Tillbridge Solar

Tillbridge Solar Project

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9. Ecology and Nature Conservation

9.1 Introduction

9.1.1 This chapter presents the findings of an assessment of the likely significant effects on ecology and nature conservation (collectively referred to as biodiversity within this chapter) as a result of the Tillbridge Solar Project (hereafter referred to as 'the Scheme'). For more details about the Scheme, refer to **Chapter 3: Scheme Description** of this Environmental Statement (ES) **[EN010142/APP/6.1]**.

9.1.2 This chapter:

a. Identifies and proposes measures to address the potential impacts and likely significant effects of the Scheme on biodiversity, during the construction, operation and decommissioning phases;

b. Provides an evaluation of relevant important ecological features (including nature conservation designations, priority habitats, protected species and invasive non-native species (INNS)) associated with the Scheme, with each being assigned a nature conservation value (sensitivity value);

c. Identifies the Scheme's direct and indirect impacts and effects on ecological features and their conservation status, inter-relationships, and their contribution to local (and if appropriate county, regional and national) biodiversity;

d. Takes into account impact avoidance design measures and embedded mitigation when determining the significance of effects; and

e. Identifies and describes the requirement for any additional mitigation and monitoring measures, with these considered in the assessment of residual effects.

9.1.3 This chapter is supported by the following technical appendices **[EN010142/APP/6.2]**:

a. **Appendix 9-1**: **Ecology and Nature Conservation: Legislation, Policy and Guidance**;

b. **Appendix 9-2: Aquatic Ecology Baseline Report**;

c. **Appendix 9-3**: **Baseline Report for Flora (including hedgerows)**;

d. **Appendix 9-4: Baseline Report for Terrestrial invertebrates;**

e. **Appendix 9-5: Baseline Report for Great Crested Newt;**

f. **Appendix 9-6: Baseline Report for Reptiles and amphibians;**

g. **Appendix 9-7: Baseline Report for Breeding birds (Confidential - Annex C);**

h. **Appendix 9-8: Baseline Report for Non-breeding birds;**

i. **Appendix 9-9: Baseline Report for Bats;**

j. **Appendix 9-10: Baseline Report for Riparian mammals;**

k. **Appendix 9-11: Baseline Report for Badger (Confidential)**; and

l. **Appendix 9-12**: **Habitat Regulations Assessment (HRA) pre-Screening Report**.

9.1.4 The baseline report for Badger (*Meles meles)* is not included in full within this ES chapter, 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 **Appendix 9-11: Baseline Report for Badger (Confidential)** of this ES **[EN010142/APP/6.2]** will be provided as **Annex A** to the Planning Inspectorate and confidentially to key stakeholders with a legitimate interest. Similarly, where specially protected breeding bird species (owing to inclusion on Schedule 1 of the Wildlife and Countryside Act, 1981 (Ref. 9-1)) were recorded, the locations of these have been plotted onto a separate figure which will also be provided confidentially to key stakeholders, including the Planning Inspectorate.

9.1.5 Effects on biodiversity from infrastructure projects can arise from direct and indirect impacts upon designated sites, habitats 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 of this ES **[EN010142/APP/6.1]**, and should be read in conjunction with these chapters:

a. **Chapter 6: Air Quality**;

b. **Chapter 7: Climate Change**;

c. **Chapter 10: Water Environment** (which includes hydrology and water pollution);

d. **Chapter 12: Landscape and Visual Amenity** (including lighting); and

e. **Chapter 13: Noise and Vibration**.

9.1.6 This chapter is supported by the following figures of this ES **[EN010142/APP/6.3]**:

a. **Figure 9-1: Sites Statutorily Designated for Nature Conservation Value**;

b. **Figure 9-2: Non-Statutory Sites Designated for Nature Conservation Value**; and

c. **Figure 9-3: Phase 1 Habitat Map**.

9.1.7 This chapter should also be read in conjunction with **Chapter 2: Scheme Location**, **Chapter 3: Scheme Description**, **Chapter 4: Alternatives and Design Evolution**, and **Chapter 5: EIA Methodology** of this ES **[EN010142/APP/6.1]**.

9.1.8 A **Framework Construction Environmental Management Plan** (Framework CEMP) **[EN010142/APP/7.8], Framework Operational Environmental Management Plan** (Framework OEMP)

[EN010142/APP/7.9] and **Framework Decommissioning Environmental Management Plan** (Framework DEMP) **[EN010142/APP/7.10]** have been prepared for the Scheme to manage environmental effects arising from the Scheme and to demonstrate compliance with environmental legislation.

9.1.9 This chapter is also supported by a **Framework Landscape and Ecology Management Plan** (Framework LEMP) **[EN010142/APP/7.17]**, the purpose of which is 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 Scheme. The Framework LEMP will also provide management prescriptions aimed at ensuring the Scheme delivers a net gain for biodiversity over the long term.

9.1.10 In addition, a standalone **Biodiversity Net Gain report [EN010142/APP/7.14]** has been prepared for submission with the DCO application.

9.2 Legislation and Planning Policy

9.2.1 Full details of the legislation, policy, and guidance of relevance to the assessment of significant biodiversity effects of the Scheme are provided in **Appendix 9-1: Ecology and Nature Conservation Legislation, Policy and Guidance** of this ES **[EN010142/APP/6.2]**.

9.2.2 As part of the assessment of the Scheme, it is necessary to determine whether the Scheme is likely to have a significant effect on areas that have been internationally designated for nature conservation purposes, such as Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites, as well as proposed or potential sites (i.e. European sites). Therefore, Likely Significant Effects (LSEs) have been considered further, with relation to European sites, in **Appendix 9-12: Habitat Regulations Assessment (HRA)** of this ES **[EN010142/APP/6.2].** The HRA concludes that the Scheme will not result in LSEs either alone or in-combination with other projects, due to the distance of designated sites and absence of impact pathways.

9.3 Assessment Assumptions and Limitations

9.3.1 The assessment of all the phases of the Scheme (construction, operation and decommissioning) is based upon the maximum parameters of design for the Scheme (refer to **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**), the construction period of which is expected to be between 24 and 36 months.

9.3.2 This 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 receptor involved. For example, a 36-month construction period will 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.

9.3.3 Habitat and species information referenced in the assessment has been collected from existing sources of data and site surveys undertaken on land within and around the Order limits between March 2022 and December 2023.

9.3.4 As set out in **Chapter 4: Alternatives and Design Evolution** of the ES **[EN010142/APP/6.1]**, the Applicant has worked collaboratively with the promoters of Gate Burton Energy Park, Cottam Solar Project and West Burton Solar Project to minimise environmental impacts along the Cable Route Corridor for the different schemes by using a shared route, where practicable. As a result, a wealth of ecological information has been collected along this corridor. To minimise disturbance to wildlife and landowners, through repeated access by multiple schemes, where relevant, the Applicant has collaborated with the other proposed developments to 'share' data. However, where this has been the case, the Applicant has undertaken surveys to ground truth these data where relevant (and where access was permitted). Where no overlap exists with the other schemes, then field surveys have been undertaken by the Applicant.

9.3.5 Specific assumptions and limitations relevant to each survey, including how any limitations have been overcome, are included within the relevant technical reports presented in **Appendices 9-2 to 9-11** of this ES **[EN010142/APP/6.2]**). 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.

9.3.6 The **Biodiversity Net Gain report [EN010142/APP/7.14]** has been prepared with reference to the illustrative design (see Framework Landscape Masterplan in Annex A of the Framework LEMP **[EN010142/APP/7.17]**) and **Figure 3-1 Indicative Site Layout Plan** of the ES **[EN010142/APP/6.3]**. Therefore, the report presents an indicative assessment of the units that can be expected to be achieved within the parameters set out in **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**.

9.4 Assessment Methodology

Characterising the baseline

9.4.1 Within this chapter, the following terminology is used when referring to the geographic areas within which assessments were made:

a. Study Area – the area within the Order limits and a 2 kilometre (km) radius which was subject to collection of background information e.g., desk study records for bats;

b. Zone of Influence (ZoI) – area over which receptors may be affected by the Scheme, using the criteria below and proportionate to the Scheme's potential to impact on each receptor. The ZoI was kept under review, e.g., with respect to likely impacts of the Scheme and results of the desk

study, which was then used to inform the requirements for field surveys; and

c. Survey Area – this is the area within which field survey work was undertaken.

9.4.1 The Chartered Institute of Ecology and Environmental Management (CIEEM) (Ref. 9-2) define the ZoI as: "…*the area over which biodiversity features may be affected by biophysical changes as a result of the proposed project and associated activities*". The ZoI is based on:

a. The nature of the project (a solar farm scheme), project activities, and the potential for effects at all development stages (construction, operation and decommissioning);

b. The nature of the 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;

c. The presence and assemblages of species which may be in the area based on the location of the Order limits and desk study data; and

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

Study Area

9.4.2 The Order limits, referred to within this chapter, include the Principal Site in which the solar arrays are located, and the Cable Route Corridor (as defined in **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**). The Principal Site is within the administrative county of Lincolnshire whilst recognising 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 (Ref. 9-3).

9.4.3 The Study Area has captured all designated sites, sensitive habitats and species of importance that occur within the relevant ZoI of the Scheme. The boundaries and zones for the Study Area reflect standard good practice and were informed by published guidance and professional judgement. This then enabled the identification of specific areas which required ecological survey (Survey Areas) which are specific to a given species, group of species or habitat (see **Table 9-2**). The Survey Areas are defined by the maximum distances that statutory consultees would typically expect to be considered. These Survey Areas were presented within **Appendix 1-1: EIA Scoping Report [EN010142/APP/6.2],** with no scoping responses disagreeing with the extent chosen.

9.4.4 The extent of the Survey Areas 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 in the Survey Area. Accordingly, the Survey Areas used in this assessment ensure sufficient data were gathered to meet any design iterations which may change the likely ZoI used to undertake the impact assessment.

9.4.5 The Study Area for which data were searched and collated through a desk-based study included:

a. European sites within 10km of the Order limits as well as any SACs within 30km of the Order limits 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 Scheme is connected to any European sites designated for migratory fish;

b. Sites nationally designated for their biodiversity value e.g., Sites of Special Scientific Interest (SSSIs) and Local Nature Reserves (LNRs) within 2km of the Order limits;

c. Sites non-statutorily designated for their biodiversity value, e.g., Local Wildlife Sites (LWSs), within 2km of the Order limits;

d. Ancient Woodland, veteran trees and other notable habitats within 2km of the Order limits;

e. Records of protected or notable species and scheduled INNS within 2km of the Order limits;

f. For aquatic species records a 2km Study Area was used. 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. Any applications for European Protected Species Licences within 2km of the Order limits; and

h. Any agri-environment schemes within the Order limits, e.g., Countryside Management Schemes.

9.4.6 Furthermore, the Study Area included a 2km search from the Order limits for the status of water bodies subject to the Water Framework Directive (WFD) (Ref. 9-4) in order to identify those that are likely to be impacted by the Scheme (these are assessed in **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]** and informed by the assessment of aquatic ecology receptors presented in this chapter). As water pollution may spread downstream or there could be downstream flood risk effects, to identify all the relevant ecological, chemical and physical features of water bodies that may be impacted and that contribute to the water bodies' overall importance, any hydrologically linked surface water bodies or water dependent ecological sites or habitats within the Study Area were considered.

9.4.7 In defining individual Study Areas, consideration was given to the geographic location, nature and scale of the Scheme (refer to **Chapter 2: Scheme Location** and **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**).

Sources of Information

9.4.8 The ecological baseline across the Order limits was established using the following sources of data:

a. A desktop review undertaken to identify sites designated for their biodiversity value (e.g., SPAs), and records of protected and/or notable

habitats and species (biodiversity features) and locations of invasive non-native species that could be relevant to the Scheme;

b. Use of collaborative datasets (see paragraph 9.4.15 of this chapter) from fieldwork undertaken as part of three neighbouring solar schemes; and

c. Field surveys (as applicable) across the Order limits, undertaken by the Applicant.

Desktop Review

9.4.9 The Study Area used for the desk study is defined in paragraph 9.4.5 of this chapter.

9.4.10 Greater Lincolnshire Nature Partnership (GLNP) and Nottinghamshire Biological and Geological Records Centre (NBGRC) were contacted in July 2022 to obtain pre-existing ecological information (i.e., location and citations of LWSs, records of protected, notable habitats and species; and on scheduled INNS within 2km of the Order limits).

9.4.11 Protected and notable habitats and species include those listed under:

a. Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended) (Ref. 9-1);

b. Schedules 2, 4 and 5 of the Conservation of Habitats and Species Regulations 2017 (Ref. 9-5); or

c. Section 41 of the NERC Act which lists species and habitats of principal importance (Species of Principal Importance (SPI) or Habitats of Principal Importance (HaPI)) for nature conservation in England (Ref. 9-6).

9.4.12 Other habitats and species were also considered and have been assessed on a case-by-case basis, e.g., 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.

9.4.13 Records of INNS, as listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) (Ref. 9-1) and the Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref. 9-7) have been taken into account when assessing potential constraints on the Scheme.

9.4.14 Sources of online data resources that were reviewed included:

a. The Ramsar Sites Information Service (RSIS) (Ref. 9-8) for site information and designation details of any Ramsar's identified within the relevant Study Area (refer to Section 9.4.5);

b. The Natural England website (Ref. 9-9) for information on sites statutorily designated for their biodiversity value and to confirm reasons for designation and their condition;

c. Joint Nature Conservation Committee (JNCC) website (Ref. 9-10), for site information and designation details of SACs and SPAs (including pSACs and pSPAs) identified within the relevant Study Areas (refer to Section 9.4.5);

d. Multi-Agency Geographic Information Centre (MAGIC) website (Ref. 9-11), to identify the location (and details) of sites statutorily designated for their biodiversity value, Ancient Woodland, Priority and other notable habitats and any granted European Protected Species Licence applications or agri-environment schemes within the Order limits;

e. Natural England's Ancient Woodland (England) inventory (Ref. 9-12) for the location of Ancient Woodland within 2km of the Order limits;

f. Woodland Trust's ancient tree inventory (Ref. 9-13), for details of ancient, veteran or notable trees within the Study Area;

g. National Biodiversity Network (NBN) Atlas (Ref. 9-14) for open-source records of protected and, or notable species recorded within 2km of the Order limits;

h. Environment Agency (EA) Ecology and Fish Data Explorer for species records of fish, macroinvertebrate and macrophytes (Ref. 9-15);

i. The Biodiversity Action Plans for Lincolnshire (Ref. 9-16) [currently being replaced by a Local Nature Recovery Strategy], Nottinghamshire (Ref. 9-17) and for the Upper Witham Internal Drainage Board (Ref. 9-18); and

j. A review of publicly available information collected in support of nearby large-scale infrastructure developments, including a search for relevant survey data in planning documentation.

Collaborative datasets

9.4.15 Datasets from the three solar projects (Gate Burton Energy Park (Ref. 9-19), Cottam Solar Project (Ref. 9-20) and West Burton Solar Project (Ref. 9-21)) that neighbour, or overlap with, the Order limits, were obtained from the respective developers (Low Carbon and Island Green Power) to supplement data collection within the Cable Route Corridor and to demonstrate collaboration with these overlapping schemes and a reduction in environmental footprint. These datasets were predominantly collected for the respective solar projects in 2022 and were validated by the Applicant within the appropriate survey seasons in 2023, via a walkover of the Cable Route Corridor, which was used to determine that the identified habitats and locations of protected species were still relevant and up to date.

9.4.16 The datasets received are presented in **Table 9-1**.

Table 9-1: Summary of datasets received from neighbouring or overlapping solar projects

Solar project	Location / overlap with the Scheme	Dataset received
Gate Burton Energy Park	Data received from the Cable Route Corridor, between the A1500 and Cottam Power Station	• Phase 1 habitat data • Information on hedgerows (species-rich / poor and, or ecologically important) • Locations and details of surveyed water bodies for Great Crested Newt (GCN), including eDNA data, of presence / absence, of GCN • Locations of surveyed areas for reptiles and presence of reptiles and amphibians • Locations of territories of breeding birds • Location and details of surveyed trees for bat roost potential • Locations and details of surveyed watercourses for riparian mammals and presence / absence of these species • Location and details of Badger setts
West Burton Solar Project	Data received from the Cable Route Corridor, between the A1500 and Coates	• Phase 1 habitat data • Information on hedgerows (species-rich / poor and, or ecologically important) • Locations and details of surveyed water bodies for GCN, including eDNA data, of presence / absence, of GCN • Locations of registrations of breeding birds • Location and details of surveyed trees for bat roost potential • Locations and details of surveyed watercourses for riparian mammals and presence / absence of these species • Location and details of Badger setts
Cottam Solar Project	Datasets received from the Cable Route Corridor between the Principal Site and the A1500	• Phase 1 habitat data • Information on hedgerows (species-rich / poor and, or ecologically important) • Locations of registrations of breeding birds • Location and details of surveyed trees for bat roost potential

Solar project	Location / overlap with the Scheme	Dataset received
		• Locations and details of surveyed watercourses for riparian mammals and presence / absence of these species • Location and details of Badger setts

Field survey undertaken by the Applicant

9.4.17 The requirement for ecological field surveys was determined following a Preliminary Ecological Appraisal (PEA), which consisted of three components, the results of which are presented in this chapter: the desktop study data review (which included review of the collaborative datasets received); a Phase 1 Habitat survey; and a scoping survey for protected and notable species and other species of conservation concern.

9.4.18 The Phase 1 Habitat survey followed the standard JNCC method '*Handbook for Phase 1 habitat survey: A technique for environmental audit*' (Ref. 9-22). In summary, this comprised a walkover of the Order limits to record the broad habitat types within the Order limits and up to 50 metres (m) from the Order limits, where these areas were accessible or viewable from within the Order limits.

9.4.19 A scoping survey to determine the likelihood of habitats supporting protected and notable species was carried out in conjunction with the Phase 1 Habitat survey. This survey, also informed by the desk study and review of collaborative datasets, led to the recommendation of field surveys for certain protected or notable habitats and species. Detailed, species-specific, surveys were then undertaken to characterise the ecological baseline within the relevant Survey Areas as presented in **Table 9-2** and reported within **Appendices 9-2 to 9-11** of this ES **[EN010142/APP/6.2]**.

9.4.20 An aquatic scoping (walkover) survey was completed to assess the quality of targeted aquatic habitats (watercourses and ditches) within the Order limits. This involved undertaking a habitat appraisal where potential impacts were considered likely and to assess the potential for water bodies to support protected or notable species and inform further survey work (included within **Appendix 9-2** of this ES **[EN010142/APP/6.2]**). Where deemed suitable, macrophyte surveys and aquatic macroinvertebrate sampling were undertaken on selected water bodies, as presented in **Appendix 9-3** of this ES **[EN010142/APP/6.2]**).

9.4.21 A walkover survey was undertaken by a specialist entomologist to determine the most suitable habitats that could potentially support terrestrial invertebrates (see **Appendix 9-4** of this ES **[EN010142/APP/6.2]**) and this walkover survey was used to inform the design of the Scheme. The Order limits contain a variety of habitats, but the majority of habitat that may support notable terrestrial invertebrates or invertebrate communities (e.g., woodland, scrub and arable margins) will be retained and, or avoided during construction of the Scheme.

9.4.22 Ecological surveys completed across the Order limits have noted the presence of Brown Hare (*Lepus europaeus)* but, no surveys specifically for any mammals listed on S41 of the NERC Act (Ref. 9-6), including Hedgehog (*Erinacues europaeus)* and Polecat (*Mustela putorius)*, have been undertaken as part of the assessment. Where the Order limits are within the known geographical range for these species and suitable habitat to support them is present, then they are assumed to be present. Any embedded mitigation required for these mammal species is described in this chapter (see **Table 9-13**) and it is anticipated that the proposed landscape design for

the Scheme (as presented in the Framework LEMP **[EN010142/APP/7.17]**) will be largely beneficial for these species.

9.4.23 **Table 9-2** presents details of the coverage, methods and survey periods within the relevant Survey Areas.

Table 9-2: Ecological surveys, undertaken by the Applicant, to characterise baseline conditions

Survey (and relevant technical appendix)	Survey Method	Survey Period	Survey Area	Supporting Notes
Aquatic habitat walkover (scoping) survey; macro-invertebrate and macrophyte surveys, including aquatic and riparian INNS (**Appendix 9-2: Aquatic ecology baseline report [EN010142/APP/6.2]**)	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. Surveys of ponds were based on the Predictive System for Multimetrics (PSYM) methods used for ponds (Ref. 9-23). Survey method for streams and ditches followed the aquatic macroinvertebrate sampling procedures standardised by the Environment Agency in 2017 (Ref. 9-24) and the UKTAG River Assessment Method (Macrophytes and	Aquatic macrophytes and aquatic macroinvertebrates were surveyed as required, in May and November 2022.	Water bodies identified during the aquatic scoping survey and desk study for further survey within the Order limits based on likely impacts to ordinary watercourses and ditches. Main rivers (i.e., River Trent and River Till) were scoped out due to the commitment to cross these watercourses by non-intrusive techniques.	The land within the Order limits is an appropriate Survey Area to determine any potential impacts arising from the Scheme both upstream and downstream (also informed by the desk study which assessed a wider 2km zone). Fish surveys were scoped out as sufficient information to inform the assessment was obtained from desk study data alone.

Survey (and relevant technical appendix)	Survey Method	Survey Period	Survey Area	Supporting Notes
	Phytobenthos) for use with LEAFPACS2 (Ref. 9-25).			
Arable Flora and Grasslands (including invasive non-native species of flora) (**Appendix 9-3: Baseline Report for Flora (including hedgerows)** of this ES **[EN010142/APP/6.2]**)	Surveys for arable flora involved walking arable field boundaries to record notable species as listed in Great Britain (Ref. 9-26, Ref. 9-27) and England (Ref. 9-28). Grasslands, including LWS's within the Order limits were surveyed in more detail (i.e.: species lists with abundance ratings) for notable species and species composition with the rarity of higher plants given based on 'New Flora of the British Isles' (Ref. 9-29).	Surveys for arable flora were undertaken in June 2023 and of grassland areas in September 2023.	The Survey Area for arable flora is the Principal Site and areas of terrestrial habitat that were surveyed in detail were those that had the potential to be affected by the Scheme. Grasslands that were surveyed in further detail were those with the potential to be affected by the Scheme and priority or potential priority habitats, as identified from the initial Phase 1 Habitat survey and desk study information.	Using professional judgement, arable field margins within the Principal Site and grassland within the Order limits were surveyed in more detail, acknowledging that the habitats within these areas have the potential to be directly or permanently impacted by the Scheme.
Hedgerows (**Appendix 9-3: Baseline Report for Flora (including hedgerows)** of this ES **[EN010142/APP/6.2]**)	Hedgerows were surveyed and assessed for their 'importance' against the Wildlife and Landscape Criteria, detailed in the Hedgerow Regulations (Ref. 9-30).	Surveys were undertaken between June and September 2023.	Hedgerows within the Order limits.	Using professional judgement, hedgerows within the Order limits is an appropriate Survey Area, acknowledging that those that are likely to be impacted by the

Survey (and relevant technical appendix)	Survey Method	Survey Period	Survey Area	Supporting Notes
				Scheme are within the Order limits. Hedgerows outside the Scheme will remain intact and unaffected by Scheme.
Terrestrial Invertebrates (**Appendix 9-4: Baseline Report for Terrestrial invertebrates** of this ES **[EN010142/APP/6.2]**)	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.	Walkover survey undertaken in May 2023, with sample surveys of terrestrial invertebrates in selected areas undertaken in May 2023.	The Survey Area was the Principal Site and the walkover survey identified habitats within that, potentially suitable to support notable terrestrial invertebrates.	Using professional judgement, habitat within the Principal Site is an appropriate Survey Area, acknowledging that habitats that have the potential to be permanently impacted (i.e., lost) by the Scheme and potentially supporting notable terrestrial invertebrates or assemblages are within this area. No surveys were undertaken for terrestrial invertebrates within the Cable Route Corridor as the temporary nature of the construction of the cable corridor will not significantly impact upon any terrestrial

Survey (and relevant technical appendix)	Survey Method	Survey Period	Survey Area	Supporting Notes
				invertebrates, or their habitats, in these areas.
Great Crested Newt (**Appendix 9-5: Baseline Report for Great Crested Newt** of this ES **[EN010142/APP/6.2]**)	Habitat Suitability Index (HSI) surveys to evaluate the suitability of ponds and their potential to support Great Crested Newt (Ref. 9-31). Further to the HSI assessment, suitable (as defined by the results of the HSI survey) and accessible water bodies identified within the Survey Area were then scoped in for Environmental DNA (eDNA) survey (Ref. 9-32) to determine the presence or absence of Great Crested Newt.	HSI and eDNA surveys were undertaken between April and June 2022 and May and June 2023.	HSI surveys were undertaken on water bodies within 250m of the Order limits and, where further survey was identified as being required, using eDNA methods.	With reference to published guidance, habitats within and up to 250m of the Order limits 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. 9-33). However, 250m is an appropriate Survey Area from the Order limits acknowledging that there is a notable decrease in abundance of Great Crested Newt beyond a distance of 250m from a breeding pond (Ref. 9-34).
Reptiles (and amphibians) (**Appendix 9-6: Baseline Report for Reptiles and**	Surveys of terrestrial habitats for reptiles and amphibians (such as	Surveys were undertaken between April and early June 2023.	Suitable habitat for reptiles and other amphibians (such as	With reference to published guidance, the Survey Area provides

Survey (and relevant technical appendix)	Survey Method	Survey Period	Survey Area	Supporting Notes
amphibians of this ES **[EN010142/APP/6.2]**)	Common Toad (*Bufo bufo)*) to record species presence (or absence) using artificial refugia and observations of species in accordance with Froglife's Advice Sheet 10 (Ref. 9-35) and Natural England's Standing Advice Sheet for reptiles (Ref. 9-36). Surveys of aquatic habitats took place from the edges of water bodies, making observations and sightings of amphibians in the water, including tadpoles, spawn and newt efts.		grassland) within the Principal Site.	sufficient information on reptile and amphibian presence within the Order limits, acknowledging that habitats that have the potential to be permanently impacted (*i.e.,* lost) by the Scheme and potentially supporting reptiles and amphibians are within this area.
Breeding birds (including farmland birds) (**Appendix 9-7: Baseline Report for Breeding birds** of this ES **[EN010142/APP/6.2]**)	Surveys for breeding birds are based on a standard territory mapping method for surveying breeding birds as detailed in 'Bird Monitoring Methods' (Ref. 9-37) and 'Bird Census Techniques' (Ref. 9-38); and were adapted where necessary to include species-specific methods (as detailed in 'Bird	Surveys within the Principal Site were undertaken between April and July 2022.	For the general breeding bird assemblage, the land within the Order limits and to a maximum of 50m from the Order limits was surveyed. For species of greater conservation value and/ or higher sensitivity, e.g. those listed on Schedule 1 of the	Standardised survey zones for assessing the impacts of development on bird populations do not exist, however, the Survey Area provides information on the breeding birds within the area immediately surrounding and contiguous with the Order limits, where birds

Survey (and relevant technical appendix)	Survey Method	Survey Period	Survey Area	Supporting Notes
	Monitoring Methods' (Ref. 9-37)) for other species, as required.		Wildlife and Countryside Act, 1981 (Ref. 9-1) and sensitive to potential noise or visual disturbance, where any such species were recorded, the survey area was extended up to 200m from the Order limits, *e.g.:* Hobby *Falco subbuteo* and Barn Owl *Tyto alba*.	may potentially be adversely affected. Published guidance on disturbance distances for specially protected species (Ref. 9-39) was used to define the Survey Area for specially protected species.
Non-breeding birds (including farmland birds) (**Appendix 9-8: Baseline Report for Non-breeding birds** of this ES **[EN010142/APP/6.2]**)	Non-breeding bird surveys were undertaken using walkover survey methods, adapted from the survey methods used to record breeding birds as detailed in 'Bird Monitoring Methods' (Ref. 9-37) and 'Bird Census Techniques' (Ref. 9-38).	Surveys were undertaken between October 2022 and March 2023.	The land within the Order limits and to a maximum of 50m from the Order limits was 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 Order limits, where birds may potentially be adversely affected, either directly or

Survey (and relevant technical appendix)	Survey Method	Survey Period	Survey Area	Supporting Notes
				indirectly. Therefore, the Survey Area is sufficient to determine the likely impacts of the Scheme on the majority of non-breeding bird species occurring or likely to occur in the area.
Bats (**Appendix 9-9: Baseline Report for Bats** of this ES **[EN010142/APP/6.2]**)	Surveys for bat activity were undertaken within the Principal Site and were based on standard methods for bat activity transect surveys as described in the Bat Conservation Trust (BCT) guidelines (Ref. 9-40).	Activity surveys were completed within the Principal Site, using three transects routes that were surveyed once in each season (spring, summer and autumn) between May and September 2022; and a fourth transect that was surveyed once in each season in April, June and September 2023.	The Survey Area comprises representative habitats within the Principal Site only.	Using professional judgement and with reference to published guidance, the Survey Area provides sufficient information on bat usage (commuting and foraging) of the Principal Site and where impacts are predicted, assessing commuting and foraging habitat and nearby roosts, and enabling determination of impacts on bat populations occurring within, or adjacent to, the Principal Site, acknowledging that any impacts within the Cable Route Corridor will be

Survey (and relevant technical appendix)	Survey Method	Survey Period	Survey Area	Supporting Notes
				temporary and loss of important features (such as hedgerows) are minimised or avoided.
	Preliminary bat roost appraisal surveys were undertaken on buildings and trees, following guidance as described in the BCT guidelines (Ref. 9-40).	The PRA survey was undertaken between January and February 2023.	The land within the Order limits and a zone up to a maximum of 50m from the Principal Site, where the potential for impacts were identified.	With reference to published guidance and using professional judgement, the Order limits and a zone up to a maximum of 50m is an appropriate Survey Area to determine potential impacts (direct loss and/or disturbance) on roosting bats. The Scheme has been designed to ensure that the majority of trees and structures will be retained and appropriately buffered, therefore no further detailed surveys are required to be undertaken to characterise the baseline for bats.
	Advanced Level Bat Survey Techniques (ALBST) were	Between May and September (avoiding mid-	ABLST within Harpswell Wood only.	Harpswell Wood was the Survey Area for

Survey (and relevant technical appendix)	Survey Method	Survey Period	Survey Area	Supporting Notes
	used in Harpswell Wood to determine the presence of and identify rare/cryptic bat species (e.g. Barbastelle *Barbastella barbastellus* and *Myotis* species).	June to July when bats may have dependant young).		ABLST as a high number of bat passes were recorded during transect and static detector surveys here (including unknown *Myotis* species) and the information collected supplemented the activity and static detector surveys by providing more clarity on any potentially rare/cryptic species that may occur within the Survey Area, including details on their breeding status and assessing the potential for roosting on site.
Riparian mammals (Water Vole (*Arvicola amphibius),* Otter (*Lutra)* and Mink (*Mustela vison)*) (**Appendix 9-10: Baseline Report for Riparian mammals** of this ES **[EN010142/APP/6.2]**)	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	The Habitat Suitability Assessments were undertaken in November 2022 and June 2023, with detailed surveys undertaken alongside these (and in August 2023), as appropriate.	The Habitat Suitability Assessment was undertaken on all watercourses and water bodies within the Principal Site, with only those watercourses and water bodies that were identified as being	With reference to published guidance and using professional judgement, surveying riparian habitats up to 10m from the Principal Site is sufficient to determine presence or absence of riparian

Survey (and relevant technical appendix)	Survey Method	Survey Period	Survey Area	Supporting Notes
	then surveyed for evidence of Water Vole and Otter activity, following methods as described in the 'Water Vole Conservation Handbook' (Ref. 9-41) and 'The Water Vole Mitigation Handbook' (Ref. 9-42), guidance in the 'New Rivers and Wildlife Handbook' (Ref. 9-43); the 'Fifth Otter Survey of England 2009-2010' (Ref. 9-44) and the 'Ecology of European Otter' (Ref. 9-45). Any evidence of Mink was also recorded, using these survey methods.		suitable to support riparian mammals within the Principal Site (and to a maximum of 10m from the Principal Site, where access was permitted) subject to detailed surveys for Water Vole, Otter and Mink. Additional surveys of woodland in the vicinity of water courses were also checked for Otter holts.	mammals within, or adjacent to, the Principal Site.
Badger (*Meles meles)* (**Appendix 9-11: Baseline Report for Badger (Confidential)** of this ES **[EN010142/APP/6.2]**)	A walkover survey searching for signs of Badger activity (such as setts and latrines), as described in the Mammal Society publication 'Surveying Badgers' (Ref. 9-46) and with reference to 'Surveying for Badgers: Good Practice Guidelines' (Ref. 9-47).	Surveys were undertaken in November and December 2022; February 2023; and between September and November 2023, with any evidence of Badger also recorded during other ecological surveys undertaken in 2023.	Within the Order limits and to a maximum of 50m from the Order limits, where viewable from within the Order limits or where access was permitted.	With reference to published guidance and applying professional judgement, 50m beyond the Order limits is an appropriate Survey Area as it covers the 30m distance of avoidance around setts at which direct or indirect effects

Survey (and relevant technical appendix)	Survey Method	Survey Period	Survey Area	Supporting Notes
				on Badger setts could occur.

Biodiversity Net Gain

9.4.24 Surveys to inform the Biodiversity Net Gain (BNG) assessment were undertaken, between June and November 2023, to record the area (or length) of each habitat measured alongside a habitat condition assessment in line with UK Habitat Classification (UKHab) (Ref. 9-48) and guidance for river and ditch condition assessment (Ref. 9-49, Ref. 9-50), as per BNG guidance documents (Ref. 9-51).

9.4.25 Biodiversity metrics provide a measure of overall biodiversity value based on habitat type, area, condition, strategic significance and distinctiveness. Calculations consider the level of proposed habitat loss, retention, enhancement and/or creation delivered by the Scheme and are measured using DEFRA's Statutory Biodiversity Metric (Ref. 9-52) in accordance with the User Guide (Ref. 9-53) and best practice principles (Ref. 9-54). The change in biodiversity units is calculated for each habitat component: habitats, watercourses (rivers and streams) and hedgerows, and indicates either a net loss, a net gain or no change in biodiversity.

9.4.26 Schedule 15 of the Environment Act, 2021 (Ref. 9-55) makes provision for BNG in relation to development consent for Nationally Significant Infrastructure Projects (NSIPs). Although the requirement for a minimum 10% gain in biodiversity for NSIPs will not become mandatory until November 2025, the Scheme is committed to deliver BNG in accordance with the **draft DCO [EN010142/APP/3.1]**. Based on current plans, the Scheme is predicted to result in a net gain of 64.55% for area-based habitat units, 17.33% for hedgerow units, and 22.94% for watercourse units.

