RWE

Tween Bridge Solar Farm

Environmental Statement
Chapter 7: Ecology and Nature Conservation

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

APFP Regulation 5(2)(a)

Document Reference: 6.2.7

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Revision 3

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7.1. Introduction

7.1.1. The Ecology and Nature Conservation chapter sets out the baseline information available at the time of writing and provides an assessment of the likely effects of the Scheme on ecological features during its construction, operation and decommissioning phases. Responses from consultees and the Scoping opinion issued by the Planning Inspectorate on 14 March 2023 have been taken into account during the preparation of this chapter and this is discussed in detail below. This also includes consultation undertaken with City of Doncaster Council and North Lincolnshire Council.

7.1.2. A working draft of the Preliminary Environmental Information Report (PEIR) was originally completed by Avian Ecology Ltd. and was issued as part of the non-statutory pre-application consultation in October- November 2023. An updated formal PEIR was then prepared by Tyler Grange Ltd. to inform the statutory consultation in March 2025.

7.1.3. This ES chapter has comprised a review of the previous assessments undertaken, expanded on them where relevant, and included additional assessments to take account of the alterations to the Order Limits since the original assessment. In addition, as part of this the proposed mitigation the layout has been evolved and updated following comments received from Natural England, with further detail now provided regarding land use and management post-development.

7.1.4. This chapter is supported by the following appendices: -

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7.1.6. **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]**

7.1.7. **Outline Landscape Ecological Management Plan Landscape Ecological Management PlanLandscape Ecological Management Plan [Document Reference 7.6 Revision 3]**

- **Report to Inform Habitats Regulations Assessment [Document Reference 5.3 Revision 4]**

7.1.8. Since the August 2025 submission, all updated ecology survey work is now complete and all data available to fully review and analyse. This includes all the bat survey data recorded during the 2025 survey season and the autumn water vole surveys. In addition, further analysis has been completed on the non-breeding and breeding bird data and updated information has been included in relevant sections as necessary. All changes are included in this ES Chapter as tracked changes.

7.2. Consultation

7.2.1. A Scoping report was submitted to PINS on 26 January 2023 (included as **ES Appendix 1.2 Applicant's EIA Scoping Report [APP-0582]**) The following

ecology and nature conservation comments were provided in the Planning Inspectorate Scoping Opinion dated 14 March 2023 (included as **ES Appendix 1.1 Planning Inspectorate's EIA Scoping Opinion [APP-057]**).

Table 7-1: Extract of aspect based scoping table from Scoping Opinion for Tween Bridge Solar Farm

Id	Ref	Matter	Planning Inspectorate Comments	Applicant's Response
3.6.1	Paras 5.62 to 5.64; 5.76 and 5.78	Important ecological features (PINS)	The Scoping Report proposes that the ES will only contain a detailed assessment of impacts on 'important' ecological features (as per the CIEEM Guidelines). A detailed assessment of ecological features that are sufficiently widespread, unthreatened and/ or resilient to impacts of the Proposed Development would be scoped out. The ES should explain how the importance of ecological features has been determined, with reference to baseline data, relevant guidance and professional judgement. The Applicant should make effort to agree the list of 'important' ecological features with the relevant local planning authorities and Natural	This ES sets out the methodology adopted for the ecological assessment based on guidance issued by CIEEM and EIA (CIEEM, 2024 **[Ref. 7-1]**) which references use of baseline data, survey methods, relevant guidance and professional judgement. Identification of important ecological features and those features that can be scoped into or out of the detailed assessment will be identified and are being discussed with Natural England and the relevant LPA.

			England (NE). Subject to this, the Inspectorate agrees that a detailed assessment of impacts on ecological receptors which are not determined to be 'important' can be scoped out of the ES.	
3.6.2	Para 5.65 and Table 5.2	Statutory designated sites (PINS)	Having regard to the nature and characteristics of the Proposed Development, the Inspectorate is content that this matter can be scoped out for the operational phase. Sections 7 (Ground Conditions) and 8 (Hydrology and Flood Risk) of the Scoping Report identify the potential for construction to result in contamination of surface water courses or groundwater via spills and leaks, or through disturbance of existing contaminated soils. The Inspectorate notes that NE (see Appendix 2 of this Opinion) considers the application site could be hydrologically connected to statutory designated sites. As information has not been provided within the	Statutory (and non-statutory) designated sites within and around the Order Limits have been identified, and the potential for hydrological changes or water quality impacts (including nutrient inputs) during construction. Operation and any future decommissioning form part of the assessment within the ES.

			Scoping Report to confirm the absence of a hydrological pathway for significant effects on statutory designated sites during construction and decommissioning, the Inspectorate is not in a position to scope out this matter for construction and decommissioning. The ES should assess any likely significant effects on statutory designated sites including those located over 2km from the site resulting from hydrological changes and water quality impacts, during construction and decommissioning. The assessment should include the potential for increased nutrient and other pollutant inputs	
3.6.3	Para 5.66 and Table 5.2	Statutory designated sites – mobile qualifying features (PINS)	Paragraph 5.66 of the Scoping Report proposes that designated sites within 10km of the site with associated qualifying bird assemblages are scoped out of the ES. However, Table 5.2 of the Scoping Report identifies this matter as scoped	Impacts on statutory designated sites (with mobile qualifying features) within 10km of the Order Limits have been scoped into the ES for detailed assessment. This includes an assessment of the potential for significant effects on functionally

			into the assessment meaning the Applicant's proposed approach is unclear. For the avoidance of doubt, the Inspectorate considers that this matter should be scoped into the ES. In particular the Inspectorate considers there is potential for significant effects as a result of hydrological changes and water quality impacts (see above) and habitat loss or disturbance of any qualifying features using the application site and surrounding area. The scope of the assessment should be sufficient to ensure that significant effects to habitats and features due to any functional link with statutory designated sites (including the Humber Estuary Special Protection Area (SPA)/ Ramsar/ Site of Special Scientific Interest (SSSI); Thorne and Hatfield Moors SPA; Thorne, Crowle and Goole Moors SSSI; and Hatfield Moor SSSI) are assessed.	linked land associated with such sites. A **Report to Inform Habitats Regulations Assessment [Document Reference 5.3 Revision 4]** is provided with the application in order to provide specific information in regard to internationally designated sites and their qualifying interests including the Humber Estuary SPA, SAC and Ramsar, Thorne and Hatfield Moors SPA, Hatfield Moors SAC and Thorne Moor SAC.

3.6.4	Para 5.67 and Table 5.2	Low sensitivity habitats (PINS)	The ES should explain how the classification of any habitat as 'low sensitivity' has been determined, with reference to baseline data, relevant guidance and professional judgement. The Applicant should make effort to agree its findings on sensitivity with the relevant local planning authorities and NE. Subject to this, the Inspectorate is content to scope this matter out.	This ES sets out the methodology adopted for the ecological assessment based on published ecological guidance such that issued by CIEEM which includes accepted approaches to the identification of habitats and appraisal of ecological value based on plant communities present, the species such habitats may support along with information on underlying environmental conditions and land management practices. Habitats and supporting survey information has been discussed with Natural England and the relevant LPA as part of the consultation process. Results of this are included within this ES Chapter.
3.6.5	Para 5.68 and Table 5.2	Invertebrates (PINS)	Table 5.1 of the Scoping Report describes the Hatfield Chase Ditches SSSI (within the site boundary) as supporting rare invertebrates. The Thorne, Crowle and Goole Moors SSSI (adjacent to the site)	Baseline data, has been gathered through a desk study. In addition, a habitat suitability assessment survey has been undertaken of the Order Limits with targeted scoping survey focused on habitat

			and Hatfield Moor SSSI (in close proximity) are also described as supporting a range of invertebrates. The Inspectorate considers that impacts from the Proposed Development, such as changes in water quality, could result in significant effects on invertebrates. Therefore, this matter cannot be scoped out of the ES. The ES should assess impacts to invertebrates which are likely to result in significant effects. The assessment should be based on sufficient baseline survey data.	within the Order Limits that are in close proximity to designated sites.
3.6.6	Paras 5.45 and 5.69 and Table 5.2	Reptiles (PINS)	The Scoping Report proposes to scope out specific surveys for reptiles (para 5.45) and a detailed assessment of impacts (para 5.69), stating that baseline surveys have not identified the site as being sufficiently important to lead to the potential for significant effects. However, Table 5.2 of the Scoping Report identifies reptiles as scoped into the assessment meaning the Applicant's proposed approach is unclear.	The ES addresses the potential for impacts on reptiles based on habitat survey and suitability appraisal and an understanding of the lifecycle requirements of reptile species. Detailed surveys for reptiles are not currently proposed as the Order Limits predominantly comprises managed agricultural/arable land, accepted as having limited suitability to support notable reptile populations. As habitat of higher value to reptile

			The Inspectorate is therefore not in a position to agree that these matters can be scoped out. The ES should assess potential impacts on reptiles, supported by robust baseline survey data, unless otherwise agreed with relevant consultation bodies.	species will be protected and retained as part of The Scheme it is reasonable to scope out the potential for significant adverse effects on local reptile populations and address the safeguarding of individuals potentially present, within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3].** This is set out in the ES.
3.6.7	Para 5.69 and Table 5.2	Other priority mammals (PINS)	Paragraph 5.69 of the Scoping Report proposes to scope out a detailed assessment of impacts on these species, stating that baseline surveys have not identified the site as being sufficiently important to lead to the potential for significant effects. The Inspectorate notes that the Applicant has not yet undertaken ecological surveys of the study area (with the exception of a Walkover Survey and bird surveys) and that the site may potentially support these species. Without	The ES addresses potential impacts on these species, supported by habitat and locality information and local records and professional understanding of the lifecycle and requirements of these species, which enables an informed judgement to be made. Detailed surveys are not considered likely to further inform the assessment process given the largely agricultural /arable habitats present and the embedded retention and protection of those habitats likely to support

			certainty on the extent and presence of these species, the Inspectorate does not agree that a detailed assessment of impacts on brown hare, polecat, harvest mouse and hedgehog can be scoped out. The ES should address potential impacts on these species, supported by robust baseline survey data, unless otherwise agreed with relevant consultation bodies.	such species which are detailed in the ES.
3.6.8	Para 5.71 and Table 5.2	Lighting (PINS)	In the absence of defined locations for principal development components and without certainty on the extent and presence of certain species (including SPA/ Ramsar bird qualifying features), the Inspectorate does not agree that this matter can be scoped out.	Lighting forms part of the ecological assessment in the ES, with reference to a variety of species which may be especially sensitive to changes in lighting. Given the limited degree that The Scheme requires lighting (the operational solar farm will for example not be lit). Impacts from, lighting will be addressed in the Mitigation Section of Chapter 7 of the ES, and are discussed in Section 7.15 of this chapter.

3.6.9	n/a	Sensitive information (PINS)	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.	Information relating to sensitive or vulnerable species (such as badger) is provided as a separate Confidential Appendices to this chapter. This approach will be maintained for the final ES. This can be evaluated by the Inspectorate but only made available to the wider public on a restricted basis.
3.6.10	Paras 5.5, 5.6 and 5.14	Bird surveys (PINS)	Breeding bird surveys were completed during April to July 2022. The Scoping Report states that whilst areas of the site boundary have been omitted from the breeding bird surveys	Non-breeding bird surveys have been completed over the 2022-23 and 2023-2024 survey seasons. In addition breeding bird surveys have been

			(due to the design evolution of the Proposed Development), the baseline data is considered sufficient "…to reliably inform an Ecological Assessment Process". The Scoping Report states that wintering bird surveys are being undertaken from "September 2022 to March 2023 [ongoing]". The Inspectorate notes advice from NE (Appendix 2 of this Opinion) that the passage/ wintering bird surveys should cover different tidal states and consideration should be given to surveys during poor weather/ visibility conditions. NE advise that surveys at dusk and dawn should also be considered, if geese and swans on site have the potential to use the application site or surrounding area. It does not appear that further breeding bird or passage/ wintering bird surveys are proposed to inform the ES. The ES should be based on sufficient baseline data to support a robust	completed in 2022 and 2023, with further surveys also undertaken in 2025 to ensure all habitats with the updated Order Limits have been subject to surveys. The 2025 survey data will be submitted post submission (in September 2025) and is unlikely to change the conclusions of this assessment due to the extensive survey coverage already completed. The raw survey data from the completed 2025 surveys has also been considered as part of this assessment. Surveys undertaken for the non-breeding birds have encompassed different tidal states and times of day. Further details regarding methodology and results can be found in **Appendix 7.3 Non Breeding Survey Report [AS-015]**.

			assessment of LSE as required by the EIA Regulations 2017. The Applicant should make effort to agree the approach to breeding bird surveys and passage/ wintering bird surveys with NE and to evidence this at the point of DCO application submission.	
3.6.11	Para 5.23	Invasive species (PINS)	The ES should assess the risks of spreading invasive species including Azolla, Himalayan Balsam, New Zealand pygmy weed and New Zealand moss during construction and operation of the Proposed Development. Any necessary eradication/ control measures should be detailed in the ES.	Surveys have identified the presence of invasive species and measures are included to ensure legislative compliance and any necessary measures to prevent the inadvertent spread or introduction of such species.
3.6.12	Paras 5.38 to 5.40	Water voles (PINS)	The use of detection dogs is noted but for the avoidance of doubt, the Inspectorate agrees with comments from the Environment Agency (Appendix 2 of this Opinion) that the assessment should include two water vole surveys at the recommended times of year. Effort should be made to agree the	Water vole surveys were undertaken in 2023 to inform the assessment in relation to potential impacts on water voles, with further detail provided within this Chapter. In addition, further surveys are being completed in 2025 to confirm the current status of this species in the Order Limits. The June 2025 surveys are

			survey assessment methodology with relevant consultation bodies including the Environment Agency.	complete and detailed in relevant sections of this Chapter, with the second period of surveys in Sept 2025 to be submitted post-submission. However, based on the extensive survey data recorded an accurate assessment of the baseline situation is considered to have been made. Further updated surveys will be completed prior to construction to confirm any mitigation required.
3.6.13	Great Crested Newt (GCN) eDNA survey extent	Great crested newt (PINS)	The Scoping Report states that ponds within 250m of the site will be surveyed for the presence of GCN. GCN can travel up to 500m from their breeding ponds. As such, the Inspectorate considers that ponds up to 500m from the site should be surveyed for the presence of GCN.	It is accepted practice to survey accessible ponds up to 250m from Order Limits boundaries, an approach which has been accepted on numerous other solar schemes. This approach is based on NE guidance (Natural England, 2014 **[REF. 7-17]**) and the nature of solar developments that retain habitat beneath and around the panels and do not restrict opportunities for dispersal, foraging or breeding when operational. Subsequently there is

				limited pathway for effects. If found to be present a District Level Licence will be sought from Natural England and survey data within 250m is sufficient to support this The scope for GCN surveys was agreed with North Lincolnshire and the City of Doncaster Councils and surveys have been updated in 2025 with detail provided within this ES.
3.6.14	Para 5.50	Winter bird mitigation (PINS)	Wintering bird mitigation areas are proposed. Details of the location, extent, implementation (including specific timings) and management of these mitigation areas should be provided in the ES, with reference to available evidence on the requirements of relevant species. Effort should be made to discuss and agree these details with NE and other relevant consultation bodies.	Information on the potential effects on wintering birds and any proposed mitigation measures is included within the ES and has been subject to consultation with NE, see **Appendix 7.9 Natural England Discretionary Advice Note – December 2024 and April 2025 [APP-084].**
3.6.15	Para 5.52	Directional drilling (PINS)	Appendix 2.1 of the Scoping Report identifies an indicative location for HDD beneath the	The potential impacts from HDD beneath the Canal is considered within this ES.

			Stainforth and Keadby Canal. Any impacts on aquatic environment and water resource receptors from mud toxicity and bentonite breakout during HDD works which are likely to result in significant effects should be assessed in the ES.	
3.6.16	n/a	Priority botanical species, ancient woodland and ancient and veteran trees (PINS)	The ES should explain whether any scarce or priority botanical species, ancient woodland, ancient and veteran trees could potentially be impacted by the Proposed Development. Any impacts on these features which are likely to result in significant effects should be assessed in the ES.	The potential for impacts on scarce or priority botanical species, ancient woodland, ancient and veteran trees is considered as part of the ES.
n/a	n/a	Invasive species (Canal & Rivers Trust)	Paragraph 5.23 highlights the presence of invasive species within the canal. We advise that the report should seek to assess whether there is any risk of this species being transferred elsewhere during development, which may be dependent on the works proposed alongside or on the water.	Surveys have identified the presence of invasive species and the ES includes measures to ensure legislative compliance and any necessary measures to prevent the inadvertent spread or introduction of such species. Further detail is included in the **Outline Landscape Ecological Management Plan [Document**

				Reference 7.6 Revision 3].
n/a	n/a	Directional drilling (Canal & Rivers Trust)	Directional drilling is proposed under the canal. We wish to highlight that directional drilling can still cause sediment discharges and problems arising from mud.	The potential impacts from directional drilling beneath the Canal is considered within the ES. However, it is not considered that these works would give rise to significant effects, as defined in the EIA Regulations (as set out in the methodology section of the ES). Measures to address general protection measures and non-significant effects do however form part of the mitigation section of the ES, including in the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3].**
n/a	n/a	Lighting (Canal & Rivers Trust)	We note that artificial lighting may be proposed on site, and that is proposed to not be scoped into the Environmental Report. We advise that temporary construction lighting, including upon the cable corridor routing, has the potential	Lighting forms part of the ecological assessment in the ES, with reference to a variety of species which may be especially sensitive to changes in lighting. Given the limited degree that the Scheme requires lighting (the operational solar

			to disturb wildlife, including along the canal…. As a result, we request that further justification may be required for not scoping this into the report, such as the agreement for additional lighting details to be provided prior to the commencement of construction works. The submission of a construction phase lighting plan with LUX values provided could offer an appropriate solution, and could potentially be provided post determination.	farm will for example not be lit), lighting will largely be addressed in the Mitigation Section of ecological assessment and the **Outline Construction Environmental Management Plan [Document Reference 7.1 Revision 3]**.
n/a	n/a	Hedgerows (City of Doncaster Council)	The cultural significance of the existing hedgerows should be recognised in the Environmental Statement along with details of their structural condition and species composition as part of the of hedgerow/arboricultural survey data in accordance with BS5837 (2012) which will also need to identify individual or groups of trees and woodlands. These features, along with the hedgerows would, in principle, be	Hedgerows are recognised as important ecological and cultural features, and the design of the Scheme retains and protects the hedgerow network across the Order Limits (existing field entrances will be utilised with the possibility of some minor breaches for access only). Habitat survey and the landscape appraisal provided within the ES Chapter 6 Landscape and Visual Mitigation [Document Reference 6.2.6] provides

			expected to be retained and enhanced with increased connectivity as part of this scheme	information on existing trees, woodland and hedgerows. The ES Environmental Aspect Chapters will provide information on proposals for new habitat creation and planting to strengthen and connect these features, and where necessary, address replacement planting for any unavoidable small-scale removal.
n/a	n/a	Water (City of Doncaster Council)	Assess potential impacts on flows (volume and pathways) and potential for temporary or permanent changes, particularly those that might result in the lowering of the water table. Mapping of surface water requirements for all habitat types within the study area. -Assess the potential for standing water and impacts of drainage of standing water. -Groundwater studies to identify if surface activities will affect discharge into ground water resources.	The ES addresses hydrology and water quality matters in the relevant ES Environmental Aspect Chapters, along with consideration of the potential changes to land management and the potential for effects on receiving surface waters. Sheep grazing is an option, but may not be undertaken, with alternative management such as mowing potentially being completed instead.

