during operation of the Proposed Development.	No
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and any impacts at the time of decommissioning would be mitigated fully in line with relevant legislative and policy	No

IEF	Importance (see Section 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		requirements. The mode of decommissioning for cables within the Cable Corridor would be dependent upon government policy and good practice at that time (as presented in **PEI Report Volume 1, Chapter 3: The Proposed Development**). Whilst it is preferred to leave cabling *in situ*, as this avoids disturbance to overlying land and habitats, cabling can be removed by opening up the ground at regular intervals and pulling through to an extraction point, avoiding the need to open up the entire length of the Cable Corridor. Therefore, dependent on the decommissioning methods used within the Cable Corridor, it should be possible to avoid siting extraction points within LWS's which will avoid any impact pathways to these sites. Measures to remove impacts to LWS's during decommissioning will be included within the Framework DEMP, submitted as part of the DCO application and will include siting extraction points away from LWS's (if cabling is to be removed) and pollution control.	
Three non-statutorily designated sites within 100m of the Site	Medium	**Construction**: Three LWS (Tunman Wood LWS, Tunman Wood North LWS and Gorse Lane LWS) are outside of the Site but within 100m of the Site. All are designated for their habitat and there are ecological or hydrological connections between these LWS's and the Site. There will be no loss of habitat within these LWS's, nor fragmentation of habitats, or of populations of species using habitats within any of these non-statutorily designated sites during construction. Boundary vegetation, such as hedgerows and ditches, potentially linking LWS's to the Site, will be retained. Embedded mitigation measures, as presented in section 8.10 will ensure there is no impact on the integrity or the functioning of LWS that no construction related pollution would affect these LWS (e.g. through management of surface water and sediment runoff) and consequently that there will be no species mortality of any species using these LWS. These standard environmental protection measures will be adopted during	No

IEF	Importance (see Section 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		construction and formalised in the CEMP, secured as part of the DCO Requirements. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon the integrity or functioning of these non-statutory designated sites.	
		Operation and Maintenance: During operation and maintenance of the Proposed Development, there are no pathways (e.g. habitat loss or disturbance to designated site features (such as through noise, water quality, air quality, lighting or visual) which could affect LWS within 100m of the Site. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon these non-statutorily designated sites during operation and maintenance of the Proposed Development.	No
		Decommissioning: Any impacts at the time of decommissioning would be mitigated fully in line with relevant legislative and policy requirements, although there is unlikely to be any disturbance to LWS, habitat degradation or species mortality. Measures to remove or reduce impacts during decommissioning will be included within the DEMP, secured as part of the DCO Requirements.	No
20 non-statutorily designated sites >300m from the Site	Medium	**Construction**: These LWS are all outside of the Site and >300m from the Site, with the closest LWS being High Dike, Coleby Mill to Harmston Verges LWS which is approximately 310m from the Cable Corridor. All are designated for their habitat. The construction of the Proposed Development will not directly impact on habitat within these non-statutory designated sites as they are outside of the Site and consequently, there will be no fragmentation of habitats, or of populations of species using habitats within any of these non-statutorily designated sites during construction. Boundary vegetation, such as	No

IEF	Importance (see Section 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		hedgerows and ditches, potentially linking these LWS to the Site, will be retained. Embedded mitigation measures, as presented in section 8.10, will ensure there is no impact on the integrity or the functioning of LWS; that no construction related pollution would affect these LWS (e.g. through management of surface water and sediment runoff) and consequently that there will be no species mortality of any species using these LWS. These standard environmental protection measures will be adopted during construction and formalised in the CEMP secured as part of the DCO Requirements. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon the integrity or functioning of these non-statutory designated sites.	
		Operation and Maintenance: During operation and maintenance of the Proposed Development, there are no pathways (e.g. habitat loss or disturbance to designated site features (such as through noise, water quality, air quality, lighting or visual) which could affect LWS outside of the Site. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon the integrity or functioning of these non-statutorily designated sites during operation and maintenance of the Proposed Development.	No
		Decommissioning: Given the distance of these LWS from the Site and the lack of pathways, as with construction, there will be no disturbance or direct impact to these LWS, fragmentation of habitats, habitat degradation or species mortality from decommissioning activities and any impacts at the time of decommissioning would be mitigated fully in line with relevant legislative and policy requirements. Measures to ensure impacts do not occur during	No

IEF	Importance (see Section 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		decommissioning will be included within the DEMP, secured as part of the DCO Requirements.	

Habitats and Species

8.11.6 The relevant ecological features (IEFs) that have been identified to date (based on the desk study and field surveys) and therefore considered in this PEI Report, are presented in **Table 8-12**. Where there is the potential for an effect to occur on known IEFs, then this is stated and the relevant features assessed throughout Section 8.11 of this PEI Report to determine the significance of that effect.

8.11.7 Where the current characterisation of the baseline and assessment have identified that potential or reasonable likely presence of IEFs, but this is either not confirmed or the extent of any presence fully established yet, **Table 8-12** sets out how the Proposed Development has either embedded mitigation to avoid an effect occurring or whether further additional mitigation may be required, subject to outcomes of detailed surveys, to avoid and reduce an effect.

Table 8-12: Determination of potential impacts and effects on IEFs – Habitats and Species

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
Habitat – broadleaved woodland (including Ancient Woodland and individual trees (including ancient / veteran trees))	Medium	**Construction**: Broad-leaved woodland habitat was recorded within the Site and will be retained and protected. There is no Ancient Woodland within the Site Boundary. The desk study recorded veteran and ancient trees outside the Site, and these will be avoided. Any veteran or ancient trees that are identified within the Site during ongoing ecological surveys in 2024 will also be retained and avoided. There will be no direct impacts on woodland habitat and veteran / ancient trees; no fragmentation of habitats, or of populations of species using habitats and no species mortality of any species associated with woodland habitats. Embedded mitigation measures (see section 8.10) which will be formalised in the Framework CEMP (secured as part of the DCO Requirements) and include the protection of retained habitats and pollution prevention will ensure no impact on the integrity or the functioning of woodland habitats and veteran / ancient trees through use of standard environmental protection measures. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon the integrity or functioning of woodland habitats and veteran / ancient trees.	No
		Operation and Maintenance: During operation and maintenance of the Proposed Development, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, water quality or lighting)), that could affect retained woodland habitats and maintenance is not expected to be required for retained woodland. Therefore, there are no impact pathways, either directly or indirectly, that would impact	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		upon woodland habitats and veteran / ancient trees during operation and maintenance of the Proposed Development.	
		Decommissioning: There will be no disturbance or direct impact to broad-leaved woodland and veteran / ancient trees, no fragmentation of habitats, no habitat degradation or species mortality and any impacts at the time of decommissioning would be mitigated fully in line with relevant legislative and policy requirements at the time of decommissioning. Measures to remove or reduce impacts during decommissioning and included in the Framework DEMP submitted with the DCO application will include retention and avoidance of habitats and pollution (e.g. spillages, noise, light) control.	No
Habitat – neutral grassland (semi-improved) within the Cable Corridor – Coastal and Floodplain Grazing Marsh	Medium	**Construction**: This habitat was identified within the Cable Corridor, adjacent to the River Witham. There will be no direct impact on this habitat; no fragmentation of habitats, or of populations of species using habitats and no species mortality of any species associated with coastal and floodplain grazing marsh. Embedded mitigation measures (see section 8.10) which will be formalised in the Framework CEMP (secured as part of the DCO Requirements) and include ensuring appropriate buffers from construction adjacent to this habitat and pollution control, will ensure no impact on the integrity or the functioning of this habitat through use of standard environmental protection measures. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon the integrity or functioning of coastal and floodplain grazing marsh.	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		Operation and Maintenance: During operation and maintenance of the Proposed Development, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, water quality or lighting)), that could affect retained habitats. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon his habitat during operation and maintenance of the Proposed Development.	No
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning. Initial measures will be included within the Framework DEMP, secured as part of the DCO Requirements. These measures will include retention and avoidance of habitats and pollution (e.g. spillages, noise, light) control.	No
Habitat – swamp	Medium	**Construction**: This habitat is found predominantly around water bodies and will be retained and is outside of the developable areas of the Proposed Development, as presented in **PEI Report Volume 2, Figure 3-2-A: Indicative Site Layout**. Embedded mitigation measures (see section 8.10) which will be formalised in the Framework CEMP (secured as part of the DCO requirements) and include avoidance of this priority habitat, protection of retained habitats and pollution prevention to ensure the integrity of retained swamp habitats are not adversely affected.	No
		Operation and Maintenance: During operation and maintenance of the Proposed Development, there are no	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		pathways (e.g. habitat loss or disturbance to habitats (such as through noise, water quality or lighting)), that could affect retained habitats, and maintenance is not expected to be required for swamp habitats. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon swamp habitats during operation and maintenance of the Proposed Development.	
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning. Initial measures will be included within the Framework DEMP, secured as part of the DCO requirements. These measures will include retention and avoidance of habitats and pollution (e.g. spillages, noise, light) control.	No
Habitat – running water	Medium	**Construction**: This habitat is found throughout the Site. Several ordinary watercourses and ditches will be crossed by access roads or cable crossings, requiring open-cut crossings, or culvert improvements. Main Rivers (the River Witham and River Brant) will be avoided, with cable crossings installed by non-intrusive techniques (HDD), no access proposed over these main rivers and appropriate setbacks (see Table 8-10) from the bank-top of the river to protect riparian habitats. HDD at insufficient depths can generate the potential effect of sediment mobilisation and disturbance of the bed of any watercourse, however, cables will be buried at a minimum depth of 2m below the bed of watercourses (increased to 5m below main rivers) through HDD and this embedded mitigation removes this potential impact.	Yes – subject to refinement of design for crossing methods and cabling installation across ordinary watercourses