9.4.27 Paragraph 4.6.6 of NPS EN-1 (Ref. 9-56) sets out how BNG should be addressed for Energy NSIP proposals and how these should seek opportunities to contribute to and enhance the natural environment by providing net gains for biodiversity and the wider environment, where possible. Paragraph 4.6.10 states that BNG should be applied after compliance with the mitigation hierarchy and does not change or replace existing environmental obligations although compliance with those obligations will be relevant to the question of the baseline for assessing net gain and if they deliver an additional enhancement beyond meeting the existing obligation, that enhancement will count towards net gain.

9.4.28 In addition, the NPPF (Ref. 9-57) requires that proposed developments consider and engage with the mitigation hierarchy, requiring the highest level to be applied, where possible. The mitigation hierarchy consists of 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).

9.4.29 CIEEM's Biodiversity Net Gain: Good Practice Principles for Development (Ref. 9-58) defines BNG 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 Order limits, outside of this, or in combination, the Scheme will deliver BNG within the Principal Site, through the implementation of measures such as field boundary enhancements and planting appropriate seed mixes.

9.4.30 The BNG assessment **[EN010142/APP/7.15]** identifies the opportunities of the Scheme, contributing to BNG, in line with the requirements of the Environment Act 2021 (Ref. 9-55), NPS EN-1 (Ref. 9-56), the NPPF (Ref. 9-57), CIEEMs Good Practice Guidance (Ref. 9-58) and local planning policy (see **Appendix 9-1** of this ES **[EN010142/APP/6.2]**). The **Framework LEMP [EN010142/APP/7.17]** also specifies mitigation and enhancement measures in line with the BNG assessment.

Impact Assessment Methodology

Assessment Criteria

9.4.31 This environmental assessment has been undertaken in accordance with best practice guidance for Ecological Impact Assessment (EcIA), issued by the CIEEM (the CIEEM guidelines) entitled '*Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Costal and Marine'* (Ref. 9-2) as summarised below. The aims of the ecological assessment are to:

a. Identify important ecological features (IEFs) (*i.e.,* designated sites, habitats, species or ecosystems) which may be impacted by the Scheme;

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

c. Facilitate scientifically rigorous and transparent determination of the consequences of the Scheme 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.

9.4.32 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 Scheme 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 Scheme (*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 (additional mitigation), where possible, 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.

f. Any residual significant effects of the Scheme following additional mitigation are identified.

g. Scope for ecological enhancement is considered.

9.4.33 It is not necessary in the assessment to address all habitats and species with potential to occur in the relevant Study Area and instead the focus is on those that are “relevant”, *i.e.,* ecological features that are considered to be important and potentially affected by the Scheme. This does not mean that efforts should not be made to safeguard wider biodiversity, however, and this has been considered where appropriate.

Determining Importance

9.4.34 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 Scheme 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 **Appendix 9-1: Ecology and Nature Conservation: Legislation Policy and Guidance** of this ES **[EN010142/APP/6.2]**), which is important in demonstrating how the Scheme

will comply with statutory requirements and policy objectives for biodiversity, in accordance with Section 4.3 of the CIEEM guidelines (Ref. 9-2).

9.4.35 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 Biodiversity Action Plan (BAP) status) and legal protection. For example, bird populations exceeding 1% of published information on biogeographic populations are considered to be of international importance, those exceeding 1% of published data for national populations are considered to be of national importance, and so on.

9.4.36 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.

9.4.37 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.

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

9.4.39 For the purposes of the assessment within this chapter, 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. As the CIEEM guidelines (Ref. 9-2) state, 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*".

9.4.40 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 proposed developments or land

use changes, as explained in the ‘Future Baseline (no development)’ section of this chapter.

9.4.41 A summary of the value (importance) of ecological features and the geographical frames of reference used for this assessment, based on Section 4.7 in the CIEEM guidelines (Ref. 9-2) is presented in **Table 9-3**.

Table 9-3: Summary of sensitivity of ecological features, according to geographic context

Value (Importance) of ecological receptor	Geographic Frame of Reference	Examples
Very High	International	Statutorily designated sites, such as Ramsar Sites, SACs (including candidate SACs), SPAs, normally within the geographic area of Europe. Species occurring in numbers approaching that of international importance (*i.e.*, >1% of a biogeographic population). 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. Species occurring in numbers approaching that of national importance (*i.e.*, >1% of the UK population). Priority habitats included on Annex I of the Habitats Directive (Ref. 9-59) or S41 of the NERC Act 2006 (Ref. 9-6).
Medium / High	Regional (East Midlands)	Species occurring in numbers of greater geographical importance than within the county of Lincolnshire or Nottinghamshire but does not reach the threshold to be of National importance.
Medium	County (Lincolnshire or Nottinghamshire) and, or, District (Bassetlaw and West Lindsey)	Non-statutorily designated sites, such as LWSs. Species occurring in numbers approaching that of county or district importance (*i.e.*, >1% of the county or district (if known) population).
Low	Local	Species of conservation interest, *e.g.*: UK Biodiversity Action Plan (UKBAP) / Local Biodiversity Action Plan (LBAP) species that contribute to the local community.

Value (Importance) of ecological receptor	Geographic Frame of Reference	Examples
		Areas of habitat that do not meet criteria for selection as LWS in Lincolnshire or Nottinghamshire. Areas of habitat or species that are considered to enrich local area.
Negligible	Site	Species that are common and widespread and are not legally protected or included within local planning policy. Areas of habitat that are widespread and of no local value (such as a fence-line or hard-standing).

Characterising Ecological Effects

9.4.42 In accordance with Section 1.21 in the CIEEM guidelines (Ref. 9-2), 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.

9.4.43 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 - consideration of the point at which the impact occurs in relation to critical life-stages or seasons.

f. Reversibility – A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation, whereas an irreversible effect is one from which recovery is not possible within a reasonable timescale *i.e.* within the 60-year lifespan of the Scheme (in the context of the feature being assessed), or there is no reasonable chance of action being taken to reverse it.

g. Temporary or permanent – determining if the impact is temporary or permanent. A temporary impact is one that occurs for a limited duration or that will alter a condition for a short period of time, as opposed to a permanent effect, which is one that is persists over time and does not easily revert to its original state.

9.4.44 Combined, these characteristics form the magnitude criteria for effects of the Scheme on IEFs as summarised in

9.4.45 **Table** 9-4.

Table 9-4: Magnitude Criteria for 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 on an ecological feature 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

9.4.46 For each ecological feature, only those characteristics relevant to understanding the ecological effect of the Scheme 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.

9.4.47 Sections 5.24 to 5.28 in the CIEEM guidelines (Ref. 9-2) 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)*".

9.4.48 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 significance is determined at the appropriate geographical scale, as presented in **Table 9-3**.

9.4.49 There are a number of approaches for determining the significance of effects on ecological features. Whilst the CIEEM guidelines (Ref. 9-2) 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 9-5**.

Table 9-5: 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.
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.

Effect classification terminology	Equivalent CIEEM terminology
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.

9.5 Stakeholder Engagement

9.5.1 An EIA Scoping Opinion was requested from the Secretary of State through the Planning Inspectorate in October 2022 as part of the EIA Scoping Process.

9.5.2 The **EIA Scoping Report** (**Appendix 1-1** of this ES **[EN010142/APP/6.2]**) was issued in April 2022 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 Scheme on biodiversity.

9.5.3 The **Scoping Opinion (Appendix 1-2** of this ES **[EN010142/APP/6.2]**) was received in November 2022 and relevant stakeholders responses, in relation to Ecology are summarised in **Table 9-6**.

9.5.4 Further consultation in response to formal pre-application engagement was undertaken through the Preliminary Environmental Information Report (PEI Report), issued in April 2023. **Table 9-7** outlines the responses received through statutory consultation between May and July 2023 relating to ecology and nature conservation and how these have been addressed through the ES. Responses have been grouped thematically where relevant, but all relevant consultees are listed. **Table 9-7** also summarises additional comments received from targeted consultation completed in December 2023 – January 2024.

9.5.5 In addition to statutory consultation, technical engagement has been undertaken with statutory stakeholders for ecology. **Table 9-8** provides a summary of these meetings.

Table 9-6: Summary of Scoping Opinion responses to Ecology and Nature Conservation

Stakeholder	Summary of Scoping Opinion Comment	Summary of Applicant Response	Location of Response within this Chapter
Planning Inspectorate	Attraction of aquatic invertebrates to solar panels: The Applicant proposes to scope out this matter on the basis that there are no designated sites with aquatic invertebrate species or assemblages as qualifying features within the study area. The Inspectorate is content to scope out consideration of this matter on this basis.	Comment noted. As set out in **Table 9-2**, appropriate aquatic surveys have been undertaken, but this impact pathway has not been included in this ES.	See **Table 9-2** for surveys undertaken and **Appendix 9-2: Aquatic ecology baseline report** of this ES **[EN010142/APP/6.2]** for full details of the aquatic baseline.
Planning Inspectorate	Attraction of Birds to Solar Panels: The Applicant proposes to scope out this matter on the basis that there is limited evidence from operational solar schemes to suggest that solar panels attract birds and increase the risk of mortality. The Scoping Report also notes that the Proposed Development is not located within a migratory route or near areas which support large congregations of birds. Considering the information available the Inspectorate is content that significant effects are unlikely to occur and as such this matter can be scoped out. However, the ES should ensure that impacts of the Proposed Development on birds are assessed using a suitable approach, seeking agreement from relevant consultation bodies where possible.	Comment noted. This impact pathway has not been included in this ES. However, the potential impact of the Scheme on birds has been assessed within this chapter and the scope and assessments agreed with relevant consultees, including Natural England.	See **Table 9-2** for surveys undertaken and **Appendices 9-7: Baseline report for Breeding birds** and **9-8: Baseline report for Non-breeding birds** of this ES **[EN010142/APP/6.2]** for full details of the methods used and assessment baseline (see also **Table 9-11**). The assessment of likely impacts and effects relating to birds is included in Section 9.9 of this chapter.

Stakeholder	Summary of Scoping Opinion Comment	Summary of Applicant Response	Location of Response within this Chapter
Planning Inspectorate	Surveys for Polecat, Hedgehog and Brown Hare: Scoping Report paragraph 10.32 states that specific surveys of Brown Hare, West European Hedgehog, and Polecat will not be conducted however no justification is provided for this approach. Records of Brown Hare and Hedgehogs were found within the study area, as stated in Scoping Report paragraph 10.25 and the Preliminary Ecological Appraisal (PEA) provided in Appendix B. It is unclear why specific surveys for these species are not proposed, particularly considering Brown Hare and Hedgehogs have been recorded. The ES should consider effects on these species and be supported by robust survey data, unless otherwise agreed with relevant consultation bodies.	Where the Order limits is within the known geographical range for these species and suitable habitat to support them is present, then they are assumed to be present and therefore specific surveys were not undertaken. Any embedded mitigation required for Polecat, Hedgehog and Brown Hare (and any other relevant S41 species) is included in this chapter and it is anticipated that the proposed landscape design for the Scheme (as presented in the **Framework LEMP [EN010142/APP/7.17]**) will be largely beneficial for these species.	Section 9.4.22 of this chapter sets out the rationale for surveys and **Table 9-11** includes the baseline detail, with any embedded mitigation for any relevant S41 mammal species included in **Table 9-13**.
Planning Inspectorate	Directional drilling methods: The potential for sediment mobilisation and emissions of pollutants from the riverbed through the use of directional drilling methods or the vibration impacts arising from this method to install cable connections are not identified in this paragraph of the Scoping Report. The ES should consider the effects of drilling in watercourses on invertebrates and fish species found in these drilling locations.	Comment noted. This chapter assesses the impacts of the Scheme on aquatic macrophytes and macroinvertebrates and fish, including, where appropriate, potential impacts arising from non-intrusive methods such as drilling.	**Table 9-13** sets out the relevant embedded avoidance and mitigation measures, with an assessment of the impacts of the Scheme, on Aquatic macrophytes and macroinvertebrates and fish, including, where appropriate, potential impacts arising from non-intrusive methods such as drilling, presented in **Table 9-15**.

Stakeholder	Summary of Scoping Opinion Comment	Summary of Applicant Response	Location of Response within this Chapter
Planning Inspectorate	Table 6-1 of the PEA (Scoping Report Appendix B) provides a summary of the ecological constraints and recommended further requirements. Impacts on non-statutory designated sites are not listed within the table despite there being sites located within the proposed Cable Route Corridor area. The ES should ensure that impacts on non-statutory designated sites are assessed and where there is the potential for significant effects to occur this should be assessed within the ES.	An assessment of the potential impacts of the Scheme on non-statutory designated sites is included within this chapter.	**Table 9-9** identifies the relevant non-statutory sites, with embedded avoidance and mitigation included in **Table 9-13.** An assessment of the potential impacts and effects is included in **Table 9-15**.
Planning Inspectorate	In addition to the assessment of impacts at the project scale, the Applicant should assess the potential for the Proposed Development to result in regional level impacts on ground nesting birds from the loss of suitable habitat.	Comment noted. A full assessment on the potential impacts of the Scheme on birds is included within this chapter.	See **Table 9-2** for surveys undertaken and **Appendices 9-7: Baseline report for Breeding birds** and **9-8: Baseline report for Non-breeding birds** of this ES **[EN010142/APP/6.2]** for full details of the methods used and assessment baseline (see also **Table 9-11**). The assessment of likely impacts and effects is included in **Section 9.9** of this ES. An assessment of cumulative effects is provided in **Chapter 18: Cumulative Effects and**

Stakeholder	Summary of Scoping Opinion Comment	Summary of Applicant Response	Location of Response within this Chapter
			Interactions of this ES **[EN010142/APP/6.1]**
Planning Inspectorate	Public bodies have a responsibility to avoid releasing environmental information that could bring about harm to sensitive or vulnerable ecological features. Specific survey and assessment data relating to the presence and locations of species such as badgers, rare birds and plants that could be subject to disturbance, damage, persecution, or commercial exploitation resulting from publication of the information, should be provided in the ES as a confidential annex. All other assessment information should be included in an ES chapter, as normal, with a placeholder explaining that a confidential annex has been submitted to the Inspectorate and may be made available subject to request.	Comment noted. The ES will not disclose the presence of, or location of sensitive species.	N/A

Stakeholder	Summary of Scoping Opinion Comment	Summary of Applicant Response	Location of Response within this Chapter
Planning Inspectorate	Veteran trees are not referenced in the Ecology chapter of the Scoping Report. The ES should identify any veteran trees which may be affected by the Proposed Development and explain how such features have been avoided or where this is not possible assess any likely significant effects that may arise.	Comment noted. An Arboricultural Impact Assessment has been prepared to accompany the DCO Application. This is included within **Appendix 12-7: Arboricultural Impact Assessment** of this ES **[EN010142/APP/6.2]**.	See **Appendix 12-7: Arboricultural Impact Assessment** of this ES **[EN010142/APP/6.2]**.
Bassetlaw District Council	The need for 10% net gain is welcomed and this should be scoped into the assessment. The Environment Act 2021 promotes biodiversity net gain in new development, albeit from 2023. However, the NPPF recommends securing net gains now. Reflecting the principles of national planning policy and the emerging provisions of the Act we would strongly recommend that the proposal secures at least 10% net gain in biodiversity to ensure that the value of the development exceeds the pre-development on site habitat value by at least 10%. It will be possible to make specific comments when a more exact route is known. Ongoing consultation with the Nottinghamshire Wildlife Trust will be important. Designations such as SSSIs, Local Wildlife Sites and other relevant	Comment noted. The Scheme is committed to deliver BNG in accordance with the **draft DCO [EN010142/APP/3.1]**. As set out in the **BNG Report [EN010142/APP/7.14],** the Scheme is predicted to result in a net gain of 64.55% for area-based habitat units, 17.33% for hedgerow units, and 22.94% for watercourse units, based on current plans. An assessment of the potential impacts of the Scheme on designated sites is included within this chapter, which concludes there will be no significant effects on SSSIs, LWSs or other relevant designations. Consultation with Nottinghamshire Wildlife Trust on designated sites is detailed within the **Consultation**	See Section 9.4.24 to 9.4.30 regarding Biodiversity Net Gain. **Table 9-2** outlines ecological surveys that have been used to inform the **BNG Report [EN010142/APP/7.14]**. **Appendix 9-1: Ecology and Nature Conservation: Legislation Policy and Guidance** of this ES **[EN010142/APP/6.2]** includes relevant legislation, policy and guidance documents used to inform the assessment presented in this chapter.

Stakeholder	Summary of Scoping Opinion Comment	Summary of Applicant Response	Location of Response within this Chapter
	designations should be avoided where possible. The most relevant policies are Policy DM9 of the Bassetlaw Core Strategy, Section 15 of the NPPF, Policies ST39 and ST40 of the Draft Bassetlaw Local Plan, Policy 6 of the Rampton and Woodbeck Neighbourhood Plan and Policy 2 of the Treswell and Cottam NP.	**Report [EN010142/APP/5.1]** and this has informed the scope of assessments presented in this chapter.	
Environment Agency	We support the proposal for further survey work regarding water vole. Concerning river surveys, we would expect these to be carried out from within the channel. However, if this proves difficult, we support the use of water vole rafts as an alternative method for surveying; these should still follow timing and survey effort guidelines as per the relevant best practice.	Comment noted. The approach used for surveys of Water Vole was dependent on the watercourse and how accessible it was.	Details of Water Vole surveys are set out in **Appendix 9-10: Baseline Report for Riparian mammals** of this ES **[EN010142/APP/6.2]**.
Environment Agency	In respect of the Biodiversity Net Gain (BNG) assessment, we suggest referring to relevant Biodiversity Opportunity Mapping documents that may provide enhancement and/or mitigation suggestions. The relevant contacts for this will be through the Nottinghamshire Biodiversity Action Group or the Greater Lincolnshire Nature Partnership, depending on the location.	Comment noted. The Scheme has utilised the Biodiversity Opportunity mapping tools to inform the green infrastructure proposed as part of the Scheme.	Full details of the BNG assessment are provided in the **Biodiversity Net Gain report [EN010142/APP/7.14]**.

Stakeholder	Summary of Scoping Opinion Comment	Summary of Applicant Response	Location of Response within this Chapter
	The Applicant (if not already aware) may be able to utilise Environment Agency data within their assessment, which is accessible at: Open WIMS data; and England | Catchment Data Explorer		
Natural England	Section 5.2.1 of the Scoping Report notes that the scheme sits outside the IRZ for solar development for Ashtons Meadow SSSI, but despite this, section 5.2.2 states that indirect impacts to the SSSI will be assessed fully. Ashtons Meadow SSSI is designated for its neutral grassland interest, which may be susceptible to changes in air quality. Due to the immobile nature of the interest features of the site, and relatively large distance to the development site (approx. 1 km) we consider impacts to be unlikely, but continue to welcome the intention to rule out any impacts within the ES.	Comment noted. **Chapter 6: Air Quality** of this ES **[EN010142/APP/6.1]** identifies no significant effects on ecological designated sites due to the distance of all elements of the Scheme from designated sites.	Further details are provided in **Chapter 6: Air Quality** of this ES **[EN010142/APP/6.1]**.
Natural England	Whilst Natural England do not hold information regarding locally designated sites, we consider that the ES should consider any impacts upon local wildlife and geological sites, including local nature reserves. Local Sites are identified by the local wildlife trust, geo-conservation group or other local group and protected under the NPPF (paragraph 174 and 175). The ES should set out	An assessment of the potential impacts of the Scheme on non-statutory designated sites is included within this chapter.	**Table 9-9** identifies the relevant non-statutory sites, with embedded avoidance and mitigation included in **Table 9-13**. An assessment of the potential impacts and effects is included in **Table 9-14**.

Stakeholder	Summary of Scoping Opinion Comment	Summary of Applicant Response	Location of Response within this Chapter
	proposals for mitigation of any impacts and if appropriate, compensation measures and opportunities for enhancement and improving connectivity with wider ecological networks.		
Natural England	The ES should assess the impact of all phases of the proposal on protected species (including, for example, great crested newts, reptiles, birds, water voles, badgers and bats). Natural England does not hold comprehensive information regarding the locations of species protected by law. Records of protected species should be obtained from appropriate local biological record centres, nature conservation organisations and local groups. Consideration should be given to the wider context of the site, for example in terms of habitat linkages and protected species populations in the wider area. The area likely to be affected by the development should be thoroughly surveyed by competent ecologists at appropriate times of year for relevant species and the survey results, impact assessments and appropriate accompanying mitigation strategies included as part of the ES. Surveys should always be carried out in optimal survey time periods and to current guidance by suitably qualified and, where necessary, licensed, consultants.	This comment is noted. This chapter assesses the impact of all phases of the Scheme on protected species. Data has been obtained from the Greater Lincolnshire Nature Partnership and Nottinghamshire Biological and Geological Record Centre within a 2km Study Area of the Order limits to provide context of the wider area. Thorough surveys for protected and notable habitats and species were undertaken (set out in **Table 9-2** of this chapter) to inform mitigation of potential effects (included in **Table 9-13**).	Details of ecological surveys are set out in **Table 9-2**. **Table 9-11** . These include the baseline detail, with any embedded mitigation for any relevant protected species included in **Table 9-13**. Full results of all ecological surveys are set out in **Appendices 9-2 – 9-11** of this ES **[EN010142/APP/6.2]**.

Stakeholder	Summary of Scoping Opinion Comment	Summary of Applicant Response	Location of Response within this Chapter
	Natural England has adopted standing advice for protected species, which includes guidance on survey and mitigation measures. A separate protected species licence from Natural England or Defra may also be required.		
Natural England	Priority Habitats and Species are of particular importance for nature conservation and included in the England Biodiversity List published under section 41 of the Natural Environment and Rural Communities Act 2006. Most priority habitats will be mapped either as Sites of Special Scientific Interest, on the Magic website or as Local Wildlife Sites. Lists of priority habitats and species can be found here. Natural England does not routinely hold species data. Such data should be collected when impacts on priority habitats or species are considered likely. The Environmental Statement should include details of: • Any historical data for the site affected by the proposal (e.g. from previous surveys) • Additional surveys carried out as part of this proposal • The habitats and species present • The status of these habitats and species (e.g. whether priority species or habitat)	Comment noted. This approach has been applied to the ES to include the details stated.	Refer to **Chapter 9: Ecology and Nature Conservation** of the ES **[EN010142/APP/6.1]**.

Stakeholder	Summary of Scoping Opinion Comment	Summary of Applicant Response	Location of Response within this Chapter
	• The direct and indirect effects of the development upon those habitats and species • Full details of any mitigation or compensation measures • Opportunities for biodiversity net gain or other environmental enhancement		
Natural England	Section 10.17-10.19 shows that a BNG assessment will be undertaken using the latest version of the Biodiversity Metric (currently 3.1) in line with the requirements of the Environment Act. We note that the Environment act requires habitats to be secured for at least 30 years. Section 3.63 states that 'A Framework Biodiversity and Landscape Management Plan will set out the principles for how the land will be managed throughout the operational phase, following the completion of construction. A detailed Biodiversity and Landscape Management Plan will be produced following grant of the DCO and prior to the start of construction'. Due to the 40 year lifespan of the development, this management plan is likely to fulfil the 30 year management requirement of BNG habitats. We recommend that all habitat creation on site should be designed to complement the	Comment noted. The BNG assessment is submitted as part of the DCO application. The assessment includes the anticipated percentage of biodiversity net gain that is proposed for the Scheme alongside indicative habitat management and delivery mechanisms. A minimum of 10% across the three habitat metrics will be delivered. The assumed operational lifetime of the Scheme is 60years, and therefore ensures the security of habitats for a minimum of 30 years. Habitat creation, management and monitoring of the Scheme, are set out in the **Framework LEMP [EN010142/APP/7.17]** of this ES, securing though the DCO, to ensure mitigation and enhancement measures are delivered successfully.	Full details of the BNG assessment are provided in the **Biodiversity Net Gain report [EN010142/APP/7.14]**. Full details of habitat creation, management and monitoring for the lifetime of the Scheme, are set out in the **Framework LEMP [EN010142/APP/7.17]**.

Stakeholder	Summary of Scoping Opinion Comment	Summary of Applicant Response	Location of Response within this Chapter
	surrounding area, enhancing existing features, improving connectivity across the development area and contributing to the Nature Recovery Network		
Natural England	The ES should include details of the decommissioning and after use of the site, with details relating to proposed methods of restoration of land to agricultural use – which should be of an equal grade to the pre-development ALC grading. Section 6.34 states that a Framework DEMP will be included in the ES. We acknowledge that this will require some assumptions to be made, as a result of the uncertainty introduced by the time elapsing during the operational phase. Nonetheless, alongside setting out the basis for protecting habitats and species during decommissioning, this should provide the framework for ensuring soil resources are protected. There is additional uncertainty regarding decommissioning due to the potential establishment of important habitats during the operational phase. The ES should include a framework to enable the most valuable habitats to be retained. The loss of created habitats in order to revert to agriculture after 40 years of operation could	Comment noted. The assumed operational lifetime of the Scheme is 60 years. The effects of decommissioning will be appropriately managed through the detailed DEMP, and the measures set out in the DEMP will be required to adhere to relevant legislation and policy at the time of decommissioning. The **Framework DEMP [EN010142/APP/7.10]** sets out measures to mitigate any decommissioning related effects on biodiversity, with which the detailed DEMP must be prepared in substantial accordance. Pre-decommissioning surveys will be required to inform any mitigation and protected species licensing, as required at the time of decommissioning.	Section 9.9 and **Table 9-15** of this chapter detail the decommissioning phase of the Scheme as it relates to biodiversity and the determination of relevant habitats. The **Framework DEMP [EN010142/APP/7.10]** sets out measures to mitigate any decommissioning related effects on biodiversity. Further details on soil resources are provided in **Chapter 15: Soils and Agriculture** of this ES **[EN010142/APP/6.1]**.

Stakeholder	Summary of Scoping Opinion Comment	Summary of Applicant Response	Location of Response within this Chapter
	have a negative impact on biodiversity, habitats and species which have established in the operational period. We acknowledge the difficulty in pre-planning for a scenario 40 years into the future, but consider that the ES should include provision for new surveys and assessment to inform any additional mitigation/compensatory measures to be implemented prior to any reinstatement works occurring. We would also encourage the retention of areas of particular biodiversity value, i.e. widened field boundaries/buffer areas, and/or compensatory habitat being provided off-site.		
West Lindsey District Council	This agricultural landscape has a network of hedgerows and ditches, with small geometrical blocks of woodland giving extensive wildlife corridors across the area. The ES should assess the impact upon this important habitat network, and any landscape proposals should aim to improve connectivity of habitat networks. Information should be included from the Greater Lincolnshire Nature Partnership (GLNP), Lincolnshire Environmental Records Centre (LERC) and Lincolnshire Wildlife Trust (LWT).	**Table 9-15** assesses the impacts of the Scheme on Hedgerows and woodland. The Scheme will retain and avoid areas of woodland within the Order limits. Furthermore, hedgerows will be retained and avoided as much as is practicable and new planting will seek to bolster existing defunct hedgerows and create new hedgerows, where possible, with the aim of creating wildlife corridors. Information and records were sourced from GLNP, LERC and LWT, where relevant, to support this assessment.	Section 9.4.22 sets out the rationale for surveys and **Table 9-11** includes the baseline detail, with any embedded mitigation included in **Table 9-13**.

Stakeholder	Summary of Scoping Opinion Comment	Summary of Applicant Response	Location of Response within this Chapter
West Lindsey District Council	No Tree preservation Orders (TPO) are present within the site area, though there are TPO protected trees within the buffer zone. Therefore the protected tree legislation of The Town and Country Planning (Tree Preservation)(England) Regulations 2012, and the Town and Country Planning Act 1990 Part 8 Chapter 1, will need to be considered (10.8).	Comment noted. An Arboricultural Impact Assessment has been prepared to accompany the DCO Application. This is included within **Appendix 12-7: Arboricultural Impact Assessment** of this ES **[EN010142/APP/6.2]**, which considers, where appropriate, the Town and Country Planning (Tree Preservation) (England) Regulations 2012 and Country Planning Act 1990..	See **Appendix 12-7: Arboricultural Impact Assessment** of this ES **[EN010142/APP/6.2]**.
West Lindsey District Council	10.17 – The Council is encouraged that a BNG assessment will be undertaken (using Defra Metric 3.1 or the most up to date metric) to identify opportunities for contributing to BNG. However, the Scoping Report does not set out whether the development proposes to achieve above or beyond 10% BNG. This needs to be clear, as to how this will be accounted for in the ES.	The Scheme is committed to deliver BNG in accordance with the **draft DCO [EN010142/APP/3.1]**. DEFRA's Statutory Biodiversity Metric has been used to quantify gains and demonstrate developmental benefits. As set out in the **BNG Report [EN010142/APP/7.14],** the Scheme is predicted to result in a net gain of 64.55% for area-based habitat units, 17.33% for hedgerow units, and 22.94% for watercourse units, based on current plans.	Full details of the BNG assessment are provided in the **Biodiversity Net Gain report [EN010142/APP/7.14]**.
West Lindsey District Council	10.20 - The Council does not presently have in-house expertise to cover ecology matters. This is an area in which we will be seeking additional resource. It is recommended that information is sought from the Greater	Comment noted. Data has been obtained from relevant sources during the desk study, including where available, the Greater Lincolnshire Nature Partnership and Lincolnshire	Section 9.4.10 and **Table 9-11** details the attainment of data from relevant sources and the baseline detail provided by such.

Stakeholder	Summary of Scoping Opinion Comment	Summary of Applicant Response	Location of Response within this Chapter
	Lincolnshire Nature Partnership and the Lincolnshire Wildlife Trust.	Wildlife Trust and is included within this assessment. Both parties were also subject to consultation following the PEIR.	
West Lindsey District Council	10.35 – The effect of deer fencing should also be considered during construction and operational phases, and the effect on commuting habits.	Comment noted. The assessment of impacts on biodiversity will follow CIEEM guidelines. **Table 9-15** outlines effects on ecological features during construction and operational phases, including any reduction in connectivity resulting from Scheme, such as through fencing.	**Table 9-15** outlines effects on ecological features during construction and operational phases, including the effects of fencing. Additionally, section 9.8.14 details the embedded mitigation for fencing that will allow passage for mammals and maintain connectivity.
Canal and River Trust	The Scoping Report mentions the consideration of sediments in paragraph 11.78 but has not discussed in detail the potential for sediment mobilisation from the riverbed through the use of directional drilling methods to install cable connections beneath waterways such as the River Trent. There will be a small risk of vibrations leading to sediment mobilisation, or the emission of pollutants, although such impacts are considered likely to be minor to moderately adverse in the short to medium term. We consider that directional drilling can cause	During construction of the Cable Route Corridor, the River Trent and the majority of smaller watercourses (**Figure 10-5: Watercourses, Flood Zones and Internal Drainage Boards [EN010142/APP/6.3])** will be crossed using trenchless (non-intrusive) methods (e.g. horizontal directional drilling (HDD) techniques or similar, that would not disturb the watercourse), with the depth of the cable below the bed to be greater than 3m (the River Trent and River Till will be at a minimum depth of	**Table 9-15** includes details of embedded mitigation measures, with **Table 9-15** outlining effects on ecological features during construction, including disturbance to aquatic habitats.

Stakeholder	Summary of Scoping Opinion Comment	Summary of Applicant Response	Location of Response within this Chapter
	sediment discharges and problems arising from mud toxicity due to vibrations below the river. As a result, we believe the impact should be scoped in, with consideration given to the provision of field studies into invertebrates and fish species found in the water to assess the sensitivity of these species to potential sediment movement	5m and a maximum depth of 25m). This is considered sufficient to minimise sediment movement to levels where any effect would be negligible.	
Canal and River Trust	Temporary construction lighting along the cable corridor route in the vicinity of the River Trent will have the potential to disturb wildlife. As a result, we believe the impact should be scoped in, with consideration given to the provision of mitigation measures to minimise impacts on ecology and biodiversity, as well as landscape and visual impact.	Any lighting used during construction or operation will be task-specific and will avoid unnecessary light-spill onto adjacent habitats. Permanent lighting will be avoided and the use of security lighting with PIR sensors is proposed. The impacts of lighting is considered throughout this chapter, where relevant.	Section 9.8 details the use of construction lighting, **Table 9-13** sets out the embedded mitigation measures which include mitigating for the effect of lighting where relevant. Full details of lighting during construction are set out within the **Framework CEMP [EN010142/APP/7.8].** and details of operational lighting is set out within **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**.