			-An assessment/review of the potential for nutrient enrichment of surface and ground waters associated with the planned sheep grazing.	
n/a	n/a	Mire species, peat, nightjar and bats (City of Doncaster Council)	Landscape appraisal linking in with flora and fauna i.e. presence of mire species in relation to pockets of peat soils, landscape features and nightjar and bat foraging/commuting.	Habitat surveys have confirmed that the Order Limits are predominantly agricultural land under arable/non arable cropping. Habitat survey in 2022 and 2024 found there are no remnant areas of moorland or mire communities within the Order Limits.. The ES provides information on the potential for effects on protected species including nightjar and bats as well as habitats and peat soils.
n/a	n/a	Habitat mapping (City of Doncaster Council)	Site and beyond habitat mapping. Identification through habitat mapping of sensitive sites that have supporting roles in the maintenance of qualifying features on protected sites. An appraisal of trends of regeneration and habitat development.	The ES includes the findings of habitat and species surveys which inform the assessment of potential effects.

n/a	n/a	Mire & aquatic flora (City of Doncaster Council)	Identification of specific requirements of specialist mire and aquatic flora. Review of literature and papers concerned with regeneration of these species that are extremely specialised in their requirements and potential for these to be disturbed	Habitat surveys have confirmed that the Order Limits are predominantly agricultural land under arable/non arable cropping. Habitat surveys in 2022 and 2025 found there are no remnant areas of moorland or mire communities within the Order Limits. The ES addresses the potential for effects on protected and notable species, in particular those associated with nearby designated sites.
n/a	n/a	Faunal surveys (City of Doncaster Council)	Faunal surveys to include key species, their interaction with the habitats of the area and potential impacts associated with construction and operational phases.	A range of species and habitat surveys have been completed, with detail on associated potential impacts from construction and operational phases included. .
n/a	n/a	Birds (City of Doncaster Council)	Birds: Overwintering surveys with an extension of at least 0.5km beyond site boundary. Details of qualifying and nonqualifying avian species of significance populations and survey information on potential	Breeding and non-breeding bird surveys have been completed and the results are included as part of the ES. Updated breeding bird surveys in 2025 are also being undertaken to include additional land that was not originally

			impacts on these species. -Breeding bird surveys will be required. -Review of recorded nightjar foraging distribution/activity and survey for existing and potential habitat features outside of protected sites.	included within the Order Limit boundaries. The 2025 survey data will be submitted post submission (in September 2025) and is unlikely to change the conclusions of this assessment due to the extensive survey coverage already completed.
n/a	n/a	Aquatic fauna (City of Doncaster Council)	Aquatic fauna: Usual survey methods to provide a detailed overview of presence and potential for impacts particularly during construction phase. Otter, water vole surveys are required and also potential of adverse impacts of mink.	Aquatic fauna are recognised ecological receptors associated with the network of drains, ditches and ponds present within the Order Limits and across adjacent land. This chapter includes consideration of the likely presence of and potential for impacts upon protected species such as water vole and otter.
n/a	n/a	Scope of assessment (East Riding of Yorkshire Council)	East Riding of Yorkshire Council is happy with the scope of the assessment and has no further comments to make at this stage.	No response required.
n/a	n/a	Protected sites	We note the Thorne Moors SAC/SPA/SSSI to the north of the site, the local wildlife site of	No response required.

		(Environment Agency)	Stainforth and Keadby Canal Corridor and the surface watercourses including main rivers on the site. In general we agree with the proposed approach and the biodiversity aspects scoped in.	
n/a	n/a	Water vole surveys and BNG (Environment Agency)	Water vole surveys: The assessment should follow best practice guidelines and include two surveys at the recommended times of year. • Biodiversity net gain (BNG): Section 5.74 (of the Scoping Report) states that the EIA will seek to demonstrate 10% net gain. Whilst we acknowledge that it is not yet a mandatory requirement, we would encourage the project to make a commitment to delivering 10% as a minimum, given its scale. • There may be opportunities for BNG and wider environmental gain in relation to controlled waters.	Water vole surveys were completed across the site in 2023 and then updated surveys completed in June 2025 targeting ditches proposed to be impacted **Appendix 7.6 Confidential Report - Otter and Water Vole Survey Report*)* [APP-077].** Although not a mandatory requirement, the ES includes demonstrable BNG as part of the ecological and landscape enhancements proposed within the design, with further detail provided within **Appendix 7.12 Biodiversity Net Gain Assessment [APP-072]**.
n/a	n/a	Multiple (Natural England)	As part of the general guidance provided in it's response, NE refers to Regulation 11 of the	The ES provides information as set out in the EIA Regulations, and assess the potential for

			Infrastructure Planning Regulations 2017 as follows: (The EIA Regulations) sets out the information that should be included in an Environmental Statement (ES) to assess impacts on the natural environment. And also to the requirement for consideration of the potential for cumulative effects including a full consideration of the implications of the whole scheme should be included in the ES. All supporting infrastructure should be included within the assessment. The assessment will need to include potential impacts of the proposal upon sites and features of nature conservation interest as well as opportunities for nature recovery through biodiversity net gain (BNG). The general guidance also refers to Technical Information Note which provides a summary of advice about their siting, their potential impacts and mitigation requirements for the safeguarding of the	cumulative effects, effects in relation to designated sites of nature conservation interest and protected species along with mitigation and protection measures as necessary. The ES also demonstrates BNG as part of proposed enhancements. An '**Report to Inform a Habitats Regulations Assessment'**

			natural environment. Solar parks: maximising environmental benefits (TIN101). NE further states: The ES should thoroughly assess the potential for the proposal to affect internationally designated sites of nature conservation importance / European sites, including marine sites where relevant. This includes Special Protection Areas (SPA), Special Areas of Conservation (SAC), listed Ramsar sites, candidate SAC and proposed SPA. 4.3 Article 6 (3) of the Habitats Directive requires an appropriate assessment where a plan or project is likely to have a significant effect upon a European Site, either individually or in combination with other plans or projects.	**[Document Reference 5.3 Revision 4]** report in relation to internationally protected sites and associated qualifying features is submitted as a standalone document alongside this ES.
n/a	n/a	International designated sites (Natural England)	NE provides detailed comments regarding potential risks to international designated sites and matters for consideration within the	The ES considers such features as set out in NE's response.

			Habitats Regulations Assessment (HRA) report in Table 1 of its response including in relation to functionally linked land, use by mobile qualifying species (birds), hydrological connectivity, potential for surface water and water quality impacts, dust and air quality impacts and lighting impacts (- **ES Appendix 1.1- Planning Inspectorate EIA Scoping Opinion [Document Reference 6.3.1.1]**)	
n/a	n/a	Review paper- solar farms (Natural England)	Natural England has produced a review paper which includes information on the impacts of solar farms on birds, we recommend that this is considered when undertaking the assessment (Natural England, 2017 **[REF. 7-18]**).	This review paper has been considered when undertaking the assessment
n/a	n/a	Hatfield Chase Ditches SSSI (Natural England)	Table 1 also addresses Nationally Designated Sites including Natural England notes paragraph 5.18 of the Tween Bridge Solar Farm Scoping Report (dated January 2023) that Hatfield	The potential for effects on designated sites, including Hatfield Chase Ditches SSSI, forms part of the assessment included in this ES. .

			Chase Ditches SSSI is within the application site. Therefore, potential impact pathways need to be assessed such as direct habitat loss, water quality, water supply, air quality and disturbance	
n/a	n/a	SSSI impacts (Natural England)	Our advice regarding the potential impact pathways upon the other SSSIs listed above broadly coincides with those set out in Table 1 above for their corresponding European sites. However, we highlight that Thorne, Crowle & Goole Moors SSSI and Hatfield Moor SSSI are designated for additional features including assemblages of breeding birds (mixed: lowland damp grassland, lowland heath, scrub, woodland) and invertebrate assemblage. Therefore, potential impacts on these features should also be considered in the relevant assessment. The Environmental Statement should include a full assessment of the direct and indirect effects of the development on the	The potential for direct and indirect effects on designated sites and their qualifying features a**re** addressed in the ES, along with avoidance, protection and mitigation measures as appropriate.

			features of special interest within the SSSI and identify appropriate mitigation measures to avoid, minimise or reduce any adverse significant effects.	
n/a	n/a	Protected species (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). 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 assessment of potential impacts on protected species is included in this ES and is informed by a range of habitat and protected species surveys and baseline data from Local Biological Records Centres, supported by professional judgement and ecological literature on the lifecycles/habitat requirements, population distributions and sensitivities of such species.
n/a	n/a	Methodologies (Natural England)	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	A range of species and habitat surveys have been completed and are included in this ES. Surveys are undertaken by suitably experienced professional ecologists in line with standard

			appropriate accompanying mitigation strategies included as part of the ES.	survey methods, or else otherwise agreed.
n/a	n/a	Great crested newts (Natural England)	We note in the Scoping report that further surveys for great crested newts (GCN) have been suggested, we advise that you may wish to consider district level licensing.	Surveys of ponds for the potential presence of GCN has been undertaken in 2023 and 2025. The findings have been used to inform appropriate protection and mitigation measures. It can be confirmed that a District Level Licensing approach will be considered if necessary.
n/a	n/a	Priority habitats (Natural England)	An appropriate level habitat survey should be carried out on the site, to identify any important habitats present. In addition, ornithological, botanical, and invertebrate surveys should be carried out at appropriate times in the year, to establish whether any scarce or priority species are present	Habitat and ornithological surveys along with other species surveys are underway or complete, and have been used to inform the assessment within the ES.
n/a	n/a	Ancient woodland, ancient and veteran trees (Natural England)	Ancient woodland, ancient and veteran trees: The ES should assess the impacts of the proposal on any ancient and veteran trees, and the scope to avoid and	The potential for impacts on scarce or priority botanical species, ancient woodland, ancient and veteran trees are considered as part of this ES. Opportunities for

			mitigate for adverse impacts. It should also consider opportunities for enhancement	enhancement are addressed as part of the proposed BNG approach.
n/a	n/a	Biodiversity Net Gain (Natural England)	Natural England notes and supports the applicant's aspiration to deliver 10% Biodiversity Net Gain measured utilising the Biodiversity Metric 3.1 stated within the scoping report. However, given the scale of the project and a history of successful delivery of BNG for solar projects. Natural England encourages the applicant to commit to delivery of 10%. Natural England recognises the high opportunity for the development to deliver Biodiversity Net Gain (BNG) on-site. In addition, the applicant should be aware of forthcoming guidance and legislation in relation to the Environment Act 2021, which may be released in the interim prior to submission of the DCO application	Although not a mandatory requirement, the ES includes demonstrable BNG as part of the ecological and landscape enhancements proposed within the design with detail in **BNG Assessment Technical Appendix 7.12 Biodiversity Net Gain Assessment [APP-082]** and the **Outline Landscape Ecological Management Plan [Document Reference 7..6 Revision 3]**. The Statutory Biodiversity Metric has been used to assess impacts/uplifts on habitat units, linear units and watercourse units.
n/a	n/a	Air Quality (Natural England)	Natural England welcomes that paragraph 12.43 of the Tween Bridge Solar Farm Scoping Report (dated	Further information relating to this is included within the ES Chapter and within a

			January 2023) states that air quality impacts from increased vehicle emissions, dust and Non-Road Mobile Machinery (NRMM) during the construction phase and vehicle emissions during the operation stage will be considered in the HRA. Natural England therefore advises that ammonia sourced from traffic emissions should be included for assessment within the HRA.	**Report to inform Habitats Regulations Assessment [Document Reference 5.3 Revision 4]**
n/a	n/a	Climate change (Natural England)	Climate Change: The England Biodiversity Strategy published by Defra establishes principles for the consideration of biodiversity and the effects of climate change. The ES should reflect these principles and identify how the development's effects on the natural environment will be influenced by climate change, and how ecological networks will be maintained. The NPPF requires that the planning system should contribute to the enhancement of the	Enhancements as part of the BNG/landscape mitigation will be delivered as part of The Scheme and be maintained over the lifetime of the project (at least 40 years). There will be the commitment to long-term measurable benefits that will contribute to enhancement of the natural environment and resilient ecological networks.

			natural environment 'by establishing coherent ecological networks that are more resilient to current and future pressures' (NPPF Para 174), which should be demonstrated through the ES	

7.2.2. Following the scoping process consultation was undertaken with detail provided below.

7.2.3. A meeting was carried out on the 13 July 2023 between Doncaster Council Local Planning Authority (LPA) and Avian Ecology Ltd. A summary of scoping and consultation responses received to date are provided in **Tables 7-1 and 7-2,** along with information on how these are being addressed by the Applicant in relation to Ecology and Nature Conservation.

7.2.4. A request to consult with Natural England through their Discretionary Advice Service (DAS) was submitted on the 11 July 2023 and a response was received on 6 September 2023. The note to accompany this request can be seen in **Appendix 7.8 [APP-07]**. An Additional DAS response from NE was received in January 2025 and seen in **Appendix 7.9 [APP-084]**.

7.2.5. Meetings were held on the 12 of February 2024 and 14 February 2024 between Tyler Grange and Andrew Taylor (Ecology Officer at North Lincolnshire Council) and Martin Nowacki (Ecology Officer at Doncaster Council) respectively. These meetings were held to consult on the proposed scope of survey work to inform the Environmental Statement as well as details on the design and mitigation required.

7.2.6. A summary of consultation responses received to date is provided in **Table 7-2 Summary of Consultation** along with information on how these are being addressed by the Applicant in relation to Ecology and Nature Conservation.

Table 7-Error! No text of specified style in document.**1: Summary of Consultation**

Consultee	Summary Of Consultee Response	How Response Has Been Addressed By Applicant
City of Doncaster Council	**Nightjars** Lighting within solar farm will need to be addressed within the CEMP. Assessment should look at research relating to solar farms and nightjars. In addition, research has been done on the populations of nightjar on Thorne and Hatfield Moors which looks at the usage of the Order Limits and the wider area by the species and this should be utilised in the assessment.	An assessment on the likely significant effects on nightjar has been undertaken. This utilises data gathered as part of wind farm monitoring (**Appendix 7.4 [APP-075]**) as well as from Natural England, where available, and data gathered through a literature based review. This assessment is included within the ES Chapter in section 7.5. This will look at potential impact pathways including lighting and noise.
City of Doncaster Council	**Invertebrates** Is there an impact on invertebrates with the reflective nature of the panels and perception that its water. They raised concerns with the Scheme being so large and presence of aquatic invertebrates.	An assessment on the likely significant effect on invertebrates is included within the ES Chapter in section 7.5.
City of Doncaster Council	**Water quality** Will monitoring of the water quality be undertaken as part of the Scheme	Further details of this will be provided in the ES Chapter.
City of Doncaster Council	**Best and most versatile land**	**Appendix 15.1 ALC Report [APP-120]** is submitted with the application detailing 44.3% of

	Is there any best and most versatile land within the Order Limits	the Order Limits BMV land, the remaining 55.7% is non-BMV land. Full details of the ALC survey is provided in **ES Chapter 15 Agriculture Circumstances [APP-052]** as well as the ES Chapter.
City of Doncaster Council	**Skylarks** Raised concerns of the likely significant effects on this species. As part of a mitigation strategy, they would be looking for evidence of skylark plot implementation and benefits to skylark through this. Also, evidence of implementation of a mitigation strategy for perpetuity.	An assessment on the likely significant effect on ground nesting species including skylark is included within the ES. Points raised are also be addressed within a mitigation strategy as mentioned within this ES Chapter.
City of Doncaster Council	**Mammal connectivity** How will connectivity be maintained for small mammals in the Order Limits and in the wider area.	Mammal gates will be adopted and these will be micro sited along corridors and mammal pathways, with detail in this ES.
City of Doncaster Council	**Other priority mammals** Deer have a part to play within the ecological network and are present in the area.	It is understood that roe deer are a Local Biodiversity Action Plan (LBAP) species, and these are considered within the assessment on the likely significant effect on other priority mammals within this ES Chapter.
City of Doncaster Council	**Hibernacula** Will hibernacula be installed to provide additional habitat provision for amphibians and reptiles	These are detailed within the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** and this ES Chapter.

City of Doncaster Council	**Peat & carbon sequestration** Will an assessment be undertaken on peat soils and also the impact of The Scheme on carbon sequestration.	Further details of this will be provided in the ES Chapter including **ES Chapter 9 Ground Conditions [APP-046].**
City of Doncaster Council	Importance of open areas for wintering birds. Council stressed the importance of open arable.	An assessment on the likely significant effect on non-breeding birds was included within this PEIR, and within the Non-Breeding Bird Mitigation strategy included in **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019],** which was also informed by NE's DAS response. This information has been updated within this ES and an updated version of the Non-Breeding Bird Mitigation strategy.
City of Doncaster Council	**Habitat enhancements** There is an opportunity for landscape scale habitat creation.	The Applicant agrees that the Scheme presents an excellent opportunity to deliver habitat creation. A landscape strategy will be produced which will contribute to a minimum of 10% Biodiversity Net Gain (BNG) and will benefit a range of species, both within the Order Limits and wider area.
Natural England (Discretionary Advice 6th September 2023)	**Non-breeding bird surveys** Requested additional surveys 2022 – 2023 to determine potential for impacts on the Humber	Additional surveys commenced September 2023 and were completed in March 2024. These surveys included VP surveys and increased nocturnal surveys.