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		Within the Principal Site, there are several watercourse / ditch crossings, which are required for access, although these may be updated during detailed design. The majority of these are existing crossing points that may require improvement, although any such improvements will ensure that running water habitats are not impacted through the implementation of mitigation measures outlined in the Framework CEMP (e.g. water quality monitoring and buffer zones). Indicative new crossing points will be included within the design to facilitate construction and similarly will be installed to allow continued connectivity along watercourses to maintain connectivity for any species using them (e.g. fish). Localised SuDS, such as swales and infiltration trenches, will be used to control runoff to remove any indirect impacts to running water habitats. A full list of crossing methods will be provided in the Framework CEMP and an explanation of these techniques is provided in **PEI Report Volume 1, Chapter 9: Water Environment**. Embedded mitigation measures (see Section 8.10) which will be formalised in the Framework CEMP (secured as part of the DCO requirements) and include avoidance of this priority habitat, protection of retained habitats and pollution prevention to ensure the integrity of retained habitats are not adversely affected.	
		Operation and Maintenance: There are no impact pathways (e.g., habitat loss or degradation), during operation of the Proposed Development which could affect running water. The change in land use from agricultural use to solar will see benefits in the water table, which has previously been artificially lowered for the purpose of irrigation of arable fields.	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning. Initial measures will be included within the Framework DEMP, secured as part of the DCO requirements. Whilst it is preferred to leave the cabling within the Cable Corridor *in situ*, as this avoids disturbance to overlying land and habitats, the cabling can be removed by opening up the ground at regular intervals and pulling through to an extraction point, avoiding the need to open up the entire length of the Cable Corridor. Therefore, dependent on the decommissioning methods used within the Cable Corridor, it should be possible to avoid disturbance to running water, which will avoid any impact pathways. Measures to remove impacts to running water will include retention and avoidance of habitats and pollution (e.g. spillages, noise, light) control.	No
Habitat – arable field margins	Medium	**Construction**: Detailed surveys are ongoing to determine the value of arable margins, and these surveys will be used to inform specific mitigation requirements and inform the design evolution of the Proposed Development. However, it should be possible to retain and protect the majority of arable margins, particularly any that support protected or notable flora as the setbacks (see section 8.10) from watercourses and boundary habitats (such as 5m from hedgerows) will likely overlap with and include the majority of arable margins. Security fencing will be installed at an early stage to protect retained habitats from incursion during construction.	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		Embedded mitigation measures (see section 8.10) will be formalised in the Framework CEMP (secured as part of the DCO requirements) and include avoidance (where practicable) of protected and notable flora, protection of retained habitats and pollution prevention to ensure the integrity of retained habitats are not adversely affected.	
		Operation and Maintenance: During operation of the Proposed Development, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, lighting or visual)), that could affect arable field margins. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **PEI Report Volume 1, Chapter 9: Water Environment**) will ensure no hydrological impacts occur and that there are consequently no impacts upon arable field margins during operation of the Proposed Development.	No
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning. Decommissioning access are likely to utilise operational accesses and existing access routes across the Site, avoiding loss of this habitat as much as is practicable. Initial measures will be included within the Framework DEMP, secured as part of the DCO requirements. These measures will include retention and avoidance of habitats and pollution (e.g. spillages, noise, light) control.	No
Habitat - hedgerows	Medium	**Construction**: Detailed surveys are ongoing to determine the importance of hedgerows, and these surveys will be used to	Yes

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		inform specific mitigation requirements and inform the design of the Proposed Development. Whilst the embedded mitigation includes the retention and avoidance of the majority of hedgerows, there will be the loss of sections of hedgerow during construction, to facilitate the Cable Corridor, new fence lines and access routes. These habitats will be restored, post-construction, but there is likely to be a temporary (short-term) adverse effect on this habitat type. Embedded mitigation measures (see section 8.10) will be formalised in the Framework CEMP (secured as part of the DCO requirements) and include avoidance (where practicable) of hedgerows, protection of retained habitats and pollution prevention to ensure the integrity of retained habitats is not adversely affected.	
		Operation and Maintenance: During operation of the Proposed Development, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, lighting or visual)), that could affect hedgerows. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **PEI Report Volume 1, Chapter 9: Water Environment**) will ensure no hydrological impacts occur and that there are consequently no impacts upon hedgerows during operation of the Proposed Development.	No
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning. Decommissioning	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		access are likely to utilise operational accesses and existing access routes across the Site, avoiding loss of this habitat as much as is practicable. Initial measures will be included within the Framework DEMP, secured as part of the DCO requirements. These measures will include retention and avoidance of habitats and pollution (e.g. spillages, noise, light) control.	
Aquatic macroinvertebrates and macrophytes	Low	**Construction**: The construction of the Proposed Development will be offset (>10m) from any watercourses and 20m from standing water as detailed in the embedded design mitigation (see section 8.10). These offsets will prevent disturbance to aquatic and riparian habitats. Where ordinary watercourses and ditches are crossed, crossing points will be designed to allow continued connectivity along the watercourse, with a natural bed and no drop inlet or outlet. Where watercourses are open-cut for cable crossings, impacts will be temporary and habitats will reinstate within two years, with aquatic species re-colonising naturally from adjacent habitats. The construction of the Cable Corridor and any internal access across the Site, where this crosses watercourses, will utilise non-intrusive methods to avoid physical disturbance to the watercourse, therefore avoiding disturbance to species, habitat loss, and direct mortality for aquatic species. Embedded mitigation measures (see section 8.10) will be formalised in the Framework CEMP (secured as part of the DCO requirements) and include avoidance (where practicable) of watercourses, protection of retained habitats and pollution prevention to ensure the integrity of retained habitats is not adversely affected.	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		There will be minimal mortality of any species associated with running or standing water during construction of the Proposed Development, with appropriate mitigation to relocate aquatic species away from the works areas during construction. Where aquatic macroinvertebrates and macrophytes are lost during construction, these will rapidly re-colonise from adjacent habitats.	
		Operation and Maintenance: Artificial horizontally polarising surfaces (such as solar panels), the reflection-polarisation characteristics of which are similar to those of water, have the potential to attract water-leaving polarotactic insects posing a potential threat to these species. Aquatic macroinvertebrates in their terrestrial or airborne phase may be attracted to these surfaces, which may then disrupt their life cycle. Some aquatic insects are attracted to solar panels although this is an unusual event dependent on the coincidence of several suitable conditions to trigger such behaviour e.g. wind direction and cloud cover. The likelihood of aquatic insects being attracted to large open areas of shiny surfaces is considered low given that such species will preferentially use smaller shiny surfaces. Most of the aquatic insect species identified during the desk study are of low conservation value, and do not use open water areas for any of their behaviours (i.e. few *Odonata* (dragonflies) were recorded for example). The impact of solar panels on aquatic insects would therefore be negligible. It is not considered that there are any other impact pathways (e.g. habitat loss or degradation), during operation and maintenance of the Proposed Development which could affect aquatic macrophytes or macroinvertebrates.	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		Therefore, there are considered to be no impact pathways that would impact either directly or indirectly upon aquatic macrophytes or macroinvertebrates.	
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning. Initial measures will be included within the Framework DEMP, secured as part of the DCO requirements. These measures will include retention and avoidance of habitats and pollution (e.g. spillages, noise, light) control.	No
Fish	Medium	**Construction**: The construction of the Proposed Development will avoid watercourses that support fish, where practicable, and these will be retained and suitably buffered (see section 8.10). The construction of the Proposed Development will be offset (>10m) from any peripheral watercourses, as detailed in the embedded design mitigation (see section 8.10) and these offsets will prevent disturbance to aquatic habitats supporting fish. Main Rivers (the River Witham and River Brant) will be avoided, with cable crossings installed by non-intrusive techniques (HDD), no access proposed over these main rivers and appropriate setbacks of 10m from the bank-top of the river to protect riparian habitats. Where ordinary watercourses and ditches are crossed, crossing points will be designed to allow continued connectivity and fish passage along the watercourse, with a natural bed and no drop inlet or outlet. Where watercourses are open-cut for cable crossings, impacts will be temporary and habitats will reinstate within two years, with aquatic species re-colonising	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		naturally from adjacent habitats; however, fish rescue may be required during construction where de-watering or over-pumping is required. The construction of the Cable Corridor and any internal access across the Site, where this crosses watercourses, will utilise non-intrusive methods to avoid physical disturbance to the watercourse, therefore avoiding disturbance to species, habitat loss and direct mortality for aquatic species. Embedded mitigation measures (see section 8.10) will be formalised in the Framework CEMP (secured as part of the DCO requirements) and include avoidance (where practicable) of watercourses, protection of retained habitats and pollution prevention to ensure the integrity of retained habitats is not adversely affected. With the implementation of embedded and essential mitigation measures, there will be no species mortality during construction of the Proposed Development. Impacts on main rivers (the Rivers Witham and Brant) through HDD and construction activities (i.e., sediment mobilisation, noise, and vibration) will be avoided through measures formalised through the Framework CEMP, secured through the DCO, including HDD a minimum of 5m below the bed of the watercourse , avoiding key fish migration seasons (e.g. March to June for European Eel), ensuring a buffer of at least 10m from the bank-top of any watercourse and directing lighting away from the watercourse. For the Rivers Witham and river Brant, HDD works should avoid the core migration season of September to February, and May, unless the depth of the HDD is confirmed to be of a sufficient	