Table 9-7: Main matters raised through the Statutory Consultation

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
Brampton Parish	An installation of a large expanse of technology will negatively impact on wildlife welfare and diversity.	The Scheme has been designed to avoid significant adverse effects on ecology. No significant residual effects on ecology are predicted during construction, operation and decommissioning of the Scheme's lifetime. The impact assessment on habitats / species and the Applicant's proposed mitigation are set out in this chapter.	**Table 9-13** sets out the relevant embedded avoidance and mitigation measures, with an assessment of the impacts of the Scheme on habitats, presented in **Table 9-15**.
Fillingham Parish Council	The limited area of proposed mitigation buffer zones will create small, isolated habitats.	Undeveloped buffers throughout the Scheme are minimum buffers that have been embedded within the Scheme design to avoid potential impacts to retained habitats and species using them. Buffers proposed follow good practice and industry guidance and were discussed with relevant consultees.	Section 9.8 sets out embedded mitigation measures to protect existing habitats.
Fillingham Parish Council	Uncertainties on how / if a biodiversity net gain of 10% will be achieved.	The Scheme is committed to deliver BNG in accordance with the **draft DCO [EN010142/APP/3.1]**. The BNG assessment has been submitted as part of the DCO Application. Habitat data, required to calculate the BNG delivered by the Scheme, has been collected	Section 9.4.24 addresses BNG and full details of the BNG assessment are provided in the **Biodiversity Net Gain report [EN010142/APP/7.14]**.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
		during the original Phase 1 Habitat surveys and updated, as necessary, through subsequent surveys (such as arable flora and hedgerow surveys). This has ensured a comprehensive baseline of data for the BNG assessment has been collected. DEFRA's Statutory Biodiversity Metric has been used to quantify gains and demonstrate developmental benefits. The approach to delivering BNG has been guided by the mitigation hierarchy that seeks to avoid impacts in the first instance and then minimise and offset residual impacts and will be in line with statutory metric guidance. The Scheme is predicted to result in a net gain of 64.55% for area-based habitat units, 17.33% for hedgerow units, and 22.94% for watercourse units, based on current plans.	
Sturton by Stow Parish Council	Uncertainties of the percentage achievement of Biodiversity Net Gain	The Scheme is committed to deliver BNG in accordance with the **draft DCO [EN010142/APP/3.1]**. As set out in the **BNG Report**	Full details of the BNG assessment are provided in the **Biodiversity Net Gain report [EN010142/APP/7.14]**.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
		[EN010142/APP/7.14], the Scheme is predicted to result in a net gain of 64.55% for area-based habitat units, 17.33% for hedgerow units, and 22.94% for watercourse units, based on current plans.	
Sturton by Stow Parish Council	Comment regarding whether the Scheme will work with the additional four developments within the area to deliver BNG requirements above the basic anticipated as a result of land use change	The BNG assessment has considered the relevant local plans and policies, including Biodiversity Opportunity Mapping for Lincolnshire, in designing and locating new habitats throughout the Scheme. Consideration has also been given as to how habitat creations link with other proposed developments and more widely across the landscape.	Full details of the Biodiversity Net Gain assessment are provided in the **Biodiversity Net Gain report [EN010142/APP/7.14]**.
Sturton by Stow Parish Council	Comment regarding whether there has been consideration given to creating nature reserves or corridors though this (and adjoining) sites, which will benefit wildlife and local people	The landscape design has sought to create green corridors across the Scheme to enhance ecological connectivity, linking areas outside of the Order limits. Permissive paths have been designed into the Scheme creating recreational benefits as shown on **Figure 3.1** of this ES **[EN010142/APP/6.3]**.	**Figure 3-1** of this ES **[EN010142/APP/6.3]** identifies where green corridors and permissive paths have been designed into the Scheme.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
Sturton by Stow Parish Council	Concern that small wildlife flower pockets will not compensate the loss of mature trees and hedgerows.	The majority of trees and hedgerows will be retained and, in many cases, enhanced through additional planting and the creation of undeveloped margins, which will allow natural expansion of existing features.	**Table 9-13** details the embedded avoidance and mitigation of effects on ecological features, including mature trees and hedgerows. Section 9.10 addresses additional mitigation and enhancement measures which include planting.
Environment Agency	Recommendation that water vole and otter surveys are undertaken from within the channel.	Surveys for Water Vole and Otter have been undertaken throughout the Order limits, where necessary. The results of these are presented in **Appendix 9-10: Baseline Report for Riparian mammals** of this ES **[EN010142/APP/6.2]**.	Details of Water Vole and Otter surveys are set out in **Appendix 9-10: Baseline Report for Riparian mammals** of this ES **[EN010142/APP/6.2]**.
Environment Agency	Recommendation to combine mitigation for the Water Framework Directive (WFD) and BNG to improve the river and ditch network e.g. in-channel enhancements, riparian planting and control of invasive species.	As set out in the **BNG Report [EN010142/APP/7.14],** the Scheme is predicted to result in a net gain of 64.55% for area-based habitat units, 17.33% for hedgerow units, and 22.94% for watercourse units, based on the current plans. The approach to delivering a net gain in watercourse units has considered the requirements set out in the WFD. This includes the reinstatement of trenched watercourse crossings with the aim to provide an improved channel	Full details of the Biodiversity Net Gain assessment are provided in the **Biodiversity Net Gain report [EN010142/APP/7.14]**.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
		form, with enhancement works to be carried out (where relevant and appropriate to do so) between 5 and 10 m upstream and downstream of the open trench to ensure the reinstated improved channel form merges into the existing channel form. These works will be secured through the **Framework LEMP [EN010142/APP/7.17].**	
Nottinghamshire Wildlife Trust	Satisfied with the proposed ecological survey work and methodologies relating to the Cable Route Corridor.	Comment noted. No response required.	N/A
Nottinghamshire Wildlife Trust	Satisfied that the Scheme will have no impact on designated sites.	Comment noted.	N/A
Nottinghamshire Wildlife Trust	Comment that it is currently anticipated that should a route through the Upton Grange Road Verges LWS, Willingham to Fillingham Road Verges LWS and Cow Pasture Lane Drain LWS is required, then the cable would be installed by drilling underneath these sites, which would avoid the need for any vegetation clearance in the LWSs.	The Scheme has sought to minimise construction related impacts to the Upton Grange Road Verges LWS, Willingham to Fillingham Road Verges LWS and Cow Pasture Lane Drain LWS. However, temporary loss of habitat will occur within the Upton Grange Road Verges LWS and Willingham to Fillingham Road Verges LWS to facilitate construction access and traffic.	Details of embedded avoidance and mitigation measures are set out in Table 9-13, with an assessment of effects provided in section 9.9.11-9.9.17.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
		A temporary crossing (bailey bridge) will be required over Cow Pasture Lane Drains LWS, however, this will not result in any direct habitat loss.	
Nottinghamshire Wildlife Trust	Satisfied with the approach to cross the LWS via a bailey bridge rather than culvert to minimise negative impacts.	Crossing by bailey bridge will be applied to Cow Pasture Lane Drain LWS. This commitment is provided in the **Framework CEMP [EN010142/APP/7.8]**.	Full details provided within the **Framework CEMP [EN010142/APP/7.8]**.
Nottinghamshire Wildlife Trust	Cabling operations should be carried out according to a PMW or Ecological Method Statement in the presence of an Ecological Clerk of Works to supervise and advise during the process to avoid direct impacts upon protected and notable species.	The requirement for and scope of an Ecological Clerk of Works (ECoW) is set out in the **Framework CEMP [EN010142/APP/7.8]**.	Details are set out within the **Framework CEMP [EN010142/APP/7.8]**.
Nottinghamshire Wildlife Trust	Support is given for the proposal to provide mitigation for loss of skylark nesting habitat, however, concerns that this will be challenging in a solar array site.	Section 9.9 of this chapter addresses the loss of arable farmland and embedded mitigation for Skylark, concluding that there will be a minor adverse to negligible effect, which is not significant, to the Skylark population as a result of the Scheme. In line with the **Works Plans [EN010142/APP/2.4]**, areas of undeveloped land have been embedded within the Scheme. These biodiversity zones will	Section 9.9 of this chapter addresses the loss of arable farmland and embedded mitigation for Skylark. The **Works Plans [EN010142/APP/2.4]**, secure the areas of undeveloped land to be used as biodiversity zones, which provide extensive areas of grassland creation.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
		provide permanent habitat for ground-nesting birds such as Skylark.	
Nottinghamshire Wildlife Trust	Spatial extent of surveys on breeding birds must be considered as to avoid disturbance. Strategies to avoid effects should include designated 'buffer zones' around centres of animal's distribution within which human activity is restricted.	The spatial extent of surveys was defined, in part, by the potential zone of influence of activities generated by the Scheme during construction, operation and decommissioning. The rationale for survey areas is presented in **Table 9-2** of this chapter.	Section 9.4 of this chapter sets out the assessment methodology used to define the Study and Survey Areas. Further rationale for survey areas is presented in **Table 9-2**. Buffers have been included in the embedded mitigation set out in Section 9.8.
Nottinghamshire Wildlife Trust	Cabling operations should be carried out according to a PMW or Ecological Method Statement in the presence of an Ecological Clerk of Works to supervise and advise during the process to avoid direct impacts upon protected and notable species.	The requirement for and scope of an Ecological Clerk of Works (ECoW) is set out in the **Framework CEMP [EN010142/APP/7.8]**.	Details are set out within the **Framework CEMP [EN010142/APP/7.8]**.
Nottinghamshire Wildlife Trust	Satisfied that ecology surveys across the Order limits were ongoing during 2023 and with the implementation of a monitoring programme to ensure that new habitats delivered as part of the Scheme establish successfully.	Details of surveys undertaken to characterise the ecological baseline conditions are set out in **Table 9-2**, of this chapter, with details of monitoring described in Sections 9.8 and 9.10.	**Table 9-2** sets out the surveys undertaken to characterise the ecological baseline and details of the monitoring carried out are described in Sections 9.8 and 9.10. Additionally, a robust monitoring programme is also provided in the **Framework LEMP [EN010142/APP/7.17]**.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
Nottinghamshire Wildlife Trust	It is expected that the Scheme will secure at least 10% net gain in biodiversity and that habitats should be as close to the proposed development site as possible and secured for at least 30 years via obligations/conservation covenant. The mitigation hierarchy still applies of avoidance, mitigation and compensation for biodiversity loss. Appropriate site-specific recommendations will be required for providing enhancements specific for Nottinghamshire BAP species and Section 41 Species and habitats of Principal Importance (NERC Act 2006).	The Scheme is committed to deliver biodiversity net gain, in accordance with the requirements of the **draft DCO [EN010142/APP/3.1].** A BNG assessment has been submitted as part of the DCO application. Habitat data, required to calculate the BNG delivered by the Scheme, has been collected during the original Phase 1 Habitat surveys and updated, as necessary, through subsequent surveys (such as arable flora and hedgerow surveys). This has ensured a comprehensive baseline of data for the BNG assessment has been collected. DEFRA's Statutory Biodiversity Metric has been used to quantify gains and demonstrate developmental benefits. The approach to delivering BNG at the Scheme has been guided by the mitigation hierarchy that seeks to avoid impacts in the first instance and then minimise and offset residual impacts and is in line with statutory metric guidance. The Scheme is predicted to result in a	Full details of the BNG assessment are provided in the **Biodiversity Net Gain report [EN010142/APP/7.14]**.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
		net gain of 64.55% for area-based habitat units, 17.33% for hedgerow units, and 22.94% for watercourse units, based on the current plans.	
Nottinghamshire Wildlife Trust (targeted consultation)	The Order limits have been increased to include Torksey Ferry Road and additional land within Cottam Power Station to allow for a suitable access to the Cable Route Corridor to facilitate its use by construction vehicles. The eastern section of the additional land is adjacent to Cottam Wetlands LWS (LWS 1/101). Please confirm mitigation that will be implemented to ensure that the LWS is protected.	An assessment of the potential impacts of the Scheme on non-designated sites is included within this chapter, this concludes there will be no adverse effects to Cottam Wetlands LWS during construction. Further details about the protection of LWS during construction are set out in the **Framework CEMP [EN010142/APP/7.8]**.	**Table 9-13** sets out the relevant embedded avoidance and mitigation measures, with an assessment of the impacts of the Scheme on LWS, presented in **Table 9-14**. Full details about the protection of LWS during construction are set out within the **Framework CEMP [EN010142/APP/7.8]**.
Willingham by Stow Parish Council	Despite precautions and assurances, it will not be possible to deliver the Scheme without damaging habitat.	The Scheme has been designed to avoid significant adverse effects on ecology. No significant residual effects on ecology are predicted during construction, operation and decommissioning of the Scheme's lifetime. The impact assessment on habitats / species and the Applicant's proposed mitigation are set out in this chapter.	**Table 9-13** sets out the relevant embedded avoidance and mitigation measures, with an assessment of the impacts of the Scheme on habitats, presented in **Table 9-15**.
Natural England	As there are no European or national designations notified for bird or bat features within the area, Natural England has no	The comments on survey methodology are noted. Existing land management has been	Section 9.6 defines the baseline conditions of the Order limits and details agri-environment schemes.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
	additional comments on the survey methodology outlined. Natural England also notes that assessment of agri-environment schemes will be made and accounted for in the scheme design and implementation.	considered when determining the Scheme design.	
Natural England	One nationally important designation was triggered by the cable route corridor; Ashton's Meadow Site of Special Scientific Interest (SSSI). Fourteen non-statutory sites designated for nature conservation (designated as Local Wildlife Sites (LWS)) and an area of Ancient Woodland were noted in the baseline conditions. Protected and notable species were also recorded within the scheme boundary and study area.	Designated sites relevant to the Scheme are set out in **Table 9-10** of this chapter.	**Table 9-10** and **Table 9-101** set out designated sites, protected and notable species relevant to the Scheme.
Natural England	In agreement that there will be low likelihood of direct impacts on Ashton's Meadow SSSI from the Scheme. However, indirect impacts were considered further by Natural England in the following chapters: 6. Air Quality and 10. Flood Risk, Drainage and Surface Water.	Comment noted.	N/A
Natural England	Natural England welcomes the consideration of impacts from the proposed development to LWS, ancient woodland and ancient and veteran	This comment is noted. Advice taken from Natural England and the Forestry Commission on ancient woodland and ancient and veteran	**Table 9-14** and **Table 9-15** of this chapter considers impacts on designated sites and habitats

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
	trees. Natural England and the Forestry Commission have produced standing advice for planning authorities in relation to ancient woodland and ancient and veteran trees, which is recommended to be referred to in relation to this IEF.	trees has been considered within this assessment to inform the scope of assessments presented in this chapter.	including ancient woodland and veteran trees. Further details are set out in **Appendix 12-7: Arboricultural Impact Assessment** of this ES [**EN010142/APP/6.2]**.
Natural England	Natural England notes the presence of protected species. Where it is considered by the developer that a licence is likely to be required from Natural England, a Pre-Submission Screening Service can be provided, whereby a draft licence application is assessed and a Letter of No Impediment (LONI) provided, where it is considered there to be no reason that a licence would not be granted post DCO consent.	The Scheme has been designed to avoid areas supporting protected species, with the retention of existing habitats of value, e.g., woodlands, trees, ponds and hedgerows and the incorporation of undeveloped offsets to minimise disturbance during construction, operation and decommissioning. As discussed with Natural England, the Applicant considers that the Scheme can be constructed without the requirement for Protected Species Licenses, through avoiding loss of habitat of habitat supporting Protected Species, such as bats and Great Crested Newt and restricting construction activities to areas of low value for these species. Reasonable Avoidance Methods and Precautionary	Embedded avoidance and mitigation measures are set out in **Table 9-13.** A summary of consultation with Natural England is included in **Table 9-8.** Relevant protective measures during construction are set out in the **Framework CEMP [EN010142/APP/7.8]** with their implementation secured through the DCO requirement that the detailed CEMP be prepared in substantial accordance with the Framework CEMP.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
		Methods of Working will ensure that appropriate measures are in place during construction to meet legislative requirements, with procedures set out for the unlikely event that Protected Species are encountered.	
Natural England	Natural England notes there may be temporary loss to habitat, including hedgerows and species rich grassland as well as adverse effects on notable species from disturbance of important, associated habitats. Natural England supports the measures outlined in the Design Development as they mitigate the adverse effects of the scheme to the noted important ecological features.	Comment noted.	**Table 9-13** in this chapter summarises the embedded avoidance and mitigation measures for IEFs.
Natural England	When considering connectivity and biodiversity enhancement, Natural England suggest working with local Biodiversity Action Plans and consulting the Local Nature Recovery Strategies, once published, to create a design that works for the local environment. Where possible, provision of ecological mitigation should be put in place before adverse effects are implemented to limit habitat loss and disturbance to species.	This comment is noted. The BNG assessment submitted as part of the DCO Application considers relevant local plans and policies, including Local Nature Recovery Strategies as set out in **Appendix 9-1: Ecology and Nature Conservation Legislation and Policy** of this ES **[EN010142/APP/6.2]**. The approach to delivering BNG for the Scheme has been guided by the	Full details of the BNG assessment are provided in the **Biodiversity Net Gain report [EN010142/APP/7.14]**. Locals plans and policies including Local Nature Recovery Strategies relevant to the Scheme are considered in **Appendix 9-1: Ecology and Nature Conservation Legislation and Policy** of this ES **[EN010142/APP/6.2]**.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
		mitigation hierarchy that seeks to avoid impacts in the first instance and then minimise and offset residual impacts.	
Natural England	Natural England welcomes the use of standard guidance to trees in relation to construction. A Root Protection Area of 15m for ancient woodland, 10m for all other trees and 5m for hedgerows is recommended.	Comment noted. There are no ancient woodlands within or near to the Order limits. The Root Protection Area for trees and hedgerows have been determined as per BS5837 for trees subject to detailed tree survey as set out in **Appendix 12-7: Arboricultural Impact Assessment** of this ES **[EN010142/APP/6.2]** and an estimated buffer zone has been applied for trees along the Cable Route Corridor which have been determined via desk study with the use of LiDAR (this approach has been agreed in principle with the Local Planning Authorities).	Full details of Root Protection Areas are set out in **Appendix 12-7: Arboricultural Impact Assessment** of this ES **[EN010142/APP/6.2]**.
Natural England	Natural England welcomes consideration of nesting birds, and the actions outlined such as avoidance of vegetation clearance during nesting season and the use of nesting bird check by a qualified ornithologist where this is not practicable.	This comment is noted. Measures to protect nesting birds are set out in the **Framework CEMP [EN010142/APP/7.8]**.	Section 9.8.12 address vegetation clearance and the assessment of likely impacts and effects relating to birds is included in Section 9.9 of this chapter. Additionally, measures to protect nesting birds are set out in

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
			the **Framework CEMP [EN010142/APP/7.8]**.
Natural England	Natural England welcome the diversity of habitats proposed to be created as part of the scheme design, suitable to the location, existing habitat and prominent ecological sites (such as LWS and ancient woodland).	This comment is noted. Full details of habitat creation, management and monitoring are set out in the **Framework LEMP [EN010142/APP/7.17]**.	Full details of habitat creation, management and monitoring are set out in the **Framework LEMP [EN010142/APP/7.17]**.
Natural England	Natural England would expect at least 10% gain in biodiversity as a result of the scheme. Designing BNG early on, as multifunctional and integral to the overall design can also contribute to the landscape character, access, green and blue infrastructure and sustainable drainage systems (SuDS) within the area. It can join up important ecological features through wildlife corridors and stepping stones such as water bodies, hedges and woodlands.	This comment is noted. The Scheme is committed to deliver biodiversity net gain, in accordance with the requirements of the **draft DCO [EN010142/APP/3.1].** The BNG assessment submitted as part of the DCO Application sets out how the Scheme has provided ecological connectivity, linking up areas outside of the Order limits. The Scheme is predicted to result in a net gain of 64.55% for area-based habitat units, 17.33% for hedgerow units, and 22.94% for watercourse units, based on the current plans.	Full details of the BNG assessment are provided in the **Biodiversity Net Gain report [EN010142/APP/7.14]**.
Natural England	Natural England understand that the LEMP will provide the management strategy for all ecological enhancement across the site and would recommend that the management of the habitats for the lifetime of the scheme is	Full details of habitat creation, management and monitoring for the lifetime of the Scheme, are set out in the **Framework LEMP [EN010142/APP/7.17]**.	Full details of habitat creation, management and monitoring for the lifetime of the Scheme, are set out in the **Framework LEMP [EN010142/APP/7.17]**.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
	secured to ensure the habitats are maintained beyond the anticipated mandatory 30-year period.		
Natural England	The published Secretary of State BNG metric, released in late 2023, should be used to assess baseline and gains for the scheme. In terms of soils, it is important that any BMV is considered when planning the site layout and the proposed location of any habitat enhancement or BNG. The LEMP and BNG Assessment will be reviewed further when submitted alongside the ES including the management and monitoring approach.	DEFRA's Statutory Biodiversity Metric (Ref. 9-52) has been used to quantify gains and demonstrate developmental benefits. The approach to delivering BNG for the Scheme has been guided by the mitigation hierarchy that seeks to avoid impacts in the first instance and then minimise and offset residual impacts and will be in line with the Statutory Biodiversity Metric guidance. The location of BMV has influenced the design of the Scheme, including proposed areas of habitat enhancements and the provision of BNG.	Section 9.4.24 addresses BNG and full details of the BNG assessment are provided in the **Biodiversity Net Gain report [EN010142/APP/7.14]**. The **Framework LEMP [EN010142/APP/7.17]**. specifies mitigation and enhancement measures in line with the BNG assessment. **Chapter 4: Alternatives and Design Evolution** of this **ES [EN010142/APP/6.1]** and **Chapter 15: Soils and Agriculture** of this ES **[EN010142/APP/6.1]** discuss how the location of BMV has influenced the design of the Scheme and any impacts on BMV are assessed.
Natural England	Natural England welcomes reference to the Green Infrastructure (GI) framework as essential infrastructure, laid out in the Outline LEMP. Natural England would direct the developer to the latest GI standards and guidance for further consideration of green and blue infrastructure. Particularly those	Comments noted, including reference to relevant NE GI guidance. The Scheme has utilised the Biodiversity Opportunity mapping tools to inform the green	Full details of habitat creation, management and monitoring for the lifetime of the Scheme, are set out in the **Framework LEMP [EN010142/APP/7.17]**.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
	highlighting GI in rural areas within the GI Planning & Design Guide.	infrastructure proposed as part of the Scheme.	
Canal and Rivers Trust	Comments regarding trenchless techniques that can cause sediment discharges and problems arising from mud toxicity due to vibrations below the river. Impacts on fish species and invertebrates found in the water and their likely sensitivity to potential sediment movement should be considered within the Environmental Statement and appropriately mitigated. Further comment regarding temporary construction lighting along the cable corridor route in the vicinity of the River Trent will have the potential to disturb wildlife and comment to note that mitigation measures to minimise such impacts are set out in the Framework CEMP.	During construction of the Cable Route Corridor, the River Trent and the majority of smaller watercourses (**Figure 10-5: Watercourses, Flood Zones and Internal Drainage Boards [EN010142/APP/6.3])** will be crossed using trenchless (non-intrusive) methods (e.g. horizontal directional drilling (HDD) techniques or similar, that would not disturb the watercourse), with the depth of the cable below the bed to be greater than 3m (the River Trent and River Till will be at a minimum depth of 5m and a maximum depth of 25m). This is considered sufficient to minimise sediment movement to levels where any effect would be negligible. Any lighting used during construction or operation will be task-specific and will avoid unnecessary light-spill onto adjacent habitats. Permanent lighting will be avoided and the use	**Table 9-15** includes details of embedded mitigation measures, with **Table 9-15** outlining effects on ecological features during construction, including disturbance to aquatic habitats. Section 9.8 details the use of construction lighting, **Table 9-13** sets out the embedded mitigation measures which include mitigating for the effect of lighting where relevant. Full details of lighting during construction are set out within the **Framework CEMP [EN010142/APP/7.8].** and details of operational lighting is set out within **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
		of security lighting with PIR sensors is proposed. The impacts of lighting is considered throughout this chapter, where relevant.	
West Lindsey District Council	The policy context appears to be generally acceptable to West Lindsey District Council, however there is confusion over why all of the relevant Neighbourhood Plans have been excluded from this section as they form part of the Development Plan and often contain policies relating to ecology/biodiversity considerations.	All relevant Neighbourhood Plans which contain policies applicable to biodiversity have been referenced in **Appendix 9-1: Ecology and Nature Conservation: Legislation, Policy and Guidance** of this ES **[EN010142/APP/6.2]**and have been considered throughout this assessment.	Details of relevant Neighbourhood Plans considered in the assessment are referenced in **Appendix 9-1: Ecology and Nature Conservation: Legislation, Policy and Guidance** of this ES **[EN010142/APP/6.2]**.
West Lindsey District Council	The ecological baseline conditions outlined in Table 9-1 are noted by West Lindsey District Council and it is accepted that ecological surveys will need to be continued into 2023. It would be expected that the results of these are set out in full in the ES.	The full results of all ecological surveys are set out in this chapter and **Appendices 9-2 – 9-11** of this ES **[EN010142/APP/6.2]**.	Details of ecological surveys are set out in **Table 9-2** and **Table 9-11** and the full results of all ecological surveys are set out in **Appendices 9-1** to **9-11** of this ES **[EN010142/APP/6.2]**.
West Lindsey District Council	West Lindsey District Council deem the approach to baseline conditions and surveying of all relevant statutory and non-statutory designations acceptable, however, potential impacts should be considered beyond the standard 2km baseline where necessary or concern is identified.	This comment is noted. The spatial extent of the Study and Survey Areas was defined, in part, by the potential ZoI of activities generated by the Scheme during construction, operation and decommissioning. The rationale for survey areas is presented in **Table 9-2** of this chapter.	Section 9.4 of this chapter sets out the assessment methodology used to define the Study Areas and Survey Areas. Further rationale for Survey Areas is present in **Table 9-2**.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
West Lindsey District Council	West Lindsey District Council note that the impacts on hedgerows and Skylarks are considered to be potentially significant on a precautionary basis and the loss of Skylark habitat needs to be fully compensated as stated in Table 9-12. It is noted that mitigation measures are not yet fully defined (9.8.16). This needs to be fully justified within the ES and all opportunities for mitigation measures taken where possible. The use of buffer zones for hedgerow planting is welcomed (9.7.5) alongside multiple references to replacement planting.	Section 9.9 of this chapter addresses the loss of arable farmland and embedded mitigation for Skylark, concluding that there will be a minor adverse to negligible effect, which is not significant, to the Skylark population as a result of the Scheme. In line with the **Works Plans [EN010142/APP/2.4]**, areas of undeveloped land have been embedded within the Scheme. These biodiversity zones will provide permanent habitat for ground-nesting birds such as Skylark.	Section 9.9 of this chapter addresses the loss of arable farmland and embedded mitigation for Skylark. The **Works Plans [EN010142/APP/2.4]**, set out the areas of undeveloped land to be used as biodiversity zones.
West Lindsey District Council	West Lindsey District Council welcome the intention to undertake a Biodiversity Net Gain (BNG) report, using Defra Metric 3.1 (9.3.5), however, whilst there is the intention to achieve at least a 10% net gain, this will become the legally mandated minimum net gain in biodiversity and many solar schemes are capable of achieving substantially higher levels of net gain.	The Scheme is committed to deliver biodiversity net gain, in accordance with the requirements of the **draft DCO [EN010142/APP/3.1].** DEFRA's Statutory Biodiversity Metric has been used to quantify gains and demonstrate developmental benefits. The approach to delivering BNG at the Scheme has been guided by the mitigation hierarchy that seeks to avoid impacts in the first instance and then minimise and offset	Section 9.4.24 addresses BNG and full details of the BNG assessment are provided in the **Biodiversity Net Gain report [EN010142/APP/7.14]**.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
		residual impacts and will be in line with statutory metric guidance.. The Scheme is predicted to result in a net gain of 64.55% for area-based habitat units, 17.33% for hedgerow units, and 22.94% for watercourse units, based on the current plans.	
Ingham Parish Council & Glentworth Parish Council	Comments that despite precautions and assurances, it will not be possible to deliver the Scheme without damaging habitat.	The Scheme is committed to deliver biodiversity net gain, in accordance with the requirements of the **draft DCO [EN010142/APP/3.1].** The Scheme has been designed to avoid significant adverse effects on ecology. No significant residual effects on ecology are predicted during construction, operation and decommissioning of the Scheme's lifetime. The impact assessment on habitats / species and the Applicant's proposed mitigation are set out in this chapter. As set out in the **Biodiversity Net Gain report [EN010142/APP/7.14]** the Scheme is predicted to result in a net gain of 64.55% for area-based habitat units, 17.33% for hedgerow units, and 22.94% for watercourse units, based on the current plans.	**Table 9-13** sets out the relevant embedded avoidance and mitigation measures, with an assessment of the impacts of the Scheme on habitats, presented in **Table 9-15**.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
Bassetlaw District Council	Bassetlaw District Council strongly recommend that the proposal secures at least 10% net gain in biodiversity to ensure that the value of the development exceeds the pre-development on site habitat value by at least 10%.	The Scheme is committed to deliver biodiversity net gain, in accordance with the requirements of the **draft DCO [EN010142/APP/3.1].** The BNG assessment, completed using DEFRA's Statutory Metric (Ref. 9-52), is submitted as part of the DCO application. The Scheme is predicted to result in a net gain of 64.55% for area-based habitat units, 17.33% for hedgerow units, and 22.94% for watercourse units, based on the current plans.	Full details of the BNG assessment are provided in the **Biodiversity Net Gain report [EN010142/APP/7.14]**.
S47 consultees	Comments on the negative impact on wildlife that cannot be mitigated.	The Scheme has been designed to avoid significant adverse effects on ecology. No significant residual effects on ecology are predicted during construction, operation and decommissioning of the Scheme's lifetime. The impact assessment on habitats / species and the Applicant's proposed mitigation are set out in this chapter.	**Table 9-13** sets out the relevant embedded avoidance and mitigation measures, with an assessment of the impacts of the Scheme on habitats and species, presented in **Table 9-15**.
S47 consultees	Comments on the loss of habitat, including hedgerows.	The Scheme has been designed to avoid significant adverse effects on ecology during all phases of the Scheme's lifetime. The impact assessment on habitats, including	**Table 9-13** sets out the relevant embedded avoidance and mitigation measures, with an assessment of the impacts of the Scheme on habitats,

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
		hedgerows and the Applicant's proposed mitigation are set out in this chapter. Hedgerows will be avoided and buffered and will only be removed where absolutely necessary, to facilitate access; existing field gaps will be used in preference and where removed will be restored. New hedgerows with trees will be planted, providing valuable habitat and wildlife corridors. In line with the **Works Plans [EN010142/APP/2.4]**, areas of undeveloped land have been embedded within the Scheme. These biodiversity zones will provide permanent habitat, specifically managed for biodiversity.	including hedgerows, presented in **Table 9-15**. Section 9.10 of this chapter details additional mitigation and enhancement measures, including planting. The **Works Plans [EN010142/APP/2.4]**, set out the areas of undeveloped land to be used as biodiversity zones.
Residents	Comments regarding the negative effect of the BESS.	The impact assessment on habitats / species has considered all elements of the Scheme, including, where relevant, the BESS, and the Applicant's proposed mitigation are set out in this chapter**.**	**Table 9-154** and **Table 9-15** address the potential impacts and effects of the Scheme on biodiversity, including those associated with the BESS.
S47 consultees	Comments on the need for rewilding to prevent the escalation of biodiversity loss.	The Scheme has embedded significant areas of undeveloped	Section 9.8 details embedded mitigation measures incorporated

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
		land, which will deliver the creation of new habitats, aimed at increasing the biodiversity value of the Scheme.	into the Scheme and Section 9.10 sets out additional mitigation and enhancement measures. Full details of habitat creation, management and monitoring for the lifetime of the Scheme are set out in the **Framework LEMP [EN010142/APP/7.17]**.
S47 consultees	Comment on the length of Cable Route Corridor being too long and too far from Cottam Power Station, causing too much ecological harm.	The Scheme, including the cable route, has been designed to avoid significant adverse effects on ecology. The impact assessment on habitats / species and the Applicant's proposed mitigation are set out in this chapter.	Refer to **Chapter 9: Ecology and Nature Conservation** of the ES **[EN010142/APP/6.1]**.
S47 consultees	Comments on the concern of cumulative effects, including the effects of the nearby solar projects.	**Chapter 18: Cumulative Effects and Interactions** of this ES **[EN010142/APP/6.1]** presents an assessment of the Scheme's impacts in combination with those of other nearby solar projects.	An assessment of cumulative effects is provided in **Chapter 18: Cumulative Effects and Interactions** of this ES **[EN010142/APP/6.1]**.
S47 consultee (including Lincolnshire Wildlife Trust)	Comments on the concern of displacing ground nesting birds, including Skylarks during the 2 year construction phase and further negatively impacting population levels across Greater Lincolnshire due to	Section 9.9 of this chapter addresses the loss of arable farmland and embedded mitigation for Skylark during the construction phase, concluding that there will be a minor adverse to negligible effect,	See **Table 9-2** for surveys undertaken and **Appendices 9-7: Baseline report for Breeding birds** and **9-8: Baseline report for Non-breeding birds** of this ES **[EN010142/APP/6.2]** for full details

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
	the cumulative effects of the other solar farm developments.	which is not significant, to the Skylark population as a result of the Scheme. In line with the **Works Plans [EN010142/APP/2.4]**, areas of undeveloped land have been embedded within the Scheme. These biodiversity zones will provide permanent habitat for ground-nesting birds such as Skylark.	of the methods used and assessment baseline (see also **Table 9-11**). The assessment of likely impacts and effects is included in Section 9.9. An assessment of cumulative effects is provided in **Chapter 18: Cumulative Effects and Interactions** of this ES **[EN010142/APP/6.1]**.
S47 consultees (including Lincolnshire Wildlife Trust)	Comments referring to estimates over confirmation on the increase of biodiversity.	The Scheme is committed to deliver biodiversity net gain, in accordance with the requirements of the **draft DCO [EN010142/APP/3.1].** A BNG assessment has been submitted as part of the DCO application. Habitat data, required to calculate the BNG delivered by the Scheme has been collected during the original Phase 1 Habitat surveys and updated, as necessary, through subsequent surveys (such as arable flora and hedgerow surveys). This has ensured that a comprehensive baseline of data for the BNG assessment has been collected.	Full details of the BNG assessment are provided in the **Biodiversity Net Gain report [EN010142/APP/7.14]**.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
		DEFRA's Statutory Biodiversity Metric has been used to quantify gains and demonstrate developmental benefits. The approach to delivering BNG within the Scheme has been guided by the mitigation hierarchy that seeks to avoid impacts in the first instance and then minimise and offset residual impacts and will be in line with statutory metric guidance. As set out in the **Biodiversity Net Gain report [EN010142/APP/7.14]** the Scheme is predicted to result in a net gain of 64.55% for area-based habitat units, 17.33% for hedgerow units, and 22.94% for watercourse units, based on the current plans.	
S47 consultees	Comments concerning the guarantee that new habitats will establish successfully, including grassland underneath panels and the timings of the creation of ecological enhancement areas e.g. prior to construction.	The **Framework LEMP [EN010142/APP/7.17]** describes the creation, management and monitoring prescriptions for all habitats within the Order limits. This includes the requirement for any advance planting or habitat creation.	Full details of habitat creation, management and monitoring for the lifetime of the Scheme, are set out in the **Framework LEMP [EN010142/APP/7.17]**.
S47 consultees	Comments regarding contacting Local Wildlife Trusts and the RSPB to enhance	The Applicant has engaged with relevant nature conversation	Section 9.10 outlines additional mitigation and enhancement

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
	local wildlife, specifically by erecting bird boxes and bat boxes	organisations and embedded significant enhancements for biodiversity within the Scheme design. Boxes for wildlife will be installed, where appropriate. The details for this are provided in the **Framework LEMP [EN010142/APP/7.17]**.	measures including the installation of habitat boxes. Full details of habitat creation, management and monitoring for the lifetime of the Scheme, are set out in the **Framework LEMP [EN010142/APP/7.17]**.
S47 consultees (Lincolnshire Wildlife Trust)	Comments concerning the impact of construction and vehicles of wildlife and flora communities of roadside verges, particularly the LWS within the Cable Route Corridor.	This is noted. LWS are considered in **Chapter 9: Ecology and Nature Conservation of this ES [EN010142/APP/6.1]** and details about the protection of LWS during construction are set out in the **Framework CEMP [EN010142/APP/7.8]**.	**Table 9-14** and **Table 9-15** outlines potential impacts and effects on designated sites and habitats and species and details the protection of LWS during construction are set out in the **Framework CEMP [EN010142/APP/7.8]**.
S47 consultees (Lincolnshire Wildlife Trust)	Comments encouraging the habitats to be described in all forthcoming documents to use the UKHab classification system as this is the nomenclature used in the DEFRA metric Biodiversity Calculation Tool used in Biodiversity Net Gain calculations and Phase 1 habitat types do not translate perfectly into UKHab style.	Habitats referenced within this report follow Phase 1 Habitat nomenclature and the BNG calculations within the BNG assessment use the UKHab classification system.	Phase 1 habitats are described in **Table 9-10** and are presented on **Figure 9-3**. The UKHab map is presented within the **Biodiversity Net Gain report [EN010142/APP/7.14]**.