	Estuary Special Protection Area (SPA). NE state that surveys should include Vantage Point (VP) surveys and increased nocturnal surveys to that completed in Year 1 .	
Natural England (Discretionary Advice 6th September 2023)	**Nightjar** NE requested that the assessment considers the potential for impacts on foraging nightjars during the construction and operational phases of the Scheme.	An assessment on the likely significant effects on nightjars is included within this ES.
North Lincolnshire Council (Virtual meeting 12th February 2024)	**Non-breeding bird surveys** Discussions had regarding the use of the 'Bird Days' method of calculating quantum of compensatory habitat for loss of land used by qualifying species of Humber Estuary SPA. Andrew Taylor confirmed that this method has been used elsewhere – notably the 'South Humber Gateway', but also noted that the method has its limitations as it does not reflect how birds may be using a site, despite giving an overall 'area'.	The use of the 'Bird Days' calculation has been utilised to help inform the extent of mitigation to be provided, although consideration has been had to how birds may be using the site in line with the North Lincolnshire Council's comments.
North Lincolnshire Council (Virtual	**Breeding bird surveys**	The updated PEIR discussed the proposed mitigation strategy,

meeting 12th February 2024)	The results of the existing breeding bird surveys were discussed, and mitigation options also explored. Acknowledgement was agreed between all parties that research into the use of solar farms by ground-nesting species such as skylark is contradictory. Discussions were also had regarding the scope and length of commitment of off-site skylark plots in adjacent land.	taking account of the land proposed purely for bird mitigation, and an indication of the format of the agreement regarding off-site skylark plots. Surveys have been undertaken in 2025 to cover areas which were not previously subject to survey given changes to the Order Limits since the working draft PEIR chapter and non-statutory consultation. Further detail on breeding birds is provided in this ES.
North Lincolnshire Council (Virtual meeting 12th February 2024)	**Water vole / Otter** Both parties acknowledged the need for proportionality regarding survey effort given the extensive length of ditch network, and limited impacts on such. Andrew Taylor also specified that any mitigation/enhancement measures would need to be cognisant of mink control.	The formal PEIR discussed the survey approach for the 'updated' Order Limits, and repeat surveys on the watercourses which had already been subject to surveys. This has been updated where relevant in this ES. Embedded mitigation within the scheme accounts for a stand-off of 9m from all Internal Drainage Board (IDB) watercourses, and a 5-8m stand off from all other non-IDB ditches.
North Lincolnshire Council (Virtual meeting 12th February 2024)	**Bats** Tyler Grange proposed a targeted survey scope to assess impacts on foraging/commuting bats	Bat transect surveys, comprising 'Night-time Bat Walkovers' are being completed across the Order Limits in 2025, targeting representative habitat types. Data collected from

	across the Order Limits, the scope of which is discussed within this PEIR. Andrew Taylor made specific emphasis on the coverage of the canal corridor within the survey scope.	these surveys is included in Appendix 7.13 Bat Survey Results Spring and Summer 2025.
North Lincolnshire Council (Virtual meeting 12th February 2024)	**Great crested newt (GCN)** All parties acknowledged that eDNA surveys, as already completed, are an acceptable method of establishing GCN presence/likely absence. Andrew Taylor's previous comments regarding the 'unexpected results' (all negative eDNA) were noted, and a bespoke approach to re-survey was proposed and detailed within this ES Chapter	The previous results from surveys in 2023 were all negative and are considered to provide an accurate baseline assessment. Nonetheless, as part of best practice, these surveys have been updated in 2025 to inform this assessment,. These surveys will be updated again prior to construction to ensure that any necessary mitigation is implemented in full to maintain this species at a favourable conservation status.
City of Doncaster Council (Virtual meeting 14th February 2024)	**General** No additional topics which weren't raised by Andrew Taylor / North Lincolnshire Council were discussed.	N/A

Table 7-Error! No text of specified style in document.**1: Statutory consultation for formal consultation including the formal PEIR Chapter**

Consultee	Summary Of Consultee Response / Discussion	How Response Has Been Addressed By Applicant
Natural England DAS (20th December 2024 date)	**Non-breeding bird mitigation strategy** Change in Order Limits Boundary will need assessing, along with proposed cable route. Habitat types and carrying capacity of proposed mitigation areas requires further detail informed by non-breeding bird survey data from Year 2 (2023/24). NE welcomes the proposed approach to grassland creation for waders (lapwing and golden plover) and that locations proposed for mitigation have, where possible, aligned with locations of relevant species. NE acknowledged that both waders and geese can be accommodated in same land as they do not compete for food, although management to maximise the food for one group might impact the	Changes in the Order Limits have been fully assessed as part of this ES. The cable route is not part of this application and will be assessed as part of a separate application. Mitigation strategy for non-breeding birds has been updated to increase the carrying capacity and to have full consideration of lapwing, golden plover, pink-footed geese and greylag geese. Further assessment of carrying capacity has been undertaken, arable provision has been included and an arable management plan produced and included in the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** following the principles set out by NE. 150m buffers to core mitigation areas have been mapped and fully considered as part of the mitigation design. Mitigation design has also incorporated the

	other. As such, mitigation areas need to be larger than required for either one group (but not adding the two area requirements together as the two groups are not in competition and are being accommodated on the same land) so suitable habitat types for each species can be provided. The inclusion of scrapes and muddy areas would be of benefit to waders. NE advised that consideration is given to the foraging preferences of pink-footed geese, which are more likely to feed on arable with high levels of carbohydrates than grassland, particularly early in winter, and preferentially feed on sugar beet tops, then winter cereal crops, oil seed rape or post-harvest cereal stubbles. Arable rotation would need to be managed with consideration of the SPA species need. Factors to consider include: • A suitable cropping regime, such as sugar beet tops, oil seed rape, winter	recommendations regarding management of land in proximity to Thorne and Hatfield Moors SPA and Thorne Moor SAC see **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019].** Full consideration of nightjars and previous survey data has been incorporated into the overall mitigation design. All the above detail is provided in a non-breeding bird Mitigation Strategy, which is also included as part of the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** and the **Report to Inform Habitat Regulations Assessment [Document Reference 5.3 Revision 4].**Landscape Ecological Management Plan

	cereal crops and post-harvest cereal stubbles for geese. • The avoidance of deep ploughing. • The addition of manure subject to a reasonable agricultural cycle. • The incorporation of a ley crop within the management rotation. • The inclusion of permanent grass margins to the fields. Connectivity of mitigation areas is important. For the provision of grassland, one or two larger areas is generally preferable to a fragmented design. Consideration given to whether proposed fields would adequately function in context of surrounding proposed solar infrastructure. Golden plover and lapwing rely on open vistas to forage and NE generally advises that an undeveloped / undisturbed 150m buffer around core mitigation areas is secured. If solar panels are proposed in the 150m buffer area,	

	evidence needed to determine whether the siting of panels will affect the usage of core mitigation areas by birds. Management and monitoring - all mitigation areas should be adequately managed, monitored and secured in-perpetuity, at least for the lifetime of the development. NE advise that it should be clarified which management approach/es will be secured and how these will effectively deliver the required outcomes. In addition, NE advised that an ecological mitigation plan should be secured. Other advice - Parcel 1 – Continued engagement recommended regarding design and management of Parcel 1 to provide suitable mitigation for Humber Estuary SPA/Ramsar/SSSI wading birds, alongside water management improvements for Thorne & Hatfield Moors SPA/Thorne Moor SAC/SSSI.	

	They recommend that a wet grassland scheme with ditch raising and water level management would be most suitable mitigation approach, also encourage suitable removal of tree cover at the edge of moors to improve suitability for wading birds. NE encourage suitable management of the Thorne Moor SAC fringe areas immediately to the north and the south of Parcel 1. Nightjar - an update of potential impacts to nightjar associated with Thorne and Hatfield Moors SPA is required. Previous monitoring showed tagged nightjars foraged within the proposed application site boundary and recorded nesting in proximity to the site boundary. Full response is shown in **Technical Appendix 7.9 Natural England Discretionary Advice Note - December 2024 [APP-084]**	

NE Meeting 13.01.25	Meeting to discuss the Natural England DAS response.	
City of Doncaster Council - Martin Nowacki - Senior Ecologist Planner – Meeting 12.03.2025	Meeting with Martin Nowacki at Doncaster Council to provide an update on the survey approach, scheme design, mitigation approach. DC welcome the approach to update surveys for GCN, water vole and bats	Updated surveys are being completed in 2025 , full detail to be provided in the ES and a meeting to be arranged with DC and also North Lincolnshire to ensure a combined and consistent approach with the two relevant local authorities.
Meeting with City of Doncaster Council - Martin Nowacki –and North Lincolnshire Council – Andrew Taylor – Natural Environment Policy Specialist - 10.04.25	Following the meeting with DC, a more detailed discussion on survey scope, methodology and scheme design was held with both local authorities, due to the scheme extending into both authority areas.	The survey scope with regards to water vole, GCN and bats was confirmed and has been implemented, along with design recommendations
Natural England – Consultation response to PEIR Chapter. May 2025.	Provided detailed comments including on the following: Construction phasing, Draft Order Limits within designated sites, Air quality, Water quality and resources, In-combination assessment. mitigation measures during construction and operation, Construction and operational management/mitigation plans, Buffers, Humber Estuary SPA/Ramsar, Loss of functionally linked land,	Additional detail has been provided within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** and **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** and this ES Chapter, to address the comments, as well as the non-breeding bird mitigation strategy. Further detail is also provided with regards to mitigation to prevent impacts to SSSIs. A BNG assessment has been completed demonstrating

	Noise and visual disturbance to SPA birds using functionally linked land, Thorne and Hatfield Moors SPA – impacts to nightjar, Detail that consideration is needed to all SSSIs in proximity to the Order Limits, state that although BNG is not a mandatory requirement for NSIPs, they strongly recommend that BNG provision is secured through this development, confirm the proposals for grassland under panels is acceptable and recommended pollinator species are used, welcome proposal to retain ponds and linear features.	large measurable gains in biodiversity.
Thorne & Hatfield Moors Conservation Forum – Consultation response to PEIR Chapter. May 2025.	Provided detailed comments regarding to potential impacts to Thorne and Hatifeld Moors designated site and the habitats and species that it supports, including invertebrates and birds.	Additional detail has been provided within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** and **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** and this ES Chapter.
Canal & River Trust – Consultation response to PEIR Chapter. May 2025.	Confirmed that the revised PEIR responded to the majority of their previous comments. State that they appreciate that lighting will be temporary during	Additional detail has been provided within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** and **Outline Landscape Ecological Management Plan [Document**

	construction and have no significant issue with the proposal to control lighting impacts via the CEMP. State they appreciate final species as part of mitigation may not be finalised and that details could be reserved as a requirement in the final Development Consent Order text.	**Reference 7.6 Revision 3]** and this ES Chapter.
North Lincolnshire Council - Consultation response to PEIR Chapter. May 2025.	Combining landscape mitigation with ecological measures would be beneficial to ensure suitability and connectivity across the site landscape and the wider area. The Stage 1 Habitats Regulations Assessment Screening Report will be submitted alongside the ES. Welcome the mitigation measures and features detailed in the Outline eCMP and Outline Landscape Ecological Management Plan, as appropriate for the setting, as well as the continued monitoring of the sites with remedial measures considered. BNG measures	Detail provided within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3], Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3], Appendix 7.12 Biodiversity Net Gain Assessment [APP-082] Report to Inform Habitats Regulations Assessment [Document Reference 5.3 Revision 4]**

	appropriate for the local landscape and do not degrade the Isle of Axholme setting	
Meeting with City of Doncaster Ecologist and North Lincolnshire Ecologist with Tyler Grange **– 15.07.25**	Meeting to discuss the timetable of the submission, the updated survey work undertaken in 2025 and the fact that the results form some of these surveys will be submitted as addendum reports, including bats, breeding birds of additional land, the second water vole surveys and bat surveys. Also discussed BNG proposals and potential offsite skylark mitigation options.	Additional detail has been provided on updated 2025 surveys where the data is available. Further detail on BNG is provided within the associated BNG report and metric. Skylark are to be mitigated onsite, but the potential option of offsite land is acknowledged.

7.3. Assessment Approach

Methodology

7.3.1. Two options in the design layout are considered, Option 1 for a fixed and tracker design (see **ES Figure 2.2b– Indicative Operational Layout (Fixed and Tracker Solar Panel) [APP-135]**) and Option 2 for a fixed design (see **ES Figure 2.2a – Indicative Operational Layout (Fixed Solar Panel) [APP-134]**) with further details set out in **ES Chapter 2 Scheme Description [APP-039].** However, the parameters of the Scheme are, in the main, the same with only minor differences. As such the 'Assessment of Likely Effects' and 'Residual Effects' assess both design options as there is no significant difference. In addition, there is optionality regarding how grassland will be managed under the solar arrays, with sheep grazing and mowing both potential options. As such, consideration for both management methodologies is included.

7.3.2. The Environmental Statement assumes that construction of the Scheme is built out over up to a 54 month-period (2028- 2032) in either a single phased approach (development of Land Parcels completed one after another with the potential for breaks between development of Land Parcels) or through multiple phases (development of Land Parcels concurrently). For the multiple phase construction option, no more than two land parcels (within land parcels A-E) would be built out at the same time. ES Environmental Aspect Chapters determine in the methodology 'Assessment Approach' section which of the two options for the construction phasing approach would give rise to the 'worst-case scenario' for the purpose of their assessment. The current connection date for the Scheme, within the NESO Connection Agreement is 2029. As with all electricity generation projects, this date is under review by NESO as part of the ongoing connections reform process.

7.3.3. If the NESO Connection Agreement remains with the connection date of 2029, it would be possible to operate a phased start to operational generation. This phased approach would connect each Land Parcel to the RWE on-site 400kV substation when construction of that Land Parcel was completed. In this operational scenario there would be partial Scheme operation from 2029-2032 (3 years). From 2032 onwards the full Scheme would be generating at full operational capacity. The full Scheme would operate for 40 years until 2072. If the NESO Grid Connection date varies, which is not within the Applicants direct control, the timeframe where there could be partial operation of the Scheme could reduce or fail to materialise. In this situation the full operational Scheme would operate for 40 years from its new grid connection date. In either connection scenario there will be full operational generation for 40 years, which would be the worst-case scenario operational time period for the Scheme.

7.3.4. Following 40 years of a fully operational Scheme, it is proposed that the Scheme will be decommissioned. This decommissioning with take approximately 24 months and will be in a phased approach.

7.3.5. The final construction programme will depend on the detailed layout, design and potential environmental constraints on the timing of construction activities. An indicative overview of the final construction programme will be set out in the Construction Environmental Management Plan(s) for information.

7.3.6. The proposed mitigation will also be delivered in phases and linked to the built out of each land parcel.

7.3.7. The potential impacts for the different phase approach is considered to be the same. If the Scheme is to be built in a single phase, it will still be undertaken one

Land Parcel at a time, with potential breaks between development of Land Parcels. Therefore, potential impacts are considered to be the same as if a multiple phase approach is undertaken. The worst-case scenario for impacts has been assessed within this chapter, which as detailed is considered to be the same for either phased approach.

7.3.8. The assessment presented within this chapter has been undertaken with reference to applicable wildlife and countryside legislation, national and local planning policy and the Chartered Institute of Ecology and Environmental Management (CIEEM) (2024) guidance [**Ref. 7-1**] (hereafter 'the CIEEM guidelines'). The assessment methodology also reflects the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (the 'EIA Regulations') and focuses on those activities that could potentially generate significant effects on ecological and ornithological features.

7.3.9. Ecological Impact Assessment (EcIA) is defined within the CIEEM guidelines as

'…a process of identifying, quantifying and evaluating the potential effects of development-related or other proposed actions on habitats, species and ecosystems'.

7.3.10. The assessment presented within this chapter and associated technical appendices therefore includes:

- A description of baseline ecological and ornithological conditions;
- An evaluation of identified important ecological and ornithological features;
- A description and evaluation of the potential effects of the Scheme;
- Mitigation measures implemented to address any identified significant adverse effects;
- An assessment of cumulative effects;
- Identification of any residual effects after mitigation; and,
- Identification of opportunities for biodiversity enhancement.

7.3.11. For the purpose of the assessment, the terms 'impacts' and 'effects' are referred to in accordance with the definitions set out in CIEEM guidance as follows:

- **Impact**: Actions resulting in changes to an ecological feature, for example, removing a hedgerow; and

- **Effect**: Outcome to an ecological feature from an impact, for example, the changes experienced by the local population of a species arising from the loss of the hedgerow.

Assessment of Significance

7.3.12. The EIA Regulations require the ES to include information that *'is reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of the development (and of any associated development)* (Regulation 12(2)(b)).

7.3.13. To determine the overall significance of each ecological effect, judgements on the sensitivity of the receptor(s) and the magnitude of impact from The Scheme are considered together in order to determine whether or not an effect is likely to be significant. This involves a combination of quantitative and qualitative assessment and the application of professional judgement.

7.3.14. For the purposes of the ES, effects will be categorised as 'significant' or 'not significant', in line with the EIA Regulations. The assessment considers effects at different geographic scales i.e. where effects may be discernible at a local scale but are not considered significant in the context of the EIA Regulations. For the purpose of the assessment, moderate and major effects are deemed to be 'significant' in EIA terms unless stated otherwise.

7.3.15. A 'significant effect' is considered to be one that either supports or undermines biodiversity conservation objectives for 'important ecological features', or for biodiversity in general.

7.3.16. The CIEEM guidelines on ecological impact assessment note that:

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

7.3.17. For ease of reference, **Table 7-4** sets out the adapted CIEEM terminology, which also shows the equivalent EIA terms to be used in this chapter.

Table 7-Error! No text of specified style in document.**4: Summary of Significance Levels**

Effect (Standard EIA-related terminology and associated assigned significance)		Equivalent CIEEM terminology adapted for Ecological Assessment
Negligible	**Neutral**	No discernible impact on conservation status (e.g. species or habitat).
Minor-Moderate Adverse	**Not Significant**	Adverse effect on ecological integrity or conservation status, discernible/significant in ecological terms at a Local geographic scale only.
Moderate-Major Adverse	**Significant**	Adverse effect on ecological integrity or conservation status at a County, National or International geographic scale.

7.3.18. The Scheme has been assessed as having an operational lifespan of up to 40 years for the purpose of the assessment. Ecological effects will be described in terms of their duration as short, medium term and long-term as follows:

- Short term effects are defined as a period of months, up to one year;
- Medium term effects are defined as a more than one year, up to five years; and,
- Long term effects are defined as > 5 years.

7.3.19. For the purposes of the assessment the importance or sensitivity of an ecological feature will be considered within the context of a defined geographical area, ranging from International (high value) to Site (low/negligible), as detailed in **Table 7-5.**

Table 7-Error! No text of specified style in document.**5: Value/Sensitivity Assessment**

Value or Sensitivity of Receptor/ Geographic Scale of Importance	Definition Examples
High – International / European	Greater than a UK scale, typically valued at a European level such as internationally designated sites (Special Protection Areas (SPA), Special Areas of Conservation (SAC) and/ or Ramsar sites) or proposed/candidate site (pSPA or cSAC), Large area of a habitats listed in Annex I of the Habitats Directive [Ref. 7-2] or smaller areas of such habitat which are essential to maintain the viability of the larger whole, large population of an internationally important species or site supporting such a species (or supplying a critical element of their habitat requirement) or species listed in Annex IV of the Habitats Directive.
High – National (England/UK)	England/UK: A nationally designated site (e.g. Site of Special Scientific Interest) or a discrete area which meets the selection criteria for national designation. An area of a priority habitat listed under the Section 31 of the Natural Environment and Rural Communities Act 2006 (NERC) which constitutes a significant proportion of the resource of that habitat in England or the UK as a whole. A regularly occurring, regionally significant population of any nationally important species listed as a UK BAP / Biodiversity List and priority species listed under the Section 31 of the NERC Act 2006, and Species listed under Schedule 1 or Schedule 5 of the Wildlife and Countryside Act or Annex II or Annex IV of the Habitats Directive.

Medium - Regional / County	Locally designated sites (Local Nature Reserves, County or Local Wildlife Sites). Areas of priority habitat, which constitute a significant proportion of the County's resource of that habitat. A regularly occurring, locally significant population of any nationally important species listed as a UK BAP / priority species and priority species listed under Section 31 of the NERC Act 2006, and Species listed under Schedule 5 of the Wildlife and Countryside Act or Annex II or Annex IV of the Habitats Directive.
Low – Local	Local area around the Order Limits. For example, areas of priority habitat which are not large enough to meet the criteria for County value, or small but sustainable populations of a protected or notable species.
Low/Negligible - Site	Within the Order Limits. Features present but of value in relation to the Order Limits only.

7.3.20. Effects on ecological features will be assessed based upon the interaction between the importance, or sensitivity, of the feature and the magnitude of change it is likely to experience. In accordance with the CIEEM guidelines (2024) [**Ref. 7-1**] , an EcIA need only assess in detail, impacts upon important ecological features i.e. those that are considered important and potentially affected. It is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable. Where ecological features are not considered important enough to warrant further consideration, or where they will not be significantly affected, these are scoped out of the assessment process, and justification for exclusion is provided.