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		distance of approximately 10-15m below the riverbed to avoid noise and vibration effects. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon fish species.	
		Operation and Maintenance: There will be no habitat loss or degradation, during operation and maintenance of the Proposed Development that could affect fish. There are potential effects on fish and other aquatic fauna due to electromagnetic fields (EMF) from cables buried beneath watercourses. Such artificial EMF can disrupt migratory cues and predatory behaviour. It is considered, based on literature review and consideration of the strength of EMF from buried cables for the Proposed Development, that 5m depth beneath the riverbed of the River Witham and River Brant is sufficient depth to avoid impacts. EMF levels at this distance would be almost imperceptible (around 3 microteslas, or lower if the cables are installed in bedrock), with any fish also being directly above the buried cables for only a very short duration. The effects of EMF from cables buried beneath watercourses for the Proposed Development will be negligible in the wider context of the watercourses and are therefore not significant.	No
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning. Initial measures will be included within the Framework DEMP, secured as part of the DCO requirements. Whilst it is preferred to leave the cabling within the Cable Corridor *in situ*, as this avoids disturbance to	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		overlying land and habitats, the cabling can be removed by opening up the ground at regular intervals and pulling through to an extraction point, avoiding the need to open up the entire length of the Cable Corridor. Therefore, dependent on the decommissioning methods used within the Cable Corridor, it should be possible to avoid disturbance to watercourses, which will avoid any impact pathways to fish. Measures to remove impacts to running water will include retention and avoidance of habitats and pollution (e.g. spillages, noise, light) control.	
Terrestrial invertebrates	Low	**Construction**: The construction of the Proposed Development will retain the majority of habitats of greater importance to terrestrial invertebrates, such as woodland, swamp, hedgerows and arable margins and will be offset from such habitats as detailed in the embedded design mitigation (see section 8.10). Embedded mitigation measures (see section 8.10) will be formalised in the Framework CEMP (secured as part of the DCO requirements) and include (where practicable) protection of retained habitats and pollution prevention to ensure the integrity of retained habitats are not adversely affected and that there are no impact pathways to terrestrial invertebrates.	No
		Operation and Maintenance: During operation of the Proposed Development, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, lighting or visual)), that could affect terrestrial invertebrates. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **PEI Report Volume 1, Chapter 9: Water Environment**) will ensure no hydrological impacts occur and that there are consequently no	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		impacts upon retained habitats during operation of the Proposed Development that would lead to impact pathways to terrestrial invertebrates.	
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning. Initial measures will be included within the Framework DEMP, secured as part of the DCO requirements. These impacts will be similar to those occurring during construction with retention and avoidance (where practicable) of the majority of habitats potentially supporting terrestrial invertebrates (such as woodland, hedgerows, ditches) and vegetation clearance undertaken in a sensitive manner.	No
Grass Snake / Common Toad	Low	**Construction**: Grass Snake were recorded within the Principal Site in grassland habitats, bordering woodland edge close to Tunman Wood and in grassland habitat to the west of the River Brant. These habitats and other marginal grassland habitats close to watercourses across the Principal Site (which may also support Grass Snake) are of value to Grass Snake and will be retained and avoided through the buffering of other habitats, such as 15m undeveloped setback from woodland. All such habitats, known to support Grass Snake or with potential to support Grass Snake will, where practicable, be cleared in a sensitive manner (see section 8.10) pre-construction to ensure that no mortality occurs as reptiles will be displaced into adjacent habitats and away from construction activities. For the Cable Corridor, sensitive vegetation clearance, under the assumption of presence of reptiles in suitable habitat, will be adopted to	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		displace reptiles into adjacent habitats and ensure no mortality occurs. Where direct impacts cannot be avoided (e.g. for construction compounds) to habitat deemed as suitable to support reptiles within the Cable Corridor, then further surveys will be undertaken in April/May 2025 to confirm presence/absence and confirm mitigation requirements. Embedded mitigation measures (see section 8.10) which will be formalised in the Framework CEMP (secured part of the DCO requirements) and include protection of retained habitats and pollution prevention, will ensure the integrity of retained habitats supporting reptiles is not adversely affected. Therefore, there are no impact pathways, either directly or indirectly, that would negatively impact upon reptiles.	
		Operation and Maintenance: During operation of the Proposed Development, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, lighting or visual)), that could affect Grass Snake and Common Toad. The management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **PEI Report Volume 1, Chapter 9: Water Environment**) will ensure no hydrological impacts occur and that there are consequently no impacts upon aquatic habitats potentially supporting these species during operation of the Proposed Development. Any maintenance of retained habitats potentially supporting Grass Snake, such as mowing of grassland beneath and between Solar PV Panels, has the potential to impact upon Grass Snake through mortality. However, this activity is expected to be undertaken either in winter months (November to February) or at an appropriate time of year for the sensitive management of	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		grassland (i.e. late summer/early autumn when temperatures are >10°C) when reptiles are active and can move away to avoid incidental injuring or killing of reptiles, concordant with the requirements for other species, such as nesting birds.	
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning. Initial measures will be included within the Framework DEMP, secured as part of the DCO requirements. These impacts will be similar to those occurring during construction with retention and avoidance of the majority of habitats potentially supporting reptiles (such as woodland, hedgerows, ditches) and vegetation clearance undertaken in a sensitive manner.	No
Breeding birds	Up to Medium	**Construction**: Habitats supporting the majority of breeding bird species throughout the Site, such as the majority of hedgerows, ditches and all woodland areas, will be retained and buffered with undeveloped margins around such features (see section 8.10). However, the construction of the Proposed Development will lead to the loss of arable habitat, used by ground-nesting breeding bird species such as Skylark and Lapwing. There will be no direct loss of woodland habitat or individual trees potentially supporting specially protected bird species. Embedded mitigation measures (see section 8.10) which will be formalised in the Framework CEMP (secured as part of the DCO requirements) and include protection of retained habitats, avoidance of the nesting bird period (typically this is March to August inclusive), pre-construction nesting bird checks and	Yes – on ground-nesting birds