Consultee	Summary of main matter raised	How has the matter been addressed?	Location of response in this chapter
S47 consultees (Lincolnshire Wildlife Trust)	Comments regarding the mitigation areas for farmland birds to exclude mammal passes to decrease the risk of predation.	This is noted. Where areas of undeveloped land are included within the Scheme for ground nesting birds, measures such as minimising access by ground predators has been incorporated.	Section 9.8 details how security fencing surrounding targeted areas for farmland birds shall not contain passages for mammals.

Table 9-8: Summary of Engagement with Statutory Nature Consveration Bodies

Stakeholder and type of engagement	Summary of matters discussed	Summary of where this is dealt with in the Chapter
Natural England – Online meeting 13/07/2023	Summary of the Scheme and information presented in the PEI Report, including: • Collaboration between the Applicant and Gate Burton, West Burton and Cottam solar schemes. • Summary of baseline conditions and ecological surveys undertaken/in the process of being completed. • Embedded avoidance and mitigation measures and conclusion of the PEI Report. Review of Natural England's Section 42 Statutory Consultation responses. The key points being: • No further Habitats Regulation Assessment is required due to distance of designated sites from the Scheme and lack of impact pathways. • Approach to protected species and the requirement for licences. • Deliverance of BNG and connected and in line with local biodiversity opportunity mapping.	The approach to working collaboratively with other solar developers is set out in the **Joint Report on the Interrelationship with other National Infrastructure projects [EN010142/APP/7.6]**. Section 9.4.22 sets out the rationale for surveys and **Table 9-11** includes the baseline detail, with any embedded mitigation for any relevant protected species included in **Table 9-13**. A Habitats Regulations Assessment is provided in **Appendix 9-12: Habitat Regulations Assessment** of this ES **[EN010142/APP/6.2]**). Full details of the BNG assessment are provided in the **Biodiversity Net Gain report [EN010142/APP/7.14]**.
Natural England – Online meeting 15/12/2023	Update on Habitats Regulations Assessment: • A HRA Screening was submitted as part of the PEIR where all potential impacts on European sites were screened out due to	A Habitat Regulations Assessment is provided in **Appendix 9-12: Habitat Regulations Assessment** of this ES **[EN010142/APP/6.2]**).

Stakeholder and type of engagement	Summary of matters discussed	Summary of where this is dealt with in the Chapter
	there being none within the Zol. However, it has been raised in examinations for other DCO projects in the shared crossing point that electromagnetic fields (EMFs) could cause potential impacts on migratory fish associated with the Humber (which use the River Trent) located around 30km away. The Humber Estuary SAC will therefore be screened in the revised HRA Screening report and taken forward to appropriate assessment, if required. Update provided on protected species surveys and approach to licensing requirements. The Applicant set out their approach for using Reasonable Avoidance Measures. Update on progress of Statement of Common Ground with Natural England.	The approach to protected species, where present, is set out in **Table 9-11** of this chapter.

9.6 Baseline Conditions

Existing Land Use and Background Information

9.6.1 The existing land use within the Order limits is dominated by intensive agriculture. The Principal Site covers an area of approximately 1,350 ha of flat landscape which heavily relies on agricultural inputs (such as chemical inputs through fertilizers and pesticides) to sustain arable agriculture and increase agricultural production.

9.6.2 Additionally, abstraction licences are needed to irrigate arable fields. As presented in **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**, there are two licenced surface water abstractions within the Study Area of the Order limits. Both abstractions are used for agricultural irrigation / storage.

9.6.3 The artificial lowering of water levels by water abstraction and use of agricultural chemicals may negatively impact rivers and drains, which in turn may further impact on wildlife that rely on these habitats. Their condition can also be worsened by agricultural runoff, causing eutrophication.

9.6.4 The land within the Principal Site is classified in the Agricultural Land Classification (ALC) as predominantly Grade 3b (moderate quality) agricultural land with some Grade 3a (good quality) and Grade 2 (very good quality) agricultural land (refer to **Chapter 15: Soils and Agriculture** of this ES **[EN010142/APP/6.1]**). This comprises land with moderate limitations that affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown, yields are generally lower or more variable than on land in higher grades. The soil type is characterised by slightly acidic and base-rich loamy and clayey soils with impeded drainage.

9.6.5 The majority of the Principal Site (>60%) is farmed under agri-environment schemes, such as the Countryside Stewardship Scheme (Mid-Tier) (Ref. 9-11). The Mid-Tier is a UK Government led scheme to allow farmers and land managers to help them protect and enhance the natural environment e.g., through improving the land for the benefit of wildlife or managing the risk of flooding.

9.6.6 The land within the Cable Route Corridor is predominantly agricultural, some of which is farmed under the Mid-Tier Countryside Stewardship Scheme (Ref. 9-11) and the Cable Route Corridor crosses the rivers Till and Trent. An ALC survey of the Cable Route Corridor has not been undertaken (refer to **Chapter 15: Soils and Agriculture** of this ES **[EN010142/APP/6.1]**) but has been mapped based on secondary data sets.

Sites statutorily designated for biodiversity importance

9.6.7 There are no sites internationally designated for their biodiversity importance within 10km of the Order limits nor any for which bats are a qualifying feature within 30km of the Order limits. The Cable Route Corridor crosses the River Trent, which is hydrologically connected to the Humber Estuary SAC and Ramsar Site (approximately 40km upstream of the Cable Route Corridor),

which includes migratory fish as a qualifying feature (see **Appendix 9-12: Habitat Regulations Assessment** of this ES **[EN010142/APP/6.2]**).

9.6.8 There is one site designated for biodiversity importance at a national level within the Study Area set out in Section 9.4.5 of this chapter. The location of this statutory site, Ashton's Meadow SSSI, is presented in **Figure 9-1** of this ES **[EN010142/APP/6.3]**. The SSSI, 3.6 hectares (ha) in area, is an ancient traditionally maintained meadow, surrounded by species rich hedgerows, approximately 1.5 km to the west of the Cable Route Corridor. There are no ecological or hydrological connections between this SSSI and the Order limits. The SSSI is also a Nottinghamshire Wildlife Trust Local Wildlife Site (LWS), as presented in **Table 9-9**.

Sites non-statutorily designated for biodiversity importance

9.6.9 There are 13 non-statutory sites designated for biodiversity importance within 2km of the Order limits and these are presented in **Table 9-9** and listed in ascending order, with those closest to the Order limits listed first. These sites have been designated as LWS for their biodiversity value at a county level and are known to support a wide variety of protected and notable species and/ or habitats. Site information descriptions are summarised in **Table 9-9** and are taken from non-statutory site descriptions received as part of the desk study through LERC and NBGRC. The locations of these non-statutory sites, relevant to the Scheme, are presented in **Figure 9-2** of this ES **[EN010142/APP/6.3]**.

Table 9-9: Sites non-statutorily designated for biodiversity importance within 2km of the Order limits

Non-Statutory Site Name and Designation	Non-Statutory Site Description	Approximate Distance (m / km) and direction from closest point of the Order limits
Willingham to Fillingham Road Verges LWS	This length of road, marked by sharp bends at each end, is flanked by verges 3 to 3.5m wide on both sides, running alongside ditches with a species-rich hedgerow. Nitrophiles (certain plant species showing a preference for a habitat rich in nitrate) are occasional but never dominating. Coarser grasses are frequent but not dominating. Both verges are flailed with cuttings left in late summer by the adjacent landowner. The site is described as being in favourable condition but under negative management.	Within the Cable Route Corridor.
Cow Pasture Lane Drains LWS	Drains with notable aquatic and bankside vegetation including Branched Bur-reed *Sparganium erectum*, Amphibious Bistort *Persicaria amphibia*, Blunt-fruited Water-starwort *Callitriche obtusangula* and stands of Reed Sweet-grass *Glyceria maxima*. The lower reaches of the bank support Wild *Angelica sylvestris* and False Fox-sedge *Carex otrubae*.	Within the Cable Route Corridor.
Upton Grange Road Verges LWS	The north and east verges are species-rich and the south and west verges comprise linear herb-rich neutral grassland with adjacent species-poor hedgerows. The invertebrate diversity on these verges is likely to be high given the floral diversity and abundance of nectar resources.	Within the Cable Route Corridor.
Coates Wetland LWS	The River Trent meanders around this site comprising a mosaic of habitats including wetland, developing woodland and grassland enclosed within a flood bank.	Immediately adjacent to the Cable Route Corridor.
Cottam Wetlands LWS	Part of the former Cottam Power Station, this wetland mosaic comprises lagoons, marshy grasslands, swamp and a representative length of the River Trent.	Immediately adjacent to the Cable Route Corridor at Torksey Ferry Road.

Non-Statutory Site Name and Designation	Non-Statutory Site Description	Approximate Distance (m / km) and direction from closest point of the Order limits
Torksey Ferry Road Ditch LWS	A drain of interest for water beetles, including the near threatened water beetles *Agabus ulignosus*, *Cercyon convexiusculus*, *Cymbiodyta marginellus* and *Ilybius montanus*.	30m east of the Cable Route Corridor at Torksey Ferry Road.
Cottam Ponds LWS	Ponds, supporting abundant wildlife.	610m east of the Cable Route Corridor.
Broad Lane Grassland, North Leverton LWS	This small neutral grassland is bordered by Hawthorn *Crataegus monogyna* and Blackthorn *Prunus spinosa* hedgerows and a linear broadleaved woodland, separating it from a railway line.	840m north-west of the Cable Route Corridor.
Mother Drain Upper Ings LWS	Mother Drain is notable for supporting 46 water beetle species and 11 water bug species, including the nationally near threatened water beetle *Hydrochus elongatus* at its only Nottinghamshire location and the nationally scarce water beetle *Hygrotus quinquelineatus*.	960m north of the Cable Route Corridor.
Ashton's Meadow LWS	This meadow is also a SSSI that is owned and managed by the Nottinghamshire Wildlife Trust. The sward is unimproved and species-rich with a range of characteristic grasses and forbs.	1.5km west of the Cable Route Corridor.
Thornhill Lane Drain, Littleborough LWS	A linear watercourse feature designated for the presence of near threatened / nationally scarce water beetles.	1.7km north of the Cable Route Corridor.
Bushstocks Lane Meadow LWS	This old hay meadow has a sward containing many plant species indicative of unimproved neutral grassland. Ridge and furrow running in an east-west direction influences the composition of the sward. Damper hollows support abundant Meadow Foxtail *Alopecurus pratensis* whilst the drier ridges are dominated by Common Knapweed *Centaurea nigra*.	1.9km west of the Cable Route Corridor.
Littleborough Lagoons LWS	Littleborough Lagoons has pasture fringes and is important for over-wintering birds, including Common Sandpiper *Actitis hypoleucos*	1.9km north of the Cable Route Corridor.

9.6.10 In addition, one area of Ancient Woodland was identified within 2km of the Order limits. This is Burton Wood which is approximately 1.1km north of the Cable Route Corridor. The location of this Ancient Woodland site is presented in **Figure 9-2** of this ES **[EN010142/APP/6.3]**.

Habitats

9.6.11 The land within the Order limits is flat and dominated by arable agriculture (1,429.56ha / c.86%), the fields being intersected by a network of drainage ditches (c.26.77km). Other habitat includes improved grassland fields (66.1 ha / c.4.0%), mature trees and hedges (c. 90.91km), small, wooded copses (c.20 ha / c.1-2%)) and ponds (<25). The surrounding habitat is mainly arable, with small pockets of mature broad-leaved woodland (plantation and semi-natural). There are individual and clusters of residential properties located adjacent to the Order limits.

9.6.12 The habitats present within the Order limits, as presented in **Table 9-10**, were identified during the Phase 1 habitat survey, undertaken between June and September 2022; and in June and August to November 2023. These habitats are the broad habitat types found within the Order limits and were further defined by the detailed habitat surveys set out in **Table 9-2**. Combined, these habitat data were utilised to determine each habitat's biodiversity importance and calculate the BNG or net loss to ensure a comprehensive baseline of data for the BNG assessment. The locations of these habitats are presented in **Figure 9-3** of this ES **[EN010142/APP/6.3]**.

Table 9-10: Habitat within the Order limits and their biodiversity importance

Habitat	Habitat Description	Area (ha) / length (km)	% of Order limits	Conservation Status	Biodiversity Importance	Rationale for Biodiversity Importance
A1.1.1 – Broad-leaved woodland – semi-natural	Species within semi-natural woodland include Pedunculate Oak *Quercus robur,* Ash *Fraxinus excelsior* along with Hawthorn, Blackthorn, Field Maple *Acer campestre* and Elder *Sambucus nigra.*	2.19ha	0.1	Habitat of Principal Importance (HaPI) – Lowland Mixed Deciduous Woodland and Wet Woodland. LBAP habitat in Lincolnshire	County	There are a number of areas of priority deciduous woodland habitat within and adjacent to the Order limits. There are no Ancient Woodland within the Order limits, with the nearest Ancient Woodland being Burton Wood, approximately 1.05km north of the Cable Route Corridor (Ref. 9-12).
A1.1.2 – Broad-leaved woodland – plantation	Plantation woodlands contain Pedunculate Oak, Ash, Sycamore *Acer pseudoplatanus,* Horse Chestnut *Aesculus hippocastanum*, Norway Maple *Acer platanoides*, Elder and Common Whitebeam *Sorbus aria.*	14.25ha	0.9	None	Site	Not a HaPI.
A1.3.2 – Mixed woodland – plantation	There are small areas of mixed planation woodland which contain deciduous and coniferous trees.	0.03ha	<0.1	None	Site	Not a HaPI

Habitat	Habitat Description	Area (ha) / length (km)	% of Order limits	Conservation Status	Biodiversity Importance	Rationale for Biodiversity Importance
A2.1 – Scrub – dense/continuous	There are a number of small areas of scrub within the Order limits, species include Bramble Rubus *fruticosus agg*. Along with Hawthorn, Elder and Blackthorn.	3.49ha	0.2	None	Site	Not a HaPI.
A2.2 – Scrub – scattered		1.35ha	0.1	None	Site	Not a HaPI.
A3.1 – Broadleaved parkland/ scattered trees	This habitat type relates to individual and groups of trees, such as Oak and Ash.	3.64km	-	None	Individual trees – Site Veteran / Ancient trees County	The desk study identified veteran and ancient trees within the Study Area, but none from within the Order limits (Ref. 9-13). Subsequently, surveys have identified a number of likely veteran and / or ancient trees within the Principal Site.
B1.2 – Acid Grassland – semi-improved	Species composition included Curled Dock *Rumex crispus*, Birdsfoot Trefoil *Lotus corniculatus* and Common Sorrel *Rumex acetosa*.	0.58ha	<0.1	HaPI; and LBAP habitat in Lincolnshire (Ref. 9-16) and Nottinghamshire (Ref. 9-17).	County	Small area of this habitat is present within the Cable Route Corridor (Cottam Power Station) and amounts to 3.9% of this habitat type occurring in Nottinghamshire (1,500ha in the county) (Ref. 9-60).
B3.2 – Calcareous	Dominant Tall Fescue *Festuca arundinacea*, Cock's-foot *Dactylis glomerata*, False Oat-	2.47ha	0.1	HaPI and part of designated LWS	County	This grassland type is scarce in Lincolnshire and

Habitat	Habitat Description	Area (ha) / length (km)	% of Order limits	Conservation Status	Biodiversity Importance	Rationale for Biodiversity Importance
grassland – semi-improved	grass *Arrhenatherum elatius* and Common Couch *Elymus repens*. Other species include Great Burnet *Sanguisorba officinalis*, Meadow Vetchling *Lathyrus pratensis*, Red Clover *Trifolium pratensis*, Common Sorrel *Rumex acetosa* and Tufted Vetch *Vica cracca*. A few calcareous grassland indicator species are present, including Tor Grass *Brachypodium pinnatum* and Common Knapweed *Centaurea nigra* agg.					associated with locally designated wildlife sites.
B4 – Improved grassland	Species present include Perennial Rye-Grass, Dandelion, Creeping Thistle and Curled Dock.	66.11ha	4.0	Coastal and Floodplain Grazing Marsh is a HaPI.	County(only where it identified as Coastal and Floodplain Grazing Marsh)	There are multiple areas of this habitat within the Order limits. Cattle-grazed grassland either side of the River Trent is classified as Coastal and Floodplain Grazing Marsh, a HaPI, as identified on MAGIC (Ref. 9-11).
B6 – Poor semi-improved grassland	Species present are Red Fescue, Smooth Meadow-grass, False Oat-Grass, Timothy *Phleum pratense*,	92.56ha	5.5	None	Site	There are a number of areas of this habitat across the Order limits including along some of the arable

Habitat	Habitat Description	Area (ha) / length (km)	% of Order limits	Conservation Status	Biodiversity Importance	Rationale for Biodiversity Importance
	Perennial Rye-Grass, Creeping Bent *Agrostis stolonifera*, Oxeye Daisy, White Clover *Trifolium repens*, Clustered dock *Rumex conglomeratus*, Hogweed *Heracleum sphondylium*, Bristly Oxtongue *Helminthotheca echioides*, Curled Dock *Rumex crispus* and, Dandelion *Taraxacum offincile* agg					fields margins, with some restricted areas supporting occasional species suggesting neutral grassland and soil pH. Not a HaPI.
C3.1 – Other tall herb and fern – ruderal	Species include Great Willowherb *Epilobium hirsutum*, Hogweed, Rosebay Willowherb *Chamaenerion angustifolium*, Yorkshire Fog, Hemlock *Conium maculatum*, Spear Thistle *Cirsium vulgare*, Broad-leaved Dock *Rumex obtusifolius*, Common Nettle *Urtica dioica*, False Oat Grass and Welted Thistle *Carduus crispus*	2.76ha	0.2	None	Site	This habitat is scattered across the Order limits but not a HaPI.
G1 – Standing water	Standing water contained very little aquatic vegetation with the only species present being	1.66ha	0.1	Ponds of certain criteria are a HaPI.	Local	Ponds can be defined as permanent (or seasonal) waterbodies up to 2ha in

Habitat	Habitat Description	Area (ha) / length (km)	% of Order limits	Conservation Status	Biodiversity Importance	Rationale for Biodiversity Importance
	Soft Rush *Juncus effusus*, Great Willowherb, Creeping Bent and Floating Sweet-Grass *Glyceria fluitans*					extent and qualify as being a HaPI if they meet one or more criteria for UKBAP classification, including supporting species of high conservation importance. There are <25 ponds within the Principal Site, the majority of which contained little to no macrophytes or aquatic vegetation and had little other ecological value. Furthermore, these ponds are not a stand-alone habitat within the wider area, as similar habitat can be found in the surrounding area. All ponds that were assessed through PYSM survey did not meet criteria for a HaPI, according to UK BAP criteria. One pond had poor biological quality, whilst four had moderate biological quality, and macrophyte growth was suppressed due to shading,

Habitat	Habitat Description	Area (ha) / length (km)	% of Order limits	Conservation Status	Biodiversity Importance	Rationale for Biodiversity Importance
						eutrophication, and partial drying. However, two ponds within the Order limits support Great Crested Newt. Overall, given the lack of status as a HaPI, poor to moderate biological quality and lack of notable species, the ponds were assessed to be of Local importance only.
G2 – Running water	Running water habitats support aquatic plant species such as Reed Canary-grass *Phalaris arundinacea*, Meadowsweet *Filipendula ulmaria*, Great Willowherb and Fool's Watercress *Helosciadium nodiflorum.*	3.59ha	0.2	Rivers may qualify as a HaPI	Up to County	The River Trent is within and crossed by the Cable Route Corridor. Watercourses from the Eau de Source to Northorpe Beck, Fillingham Beck and River Till catchments lie within the Principal Site, all with Poor to Moderate ecological status. The watercourses present consisted of agricultural ditches, with simple herb and rank vegetation or hedgerow vegetation or deciduous tree vegetation, and in-channel

Habitat	Habitat Description	Area (ha) / length (km)	% of Order limits	Conservation Status	Biodiversity Importance	Rationale for Biodiversity Importance
						macrophytes. Three-spined Stickleback *Gasterosteus aculeatus* was recorded, and the ditches had potential to support protected species, though none were recorded. All watercourses within the Principal Site were subject to habitat diversity and water quality pressures, with Very Poor, Heavily Polluted water quality and high levels of siltation, and overall Low conservation value for macroinvertebrates (except for a couple of sites). Due to a lack of scoring macrophyte taxa present within the watercourses, WFD status for macrophytes was unclassifiable. Given the lack of notable species supported by the ditches, and low conservation value, the

Habitat	Habitat Description	Area (ha) / length (km)	% of Order limits	Conservation Status	Biodiversity Importance	Rationale for Biodiversity Importance
						reaches were considered of Site Importance only. Overall, however, running water habitats that may be impacted by the development are of up to County Importance, given the River Trent and River Till being included in the Cable Route Corridor.
Hardstanding	Areas of hard surface, e.g. roads	29.36ha	1.8	None	Site	Not a HaPI.
I2.2 – Spoil	-	0.05ha	<0.1	None	Site	Not a HaPI.
J1.1 – Cultivated/ disturbed land – arable	The majority of the Order limits is in arable production, such as Wheat *Triticum aestivum.*	1,429.56 ha	85.7	None	Up to Local	The majority of the Order limits is intensively managed arable farmland, with some of the arable fields having arable field margins. Excluding arable field margins, not 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 managed with very few plant species.	0.78ha	<0.1	None	Site	This habitat is predominantly outside of the Order limits, not a HaPI.

Habitat	Habitat Description	Area (ha) / length (km)	% of Order limits	Conservation Status	Biodiversity Importance	Rationale for Biodiversity Importance
J1.3 – Cultivated/ disturbed land – ephemeral / short perennial	-	0.96ha	<0.1	None	Site	Not a HaPI
Hedgerows without trees (intact and defunct)	Woody species recorded in the hedges included Ash, Hawthorn, Blackthorn, Dog Rose Rosa canina agg., Field Maple, Buckthorn *Rhamnus cathartica*, Midland Hawthorn *Crataegus laevigata*, a Willow *Salix* sp., Pedunculate Oak, Horse Chestnut *Aesculus hippocastanum*, Crab Apple *Malus sylvestris*, Sweet Chestnut *Castanea sativa*, Wild Privet *Ligustrum vulgare*, Guelder Rose *Viburnum opulus*, Sycamore, Wild Cherry *Prunus avium* Hazel *Corylus avellana*, Elm sp. *Ulmus* sp. and, Elder, Wych Elm *Ulmus glabra* and a planted Tibetan Cherry *Prunus serrula*.	46.04km	-	HaPI. LBAP habitat in Lincolnshire and Nottinghamshire	Up to County	There are many hedges across the Principal Site from species poor to species rich and some of which contain trees. HaPI, legally protected under the Hedgerows Regulations (Ref. 9-30).
Hedgerows with trees (intact and defunct)		44.87km	-	HaPI. LBAP habitat in Lincolnshire and Nottinghamshire	Up to County	
J2.4 – Fence	-	2.28km	-	None	Site	Not a HaPI.

Habitat	Habitat Description	Area (ha) / length (km)	% of Order limits	Conservation Status	Biodiversity Importance	Rationale for Biodiversity Importance
J2.6 – Dry ditch	A naturally occurring channel that is connected to a channel but does not hold water.	26.77km	-	None	Site	Not a HaPI.
J3.6 – Buildings	-	0.79ha	<0.1	None	Site	Not a HaPI.
J4 – Bare ground	-	6.05ha	0.4	None	Site	Not a HaPI.
J5 – Other habitat	Game bird cover strips are located on the edge of a number of arable fields, species present included White Melilot *Melilotus albus*, Ribbed Melilot *Melilotus offincinalis*, Wild Carrot *Daucus carota*, Alsike Clover *Trifolium hybridum*, Red Clover *Trifolium pratense* and Scentless Mayweed *Tripleurospermum inodorum*.	9.62ha	0.6	None	Site	Not a HaPI.

Protected and notable species and invasive non-native species

9.6.13 The desk study identified records of protected and notable species, including INNS, from within the 2km search radius from the Order limits and for the preceding ten years.

9.6.14 **Table 9-11** presents a summary of protected or notable animal species that have been identified through a combination of desk study and/ or ecological surveys as present, or potentially present, within the Order limits and relevant Survey Areas (see **Table 9-2**) alongside an evaluation and justification of each receptors importance / value (sensitivity).

9.6.15 The assessment of biodiversity importance of ecological features has been made for the entirety of the Order limits, where sufficient information of protected or notable animal species has been gathered from the desk study, through collaborative datasets and/ or surveys undertaken. Where the biodiversity importance of a receptor is specific to a particular area of the Order limits (e.g., occurring within the Principal Site only), then this is specified with population size or specific species in **Table 9-11**.

Table 9-11: Summary of baseline details for legally protected and, or, notable species, alongside assessment of Biodiversity Importance of Ecological Features

Ecological receptor and technical appendix	Baseline Detail	Nature Conservation Receptor	Biodiversity Importance	Supporting notes for Biodiversity Importance
Aquatic macrophyte and macroinvertebrates (**Appendix 9-2: Aquatic ecology baseline report** of this ES **[EN010142/APP/6.2]**)	The data search returned records of Willow Emerald Damselfly *Chalcolestes viridis* [formerly *Lestes viridis*] within the Study Area, but outside of the Order limits. No protected aquatic invertebrate species were identified within the Study Area. There were no records of White-clawed Crayfish *Austropotamobius pallipes.* The Nationally Scarce aquatic beetle *Helophorus dorsalis* was recorded within a single water body within the Principal Site.	Single water body supporting one nationally scarce beetle species.	Site	Whilst *Helophorus dorsalis* has legislative designation, it is relatively widespread within England and Lincolnshire (Ref. 9-60) and the presence of this species indicates suitable habitat conditions, contributing to an overall diverse assemblage of macroinvertebrates typical of slow-flowing to standing water conditions.
Fish, including European Eel *Anguilla anguilla* (**Appendix 9-2: Aquatic ecology baseline report** of this ES **[EN010142/APP/6.2]**)	No Environment Agency fish surveys have been undertaken within the Study Area, but records of European Eel were identified at Squires Bridge on the River Till, outside of the Order limits. Records of Spined Loach *Cobitis taenia* were also identified at Squires Bridge on	Assumed presence of fish species and Eel in larger water bodies (and connected watercourses), such as the River Trent and	Up to County	All fish species and their habitats are afforded protection under the Salmon and Freshwater Fisheries Act (Ref. 9-62). Eel are afforded protection under the Eels (England and Wales) Regulations 2009 (Ref. 9-63), which places a requirement on developers to ensure continued Eel passage and to prevent Eel entrainment. In addition, Spined Loach was identified within the same water body and this

Ecological receptor and technical appendix	Baseline Detail	Nature Conservation Receptor	Biodiversity Importance	Supporting notes for Biodiversity Importance
	the River Till, outside of the Order limits. No field surveys were undertaken as desk study data was sufficient.	River Till, within the Order limits.		species is listed on Annex II of the Habitats and Species Directive (Ref. 9-59). It is a relatively widespread species in central and eastern England.
Flora/plants (**Appendix 9-3: Baseline report for Flora (including hedgerows)** of this ES **[EN010142/APP/6.2]**)	The desk study identified sixteen records of nine species of notable flora occurring within the Study Area (but outside of the Order limits), including Tasteless Water-pepper *Persicaria mitis*. The field surveys identified five arable fields that supported notable arable plant species of Local importance. In general, grassland around the Order limits is poor semi-improved or improved grassland. However, there are two LWSs within the Order limits that, in terms of UKhabs classification, are best placed within g3a Lowland meadows priority habitat and of County Importance.	Five fields with margins supporting notable arable plant species.	Arable Flora – Local Grasslands associated with LWS – up to County	Five arable fields (11, 20, 30, 33 and 55, see **Appendix 9-3: Baseline report for Flora (including hedgerows)** of this ES **[EN010142/APP/6.2]**) supported notable arable plant plants of Local importance based on established criteria (Ref. 9-26, Ref. 9-27, Ref. 9-28). These assemblages enrich the habitat resource and are of value within the Local context (i.e. within 2km of the Order limits). Grassland within two LWS road verges were scarce grassland types and were good examples at a County Level.

Ecological receptor and technical appendix	Baseline Detail	Nature Conservation Receptor	Biodiversity Importance	Supporting notes for Biodiversity Importance
Hedgerows (**Appendix 9-3: Baseline report for Flora (including hedgerows)** of this ES **[EN010142/APP/6.2]**)	Surveys identified 222 hedgerows within the Order limits, of which 33 are species-rich and 22 are 'important' under the Wildlife and Landscape criteria of the Hedgerows Regulations (Ref. 9-30). In addition, a further 51 hedgerows that are species-rich and six hedgerows that are 'important' (under the Wildlife and Landscape criteria of the Hedgerows Regulations (Ref. 9-30)) within the Order limits were identified from the collaborative datasets.	Important hedgerows, under the Hedgerows Regulations (Ref. 9-30) and species-rich hedgerows.	Up to County	HaPI, legally protected under the Hedgerows Regulations (Ref. 9-30). LBAP habitat in Lincolnshire and Nottinghamshire.
Terrestrial invertebrates (**Appendix 9-4: Baseline Report for Terrestrial invertebrates** of this ES **[EN010142/APP/6.2]**)	There were no records of terrestrial invertebrates identified through the desk study. Ten areas of habitat (grassland margins, grassland field) of potentially more value to terrestrial invertebrates, within the Principal Site. Three notable species (the ground beetle	Notable terrestrial invertebrate species associated with grassland and grassland margins within the Principal Site and likely	Local	Ten areas within the Principal Site (less than 5 hectares, amounting to less than 1% of the potential developable areas of the Order limits) that, due to the habitat, were considered to have potentially more value to terrestrial invertebrates and three notable species recorded within the Principal Site with no legally protected species or SPI recorded.

Ecological receptor and technical appendix	Baseline Detail	Nature Conservation Receptor	Biodiversity Importance	Supporting notes for Biodiversity Importance
	Stenolophus teutonus, and moths, Mottled Umber *Erannis defoliaria* and Latticed Heath *Chiasmia 9-97lathrate*) recorded in May 2023, but no legally protected species or SPI.	throughout the Order limits.		
Great Crested Newt (**Appendix 9-5: Baseline Report for Great Crested Newt** of this ES **[EN010142/APP/6.2]**)	The desk study identified the presence of this species within a single water body within the Principal Site and in water bodies to the east of the Cable Route Corridor (within 250m of the Order limits), near Cottam. Positive eDNA samples for Great Crested Newt were returned from two water bodies within the Order limits (one water body within the Principal Site and one water body within the Cable Route Corridor) and one water body outside of the Order limits. In addition, the collaborative dataset identified a further pond just outside (within 100m) of the Cable Route Corridor, which returned a positive eDNA	Presence of Great Crested Newt within the Order limits.	Local	Great Crested Newt are a SPI in England under Section 41 of the NERC Act (2006) (Ref. 9-6), listed on Schedule 5 of the Wildlife and Countryside Act, 1981 (Ref. 9-1), which affords them protection under Section 9, as amended by the Countryside and Rights of Way Act (2000) (Ref. 9-64) and are also protected under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (Ref. 9-5). Furthermore, they are listed on Annex II and VI of the Habitats Directive (Ref. 9-59). Great Crested Newt presence confirmed within the Order limits (two water bodies) and in water bodies outside of the Order limits, the closest being a single water body within 100m of the Cable Route Corridor and all others >100m from the Order limits (see **Appendix 9-5: Baseline Report for Great Crested Newt** of this ES **[EN010142/APP/6.2]**).

Ecological receptor and technical appendix	Baseline Detail	Nature Conservation Receptor	Biodiversity Importance	Supporting notes for Biodiversity Importance
	sample, as confirming the presence of Great Crested Newt.			Notwithstanding the international legislation that protects the species, due to confirmed presence (confirmed through eDNA laboratory analysis) within four water bodies (from 112 water bodies identified) within 500m of the Order limits and the presence of Great Crested Newt in the wider landscape (confirmed through desk study records or data received from neighbouring and overlapping schemes), a Great Crested Newt population of only Local Importance is considered to be present within the ZoI.
Reptiles and amphibians (**Appendix 9-6: Baseline Report for Reptiles and amphibians** of this ES **[EN010142/APP/6.2]**)	The data search returned two records of Grass Snake *Natrix helvetica* within the Study Area (but outside of the Order limits) and a single record of Common Lizard *Zootoca vivipara* outside of the Order limits. The data search also returned records of three species of amphibian (Smooth Newt *Lissotriton vulgaris*, Common Frog *Rana*	Grass Snake, Common Lizard and Common Toad recorded within the Order limits.	Grass Snake and Common Lizard – Local Importance.	Reptiles are protected from intentional injuring or killing under the Wildlife and Countryside Act, 1981 (Ref. 9-1) and are SPI under Section 41 of the NERC Act (2006) (Ref. 9-6). Low populations of both Common Lizard and Grass Snake are present in a single area within the Cable Route Corridor.

Ecological receptor and technical appendix	Baseline Detail	Nature Conservation Receptor	Biodiversity Importance	Supporting notes for Biodiversity Importance
	temporaria and Common Toad *Bufo bufo*) occurring within the Study Area. No reptiles were recorded during surveys of the Principal Site. Small numbers of Common Toad were recorded within the Principal Site. The collaborative dataset identified an area of tussocky grassland, within the Cable Route Corridor, as supporting populations (of Local Importance) of Common Lizard and Grass Snake.		Common Toad – Site Importance	SPI (Ref. 9-6), recorded in low numbers within the Principal Site only.
Breeding birds (**Appendix 9-7: Baseline Report for Breeding birds** of this ES **[EN010142/APP/6.2]**)	The data search returned records of 99 bird species, including specially protected or notable bird species from within the Study Area. Breeding assemblage of 55 bird species within the Principal Site with a further two species recorded within the Cable Route Corridor from the collaborative dataset.	Assemblage of breeding birds, including specially protected species and notable species, within the Order limits.	Species Diversity is of County Importance. Population of Skylark is of District Importance Two territories of Black Redstart within the ZoI (200m Survey	No species are present within the Principal Site in numbers of national significance, i.e., 1% or more of the UK population. Black Redstart is considered to be of County Importance (i.e. >1% of the Nottinghamshire population). Five species recorded within the Survey Area that are listed on Annex 1 of the Birds Directive (Ref. 9-65) or on the Wildlife and Countryside Act, 1981 (as amended) (Ref. 9-1).