7.3.21. Relevant European, national and local guidance from governments and specialist organisations will be referred to in order to determine the importance (or 'sensitivity') of ecological features. Importance will also be determined using

professional judgement and taking account of the results of baseline surveys and the functional role of features within the context of the geographical area.

7.3.22. Importance does not necessarily relate solely to the level of legal protection that a feature receives, and ecological features may be important for a variety of reasons, such as their connectivity to a designated site and the rarity of species or the geographical location of species relative to their known range.

7.3.23. Once identified, potential impacts are described making reference to the following characteristics as appropriate: positive or negative, extent, magnitude, duration, timing, frequency, and, reversibility. The judgements on magnitude may need to be adjusted (either up or down) to reflect the duration of the change (i.e. short, medium or long term) and whether it is potentially reversible. The assessment also identifies areas where no change is anticipated and the resulting effect is described as 'not discernible' or 'none'.

7.3.24. Ecological effects are described as far as possible and where available information allows in terms of the parameters detailed in **Table 7-6**.

7.3.25. Magnitude of effect, based on the effects that the Scheme would have upon the resource/receptor, is considered within the range of high, medium, low, negligible. Consideration is given to scale, duration of impact/effect. The assessment will consider how existing baseline conditions may change over time, as for example the baseline conditions could alter through operational land use, in the form of differing management and natural growth or succession of habitats.

Table 7-6: Environmental Parameters

Environmental Parameters	Description
Magnitude	The 'size' or amount of the effect is referred to as the magnitude and is determined on a quantitative basis where possible supported by professional judgement.
Extent	The area over which an effect occurs. The magnitude and extent of an effect may be synonymous

Duration	The time over which an effect is expected to last prior to the recovery or replacement of the ecological receptor. This can be considered in terms of life cycles of species or regeneration of habitats. The duration may be longer than the duration of an activity.
Reversibility	Reversible (or temporary) effects are those that occur during the lifetime of the development and where spontaneous recovery, or mitigation allows recovery within a reasonable timescale. Permanent effects are those which cannot be recreated within the proposed development or there is no reasonable chance that actions can be undertaken to reverse it.
Timing and Frequency	The timing of effects in relation to important seasonal and/or life cycle constraints. The frequency with which activities and simultaneous effects would take place can be an important determinant.

7.3.26. The assessment of effects is based upon the assessments of magnitude of effects and sensitivity of the resource/receptor to come to a professional judgement of how important this effect is. The magnitude of change effected on ecological receptors. The likelihood or probability that an effect will occur is addressed as far as possible based on available information. Whilst it is reasonably straightforward to identify effects that are certain to occur, or conversely will not occur, it is generally more difficult to assign a quantified level to occurrences defined as likely, unlikely or highly unlikely. In these circumstances, professional judgement has been used, with reasoning supported by available evidence.

Table Error! No text of specified style in document.**7-7: Magnitude of Effect**

Magnitude	Criteria
High	The change may negatively or positively affect the conservation status of a site or species population, in terms of the coherence of its ecological structure and function, that sustains the

	habitat, complex of habitats and/or the population levels of species of interest.
M**oderate**	Conservation status of a site or species population will not be negatively or positively affected, but some element of the functioning of the site or population might be affected and the change to the site/ population is likely to be significant in terms of its ability to sustain some part of itself in the long term.
Low	Neither of the above applies, but some minor negative or positive change is evident on a temporary basis, or the change affects extent of habitat or individuals of a species abundant in the local area.
Negligible	No observable effect in either direction

7.3.27. For an effect to be significant, the ecological integrity or conservation status of a sensitive feature must be influenced in some way. It may be that the effect is substantial in magnitude or scale, irreversible, has a long-term effect, or coincides with a critical period in a species' life-cycle. Where uncertainty or limitations exist, this is acknowledged.

7.3.28. It is recognised that discernible effects can also occur at a local geographic scale which are not sufficiently severe to be assessed as 'significant' in accordance with the EIA approach, and do not require specific mitigation, but nonetheless merit discussion. In the interest of completeness these effects are detailed in relation to general construction good practices to be adopted to avoid or minimise low-level or minor disruption to local features, including for example standard pollution prevention and control measures.

Mitigation

7.3.29. The **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** and **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3],** submitted separately to this ES**,** are considered as 'embedded' mitigation rather than 'additional mitigation' in this chapter (and therefore deviate from the standard approach as set out in Chapter 4: Approach to EIA) as the control measures included in these documents are so intrinsic that they are required to be considered as 'embedded mitigation'. Further detail is provided in the relevant sections below.

Zones of Influence

7.3.30. The 'zone of influence' for a development is the area over which ecological features may be affected by biophysical changes as a result of the development and associated activities.

7.3.31. The zones of influence for the Scheme are acknowledged to have the potential to extend beyond direct land-take required and have been identified in view of the nature of the Scheme as described in **ES Chapter 2 Scheme Description [APP-039]**, consultation and Scoping process and current CIEEM guidance [**Ref. 7-1**] and Natural England ('NE') Standing Advice **[Ref. 7-3]** as applicable and available.

7.3.32. The zone of influence will therefore vary for different ecological and ornithological features depending on their sensitivity to environmental change.

7.3.33. Zones of influence for the Scheme and for which baseline information has been established have therefore been identified on the basis of proximity to the Scheme as follows:

- **Statutory designated sites for nature conservation** (excluding geological sites)**:** within 5km from the Order Limits, extended to 30km for internationally designated sites (comprising Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites **[Ref. 7-4]**.
- **Non-statutory designated sites for nature conservation** (excluding geological sites)**:** within 2km from the Order Limits **[Ref. 7-5]**.
- **Protected, priority and otherwise notable species** (e.g. Natural Environment and Rural Communities (NERC) Act 2006 Section 41 Species of Principal Importance): within 2km of the Order Limits boundary **[Ref. 7-5]**;
- **Priority habitats** (e.g., NERC Act 2006 Section 41 Priority Habitats): within 2km of the Order Limits boundary **[Ref. 7-5]**;
- **Widespread habitats and vegetation:** within and immediately adjacent to the Order Limits **[Ref. 7-6]**;
- **Breeding birds:** within the Order Limits and immediately adjacent boundary habitats viewable from the Order Limits **[Ref. 7-7]**;

- **Non-breeding birds:** the Order Limits and surrounding fields up to 600m from the Order Limits (known as the Wider Survey Area (WSA) where access was possible, or where land could be viewed from publicly accessible locations **[Ref. 7-8]**;
- **Badgers**: within the Order Limits and areas out to at least 30m (where access allowed);
- **Otter** and **water vole**: ditch networks within the Order Limits; and
- **Great crested newts (GCN):** within the Order Limits and within suitable breeding ponds/waterbodies out to 250m of the Order Limits boundaries where access was possible.

Baseline Data Gathering

Desk Study

7.3.34. A desktop study was originally undertaken in April 2023 to identify any known existing features or species of ecological importance within and surrounding the Order Limits. This was then updated in and June 2025 to reflect changes in the Order Limits boundary and in order to receive the most up to date data available as part of a robust assessment.

7.3.35. The desktop study included a review of relevant policy and guidance and sought to identify any statutory designated sites for nature conservation through a review of the Natural England Designated Sites View **[Ref. 7-9]**, Joint Nature Conservation Committee (JNCC) **[Ref. 7-10]** and Multi Agency Geographic Information for the Countryside (MAGIC) **[Ref. 7-11]** websites. A 5km search radius surrounding the Order Limits was adopted for all statutory designated sites, extending to 30km for international protected sites.

7.3.36. The MAGIC website review also included details of granted European Protected Species (EPS) mitigation licence applications, including for bats and GCN.

7.3.37. In addition, MAGIC was used to search for great crested newt class licence return results up to the end of June 2025, together with a review of Natural England Open Data on great crested Newt eDNA pond surveys for district level licensing (DLL) (England) **[Ref. 7-12]**. A 2km search radius around Order Limits boundary was adopted for these sources.

7.3.38. Biological record data regarding non-statutory designated sites and records of protected and notable species was obtained from the Greater Lincolnshire

Nature Partnership (GLNP) and Doncaster Biological Records Centre (DoBRC). A 2km search radius was used from the Order Limits boundaries. Records dated within the past ten years were used unless historic records (pre-2013) were received from within (or within close proximity to) the Order Limits and/or where historic records were considered particularly pertinent to The Scheme.

7.3.39. Data was also requested in June 2025 from the South Yorkshire bat group, with a 2km search radius used from the Order Limit boundaries.

7.3.40. Reference was also made to Ordnance Survey maps of the wider area and online aerial images in order to determine any features of nature conservation interest in the wider area.

7.3.41. Following information from Natural England, nightjar data was requested from the nightjar study undertaken in the area *'LIFE+ - 'That's Life' Monitoring of European Nightjar 2015 – 2017'*. This data was received in May and June 2025 and has informed this assessment.

7.3.42. The results of the desktop study are provided in **Figure 2**: Statutory Designated Sites Plan and **Figure 3**: Non-statutory Designated Sites Plan of **Technical Appendix 7.1 Report [APP-072]** and discussed in greater detail within the associated **Technical Appendix 7.1 Report [APP-072]**.

Habitat Survey

7.3.43. Walkover habitat surveys of the Order Limits at the time of the non-statutory consultation were undertaken by Avian Ecology over three visits on;

- 2 and 3 March 2022;
- 20 March 2022; and,
- 10, 11 and 12 August 2022.

7.3.44. A further extended habitat survey of the Order Limits was undertaken in August and September 2023, which updated the 2022 data as well as provide habitat condition assessments for the Order Limits during an optimal survey period for habitats. All surveys were completed by suitably qualified and experienced ecologists.

7.3.45. Detailed survey methodologies and findings are detailed in **Technical Appendix 7.1 [APP-072]** and habitat plans are provided in **Figure 4A to 4G** within **T7.1.**

7.3.46. Tyler Grange undertook updated extended Phase 1 habitat surveys of the previous Order Limits assessed by Avian, plus additional land parcels included within the revised Order Limits, on the 15, 16, 19, 20 and 21 of August 2024. Additional land parcels subsequently included within the Order Limits were surveyed by Tyler Grange in the November 2024 and June and July 2025.

7.3.47. The habitat survey methodology was based on guidance set out in the 'Handbook for Phase 1 habitat survey' **[Ref: 7-45]** and entailed recording the main plant species and classifying and mapping the broad habitats present.

7.3.48. As part of this survey work all habitats were classified with reference to the Habitat Definitions provided by the UK Habitat Classification Working Group [Ref. 7-46].

7.3.49. Note was taken of the more conspicuous fauna and any evidence of, or potential for the presence of protected or notable flora and fauna. A basic inventory of the habitats and a representative species list was produced. Where access allowed, adjacent habitats were also considered in order to assess the site within the wider landscape and to provide information with which to assess possible impacts within the context of the site boundary.

7.3.50. Detailed survey methodologies and findings are detailed in **ES Appendix 7.8 Natural England Request For Discretionary Advice Note [APP-079]** also summarises where there were habitat changes recorded within the original Order Limits recorded by Avian.

Species Surveys

7.3.51. The following baseline species-specific surveys and assessments were undertaken between March 2022 and April 2024:

- Non-breeding/winter (Year 1 and 2) bird surveys;
- Breeding bird surveys;
- Nightjar survey of Thorne & Hatfield Moors designated sites only;
- Badger survey;
- Great crested newt eDNA survey;
- Invertebrate habitat assessment and targeted scoping survey;
- Otter survey; and

- Water vole survey.

7.3.52. In addition, in 2025 surveys have been undertaken following the meetings undertaken with Natural England, City of Doncaster Council and North Lincolnshire Council, the consultation responses received, as well as to ensure coverage of the latest Order Limits boundary and to update the results of surveys previously undertaken. This included the following:

- Breeding Bird surveys of additional land;
- Badger surveys of additional land;
- Bat Surveys of the whole Order Limits;
- GCN eDNA surveys of the whole Order Limits and surrounding area where access was possible;
- Targeted water vole surveys of ditches to be directly impacted; and
- Targeted otter surveys of ditches to be directly impacted.

7.3.53. The results of all surveys are provided as **Appendices 7.1 -7.6**

Biodiversity Net Gain

7.3.54. Although it is not yet a mandatory requirement for NSIP applications to demonstrate a quantifiable biodiversity net gain (BNG) of at least 10% under the Environment Act 2021, a BNG assessment has been completed to provide evidence of the deliverability of measurable biodiversity gains, in accordance with NERC obligations and the January 2024 National Policy Statement for Energy (EN-1) [Ref. 7-13] and National Policy Statement for Renewable Energy Infrastructure (EN-3) [Ref. 7-14].

7.3.55. The DEFRA Biodiversity Metric Calculator has been utilised to provide evidence of achievable on-Site biodiversity gains, which is an established method to quantify biodiversity gains and will be presented in **ES Appendix 7.12 Biodiversity Net Gain Assessment [APP-082].**

Legislative and Policy Framework

National Policy Statements

7.3.56. The November 2023 National Policy Statement for Energy (EN-1) **[Ref. 7-13]** includes policies regarding Biodiversity (Chapter 5.4); which requires developments to;

'avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives …where significant harm cannot be avoided, then appropriate compensation measures should be sought'.

7.3.57. In addition, the November 2023 National Policy Statement for Energy (EN-1) states that;

'In taking decisions, the Secretary of State should ensure that appropriate weight is attached to designated sites of international, national, and local importance; protected species; habitats and other species of principal importance for the conservation of biodiversity; and to biodiversity and geological interests within the wider environment.'

7.3.58. The November 2023 National Policy Statement for Renewable Energy Infrastructure (EN-3) **[Ref. 7-14]** together with the Overarching November 2023 National Policy Statement for Energy (EN-1) (above), provides the decision-making basis of the Infrastructure Planning Commission on applications for nationally significant renewable energy infrastructure. Therefore, applications and accompanying supporting documents and information should be consistent with the instructions and guidance in this policy statement and corresponding biodiversity information provided within the EN-1 document.

7.3.59. The November 2023 National Policy Statement for Energy (EN-1) **[Ref. 7-13]** which includes further information regarding biodiversity, the document states;

'where the development is subject to EIA the applicant should ensure that the ES clearly sets out any effects on internationally, nationally, and locally designated sites of ecological or geological conservation importance…, on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity, including irreplaceable habitats'.

7.3.60. Furthermore, the November 2023 National Policy Statement for Energy (EN-1), states that;

'the applicant should show how the project has taken advantage of opportunities to conserve and enhance biodiversity and geological conservation interests…the design process should embed opportunities for nature inclusive design. Energy infrastructure projects have the potential to deliver significant benefits and enhancements beyond Biodiversity Net Gain, which result in wider environmental gains'.

7.3.61. The November 2023 National Policy Statement for Renewable Energy Infrastructure (EN-3) **[Ref. 7-14]** also includes further information regarding biodiversity, the document states;

'proposed enhancements should…aim to achieve environmental and biodiversity net gain in line with the ambition set out in the Environmental Improvement Plan and any relevant measures and targets, including statutory targets set under the Environment Act or elsewhere…this might include maintaining or extending existing habitats and potentially creating new important habitats'.

Development Plans

7.3.62. The City of Doncaster Council Local Plan (2021) **[Ref. 7-15]** includes a number of policies which include reference to biodiversity, including:

- Policy 26; *Green Infrastructure*, which includes reference to the protection, maintenance and enhancement (where possible) of ecological networks, natural environment and biodiversity.
- Policy 29; *Ecological Networks (Strategic Policy),* which includes the requirement for proposals to deliver a net gain for biodiversity and 'protect, create, maintain and enhance the Borough's ecological networks'.
- Policy 30; *Valuing Biodiversity and Geodiversity (Strategic Policy)* which refers to the protection of internationally, nationally and locally important habitats, sites and species, including nightjar.
- Policy 31; *Local Wildlife and Geological Sites* which includes policy regarding the protection of these sites and sites that are awaiting designation but meet qualifying criteria.
- Policy 32; *Woodlands, Trees and Hedgerows* ensures that these habitats have been duly considered and there is no adverse impact on their public amenity and ecological interest.

- Policy 33; *Landscape (Strategic Policy)* which includes policy to ensure that the proposals conserve, enhance and restores the local environment including Thorne and Hatfield Moors. Proposals will also need to have consideration for the 'quality, local distinctiveness, sensitivity to change of distinctive landscape character areas and individual landscape features'.

7.3.63. The South Yorkshire Mayoral Combined Authority (SYMCA) Strategic Economic Plan (SEP) 2021-2041 **[Ref. 7-16]** covers Doncaster. The three overarching policy objectives are growth, inclusion and sustainability, with clear mention of protecting and enhancing biodiversity through achieving biodiversity net gain.

Limitations to the Assessment

7.3.64. Access to all waterbodies within the Order Limits and within 250m, was not possible as part of the GCN surveys. Nonetheless, the majority were surveyed and an extensive amount of data is available from 2025 and 2023. As GCN move between waterbodies and rely on more than one water body to successfully breed, the fact that the majority of waterbodies have been surveyed ensures that an accurate baseline assessment has been completed. {Doc Ref: 6.3.77]

7.3.65. Access to all waterbodies was also not possible for the water vole and otter surveys in 2025, although the majority were surveyed. As a significant amount of data has been recorded for these species in 2023 and 2025 and they are known to be present, so mitigation for their presence is provided, it is considered that the measures proposed ensure their favourable conservation status will be maintained. . In addition, all ponds and ditches are being retained and buffered, and new native habitat creation is to take place adjacent to these features, which are currently located adjacent to intensively managed agricultural land that receives regular agrichemical input. Therefore, the design of the Scheme and the measures proposed will create a significant enhancement for GCN, otter and water vole. .

7.3.66. Furthermore, updated surveys for GCN, otter and water vole are proposed prior to construction commencing, which will ensure that the most up today baseline situation at the Order Limits will be known, so that the appropriate mitigation detailed int his chapter can be implemented as necessary to prevent any potential impacts from occurring.

7.3.67. Invertebrate surveys have been undertaken, although not the entire Order Limits boundary was surveyed, but a targeted approach was undertaken. The results of the survey did not indicate that further surveys would be required, with no

notable or significant numbers of species recorded. In addition, when considering the nature of the proposals results in minimal construction and the fact that the majority of ditches will remain unaffected, and their ecological condition improved due to the cessation of intensive arable management, resulting in a reduction to agrichemical inputs and an enhancement through adjacent native habitat creation, no further surveys were considered necessary.

7.3.68. No reptile surveys have been undertaken as the majority of the Order Limits is unsuitable, comprising intensive managed arable land. Furthermore, the potential habitat is to be retained and large areas of suitable habitat are to be created, resulting in gains in potential reptile habitat post-development.

7.3.69. Any other survey specific limitation are provided within the relevant Technical Appendices.

7.3.70. There are no other identified substantive limitations to this ES chapter.

7.4. Baseline Conditions

Order Limits Description and Context

7.4.1. The Order Limits consist of approximately 1,831ha of agricultural land, approximately 94% of which consists of arable farmland with cereal and non-cereal crops. Fields are bounded by watercourses as well as fences, hedgerows and tree lines. Modified grassland used for pastoral land is also present within the Order Limits as well as a woodland copse and a number of ponds.