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		pollution prevention, will ensure the integrity of retained habitats supporting breeding birds is not adversely affected and that there is no fragmentation of habitats, or of populations of species using habitats and no species mortality of any breeding bird species.	
		Operation and Maintenance: During operation and maintenance of the Proposed Development, there will be no habitat loss or disturbance to habitats (such as through noise, water quality or lighting) that could affect breeding birds. Any maintenance of retained habitats potentially supporting breeding birds, such as mowing of grassland beneath and between Solar PV Panels, has the potential to impact upon breeding birds through mortality. This activity is expected to be undertaken between September and February, which is outside of the bird breeding season at an appropriate time of year to avoid incidental injuring or killing of breeding birds, concordant with the requirements for other species, such as reptiles. However, pre-commencement checks will be required where any unexpected maintenance is required during the bird nesting season. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon breeding birds during operation and maintenance of the Proposed Development.	No
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning. Initial measures will be included within the Framework DEMP, secured as part of the DCO requirements. These measures will include protecting retained habitats, avoidance of the nesting bird period (typically	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		this is March to August inclusive), pre-construction nesting bird checks and pollution prevention.	
Non-breeding birds	Up to Medium	**Construction**: Habitats supporting the majority of non-breeding bird species throughout the Site, such as hedgerows and woodland areas, will be retained and the Proposed Development has been designed to minimise the amount of permanent habitat loss as much as is practicable. Embedded mitigation measures (see section 8.10) which will be formalised in the Framework CEMP (secured as part of the DCO requirements) and include protection of retained habitats and pollution prevention, will ensure the integrity of retained habitats supporting non-breeding birds is not adversely affected and that there is no fragmentation of habitats, or of populations of species using habitats and no species mortality of any non-breeding bird species. Therefore, there are no impact pathways, either directly or indirectly, that would negatively impact upon non-breeding birds.	No
		Operation and Maintenance: During operation and maintenance of the Proposed Development, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, water quality or lighting)), that could affect non-breeding birds. Any maintenance of retained habitats potentially supporting non-breeding birds, such as mowing of grassland beneath and between Solar PV Panels, is not considered to have any impact on non-breeding birds. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon breeding birds during operation and maintenance of the Proposed Development.	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning. Initial measures will be included within the Framework DEMP, secured as part of the DCO requirements. These measures will include protecting retained habitats and pollution prevention.	No
Bats (foraging / commuting and roosting)	Medium	**Construction**: Whilst the baseline for bats has yet to be fully defined, based on current understanding of baseline survey results any habitats supporting, or likely to support bats the current design of the Proposed Development avoids features used by commuting / foraging and roosting bats, such as woodland, hedgerows and mature trees. This means there will be no loss of important habitats used by bats anywhere within the Site during construction. However, if the footprint of the Proposed Development changes, resulting in any features that are likely to be directly impacted (e.g. from the Cable Corridor / access) then further, more detailed bat roost surveys will be required at specific features (i.e. structures and trees with roost suitability) to inform mitigation and potential licence application in accordance with good practice guidance. Where construction works are undertaken within these buffer zones, there may be indirect impacts to roosts/potential roosts. However, these impacts would be avoided through use of a precautionary working method statement and the embedded mitigation measures presented in section 8.10. Embedded mitigation measures (see section 8.10) which will be formalised in the Framework CEMP (secured as part of the DCO	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		requirements) will include protection of retained habitats, avoidance of important habitats to roosting bats, pre-construction checks and pollution prevention (including for lighting). These measures will ensure the integrity of retained habitats supporting, or potentially supporting, roosting bats is not adversely affected and that there is no fragmentation of habitats, or of populations of species using habitats and no species mortality of any bat species. Consequently, indirect effects to habitats supporting bats during construction will be avoided. Therefore, there are no impact pathways, either directly or indirectly, that would negatively impact upon roosting or commuting / foraging bats.	
		Operation and Maintenance: During operation and maintenance of the Proposed Development, there will be no habitat loss or disturbance to habitats (such as through noise, water quality, lighting or visual) that could affect commuting or foraging bats. Any maintenance of retained habitats potentially supporting bats (such as hedgerows and trees) is not expected. Recent research has suggested that numbers of foraging bats may be reduced by the presence of Solar PV Panels. This found that bats avoided fields with solar panels during operation and that total bat activity was almost halved at the boundaries of solar panel fields compared to that of control sites and at the centre of solar panel fields, bat activity dropped by two-thirds (Ref 8-89). The reasons for these impacts were not fully determined, but it should be noted that these sites did not have any significant new tree/ hedge planting, and/ or grassland creation and may not be comparable to the Proposed Development (and other large-scale	Yes

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		DCO schemes) where significant areas of habitat compensation and enhancement are provided.	
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning. Initial measures will be included within the Framework DEMP, secured as part of the DCO requirements. These impacts will be similar to those occurring during construction with retention and avoidance of the majority of habitats potentially supporting bats (such as woodland, hedgerows), pre-commencement checks and pollution prevention.	No
Riparian mammals	Medium	**Construction**: There will be no construction of the Principal Site within 10m of the River Witham, where Water Vole have been recorded and no construction within 10m of the bank-top of any watercourse anywhere within the Site. Where the Interconnecting Cable Corridor crosses the River Witham the setback from the River will be extended to 100m in recognition of the presence of a potential Otter holt and no construction will be undertaken outside of daylight hours and avoiding the periods of 1-2 hours before / after sunset and sunrise (dependent on the time of year). Main Rivers (the River Witham and River Brant) where Otter and Water Vole were recorded will be avoided, with cable crossings installed by non-intrusive techniques (HDD), no access proposed over these main rivers and appropriate setbacks (see **Table 8-10**) from the bank-top of the river to protect riparian habitats.	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		The construction of the Cable Corridor and any internal access across the Site, where this crosses watercourses, will utilise non-intrusive methods to avoid physical disturbance to the watercourse, therefore avoiding disturbance to species, habitat loss and direct mortality for riparian mammals. Embedded mitigation measures (see Section 8.10) will be formalised in the Framework CEMP (secured as part of the DCO requirements) and include avoidance (where practicable) of watercourses, protection of retained habitats and pollution prevention to ensure the integrity of retained habitats is not adversely affected. With the implementation of embedded and essential mitigation measures, there will be no species mortality during construction of the Proposed Development. Impacts on main rivers (the Rivers Witham and Brant) through HDD and construction activities (i.e., sediment mobilisation, noise, and vibration) will be avoided through measures formalised through the Framework CEMP, secured through the DCO, including pre-construction surveys, pollution prevention, buffers from the bank-top of watercourses (of a minimum of 10m for Water Vole and 100m for Otter) and directing lighting away from watercourses will ensure the integrity of retained habitats supporting riparian mammals are not adversely affected.	
		Operation and Maintenance: There are no pathways (e.g. there will be no habitat loss or disturbance to habitats (such as through noise, lighting or visual)), that could affect riparian mammals. Maintenance is not expected to be required for watercourses. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **PEI**	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		Report Volume 1, Chapter 9: Water Environment) will ensure no hydrological impacts occur and that there are consequently no impacts upon aquatic habitats during operation of the Proposed Development.	
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning. Initial measures will be included within the Framework DEMP, secured as part of the DCO requirements. Whilst it is preferred to leave the cabling within the Cable Corridor *in situ*, as this avoids disturbance to overlying land and habitats, the cabling can be removed by opening up the ground at regular intervals and pulling through to an extraction point, avoiding the need to open up the entire length of the Cable Corridor. Therefore, dependent on the decommissioning methods used within the Cable Corridor, it should be possible to avoid disturbance to watercourses, which will avoid any impact pathways to riparian mammals. Measures to remove impacts to aquatic habitats supporting riparian mammals will include retention and avoidance of habitats and pollution (e.g. spillages, noise, light) control.	No
Badger	Low	**Construction**: The construction of the Proposed Development will retain and avoid Badger setts recorded within the Site. Embedded mitigation measures (see section 8.10) will be formalised in the Framework CEMP (secured as part of the DCO requirements), including protecting retained habitats supporting Badger (and their setts, including appropriate no-development areas around their setts), pre-construction surveys to identify	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		Badger sett locations and pollution prevention will ensure the integrity of retained habitats supporting Badger are not adversely affected and that there is no fragmentation of habitats, or of Badger clans and that no species mortality occurs. Therefore, there are no impact pathways, either directly or indirectly, that would negatively impact upon Badger.	
		Operation and Maintenance: During operation and maintenance of the Proposed Development, there will be no habitat loss or disturbance to habitats (such as through noise, water quality or lighting) that could affect Badger. Any maintenance of retained habitats potentially supporting Badger (such as woodland or hedgerows) is not expected. However, pre-commencement checks will be required where any unexpected maintenance is required within 30m of known Badger setts or within habitats potentially supporting Badger. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **PEI Report Volume 1, Chapter 9: Water Environment**) will ensure no hydrological impacts occur and that there are consequently no impacts upon habitats potentially supporting Badger during operation of the Proposed Development. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon Badger during operation and maintenance of the Proposed Development.	No
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning. Initial measures	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		will be included within the Framework DEMP, secured as part of the DCO requirements. These impacts will be similar to those occurring during construction with pre-commencement checks, pollution control and retention and avoidance of habitats supporting Badger (and including their setts).	
Other mammals (Brown Hare, Hedgehog and Harvest Mouse)	Low	**Construction**: The construction of the Proposed Development will seek to retain and avoid the majority of habitats used by Brown Hare, Hedgehog and potentially Harvest Mouse within the Site, such as woodland, scrub and hedgerows. Embedded mitigation measures (see section 8.10) will be formalised in the Framework CEMP (secured as part of the DCO requirements), including protecting retained habitats, pre-construction surveys, sensitive timing of vegetation clearance and pollution prevention will ensure the integrity of retained habitats are not adversely affected and that there is no fragmentation of habitats, or of populations of species and that no species mortality occurs. Therefore, there are no impact pathways, either directly or indirectly, that would negatively impact upon Brown Hare (known to be present), Hedgehog or Harvest Mouse (if present).	No
		Operation and Maintenance: During operation and maintenance of the Proposed Development, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, lighting or visual)), that could affect mammals (such as Brown Hare, Hedgehog or Harvest Mouse). Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **PEI Report Volume 1, Chapter 9: Water Environment**) will ensure	No