Ecological receptor and technical appendix	Baseline Detail	Nature Conservation Receptor	Biodiversity Importance	Supporting notes for Biodiversity Importance
			Area) of the Cable Route Corridor (Nottinghamshire) are of County Importance Territories of Quail, Hobby and Barn Owl within the Principal Site and single territory of Peregrine within the ZoI of the Cable Route Corridor (Nottinghamshire) are of Local Importance	Fourteen SPI (Ref. 9-6) were recorded within the Survey Area. Twelve species, included on the Birds of Conservation Concern (BoCC) Red List (Ref. 9-66) and 15 species, included on the BoCC Amber list (Ref. 9-66), were recorded within the Survey Area. The remaining species are all included on the Green list and are of least conservation concern.
Non-breeding (wintering and passage) birds (**Appendix 9-8: Baseline Report for Non-breeding birds** of this ES **[EN010142/APP/6.2]**)	The data search returned records of 99 bird species, including specially protected or notable bird species from within the Study Area. Field Survey: 65 bird species were recorded during non-breeding bird surveys within the Survey Area.	Assemblage of wintering birds within the Order limits.	Species Diversity is of District Importance. Populations of Golden Plover, Skylark and Yellowhammer 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. Six species, listed on Annex I of the EC Birds Directive (Ref. 9-65) were recorded within the Survey Area. Fourteen SPI (Ref. 9-6) were recorded within the Survey Area.

Ecological receptor and technical appendix	Baseline Detail	Nature Conservation Receptor	Biodiversity Importance	Supporting notes for Biodiversity Importance
				Fourteen species, included on the Birds of Conservation Concern (BoCC) Red List (Ref. 9-66) and 23 species, included on the BoCC Amber list (Ref. 9-66), were recorded within the Survey Area. The remaining species are all included on the Green list and are of least conservation concern.
Bats (**Appendix 9-9: Baseline Report for Bats** of this ES **[EN010142/APP/6.2]**)	The data search returned records of at least eight bat species occurring within the Study Area, most of which were field observations that could relate to roosting and/ or foraging / commuting bats. The desk study also identified roosts of two species of bat (Common Pipistrelle and Brown Long-eared Bat) within 2km of the Order limits, but none from within the Order limits. A review of MAGIC (Ref. 9-8) did not identify any bat mitigation licences within 2km of the Order limits.	Foraging / commuting activity of common and rarer bat species with potential for roosts within and adjacent to the Order limits.	Roosting bats – Up to County Importance	All bat species and their roosts are legally protected in the UK under the Wildlife and Countryside Act, 1981 (Ref. 9-1) and Conservation of Habitats and Species Regulations (Ref. 9-5), which implemented the Habitats Directive (Ref. 9-59). Seven bat species are also included as SPI (Ref. 9-6). As a precautionary approach based on the limited data collected, bat roosts have been assigned of up to County Importance (dependent on the species) based on potential breeding (and hibernation roosts) of both abundant (but widespread) and less abundant species and possible non-breeding, smaller breeding and hibernation roosts of rare species.

Ecological receptor and technical appendix	Baseline Detail	Nature Conservation Receptor	Biodiversity Importance	Supporting notes for Biodiversity Importance
	Based on the field data collected from the PRA survey and bat activity surveys, there are likely to be roosts within or close to the Order limits of Common Pipistrelle *Pipistrellus pipistrellus* and Soprano Pipistrelle *Pipistrellus pygmaeus*, Noctule *Nyctalus noctula*, Leisler's bat *Nyctalus leisleri*, *Myotis* species (e.g. Daubenton's *Myotis daubentonii* or Natterer's *Myotis nattereri*) and Brown Long-eared *Plecotus auritus*. This is based on suitable habitat features such as suitable trees and buildings for roosting and the timing of observations in relation to expected emergence times (from static and transect data).		Foraging / commuting habitat for the overall bat assemblage – up to County Importance.	Biodiversity importance of foraging and commuting bats is based on species rarity, numbers, presence of potential nearby roosts and type/complexity of commuting/foraging features. This also considers the lower detectability on bat detectors of species such as Brown Long-eared Bat and *Myotis* bats compared to species such as Common and Soprano Pipistrelle and Noctule (Ref. 9-67). Whilst overall, the commuting routes and foraging habitat for individual bat species is considered to be of up to County importance, the developable areas of the Scheme comprise largely arable which are of lower value (up to District Importance).
Riparian Mammals (**Appendix 9-10: Baseline Report for Riparian mammals** of this ES **[EN010142/APP/6.2]**)	The data search and desk study identified the presence of Water Vole, Otter and Mink within the Study Area, including records of all three species from within the Cable Route Corridor.	Presence of Otter within the Cable Route Corridor.	Local	Otter is protected under The Conservation of Habitats and Species Regulations 2017 (Ref. 9-5) and Schedule 5 of the Wildlife and Countryside Act, 1981 (Ref. 9-1). Otters have an estimated British population of 11,000, are increasing in population size

Ecological receptor and technical appendix	Baseline Detail	Nature Conservation Receptor	Biodiversity Importance	Supporting notes for Biodiversity Importance
	No evidence of riparian mammals was recorded within the Principal Site. The collaborative dataset identified the River Trent as supporting a population of Otter, of Local Importance.			and range (Ref. 9-68) and are of International Union for the Conservation of Nature (IUCN) Least Concern status in England (Ref. 9-69). The absence of holts, couches or resting sites within the Study Area and limited riparian corridors means the Order limits is likely to only support an Otter population of Local Importance.
		Presence of Water Vole within the Cable Route Corridor.	District	Water Vole are protected under Schedule 5 of the Wildlife and Countryside Act, 1981 (Ref. 9-1). 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. 9-70). The limited number of records of Water Vole, limited suitable habitat and presence of Mink, which predate Water Vole, means the Order limits is likely to only support a population of local importance but in consideration of this species' declining status in a national and county context, the population of Water Vole is potentially of District importance.

Ecological receptor and technical appendix	Baseline Detail	Nature Conservation Receptor	Biodiversity Importance	Supporting notes for Biodiversity Importance
		Presence of Mink within the Cable Route Corridor.	N/A	American Mink is a non-native species, included on Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended) (Ref. 9-1), which makes it illegal to distribute or allow the release of this species into the wild.
Badger (**Appendix 9-11: Baseline Report for Badger (Confidential)** of this ES **[EN010142/APP/6.2]**)	Badger was recorded through the desk study, with the majority of records concerning Badger that were dead near roads, outside of the Order limits. Field surveys identified Badger setts within and up to 50m from the Order limits.	Presence of this species within the Order limits.	Local	Protected under The Protection of Badgers Act 1992 (Ref. 9-71), however, they remain common and widespread throughout Lincolnshire and Nottinghamshire (Ref. 9-72, Ref. 9-73, Ref. 9-74).
Other mammals	The data search returned records of Brown Hare within the Study Area. Brown Hare was recorded within the Order limits during other ecological surveys.	Presence of this species confirmed within Order limits.	Local	SPI in England (Ref. 9-6) and local BAP species in Lincolnshire (Ref. 9-16). Brown Hare was recorded in arable land within the Order limits during ecological surveys undertaken in 2022/2023.
	The data search returned records of Hedgehog within the Study Area. Not recorded during ecological surveys within the Order limits.	Assumed presence within Order limits.	Local	SPI in England (Ref. 9-6) and Local BAP species in Lincolnshire (Ref. 9-16) and Nottinghamshire (Ref. 9-17). Not recorded during ecological surveys, but based on scrub, woodland and hedgerow habitats within the Order limits,

Ecological receptor and technical appendix	Baseline Detail	Nature Conservation Receptor	Biodiversity Importance	Supporting notes for Biodiversity Importance
				geographical range of this species, alongside abundance within Lincolnshire (Ref. 9-73) and Nottinghamshire (Ref. 9-74), an assumption has been made this species is likely to be present within the Order limits.
	The desk study did not return any records of other mammals listed on S41 of the NERC Act (Ref. 9-6), such as Polecat or Harvest Mouse *Micromys minutus.* No mammals listed on S41 of the NERC Act (Ref. 9-6) were recorded during ecological surveys within the Order limits.	Possible presence of Harvest Mouse	Local	Polecat and Harvest Mouse are SPI under Section 41 of the NERC Act (Ref 8 11). Polecat is a rare species outside of its known distribution range (Ref. 9-75) and historical records of Polecat show a widespread but scarce distribution in the northern half of Lincolnshire (Ref. 9-73) and sporadically within Nottinghamshire (Ref. 9-74). Therefore, given the paucity of records of this species within the Study Area and this species' rarity within both Lincolnshire and Nottinghamshire, Polecat is likely to be absent from the Order limits. 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 and Nottinghamshire, based on its known (or likely) distribution in Lincolnshire (Ref. 9-73) and Nottinghamshire (Ref. 9-74). Furthermore, the Order limits does offer suitable habitat

Ecological receptor and technical appendix	Baseline Detail	Nature Conservation Receptor	Biodiversity Importance	Supporting notes for Biodiversity Importance
				for this species, which can be found in tall grassland, farmland and hedgerows.
Invasive non-native species	The data search recorded a non-native, but non-invasive, freshwater amphipod shrimp *Crangonyx psuedogracilis / floridanus* at the Environment Agency Fillingham Beck monitoring site in 2016. There were also records of the non-native but non-invasive New Zealand Mud Snail *Potamopyrgus antipodarum* within the Study Area, between 2013 and 2016. The data search also returned records of seven invasive and, or, non-native species: Mitten Crab *Eriocheir sinensis*, New Zealand Mud Snail, a freshwater amphipod shrimp *Gammarus fasciatus*, American Mink and New-Zealand Pigmyweed *Crassula helmsii*, Himalayan Balsam *Impatiens glandulifera* and Japanese Knotweed *Reynoutria japonica*.	Presence of two invasive non-native plant species within the Study Area and potential presence of invasive non-native animal species (see also Mink, above).	N/A	Nuttall's Waterweed and New Zealand Pigmyweed are listed in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) (Ref. 9-1), and in the Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref. 9-7). The legislation referenced makes it an offence to plant, or otherwise cause to grow (including allowing to spread), listed plant species in the wild. If transported off site, there is a duty of care with regards to the disposal of any part of the plant that may facilitate establishment in the wild and cause environmental harm (as per the Environmental Protection Act 1990 (Ref. 9-76). The legislation also makes it an offence to release, or allow to escape, listed species (or species not ordinarily resident in and is not a regular visitor to Great Britain in a wild state) into the wild.

Ecological receptor and technical appendix	Baseline Detail	Nature Conservation Receptor	Biodiversity Importance	Supporting notes for Biodiversity Importance
	Pond macrophyte surveys identified the INNS species Nuttall's Waterweed *Elodea nuttallii* and New Zealand Pigmyweed within the Study Area.			

Important Ecological Features

9.6.16 **Table 9-12** summarises the known IEFs that are relevant to the Scheme. Based on CIEEM guidelines (Ref. 9-2) 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. However, in recognition of the protected status of species occurring at less than local level (e.g., Common Toad), the Scheme has embedded appropriate mitigation to minimise impacts in line with the relevant legislation.

Table 9-12: Summary of Important Ecological Features (IEFs)

IEF	Geographic Importance (**see** Error! Not a valid result for table.**)**	Reason for valuation of IEF
Ashton's Meadow SSSI	National	Statutory site designated for biodiversity importance and therefore qualifies as **High** Importance.
13 sites of county importance (LWSs – see Table 9-9)	County	Non-statutory sites designated for biodiversity importance, qualifying as **Medium** Importance.
Habitat – broad-leaved woodland (semi-natural)	County	Habitat of ecological importance, supporting a wide range of fauna and included as a HaPI and LBAP habitat. Therefore, this habitat qualifies as being of **Medium** Importance.
Veteran trees	County	Ancient and veteran trees are notable for their potential biodiversity value. Therefore, this habitat qualifies as being of **Medium** Importance.
Habitat – acid grassland (semi-improved) within the Cable Route Corridor	County	Habitat of ecological importance included as a Priority Habitat and LBAP habitat in Nottinghamshire. The small extent of this habitat (c. 0.6ha) amounts to 3.9% of the habitat type occurring in the county and therefore, this habitat qualifies as being of **Medium** Importance.
Habitat – calcareous grassland within the Cable Route Corridor	County	Habitat of ecological importance included as a Priority Habitat and LBAP habitat in Lincolnshire. Therefore, this habitat qualifies as being of **Medium** Importance.
Habitat – Coastal and Floodplain Grazing Marsh within the Cable Route Corridor	County	Coastal and Floodplain Grazing Marsh either side of the River Trent qualifies as a habitat of ecological importance included as a HaPI and LBAP habitat. Therefore, this habitat qualifies as being of **Medium** Importance.

IEF	Geographic Importance (see Error! Not a valid result for table.)	Reason for valuation of IEF
Habitat – Standing Water	Local	Habitat of ecological importance included as a Priority Habitat or LBAP habitat. Considered as being of **Low** Importance as <25 ponds within the Order limits and none fulfil the criteria of a priority habitat.
Habitat – Running Water	Up to County	The River Trent and River Till are within the Order limits and qualify as being of **Medium** Importance. Surveys of the network of ditches with running water did not identify any notable macroinvertebrate, macrophyte or fish species and are mostly of Low conservation value. However, the ditches are likely to support protected species, such as bats, therefore these would also qualify as being of **Medium** Importance.
Arable field margins with scarce arable flora	Local	Five fields of **Low** Importance.
Habitat – hedgerows	Up to County	The network of hedgerows across the Order limits will be of value to birds, bats and other fauna, therefore hedgerows qualify as being of **Medium** Importance.
Spined Loach and European Eel	Up to County	European Eel is afforded protection under the Eel Regulations 2009 (Ref. 9-63) and Spined Loach is listed on Annex II of the Habitats and Species Directive (Ref. 9-65). European Eel and Spined Loach are both listed as SPI (Ref. 9-6). Whilst protected, both species are relatively widespread in central and eastern England and therefore these species would qualify as being of **Medium** Importance.
Terrestrial Invertebrates	Local	No legally protected terrestrial invertebrate species or SPI recorded, but three notable species and ten areas of habitat (amounting to less than 1% of the potential developable area of the Order limits) that qualify as being of potentially more value to terrestrial invertebrates. Therefore, qualifies as being of **Low** Importance.

IEF	Geographic Importance (see Error! Not a valid result for table.)	Reason for valuation of IEF
Great Crested Newt	Local	Presence of this species confirmed in two ponds within the Order limits and six water bodies outside of the Order limits but within 500m. Therefore, qualifies as being of **Low** Importance.
Reptiles – Grass Snake and Common Lizard	Local	Presence of small population of two reptile species within the Order limits (Cable Route Corridor). Therefore, qualifies as being of **Low** Importance.
Breeding Birds (General breeding bird assemblage)	Up to 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 Skylark within the Principal Site	District	Population of Skylark within the Principal Site qualifies as being of **Medium** Importance.
Breeding birds – territories of specially protected species within the Principal Site.	Up to County	Population of Quail, Peregrine, Hobby and Barn Owl, all species included on Schedule 1 of the Wildlife and Countryside Act, 1981 (Ref. 9-1) qualifies as being of **Low** Importance. However, population of Black Redstart is of Medium Importance within Nottinghamshire.
Non-breeding birds	District	Populations of common and notable non-breeding bird species, including populations of Golden Plover, Skylark and Yellowhammer of District importance, and therefore qualifies as being of **Medium** Importance.
Bats – roosting	Up to County	Potential for bat roosts within and close to the Order limits and dependent on the species, would qualify as being of **Medium** Importance.
Bats – foraging / commuting	Up to County	Overall, based on recorded species, their rarity, numbers, presence of potential nearby roosts and type/complexity of commuting/foraging

IEF	Geographic Importance (see Error! Not a valid result for table.)	Reason for valuation of IEF
		features within a largely arable setting would qualify as being of **Medium** Importance.
Water Vole	District	Presence of this species within the Cable Route Corridor and qualifies as being of **Medium** Importance due to localised population recorded, but in consideration of National and County declines of this species.
Otter	Local	Presence of this species using the River Trent and localised watercourses within the Cable Route Corridor, although no Otter holts, couches or resting sites identified and therefore qualifies as being of **Low** Importance.
Badger	Local	Badgers occurring within the Order limits are of **Low** importance.
Other mammals (Brown Hare, Hedgehog and Harvest Mouse)	Local	Presence of Brown Hare confirmed within the Order limits and presence likely across the Order limits for Hedgehog and Harvest Mouse, with all species qualifying as being of **Low** Importance.

Future Baseline

9.6.17 The future baseline (no development) scenarios are set out in **Chapter 5: EIA Methodology** of this ES **[EN010142/APP/6.1]**. However, this section considers those changes to the ecological baseline conditions, described above, that might occur in the absence of the Scheme and during the time period over which the Scheme would be in place.

9.6.18 In the short to medium term, in the absence of the Scheme, habitats within the Order limits (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 Scheme, 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 the assessment and when determining mitigation measures.

9.6.19 Irrespective of whether the Scheme 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 Scheme throughout its duration.

Construction Period (assumed to be 2025-2027)

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

9.6.21 If the Scheme 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 2027.

Operation (assumed to be 2028-2088)

9.6.22 Based on current projections, the long-term (i.e., the next 60 years) will see an increased frequency of extreme weather conditions due to climate change (see **Chapter 7: Climate Change** of this ES **[EN010142/APP/6.1]**) 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 Order limits.

9.6.23 National and local planning policy targeted at halting and reversing these declines is presented in **Appendix 9-1: Ecology and Nature Conservation: Legislation, Policy and Guidance** of this ES **[EN010142/APP/6.2]**.

9.6.24 If the Scheme 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 Order limits between opening in 2028 and decommissioning in 2088. 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 2088)

9.6.25 In the absence of the Scheme, the future baseline conditions are currently unknown and more difficult to predict given the time period that would need to lapse between now and then. The habitats are likely to be similar to this at the start of construction (2025), although 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.

9.7 Potential Impacts

9.7.1 Prior to the implementation of any mitigation, the Scheme has the potential to affect biodiversity (positively or negatively), during construction, operation and decommissioning, in the following ways outlined below.

Construction (assumed to be 2025-2027)

9.7.2 Impacts on biodiversity features during construction of the Scheme are likely to include:

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

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

c. Disturbance / displacement – indirect impacts resulting from a change in normal conditions (light, noise, vibration, 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 of invasive species, due to the movement of personnel, equipment and plant machinery, potentially facilitating the introduction of invasive species.

Operation (assumed to be 2028-2088)

9.7.3 Impacts on biodiversity features during the operational phase of the Scheme are likely to include:

Adverse impacts:

a. Potential attraction of aquatic invertebrates to solar panels, causing displacement and mortality;

b. Potential avoidance of species using the Order limits, such as bats and birds, due to indirect impacts through operational lighting;

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

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

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

d. 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 2088)

9.7.4 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 Order limits returned to landowners in the condition as at the end of operation, including the established habitats.

9.8 Embedded Mitigation

9.8.1 This section contains the avoidance and mitigation measures relevant to biodiversity that are incorporated into the Scheme design, as described in **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**, and any management plans submitted with the DCO Application.

9.8.2 Embedded avoidance and mitigation measures are incorporated into the Scheme, in line with national and local planning policy (as presented in **Appendix 9-1: Ecology and Nature Conservation: Legislation, Policy and Guidance** of this ES **[EN010142/APP/6.2]**). As a first principle, the Scheme has sought to avoid IEFs. Where this has not been possible, embedded mitigation measures have been added to form an integral, committed and deliverable part of the Scheme or comprise standard construction practices. They are assumed to be implemented (formalised into the **Framework CEMP [EN010142/APP/7.8]**, **Framework OEMP [EN010142/APP/7.9]**, **Framework DEMP [EN010142/APP/7.10]**, and **Framework LEMP** [EN010142/APP/7.17], secured through the DCO) and are therefore factored into the determination of significant effects. A summary of the primary avoidance and mitigation measures embedded into the Scheme to minimise construction impacts on biodiversity are presented below and details of how the Scheme design's embedded avoidance and construction-related mitigation measures interact with IEFs are presented in **Table 9-13**.

Scheme Design and Construction

Scheme design

9.8.3 The Scheme design has evolved to avoid all sites statutorily designated for their biodiversity importance and to avoid or minimise impacts on sites that are non-statutorily designated for their biodiversity importance. Measures embedded within the Scheme design will ensure that designated sites are not adversely impacted during construction, operation or decommissioning e.g., through siting construction routes away from designated sites, incorporating suitable buffer zones and erection of temporary construction fencing to avoid incursion into exclusion zones.

Habitat Avoidance Measures

9.8.4 From the outset, the Scheme has been designed to avoid key nature conservation and ecological features present within or adjacent to the Order limits. Accordingly, the following buffers from key habitat features have been applied:

a. All woodland – at least 15 m;

b. All trees within hedgerows and individual trees – protected by clearly defined root protection areas, concordant with the requirements for each individual tree as detailed in **Appendix 12-7: Arboricultural Impact Assessment** of this ES **[EN010142/APP/6.2]**;

c. Watercourses (where practicable) – at least 10 m from the bank-top of the watercourse;

d. Standing water – at least 20m; and

e. Hedgerows – where practicable, at least 5m.

9.8.5 These avoidance measures are secured in the **Framework CEMP [EN010142/APP/7.8]**.

Framework CEMP

9.8.6 The **Framework CEMP [EN010142/APP/7.8]**, includes measures to manage the environmental effects of the Scheme and to demonstrate compliance with environmental legislation. Accordingly, the Framework CEMP details the measures required to mitigate any construction related effects on biodiversity, including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Implementation of the measures set out in the Framework CEMP are secured by Requirement of the DCO, which requires that the detailed CEMP be prepared in substantial accordance with the Framework CEMP.

Measures for Ground-nesting birds

9.8.7 Through the evolution of the Scheme design, including mitigation requirements for other environmental disciplines, sufficient areas of habitat creation, alongside extensive habitat enhancements have been incorporated to offset the impact of loss of arable farmland for breeding Skylark and other ground nesting birds, as well as provide extensive benefits for other IEFs and wider biodiversity. The locations of proposed measures (Biodiversity Zones) are illustrated on the Framework Landscape Masterplan in Annex A of the **Framework LEMP [EN010142/APP/7.17]**.

9.8.8 Over 200ha of undeveloped land, in open ‘Biodiversity Zones’, along with over 1,000 ha of grassland creation, has been incorporated into the Scheme design. 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. Management of these areas will ensure that the sward does not exceed 60 cm and any management activities are restricted for the full extent of the breeding season (typically March to August inclusive), allowing for potential of up to four broods.

9.8.9 In addition to these larger undeveloped areas, wide margins (c.15m) have been left alongside numerous internal access tracks. A similar treatment to the larger undeveloped areas will be applied to these linear habitats, providing nesting opportunities and mosaics of bare ground and diversity grassland for foraging and territory defence.

9.8.10 Wide grassland margins and undeveloped corners of fields, particularly along the periphery of the Scheme, have been incorporated into the design to enhance foraging for Skylark nesting both onsite and offsite and to allow for an element of displacement from the Scheme and absorption into neighbouring habitats.

9.8.11 In habitat areas targeted for Skylark management, existing hedgerows, where practicable, will be maintained at their current height, to minimise further loss of ‘openness’ of these areas. Further to this, to reduce predation

from ground predators, particularly in areas where existing woodlands and mature hedgerows may provide a sink for predators, the perimeter security fencing will not contain passages for mammals, as is proposed elsewhere throughout the Scheme, which will reduce nest predation.

9.8.12 The Scheme has also allowed for areas to be set aside for overwinter foraging resources. These seed rich area will increase the chances of overwinter survival of adult and juvenile birds, improving potential recruitment of individuals into the local breeding population.

Vegetation Clearance

9.8.13 Vegetation clearance will be undertaken in advance of construction and at an appropriate time of year so as to avoid the nesting bird period and incidental injuring or killing of animals, such as Brown Hare or reptiles. These measures are set out in the **Framework CEMP [EN010142/APP/7.8]** and **Framework OEMP [EN010142/APP/7.9]**, with implementation of the measures secured by Requirement of the DCO, which requires that the detailed CEMP and OEMP be prepared in substantial accordance with the Framework CEMP and OEMP (respectively).

Security Perimeter Fencing

9.8.1 A security perimeter fence will be implemented early in the construction phase to secure the Order limits and prevent construction activity in proximity to peripheral habitats and retained habitats within the Order limits. The fence design will include gaps to allow mammals that may use woodland habitats, including small deer, Badger, Brown Hare and Hedgehog, to pass underneath at strategic locations. Equally, in some locations, gaps will be avoided to allow the security fencing to act as an anti-predator fence, particularly in areas targeted at providing habitat for ground-nesting birds. These measures are set out in the **Framework CEMP [EN010142/APP/7.8],** with implementation of the measures secured by Requirement of the DCO, which requires that the detailed CEMP be prepared in substantial accordance with the Framework CEMP.

Construction Lighting

9.8.2 Where lighting is required, it will conform to best practice guidelines with respect to minimising light spill into habitats and temporary construction lighting, in the form of mobile lighting towers with a power output of 8 kilo volt-amperes (kVAs), will be required in areas where natural lighting is unable to reach (sheltered/confined areas) and during core working hours within winter months but deployed in accordance with the following recommendations to prevent or reduce the impact on human and ecological receptors. These measures are set out in the **Framework CEMP [EN010142/APP/7.8],** with implementation of the measures secured by Requirement of the DCO, which requires that the detailed CEMP be prepared in substantial accordance with the Framework CEMP.

Methods for Watercourse Crossing

9.8.3 During construction of the Cable Route Corridor, the River Trent and the majority of smaller watercourses (**Figure 10-5: Watercourses, Flood Zones**

and Internal Drainage Boards [EN010142/APP/6.3]) will be crossed using trenchless (non-intrusive) methods (e.g. horizontal directional drilling (HDD) techniques or similar, that would not disturb the watercourse), with the depth of the cable below the bed to be greater than 3m. The minimum depth under the River Trent and River Till will be 5m and maximum 25m.

9.8.4 Setbacks of at least 10m from the water's/channel edge of all watercourses is considered sufficient to mitigate for potential hazards such as chemical and soils spills into watercourses and avoid potential direct impacts to watercourses, as well as Otter, which occasionally use the River Trent for commuting and foraging. The **Framework CEMP [EN010142/APP/7.8]**, specifies requirements for the safe storage of chemicals / other hazardous materials (e.g. fuel) reaching watercourses during flood events during construction. A full list detailing crossing methods and an explanation of these techniques is provided in **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**.

9.8.5 However, there are 18 watercourse crossings that could require open cut installation techniques. For these crossings it is assumed that water flow would be maintained by damming and over pumping. These watercourses are generally ephemeral ditches and if works are carried out in the drier months this would reduce the risk of pollution propagating downstream, although this cannot be guaranteed. Where intrusive crossing techniques are used, a pre-works hydromorphological survey will be undertaken to record channel features and provide the baseline against which reinstatement will be provided. Reinstatement will aim to provide an improved channel form with reinstatement works to be carried out (where relevant and appropriate to do so) between 5 and 10m upstream and downstream of the open trench to ensure the reinstated improved channel form merges into the existing channel form. It is anticipated that enhancements will consist of soft engineering techniques and improvements to the riparian corridor to improve channel diversity and biodiversity.

Drainage Strategy

9.8.6 An Outline Drainage Strategy (see **Appendix 10-4: Outline Drainage Strategy** of this ES **[EN010142/APP/6.2]**) has been developed to manage surface water runoff 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.

Wildlife Legislation Compliance

9.8.7 To comply with relevant wildlife legislation, pre-construction surveys, such as Phase 1, badger and/or bat walkovers (if roost features are impacted), will be undertaken to support the baseline survey findings. The purpose of these preconstruction surveys is to ensure mitigation during the construction phase is based on the latest protected species and invasive species information.

9.8.8 During construction and operation, Reasonable Avoidance Measures (RAMs), including appropriate buffers (of up to 30m) around any identified Badger setts, or trees with bat roost potential (a buffer of 15m) throughout the Scheme (e.g., from solar arrays and along the Cable Route Corridor).

9.8.9 These measures are set out in the **Framework CEMP [EN010142/APP/7.8]** and **Framework OEMP [EN010142/APP/7.9]**, with implementation of the measures secured by Requirement of the DCO, which requires that the detailed CEMP and OEMP be prepared in substantial accordance with the framework plans.

Table 9-13: Summary of Embedded Avoidance and Mitigation Measures

IEF	Embedded Avoidance and Mitigation
Designated Sites – Ashton's Meadow SSSI	Scheme Design: • The Scheme location avoids Ashton's Meadow SSSI, which is 1.5km from the Order limits. Construction: • As set out within the **Framework Construction Traffic Management Plan (CTMP) [EN010142/APP/7.11]**, there are no routes for construction traffic that pass within 200m of the SSSI, thus avoiding any potential degradation to sensitive habitats from vehicle pollutants. • In addition, the Scheme will implement standard environmental protection measures during construction, such as dust suppression and pollution prevention, to ensure no indirect impacts occur. These measures are set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured by a Requirement of the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects on this SSSI (and any species using the SSSI), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g., fuel), to prevent them reaching standing and running waters through flood events during construction. It will ensure that those involved with the construction stages are committed to agreed best practice and meet all relevant environmental legislation including the Hazardous Waste (England and Wales) Regulations 2005 (Ref. 9-77).
Designated Sites – Willingham to Fillingham Road Verges LWS	Scheme Design: • Whilst, the Scheme has to unavoidably cross the LWS to facilitate the Cable Route Corridor, which will require a new temporary construction access track, the design has sought to minimise impacts on the LWS, through the careful positioning of site accesses along the Cable Route Corridor which minimise direct loss of habitats. This has also removed the need for passing places which may directly impact the LWS, as well as minimising the volume of construction traffic which will need to pass alongside the LWS verges. Site accesses are secured through compliance with the **Street, Access and Rights of Way plans**

IEF	Embedded Avoidance and Mitigation
	[EN010142/APP/2.5]. The Order limits for the Cable Route Corridor have been refined to minimise the extent of the LWS present in the Scheme.
	Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • To limit disturbance to habitat inside the LWS during construction, the working area will be kept to a minimum of 5m inside the LWS and no spoil, materials or vehicles will be stored within the LWS. • Once the cable(s) have been installed, the removed soil and turfs from the LWS (stored separately to that of adjacent fields) will be backfilled and replaced promptly, retaining the original topsoil and seed bank. • A new temporary construction access track into the fields along Willingham Road will be required. However, reinstatement will be undertaken after construction, with the removed soil and turfs from the LWS, replaced promptly once cable laying has ceased. • A security perimeter fence will be implemented early in the construction phase to secure the Order limits and prevent construction activity from intruding into the remainder of the LWS. • The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures are set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured by a Requirement of the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects on the LWS (and species using them), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g., fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**). It will ensure that those involved with the construction stages are committed to agreed best practice and meet all relevant environmental legislation including the Hazardous Waste (England and Wales) Regulations 2005 (Ref. 9-77).

IEF	Embedded Avoidance and Mitigation
Designated Sites – Upton Grange Road Verges LWS	Scheme Design: • The Scheme has been designed to minimise impacts on the LWS, through careful positioning of site accesses along the Cable Route Corridor which utilise existing field accesses. Site accesses are secured through compliance with the **Street, Access and Rights of Way plans [EN010142/APP/2.5]**. The Order limits for the Cable Route Corridor have been refined to minimise the extent of the LWS present in the Scheme.
	Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • A security perimeter fence will be implemented early in the construction phase to secure the Order limits and prevent construction activity from intruding into the LWS. • The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures have been set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation secured by a Requirement of the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects on the LWS (and species using them), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g., fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**). It will ensure that those involved with the construction stages are committed to agreed best practice and meet all relevant environmental legislation including the Hazardous Waste (England and Wales) Regulations 2005 (Ref. 9-77).
Designated Sites – Cow Pasture Lane Drains LWS	Scheme Design: • The Scheme has been designed to minimise impacts on the LWS, through careful positioning of site accesses and crossing points along the Cable Route Corridor. Site accesses are secured through compliance with the **Street, Access and Rights of Way plans [EN010142/APP/2.5]**.

IEF	Embedded Avoidance and Mitigation

Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**):

- A security perimeter fence will be implemented early in the construction phase to secure the Order limits and prevent construction activity from intruded into the LWS.
- The laying of cabling through Cow Pasture Lane Drains LWS will be undertaken using non-intrusive methods, with setbacks of at least 10m from the bank-top of the drain to protect riparian habitats and the adjacent hedge. This setback will mitigate for potential hazards such as chemical and soils spills into the watercourse, thus avoiding potential direct impacts to the LWS and riparian habitats.
- Any access that is required for construction of the Cable Route Corridor will utilise existing access tracks, such as the track that runs alongside Cow Pasture Lane Drains LWS, to the east. Any access to the western side of Cow Pasture Lane Drains LWS will, principally, seek to avoid crossing of this LWS although there is potential for a temporary bailey bridge to be placed over the LWS to facilitate any crossing. Vegetation clearance in these areas will also be minimised as much as is practicable.
- Construction compounds will be setback from any LWS with a minimum 10m from the bank-top of the watercourse, with security fencing implemented at an early stage to ensure incursion into this LWS does not occur.
- The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures have been set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured by a Requirement of the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein are implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects on this LWS (and species using them), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g., fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**). It will ensure that those involved with the construction stages are committed to agreed best practice and meet all relevant environmental legislation including the Hazardous Waste (England and Wales) Regulations 2005 (Ref. 9-77).