7.4.2. The Tween Bridge Wind Farm is largely surrounded by the Order Limits and consists of twenty-two operational wind turbines. Nineteen are within the order limits and a further three lie outside the order limits. The Stainforth and Keadby Canal crosses the Order Limits from west to east.

7.4.3. In the wider context, the Order Limits is surrounded by extensive areas of farmland and areas of woodland, with areas of lowland peat bog (Thorne & Hatfield Moors) located to the north and south of the Order Limits.

7.4.4. Over the duration of the survey programme the Draft Order Limits were revised as the project design evolved. Ornithology survey results in this chapter are presented based on the Draft Order Limits (survey area) as applicable at the time of survey, so as to fully present the extent of data collection including adjacent land which could potentially be impacted by the Scheme. It should therefore be noted that impact assessment utilises all data collected over the

course of the survey programme, including the final Order Limits, and is consequently robust.

Baseline Survey Information

Desk Study

7.4.5. A summary of the desk study results is provided below, further information is provided within **Technical Appendices; 7.1 [APP-072], 7.2 [APP-073], 7.3 [AS-015], 7.5 [APP-076], 7.6 [APP-077]**and **7.7 [AS-016]**.

Statutory Designated Sites for Nature Conservation

7.4.6. The Order Limits lies outside designated sites with the exception of a small 0.54ha area of Thorne & Hatfield Moors Special Protection Area (SPA), Thorne Moor Special Area of Conservation (SAC), Thorne, Crowle and Goole Moors Site of Special Scientific Interest (SSSI) and Hatfield Chase Ditches SSSI. Whilst the Thorne & Hatfield Moors SPA/SAC/SSSI lies within the Order Limits, they are outside the development footprint and this area is to be buffered from any development. Therefore no work is scheduled within these designated sites.

7.4.7. Details of the international statutory designated sites that occur within 30km of the Order Limits boundary are:

- Humber Estuary SPA;
- Humber Estuary Ramsar;
- Humber Estuary SAC;
- Thorne & Hatfield Moors SPA;
- Thorne Moor SAC;
- Hatfield Moor SAC;
- Lower Derwent Valley SPA;
- Lower Derwent Valley RAMSAR;
- Lower Derwent Valley SAC
- Skipwith Common SAC; and
- River Derwent SAC.

7.4.8. Eight national statutory designated sites occur within 5km of the Order Limits, including Local Nature Reserves (LNR) and SSSI's The Humberhead Peatlands National Nature Reserve (NNR) is also located directly adjacent to the Order Limits boundary.

7.4.9. These sites are summarised in Table 3.1, are shown on Figure 2 within **ES Appendix 7.1 [APP-072]** and are listed below:

- Hatfield Moors SSSI;
- Hatfield Chase Ditches SSSI;
- Thorne, Crowle and Goole Moors SSSI;
- Crowle Borrow SSSI;
- Humber Estuary SSSI;
- Eastoft Meadow SSSI;
- Belshaw SSSI; and
- Epworth Turbary SSSI.

7.4.10. The Order Limits are also located within the NE defined SSSI Impact Risk Zones (IRZs), for the SSSIs listed above.

Non-Statutory Designated Sites for Nature Conservation

7.4.11. Fourteen non-statutory designated sites fall within the Order Limits, including 10 Local Wildlife Sites (LWS) and four Candidate Local Wildlife Sites (CLWS). These are all associated with 'drain' watercourses within the Order Limits, except for Whittaker's Plantation CLWS which relates to plantation woodland.

7.4.12. A further two LWS, one CLWS and a Lincolnshire Wildlife Trust Reserve (LWT) are located directly adjacent to the Order Limits boundary, with a further 19 LWS, five CLWS and one Local Geological Site (LGS) situated within 2km. A full list of sites both in and within 2km of the Order Limits can be found in **Annex 2** of **ES Appendix 7.1 Baseline Habitats Report [APP-072]** as well as being shown on **Figure 3** of the same appendix.

Priority Habitats; Desk Based Records

7.4.13. Eleven Habitats of Principal Importance (also known as priority habitats) as defined under Section 41 of the NERC Act/UK Biodiversity Action Plan are located within 2km of the Order Limits. Of these, three are present within the Order Limits itself (lowland deciduous woodland, hedgerows, and ponds).

7.4.14. Within 2km of the Order Limit boundary, a further 14 habitats listed under the Lincolnshire LBAP and 11 priority habitats under the Doncaster LBAP are also present.

7.4.15. A review of the Woodland Trust Ancient Tree Inventory **[REF. 7-18]** identified no notable trees within the Order Limits. One notable tree was identified within 500m of the Order Limits; a veteran oak situated 40m from the Order Limits boundary (National Tree ID: 10396).

7.4.16. A review of the NE Open Data Geoportal **[REF. 7-19]** identified ancient or irreplaceable peaty soil habitat within the Order Limits. Locations of this are described within **ES Chapter 9: Ground Conditions [APP-046]**.

7.4.17. A full list of priority habitats both in and within 2km of the Order Limits can be found in **Table 3.2** of **ES Appendix 7.1 Baseline Habitats Report [APP-072]**

Habitats

7.4.18. Habitats within the Order Limits predominantly comprise arable fields (approximately 94% of the total area) that are bounded by a combination of deep drains and ditches with some hedgerows, tree lines, grassland field margins. A small woodland copse called Whittaker's Plantation is present within the centre of the Order Limits. Nine ponds are located within the Order Limits, one of which was found to be dry during surveys in spring 2023. A further 32 ponds were identified within 250m of the Order Limits.

7.4.19. The following broad habitat types were recorded within the Order Limits:

- Arable (UKHab codes: c1c (cereal crops) and c1d (non-cereal crops));
- Reedbeds (UKHab code: f2e)
- Modified Grassland (UKHab codes: g4, g4.16 (tall forbs included));
- Hedgerows (UKHab codes: h2a5 (species rich), h2a6 (other native hedgerow) and h2b (non-native/ornamental hedgerow),
- Line of Trees (UKHab code: w1.33);

- Standing Open Water and Canals (UKHab code: r1.50.500 (dry ditch), r1.50.501 (mesic), r1.50.502 (seasonally wet), r1.50.503 (wet) & r1e (canal));
- Ponds (UKHab code: r1.40 (priority habitat));
- Woodlands (UKHab codes: w1d and w1g.30)
- Scrub (UKHab codes: h3h,); and
- Urban (UKHab codes: u1 (built up areas and gardens, u1b (developed land – sealed surface), u1b5 (buildings), u1b5.800 (road), u1b.839 (track) u1b5.84 (wind farm).

7.4.20. Detailed habitat descriptions and target notes (TNs),and associated photographic plates are provided within **ES Appendix 7.1 [APP-072]**. Baseline habitats recorded within the Order Limits are illustrated in **Figures 4A** to **4G** of **ES Appendix 7.1 [APP-072]**.

Birds

Desk Study

7.4.21. The GLNP and DoBRC data search returned numerous records of bird species within 2km of the Order Limits, including a variety of species commonly associated with farmland and woodland habitats.

7.4.22. The data search returned 4670 records for 185 bird species, including 24 species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) **[Ref. 7-42]**, 19 species listed on Annex 1 of the Directive 2009/147/EC (Birds Directive) **[Ref. 7-42],** 29 Natural Environment & Rural Communities (NERC) Act Section 41 Species **[Ref: 7-21],** 24 Lincolnshire Biodiversity Action Plan **[Ref: 7-43]** species and 20 Doncaster Local Biodiversity Action Plan **[Ref: 7-44]** birds.

7.4.23. A detailed desk study is presented in the baseline report (**ES Appendix 7.1 [APP-072]**). This was originally completed by Avian Ecology in 2023 and was then updated by Tyler Grange in 2025 to ensure that all land within the Order Limits was included and that the most up to date data available was utilised as part of this assessment.

Breeding Bird Survey

7.4.24. The combined total breeding bird assemblage recorded within the collective survey area is considered representative of the locale and the agricultural and field boundary habitats present. A total 29 Notable Species recorded breeding within the survey area as summarised in Table 3.1 of Appendix 7.2 [AS-014]

7.4.25. Breeding evidence for 28 Notable Species was recorded within the Order Limits, which included:

- One species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (hobby);
- No species listed on Annex 1 of the Directive 2009/147/EC (Birds Directive);
- 12 Red List species (grey partridge, cuckoo, lapwing, skylark, mistle thrush, tree sparrow, house sparrow, yellow wagtail, greenfinch, linnet, corn bunting and yellowhammer);
- 15 Amber List species (greylag goose, mallard, stock dove, woodpigeon, moorhen, kestrel, rook, willow warbler, sedge warbler, whitethroat, wren, song thrush, dunnock, meadow pipit and reed bunting);
- 13 listed as rare and most threatened species under S41 of the NERC Act (2006) (grey partridge, cuckoo, lapwing, skylark, song thrush, tree sparrow, house sparrow, dunnock, yellow wagtail, linnet, corn bunting, yellowhammer and reed bunting);
- 11 species recorded listed under the Lincolnshire LBAP (grey partridge, lapwing, skylark, song thrush, tree sparrow, house sparrow, yellow wagtail, linnet, corn bunting, yellowhammer and reed bunting); and,
- Eight species listed under the Doncaster LBAP (grey partridge, skylark, song thrush, tree sparrow, yellow wagtail, linnet, corn bunting and reed bunting).

7.4.26. Two species recorded are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). This comprised hobby (one territory within the Order Limits) and Cetti's warbler (one territory within the wider survey area and one territory outside the survey area that may utilise the wider survey area as part of a broader territory). The location of breeding Schedule 1 species territories are considered sensitive and have been excluded from Figures 1 to 10. Confidential breeding locations of Schedule 1 species are presented separately on Figure 11; the Confidential Schedule 1 Species Survey Results plan (see **Appendix 7.2a Figure 11_Breeding Bird Confidential Results [APP-073a]**.

7.4.27. Two barn owl nest boxes were recorded within the wider survey area of Area 6, with individual barn owls recorded foraging within the Order Limits in Area 8 over the course of surveys. Use (or signs of use) of the nest boxes was however, not observed during surveys, but it is possible birds may use the boxes for roosting or breeding in other years. Barn owl is listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and further listed as a local priority species under the Lincolnshire and Doncaster LBAPs.

7.4.28. No species listed on Annex 1 of the Directive 2009/147/EC (Birds Directive) were recorded breeding within the study area.

7.4.29. No species comprising qualifying breeding species of Nature Network Sites (European sites) or national designated sites were recorded breeding within the study area as detailed in Appendix 7.2 [AS-014] .

7.4.30. Observations of marsh harrier, were made over the course of survey visits, including a pair flying together in April 2023. No further breeding evidence was however recorded within the survey area, and the species did not breed within the Order Limits in either survey year. Breeding pairs may however have been present within suitable habitats within the surrounding wider area,and sporadically using the Order Limits as part of their wider territory e.g., for foraging.

7.4.31. Breeding territories of Notable Species were typically associated with vegetation along field boundaries, which principally comprises of field-margins, hedgerows, scrub, tree-lines, ditches, watercourses, ponds and woodland habitats within or directly adjacent to the Order Limits. These species included mallard, cuckoo, stock dove, woodpigeon, moorhen, kestrel, rook, willow warbler, sedge warbler, whitethroat, wren, song thrush, mistle thrush, tree sparrow, house sparrow, dunnock, greenfinch, linnet, yellowhammer and reed bunting.

7.4.32. Ground-nesting Notable Species that breed in open habitats within the Order Limits comprised of greylag goose (1 territory), grey partridge (9 territories), lapwing (20 territories), skylark (269 territories), yellow wagtail (94 territories), meadow pipit (12 territories) and corn bunting (3 territories).

7.4.33. With the size of the surveyed Site being 1,830 ha, the estimated 269 skylark territories results on average to be 0.15 skylark territories per ha.

7.4.34. The cropping regime within the Order Limits comprised winter wheat, maize, spring barley, oilseed rape, potatoes, beans, oats, linseed and sugar beet.

Modified grassland pastures were either used for livestock grazing (horse or cattle), or for silage production.

7.4.35. Grey partridge and corn bunting were identified breeding principally along arable and grassland field margins, rather than within open agricultural fields themselves. Grey partridge was also located in tall ruderal field corners of cereal crop arable fields and was recorded throughout the survey area, whilst corn bunting was recorded in Area 13 only. Lapwing was identified in Area 1 and 12 which primarily comprises cereal crop arable fields, with a single modified grassland pasture also present in Area 1. Lapwing were also identified in Areas 7a and 9, which comprised of cereal crop and regions not included in habitat surveys. Skylark and yellow wagtail were recorded throughout the Order Limits and comprised of territories primarily within open arable fields that are also likely to utilise any neighbouring associated grassland field margins in their broader home range. Meadow pipit was identified in Areas 4, 6, 6a, 7, 7a, 8and 9 largely in cereal crop fields and the associated grassland field margins.

7.4.36. Further detail on the breeding bird surveys undertaken is provided within the Breeding Bird Report (see E**S Appendix 7.2 [AS-014**])

7.4.37. Detailed survey results and further confidential breeding bird information regarding species listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) is provided in **ES Appendix 7.2 [AS-014]**. and within **Figures 1-10** of the same appendix.

Non-breeding Bird Survey

7.4.38. Detailed results of Year 1 and Year 2 are presented in the **ES Appendix 7.3 Non-breeding Bird Survey Report (Year 1 and Year 2) [AS-015]** and within **Figures 1-31** of the same appendix.

7.4.39. It should be noted that since the completion of the non-breeding bird surveys, the Order Limits has evolved to include additional land parcels which were not previously within the Order Limits, but within the WSA. Therefore, the survey effort which extended beyond the Order Limits boundary, has ensured that all the land now included in the Order Limits has been surveyed for non-breeding birds. In the context of the following text on non-breeding bird survey results, the Order Limits is defined as those presented as part of this ES chapter and not those considered as part of the previous survey effort. Distinction is then made to land which is now within the WSA and not part of the Order Limits.

7.4.40. Target species consisted of wetland birds such as waders, waterfowl and gulls and Annex 1 **[REF. 7-22]** /Schedule 1 **[REF. 7-23]** raptors and owls.

7.4.41. Target Species recorded within the Order Limits included; whooper swan *Cygnus cygnus*, mute swan *Cygnus olor*, pink-footed goose *Anser brachyrhynchus*, mallard, shoveler *Spatula clypeata*, teal *Anas crecca*, grey heron *Ardea cinerea*, little egret *Egretta garzetta*, little grebe Tachybaptus ruficollis lapwing, golden plover *Pluvialis apricaria*, grey plover *Pluvialis apricaria*, green sandpiper *Tringa ochropus*, curlew Numenius arquata, snipe *Gallinago gallinago*, woodcock *Scolopax rusticola*, osprey *Pandion haliaetus*, red kite *Milvus milvus*, marsh harrier *Circus aeruginosus*, peregrine *Falco peregrinus*, barn owl Tyto alba and little owl Athene noctua.

7.4.42. Species associated with the Humber Estuary SPA and Ramsar recorded within the Order Limits included: Mallard, teal, lapwing, golden plover, grey plover, curlew, pink-footed goose *Circus cyaneus*, hen harrier and marsh harrier.

7.4.43. Within the WSA target species comprised: whooper swan, mute swan, pink-footed goose, mallard, shoveler, teal, grey heron, little egret, crane *Grus grus*, lapwing, golden plover, green sandpiper, snipe, jack snipe, *Lymnocryptes minimus*, woodcock, osprey, hen harrier and marsh harrier, peregrine, barn owl, little owl and tawny owl *Strix aluco*.

7.4.44. Additionally, species associated with the Humber Estuary SPA were listed in the WSA included marsh harrier, hen harrier, lapwing, mallard and teal.

7.4.45. The survey results are detailed on the tables below and within **ES Appendix 7.3 Non-breeding Bird Survey Report (Year 1 and Year 2) [AS-015].**

Table 7-8 : SPA qualifying species recorded within and outside of the Draft Order Limits during 2022/23. Note that nocturnal and diurnal surveys were combined and peak count of the two is provided, alongside the percentage of the *most up to date (2023/24) WeBS 5-year mean totals*.[1]

Species	2022				2023		
	Sep	Oct	Nov	Dec	Jan	Feb	Mar

[1] Calbrade, N.A., Birtles, G.A., Woodward, I.D., Feather, A., Hiza, B., Caulfield, E., Balmer, D.E., Peck, K., Wotton, S.R., Shaw, J.M., and Frost, T.M. 2025.
Waterbirds in the UK 2023/24: The Wetland Bird Survey and Goose & Swan Monitoring Programme. BTO/RSPB/JNCC/NatureScot. Thetford.

Within the Draft Order Limits							
Curlew Humber Estuary 5 year mean 2022/23 **2,473**	0	0	0	0	0	0	2 (0.08%)
Golden plover Humber Estuary 5 year mean 2022/23 **21,160**	53 (0.25%)	0	0	37 (0.17%)	21 (0.10%)	0	0
Green sandpiper Humber Estuary 5 year mean 2022/23 **14**	**1 (7.14%)**	**1 (7.14%)**	**1 (7.14%)**	0	**1 (7.14%)**	0	0
Greylag goose Humber Estuary 5 year mean 2022/23 **2,569**	375 (14.60%)	0	19 (0.74%)	0	0	0	8 (0.31%)
Lapwing Humber Estuary 5	390 (2.44%)	25 (0.16%)	31 (0.19%)	127 (0.8%)	260 (1.63%)	32 (0.20%)	32 (0.20%)

year mean 2022/23 **15,951**							
Little egret Humber Estuary 5 year mean 2022/23 **215**	0	1 (0.47%)	1 (0.47%)	0	0	0	1 (0.47%)
Mallard Humber Estuary 5 year mean 2022/23 **1,459**	**92 (6.31%)**	**24 (1.64%)**	0	12 (0.82%)	**27 (1.85%)**	**64 (4.39%)**	6 (0.41%)
Pink-footed goose Humber Estuary 5 year mean 2022/23 **23,330**	**330 (1.41%)**	**360 (1.54%)**	0	0	0	0	0
Shoveler Humber Estuary 5 year mean 2022/23 **317**	0	0	0	0	2 (0.63%)	0	0
Teal Humber Estuary 5	0	2 (0.02%)	0	3 (0.03%)	6 (0.06%)	0	4 (0.04%)

year mean 2022/23 **9,994**							
Outside of the Draft Order Limits							
Golden plover	76	480	21	20	1	0	38
Green sandpiper	0	0	0	1	0	0	0
Greylag goose	150	0	0	0	0	155	34
Lapwing	260	136	1	71	14	6	13
Little egret	1	2	1	1	1	0	0
Mallard	60	2	5	42	21	17	10
Pink-footed goose	700	42	0	0	0	21	0
Shoveler	1	0	0	0	0	0	0
Teal	0	0	0	0	23	3	9
Common crane	3	0	0	0	0	0	2

Table 7-9: SPA qualifying species and species part of the wider waterbird assemblage recorded within and outside of the Draft Order Limits during 2023/24.