IEF	Importance (see 8.5 and Table 8-2)	Potential impact pathways (see section 8.9)	Potential for an effect to occur?
		no hydrological impacts occur and that there are consequently no impacts upon habitats potentially supporting these species during operation of the Proposed Development.	
		Decommissioning: Decommissioning impacts are expected to broadly align with those for construction and would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning. Initial measures will be included within the Framework DEMP, secured as part of the DCO requirements. These impacts will be similar to those occurring during construction with pollution prevention and the retention and avoidance of habitats supporting these species, where practicable.	No

8.12 Significance of Effects (with avoidance and embedded mitigation measures)

8.12.1 The significance of effects on known and predicted IEFs have been assessed following consideration of the potential impacts described in section 8.9 and with consideration of the embedded mitigation measures outlined in section 8.10 using the method as detailed in section 8.5. The aim of the assessment was to identify potentially significant effects and determine the need, or potential need, for additional mitigation measures to those detailed in section 8.10.

Construction

8.12.2 Accordingly, the evaluation has identified that during construction, per the conclusions in section 8.11, there are potential impact pathways on the following known or predicted IEFs, which are assessed in more detail further on in this PEI Report:

a. Temporary loss of habitat associated with Navenby Heath Road Verges LWS and Navenby Green Man Road Verges LWS, which are both within the Cable Corridor;

b. Temporary loss of and fragmentation of running water habitats within the Site;

c. Temporary loss of hedgerows within the Site;

d. Temporary loss and disturbance to habitats supporting macrophytes and macroinvertebrates within the Site; and

e. Loss of habitat used by ground-nesting birds within the Principal Site.

8.12.3 It is acknowledged that baseline surveys for flora, hedgerows and bats are ongoing and that these surveys may determine the presence of further IEFs. Although measures have been embedded within the design to avoid or minimise potential effects on predicted IEFs, where practicable, additional effects may be identified to those above, with further mitigation potentially being required. Following completion of surveys, all IEFs will be subject to detailed assessment, following the methods in section 8.5 and updating the assessment presented for the IEFs identified to date in **Table 8-9** and these will be presented in the ES. Therefore, the absence of significant effects presented in this chapter for these features does not preclude further significant effects arising as further ecological data becomes available.

8.12.4 **Table 8-13** summarises the preliminary sensitivity (value) of IEFs, impacts and effects resulting from construction of the Proposed Development that are predicted at this stage. These will be further defined by ongoing design iterations and the development of construction methods which will be used to reduce or remove the magnitude of impacts and potential for significant effects.

Temporary loss of habitat associated with Navenby Heath Road Verges LWS and Navenby Green Man Road Verges LWS, which are both within the Cable Corridor

8.12.5 The construction of the Cable Corridor is predicted to directly impact upon habitats within Navenby Heath Road Verges LWS and Navenby Green Man Road Verges LWS. However, the construction methods within the Cable Corridor are yet to be refined, therefore the amount of habitat affected is not known. However, the working corridor and habitats affected will be reduced as much as is practicable and standard environmental protection measures will be implemented during construction of the Proposed Development to prevent indirect impacts occurring to habitats outside of the working areas. Where practicable, the Cable Corridor will use existing farm accesses already in place across these LWS's to reduce impacts.

8.12.6 Taking into account the embedded and standard mitigation measures (see **Table 8-10**), the temporary land-take required to install the Cable Corridor (which will be restored post-construction), the magnitude of this impact (see **Table 8-13**) has been provisionally assessed as Medium, which results in a temporary moderate adverse effect, that is potentially significant in EIA terms.

Temporary loss of and fragmentation of running water habitats within the Site (and also including aquatic macrophytes and macroinvertebrates)

8.12.7 The construction of the Proposed Development is predicted to temporarily impact upon running water habitats (which in turn will impact aquatic macrophytes and macroinvertebrates), although the exact construction methods and watercourses affected are not known, but the River Witham and River Brant will not be directly or indirectly impacted (see **Table 8-10**). Standard environmental protection measures will be implemented during construction of the Proposed Development to prevent indirect impacts occurring to running water habitats outside of the working areas.

8.12.8 Taking into account the embedded and standard mitigation measures (which include setbacks from the banktops of watercourses); the buried depth of any cabling (a minimum of 2m under watercourses); and the temporary land-take required to install any crossing points over watercourses, the magnitude of any temporary loss of running water habitat (which will be restored post-construction) has been provisionally assessed as Medium, which results in a temporary moderate adverse effect, that is not significant in EIA terms as it does not affect the overall resource of running water present within the Site or the integrity of any particular watercourse.

Temporary loss of hedgerows within the Site

8.12.9 Construction activities are predicted to result in the temporary loss of sections of hedgerow (minimised as much as is practicable) as a result of fences and access routes across the Site and to facilitate the Cable Corridor. Whilst the extent of any loss of this habitat is yet to be defined, the majority of hedgerows across the Site will be avoided and any replanting required has been embedded within the design of the Proposed Development. It is

noted that this may take time to develop and therefore, there is likely to be a temporary (medium-term) adverse effect on this habitat type in some areas until new planting is established. Lengths of new, species rich, hedgerow would be planted to compensate for any loss, using three core species: Hawthorn, Blackthorn and Field Maple with others to add diversity including: Oak, Hornbeam, Holly *Ilex aquifolium*, Hazel, Spindle, Crab Apple *Malus sylvestris*, Elder *Sambucus nigra*, Dogwood *Cornus sanguinea*, and English Elm* *Ulmus procera* (*a disease resistant cultivar). Once hedgerows establish along with additional hedgerow planting proposed across the Site, it is predicted that the Proposed Development will be able to deliver a net gain in this habitat and the overall impact will be beneficial.

8.12.10 Taking into account embedded protection measures and Proposed Development design to minimise the impact of construction activities causing direct loss of small sections of hedgerows, it is provisionally assessed that the magnitude of this impact is Medium, which results in a temporary moderate adverse effect, that is not significant in EIA terms as it does not affect the overall hedgerow resource present within the Site or the integrity of any particular hedgerow.