IEF	Embedded Avoidance and Mitigation
Designated Sites – remaining ten non-statutory sites outside the Order limits	Scheme Design: • There are ten non-statutory sites designated for their biodiversity importance (see **Table 9-9**) outside the Cable Route Corridor and the Scheme has been designed to avoid or minimise impacts on these sites. • There will be no fragmentation of habitats, or of populations of species using habitats within Cottam Wetlands LWS during construction. Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • A security perimeter fence will be implemented early in the construction phase to secure the Order limits and prevent construction activity in proximity to peripheral and retained habitats within the Order limits. The fence design will include gaps to allow mammals that may use woodland habitats, 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. Equally, in some locations, gaps will be avoided to allow the security fencing to act as an anti-predator fence, particularly in areas targeted at providing habitat for ground-nesting birds. • Any access that is required for construction of the Cable Route Corridor will utilise existing access points where practicable. Vegetation clearance in these areas will also be minimised as much as is practicable. • Construction compounds will be setback from any LWS with a minimum 10m from the bank-top of the watercourse, with security fencing implemented at an early stage to ensure incursion into this LWS does not occur. • The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures have been set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured by Requirement of the DCO that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein are implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]**, details the measures required to mitigate any construction related effects on these LWS's (and species using them), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g., fuel), to prevent them reaching standing and running waters through flood events during construction

IEF	Embedded Avoidance and Mitigation
	(see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**). It will ensure that those involved with the construction stages are committed to agreed best practice and meet all relevant environmental legislation including the Hazardous Waste (England and Wales) Regulations 2005 (Ref. 9-77).
Habitat – broad-leaved woodland (semi-natural), including Ancient Woodland and individual trees (including ancient / veteran trees)	Scheme Design: • The Scheme location has been selected to avoid Ancient Woodland. There is no Ancient Woodland within or adjacent to the Order limits, with the nearest being Burton Wood, approximately 1.1 km north of the Cable Route Corridor. • The Order limits have been defined so as to exclude significant areas of broad-leaved woodland, such as Harpswell Wood. • In line with the **Works Plans [EN010142/APP/2.4]**, the locating of areas for PV panels and BESS has excluded areas broad-leaved woodland.
	Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • Retained trees and woodland will be protected, in line with British Standard Recommendations (Ref. 9-78) and undeveloped buffers will be of at least 15m from the boundary of woodlands and tree lines. Within some of these buffers, natural regeneration of woodland will create additional scrub and woodland habitat. • Other retained trees, outside of woodland habitats and adjacent to construction working areas, will be protected by clearly defined root protection areas, concordant with the requirements for each individual tree, 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 Order limits and prevent construction activity in proximity to peripheral and retained habitats within the Order limits. • The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures have been set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured by Requirement of the DCO that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein are implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects on

IEF	Embedded Avoidance and Mitigation
	this habitat (and species using them), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g. fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**). It will ensure that those involved with the construction stages are committed to agreed best practice and meet all relevant environmental legislation including the Hazardous Waste (England and Wales) Regulations 2005 (Ref. 9-77).
Coastal and Floodplain Grazing Marsh	• As set out within the **Framework CEMP [EN010142/APP/7.8]**, the crossing of the River Trent will be undertaken using trenchless methods to lay cabling, therefore avoiding impacts to watercourses, including the Coastal and Floodplain Grazing Marsh either side of the River Trent, with launch and exit pits located outside of this habitat, which is considered sufficient to mitigate for potential hazards such as chemical and soils spills into watercourses and avoid potential direct impacts to the River Trent, Coastal and Floodplain Grazing Marsh and Otter, which use the river for commuting and foraging. The **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g. fuel) reaching watercourses (and riparian habitats) through flood events during construction. Their implementation is secured by Requirement of the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP.
Standing Water (e.g., ponds)	Scheme Design: • In line with the **Works Plans [EN010142/APP/2.4],** the Scheme has been designed to ensure standing water habitats are outside of the developable areas of the Scheme. Therefore, this habitat will be retained, and measures taken to avoid direct or indirect impacts. • As secured in the **Framework CEMP [EN010142/APP/7.8]**, buffers of undeveloped land have been applied around all bodies of standing water, of at least 20m.
	Construction: • The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures have been set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured by Requirement of the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in

IEF	Embedded Avoidance and Mitigation
	substantial accordance with the Framework CEMP and then the measures contained therein are implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects on this habitat (and species using them), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g., fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**). It will ensure that those involved with the construction stages are committed to agreed best practice and meet all relevant environmental legislation including the Hazardous Waste (England and Wales) Regulations 2005 (Ref. 9-77).
Running Water	Scheme Design: • In line with the **Works Plans [EN010142/APP/2.4]**, the Scheme has been designed to ensure running water habitats are outside of the developable areas of the Scheme. Therefore, this habitat will be retained, and measures taken to avoid direct or indirect impacts.
	Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • A security perimeter fence will be implemented early in the construction phase to secure the Order limits and prevent construction activity in proximity to peripheral and retained habitats within the Order limits. The fence design will include gaps to allow mammals that may use running water habitats, including Otter, to pass underneath at strategic locations. • Setbacks of at least 10m from watercourses (taken from the bank-top of the watercourse) are included within the Scheme design to protect riparian habitats and to mitigate for potential hazards such as chemical and soils spills into watercourses. This will protect the watercourse and avoid potential direct impacts to watercourses and any protected species using them (see also riparian mammals). • Where possible, site surface water will drain from the Scheme's Sustainable Drainage Systems (SuDS) based drainage system to local receiving watercourses via a new ditch as this avoids the need to construct an engineered outfall. However, if engineered outfalls are required, the location, position and orientation of them will be carefully designed to minimise any adverse impacts on aquatic habitats.

IEF	Embedded Avoidance and Mitigation
	• Construction methods across the River Trent and all watercourses set out above will utilise trenchless methods. There is no potential for any direct impacts on running water habitat along the Cable Route Corridor (see **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**). Methods such as HDD, boring, micro-tunnelling or impact moling are all trenchless methods that would not directly impact upon running water habitats, although the exact route and construction methods to be used are yet to be defined. • In the case of any construction of watercourse crossings, culverting of water bodies, and the extension of existing culverts, construction will ensure that connectivity is maintained along watercourses to allow Eel passage and connectivity for other aquatic species. Fish rescues may be required if draw-down or over-pumping is required during construction. Open-trenching for cable crossings has been minimised and will avoid all main watercourses and IDB waterbodies, with trenchless methods undertaken. • The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures have been set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured through a Requirement in the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects on this habitat (and species using them), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g. fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**). It will ensure that those involved with the construction stages are committed to agreed best practice and meet all relevant environmental legislation including the Hazardous Waste (England and Wales) Regulations 2005 (Ref. 9-77). • Where lighting is required, it will conform to best practice guidelines with respect to minimising light spill into retained habitats to prevent or reduce the impact on running water habitats and will be minimised to that required for safe site operations and security and directed towards the middle of the Order limits rather than towards the boundaries.
	Scheme Design:

IEF	Embedded Avoidance and Mitigation
Arable field margins	• The Scheme has been designed to retain and avoid development within the majority of arable margins within the Principal Site. The embedded buffers around existing vegetation features, such as hedgerows, ensure that any uncultivated margins currently present are retained. These buffers are secured in the **Framework CEMP [EN010142/APP/7.8]**.
	Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • A security perimeter fence will be implemented early in the construction phase to secure the Order limits and prevent construction activity in proximity to peripheral and retained habitats within the Order limits. • The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures have been set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured through a Requirement in the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects on this habitat (and species using them), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g., fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**). It will ensure that those involved with the construction stages are committed to agreed best practice and meet all relevant environmental legislation including the Hazardous Waste (England and Wales) Regulations 2005 (Ref. 9-77).
Hedgerows	Scheme Design: • The Scheme has been designed to minimise hedgerow loss with the majority of hedgerows across the Order limits retained (see also the **Hedgerow Removal Plan [EN010142/APP/2.13]**).
	Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • A security perimeter fence will be implemented early in the construction phase to secure the Order limits and prevent construction activity in proximity to peripheral and retained habitats within the Order limits.

IEF	Embedded Avoidance and Mitigation
	• The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures have been set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured through a Requirement in the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects on this habitat (and species using them), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g. fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**). It will ensure that those involved with the construction stages are committed to agreed best practice and meet all relevant environmental legislation including the Hazardous Waste (England and Wales) Regulations 2005 (Ref. 9-77).
Fish, including Spined Loach and European Eel	Scheme Design: • In line with the **Works Plans [EN010142/APP/2.4],** the Scheme design retains and avoids development within the majority of habitats of value to fish, notably the River Trent, River Till and their tributaries, which are the locations supporting Spined Loach and European Eel. • Setbacks of a minimum of 10m from watercourses (taken from the watercourse bank-top) are included within the Scheme design 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. These buffers are secured in the **Framework CEMP [EN010142/APP/7.8]**.
	Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • Where watercourses and ditches are culverted, culverts are 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.

IEF	Embedded Avoidance and Mitigation

- 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:
  - Avoidance of key fish migration timings wherever possible 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, noting that non-intrusive (e.g., HDD) operations may be 24-hour (see **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**);
  - All cables will be installed at a minimum of 3m below the bed of watercourses, excluding the River Trent and River Till where cables will be installed by trenchless methods at a minimum of 5m below the bed and maximum of 25m to prevent disturbance 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.
- The combination of sealed cabling and buried depth of at least 10m below the bed of the River Trent is adequate to mitigate any potential impact of Electromagnatic Fields (EMFs) on fish transiting along the River Trent (in particular European Eel and lamprey species). 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 transiting along the River Trent.
- The following pollution prevention measures will be implemented:
  - To prevent erosion and runoff vegetation and soil disturbance will be minimised and exclusion buffer zones (10m) for the full length of watercourses within the construction buffer zone will be implemented. Further preventative measures, such as runoff/settlement ponds and/or silt fencing, will be introduced, if necessary;
  - Where construction vehicles are required to pass over the water bodies, vehicles/plant will be cleaned away from the water in dedicated vehicle washing areas to prevent potential pollutants entering the surface water system, before crossing over the water body;
  - The control of the spread of dust and sediment through fine water spraying of vehicle routes;
  - On-site plant will be regularly serviced, monitored and inspected for leaks to prevent construction spillages and to ensure pollutants do not enter the waterways. Plant and machinery will be refuelled in dedicated refuelling areas, with drip-trays used routinely and spill kits available; and

IEF	Embedded Avoidance and Mitigation
	- All surface water drainage systems will be covered and protected from pollution and sediment input. • Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects on this habitat (and species using them), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g., fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**). It will ensure that those involved with the construction stages are committed to agreed best practice and meet all relevant environmental legislation including the Hazardous Waste (England and Wales) Regulations 2005 (Ref. 9-77). • Where lighting is required, it will conform to best practice guidelines with respect to minimising light spill into retained habitats to prevent or reduce the impact on fish and will be minimised to that required for safe site operations and security and directed towards the middle of the Order limits rather than towards the boundaries.
Terrestrial Invertebrates	Scheme Design: • In line with the **Works Plans [EN010142/APP/2.4],** the Scheme design retains and avoids direct and indirect impacts to habitats of greatest value to terrestrial invertebrates within the Order limits, including woodland, grassland margins, ditches, scrub and hedgerows. Buffers around these retained features are secured in the **Framework CEMP [EN010142/APP/7.8]**.
	Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • Whilst the Scheme design retains habitats of greater terrestrial invertebrate interest, measures to ensure incursion into these habitats does not occur will be put in place, e.g., security fencing and will be implemented at an early stage during construction to protect retained habitats. • The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures have been set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured through a Requirement in the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein

IEF	Embedded Avoidance and Mitigation
	implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects biodiversity (including terrestrial invertebrates), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g. fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) and therefore, prevent them from reaching retained habitats.
Great Crested Newt	Scheme Design: • In line with the **Works Plans [EN010142/APP/2.4]**, the Scheme design retains and avoids all waterbodies, regardless of whether they were found to support Great Crested Newt. In addition, the majority of terrestrial habitats of value to Great Crested Newt, including woodland, grassland margins, ditches, scrub and hedgerows within the Principal Site will be retained. • Undeveloped buffers have been applied around all bodies of standing water, of at least 20 m. These buffers are secured in the **Framework CEMP [EN010142/APP/7.8]**.
	Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • A security perimeter fence will be implemented early in the construction phase to secure the Order limits and prevent construction activity in proximity to peripheral and retained habitats within the Order limits. • To mitigate against harm to any amphibians present, the following precautionary methods of working are deemed appropriate for the works within 250m of the pond supporting Great Crested Newt. A finger-tip search for Great Crested Newt will be undertaken within areas of suitable Great Crested Newt habitat, within 250m of a pond supporting this species. Following this, habitat manipulation will be overseen by a suitably qualified ecologist (SQE) acting as an Ecological Clerk of Works (ECoW) and will comprise the following general principles: • The on-site vegetation within the areas of habitat suitable for Great Crested Newt will be cut short during winter, between November and February (when amphibians are hibernating). If this is not possible (i.e. vegetation clearance during the Great Crested Newt active season), the vegetation will be cut in a phased approach, firstly cutting to 30cm, then, following a period of no less than 24 hours, can be cut to 15cm and then to ground level, after another 24 hours.

IEF	Embedded Avoidance and Mitigation
	• The vegetation will then be kept short to displace any amphibians, which may be present, away from the works when they emerge in the early spring and discourage amphibians from moving into the Order limits from the surrounding habitat. • Vegetation (including topsoil) will be carefully removed using an excavator using a toothed bucket. These works will be supervised by an SQE. Any habitat features which may conceal hibernating amphibians (log piles, rubble mound bunds, any other debris etc.) will not be dismantled during winter months (between November and February) and will be conducted during the amphibian active season (i.e. March (dependent on weather) to October) during warm weather conditions (i.e. above 5°C) to avoid killing or injuring potential hibernating amphibians. In the unlikely event that any Great Crested Newt are discovered during these works, then such works must cease immediately and a SQE must be consulted to determine how to proceed. If other amphibians are discovered during vegetation clearance it is proposed that these are relocated to suitable habitat nearby in suitable weather conditions. • 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 Scheme design. Should there have been any changes to the Scheme design which could impact upon Great Crested Newt, where found within the Order limits, then mitigation measures will be updated accordingly.
Reptiles – Grass Snake and Common Lizard	Scheme Design: • In line with the **Works Plans [EN010142/APP/2.4]**, the Scheme design retains and avoids the majority of habitats of value to reptiles and other amphibians, including woodland, grassland margins, ditches, scrub and hedgerows within the Principal Site. Buffers around these retained features are secured in the **Framework CEMP [EN010142/APP/7.8]**.
	Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • A security perimeter fence will be implemented early in the construction phase to secure the Order limits and prevent construction activity in proximity to peripheral and retained habitats within the Order limits. • Vegetation clearance throughout the Order limits 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, where present), concordant with the requirements for other species, such as nesting birds and Brown Hare.

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	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 reptiles (and Common Toad) have been identified, any habitat features within such areas which may conceal sheltering reptiles (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 Order limits. • The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures have been set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured through a Requirement in the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein are implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects biodiversity (including reptiles), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g., fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) and therefore, prevent them from reaching retained habitats. • 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. • 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 Scheme design. Should there have been any changes to the Scheme design which could impact upon reptiles and Common Toad, where found within the Order limits, then mitigation measures will be updated accordingly.
Breeding birds (General breeding bird assemblage)	Scheme Design: • In line with the **Works Plans [EN010142/APP/2.4]**, the Scheme design retains and avoids the majority of peripheral and boundary habitats (such as hedgerows, ditches and grassland margins), along with woodland. These habitats are of value to the majority of the breeding bird assemblage, therefore, ensuring

IEF	Embedded Avoidance and Mitigation
	that SPI that are reliant on such habitats (such as Yellowhammer *Emberiza citrinella*, Linnet *Linaria cannabina* and Dunnock *Prunella modularis*) are not impacted upon by the Scheme. Buffers around these retained features are secured in the **Framework CEMP [EN010142/APP/7.8]**.
	Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • A security perimeter fence will be implemented early in the construction phase to secure the Order limits and prevent construction activity in proximity to peripheral and retained habitats within the Order limits. • The **Framework CEMP [EN010142/APP/7.8]** 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. • The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures have been set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured through a Requirement in the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein are implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects biodiversity (including breeding birds), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g., fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) and therefore, prevent them from reaching retained habitats.
Breeding birds – territories of Skylark within the Principal Site	Scheme Design: • In line with the **Works Plans [EN010142/APP/2.4]**, areas of undeveloped land have been embedded within the Scheme to provide a wide range of benefits for biodiversity. These biodiversity zones will provide permanent habitat for ground-nesting birds such as Skylark.

IEF	Embedded Avoidance and Mitigation
	Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • A security perimeter fence will be implemented early in the construction phase to secure the Order limits and prevent construction activity in proximity to peripheral and retained habitats within the Order limits. • The **Framework CEMP [EN010142/APP/7.8]** 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. • The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures have been set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured through a Requirement in the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein are implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects biodiversity (including breeding birds), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g. fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) and therefore, prevent them from reaching retained habitats.
Breeding birds – territories of specially protected species within the Principal Site	Scheme Design: • In line with the **Works Plans [EN010142/APP/2.4]**, the Scheme design retains and avoids habitats where territories of specially protected bird species have been recorded. • Areas of undeveloped land have been embedded within the Scheme to provide a wide range of benefits for biodiversity. These biodiversity zones will provide permanent habitat for ground-nesting birds such as Quail, as secured through the **Framework LEMP [EN010142/APP/7.17]**.

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	Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • A security perimeter fence will be implemented early in the construction phase to secure the Order limits and prevent construction activity in proximity to peripheral and retained habitats within the Order limits. • The **Framework CEMP [EN010142/APP/7.8]** 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. • The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures have been set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured through a Requirement in the **draft DCO [EN010142/APP/3.1]**that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein are implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects biodiversity (including breeding birds), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g., fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) and therefore, prevent them from reaching retained habitats. • 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 information on the locations of nesting specially protected bird species. Should there have been any changes to the Scheme Design which could impact upon nesting Schedule 1 species, then mitigation measures will be updated accordingly.
Non-breeding birds	Scheme Design: • In line with the **Works Plans [EN010142/APP/2.4]**, the Scheme design retains and avoids direct and indirect impacts to the majority of habitats of value to wintering birds, including woodland, grassland

IEF	Embedded Avoidance and Mitigation
	margins, scrub and hedgerows. Buffers around these retained features are secured in the **Framework CEMP [EN010142/APP/7.8]**.
	Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • A security perimeter fence will be implemented early in the construction phase to secure the Order limits and prevent construction activity in proximity to peripheral and retained habitats within the Order limits. • The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures have been set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured through a Requirement in the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein are implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects biodiversity (including breeding birds), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g., fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) and therefore, prevent them from reaching retained habitats supporting non-breeding birds.
Bats (roosting and foraging / commuting)	Scheme Design: • In line with the **Works Plans [EN010142/APP/2.4]**, the Scheme design retains and avoids peripheral and boundary habitats, such as woodland, hedgerows, grassland margins, ditches that are used by commuting and foraging bats. Habitats such as mature trees and woodland within the Order limits, potentially supporting roosting bats, will also be avoided and suitably buffered (>15m) from the developable areas of the Scheme. Note that all woodland, buildings and trees identified with Roost Suitability (from Low to High), as presented in **Appendix 9-9: Baseline Report for Bats** of this ES **[EN010142/APP/6.2]**, should be assumed to contain bat roosts unless otherwise scoped out. Buffers around these retained features are secured in the **Framework CEMP [EN010142/APP/7.8]**.

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Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**):

- Whilst the Scheme design retains habitats that are of greatest value to bats, measures to ensure incursion into these habitats does not occur will be put in place, e.g., security fencing, which will be implemented at an early stage to protect retained habitats from incursion during construction.
- The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures have been set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured through a Requirement in the **draft DCO [EN010142/APP/3.1]**that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein are implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects biodiversity (including bats), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g., fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) and therefore, prevent them from reaching retained habitats.
- 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 Order limits rather than towards the boundaries.
- 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 Scheme design. Should there have been any changes to the Scheme design which could impact upon roosting bats, where found within the Order limits, then Natural England licences will be sought (if required) and mitigation measures updated accordingly.
- Where any temporary work is required within 15m of any tree or building 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 ECoW.

IEF	Embedded Avoidance and Mitigation
Riparian Mammals (Water Vole and Otter)	Scheme Design: • In line with the **Works Plans [EN010142/APP/2.4]**, the Scheme has been designed to ensure running water habitats that support riparian mammals are outside of the developable areas of the Scheme. Therefore, this habitat will be retained, and measures taken to avoid direct or indirect impacts. Buffers around these retained features are secured in the **Framework CEMP [EN010142/APP/7.8]**. Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • Perimeter fencing around the Scheme (of between 1.8m and 2.5m in height) will be implemented early in the construction phase to secure the Order limits. The fence design will include gaps to allow mammals, including Otter, to pass underneath at strategic locations. • Setbacks of a minimum of 10m from watercourses (taken from the bank-top of the watercourse) are included within the Scheme design to protect riparian habitats and to mitigate for potential hazards such as chemical and soils spills into watercourses and avoid potential direct impacts to water courses and any protected species using watercourses (such as Otter that use the River Trent for commuting and foraging). • Existing crossing points of watercourses will be used, where practicable, to avoid the need for new culverts/crossing points. • The crossing of the River Trent and other watercourses of value to Otter and Water Vole (as identified from baseline ecology surveys) will be undertaken using trenchless techniques (e.g. horizontal directional drilling (HDD) techniques or similar, that would not disturb the watercourse), with the depth of the cable below the bed to be a minimum of 2m, to avoid impacts to watercourses and bankside vegetation (riparian habitats). • The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures have been set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured through a Requirement in the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein are implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects biodiversity (including riparian mammals), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of

IEF	Embedded Avoidance and Mitigation
	chemicals / other hazardous materials (e.g., fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) and therefore, prevent them from reaching retained habitats. • 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. • 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 Order limits. The purpose of these pre-construction surveys is to ensure mitigation during the construction phase is based on the latest protected species information. Whilst the requirement for licensed works are not currently predicted, should there have been any changes to Otter or Water Vole distribution within the Order limits, Natural England licences will be sought (if required) and mitigation measures (such as the use of bailey bridges to facilitate the access road and non-intrusive crossing for cabling) will be updated accordingly.
Badger	Scheme Design: • The Scheme can be designed to avoid Badger setts within the Order limits. All setts within the Principal Site will have an appropriate exclusion zone of up to 30m around the sett to prevent disturbance and accidental damage. The Cable Route 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. Buffers are secured in the **Framework CEMP [EN010142/APP/7.8]**. Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • A security perimeter fence will be implemented early in the construction phase to secure the Order limits and prevent construction activity in proximity to peripheral and retained habitats within the Order limits. • The implementation of standard environmental protection measures during construction, such as dust suppression and pollution prevention, will be adopted to ensure no indirect impacts occur and these measures have been set out in the **Framework CEMP [EN010142/APP/7.8]**, and their implementation is secured through a Requirement in the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein are

IEF	Embedded Avoidance and Mitigation
	implemented. Accordingly, the **Framework CEMP [EN010142/APP/7.8]** details the measures required to mitigate any construction related effects biodiversity (including Badger), including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration. Furthermore, the **Framework CEMP [EN010142/APP/7.8]** specifies requirements for the safe storage of chemicals / other hazardous materials (e.g., fuel), to prevent them reaching standing and running waters through flood events during construction (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) and therefore, prevent them from reaching retained habitats supporting Badger. • 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. • 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 Order limits, Natural England licences will be sought (if required) and mitigation measures will be updated accordingly.
Other mammals (Brown Hare, Hedgehog and Harvest Mouse)	Scheme Design: • In line with the **Works Plans [EN010142/APP/2.4]**, the Scheme has been designed to ensure habitats that support mammals are outside of the developable areas of the Scheme. Therefore, this habitat will be retained, and measures taken to avoid direct or indirect impacts. Buffers around these retained features are secured in the **Framework CEMP [EN010142/APP/7.8]**.
	Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • Perimeter fencing around the Scheme (of between 1.8m and 2.5m in height) will be implemented early in the construction phase to secure the Order limits. The fence design will include gaps to allow small mammals (including Brown Hare) to pass underneath at strategic locations. • Vegetation clearance will be undertaken in advance of construction and at an appropriate time of year so as to avoid incidental injuring or killing of animals, including Brown Hare and concordant with the requirements for other species such as nesting birds and reptiles.

IEF	Embedded Avoidance and Mitigation
	• 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.
INNS	Construction (as set out within the **Framework CEMP [EN010142/APP/7.8]**): • Pre-construction surveys will be undertaken to provide an update on the presence and location of any invasive 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 invasive species are brought onto the Order limits (e.g., Wildlife and Countryside Act 1981 (as amended) (Ref. 9-5) Schedule 9 species) and will be formalised in the detailed CEMP , secured through the DCO. In the event that any future infestations of invasive non-native species 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

9.8.10 During the operational phase, activity within the Scheme 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 once a year for the washing of the solar panels. This will use clean water with no added chemicals, sourced from local potable water suppliers (refer to **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]** for further information).

9.8.11 During operation 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. Operational access will be taken from the A631 Harpswell Lane Principal Site accesses via the existing T-Junctions (Principal Site Access 2 and 3), via Principal Site Access 1 on the A631 Harpswell Lane and Principal Site Access 4 on B1398 Middle Street. Access to the Cottam Power Station will be required, at this stage it is anticipated that this will be from Torksey Ferry Road or an alternative access provided by EDF Energy. The majority of routine visits during the operational phase will be via vans and four-wheel drive vehicles.

9.8.12 Along the cable route, operational activity will consist of routine inspections (schedule to be determined) and any reactive maintenance such as where a cable has been damaged.

9.8.13 It is anticipated that there will be up to 10-12 permanent staff on-site during the operational phase. The Scheme is expected to generate a low level of vehicle trips during the operational phase. As a reasonable worst-case, there will be 10-12 staff on-site daily which as a worst-case scenario would generate up to 12 vehicles (24 movements) per day. In addition, there is forecast to be an average of five visits per week (one trip per day) from four-wheel drive vehicles, HGVs or transit vans for maintenance. If full panel and BESS replacement is required at some point during the lifetime of the Scheme, activity would be considerably less intensive than during construction, and is anticipated to generate approximately 10% of the daily HGV/coach and car/LGV movements estimated to be generated during peak construction of the Principal Site and Cable Route Corridor. Further discussion on operational transport movements is presented in **Chapter 16: Traffic and Transport** of this ES [**EN010142/APP/6.1**]

9.8.14 The **Framework OEMP [EN010142/APP/7.9]** includes measures required to minimise operational impacts, including:

a. No part of the Scheme will be continuously lit. Manually operated and motion-detection lighting will be utilised for operational and security purposes around electrical infrastructure such as inverters, transformers and switchgear across the Principal Site, and within the compounds and substations. Lighting will be directed downward and away from boundaries. No visible lighting will be utilised at the site perimeter fence, aside from the site entrance points.

b. The Scheme drainage strategy (**Appendix 10-4: Outline Drainage Strategy** of this ES **[EN010142/APP/6.2]**) includes measures to manage surface water runoff during operation and will reduce flooding affecting watercourses and the local ditch network to reduce or eliminate adverse effects for aquatic and riparian species and habitats, where these occur.

c. The creation and subsequent management of habitats has been determined by the characterisation of the existing baseline. Management seeks to maximise floristic diversity, which will require low density and short frequency, sheep grazing (conservation grazing) or an appropriate, sensitive mowing regime. Further details are provided and secured in the **Framework LEMP [EN010142/APP/7.17]**.

d. Any required management of vegetation within the Order limits 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).

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

Decommissioning

9.8.15 The **Framework DEMP [EN010142/APP/7.10]** sets out measures to mitigate any decommissioning related effects on biodiversity. Whilst the majority of mitigation measures will be similar to those during construction (see **Table 9-13**), pre-decommissioning surveys will be required to inform any mitigation and protected species licensing, as required at the time of decommissioning. The monitoring undertaken during the operational phase will help to inform the decommissioning strategy.

9.9 Assessment of Likely Impacts and Effects

9.9.1 The potential impacts and effects arising from the construction, operation (including maintenance) and decommissioning phases of the Scheme on the IEFs identified in **Table 9-12** is provided in **Table 9-14** and **Table 9-15**. This assessment is based on the parameters set out in Scheme description, as outlined in **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]** and on the embedded mitigation, as described in Section 9.8 of this chapter.

9.9.2 The initial screening, presented in **Table 9-14** and **Table 9-15** is based on the characterisation of the baseline conditions, in the absence of any additional mitigation over and above that is embedded in the design.

Sites statutorily and non-statutorily designated for their biodiversity importance

9.9.3 The statutory and non-statutory designated sites that have been assessed, based on the baseline data identified during the desk study, are presented in **Table 9-14**. Where there is the potential for an effect to occur on designated sites, this is stated, and the relevant receptor assessed throughout section 9.9 of this chapter to determine the significance of that effect.

Table 9-14: Determination of potential impacts and effects on relevant ecological features – Designated Sites

IEF	Importance	Potential Impacts	Potential for an effect to occur?
Ashton's Meadow SSSI (located 1.5 km from the Order limits)	High	**Construction**: This SSSI (primary designation being grassland habitats) is 1.5km to the west of the Cable Route Corridor and there are no ecological or hydrological connections between this SSSI and the Order limits. No construction traffic will pass within 200m of the SSSI. Given the distance between the Order limits and Ashton's Meadow SSSI, there will be no direct impacts on habitat within the SSSI; no fragmentation of habitats, or of populations of species using habitats and no species mortality of any species associated with Ashton's Meadow SSSI. Embedded mitigation measures (see **Table 9-13**), set out in the **Framework CEMP [EN010142/APP/7.8]** and their implementation, secured through the DCO requirement that the detailed CEMP be prepared in substantial accordance with the Framework CEMP, will ensure no impact on the integrity or the functioning of Ashton's Meadow 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 Ashton's Meadow SSSI.	No
		Operation: The distance between the SSSI and the Cable Route Corridor is 1.5km and there are no pathways (e.g. habitat loss or disturbance to designated site features occurring during operation of the Scheme, such as through noise, water quality changes, lighting or visual), during operation of the Scheme that could affect Ashton's Meadow SSSI. Operational traffic will be limited to 24 movements per day. No operational traffic will pass within 200m of the SSSI.	No
		Decommissioning: Ashton's Meadow SSSI is outside of the Order limits and there will be no disturbance or direct impact to this SSSI, fragmentation of habitats, 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. Traffic movements will be similar to	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
		those during construction and no decommissioning traffic will pass within 200m of the SSSI. Measures to remove or reduce impacts during decommissioning are included within the **Framework DEMP [EN010142/APP/7.10]**, submitted with the ES as part of this DCO application.	
Upton Grange Road Verges LWS	Medium	**Construction:** Upton Grange Road Verges LWS is within the footprint of the Cable Route Corridor and this LWS is designated for its verge grassland communities. Embedded mitigation measures (see **Table 9-13**), set out in the **Framework CEMP [EN010142/APP/7.8]** and their implementation, secured through a Requirement in the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP**,** will ensure no impact on the integrity or the functioning of Upton Grange Road Verges LWS through use of standard environmental protection measures. During construction, access will be required across the LWS to access the Cable Route Corridor. The construction access will use an existing farm access, avoiding the need for further encroachment into the LWS. However, while the road at Upton Grange Road Verges LWS is within the access route for vehicles associated with the cable route installation and where practicable existing farms accesses have been used to avoid the requirement for incursion into the LWS, a single temporary passing place during construction is required to allow construction traffic and ordinary road users to safely pass. Therefore, to facilitate construction vehicle movements an area of 115m^2 of verge would likely need to be removed to provide a temporary construction passing place.	Yes
		Operation: During operation of the Scheme, there are no pathways (e.g. habitat loss or disturbance to designated site features (such as through noise, lighting or visual)), that could affect this LWS. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **Chapter 10: Water Environment** of this ES	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
		[EN010142/APP/6.1]) will ensure no hydrological impacts occur and that there are consequently no impacts upon this LWS during operation of the Scheme.	
		Decommissioning: Buried cables are likely to remain *in situ* and therefore there would be 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 during decommissioning. However, where there is potential to remove buried cables, any decommissioning impacts would be mitigated fully in line with legislation and policy requirements at the time of decommissioning. Measures to remove or reduce impacts during decommissioning are included within the **Framework DEMP [EN010142/APP/7.10]**, submitted with the ES as part of this DCO application.	No
Willingham to Fillingham Road Verges LWS		**Construction:** Willingham to Fillingham Road Verges LWS is within the footprint of the Cable Route Corridor and this LWS is designated for its verge grassland communities. During construction, access will be required across the LWS to access the Cable Route Corridor. The Scheme considered the use of existing farm accesses already in place across the LWS, however, due to the location of these there would be the requirement for additional places along the road within the LWS to allow construction traffic and ordinary road users to safely pass. This would involve the loss of a larger area of verge habitat. Therefore, to facilitate access to the Cable Route Corridor an area of 60m^2 of verge would likely need to be removed to provide a temporary construction access.	Yes
		Operation: During operation of the Scheme, there are no pathways (e.g. habitat loss or disturbance to designated site features (such as through noise, lighting or visual)), that could affect this LWS. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **Chapter 10: Water Environment** of this ES [**EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon this LWS during operation of the Scheme.	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
		Decommissioning: Buried cables are likely to remain *in situ* and therefore there would be 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 during decommissioning. However, where there is potential to remove buried cables, any decommissioning impacts would be mitigated fully in line with legislation and policy requirements at the time of decommissioning. Measures to remove or reduce impacts during decommissioning are included within the **Framework DEMP [EN010142/APP/7.10]**, submitted as part of this DCO application.	No
Cow Pasture Lane Drains LWS (within the Cable Route Corridor)	Medium	**Construction**: Cow Pasture Lane Drain LWS is within the footprint of the Cable Route Corridor and this LWS is designated for its drain and associated hedge. Embedded mitigation measures (see **Table 9-13**), set out in the **Framework CEMP [EN010142/APP/7.8]** and their implementation, secured through the DCO requirement that the detailed CEMP be prepared in substantial accordance with the Framework CEMP, will ensure impacts on the integrity or the functioning of Cow Pasture Lane Drains LWS do not occur or are minimised, through use of standard environmental protection measures. Whilst access for construction of the Cable Route Corridor will utilise existing access tracks, there is potential for a temporary bailey bridge to be placed over the LWS to facilitate any crossing and as a result, this may lead to a temporary degradation in habitats within the LWS through shading. There will be no fragmentation of habitats or species mortality of any species associated with Cow Pasture Lane Drains LWS, as a result of construction of the Scheme.	Yes
		Operation: During operation of the Scheme, there are no pathways (e.g. habitat loss or disturbance to designated site features (such as through noise, lighting or visual), that could affect these LWSs. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **Chapter 10: Water Environment** of	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
		this ES [**EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon these LWS's during operation of the Scheme.	
		Decommissioning: Buried cables are likely to remain *in situ* and therefore there would be 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 LWSs during decommissioning. However, where there is potential to remove buried cables, any decommissioning impacts would be mitigated fully in line with legislation and policy requirements at the time of decommissioning. Measures to remove or reduce impacts during decommissioning are included within the **Framework DEMP [EN010142/APP/7.10]**, submitted as part of this DCO application.	No
Coates Wetland LWS, Cottam Wetlands LWS and Torksey Ferry Road Ditch LWS (located outside of the Order limits, but within 50m)	Medium	**Construction**: These LWSs lie outside the Cable Route Corridor and the construction of the Scheme will not directly impact on habitats within these non-statutory designated sites. There will be no fragmentation of habitats, or of populations of species using habitats within these LWS's during construction. Boundary vegetation between these LWS's and the Order limits, such as hedgerows and ditches will be retained and there will be no species mortality of any species associated with these LWS's. Embedded mitigation measures (see **Table 9-13**), set out in the **Framework CEMP [EN010142/APP/7.8]** and their implementation, secured through the DCO requirement that the detailed CEMP be prepared in substantial accordance with the Framework CEMP, will ensure no impact on the integrity or the functioning of these LWS's 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 these non-statutory designated sites.	No
		Operation: During operation of the Scheme, there are no pathways (e.g. habitat loss or disturbance to designated site features (such as through noise, lighting or visual)), that could	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
		affect these LWSs. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **Chapter 10: Water Environment** of this ES [**EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon these LWS's during operation of the Scheme.	
		Decommissioning: These LWSs are outside of the Order limits and 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 LWSs during decommissioning and any impacts would be mitigated fully in line with legislation and policy requirements at the time of decommissioning. Measures to remove or reduce impacts during decommissioning are included within the **Framework DEMP [EN010142/APP/7.10]**, submitted as part of this DCO application.	No
Cottam Ponds LWS, Broad Lane Grassland, North Leverton LWS, Mother Drain Upper Ings LWS, Ashton's Meadow LWS, Thornhill Lane Drain, Littleborough LWS, Bushstocks Lane Meadow LWS,	All Medium	**Construction**: These non-statutory designated sites (all LWS) are all outside the Order limits, the closest of which is Cottam Ponds LWS, which is approximately 610m from the Order limits. There will be no fragmentation of habitats, or of populations of species using habitats within these LWS's during construction. Boundary vegetation between these LWS's and the Order limits, such as hedgerows and ditches will be retained and there will be no species mortality of any species associated with these LWS's. Embedded mitigation measures (see **Table 9-13**), set out in the **Framework CEMP [EN010142/APP/7.8]** and their implementation, secured through the DCO requirement that the detailed CEMP be prepared in substantial accordance with the Framework CEMP, will ensure no impact on the integrity or the functioning of these LWS's 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 these non-statutory designated sites.	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
Littleborough Lagoons LWS (all located at a distance greater than 600m from the Order limits)		**Operation**: During operation of the Scheme, there are no pathways (e.g. habitat loss or disturbance to designated site features (such as through noise, lighting or visual)), that could affect these LWSs. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **Chapter 10: Water Environment** of this ES [**EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon these LWS's during operation of the Scheme.	No
		Decommissioning: These LWSs are outside of the Order limits and 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 LWSs during decommissioning and any impacts would be mitigated fully in line with legislation and policy requirements at the time of decommissioning. Measures to remove or reduce impacts during decommissioning are included within the **Framework DEMP [EN010142/APP/7.10]**, submitted as part of this DCO application.	No

Habitats and Species

9.9.4 The relevant ecological features that have been assessed, based on the ecological baseline identified during the desk study and field surveys, are presented in **Table 9-15**. Where there is the potential for an effect to occur on IEFs, this is stated, and the relevant feature assessed further on in this chapter to determine the significance of that effect.