Species	2023				2024			
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr

Within the Draft Order Limits								
Curlew WeBS 5-year mean for the Humber Estuary **2,473**	0	0	0	0	0	0	2 (0.16%)	2 (0.16%)
Dunlin WeBS 5-year mean for the Humber Estuary **22,346**	0	6 (0.027 %)	27 (0.121 %)	0	0	0	0	0
Little egret WeBS 5-year mean for the Humber Estuary **226**	0	1 (0.442 %)	0	0	0	0	1 (0.442%)	0
Green sandpiper WeBS 5-year mean for the Humber Estuary **19**	0	0	0	**1 (5.26 %)**	0	0	0	0
Greylag goose WeBS 5-year average for the Humber Estuary	0	**210 (9.19%)**	**157 (6.87 %)**	12 (0.52%)	0	**27 (1.18%)**	**76 (3.33%)**	9 (0.39%)

2,285 [2] [3]								
Golden plover (WeBS 5-year mean for the Humber Estuary **21,673)**	0	0	82 (0.38 %)	2 (0.009%)	84 (0.387%)	0	6 (0.028%)	0
Lapwing WeBS 5-year mean for the Humber Estuary **11,859**	5 (0.042 %)	**220 (1.855 %)**	**371 (3.129 %)**	53 (0.447 %)	79 (0.666%)	**147 (1.24%)**	11 (0.093%)	4 (0.034%)
Mallard WeBS 5-year mean for the Humber Estuary 1,459	2 (0.14%)	**33 (2.26 %)**	**78 (5.35 %)**	**125 (8.567 %)**	**49 (3.357%)**	**92 (6.305 %)**	**16 (1.096%)**	10 (0.685%)
Oystercatcher WeBS 5-year mean for the Humber Estuary 7,218	0	0	0	0	0	0	2 (0.028%)	0

[2] Contains Wetland Bird Survey (WeBS) data from Waterbirds in the UK 2023/24 © copyright and database right 2025. WeBS is a partnership jointly funded by the BTO, RSPB and JNCC, with fieldwork conducted by volunteers.

[3] Contains Goose and Swan Monitoring Programme (GSMP) data from Waterbirds in the UK 2023/24 © copyright and database right 2025. GSMP is a partnership, run by and jointly funded by BTO, JNCC and NS, with fieldwork conducted by both volunteer and professional surveyors.

Pink-footed goose WeBS 5-year mean for the Humber Estuary **27,329**	0	**1600* (5.85 %)**	**620 (2.27 %)**	194 (0.71%)	0	**1530 (5.63%)**	0	0
Teal WeBS 5-year mean for the Humber Estuary **9,994**	0	0	0	2 (0.020 %)	12 (0.120%)	2 (0.020%)	2 (0.020%)	1 (0.010%)
Wigeon WeBS 5-year average for the Humber Estuary **6,452**	0	6 (0.093 %)	0	0	0	42 (0.651%)	0	0
Outside of the Draft Order Limits								
Little egret	2	2	6	4	0	0	0	0
Greenshank	1	0	1	0	0	0	0	0
Greylag goose	0	184	36	64	0	0	22	1
Golden plover	0	3	20	0	1	0	0	0
Lapwing	54	48	28	12	27	66	29	2
Mallard	49	57	28	30	8	63	47	2
Pink-footed goose	0	1120	0	668	14	0	0	0

Teal	3	4	5	18	8	9	6	2

7.4.46. The SPA is designated for its assemblage of birds including wintering, passage and breeding birds. Such birds may use the Order Limits on occasion as part of a wider territory to forage and roost. Habitats which they can utilise include agricultural and arable fields, and if more than 1% of the qualifying number of each individual species is found to be present then this is considered to be functionally linked land, as confirmed in Natural England's consultation response as summarised in Table 7.2 and 7.3 of this ES chapter.

7.4.47. Based on the Year 1 and Year 2 survey results, the non-breeding bird assemblage recorded within the Order Limits is typically representative of farmland habitats.

7.4.48. Greylag goose, lapwing, mallard, and pink-footed goose exceeded the 1% threshold of their WeBS 5-year mean[4] from the Humber Estuary SPA within the Order Limits, indicating potential use of Functionally Linked Land (FLL).

7.4.49. Given the number of golden plover in the survey area, they are also considered and assessed further in this chapter, although the Order Limits is not functionally linked for this species.

7.4.50. Although greylag goose is not a qualifying feature of the SPA **[REF. 7-25]**., in their consultation response to the PEIR Chapter in May 2025, NE stated **(ES Appendix 7.9 Natural England Discretionary Advice Note – December 2024 [APP-084])** that due to the numbers of greylag geese increasing within the Humber Estuary that they 'are included in the 'main component species' list for the Humber Estuary SPA, as they occur at site levels of more than 1% of the national population according to the most recent Humber Estuary WeBS 5-year average count.' As such, impacts to loss of functionally linked land for this species is assessed within this chapter.

7.4.51. Common crane were recorded during the surveys, but only three were recorded on the ground during surveys in September 2022, three in October 2022 and two in March 2023, although all these recordings were not within the Order Limits itself, but within the WSA (see **ES Appendix 7.3 Non-Breeding Bird Survey Report [AS-015]).**

[4] Contains Wetland Bird Survey (WeBS) data from Waterbirds in the UK 2023/24 © copyright and database right 2025. WeBS is a partnership jointly funded by the BTO, RSPB and JNCC, with fieldwork conducted by volunteers.

7.4.52. Two common cranes were also recorded flying over the Order Limits in January 2024 from the direction of Hatfield Moors SSSI, but not landing within the Order Limits boundary.

7.4.53. Based on the survey results, the Order Limits is not functionally linked to any designated site for common cranes and the site does not comprise important habitat for this species.

Bats

Desk Study

7.4.54. The data received from GLNP and DoBRC returned 145 recent bat records within 2km of the Order Limits.

7.4.55. Four bat records were returned within the Order Limits itself, with several others recorded in close proximity to the boundary.

7.4.56. A review of MAGIC identified two NE licences granted for bat roosts within 2km of the Order Limits, the closest being 0.8km to the west.

Habitat Assessment: Commuting and Foraging Bats

7.4.57. The dominant habitats consist of intensively managed agricultural land, the majority of which (approximately 94%) is used for arable purposes. Open arable farmland offers negligible-low foraging and commuting potential for bats, and bat activity is considered likely to be concentrated along boundary features such as hedgerows and watercourse networks. Current farming practices, particularly the use of herbicides and pesticides, also mean that low flying invertebrate prey species will likely be limited.

7.4.58. Therefore, the predominantly arable habitats throughout the Order Limits and beyond provide little suitability for bats, however, the network of hedges, watercourses including the Stainforth and Keradby canal, tree lines, pond, and occasional woodlands do provide some limited to moderate potential opportunities for commuting and foraging. Following current guidance **[REF. 7-26]**, the Order Limits is therefore considered to have 'low' habitat suitability for bats.

Activity Survey Results

7.4.59. Bat activity surveys were undertaken across the Order Limits in accordance with current best practice to establish baseline conditions and identify the

species assemblage present. Full methods, survey results, figures and detailed analysis are presented in Appendix 7.3: Bat Activity Survey Report.

7.4.60. Surveys included manual transects and static detector deployments completed across the active bat season in spring, summer and autumn 2025. A range of habitats were surveyed, including field boundaries, hedgerows, ditches and waterbodies, providing good representation of the habitats available to foraging and commuting bats within the Order Limits.

7.4.61. A total of at least six bat species were recorded during the surveys, comprising common and widespread species typically associated with the local landscape. The assemblage was dominated by common pipistrelle *Pipistrellus pipistrellus*, accounting for approximately 87% of all registrations, followed by soprano pipistrelle *P. pygmaeus* (5%), noctule *Nyctalus noctula* (4%), Myotis species (4%),, brown long-eared *Plecotus auritus* (<1%) and Nathusius' pipistrelle *P. nathusii* (<1%). Activity levels were generally low, with the majority of recordings associated with hedgerows and watercourses.

7.4.62. Overall, the results indicate that the Order Limits support a typical assemblage of bat species associated with the surrounding agricultural landscape. Most habitats within the Order Limits comprise intensively managed arable farmland, which is generally sub-optimal for bats due to its open and exposed nature and the regular use of agrichemicals that reduce invertebrate abundance. Bat activity was largely concentrated along the remaining linear features, such as hedgerows and ditches, which provide the primary foraging and commuting opportunities within the landscape. Full survey results, figures and detailed analysis are presented in **Appendix 7.13: Bat Activity Survey Results [AS-017].**

Habitat Assessment: Roosting Bats

7.4.63. One building is present within the Order Limits, which is considered to have low bat roosting potential. In addition, bat boxes and a number of trees within the Order Limits are considered to have bat roosting potential (see **ES Appendix 7.1 Baseline Habitats And Desk Study Report [APP-072]**). These were not assessed for presence of roosts as they are to be retained and unaffected by the proposals.

7.4.64. Woodland parcels within and directly adjacent to the Order Limits generally contain mature trees potentially with bat roosting potential.

<u>Badger</u>

7.4.65. Confidential badger information is provided in **ES Appendix 7.5 Confidential Report - Badger Survey Report [APP-076]**.

Otter

7.4.66. Confidential otter information is provided in **ES Appendix 7.6 Confidential Report - Otter and Water Vole Survey Report [APP-077].**

Water vole

7.4.67. Detailed results are presented in **ES Appendix 7.3 Non-Breeding Bird Survey Report [AS-015]**. Updated water vole surveys are being completed in 2025 and are to target the ditches that have potential to be impacted, in line with the survey scope agreed with North Lincolnshire Council and Doncaster Council in 2025.

Desk Study

7.4.68. Records of water vole were returned from within the Order Limits and also within 2km. A number of designated sites have water voles listed within their citations including; Hatfield Chase Ditches SSSI, which is present within the Order Limits as well as Humberhead Peatlands NNR, which is adjacent to the Order Limits to the north.

Habitat Assessment

7.4.69. Surveyed ditch sections were assessed as providing varying suitability for water vole, ranging from sub-optimal to optimal (see **Table 3.1** within **ES Appendix 7.6 Confidential Report - Otter and Water Vole Survey Report [APP-077]**).

Survey Results

7.4.70. Evidence of water vole was found in one ditch, D3 situated north east of the Order Limits. Evidence included latrines, feed remains and burrows. The water vole detection dog teams recorded no further evidence of water vole during the ditches surveyed in April 2023.

7.4.71. Given the species was recorded during field surveys and therefore confirmed to be present within the Order Limits, a precautionary approach to assessment is adopted whereby water voles are assumed to be present. This approach allows for the likely continual changes in water vole distribution due to on-going ditch maintenance works.

Amphibians

7.4.72. Detailed results are presented in the **ES Appendix 7.7 Great Crested Newt Presence / Absence Survey Report [REP1 -018]**.

Desk Study

7.4.73. Six amphibian records received were located directly within the Order Limits. 64 records were returned within 2km, including for the species GCN (next to the Order Limits), common toad, smooth newt and common frog.

7.4.74. A data review of MAGIC identified five Natural England licences within 2km, with the closest situated 1.2km west from the Order Limits.

Habitat Assessment

7.4.75. Numerous ponds and ditches are present within and in close proximity to the Order Limits boundary and provide some opportunities for amphibian species, although these opportunities are limited by the lack of aquatic and emergent vegetation in places, with further detail provided within **ES Appendix7.1 Baseline Habitats And Desk Study Report [APP-072]** and **ES Appendix 7.7 Great Crested Newt Presence / Absence Survey Report [REP1 -018]**.

7.4.76. The majority of the terrestrial habitats are unsuitable for amphibian species, comprising intensively managed arable farmland, although the field margins, hedgerows, woodland and scrub provide some limited opportunities during their terrestrial phase.

Environmental DNA (eDNA) Sampling Results

7.4.77. eDNA sampling of waterbodies in 2023 and 2025 returned negative results for GCN DNA.

Reptiles

Desk Study

7.4.78. Detailed results are presented in **ES Appendix 7.1 Baseline Habitats And Desk Study Report [APP-072]**.

7.4.79. The data search identified 154 reptile records within 2km of the Order Limits. Species returned comprised grass snake, adder and common lizard.

7.4.80. As detailed in **ES Appendix 7.1 Baseline Habitats And Desk Study Report [APP-072]**, multiple non-statutory designated sites situated within 2km of the Order Limits are notable for supporting reptiles' populations including Jone's Cable

LWS and River Thorne LWS which are located directly adjacent to the Order Limits boundary.

Habitat Suitability Assessment

7.4.81. The Order Limits is dominated by arable farmland, which is considered to be of a negligible value for reptile species, however, the field boundary habitats such as hedgerows, watercourses and field margins (where present) do potentially provide limited habitats for foraging/hibernation purposes.

7.4.82. The Order Limits has habitat connectivity to similar extensive farmland habitats as well as moorland and heath habitats in the wider landscape. Direct habitat connectivity to woodland/wetland habitats which may support wider populations of reptile species. It is therefore considered that the limited suitable habitats within the Order Limits may potentially support low numbers of reptile species.

White Clawed Crayfish & European Eel

Desk Study

7.4.83. Detailed results are presented in **ES Appendix 7.1 Baseline Habitats And Desk Study Report [APP-072]**.

7.4.84. The data search identified one record of white clawed crayfish within North Soak drain, situated 0.83km from the Order Limits. One record of European eel was retuned within Folly Drain, located 1.8km of the Order Limits.

Habitat Suitability Assessment

7.4.85. Some drains and ditches forming part of the network of watercourses located within and adjacent to the Order Limits are considered potentially suitable to support these species. However, the majority of ditches contain poor water quality from suspected chemical and nutrient pollution, which in addition to watercourse beds lacking cobbles or stones that are required for refuge, habitat is assessed as being of low value to these species.

Other Priority Species

7.4.86. Detailed results are presented in **ES Appendix 7.1 Baseline Habitats And Desk Study Report [APP-072]**.

7.4.87. The data search also returned recent records consisting of brown hare, hedgehog, harvest mouse and roe deer within 2km of the Order Limits.

7.4.88. The habitats within the Order Limits, most notably the hedgerows, pasture fields, tree-lines, field margins, scrub, watercourses and woodland provide opportunities for brown hare, hedgehog, harvest mouse, polecat and roe deer. It is considered that the intensively managed agricultural fields that dominate habitats within the Order Limits are of poorer habitat quality for mammal species.

7.4.89. Brown hare, polecat and hedgehog are listed in England under Section 41 of the NERC Act 2006. Roe deer, brown hare and harvest mouse are further listed under the Doncaster LBAP. None of these species are listed under the Lincolnshire LBAP.

Invertebrates

Desk Study

7.4.90. The data search returned numerous records of invertebrate species within 2km of the Order Limits including for a range of true fly, moth, butterfly and beetle species as well mud pond snail.

7.4.91. Returned notable invertebrate species were all located outside the Order Limits boundary, with most focussed around Thorne Moors and Crowle Common. In addition, a number of designated sites list invertebrates within their citations including Hatfield Chase Ditches SSSI and Humberhead Peatlands NNR.

Habitat Suitability

7.4.92. Almost all of the Order Limits (approximately 94%) consists of intensively managed agricultural land, of which the majority is used for arable farming purposes. The current management of the land includes the regular application of herbicides and pesticides. These are used to prevent the growth of 'non-crop' vegetation which could potentially support invertebrates. In addition, both herbicides and pesticides are directly toxic to invertebrates, causing fatality. As such invertebrate populations are likely to be substantially impacted by current land management.

7.4.93. In addition, the land management regime will result in herbicide and pesticide drift from agricultural fields as well as fertiliser run-off onto adjacent habitats including ditches and ponds, further reducing opportunities available for invertebrate species.

7.4.94. Linear habitats within, and surrounding the Order Limits, such as hedgerows, watercourses, ponds and woodland are considered likely to support a more

diverse invertebrate community than arable fields, although these features are likely to be impacted by the existing land management as detailed above.

Survey Results

7.4.95. The results of an invertebrate scoping assessment are presented in **ES Appendix 7.11 Invertebrate Scoping Report [APP-081].**

7.4.96. The invertebrate scoping assessment comprised nine days of field work between September 2023 and October 2023, generating a total of 198 invertebrate species, seven of which have a current UK conservation status (four of which are moths that a Section 41 of the NERC Act Priority species for research only). The other three species have undergone large increases in abundance and range.

7.4.97. None of the species assemblages came close to being favourable and recommendations were made within the report to improve opportunities for invertebrates, such as by establishing neutral grassland, bare ground, allowing hedgerows to grow and ensuring ditches maintain water levels.

Invasive Species

Desk Study

7.4.98. The records search identified a number of plant species listed within Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) within the search area including Nuttall's waterweed, curly waterweed, water fern, giant hogweed and Japanese knotweed.

7.4.99. Records of invasive mammal species included, American mink, muntjac deer and grey squirrel.

7.4.100. A number of designated sites also have invasive species listed within their citations including Curly's waterweed *Lagarosiphon major* that is present within Stainforth & Keadby Canal Corridor LWS.

Extended Habitat Survey Results

7.4.101. During the extended habitat survey water fern was identified in the South Soak Drain which is located on the Order Limits boundary (as shown as **TN4** on **Figure 4A** of **ES Appendix 7.1 Baseline Habitats And Desk Study Report [APP-072]**). Rhododendron was also found within woodland situated adjacent to the Order Limits.

Biodiversity Net Gain

7.4.102. Land within the Order Limits is dominated by arable habitat, which is classified as 'low distinctiveness' within the Statutory Biodiversity Metric (SBM), and is not a target for avoidance or requiring specific mitigation under the Biodiversity Net Gain Hierarchy. Additional low distinctiveness habitats that are also not a target for avoidance or requiring additional mitigation include modified grassland.

7.4.103. Medium distinctiveness habitats, such as ditches, hedgerows, other neutral grassland, woodland and small areas of mixed scrub, are present and are in the main being retained, except for small sections of scrub and ditches, which are to be appropriately mitigated in line with the BNG requirements.

7.4.104. High distinctiveness habitats present, including wet woodland and lowland mixed deciduous woodland are being retained.

7.4.105. Further detail on BNG is provided in **ES Appendix 7.12 Biodiversity Net Gain Assessment [APP-082].**

Future Baseline Conditions

7.4.106. It is considered that in the absence of the Scheme future ecological baseline conditions will remain relatively static. The majority of the Order Limits would continue to be managed under intensive agricultural crop rotation patterns, with biodiversity interest predominantly limited to existing field boundaries including hedgerow, woodland, scrub and ditch habitats.

7.4.107. Biodiversity value may reduce along boundary features such as ditches if the spread of invasive species which have been identified as present, such as water fern, continues within the Order Limits. In addition, should continued inputs of agricultural chemicals such as fertilisers and pesticides occur, these may contribute to reduced species diversity and affect water quality of ditches within and adjacent to the Order Limits.

Determining Features to be Scoped-In for Detailed Assessment

7.4.108. In accordance with the CIEEM guidance (2024) [**Ref. 7-1**], the assessment only assesses in detail, impacts upon important ecological features i.e., those that are considered important and potentially affected (as set out in **Section 7. 3 Methodology**). It is not considered necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened, and resilient to project impacts and will remain viable and sustainable. Where ecological features are not considered important enough to warrant further consideration,

or where they will not be significantly affected, these can be scoped out of the assessment process, and justification for exclusion is provided. Where a feature has been scoped out of the detailed assessment, measures to protect, enhance or ensure legislative compliance may be included in the 'mitigation' section of the ES.

7.4.109. **Table 7-10** presents the evaluation of identified ecological features and provides the rationale as to why individual features have been included or 'scoped out' of the detailed assessment.