Loss of habitat used by ground-nesting birds within the Principal Site

8.12.11 The survey of breeding birds (see **PEI Report, Volume 3 Appendix 8-X: Breeding birds**) identified 227 territorial Skylark and 22 territories of Lapwing present across the Principal Site, with Skylark recorded in the vast majority of arable fields and Lapwing recorded in loose colonies to the north and south of the A46. The prevalent arable crop type within the Principal Site is autumn sown wheat, with occasional fields of barley and maize. Autumn sown cereals (and other crops) are now a typical feature of the arable environment and, whilst suitable in early spring (April) for ground-nesting birds, the suitability of this crop type for nesting can quickly reduce, with the crop becoming too tall as well as being prone to frequent disturbance through spraying. Dependent on conditions, earlier harvesting in May can result in nest loss, as well as an overall reduction in the number of broods and/ or nesting attempts.

8.12.12 As ground-nesting birds in arable habitats are particularly susceptible to nest failure or low fledgling success (in part due to autumn sown cereals), through predation and lower abundances of invertebrate food, than say natural unimproved grasslands (causing adults to forage over greater distances), any reduction in brood numbers can consequently reduce the productivity of the local population. Whilst 227 territorial Skylark were recorded from surveys of the Principal Site, it is not possible or practicable to search for active nests, nor is this required for territory mapping analysis and so the number of active nests or indeed breeding attempts or successful fledgling is unknown. Indicatively, for Lapwing, whilst 22 territorial birds were recorded in early spring, most of these were unsuccessful in raising young to fledging and had departed by mid-May. Therefore, whilst the number of territories of these species provides an idea of the overall potential habitat resource, it is not necessarily a good indicator for assessing the quality of that habitat and its overall productivity for the population. The dominance of arable habitats

within the Principal Site, such as autumn sown wheat, would indicate that the number of successful broods and/ or breeding attempts, e.g. for Skylark, is likely to be low (Ref 8-90), which in turn is likely to result in low productivity and juvenile recruitment into the local breeding population.

8.12.13 It is acknowledged that construction activities will result in the loss of arable farmland used by breeding ground-nesting birds. Without measures providing suitable nesting and foraging habitats being incorporated within the Proposed Development there is the potential for a long-term effect on a population of Skylark and Lapwing important at a District (Medium sensitivity) level.

8.12.14 However, the design of the Proposed Development has evolved to include sufficient areas of undeveloped land that will be utilised for habitat creation and enhancement to offset the impact of loss of arable farmland for breeding ground-nesting birds as well as provide extensive benefits for other IEFs and wider biodiversity. These areas will be subject to grassland creation, with a combination of tussocky grass and floristic diverse seed mixes used to maximise both nesting habitat but also invertebrate prey for chicks as well as seeds for adults. Small pools with shallow muddy margins will also be created for Lapwing. Management of these areas will ensure that the sward does not exceed 60cm and any management activities are restricted for the full extent of the breeding season (typically March to August inclusive), allowing for the maximum number of breeding attempts for each species and an increase in productivity.

8.12.15 Wide grassland margins (5m from hedgerows, 10m from watercourses and 15m from woodland) alongside undeveloped corners of fields will also enhance foraging for Skylark nesting both onsite and offsite and to allow for an element of displacement from the Proposed Development and absorption into neighbouring habitats.

8.12.16 Further to this, to reduce predation from ground predators (particularly for Lapwing), in areas where existing woodlands and mature hedgerows may provide attraction to predators, the perimeter security fencing will not contain passages for mammals, as is proposed elsewhere throughout the Proposed Development, which will reduce nest predation.

8.12.17 Whilst the above measures will not provide like for like mitigation for all territorial Skylark and Lapwing recorded, the provision of a stable quantity of improved quality habitat that is not subject to agricultural rotations, pesticide application or early harvesting, in combination with measures to reduce predation, will likely? increase both nesting densities and productivity over the lifespan of the Proposed Development.

8.12.18 With the application of the mitigation measures set out above, the magnitude of habitat loss for ground-nesting birds is reduced to low, resulting in a minor adverse effect which is not significant in EIA terms.

Table 8-13: Summary of Magnitude of Construction Impacts and Significance of Effect

IEF	Sensitivity (Value)	Description of impact	Magnitude of impact	Effect category	Potential for a significant effect?
Navenby Heath Road Verges LWS	Medium	The construction methods for the Cable Corridor are yet to be refined but may directly impact upon habitats within this LWS, although the habitats affected (as a result of limited survey information at the time of writing this PEI Report) are yet to be defined.	Medium	Moderate adverse	Yes
Navenby Green Man Road Verges LWS	Medium	The construction methods for the Cable Corridor are yet to be refined but may directly impact upon habitats within this LWS, although the habitats affected (as a result of limited survey information at the time of writing this PEI Report) are yet to be defined.	Medium	Moderate adverse	Yes
Running water	Medium	The construction of the Proposed Development is predicted to temporarily impact upon running water habitats (where non-intrusive crossings are not possible) which in turn will lead to temporary fragmentation of running water, although the exact construction methods are not fully defined.	Medium	Moderate adverse	No
Aquatic macroinvertebrates and macrophytes	Medium	The construction of the Proposed Development is predicted to temporarily impact upon running water habitats (where non-intrusive crossings are not possible) which in turn will lead to temporary loss of habitat supporting aquatic macroinvertebrates and macrophytes, although the exact construction methods are not fully defined.	Medium	Moderate adverse	No
Hedgerows	Medium	Construction activities are predicted to result in the potential for the loss of small sections of hedgerow as a result of construction of the Cable Corridor, fences and access routes. Whilst the extent of any loss of this habitat is currently unknown, the majority of hedgerows across the Site will be avoided and any replanting required has been embedded within the design for creation of hedgerows. However, it is noted that this may take time to develop.	Medium	Moderate adverse	No

IEF	Sensitivity (Value)	Description of impact	Magnitude of impact	Effect category	Potential for a significant effect?
Breeding birds – ground-nesting birds	Up to Medium	There will be habitat loss across the Principal Site which will lead to the loss of habitat used by ground-nesting birds.	High	Minor adverse	No

Operation and Maintenance

8.12.19 The preliminary evaluation has identified that during the operation and maintenance of the Proposed Development, the following potential impacts on IEFs have been taken forward for further assessment:

a. displacement of foraging/commuting bats by the presence of Solar PV Panels.

8.12.20 There is limited scientific literature available on the impacts to bats from solar farms (Ref 8-91, Ref 8-92, Ref 8-93). The first large scale NSIP solar scheme (Cleve Hill in Kent) received planning consent in May 2020 (Ref 8-94) and is not yet operational, so it is too early to fully predict long-term effects on bat populations arising from large-scale solar schemes.

8.12.21 A recent study in 2019 and 2020 on 19 small solar schemes in the south-west of England (Ref 8-95) found that bats avoided fields with solar panels during operation. Total bat activity was almost halved at the boundaries of solar panel fields compared to that of control sites and at the centre of solar panel fields, bat activity dropped by two-thirds. The reasons for this have not been fully determined but the paper suggests that solar panels could, in theory, inadvertently reduce the abundance of insects by lowering the availability of the plants they feed on. Solar panels may also reflect a bats' echolocation calls, making insect detection more difficult. Reduced feeding success around the panels may result in fewer bats using the surrounding hedgerows for commuting, potentially explaining the findings.

8.12.22 It should be noted that these sites did not have any significant new tree/hedge planting, and/or grassland creation and may not be comparable to the Proposed Development (and other large-scale DCO schemes) where significant areas of habitat compensation and enhancement are provided. All the small solar sites in the study were on grassland that was either grazed or managed through mowing or were on cut arable crops and therefore the avoidance behaviour observed by bats may be different to the Proposed Development, where the embedded mitigation (see **Table 8-10**) and proposed habitat creation will include large areas of grassland managed for conservation, habitat buffers, pond restoration and new tree and hedge planting.

8.12.23 Taking into account embedded mitigation measures that sets back panel arrays from all important habitats used by foraging bats, i.e., hedgerows and woodlands, there is no robust data to suggest that, with the embedded mitigation measures set out in **Table 8-10**, displacement of bats from these habitats will occur. As such, it is provisionally assessed that the magnitude of this impact is Low, which results in a negligible effect, that is not significant in EIA terms as is will not affect the overall bat populations present within the Site and will not affect the integrity of any particular bat species population.