Table 9-15: **Determination of potential impacts and effects on relevant ecological features – Habitats and Species**

IEF	Importance	Potential Impacts	Potential for an effect to occur?
Broad-leaved woodland (semi-natural), including Ancient Woodland	Medium	**Construction**: This habitat was recorded within the Order limits and will be retained and protected. There will be no direct impacts on woodland habitat; 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 **Table 9-13**) set out in the **Framework CEMP [EN010142/APP/7.8]** and their implementation, secured through the DCO requirement that the detailed CEMP be prepared in substantial accordance with the Framework CEMP, will ensure no impact on the integrity or the functioning of woodland habitats 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.	No
		Operation: During operation of the Scheme, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, lighting or visual)), that could affect broad-leaved woodland. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon broad-leaved woodland during operation of the Scheme.	No
		Decommissioning: There will be no disturbance or direct impact to broad-leaved woodland, fragmentation of habitats, 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. Measures to remove or reduce impacts during decommissioning are included within the **Framework DEMP [EN010142/APP/7.10]**, submitted as part of this DCO application.	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
Veteran Trees	Medium	**Construction:** Veteran trees were recorded within the Order limits and will be retained and protected (see **Appendix 12-7: Arboricultural Impact Assessment** of this ES **[EN010142/APP/6.2])** with suitable buffers as set out in the **Framework CEMP [EN010142/APP/7.8]** and their implementation is secured through a Requirement in the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein are implemented. There will be no fragmentation of habitats, or of populations of species using veteran trees and no species mortality of any species associated with veteran trees. Embedded mitigation measures (see **Table 9-13**) set out in the **Framework CEMP [EN010142/APP/7.8]** and their implementation, secured through a Requirement in the **draft DCO [EN010142/APP/3.1]**that the detailed CEMP be prepared in substantial accordance with the Framework CEMP, will ensure no impact on the integrity of veteran trees through use of standard environmental protection measures. However, there are four veteran trees (T127, T537, T541 and T554) where incursion into the buffer zone for permanent access, is unavoidable, although no loss or pruning is predicted (see **Appendix 12-7: Arboricultural Impact Assessment** of this ES **[EN010142/APP/6.2]**.	Yes
		Operation: There are no impact pathways (e.g., habitat loss or degradation), during operation of the Scheme which could affect veteran trees, with temporary construction accesses in buffer zones removed following completion of construction.	No
		Decommissioning: There will be no disturbance or direct impact to veteran trees (or any tree), fragmentation of habitats, 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. Measures to remove or reduce impacts during decommissioning are included within the **Framework DEMP [EN010142/APP/7.10]**, submitted as part of this DCO application.	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
Semi-improved neutral grassland (Coastal and Floodplain Grazing Marsh)	Medium	**Construction:** This habitat was identified within the Cable Route Corridor, either side of the River Trent. There will be no direct impacts 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 **Table 9-13**) set out in the **Framework CEMP [EN010142/APP/7.8]** and their implementation, secured through the DCO requirement that the detailed CEMP be prepared in substantial accordance with the Framework CEMP, including using non-intrusive construction methods to cross the River Trent, ensuring appropriate buffers from construction adjacent to this habitat and pollution control, will ensure no impact on the integrity or the functioning of woodland habitats 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
		Operation: There are no impact pathways (e.g., habitat loss or degradation), during operation of the Scheme which could affect semi-improved neutral grassland as this habitat is within the Cable Route Corridor which will be largely undisturbed during operation of the Scheme.	No
		Decommissioning: Decommissioning impacts will be mitigated fully in line with relevant legislative and policy requirements at the time of decommissioning. These measures are included within the **Framework DEMP [EN010142/APP/7.10]**, submitted as part of the DCO application. However, buried cables under the River Trent are likely to remain *in situ* and therefore there are no pathways (e.g. habitat loss or disturbance to habitat features such as through noise, water quality, air quality, lighting or visual) which could affect this habitat during decommissioning.	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
Standing Water	Low	**Construction:** All standing water (ponds) present within the Order limits will be retained and therefore, there will be no loss of standing water habitat. There will be no direct impacts on standing water habitat; no fragmentation of habitats, or of populations of species using habitats (such as amphibians) and no species mortality of any species associated with standing water (such as fish, amphibians). Embedded mitigation measures (see **Table 9-13**) set out in the **Framework CEMP [EN010142/APP/7.8]**, including pollution prevention and control and management of flood risk, will ensure no impact on the integrity or the functioning of standing water habitats through use of standard environmental protection measures. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon standing water within the Order limits.	No
		Operation: There are no impact pathways (e.g., habitat loss or degradation), during operation of the Scheme which could affect standing water. The change in land use from agricultural to solar will see benefits in the water table, which has previously been artificially lowered for the purpose of irrigation of arable fields. With c.1,300ha of arable fields no longer needing irrigation, there will be less water abstracted from surface water bodies. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon standing water during operation of the Scheme.	No
		Decommissioning: There will be no disturbance or direct impact to standing water habitats, fragmentation of habitats, 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. Measures to remove or reduce impacts during decommissioning are included	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
		within the **Framework DEMP [EN010142/APP/7.10]**, submitted as part of this DCO application.	
Running Water	Up to Medium	**Construction**: There will be no direct loss of running water habitat and there will be no fragmentation of habitats, or of populations of species using running water habitats. Embedded mitigation measures (see **Table 9-13**) set out in the **Framework CEMP [EN010142/APP/7.8]**, including pollution prevention and control, management of flood risk and maintaining connectivity for species using running water (see assessment of Fish below), will ensure no impact on the integrity or the functioning of running water habitats through use of standard environmental protection measures. There will be no species mortality of any species associated with running water during construction of the Scheme. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon running water.	No
		Operation: There are no impact pathways (e.g., habitat loss or degradation), during operation of the Scheme which could affect running water. As with standing 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. With c.1,300ha of arable fields no longer needing irrigation, there will be less water abstracted from surface water bodies.	No
		Decommissioning: Decommissioning impacts will be mitigated fully in line with relevant legislative and policy requirements at the time of decommissioning. These measures will be included within the **Framework DEMP [EN010142/APP/7.10]**, submitted as part of the DCO application. However, buried cables are likely to remain *in situ* and therefore there are no pathways (e.g., habitat loss or disturbance to habitat features such as through noise, water quality, air quality, lighting or visual) which could affect this habitat during decommissioning.	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
Arable field margins	Low	**Construction:** There were low frequencies of notable arable flora recorded and arable margins will be retained, buffered and their quality improved through positive management. All retained habitats present within the Order limits will be protected during construction, and security fencing will be installed at an early stage to protect retained habitats from incursion during construction. Embedded mitigation measures (see **Table 9-13**) formalised in the **Framework CEMP [EN010142/APP/7.8]** will ensure no impact on the integrity or the functioning of arable field margins 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 arable field margins and associated flora.	No
		Operation: During operation of the Scheme, 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 **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon arable field margins during operation of the Scheme.	No
		Decommissioning: There will be no disturbance or direct impact to arable field margins, fragmentation of habitats, 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. Measures to remove or reduce impacts during decommissioning are included within the **Framework DEMP [EN010142/APP/7.10]**, submitted as part of this DCO application.	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
Hedgerows	Up to Medium	**Construction**: Hedgerows are located across the Order limits. 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 Route 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. Buffer zones, of a minimum of 5m between hedgerows and any solar development is embedded into the Scheme and standard environmental protection measures (such as dust suppression and pollution prevention) will be implemented and adopted during construction. These embedded mitigation measures (see **Table 9-13**) set out in the **Framework CEMP [EN010142/APP/7.8]** will ensure no impacts to the majority of hedgerows.	Yes
		Operation: During operation of the Scheme, 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 **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon hedgerows during operation of the Scheme.	No
		Decommissioning: There will be no disturbance or direct impact to hedgerows, fragmentation of habitats, 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. Decommissioning access will utilise operational accesses and existing access routes across the Principal Site. Measures to remove or reduce impacts during decommissioning are included within the **Framework DEMP [EN010142/APP/7.10]**, submitted as part of this DCO application.	No
Fish (Spined Loach and	Up to Medium	**Construction:** Embedded mitigation measures (see **Table 9-13**) set out in the **Framework CEMP [EN010142/APP/7.8]** and including protecting habitats supporting, or potentially	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
European Eel)		supporting fish, alongside pollution prevention and sensitive construction methods will ensure the integrity of retained habitats supporting fish is not affected. Therefore, there are no pathways (e.g., habitat loss, disturbance of habitats and pollution), during construction of the Scheme which could affect fish.	
		Operation: During operation of the Scheme, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, lighting or visual)), that could affect fish. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon fish during operation of the Scheme.	No
		Decommissioning: There will be no disturbance or direct impact to habitats supporting fish, fragmentation of habitats, 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. Measures to remove or reduce impacts during decommissioning are included within the **Framework DEMP [EN010142/APP/7.10]**, submitted as part of this DCO application.	No
Terrestrial Invertebrates	Low	**Construction**: Habitats of value to terrestrial invertebrates, including woodland, hedgerows, scrub, ditches and arable margins will be retained, buffered and their quality improved through positive management and additional planting to ensure no fragmentation of habitats, or of populations of terrestrial invertebrates using habitats across the Order limits. Embedded mitigation measures (see **Table 9-13**) set out in the **Framework CEMP [EN010142/APP/7.8]** and including protecting retained habitats and pollution prevention will ensure the integrity of retained habitats supporting terrestrial invertebrates is not adversely affected.	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
		Therefore, there are no impact pathways, either directly or indirectly, that would negatively impact upon terrestrial invertebrates.	
		Operation: There are no pathways (e.g., habitat loss, disturbance of habitats or pollution), during operation of the Scheme which could affect terrestrial invertebrates.	No
		Decommissioning: Decommissioning impacts would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning and these measures are included within the **Framework DEMP [EN010142/APP/7.10]**. These impacts will be similar to those occurring during construction with retention and avoidance of the majority of habitats of greater importance to terrestrial invertebrates (such as woodland, hedgerows, ditches).	No
Great Crested Newt	Low	**Construction:** All ponds within the Order limits, including those supporting Great Crested Newt will be retained, with a minimum undeveloped buffer of 20m applied to all ponds and at least 50 m to those supporting Great Crested Newt. Construction within the Principal Site and Cable Route Corridor, within 250m of a pond supporting Great Crested Newt will predominantly be constructed in low value habitats (arable farmland) for this species and will avoid all habitat within 100m of this pond. However, within the Cable Route Corridor semi-improved grassland and scrub habitat (between 100m and 250m from the pond) is of potentially greater value to transient (dispersing / commuting) Great Crested Newt and an approximate area of 0.3ha of this habitat will be impacted upon during construction of the Cable Route Corridor. On evaluation, the habitats of potential value to Great Crested Newt within the Cable Route Corridor (such as semi-improved grassland and scrub) are separated from the ponds through an existing access track (tarmac), agricultural buildings / a residential property and are beyond 100m from the pond. There are no hibernacula present within the semi-improved grassland and refugia surveys, undertaken in	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
		September to October 2022 (see **Appendix 9-6: Reptiles and amphibians** of this ES **[EN010142/APP/6.2].**), did not record any Great Crested Newt. Therefore, whilst there is a small risk of encountering Great Crested Newts during construction of the Cable Route Corridor, mitigation measures will be required to reduce or eliminate this risk and ensure that UK and European legislation relating to this species is adhered to. Therefore, works will be undertaken under Reasonable Avoidance Measures (RAMs), as set out in Table 9-13, with these measures will be set out in the **Framework CEMP [EN010142/APP/7.8]**, their implementation secured through a Requirement in the **draft DCO [EN010142/APP/3.1]** that the detailed CEMP be prepared in substantial accordance with the Framework CEMP and then the measures contained therein are implemented.	
		Operation: During operation of the Scheme, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, lighting or visual), that could affect Great Crested Newt. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **Chapter 10: Water Environment** of this ES [**EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon habitats supporting Great Crested Newt during operation of the Scheme.	No
		Decommissioning: Decommissioning impacts would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning, including retention and avoidance of habitats supporting Great Crested Newt and these measures are included within the **Framework DEMP [EN010142/APP/7.10]** submitted as part of the DCO application.	No
Reptiles – Grass Snake and	Low	**Construction:** Habitats of value to reptiles in a single area within the Cable Route Corridor will be restored post-construction and sensitive vegetation clearance (see Table 9-13) pre-construction will ensure that no mortality to reptiles occurs as reptiles will be displaced into adjacent habitats and away from construction activities.	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
Common Lizard		Embedded mitigation measures (see **Table 9-13**) set out in the **Framework CEMP [EN010142/APP/7.8]** and including protecting 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: There are no pathways (e.g., habitat loss, disturbance of habitats or pollution), during operation of the Scheme which could affect reptiles.	No
		Decommissioning: Decommissioning impacts would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning and these measures are included within the **Framework DEMP [EN010142/APP/7.10]**. 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 (General breeding bird assemblage)	Medium	**Construction**: Habitats supporting the majority of breeding bird species throughout the Order limits, such as hedgerows and woodland areas, will be retained. However, the construction of the Scheme will lead to the loss of arable habitat, used by a small number of breeding bird species such as Skylark (see below), a species that is ground-nesting and relies on open space. Embedded mitigation measures (see **Table 9-13**) set out in the **Framework CEMP [EN010142/APP/7.8]** and including protecting retained habitats, avoidance of the nesting bird period (typically this is March to August inclusive), pre-construction nesting bird checks and 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.	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
		Therefore, there are no impact pathways, either directly or indirectly, that would negatively impact upon breeding birds.	
		Operation: During operation of the Scheme, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, lighting or visual)), that could affect breeding birds. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon habitats supporting breeding birds during operation of the Scheme.	No
		Decommissioning: Decommissioning impacts would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning and these measures are included within the **Framework DEMP [EN010142/APP/7.10]** submitted as part of the DCO application.	No
Breeding birds - Population of Skylark within the Principal Site	Medium	**Construction**: The loss of arable habitat, which in turn will lead to the displacement of breeding Skylark reliant on this habitat, will be avoided and mitigated through the retention of existing grassland and undeveloped mitigation areas. However, there may be a short-term impact whilst habitats succeed. Embedded mitigation methods as set out in the **Framework CEMP [EN010142/APP/7.8]** will include implementation of measures to minimise noise, lighting and vibration disturbance which will reduce or remove all such impacts to breeding birds, including Skylark. The implementation of standard mitigation measures (such as timing of vegetation clearance to avoid the bird breeding season) will ensure there is no species mortality during construction of the Scheme.	Yes
		Operation: There are no pathways (*e.g.,* habitat loss, disturbance of habitats or pollution), during operation of the Scheme which could affect breeding Skylark.	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
		Decommissioning: Decommissioning impacts will be mitigated fully in line with relevant legislative and policy requirements at the time of decommissioning. Measures to remove or reduce impacts will be included within the **Framework DEMP [EN010142/APP/7.10]** submitted as part of the DCO application.	No
Breeding birds – population of specially protected species (Quail, Hobby, Barn Owl, Black Redstart and Peregrine) within the Principal Site	Low	**Construction:** There will be no direct loss of breeding habitat used by Black Redstart or Peregrine during construction of the Scheme as this species was recorded outside of the Order limits within Cottam Power Station. Furthermore, there will be no loss of woodland habitat or individual trees and buildings supporting Barn Owl or Hobby. The loss of arable habitat would lead to the displacement of breeding Quail, where this species is recorded prior to construction, although this will be avoided and mitigated through the retention of existing grassland and undeveloped mitigation areas. However, there may be a short-term impact whilst habitats succeed.	Yes
		Operation: During operation of the Scheme, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, lighting or visual), that could affect breeding birds. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon habitats supporting, or potentially supporting, specially protected breeding bird species during operation of the Scheme.	No
		Decommissioning: Decommissioning impacts would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning and these measures are included within the **Framework DEMP [EN010142/APP/7.10]** submitted as part of the DCO application.	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
Non-breeding birds	Medium	**Construction**: Habitats supporting the majority of non-breeding bird species throughout the Order limits, such as hedgerows and woodland areas, will be retained and the Scheme has been designed to minimise the amount of permanent habitat loss as much as is practicable. Embedded mitigation measures (see Table 9-13) set out in the **Framework CEMP [EN010142/APP/7.8]** and including protecting retained habitats, creation of new 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: During operation of the Scheme, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, lighting or visual)), that could affect breeding birds. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon habitats supporting non-breeding birds during operation of the Scheme.	No
		Decommissioning: Decommissioning impacts would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning and these measures are included within the **Framework DEMP [EN010142/APP/7.10]** submitted as part of the DCO application.	No
Bats – roosting	Up to Medium	**Construction:** The construction of the Scheme will avoid features used by roosting bats, such as woodland and mature trees identified as having potential to support roosting bats. There will be no loss of important habitats used by bats anywhere within the Order limits. Where construction works are undertaken within the buffer zones of buildings, trees and woodlands	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
		that support potential roosting features, 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 **Table 9-13**. Embedded mitigation measures (see **Table 9-13**) set out in the **Framework CEMP [EN010142/APP/7.8]** and including protecting retained habitats, avoidance of important habitats to roosting bats, pre-construction checks and pollution prevention (including for lighting) 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 bats.	
		Operation: During operation of the Scheme, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, lighting or visual)), that could affect roosting bats. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon habitats supporting, or potentially supporting, roosting bats during operation of the Scheme.	No
		Decommissioning: Decommissioning impacts would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning, including retention and avoidance of habitats supporting roosting bats, and these measures are included within the **Framework DEMP [EN010142/APP/10]** submitted as part of the DCO application.	No
		Construction: Whilst all potential bat roosts are likely to be retained, as they are either located outside the Order limits or retained and avoided as part of the embedded mitigation,	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
Bats – foraging / commuting	Up to Medium	there will be some temporary or permanent loss of habitats for foraging/commuting bats associated with nearby roosts and in the wider area. Due to the embedded mitigation, presented in **Table 9-13**, it is anticipated that mainly low value habitats for foraging or commuting bats will be impacted by the Scheme (i.e. arable fields) with higher value foraging habitat such as hedges, field margins and woodlands retained and buffered and that any habitat losses will be compensated through habitat creation and enhancement elsewhere within the Scheme. The construction of the Scheme will avoid features used by roosting bats, such as woodland and mature trees identified as being important to commuting / foraging bats roosting bats. There will be no loss of important habitats used by bats anywhere within the Order limits. Embedded mitigation measures (see Table 9-13) set out in the **Framework CEMP [EN010142/APP/7.8]** and including protecting retained habitats, avoidance of important habitats to commuting / foraging bats, pre-construction checks and pollution prevention (including for lighting) will ensure the integrity of retained habitats supporting commuting / foraging 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 commuting / foraging bats.	
		Operation: During operation of the Scheme, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, lighting or visual)), that could affect commuting / foraging bats. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon habitats supporting commuting / foraging bats during operation of the Scheme. However, recent research has suggested that numbers of bats may be	Yes

IEF	Importance	Potential Impacts	Potential for an effect to occur?
		reduced by the presence of solar PV panels (Ref. 9-83, Ref. 9-84), so potential displacement is discussed further in this assessment.	
		Decommissioning: Decommissioning impacts would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning, including retention and avoidance of habitats supporting commuting / foraging bats, and these measures are included within the **Framework DEMP [EN010142/APP/7.10]** submitted as part of the DCO application.	No
Riparian Mammals (Water Vole and Otter)	Up to Medium	**Construction:** The construction of the Scheme will avoid ditches and watercourses where Water Vole and Otter were recorded, and these will be retained and suitably buffered (see **Table 9-13**). There will be no loss of habitat used by Water Vole and Otter anywhere within the Order limits. The construction of the Scheme will be offset (>10 m) from any peripheral watercourses, used by Water Vole and Otter, as detailed in the embedded design mitigation (see **Table 9-13**). These offsets will prevent disturbance to riparian habitats and any Water Vole and Otter using them. The construction of the Cable Route Corridor and any internal access across the Order limits, where this crosses watercourses used by Water Vole, will utilise non-intrusive methods to avoid physical disturbance to the watercourse (see **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**) therefore avoiding disturbance to species, habitat loss and direct mortality for Water Vole. Embedded mitigation measures (see **Table 9-13**) set out in the **Framework CEMP [EN010142/APP/7.8]**, including pollution prevention and control, management of flood risk and maintaining connectivity for riparian mammals will ensure no impact on Water Vole and Otter through use of standard environmental protection measures. Pre-construction surveys for riparian mammals will be undertaken to determine baseline conditions remain the same as currently recorded and, where any changes to Water Vole distribution are identified then mitigation measures will be updated accordingly. With the	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
		implementation of embedded and essential mitigation measures, there will be no species mortality during construction of the Scheme. Therefore, there are no impact pathways, either directly or indirectly, that would impact upon Water Vole and Otter.	
		Operation: During operation of the Scheme, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, lighting or visual)), that could affect riparian mammals. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon habitats supporting riparian mammals during operation of the Scheme.	No
		Decommissioning: Decommissioning impacts would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning, including retention and avoidance of habitats supporting riparian mammals and these measures are included within the **Framework DEMP [EN010142/APP/7.10]** submitted as part of the DCO application.	No
Badger	Low	**Construction**: The construction of the Scheme will retain and avoid Badger setts recorded within the Order limits. Embedded mitigation measures (see **Table 9-13**) set out in the **Framework CEMP [EN010142/APP/7.8]** and including protecting retained habitats supporting Badger (and their setts, including appropriate no-development areas around their setts), pre-construction surveys to identify 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.	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
		Therefore, there are no impact pathways, either directly or indirectly, that would negatively impact upon Badger.	
		Operation: During operation of the Scheme, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, lighting or visual)), that could affect Badger. Furthermore, the management of surface water, including for PV array runoff, BESS runoff and foul water drainage (see also **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon habitats supporting Badger during operation of the Scheme.	No
		Decommissioning: Decommissioning impacts would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning, including retention and avoidance of habitats supporting Badger (and including their setts), and these measures are included within the **Framework DEMP [EN010142/APP/7.10]** submitted as part of the DCO application.	No
Other Mammals (Brown Hare, Hedgehog and Harvest Mouse)	Low	**Construction**: The construction of the Scheme will seek to retain and avoid the majority of habitats used by Brown Hare, Hedgehog and potentially Harvest Mouse within the Order limits, such as woodland, scrub and hedgerows. Embedded mitigation measures (see **Table 9-13**) set out in the **Framework CEMP [EN010142/APP/7.8]** and 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, Hedgehog or Harvest Mouse (if present).	No
		Operation: During operation of the Scheme, there are no pathways (e.g. habitat loss or disturbance to habitats (such as through noise, lighting or visual)), that could affect mammals	No

IEF	Importance	Potential Impacts	Potential for an effect to occur?
		(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 **Chapter 10: Water Environment** of this ES **[EN010142/APP/6.1]**) will ensure no hydrological impacts occur and that there are consequently no impacts upon habitats supporting mammals (such as Brown Hare, Hedgehog or Harvest Mouse) during operation of the Scheme.	
		Decommissioning: Decommissioning impacts would require mitigating fully in line with relevant legislative and policy requirements at the time of decommissioning, including retention and avoidance of habitats supporting Brown Hare, Hedgehog or Harvest Mouse and these measures are included within the **Framework DEMP [EN010142/APP/7.10]** submitted as part of the DCO application.	No

Significance of Effects (with avoidance and embedded mitigation measures)

9.9.5 The impacts and effects (both beneficial and adverse) associated with the construction, operation (including maintenance) and decommissioning of the Scheme are outlined in the sections below. The assessments have been undertaken following consideration of the embedded mitigation measures as described in Section 9.8 of this chapter.

9.9.6 Taking into account the embedded mitigation measures as presented in **Table 9-13** of this chapter, the potential for the Scheme to generate effects on IEFs was evaluated using the method as detailed in Section 9.4 of this chapter. The aim of the evaluation was to identify potentially significant effects and determine the need for additional mitigation measures to those detailed in Section 9.8 of this chapter.

9.9.7 Accordingly, the evaluation has identified that during construction, the following potential impacts on IEFs have been taken forward for further assessment:

a. Temporary loss of habitat associated with Upton Grange Road Verges LWS and Willingham to Fillingham Road Verges LWS;

b. Temporary degradation of habitats within Cow Pasture Lane Drains LWS;

c. Damage to veteran trees from temporary accesses;

d. Direct loss of hedgerows within the Order limits;

e. Permanent loss of arable farmland for breeding Skylark within the Principal Site; and

f. Permanent loss of arable farmland for breeding Quail within the Principal Site.

9.9.8 The evaluation has identified that during the operation of the Scheme the following potential impacts on IEFs have been taken forward for further assessment:

a. Displacement of bats by the presence of solar PV panels.

9.9.9 The effects of decommissioning of the Scheme are likely to be similar to those for construction, but with recognition that many of the potential impacts associated with the creation of internal accesses will not be relevant during decommissioning. Habitats and protected or notable species are likely to be subject to temporary damage of habitats and disturbance to species during decommissioning activities. Therefore, appropriate measures to minimise degradation of habitats and disturbance of species, are set out in the **Framework DEMP [EN010142/APP/7.10]** and will be included in the Detailed DEMP in line with the appropriate legislative and policy requirements prior to decommissioning.

9.9.10 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.

Construction

Temporary loss of habitat associated with Upton Grange Road Verges LWS and Willingham to Fillingham Road Verges LWS

9.9.11 Upton Grange Road Verges LWS and Willingham to Fillingham Road Verges LWS are within the footprint of the Cable Route Corridor and both LWS are designated for their verge grassland communities. During construction, access will be required across Willingham to Fillingham Road Verges LWS to access the Cable Route Corridor. The Scheme considered the use of existing farm accesses already in place across the LWS, however, due to the location of these there would be the requirement for additional places along the road within the LWS to allow construction traffic and ordinary road users to safely pass. This would involve the loss of a larger area of verge habitat. Therefore, to facilitate access to the Cable Route Corridor an area of 60m^2 of verge would likely need to be removed to provide a temporary construction access. This amounts to approximately 0.4% of the overall LWS (approximately 1.7ha). Site accesses are secured through compliance with the **Streets, Rights of Way and Access plans [EN010142/APP/2.5]**. While the road at Upton Grange Road Verges LWS is within the access route for vehicles associated with the cable route installation and where practicable existing farms accesses have been used to avoid the requirement for incursion into the LWS, a single temporary passing place during construction is required to allow construction traffic and ordinary road users to safely pass. Therefore, an area of 115m^2 of verge would likely need to be removed to provide a temporary construction passing place. This amounts to approximately 0.4% of the overall LWS (approximately 3.1ha). The Order limits for the Cable Route Corridor have been refined to minimise the extent of the LWS present in the Scheme, as well as minimising the volume of construction traffic which will need to pass alongside the LWS verges.

9.9.12 The location of the access crossing Willingham to Fillingham Road Verges LWS was optimised to account for the current width of the verge and condition of the grassland communities present. The verge (and LWS) is at its narrowest on the north side of the road and at the extreme west of the LWS, with the verge being approximately 1m in width (compared to 3m elsewhere). In addition, survey of the grassland (see **Appendix 9-3: Baseline Report for Flora (including hedgerows)** of this ES [**EN010142/APP/6.2]**) indicated in general that the first 1m of the verge near the road is mown/disturbed and dominated by Perennial Rye-grass *Lolium perenne*. The narrow section of verge proposed for temporary access is therefore of limited floristic diversity (compared to other sections of the LWS) and subject to regular disturbance and degradation from over-running vehicles and road/agricultural run-off. These considerations informed the siting of the access.

9.9.13 To limit disturbance to habitat inside both LWS during construction, the working areas for accesses and passing places will be kept to a minimum of 5m inside the LWS and no spoil, materials or vehicles will be stored within the LWS. Turves will be taken for the working area and stored, managed, monitored and watered as needed, until they can be replaced in the verge. Underlying verge topsoils and subsoils will also be stripped and stored off the LWS in adjacent fields (separately to soil from the fields). Once

construction is completed the temporary access and passing place will be removed and the top and subsoil from both LWS backfilled promptly, retaining the original soil profile and seed bank. The turves will then be replaced appropriately. In addition, it may be possible to supplement the re-stated areas with seed collected from more diverse sections of the LWS, offering the opportunity to enhance these sections of the LWS, to a grassland community more representative of that identified in the citation. This will be secured in the **Framework CEMP [EN010142/APP/7.8]**. A security perimeter fence will be implemented early in the construction phase to prevent further encroachment into the remainder of the LWS.

9.9.14 Taking into account the approach to siting of the access and passing place, protection measures set out above and secured in the **Framework CEMP [EN010142/APP/7.8],** the overall area of the respective LWS to be impacted (115m^2 and 60m^2, Upton Grange Road Verges LWS and Willingham to Fillingham Road Verges LWS, respectively) and the quality of the grassland within the sections to be affected, it is assessed that the magnitude of this impact is low, which results in a temporary **minor adverse** effect, that is **not significant** to the long-term viability of either Upton Grange Road Verges LWS and Willingham to Fillingham Road Verges LWS.

Temporary degradation of habitats within Cow Pasture Lane Drains LWS

9.9.15 Whilst the necessity for an access track to cross Cow Pasture Lane Drains LWS will principally seek to avoid crossing the LWS, there is potential that a new crossing point may be required to facilitate construction-related traffic. To minimise impacts on the LWS and avoid habitat loss, a new crossing point (if required) would be in the form of a bailey bridge, approximately 6m wide which would be erected over the LWS for a temporary period during construction within this area. A temporary crossing would potentially impact the LWS through shading, although for shading to have an adverse effect on plant communities (i.e., where impacts are irreversible) a long period of exposure would need to occur, which is typically in excess of two growing seasons. In addition, the LWS is approximately 1,576m in length, so a crossing of 6m would represent approximately 0.38% of the overall length of the LWS.

9.9.16 Whilst a temporary bailey bridge would cause localised shading, the bailey bridge would be in situ for no longer than 36 months, which is not long enough to cause permanent and irreversible damage to habitats within the LWS. The majority of plant species recorded within the LWS and cited on the LWS notification (including Meadowsweet and Amphibious Bistort) are shade-tolerant and will therefore have some resilience to shading and not be adversely affected in the long term. Furthermore, control measures would be put in place to ensure indirect impacts (such as pollution) does not occur.

9.9.17 Taking into account embedded protection measures and Scheme design to minimise the impact of construction activities on the LWS, if a bailey bridge is required then the impacts of a 6m wide bridge (amounting to <1% of the overall length of the LWS) that is temporary in duration (and affecting no more than a maximum of two growing seasons) which would not impact on the integrity of the LWS, it is assessed that the magnitude of this potential

impact is **low**, which results in a temporary **negligible** effect, that is **not significant** to the LWS.

Damage to veteran trees from permanent accesses

9.9.18 The proposed permanent access routes within the buffer zones of four veteran trees (T127, T537, T541 and T554) (see **Appendix 12-7: Arboricultural Impact Assessment** of this ES [**EN010142/APP/6.2]**) are currently utilised for agricultural access and therefore, likely subject to already be subject to significant compaction from heavy agricultural machinery.

9.9.19 To mitigate against a potential adverse impact to veteran tree physiological and structural health through the alteration of soil properties from access routes (these being mechanical resistance, aeration, fertility and moisture), all access within buffer zones will be micro-sited to be positioned as far from tree stems as possible. All access within the buffers, when not on existing hard surfacing, will utilise ground protection to an engineering specification such as a no dig installation, proprietary three-dimensional cellular raft system, installed on the existing ground level. The raft system will be designed to tolerate the maximum loading required. The three-dimensional raft system will protect the buffer zones through the distribution of loading forces over a larger area of the subgrade-base interface, resulting in lower vertical stress and reduced deformation of the subgrade. This will ensure that tree roots and soil structure will be robustly protected, and existing growing conditions will be maintained. Further details are provided in **Appendix 12-7: Arboricultural Impact Assessment** of this ES **[EN010142/APP/6.2].**

9.9.20 Taking into account the protection measures set out above and secured in the **Framework CEMP [EN010142/APP/7.8]**, it is assessed that the magnitude of this impact is low, which results in a permanent **minor adverse** effect, that is **not significant** to the long-term viability of veteran trees.

Direct loss of hedgerows within the Order limits

9.9.21 Construction activities are predicted to result in the potential for the loss of sections of hedgerow (minimised as much as is practicable) as a result of security fencing and access routes across the Principal Site and to facilitate works within the Cable Route Corridor. The majority of hedgerows across the Order limits have been avoided and will be retained, including, where practicable, those which are considered as important hedgerows under the wildlife and landscape criteria of the Hedgerow Regulations. The **Hedgerow Removal Plan [EN010142/APP/2.9]** shows the locations of where there is predicted to be the requirement for removal of sections of hedgerows. This amounts to approximately 6.91km of hedgerow, including 0.83km from six which are considered to be ‘important’ hedgerows.

9.9.22 The planting of over 10km of new species rich hedgerow, consisting of native species, has been embedded within the Scheme design (see **Framework LEMP [EN010142/APP/7.17]** and **Figure 3-1: Indicative Principal Site Layout Plan [EN010142/APP/6.3]**). Lengths of new, species rich, hedgerow will use 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*,

Buckthorn *Rhamnus cathartica*, Dogwood *Cornus sanguinea*, and English Elm* *Ulmus procera* (*a disease resistant cultivar). In addition, 9.64km of existing hedgerow will be subject to re-enforced planting to strengthen and widen existing hedgerows.