Table 7-10 Importance of Ecological Features

Ecological Feature	Geographic Scale of Importance	Potential Effect Pathways and Rationale for Selection of Features for Detailed Assessment
Statutory Designated Sites	International - National	Due to the location of statutory designated sites including within and adjacent to the Order Limits, the connectivity and mobile nature of some designating features, statutory designated sites for nature conservation have been **scoped into the assessment.**
Non-Statutory Designated Sites	Regional - Local	Due to the location of non-statutory designated sites including within and adjacent to the Order Limits, the connectivity of ditch networks and mobile nature of species of interest, non-statutory designated sites for nature conservation have been **scoped into the assessment.**

Habitats	Local	Priority habitats are present within and adjacent to the Order Limits and therefore. there is potential for direct and indirect effects. As a result, habitats have been **scoped into the assessment.**
Breeding Birds - excluding ground nesting and Schedule 1 species	Regional	Breeding birds are present within the Order Limits. Habitats are also present which are suitable for breeding bird species, although boundary features such as ditches and hedgerows will be retained and protected during works. As a result, breeding birds (excluding ground nesting and Schedule 1 species) have been **scoped into the assessment.**
Breeding Birds – Schedule 1 species	National	Schedule 1 species, hobby, was found breeding within the Order Limit and Cetti's warbler were recorded on adjacent land. As there is the potential for disturbance during the construction phase Schedule 1 species have been **scoped into the assessment.**
Breeding Birds – ground nesting species	National – Regional/County	Ground nesting bird species were recorded within the Order Limits, including skylark, lapwing, yellow wagtail and meadow pipit.

		There is the risk of disturbance during construction and loss of habitat from operation of The Scheme. As a result, breeding birds – ground nesting species - **are scoped into the assessment.**
Non-breeding birds (including both over-wintering and passage period) – SPA Species	International	Year 1 and 2 surveys have identified presence of qualifying species of the Humber Estuary SPA within and adjacent to the Order Limits, so are **scoped into the assessment**.
Non-breeding birds (including both over-wintering and passage periods) – Non-SPA Species	Site-Local	Year 1 and 2 surveys have identified presence of range of non-SPA bird species, some of which are of conservation concern, within and adjacent to the Order Limits. **Scoped into the assessment.**
Bats – roosting	Site	Trees are present within the Order Limits, which have varying degrees of bat roosting potential. There are no plans for tree felling in Order Limits. Buildings are also present within the Order Limits which have low bat roost potential. However, will be retained and protected. The Scheme will be informed by an **Outline Landscape Ecological Management Plan**

		Landscape Ecological Management PlanLandscape Ecological Management Plan[Document Reference 7.6 Revision 3] which will include the provision of artificial bat roosting opportunities, which will increase, enhance and diversify opportunities for roosting. Subsequently there is no identified pathway for an adverse effect from the Scheme. The Scheme and associated works will be legislatively compliant and where necessary subject to a European Protected Species Mitigation Licence, which will ensure that the favourable conservation status of roosting bats species will be maintained. **Scoped out of assessment, however, roosting bats are considered within the mitigation section; including to ensure legislative compliance.**
Bats – foraging and commuting	Local	The Scheme has been designed to avoid boundary features which provide habitats for foraging bats. The commitment to deliver measurable habitat gains through BNG, adoption of

		sensitive lighting strategies (as detailed within the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** submitted with the ES Chapter) and cessation of regular herbicides and pesticide applications associated with current intensive agricultural land management, will provide benefit to foraging and commuting bat species within the Order Limits and surrounding environment. To refine the mitigation response, bat surveys are being completed to establish usage by bats. **Scoped into assessment**
Badger	Site	Further information is provided in confidential **Technical Appendix 7.5 [APP-076]** and mitigation measures are detailed in this ES. **Scoped into assessment**
Otter	Local-Site	Further information is provided in confidential **Technical Appendix 7.6 [APP-077].** **Scoped into assessment**

Water vole	Regional/County	Water voles were found to be present during the 2023 and 2025 water vole surveys. Avoidance of ditches/watercourses has been adopted within the overall Scheme design. The commitment to deliver measurable habitat gains through BNG will strengthen habitat corridors along ditch networks within the Order Limits, providing increased opportunities for these species. The cessation of intensive agricultural management and agrichemical inputs could enhance opportunities. However, impacts to ditches could occur during construction. **Scoped into assessment**
Amphibians	Local	GCN were found absent from all ponds surveyed in 2023 and 2025 with negative eDNA results. All ponds within the Order Limits will be retained and protected. Field boundary features such as hedgerows and ditches will not be impacted by the Scheme. The extensive provision of habitat enhancements through the delivery of BNG will provide increased terrestrial habitat

		availability for local populations of amphibians. Reasonable avoidance measures (RAMs) for amphibians will be utilised and detailed within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]**. **Scoped out of assessment, however, amphibians are considered within the mitigation section; including to enable legislative compliance (GCN).**
Reptiles	Local	Much of the Order Limits consists of intensively managed agricultural land, which is largely unsuitable for reptile species, however, linear habitats such as hedgerows, have some suitability and will be retained and protected as part of the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3],** maintaining existing opportunities for dispersal, foraging and shelter. The extensive provision of habitat enhancements through the delivery of BNG along with the cessation of agricultural

		activities will likely benefit local reptile populations. Protection measures will be implemented to avoid impacts to reptiles, including the adoption of reasonable avoidance measures (RAMs), further details will be provided within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3],** submitted as a separate document to the ES. **Scoped out of assessment but considered within the mitigation section.**
Invertebrates	Local	The Order Limits consist of intensively managed arable land. However, a small area of Thorne & Moors statutory designated sites and Hatfield Chase Ditches SSSI lie within the Order Limits. No infrastructure is proposed within this small area or immediately adjacent to it. With statutory designated sites protected from impacts. Arable farmland has negligible potential for invertebrate species. Aquatic habitats including boundary ditches will be retained and protected.

		It is considered that the commitment to the retention of habitats with ecological importance to invertebrates a**s** part of the design and the commitment to deliver measurable habitat gains through BNG, and cessation of regular herbicides and pesticide applications associated with current intensive agricultural management, there will be a benefit to invertebrate populations within the Order Limits and surrounding environment. Protection measures will be implemented to avoid impacts to invertebrates, including the adoption of reasonable avoidance measures (RAMs), further details will be provided within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3].** **Scoped out of assessment but considered within the mitigation section.**
White Clawed Crayfish & European Eel	C**ounty**	One record of white clawed crayfish was returned within the North Soak Drain, adjacent to the Stainforth and Keadby Canal but outside the Order Limits.

		A record for European eel was returned within the Folly Drain, approximately 1.8km from the Order Limits. Aquatic habitat will be retained and protected during the Scheme, maintaining habitat potentially used by these and other aquatic species. Protection measures will be implemented to avoid impacts to aquatic habitat, including the adoption of pollution prevention and control measures to maintain water quality levels. Further detail is provided within **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]**. Subsequently there is no identified pathway for an adverse effect from the Scheme. **Scoped out of the assessment.**
Other priority mammals	Site	Brown hare are known to occur within the Order Limits, predominantly field boundary features and woodland habitats, which will be retained and protected. These habitats could also support hedgehog, polecat and harvest mouse, at least on an occasional basis. These species will be protected and

		avoided as part of the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** and significant habitat enhancements will be provided, benefitting local populations; as detailed within the **Outline Landscape Ecological Management Plan [Document Reference 7.6]**, provided in addition to this ES Chapter. **Scoped out of assessment but considered within the mitigation section.**
Invasive Species	Local	Water fern *Azolla filiculoides* has been recorded within the Order Limits and Pontic rhododendron has been recorded immediately adjacent to the Order Limits. **Scoped out of assessment but considered in the mitigation section; including to enable legislative compliance.**

7.5. Assessment of Likely Significant Effects

7.5.1. Potential effects on ecological features have been considered. Effects are initially assessed in the absence of specific (non-embedded) mitigation, with residual effects presented thereafter.

Embedded Mitigation

Mitigation and Avoidance by Design

7.5.2. The design of the Scheme includes a range of inherent embedded elements, which avoid or reduce the potential for adverse ecological impacts, including retaining identified higher value statutory designated sites as well as habitat features such as, hedgerows, ditches, and woodlands, and focusing the built development proposals within lower ecological value agricultural and pastoral farmland. This is in line with both the Mitigation Hierarchy and the Biodiversity Net Gain Hierarchy. Buffer distances between development areas and potentially sensitive features have been included to avoid and minimise effects, such as the substation locations being 'set-back' from the Thorne and Hatfield Moors SPA to avoid noise disturbance in operation. Additionally, sensitive, or high value ecological features outside the Order Limits have been protected as part of the design which sets in place buffer zones and other safeguarding measures, all of which has been built-in to as part of the iterative design process.

7.5.3. The proposed **Landscape and Visual Mitigation Strategy [REP1-027]** includes extensive embedded habitat creation which will diversify and strengthen the biodiversity interest of the Scheme itself, and neighbouring areas. The detail of this masterplan is discussed further within relevant sections of this ES where it relates to species-specific mitigation/compensation.

Outline Ecological Construction Management Plan (eCMP)

7.5.4. The potential for adverse effects during the construction phase will be avoided and 'designed out' where practicable, and these will be controlled through standard good construction and environmental working practices as an integral part of the Scheme.

7.5.5. An ecologically sensitive approach to construction will be implemented through an Outline 'ecological Construction Management Plan [Document Reference 7.5 Revision 3], which form part of the wider Construction Environmental Management Plan. An **Outline** Ecological Construction Management Plan

7.5.6. [Document Reference 7.5 Revision 3]has been submitted as a separate document to the ES **[Document Reference 7.5 Revision 3],** and details measures and approaches to be adopted which will limit the likelihood of impacts upon retained habitats through damage, pollution and disturbance. Habitat protection buffers will be maintained throughout the construction phase, and identified with appropriate fencing and signage along with team briefings at 'tool box talks'.

7.5.7. The **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** describes measures to be implemented during the construction process and includes commitments to Species Protection Plans, Reasonable Avoidance Measures (RAMs), pre-construction surveys and appropriate derogation licenses as well as pollution (including dust) control, managed construction lighting and noise / traffic management measures and directional drilling details.

7.5.8. A suitably qualified and experienced Ecological Clerk of Works (ECoW) (or team of ECoWs) will be appointed prior to the commencement of construction activities and through whom appropriate ecological advice will be provided throughout. The ECoW will be responsible for undertaking and/or co-ordinating checks for protected species before providing confirmation that construction and decommissioning activities can commence. The ECoW will also maintain a watching brief as necessary throughout the construction phase to ensure compliance with relevant legislation, including adhering to any protected species mitigation measures required, such as GCN RAMs.

Outline Landscape and Ecology Management Plan Landscape Ecological Management PlanLandscape Ecological Management Plan

7.5.9. An **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** has been submitted in addition to this ES and specifies how the habitats within the operational array and ecological mitigation areas will be managed. This will include the creation and management of new habitats of biodiversity importance, including neutral grassland, native scrub, trees and hedgerow planting. In addition, detail on the provision of arable habitat and management to benefit non-breeding bird species is included.

7.5.10. Post-construction site management and monitoring will be specified, designed to reduce interference with created and retained habitats while promoting their establishment and biodiversity contribution. This will contribute to the establishment of coherent ecological networks, supporting the BNG aims of the NPS for Energy (EN-1) **[Ref. 7-13]**, although the statutory condition under the Environment Act 2021 does not yet apply in relation to NSIPs.

7.5.11. It is anticipated that the final details and implementation of the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3],** which has been submitted separately to this ES, will be secured by requirement of the DCO which would ensure a detailed Landscape Ecological Management Plan would be finalised once the party responsible for delivering the landscape management within the Order Limits has been appointed.

The Mitigation Hierarchy and Biodiversity Net Gain (BNG)

7.5.12. Compliance with planning policy in the NPPF, as well as NPS EN-1 **[Ref. 7-13]**, and EN-3 **[Ref. 7-14]**, requires that the Scheme considers and engages a mitigation hierarchy, requiring the highest level to be applied, where possible. The mitigation hierarchy is also fundamental to BNG. There are four sequential steps that must be taken throughout the lifecycle of a project where there is potential for impacts on relevant ecological receptors:

- Avoidance – actions taken to avoid causing impacts to the environment prior to beginning development (for example, moving the development to a different location);
- Mitigation – measures taken to reduce the duration, intensity, extent and/or likelihood of the unavoidable environmental impacts caused by development (for example, adapting the development design to minimise impacts);
- Restoration or rehabilitation – actions taken to repair environmental degradation or damage following unavoidable impacts caused by development; and
- Compensation – 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).

7.5.13. The Scheme's design evolution has sought to avoid areas of significant biodiversity value, such as field boundary hedgerows and ditch networks. Habitat enhancement measures and ongoing management practices are proposed in line with guidance published by the Building Research Establishment (Biodiversity Guidance for Solar Developments **[REF. 7-27]**) ('the BRE Guidance') and NE's Technical Information Note TIN101 **[REF. 7-28]** that will enhance and safeguard key habitats for the benefit of wildlife and enhance the ecological value of land currently under agricultural use.

7.5.14. The BRE guidance states that:

'with appropriate land management, solar farms have the potential to support wildlife and contribute to national biodiversity targets. Indeed, solar farms may have several additional advantages in that they are secure sites with little disturbance from humans and machinery once construction is complete. Recent research suggests biodiversity gains on solar farms can be significant'

7.5.15. This ES chapter assesses and details commitments for long-term management of the land for the duration of the Scheme to conserve and improve landscape habitat connectivity with the wider landscape for wildlife through protecting and enhancing potentially important wildlife corridors and habitats. The **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3],** which has been submitted separately to this ES summarises how the created and retained habitats within the Order Limits will be managed. This will contribute to the establishment of coherent ecological networks, supporting the BNG targets of the Environment Act 2021 and the NPS for Energy (EN-1) & EN-3.

7.5.16. Through provision of BNG and the Landscape Ecological Management Plan, the Scheme will deliver habitat enhancements, which will provide a clear benefit for a broad range of dependent species. Further, the removal of land from arable production will lead to a reduction (or complete removal) of agricultural chemical overspray and drift where this currently occurs within the Order Limits. This would lead to improved conditions for terrestrial and aquatic invertebrates, which in turn will benefit dependent species, such as foraging bats and farmland birds. Water quality and soil health will also likely improve as a result of less intensive farming practices.

Construction

7.5.17. Given the nature of the Scheme, most potential construction impacts are likely to occur through construction vehicle movements, security fence installation and the placement of the solar panel frames in the ground. In addition, potential impacts could occur due to the construction of cables and other infrastructure, although such impacts will, in the main, be temporary. Nonetheless, potential construction phase ecological effects associated with the Scheme are considered to relate to:

- Direct land take (habitat loss) to accommodate the Scheme;
- Temporary disturbance and land take for construction, laydown areas, cable routes and construction compounds (land restored thereafter);
- Disturbance to, fragmentation or severance of connecting habitat or potential commuting routes within and adjacent to the Order Limits; and
- Disturbance and pollution (indirect effects such as noise and vibration, dust, pollution from surface water run-off) resulting from clearance and construction, plant and vehicles movements and workers' activities.

7.5.18. Further detail relating to potential ecological impacts during construction prior to the implementation of mitigation is provided below.

Statutory Designated Sites

7.5.19. A small extent of Thorne & Hatfield Moors SPA, Thorne Moor SAC, Thorne, Crowle and Goole Moors SSSI and Hatfield Chase Ditches SSSI are located within the Order Limits. In addition, Hatfield Moors SAC and Humber Estuary SPA, SAC and Ramsar are situated within 10km of the Order Limits.

7.5.20. In addition, Lower Derwent Valley SPA, Lower Derwent Valley Ramsar, Lower Derwent Valley SAC, Skipwith Common SAC and the River Derwent SAC are within 30km, although beyond 10km.

7.5.21. Each statutory designated site is addressed below in turn.

Thorne & Hatfield Moors SPA

7.5.22. This is designated for its population of breeding nightjar and a small section (0.53ha) is located within the Order Limits on the northern boundary and the southern parcel is 0.1km south of the Order Limits.

7.5.23. Nightjar surveys of the SPA were undertaken in 2022, as part of ongoing monitoring works for the Tween Bridge Wind Farm. Please refer to **Appendix 7.4 Nightjar Survey Results [APP-075]** for full details. In summary, surveys found 58 churring males in Thorne and Crowle Moors (to the north of the Order Limits), which is the highest number on record since 2017. Surveys of Hatfield Moors (south of the Order Limits) found 52 churring males or territories which is the highest number since survey began in 2005. Surveys were focused within the SPA boundaries but no churring males/territories were noted within the Order Limits or immediately adjacent.

7.5.24. Following information from Natural England, nightjar data was requested from the nightjar study undertaken in the area *'LIFE+ - 'That's Life' Monitoring of European Nightjar 2015 – 2017'*. This data was received in May and June 2025 and has informed this assessment and is included in **Appendix 7.4 Nightjar Survey Results [APP-075].**

7.5.25. Radio-tracking studies were carried over this period with a number of male nightjar tagged and tracked from the Thorne and Hatfield Moors SPA.

7.5.26. The records provided that have been reviewed appear to show territories that occur on the edges of the moorland sites (Thorne and Hatfield). The locations

cluster in areas outside of the Scheme strongly suggesting that nesting did not occur within the Order Limits boundary. This is supported by the Breeding Bird Survey results and would be consisted with the known nesting preferences for this species i.e. heathland, moorland and young conifer woodland.

7.5.27. Some of the less clustered, outer territory location points fall within the Order Limits and it can be reasonably presumed that these outliers are more closely associated with foraging behaviour. Several studies have highlighted the importance of habitats beyond the song territories **[Ref: 7-47]** for foraging Nightjar. The same study also demonstrated the importance of having foraging and nesting habitats in close proximity and that these are not always the same habitat type. Additional research **[Ref: 7-48]** showed that Nightjar avoided conifer plantations and arable for improved grassland for foraging.

7.5.28. The Order Limits predominantly comprise arable fields which currently makes it not only sub-optimal for nesting, but largely unsuitable for foraging as well. Given this evidence, any improvements to foraging habitat within the Order Limits will support the nesting sites located in the adjacent moorland i.e. in the designated sites.

7.5.29. No infrastructure development is proposed within the SPA boundary, so no impacts from land take will occur.

7.5.30. Habitats within the Order Limits have limited potential for nightjar, consisting largely of intensively managed arable farmland, which holds little value as a nesting habitat or foraging resource for this specialist species. The loss of this habitat is therefore not considered likely to be significant for nightjar. Higher value boundary habitats that are likely to support invertebrate species used by foraging nightjar will be retained and protected during works. Following construction, habitat enhancement for this species will be provided through the introduction of species-rich neutral grassland around field boundaries, which will provide strengthened dispersal corridors throughout the landscape and increase potential foraging habitat. These measures will create habitats of greater value to this species [REF. 7-49], resulting in an enhancement compared to the existing situation.

7.5.31. No moorland habitat suitable for nesting nightjar was found within the Order Limits, and usage by nightjar is considered to be restricted to occasional use as a foraging resource, particularly along retained boundary features. There could be a small loss of potential foraging habitat as a consequence of the Scheme; however, this would primarily relate to intensively managed arable farmland of

limited suitability. Retained boundary habitats, including hedgerows, woodland edges and ditch corridors, will be retained and protected.