8.12.24 **Table 8-14** summarises the preliminary sensitivity (value) of IEFs, impacts and effects resulting from operation and maintenance of the Proposed Development that are predicted at this stage.

Table 8-14: Summary of Magnitude of Operation and Maintenance Impacts and Significance of Effect

IEF	Sensitivity (value)	Description of impact	Magnitude of impact	Effect category	Potential for a significant effect?
Bats	Medium	There is the potential for commuting, foraging and roosting bats to be displaced from the Site from Solar PV Panels. Taking into account the embedded mitigation measures set out in Section 8.10 and a design which sets back the Solar PV Panels from all important habitats used by foraging bats, i.e. hedgerows and woodlands, the findings from research at small operational solar sites are not considered comparable with the careful design configuration of the Proposed Development. As such, no adverse effect on the overall bat populations present within the Site or integrity of any particular bat species population is predicted.	Low	Negligible	No

Decommissioning

8.12.25 The effects of decommissioning of the Proposed Development are likely to be similar to those for construction, but with recognition that many of the potential impacts associated with the construction of the Proposed Development, such as building of infrastructure, e.g. substation and laying of cables, will not be relevant during decommissioning. Therefore, most of the effects summarised in **Table 8-13**, also apply to decommissioning. Habitats and protected or notable species are likely to be subject to temporary damage of habitats and disturbance to species during decommissioning activities. However, the significance of any effects can only be fully determined once the baseline conditions at the time of decommissioning are known. Therefore, appropriate measures will need to be put in place to minimise degradation of habitats and disturbance of species, appropriate to the legislative and policy requirements at the time of decommissioning. It is reasonable to assume that measures included within the Framework DEMP will control this.

8.12.26 Taking into account that relevant legislation and policy will need to be adhered to when decommissioning takes place, appropriate measures will be put in place to monitor and manage the impact of decommissioning activities on IEFs. A final DEMP, as secured via a requirement of the DCO, will be produced prior to decommissioning.

8.13 Additional Mitigation and Enhancement Measures

8.13.1 At this stage (in the absence of a final design) the extent of any additional mitigation required (including whether any additional mitigation measure are needed at all) over and above the embedded and standard environmental protection measures as set out in Section 8.10 has not been confirmed. However, the potential for significant effects on IEFs has been identified in Section 8.11 and the Proposed Development has included measures to reduce the potential significance of these effects. EIA is an iterative process, and should further mitigation be identified, e.g. if further ecological surveys or design information determine other impacts, then the Proposed Development will look to mitigate these wherever practicable. These mitigations will be clearly distinguished in the DCO application from any enhancements, e.g. habitat creations and improvements proposed to deliver the required net gains in biodiversity.

8.13.2 In line with the forthcoming mandatory requirements for BNG in relation to NSIPs and in acknowledgement of NPS EN-1 (Ref 8-18), the Proposed Development will seek to deliver gains for biodiversity in line with national and regional policies and biodiversity priorities. These gains and further enhancements will also be based on consultation responses as the Proposed Development progresses. A robust monitoring programme will also be defined in the DCO application to ensure that required mitigation biodiversity net gains and further enhancement measures are delivered successfully and to implement any remediation as required.

8.13.3 Habitat creation and enhancements have been included within the Proposed Development design to increase biodiversity. Whilst a number of these will minimise the landscape and visual impacts, they will also provide landscape-scale benefits for biodiversity through the increase in habitat availability and connectivity for a wide range of fauna.

8.13.4 Vegetation would be established through natural regeneration or in the case of grasslands from seed collection from the grasslands identified within the Site and through a suitable long-term habitat management regime. Consideration will be paid to microclimatic conditions when identifying appropriate species. Management will be undertaken in a variety of ways to ensure maximum biodiversity gains, with grassland managed by either low intensity grazing or infrequent hay cutting to allow plant species to flower and seed.

8.13.5 The Proposed Development will deliver enhancements for biodiversity in line with national (e.g., the NPPF (Ref 8-21)) and local (e.g., the Central Lincolnshire Local Plan (Ref 8-22)) policies and their biodiversity priorities to deliver a net gain in biodiversity. Details of habitat creation and monitoring programme will be provided in the Framework LEMP, secured through the DCO, to ensure mitigation and enhancement measures are delivered successfully and examples of habitat creation are included below.

8.13.6 The Proposed Development is committed to deliver a minimum of 10% uplift in BNG to all habitat units within the baseline i.e., area, linear and river habitats (where applicable).

Woodland Planting

8.13.7 Woodland planting (also referred to as buffers) and native tree belts will be established to reinforce the retained existing woodland and tree belts. These are proposed in areas too narrow to be planted as woodland but at 10m to 15m width will provide a more substantial block of planting than a hedgerow with specimen trees. Woodland buffers and native tree belts are characteristic of the existing landscape and provide ecological value, forming important wildlife corridors between existing woodlands.

Hedgerows

8.13.8 New hedgerows with trees will be established to supplement the existing, retained hedgerows with trees. These will provide a valuable habitat, forming important wildlife corridors and re-enforcing existing ones. Hedgerows will be maintained at a minimum of 3m high and ‘infilled’ where there are gaps in existing hedgerows.

8.13.9 Gaps in currently defunct hedges will be planted with suitable native species to improve the connectivity of habitats (such as between ancient and other broad-leaved woodland) within and adjacent to the Site. New areas of tree planting around infrastructure will be provided to provide both screening from infrastructure and to improve habitat connectivity as well to increase the area of hedge / woodland habitat within the Site. New scrub habitat and wider hedgerows (up to 8m wide) will be created in selected areas to provide suitable habitat for declining farmland birds such as Yellowhammer and Tree

Sparrow. Hedgerows and trees will be allowed to grow tall and wide to provide maximum benefits for biodiversity and this natural regeneration will encourage a mosaic of successional habitats, forming broad habitat corridors throughout the Proposed Development.

Scrub

8.13.10 Scrub composed of native shrubs is proposed adjacent to hedgerows to increase the shrub habitat and enhance biodiversity. This will create and maintain a diverse mosaic of scrub and grassland habitat, which includes providing shelter and food resources for birds and other wildlife.

Natural Re-generation Areas

8.13.11 An area 15m to 25m wide adjacent to existing ponds and woodland will be encouraged to naturally regenerate. There will be no routine management of these areas. Natural regeneration will further increase biodiversity and provide an opportunity to observe the gradual structural transition from grassland to canopy woodland habitats.

Species-rich Grassland

8.13.12 Species-rich grassland will be established across the Site, under the PV panels and in set aside areas. Conservation margins sown with a wild bird seed mix will also be established. By establishing a diverse sward of grasses and herbs biodiversity will increase, enhancing value for wildlife. The wild bird seed mix in the conservation margins will provide a cover crop habitat for game birds and food source for over-wintering farmland birds such as Skylark, Linnet and Yellowhammer. The exact location and proportion of margin types within the conservation margins will be tailored to the needs of the site's biodiversity. Following best practice, the conservation margins will be 12m in width, and at least 50m in length.

Pond restoration and planting around ponds

8.13.13 Existing ponds in poor condition will be restored with the aim of maximising their wildlife value. This will partly be achieved by de-silting to ensure that they remain at least partly wet during normal conditions, allowing amphibians and invertebrates to complete their life cycles. Where existing ponds are overshaded by mature trees, these trees will be prioritised for pollarding, to increase light and decrease leaf fall onto the ponds.

8.13.14 Scrub clearance and de-silting around ponds will be phased over five years, to prevent the site-wide loss of existing shaded pond habitats and to provide ponds in various stages of natural succession to provide a wider range of niches for wildlife. Water features tend to be colonised naturally; therefore, no planting is considered necessary or desirable in these areas.

Provision of Habitat Boxes

8.13.15 A range of artificial bird and bat boxes will be installed in existing woodland areas, on retained individual trees and existing trees in hedgerows to increase the availability of nesting and roosting features and enhance the value of these habitats for these species groups.

8.13.16 Bat roost boxes of varying types to suit different species of birds and bats will be installed in locations to be determined by an ecologist at the time of installation.

8.13.17 The bird and bat boxes will be made from long lasting materials (such as Woodcrete) and would be expected to have a life expectancy of 20-25 years. Given the Proposed Development's 60-year lifespan the bird and bat boxes will be replaced every 20 years, this will be secured within the LEMP.