9.9.23 However, this may take time to develop and therefore, there is likely to be a temporary (short-term) adverse effect on this habitat type in some areas. Once hedgerows establish along with additional hedgerow planting and strengthening of existing hedgerows proposed across the Order limits, it is predicted that the Scheme will be able to deliver a net gain in this habitat and the overall impact will be beneficial.

9.9.24 Taking into account embedded protection measures and Scheme design to minimise the impact of construction activities causing direct loss of small sections of species poor hedgerows only, it is assessed that the magnitude of this impact is low, which results in a temporary **minor adverse** effect, that is **not significant** to the overall hedgerow resource present within the Order limits or effects the integrity of any particular hedgerow.

Permanent loss of arable farmland for breeding Skylark within the Principal Site

9.9.25 The survey of breeding birds (**Appendix 9-7: Baseline Report for Breeding birds** of this ES **[EN010142/APP/6.2]**) identified 152 territorial males present across the Principal Site, with territorial males recorded in the vast majority of arable fields. 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 for nesting Skylark during the early spring, can quickly become too tall, as well as be prone to more frequent spraying and earlier harvesting. This can result in nest loss, as well as an overall reduction in the number of broods and/ or nesting attempts.

9.9.26 As Skylark 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 152 territorial males 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. Therefore, whilst the number of territories of this 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 Skylark 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 is likely to be low (Ref. 9-85), which in turn is likely to result in low productivity and juvenile recruitment into the local breeding population.

9.9.27 It is acknowledged that construction activities will result in the loss of arable farmland used by breeding Skylark. Without measures providing suitable nesting and foraging habitats being incorporated within the Scheme design

there is the potential for a long-term effect on a Skylark population of importance at a District (medium sensitivity) level.

9.9.28 However, through the evolution of the Scheme design, including mitigation requirements for other environmental disciplines, sufficient areas of habitat creation, alongside extensive habitat enhancements have been incorporated to offset the impact of loss of arable farmland for breeding Skylark as well as provide extensive benefits for other IEFs and wider biodiversity. The locations of proposed measures are illustrated on the Framework Landscape Masterplan in Annex A of the **Framework LEMP [EN010142/APP/7.17]**.

9.9.29 Over 200ha of undeveloped land in open 'Biodiversity Zones', along with over 1,000 ha of grassland creation, has been incorporated into the Scheme design. 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. 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 potential of up to four broods.

9.9.30 In addition to these larger undeveloped areas, wide margins (c.15m) have been left alongside numerous internal access tracks. A similar treatment to the larger undeveloped areas will be applied to these linear habitats, providing nesting opportunities and mosaics of bare ground and diversity grassland for foraging and territory defence.

9.9.31 Wide grassland margins and undeveloped corners of fields, particularly along the periphery of the Scheme have been incorporated into the design to enhance foraging for Skylark nesting both onsite and offsite and to allow for an element of displacement from the Scheme and absorption into neighbouring habitats.

9.9.32 In habitat areas targeted for Skylark management existing hedgerows, where practicable, will be maintained at their current height, to minimise further loss of 'openness' of these areas. Further to this, to reduce predation from ground predators, particularly in areas where existing woodlands and mature hedgerows may provide a sink or predators, the perimeter security fencing will not contain passages for mammals, as is proposed elsewhere throughout the Scheme, which will reduce nest predation.

9.9.33 The Scheme has also allowed for areas to be set aside for overwinter foraging resources. These seed rich areas will increase the chances of overwinter survival of adult and juvenile birds, improving potential recruitment of individuals into the local breeding population.

9.9.34 Whilst the above measures will not provide like for like mitigation for all territorial males recorded, as discussed in Section 9.9.16, the provision of a stable quantity of improved quality habitat not subject to agricultural rotations, pesticide application or early harvesting, in combination with measures to reduce predation, will increase both nesting densities and productivity over the lifespan of the Scheme.

9.9.35 With the application of the mitigation measures set out above, the magnitude of habitat loss is reduced to low, resulting in a **minor adverse** to **negligible** effect which is **not significant** to the Skylark population.

Permanent loss of arable farmland for breeding Quail within the Principal Site

9.9.36 The survey of breeding birds (**Appendix 9-7: Baseline Report for Breeding birds** of this **ES [EN010142/APP/6.2]**) identified a single Quail territory within arable habitat within the Principal Site, although this territory was formed from a singing bird on a single occasion. Quail rely on open arable and grassland habitats within which to breed, therefore the inclusion of undeveloped areas within the Principal Site, including wide field margins around solar PV panels will be of longer-term benefit to this species. However, in the short-term, there may be a temporary loss of habitat available to Quail in some areas of the Principal Site as newly planted habitats mature.

9.9.37 In consideration of undeveloped areas to provide nesting and foraging habitat for Quail, the likelihood that over a 36-month construction period that not all habitat within the Principal Site will be lost at once (ensuring available habitat around the Principal Site during the construction period), it is assessed that the magnitude of this impact is **low**, which results in a temporary **minor adverse** effect, that is **not significant** in EIA terms.

Operation

Displacement of bats by the presence of solar PV panels

9.9.38 There is limited scientific literature available on the impacts to bats from solar farms (Ref. 9-79, Ref. 9-80, Ref. 9-81). The first large scale (Nationally Significant Infrastructure Project (NSIP) solar scheme Cleve Hill in Kent received planning consent in May 2020 (Ref. 9-82) and is not yet operational so it is too early to fully predict long-term effects on bat populations on this comparable sized Scheme.

9.9.39 A recent study in 2019 and 2020 on 19 small solar schemes in the south-west of England (Ref. 9-83) 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.

9.9.40 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 this Scheme (and other large-scale DCO schemes) where significant areas of habitat compensation and enhancement are provided. All the small solar PV 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 at this Scheme where the embedded mitigation and proposed habitat compensation and enhancement will include large areas of grassland managed for conservation, habitat buffers, pond restoration and new tree and hedge planting. The authors also recommend maintaining boundaries, planting vegetation to network with surrounding foraging habitat and monitoring.

9.9.41 Another recent study in France in 2022 (Ref. 9-84) found an overall decrease in foraging activity over solar panels. The authors suggest that further research is needed to understand the mechanisms underlying the effects; for example, shading underneath solar panels may reduce plant biomass and therefore insect prey availability. Until exact mechanisms are identified, efforts should be made first to avoid building solar farms on sites with higher foraging potential and second to offset residual effects by improving the surrounding land and/or solar farms to provide better foraging opportunities. In this way, populations of bats can be supported alongside the generation of renewable energy.

9.9.42 Taking into account embedded mitigation measures and a Scheme design which sets back PV 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 section 9.8, significant displacement of bats from these habitats will occur. As such, it is assessed that the magnitude of this impact is **low**, which results in a **negligible** effect, that is **not significant** to the overall bat populations present within the Order limits and does not affect the integrity of any particular bat species population.

Decommissioning

9.9.43 The effects of decommissioning of the Scheme are likely to be similar to those for construction, but with recognition that many of the potential impacts associated with the creation of internal accesses will not be relevant during decommissioning. These are summarised in Table 8-14 and no potential effects have been identified. Habitats and protected or notable species are likely to be subject to some 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.

9.9.44 Where necessary 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 [EN010142/APP/7.10]** of this ES will be needed to control this. The evaluation has concluded that the decommissioning of the Scheme is not predicted to have any impacts on IEFs identified at this stage.

Summary of Magnitude of Impact and Significance of Effect

9.9.45 **Table 9-16** summarises the sensitivity (value) of IEFs, impacts and likely effects resulting from the Scheme, including whether there is potential for

significant effects. No impacts and effects arising from decommissioning of the Scheme have been identified at this stage.

Table 9-16 Summary of Magnitude of Impact and Signifcance of Effect

IEF	Sensitivity (value)	Description of impact	Magnitude of Impact	Effect Category	Potential for Significant Effect
Willingham to Fillingham Road Verges LWS	Medium (County)	Temporary loss of habitat during construction	Low	Minor adverse	No
Cow Pasture Lane Drains LWS	Medium (County)	Temporary degradation of habitat during construction	Low	Negligible	No
Veteran trees	Medium (County)	Temporary damage during construction	Low	Minor adverse	No
Hedgerows	Up to Medium (County)	Temporary loss of habitat during construction	Medium	Minor adverse	No
Skylark	Medium (District)	Permanent loss of breeding habitat during construction	High	Minor adverse to negligible	No
Quail	Low (Local)	Permanent loss of breeding habitat during construction	Low	Minor adverse	No
Bats	Medium (County)	Displacement of bats during operation	Low	Negligible	No

9.10 Additional Mitigation and Enhancement Measures

9.10.1 The assessment presented in section 9.8 and summarised in **Table 9-16**, identified no significant effects on important ecological features, as defined in **Table 9-12**. Therefore, no additional mitigation is required and this section sets out only measures put forward as part of the Scheme to provide enhancements for biodiversity.

9.10.2 The habitat creation and enhancements presented in **Table 9-17** have been included within the Scheme design to increase the biodiversity of the Scheme. The Scheme is committed to deliver BNG in accordance with the requirements of the **draft DCO [EN010142/APP/3.1].** As set out in the **Biodiversity Net Gain report [EN010142/APP/7.14],** based on the illustrative layout, the Scheme is predicted to result in a net gain of 64.55% for area-based habitat units, 17.33% for hedgerow units, and 22.94% for watercourse units.

9.10.3 Vegetation would be established through natural regeneration or in the case of grasslands from seed collection from the grasslands identified within the Order limits 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.

Woodland Planting

9.10.4 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 10 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. The locations of proposed native tree belts and woodland buffers are illustrated on the Outline Landscape Masterplan in Annex A of the **Framework LEMP [EN010142/APP/7.17]**.

Hedgerows

9.10.5 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.

9.10.6 Lengths of new, species rich, hedgerow will be planted to compensate for any lost, using three core species: Hawthorn, Blackthorn Prunus spinosa and Field Maple with others to add diversity including: Oak, Hornbeam, Holly *Ilex aquifolium*, Hazel *Corylus avellana*, Spindle *Euonymus europaeus*, Crab

Apple *Malus sylvestris*, Elder *Sambucus nigra*, Buckthorn *Rhamnus cathartica*, Dogwood *Cornus sanguinea* and a disease resistant cultivar of English Elm *Ulmus procera*.

9.10.7 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 Order limits. New areas of tree planting around infrastructure will be provided to provide both screening from Scheme infrastructure and to improve habitat connectivity as well to the increase the area of hedge / woodland habitat within the Order limits. 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 *Passer montanus*. 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 Scheme. These measures are incorporated in the **Framework LEMP [EN010142/APP/7.17]** and secured through the DCO.

Scrub

9.10.8 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

9.10.9 An area 15 to 25m wide adjacent to existing ponds and woodland both within and outside the Order limits 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

9.10.10 Species-rich grassland will be established across the Scheme, 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.

9.10.11 The locations for creating species-rich grassland are illustrated on the Outline Landscape Masterplan, Annex A of the **Framework LEMP [EN010142/APP/7.17]**. 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 12 m in width, and at least 50 m in length.

Pond restoration and planting around ponds

9.10.12 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, including poplars, willows and oak pollards, these trees will be prioritised for re-pollarding, to increase light and decrease leaf fall onto the ponds.

9.10.13 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

9.10.14 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.

9.10.15 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.

9.10.16 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.

Creation of Habitat Piles

9.10.17 Habitat piles and hibernacula will be constructed throughout the Scheme 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.

Significance of effects (with enhancement)

9.10.18 With the implementation of the measures incorporated in the **Framework LEMP [EN010142/APP/7.17]** and secured through the DCO, the Scheme has the potential to generate beneficial effects for a range of the IEFs identified in **Table 9-12**. Where relevant, the impact of these is assessed and the significance of the effect outlined in **Table 9-17**.

Table 9-17 Summary of Enhancement and Significance of Effect

IEF	Sensitivity (Value)	Enhancement Measures	Magnitude of Impact	Residual Effect
Habitat – broad-leaved woodland (semi-natural), and individual trees (including veteran trees)	Medium (County)	Natural re-generation of areas surrounding woodland within the Order limits, along with enhanced planting, will allow the expansion of existing woodlands, as well as providing further natural buffers to existing mature woodlands. New areas of tree planting will be allowed to grow tall and wide to provide maximum benefits for biodiversity and will be created as screening from Scheme infrastructure, to improve habitat connectivity (for species such as bats and birds) and increase the area of hedgerow (and woodland habitat) within the Order limits. Tree planting, however, will be avoided in any areas where there may be ecological features which require open landscapes. This will further secure the long-term future of these woodlands and is in line with the expectations of national and local planning policy.	Medium	Moderate beneficial effect – Significant
Standing Water (e.g., ponds)	Low (Local)	New habitats created by the Scheme will see the removal of agricultural chemicals from land parcels within the Principal Site reducing the quantity of agricultural run-off and chances of eutrophication in nearby rivers and ditches. Planting of aquatic macrophyte and riparian species to enhance water bodies and riparian/marginal habitats. Removal of selected shrub will also be done to reduce shading in the channel and promote macrophyte growth. This will further secure the long-term future of these habitats and is in line with the expectations of national and local planning policy.	Medium	Minor beneficial effect – not significant
Running Water	Up to Medium (County)	New habitats created by the Scheme will see the removal of agricultural chemicals from land parcels within the Principal Site	Medium	Moderate beneficial effect – Significant

IEF	Sensitivity (Value)	Enhancement Measures	Magnitude of Impact	Residual Effect
		reducing the quantity of agricultural run-off and chances of eutrophication in nearby rivers and ditches. This will further secure the long-term future of these habitats and is in line with the expectations of national and local planning policy.		
Arable field margins with scarce arable flora	Low (Local)	Grassland to be provided adjacent to and beneath the solar PV panels in the Principal Site, including in larger open fields, to increase the diversity of flora in comparison to existing intensive agriculture and provide new habitat niches to encourage other fauna such as invertebrates and birds. Vegetation would be established through natural regeneration or from seed collection from the grasslands identified within the Order limits and through a suitable long-term habitat management regime. Consideration will be paid to microclimatic conditions when identifying appropriate species.	Medium	Minor beneficial effect – not significant
Hedgerows	Up to Medium (County)	New hedgerow planting and bolstering of existing defunct hedgerows (see also **Table 9-13**) will be undertaken during construction of the Scheme and will form broad habitat corridors across the Order limits and, during operation of the Scheme. This will increase connectivity across the Order limits for species that may use such habitats (such as bats). Gaps in currently defunct hedges will be planted with suitable native species to improve the connectivity of habitats (such as between areas of broad-leaved woodland) within and adjacent to the Order limits. Hedgerows 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 Scheme.	Medium	Moderate beneficial effect – Significant

IEF	Sensitivity (Value)	Enhancement Measures	Magnitude of Impact	Residual Effect
		The above measures will greatly enhance the diversity of hedgerows present as well as provide positive management outcomes for existing species-rich hedgerows. This is in line with the expectations within national and local planning policy.		
Terrestrial Invertebrates	Low (Local)	The conversion of intensively managed arable farmland to grassland within the Principal Site is likely to be of immediate benefit to terrestrial invertebrates. An increase in permanent habitat of greater floristic diversity than arable farmland and indirect beneficial impacts through a reduction of agricultural chemical inputs to watercourses and a reduction in pesticide use on crops is likely to result in an increase in invertebrate abundance and diversity.	Medium	Minor beneficial – not significant
Reptiles and amphibians – Grass Snake, Common Lizard, Common Toad and Great Crested Newt	Low (Local)	Pond 07 will also have a 50m undeveloped buffer. This buffer will be enhanced to create optimal sheltering and foraging habitat for Great Crested Newt through the creation of rough grassland scrub mosaic. The increase in permanent grassland habitat of greater floristic diversity than arable farmland across the Principal Site will result in an increase in invertebrate abundance and habitat niches, which, during the lifetime of the Scheme (60 years) will provide conditions suitable for the spread of reptiles and amphibians, with the potential for increased colonisation of the Principal Site by reptile and amphibian species from the wider area. This is in line with the expectations within national and local planning policy.	Medium	Minor beneficial effect – not significant
Breeding birds (General	Medium (County)	New planting of hedgerows and trees, alongside natural regeneration of woodland and allowing such habitats to grow tall and wide will be of benefit to the majority of breeding bird species by providing additional foraging, roosting and potential nesting habitat.	Medium	Moderate beneficial effect – Significant

IEF	Sensitivity (Value)	Enhancement Measures	Magnitude of Impact	Residual Effect
breeding bird assemblage)		The increase in woodland, scrub and hedgerow habitat, likely resulting in an increase in invertebrate abundance and of fruiting tree species (providing additional foraging resources) will, during the lifetime of the Scheme (60 years), be of benefit to the majority of breeding bird species and will also create additional opportunities for breeding bird species to nest.		
Breeding birds – territories of specially protected species within the Principal Site	Low (County)	The provision of additional nest boxes (for Barn Owl) and creation of new habitats (such as hedgerows for Hobby) will increase the availability of potential nesting and foraging habitat on and adjacent to the Order limits for these species.	Medium	Minor beneficial – Not significant
Non-breeding birds	Medium (District)	New planting of hedgerows and trees (including species that produce berries such as Hawthorn), alongside natural regeneration of woodland and allowing such habitats to grow tall and wide will be of benefit to the majority of non-breeding bird species by providing additional foraging and roosting habitat. This increase in habitats, along with the resulting increase in seed resource from native grasslands, will during the lifetime of the Scheme, be of benefit to non-breeding birds. This is in line with the expectations of national and local planning policies pertaining to the natural environment and biodiversity.	Low	Minor beneficial effect – not significant
Bats (roosting and foraging / commuting)	Medium (County)	New planting of hedgerows and trees, alongside natural regeneration of woodland and allowing such habitats to grow tall and wide will be of benefit to the majority of bat species by providing additional foraging and commuting corridors and potential roosting	Low	Minor beneficial effect – not significant

IEF	Sensitivity (Value)	Enhancement Measures	Magnitude of Impact	Residual Effect
		habitat. The conversion of arable farmland to grassland habitats with also increase the overall abundance of invertebrate prey. This is in line with the expectations of national and local planning policies pertaining to the natural environment and biodiversity. The increase in woodland, scrub and hedgerow habitat, creating corridors across the Order limits and likely resulting in an increase in invertebrate abundance (providing additional foraging resources) will, during the lifetime of the Scheme (60 years), be of benefit to bat species. The change from agriculture to solar panels with surrounding grassland as well as new areas of grassland (based on a net biodiversity gain of >10%) has the potential to improve the foraging habitat for bats. New grassland areas will provide a range of niches for invertebrates in and around the solar panels. The provision of artificial roost sites for bats, or mechanically creating wounds/cavities in selected trees to provide roosting features in the long-term would benefit some species as tree hollow/cavity scarcity is a threat to bats and other cavity-dependent vertebrate wildlife.		
Badger	Low (Local)	Planting of gaps in hedgerows and creation of new hedgerows, tree planting and conversion of arable land to grassland habitats (to increase the flora and invertebrates) will be of benefit to Badger. This is in line with the expectations of national and local planning policy.	Medium	Minor beneficial effect – not significant
Other mammals (Brown Hare,	Low (Local)	Planting of gaps in hedgerows and creation of new hedgerows, tree planting and conversion of arable land to grassland habitats (to increase the flora and invertebrates) will be of benefit to Badger.	Medium	Minor beneficial effect – not significant

IEF	Sensitivity (Value)	Enhancement Measures	Magnitude of Impact	Residual Effect
Hedgehog and Harvest Mouse)		This is in line with the expectations of national and local planning policy.		

9.10.19 The Scheme will deliver significant enhancements for biodiversity in line with national (e.g., the NPPF (Ref. 9-52)) and local (e.g., the Central Lincolnshire Local Plan (Ref. 9-86)) policies and their biodiversity priorities to deliver a net gain in biodiversity. A robust monitoring programme is also provided in the **Framework LEMP [EN010142/APP/7.17]**, secured through the DCO, to ensure mitigation and enhancement measures are delivered successfully.

9.11 Residual Effects

9.11.1 With the application of the proposed mitigation measures set out above, no significant adverse effects have been identified during construction, operation or decommissioning of the Scheme. With consideration of enhancement measures set out in section 9.10 and **Table 9-17**, the Scheme will result in significant beneficial effects to broad-leaved woodland, running water, hedgerows and breeding birds, particularly farmland birds associated with hedgerows and field margins.

9.12 Cumulative Effects

9.12.1 An assessment of cumulative effects is provided in **Chapter 18: Cumulative Effects and Interactions** of this ES **[EN010142/APP/6.1]**.

9.13 References

Ref. 9-1. HMSO. (1981). Wildlife & Countryside Act 1981 (as amended). https://www.legislation.gov.uk/ukpga/1981/69 [Accessed December 2023]

Ref. 9-2. CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.

Ref. 9-3. Greater Lincolnshire Nature Partnership. Nature Strategy. [online]. Available at: [redacted]. [Accessed December 2023]

Ref. 9-4. HMSO. (2017). The Water Environment (Water Framework Directive) (England and Wales) Regulations https://www.legislation.gov.uk/uksi/2017/407/contents/made [Accessed December 2023]

Ref. 9-5. HMSO (2018). Conservation of Habitats and Species Regulations 2017. HMSO, London. http://www.legislation.gov.uk/uksi/2017/1012/contents/made [Accessed December 2023]

Ref. 9-6. HMSO (2006). The Natural Environment and Rural Communities Act. HMSO, London.

Ref. 9-7. HMSO (2019). The Invasive Alien Species (Enforcement and Permitting) Order 2019. https://www.legislation.gov.uk/uksi/2019/527/contents [Accessed December 2023]

Ref. 9-8. Ramsar Sites Information Service [online], Available at: [redacted] [Accessed November 2023]

Ref. 9-9. Natural England (2023). Designated Sites View. [online]. Available at: https://designatedsites.naturalengland.org.uk/ [Accessed November 2023].

Ref. 9-10. JNCC website: https://jncc.gov.uk/our-work/uk-protected-area-datasets-for-download/ [Accessed November 2023]

Ref. 9-11. Defra, Multi-Agency geographical information for the countryside (MAGIC) map. Available at: https://magic.defra.gov.uk/MagicMap.aspx [Accessed: November 2023].

Ref. 9-12. Natural England (2023): Ancient Woodland (England) inventory [online]. Available at: https://naturalengland-defra.opendata.arcgis.com/datasets/ancient-woodland-england/explore [Accessed: November 2023]

Ref. 9-13. Woodland Trust Ancient Tree Inventory. [online]. Available at: [redacted] [Accessed November 2023].

Ref. 9-14. NBN Atlas: [redacted] Accessed November 2023].

Ref. 9-15. Environment Agency Ecology and Fish Data Explorer website: https://environment.data.gov.uk/ecology/explorer/ [Accessed November 2023].

Ref. 9-16. Lincolnshire Biodiversity Action Plan. (2012-2020) 3rd edition.

Ref. 9-17. Nottinghamshire Biodiversity Action Group (2008) Local Biodiversity Action Plan. [redacted] [Accessed November 2023].

Ref. 9-18. Witham and Humber Drainage Boards (2021) Witham and Humber Drainage Boards, Nature Strategy 2021-2026. Available at: http://witham3idb.gov.uk/wp-content/uploads/2022/06/Nature-Strategy-2.pdf [Accessed November 2023].

Ref. 9-19. PINS website: Gate Burton Energy Park https://infrastructure.planninginspectorate.gov.uk/projects/east-midlands/gate-burton-energy-park/ [Accessed November 2023].

Ref. 9-20. PINS website: Cottam Solar Project https://infrastructure.planninginspectorate.gov.uk/projects/east-midlands/cottam-solar-project/ [Accessed November 2023].

Ref. 9-21. PINS website: West Burton Solar Project https://infrastructure.planninginspectorate.gov.uk/projects/east-midlands/west-burton-solar-project/ [Accessed November 2023].

Ref. 9-22. JNCC (2010) Handbook for phase 1 habitat survey – a technique for environmental audit. Joint Nature Conservation Committee, Peterborough.

Ref. 9-23. Environment Agency (2002). A guide to monitoring the ecological quality of ponds and canals using Predictive System for Multimetrics (PSYM). Available at: https://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/NPMN_PSYM_MANUAL_July09.pdf [Accessed November 2023].

Ref. 9-24. Environment Agency (2017). Freshwater macro-invertebrate sampling in rivers Operational Instruction 018_08. Environment Agency, Bristol, UK

Ref. 9-25. WFD-UKTAG (Water Framework Directive – United Kingdom Advisory Group) (2014). UKTAG River Assessment Method Macrophytes and Phytobenthos: Macrophytes (River LEAFPACS2)

Ref. 9-26. Cheffings, C.M. & Farrell, L. (eds), Dines, T.D., Jones, R.A., Leach, S.J., McKean, D.R., Pearman, D.A., Preston, C.D., Rumsey, F.J. and Taylor, I. (2005). The Vascular Plant Red Data List for Great Britain. Species Status No. 7. JNCC, Peterborough.

Ref. 9-27. BSBI (2021) [redacted] [Accessed November 2023].

Ref. 9-28. Stroh, P.A., Leach, S.J., August, T.A., Walker, K.J., Pearman, D.A., Rumsey, F.J., Harrower, C.A., Fay, M.F., Martin, J.P., Pankhurst, T., Preston, C.D. and Taylor, I. (2014). A Vascular Plant Red List for England. Botanical Society of Britain and Ireland, Bristol.

Ref. 9-29. Stace, C.A. (2019). New Flora of the British Isles, 4th edition. C&M Floristics

Ref. 9-30. HMSO. (1997). Hedgerows Regulations 1997. http://www.legislation.gov.uk/uksi/1997/1160/contents/made [Accessed November 2023].

Ref. 9-31. Oldham, R.S., Keeble, J., Swan, M.J.S., and Jeffcote, M. (2000) Evaluating the Suitability of Habitat for the Great Crested Newt (Triturus cristatus). Herpetological Journal, Vol. 10, pp. 143-155.

Ref. 9-32. Biggs, J., Ewald N., Valentini, A., Gaboriaud C., Griffiths, R.A., Foster, J., Wilkinson, J., Arnett, A., Williams, P. and Dunn, F. 2014. Analytical and methodological development for improved surveillance of the Great Crested Newt. Defra Project WC1067. Freshwater Habitats Trust: Oxford.

Ref. 9-33. English Nature (2001). Great Crested Newt Mitigation Guidelines. English Nature, Peterborough.

Ref. 9-34. Natural England (2004). An assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt. http://publications.naturalengland.org.uk/publication/134002 [Accessed November 2023].

Ref. 9-35. Froglife (1999) Froglife Advice Sheet 10: Reptile survey: An introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife, London.

Ref. 9-36. Natural England (2015). Reptiles: surveys and mitigation for development projects

Ref. 9-37. Gilbert G., Gibbons D.W., and Evans J. (1998) Bird Monitoring Methods: A manual of techniques for key UK species. RSPB, Bedfordshire.

Ref. 9-38. Bibby, C.J., Burgess, N.D. & Hill, D.A. (1992) Bird Census Techniques. The University Press, Cambridge.

Ref. 9-39. Disturbance Distances in selected Scottish Bird Species – NatureScot Guidance. Available at: [redacted] [Accessed November 2023].

Ref. 9-40. Collins (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines. Third Edition. The Bat Conservation Trust, London.

Ref. 9-41. Strachan, R., Moorhouse, T. and Gelling, M. (2011). Water Vole Conservation Handbook. Third Edition. WildCRU, University of Oxford.

Ref. 9-42. Dean, M., Strachan, R. Gow, D. and Andrews, R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds Matthews, F. and Chanin, P. The Mammal Society, London

Ref. 9-43. RSPB, NRA and RSNC (1994). The New Rivers & Wildlife Handbook. RSPB.

Ref. 9-44. Environment Agency (2011). Fifth otter survey of England 2009 – 2010.

Ref. 9-45. Chanin, P. (2003). Ecology of European Otter. Conserving Natura 2000 Rivers Ecology Series No.10 English Nature.

Ref. 9-46. Harris, S., Cresswell, P, and Jefferies D (1989). Surveying Badgers, Mammal Society.

Ref. 9-47. Scottish Badgers (2018). Surveying for Badgers: Good Practice Guidelines. Version 1.

Ref. 9-48. UKHab, UK Habitat Classification. Available at: https://ukhab.org/

Ref. 9-49. Gurnell et al. (2019). The MoRPh Survey: a Modular River Physical Survey Field Guide.

Ref. 9-50. Gurnell et al. (2020). A guide to assessing River Condition Part of the Rivers and Streams Component of the Biodiversity Net Gain Metric.

Ref. 9-51. Natural England (2024). Statutory Biodiversity Metric tools and guides Available at: https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides [Accessed March 2024].

Ref. 9-52. DEFRA. (2023). Statutory biodiversity metric calculation tool. Available at: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fassets.publishing.service.gov.uk%2Fmedia%2F65c60e5114b83c000ca715f4%2FThe_Statutory_Biodiversity_Metric_Calculation_Tool_-_Macro_enabled_02.24.xlsm&wdOrigin=BROWSELINK [Accessed March 2023].

Ref. 9-53. DEFRA. (2023). Statutory biodiversity metric: user guide. Available at: https://assets.publishing.service.gov.uk/media/65c60e0514b83c000ca715f3/The_Statutory_Biodiversity_Metric_-_User_Guide_.pdf [Accessed March 2023].

Ref. 9-54. CIEEM, IEMA & ciria (2019). Biodiversity Net Gain: Good Practice Principles for Development, A practical guide: Available at: [redacted] [Accessed March 2023].

Ref. 9-55. HMSO (2021). The Environment Act. Available at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted [Accessed November 2023].

Ref. 9-56. Department for Energy Security and Net Zero (2024) Overarching National Policy Statement for Energy (EN-1)

Ref. 9-57. National Planning Policy Framework 2023. [online]. Available at: National Planning Policy Framework - GOV.UK (www.gov.uk)

Ref. 9-58. Baker, J., Hoskin, R. and Butterworth, T. (2019). Biodiversity Net Gain – Good Practice Principles for development, A practical guide. Available at: [redacted] [Accessed December 2023].

Ref. 9-59. EC (1992). Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. EC, Brussels.

Ref. 9-60. Crouch, N.C. (2018) Nottinghamshire LWS Handbook – Guidelines for the selection of Local Wildlife Sites in Nottinghamshire. Part 1 – An overview of Local Wildlife Sites in Nottinghamshire. 2nd Edition. Nottinghamshire Biological and Geological Records Centre, Nottingham.

Ref. 9-61. UK Beetle recording. [online]. Available at: [redacted]. [Accessed December 2023]

Ref. 9-62. Salmon and Freshwater Fisheries Act 1975. Available at: https://www.legislation.gov.uk/ukpga/1975/51 [Accessed November 2023].

Ref. 9-63. The Eels (England and Wales) Regulations 2009. Available at: https://www.legislation.gov.uk/uksi/2009/3344 [Accessed November 2023].

Ref. 9-64. Countryside and Rights of Way (CRoW) Act 2000. Available at: https://www.legislation.gov.uk/ukpga/2000/37 [Accessed November 2023].

Ref. 9-65. EC (2009). Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version). EC, Brussels

Ref. 9-66. Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. 2021. The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747

Ref. 9-67. Barataud, M. 2015. Acoustic ecology of European bats. Species Identification and Studies of Their Habitats and Foraging Behaviour. Biotope Editions, Mèze; National Museum of Natural History, Paris (collection Inventaires et biodiversité)

Ref. 9-68. People's Trust for Endangered Species: Otter. [online]. Available at: [redacted] [Accessed November 2023].

Ref. 9-69. IUCN (2023). The IUCN Red List of Threatened Species. Version 2022-2.

Ref. 9-70. People's Trust for Endangered Species: Water Vole. [online]. Available at: [redacted] [Accessed November 2023].

Ref. 9-71. HMSO (1992). Protection of Badgers Act 1992. https://www.legislation.gov.uk/ukpga/1992/51/contents [Accessed November 2023].

Ref. 9-72. Mathews, F., Kubasiewicz, L.M., Gurnell, J., Harrower, C.A., McDonald, R.A. and Shore, R.F. (2018) A Review of the Population and Conservation Status of British Mammals. A report by the Mammal Society under contract to Natural England, Natural Resources Wales and Scottish Natural Heritage. Natural England, Peterborough.

Ref. 9-73. Manning, C.J. (2016). Atlas of the terrestrial and semi-aquatic mammals of Lincolnshire. Greater Lincolnshire Nature Partnership

Ref. 9-74. Nottinghamshire Wildlife Trust (2016). Provisional Atlas of Nottinghamshire Mammals, Second Edition. [online]. Available at: [redacted] [Accessed December 2023]

Ref. 9-75. The Mammal Society – Species: Polecat. [online]. Available at: [redacted] [Accessed December 2023]

Ref. 9-76. HMSO. Environmental Protection Act 1990 https://www.legislation.gov.uk/ukpga/1990/43/contents [Accessed December 2023]

Ref. 9-77. HMSO (2006). Hazardous Waste (England and Wales) Regulations 2005 [online]. Available at: https://www.legislation.gov.uk/uksi/2005/894/contents/made[Accessed November 2023].

Ref. 9-78. British Standards Institute (2012). BS 5837:2012 Trees in relation to design, demolition and construction. Recommendations

Ref. 9-79. Harrison, C., Lloyd, H., and Field, C. (2016). Evidence review of the impact of solar farms on birds, bats and general ecology. Manchester Metropolitan University

Ref. 9-80. Montag, H., Parker, G. and Clarkson, T. 2016. The effects of solar farms on local biodiversity: a comparative study. Clarkson and Woods & Wychwood Biodiversity

Ref. 9-81. BSG, 2019. Potential ecological impacts of ground mounted photovoltaic solar panels: An introduction and literature review

Ref. 9-82. Cleve Hill Solar Farm. [online]. Available at: [redacted] [Accessed November and December 2023]

Ref. 9-83. Tinsley, E. Froidevaux, J.S.P., Zsebők, S., Szabadi, K.L., Jones, G. (2023) Renewable energies and biodiversity: Impact of ground-mounted solar photovoltaic sites on bat activity. J Appl Ecol. 2023;00:1–11.

Ref. 9-84. Barré, K, Baudouin, A., Froidevaux, J.S.P., Chartendrault, V. & Kerbiriou , C. (2022) Insectivorous bats alter their flight and feeding behaviour at ground-mounted solar farms. Journal of Applied Ecology 2023;00:1–12.

Ref. 9-85. Donald, P.F. (2004) The Skylark. Poyser, London

Ref. 9-86. Central Lincolnshire Local Plan. (2018-2040). [online]. Available at: https://www.n-kesteven.gov.uk/residents/planning-and-building/planning/planning-policy/central-lincolnshire-local-plan. [Accessed November 2023].