Creation of Habitat Piles

8.13.18 Habitat piles and hibernacula will be constructed throughout the Proposed Development in suitable areas, such as close to ponds or watercourse, using natural materials generated during clearance of the site, such as logs, turf, and grass strimming. These will provide refuge and hibernation opportunities for amphibians and reptiles, as well as dead wood habitat for invertebrates, which will in turn benefit fauna such as bats and birds

8.14 Residual Effects

8.14.1 A preliminary assessment of effects to ecological features as a consequence of the Proposed Development has been undertaken and identified the potential for significant effects to ecological features.

8.14.2 The preliminary assessment presented in this chapter has been undertaken based on the IEFs presented in **Table 8-9** and Proposed Development information available at the time of writing, presented in **PEI Report Volume 1, Chapter 3: Proposed Development**. Professional judgement and a precautionary basis has been applied throughout, however, it is expected that the implementation of appropriate mitigation measures will reduce the magnitude of impact identified and the significance of effects won't exceed those presented in **Table 8-11** and **Table 8-12**.

8.14.3 The Proposed Development has the potential to generate beneficial effects for a number of the IEFs identified in **Table 8-9**. Further details on beneficial effects will be presented in the ES, once the baseline conditions are fully defined and landscaping (including any enhancement measures) fully established. However, it is anticipated that wide scale benefits will be delivered to IEFs occurring in both aquatic and terrestrial habitats from the cessation of farming practices including agricultural chemical inputs to watercourses and pesticide use on crops, as well as the extensive creation of grassland habitats and positive management of existing boundary features. These beneficial effects will be explored further in the ES, submitted with the DCO application.

8.15 Cumulative Effects

8.15.1 This section assesses the potential effects of the Proposed Development in combination with the potential effects of other proposed and committed plans and projects including other developments (referred to as 'cumulative developments') within the surrounding area.

8.15.2 This preliminary cumulative effect assessment has identified, for each feature, the areas where the predicted effects of the Proposed Development could interact with effects arising from other plans and/or projects on the same receptor based on a spatial and/ or temporal basis.

8.15.3 At this preliminary assessment stage, based on an initial review of the short list of developments, due to their nature, spatial extent and distance from the Proposed Development, no plans or projects identified in **PEI Report Volume 1 Chapter 15: Cumulative Effects and Interactions** are considered in combination to impact the important ecological features identified in this assessment. Further, it is expected that all of the cumulative developments included in this preliminary assessment will implement suitable mitigation measures in line with relevant legislative and policy requirements and best practice. Therefore, the potential for impacts to the important ecological features during the construction, operation and maintenance, and decommissioning phases of the Proposed Development are considered within the Site. Other developments are not likely to contribute to the effects on the important ecological features identified in this chapter and therefore the effects are not significant. A summary of this preliminary assessment is provided in **Table 8-15**.

Table 8-15: Preliminary Assessment of Cumulative Effects during Construction and Operation

Important Ecological Feature	Importance (value)	Description of the Potential Impact from the Proposed Development	Preliminary Residual Effect Category	Proposed Development ID	Description of Cumulative Impact	Preliminary Residual Cumulative Effect Category	Preliminary Cumulative Effect (Yes/No)
Navenby Heath Road Verges LWS, Navenby Green Man Road Verges LWS	Medium	The construction methods for the Cable Corridor are yet to be refined but may directly impact upon habitats within this LWS, although the habitats affected (as a result of limited survey information at the time of writing this PEI Report) are yet to be defined.	Moderate Adverse	86	As this cumulative development is yet to assess the potential impacts to the LWSs and there is currently no information available regarding mitigation, it is reasonable to assume that this development will provide suitable good industry mitigation measures to reduce or offset impacts, in adherence with legislation and policy and that there would be no change from the residual effects assessed for the Proposed Development.	Negligible	No
Running water	Medium	The construction of the Proposed Development is predicted to temporarily impact upon running water habitats (where non-intrusive crossings are not possible) which in	Moderate Adverse	5, 8, 18, 34, 37, 49, 86, 33, 58, 98, 99, 101	These cumulative developments have the potential for pollution to local watercourses and/or groundwater from construction site runoff containing pollutants and fine sediment, chemical spillages	Negligible	No

Important Ecological Feature	Importance (value)	Description of the Potential Impact from the Proposed Development	Preliminary Residual Effect Category	Proposed Development ID	Description of Cumulative Impact	Preliminary Residual Cumulative Effect Category	Preliminary Cumulative Effect (Yes/No)
		turn will lead to temporary fragmentation of running water, although the exact construction methods are not fully defined.			and increased flood risk during construction. Assuming these cumulative developments follow or will follow (where there is currently no information available from these cumulative developments), appropriate mitigation measures to reduce or offset impacts in adherence with legislation and policy, it is reasonable that the potential for impacts is only within the Site itself and that there would be no change from the residual effects assessed for the Proposed Development.		
Aquatic macroinvertebrates / macrophytes	Medium	The Proposed Development design has embedded mitigation measures to avoid and buffer the majority of ditches and watercourses potentially supporting aquatic	Minor adverse	5, 8, 18, 34, 37, 49, 86, 33, 58, 98, 99, 101	These cumulative developments have the potential for pollution to local watercourses (some of which may support notable aquatic macroinvertebrates and macrophytes) and/or drainage from construction site runoff containing	Negligible	No

Important Ecological Feature	Importance (value)	Description of the Potential Impact from the Proposed Development	Preliminary Residual Effect Category	Proposed Development ID	Description of Cumulative Impact	Preliminary Residual Cumulative Effect Category	Preliminary Cumulative Effect (Yes/No)
		macroinvertebrates and macrophytes. However, the construction of the Proposed Development is predicted to temporarily impact upon running water habitats (where non-intrusive crossings are not possible) which in turn will lead to temporary disturbance to aquatic macroinvertebrates and macrophytes, although the exact construction methods are not fully defined.			pollutants and fine sediment; chemical spillages and increased flood risk. Assuming these cumulative developments follow or will follow (where there is currently no information available from these cumulative developments), appropriate mitigation measures to reduce or offset impacts, in adherence with legislation and policy, it is reasonable that the potential for impacts is only within the Site itself and that there would be no change from the residual effects assessed for the Proposed Development.		
Hedgerows	Medium	Construction activities are predicted to result in the potential for the loss of small sections of hedgerow as a result of construction of the Cable Corridor,	Moderate Adverse	18, 86	Whilst individually the cumulative developments may have localised effects on small sections of hedgerows specific to their development area, there is unlikely to be any spatial	Negligible	No

Important Ecological Feature	Importance (value)	Description of the Potential Impact from the Proposed Development	Preliminary Residual Effect Category	Proposed Development ID	Description of Cumulative Impact	Preliminary Residual Cumulative Effect Category	Preliminary Cumulative Effect (Yes/No)
		fences and access routes. Whilst the extent of any loss of this habitat is currently unknown, the majority of hedgerows across the Site will be avoided and any replanting required has been embedded within the design for creation of hedgerows. Whilst it is acknowledged that these will take time to develop, once established the overall hedgerow resource will be greater than is currently present.			overlap in the hedgerow resource, with cumulative developments mitigating any loss (and if not known, assumed to be mitigating any loss), where appropriate. As such, none of the cumulative developments are considered to have the potential for adverse effects on hedgerows within the Site during the construction and operational phases.		
Ground-nesting birds	Up to Medium	There will be an extent of habitat loss across the Principal Site which without mitigation will lead to the loss of habitat	Moderate adverse	63, 86, 87, 88	Cumulative developments of similar developments, where there is land-take of arable farmland and where there are ground-nesting birds, has the potential to interact	Negligible	No

Important Ecological Feature	Importance (value)	Description of the Potential Impact from the Proposed Development	Preliminary Residual Effect Category	Proposed Development ID	Description of Cumulative Impact	Preliminary Residual Cumulative Effect Category	Preliminary Cumulative Effect (Yes/No)
		used by ground-nesting birds.			cumulatively with the Proposed Development. However, where cumulative developments are predicted to have adverse effects on the same ground-nesting bird species as that present within the Site, appropriate mitigation measures are included within respective developments, to ensure there are no significant residual effects. Where there is currently no information available from cumulative developments, regarding mitigation, it is reasonable to assume that these will provide suitable mitigation measures to reduce or offset impacts on ground-nesting birds, in adherence with legislation and policy.		

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