7.5.32. Given the close proximity of the SPA to the Order Limits boundary, should construction take place during the time nightjar are present between April and August [REF. 7-29], there is potential for disturbance impacts from construction, including noise and lighting.

7.5.33. Polluting incidences and run-off during construction could detrimentally impact the SPA, including the flora and fauna it supports. Furthermore, run-off, including mud and debris arising from construction works entering the surface water / land drainage system, causing blockages and restricting flow, could result in a negative impact, including to invertebrates that nightjar may forage on.

7.5.34. Impacts from air quality during construction, including dust and vehicle emissions, could also detrimentally impact the qualifying features.

7.5.35. Mitigation included within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]**, including measures to prevent impacts from run-off, airborne pollution including dust, noise and lighting, will prevent the above impacts from occurring.

7.5.36. On this basis, it is considered that in the absence of any further or secondary mitigation, impacts to the SPA and nightjar could be minor adverse at the international level, but Not Significant during construction, due to the potential small loss of foraging habitat and potential for disturbance.

Thorne Moor & Hatfield Moors SACs

7.5.37. Both SAC's are designated for their 'degraded raised bogs still capable of natural regeneration'. Hatfield Moors SAC is situated 100m south of the Order Limits. A small section of the northeastern boundary of the Order Limit extends into Thorne Moor SAC. Whilst this small 0.53ha area is included within the Order Limits, no development works are proposed within the SAC. The Order Limits is dominated by intensively managed arable farmland and the habitat survey did not identify any areas of bog habitat. Areas of peat are shown as present within the Order Limits based on geological and Natural England maps. However, no evidence of peat/heath/bog mire communities was recorded during the habitat survey. With no construction activities occurring within the SAC boundaries, including the area within the Order Limits, there will be no direct construction impacts (such as habitat loss or land take) on the SAC.

7.5.38. The SAC is linked to the Order Limits by a network of drainage ditches and impacts could occur to this SAC from any changes in water quality and quantity. Polluting incidences and run-off could detrimentally impact the SAC including the flora and fauna it supports. Furthermore, run-off including from mud and debris arising from construction works entering the surface water / land drainage system, causing blockages and restricting flow could result in a negative impact.

7.5.39. Impacts from air quality during construction, including dust and vehicle emissions, could detrimentally impact the qualifying features.

7.5.40. Mitigation included within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3],** which includes measures to prevent impacts from run-off including pollution and silt, airborne pollution including dust will prevent the above impacts from occurring.

7.5.41. As a result, indirect impacts on the SAC are considered to be **negligible** on a receptor of International value and sensitivity, but **Not Significant** during construction.

Humber Estuary SPA

7.5.42. The SPA is designated for its assemblage of birds including wintering, passage and breeding birds and is located 7.7km north. Such birds may use the Order Limits on occasion as part of a wider territory to forage and roost. Habitats which they can utilise include agricultural and arable fields, and if more than 1% of the qualifying number of each individual species is found to be present then this is considered to be functionally linked land , as confirmed in Natural England's consultation response as summarised in Table 7.2 and 7.3. As suitable habitat is present within the Order Limits, there is the potential for likely significant effects. Non-breeding bird surveys have, therefore, been completed to assess usage of the Order Limits by such birds and details of these surveys are presented in **Technical Appendix 7.3 [AS-015]**, which presents the results of two consecutive years' worth of surveys.

7.5.43. Given the numbers of lapwing, mallard and pink-footed geese recorded within the Order Limits during surveys, the Order Limits are functionally linked to the SPA for these species.

7.5.44. Given the low numbers recorded (i.e. below significance threshold of 1% of SPA population) and general absence of suitable habitat, the following species do not require any specific mitigation: curlew, marsh harrier, hen harrier and teal.

7.5.45. In addition to the above, greylag geese were recorded during the surveys. These were infrequently recorded in Year 1, but numbers increased in Year 2. Although this species is not a qualifying feature of the SPA and the populations located in England were widely regarded as non-native feral species, with truly native species only found in Scotland **[REF. 7-30]**. However, based on Natural England's consultation response regarding the fact that the Humber Estuary SPA supports more than 1% of the national population (see **Appendix 7.9 [APP-084])** and the fact that they have been recorded within the Order Limits, their presence has been assessed in this ES.

7.5.46. Given the distance of the SPA from the Order Limits there will be no impacts from land take or airborne emissions, including dust with dust only considered to be significant within 200m. However, as the site is functionally linked to a number of species for which the SPA is designated, the construction of the Scheme proposals could result in impacts from noise, disturbance and habitat loss to these species including, pink-footed geese, golden plover, lapwing and greylag geese.

7.5.47. Given the distance of the SPA from the Order Limits, and that impacts from water quality and quantity are not likely, due to the extensive ditch network in the area impacts could result from any changes in water quality and quantity. Polluting incidences and run-off could detrimentally impact the SAC including the flora and fauna it supports. Furthermore, run-off including from mud and debris arising from construction works entering the surface water / land drainage system, causing blockages and restricting flow could result in a negative impact.

7.5.48. Mitigation included within the Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3], which includes measures to prevent impacts from run-off, airborne pollution including dust, noise and lighting will prevent the majority of the above impacts from occurring.

7.5.49. Nonetheless, although habitat creation and management are detailed within the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** submitted in addition to the ES, the loss of foraging habitat for species functionally linked to the SPA is considered to be **moderate adverse** on a receptor of International value and sensitivity and **Significant** during construction.

Humber Estuary Ramsar

7.5.50. The Ramsar is designated for its estuarine habitats, populations of grey seals and assemblage of birds including wintering, passage and breeding birds and migrating river and sea lamprey and is located 5.6km east.

7.5.51. Due to the distance of over 5.6km of the statutory site from the Order Limits, the Scheme will not impact estuarine habitats and species such as grey seals. Effects on grey seals and bird species which exclusively use coastal and maritime features will not be adversely affected by the Scheme which is located 5.6km inland.

7.5.52. Prior to mitigation, construction at the site could impact mobile species such as birds that may use the Order Limits on occasion as part of a wider territory to forage and roost, such as from disturbance and loss of habitat.

7.5.53. Potential impacts from dust and other airborne pollutants are not likely based on the distance of this site from the Order Limits. In addition, given the distance, impacts from water quality and quantity are not likely, although the extensive ditch network in the area could result in impacts arising from any changes in water quality and quantity. Polluting incidences and run-off could detrimentally impact the RAMSAR including the flora and fauna it supports. Furthermore, run-off including from mud and debris arising from construction works entering the surface water / land drainage system, causing blockages and restricting flow could result in a negative impact.

7.5.54. Mitigation included within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3],** which includes measures to prevent impacts from run-off, airborne pollution including dust, noise and lighting will prevent the majority of the above impacts from occurring.

7.5.55. Nonetheless, although habitat creation and management are detailed within the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** submitted separately to this ES, the loss of foraging habitat for species that utilise the RAMSAR is considered to be **moderate adverse** on a receptor of International value and sensitivity and **Significant** during construction.

7.5.56. As a result, impacts to species that utilise the Ramsar are considered to be **moderate adverse** on a receptor of International value and sensitivity and **Significant** during construction.

Humber Estuary SAC

7.5.57. Located 5.6km north this SAC is designated for its estuarine habitats including coastal plain-mudflats and sandflats. It also supports populations of sea and river lampreys as well as grey seals which are qualifying features of the SAC.

7.5.58. No direct impacts are anticipated on the predominantly coastal and maritime habitats and species the SAC supports, due to the separation distance of over 5.6km. Whilst drains and ditches within and adjacent to the Order Limits could support lamprey species, no records of them were returned within the data search and therefore they are considered unlikely to be present. However, buffers around drains and watercourses as well as measures set out within the Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3] would ensure the habitat is retained and protected suitable to support lamprey and their free movement in the future.

7.5.59. The potential impacts from airborne pollutants and any changes in water quality and quantity could impact this SAC. However, mitigation included within the Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3], which includes measures to prevent impacts from run-off and airborne pollution including dust, will prevent the majority of the above impacts from occurring.

7.5.60. Therefore, no discernible impacts on this SAC or its qualifying interests are considered likely and effects are assessed as **negligible** and consequently **Not Significant**. Recent rulings (People over Wind **[REF. 7-31]**) dictate that mitigation measures cannot be taken into account when screening sites/features in/out of Appropriate Assessment (AA) as part of the Habitat Regulations Process, so whilst it is considered overall that there would not be any significant adverse effects in EIA terms on the Humber Estuary SAC, it cannot be screened out of further AA at this stage.

Lower Derwent Valley SPA

7.5.61. Located 17.2km north, this SPA is classified for an internationally important assemblage of wintering waterfowl comprising Bewick's swan, teal, wigeon, golden plover and ruff (non-breeding/passage), and breeding shoveler.

7.5.62. The non-breeding and breeding bird surveys did not record any significant numbers of the Lower Derwent SPA species utilising the Order Limits and the Order Limits is not functionally linked to this SPA. The measures detailed for the Scheme that provide suitable breeding and non-breeding habitat will ensure opportunities are available for the SPA species during the operational phase.

7.5.63. The distance of this SPA to the Order Limits also ensures any impacts are unlikely.

Lower Derwent Valley Ramsar

7.5.64. Located 17.1km north this Ramsar site is designated under Criterion 1 as one of the most important examples of traditionally managed species-rich alluvial flood-meadow habitat in the UK, supporting the hydrological and ecological functioning of the Humber Basin. It qualifies under Criterion 2 for its rich assemblage of wetland invertebrates, including 16 species of dragonfly and damselfly, 15 British Red Data Book species, and the nationally rare leafhopper Cicadula ornata. Under Criterion 4 it is important for passage birds such as ruff and whimbrel, while Criteria 5 recognise the site's internationally important waterfowl assemblages. Criterion 6 identifies Eurasian wigeon and Eurasian teal occurring at levels of international importance.

7.5.65. The non-breeding and breeding bird surveys did not record any significant numbers of the Lower Derwent Ramsar species utilising the Order Limits. The measures detailed for the Scheme that provide suitable breeding and non-breeding habitat will ensure opportunities are available for the Ramsar species during the operational phase.

7.5.66. The distance of this Ramsar to the Order Limits also ensures any impacts are unlikely.

Lower Derwent Valley SAC

7.5.67. Located 17.1km north this SAC is designated for Annex I habitats of lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) and lluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*). Otter is an Annex II qualifying species of the SAC.

7.5.68. Given the distance of the Lower Derwent Valley SAC from the Order Limits, the site's Annex I habitats and Annex II species can be scoped out from further assessment.

Skipwith Common SAC

7.5.69. Located 22.2km north this SAC is designated for Annex I heathland habitat northern Atlantic wet heaths with *Erica tetralix* and European dry heaths. The dry heath element is an example of H9 *Calluna vulgaris – Deschampsia flexuosa* heath dominated by heather *Calluna vulgaris*. The area has entomological and

ornithological importance, with nearly 80 species of birds recorded, including nightjar.

7.5.70. Given the distance of Skipwith Common SAC from the Order Limits, the SAC Annex I habitats can be scoped out from further assessment.

River Derwent SAC

7.5.71. Located 13.8 km north, this SAC is designated for the Annex I habitat Water-courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation, and Annex II species river lamprey as a primary reason for selection and Annex II species including white-clawed crayfish, sea, river and brook lampreys, bullhead, Atlantic salmon and otter as a qualifying feature.

7.5.72. Given the distance of River Derwent SAC from the Order Limits, the site's Annex I habitat and Annex II species can be scoped out from further assessment.

Thorne, Crowle and Goole Moors SSSI

7.5.73. The SSSI is designated for its lowland raised bog habitat and species it supports, including breeding and wintering birds including nightjar, as well as its invertebrate and fauna communities. The small area of the SSSI lying within the Order Limits comprises 0.53ha of wet woodland with a ground floor layer dominated by bracken.

7.5.74. Impacts relating to nightjar and moorland/raised bog habitat are discussed above. The small section of the SSSI which falls within the Order Limits will not be directly impacted by the Scheme. The small section comprises of wet woodland and will be retained and protected. Species associated with the SSSI are largely dependent on moorland habitat and this will not be impacted by the Scheme. Please refer to the relevant species sections including breeding birds, non-breeding birds and invertebrates for a detailed assessment.

7.5.75. As with the other designated sites, impacts could also occur during construction from polluting incidences including run-off, such as from mud and debris entering the surface water / land drainage system, causing blockages and restricting flow, and also from air quality including dust and vehicle emissions. All these impacts could detrimentally impact the qualifying features.

7.5.76. Mitigation included within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3],** which includes measures to

prevent impacts from run-off, airborne pollution including dust, noise and lighting will prevent the above impacts from occurring.

7.5.77. Impacts on Thorne, Crowle and Goole Moors SSSI are considered to be **negligible** on a receptor of National value and sensitivity, but **Not Significant** during construction.

Hatfield Chase Ditches SSSI

7.5.78. The SSSI is designated for its ditch network and associated species including aquatic flora, water vole and aquatic invertebrates. Ditches associated with the SSSI are situated along the boundaries of the Order Limits.

7.5.79. All ditches associated with the SSSI will be retained and protected within the Order Limits with minimum buffers of 9m and the Scheme has been designed to avoid the requirement for new crossings or works within ditches wherever possible. There is one location where a HDD will be required under the ditch for a cable route in Area E but the HDD is designed to avoid the Hatfield Chase drain.

7.5.80. Impacts to water vole present could result from accidental killing or injuring during construction.

7.5.81. Impacts from air quality during construction, including dust, could detrimentally impacts the qualifying features, including flora and aquatic invertebrates.

7.5.82. Polluting incidences and run-off could detrimentally impact the ditch network including the flora and fauna it supports. Furthermore, run-off including from mud and debris arising from construction works entering the surface water / land drainage system, causing blockages and restricting flow could result in a negative impact.

7.5.83. Should water abstraction be required during construction, such as due to directional drilling, this would have a detrimental impact to the habitats and species that they support.

7.5.84. Appropriate measures to protect this and all other SSSI and non-SSSI ditches, including management of runoff and water quality controls is set out in the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** and as a result, there will be no direct impacts on aquatic habitats and species associated with the ditch network and the SSSI.

7.5.85. The SSSI ditches are situated within an area of intensive agriculture, which receives regular input of pesticides and chemicals which likely leach into the

ditch network, including the SSSI. The cessation of intensive arable farming in proximity to the ditches is likely to have a beneficial effect to the ditch network and species it supports including aquatic invertebrates such as aquatic invertebrates.

7.5.86. In addition, habitat creation and enhancement such as species diverse grassland and hedgerow planting as part of the planned habitat creation and landscape planting that form part of the Scheme proposals, is likely to benefit a range of species including those associated with the SSSI.

7.5.87. With protection measures in place, impacts on the SSSI are assessed as **negligible** magnitude on a receptor of National value and sensitivity, which is **Not Significant.**

Crowle Borrow SSSI

7.5.88. This SSSI is located beyond the boundary of the Order Limits, and is approximately 1km east. As such there will be no impact from direct habitat loss, but impacts could occur during construction from polluting incidences including run-off, such as from mud and debris entering the surface water / land drainage system, causing blockages and restricting flow, and also from air quality including dust and vehicle emissions. All these impacts could detrimentally impact the qualifying features.

7.5.89. Mitigation included within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3],** which includes measures to prevent impacts from run-off, airborne pollution including dust will prevent the above impacts from occurring.

7.5.90. Impacts on Crowle Borrow SSSI are considered to be **negligible** on a receptor of National value and sensitivity, but **Not Significant** during construction.

Hatfield Moors SSSI

7.5.91. This SSSI is located approximately 0.1km south of the Order Limits boundary. As such there will be no impact from direct habitat loss, but impacts could occur during construction from polluting incidences including run-off, such as from mud and debris entering the surface water / land drainage system, causing blockages and restricting flow, and also from air quality including dust and vehicle emissions. All these impacts could detrimentally impact the qualifying features.

7.5.92. Mitigation included within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3],** which includes measures to prevent impacts from run-off, airborne pollution including dust, will prevent the above impacts from occurring.

7.5.93. Impacts on Hatfields Moors SSSI are considered to be **negligible** on a receptor of National value and sensitivity, but **Not Significant** during construction.

Non-Statutory Designated Sites

7.5.94. The Scheme has been designed to retain and protect non-statutory designated sites including Local Wildlife Sites (LWS) and Candidate Local Wildlife Sites (CLWS) both within the Order Limits, adjacent and in the wider area. These largely consist of drains, with one CLWS relating to a retained woodland copse called 'Whittaker's Plantation', located at the centre of the Order Limits. A full list of non-statutory designated sites can be found in **Annex 2** of **Technical Appendix 7.1 Baseline Habitats And Desk Study Report [APP-072].**

7.5.95. All non-statutory designated drains will be retained and protected by minimum 5m buffers, which is extended to 9m for all Internal Drainage Board (IDB) watercourses. The Scheme will have no direct impact on the drains and these will continue to be managed by the IDB. Indirect effects such as pollution prevention and surface runoff control measures during construction are set out within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3].**

7.5.96. Whittaker's Plantation CLWS will also be retained and the proposals buffer this CLWS by 15m, which will help to reduce potential impacts. The Order Limits border an additional two LWS, one Local Wildlife Trust (LWT) and one CLWS.

7.5.97. Although the non-statutory sites are being retained and buffered from the proposals, impacts could take place during construction such as from accidental damage, run-off including mud and silt and airborne pollutants including dust.

7.5.98. The cessation of agricultural inputs and run off as a consequence of construction is likely to improve water quality within the Order Limits and potentially wider area including non-statutory designated drains.

7.5.99. Standard measures within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will be implemented and the proposed works surrounding the non-statutory sites will adhere to British Standards BS5837:2012 Trees in relation to design, demolition and construction

[REF. 7-32] adopting 15m 'buffer zones' in relation to the protection of woodland habitats. These measures will safeguard the CLWS.

7.5.100. All non-statutory designated sites within and adjacent will have temporary appropriate signage displayed during the construction phase of the Scheme as detailed in the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3],** in order to ensure that accidental damage to habitats within the LWS/CLWS does not occur.

7.5.101. The mitigation and good practice measures detailed within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will be sufficient to prevent any measurable direct and indirect impacts to non-statutory designated sites.

7.5.102. Subsequently, impacts will be of negligible magnitude on a receptor of Regional – Local value and sensitivity, which are consequently **Not Significant.**

Habitats

7.5.103. Prior to mitigation, impacts that will occur to habitats within the Order Limits will comprise removal of habitats and damage / disturbance to retained habitats.

7.5.104. The construction of solar farms requires very low levels of direct and permanent land take (with the actual area of soil that is disturbed typically less than 2% of the total site area [Ref: 7-41] for the infrastructure. However, the proposals include converting arable land to grassland, which will result in the direct loss of this habitat, which is of low ecological importance.

7.5.105. The field boundary hedgerows comprising predominantly species-poor hedgerows, ditch networks, and grassland field margins, as well as ponds and woodland (including Whittaker's Plantation CLWS), represent habitats of higher ecological importance, albeit limited in their distribution within and immediately surrounding the Order Limits. These habitats will be largely retained and safeguarded as the design of the Scheme has sought to use existing gaps, crossings and field entrances for access. Nonetheless retained habitats could be impacted through accidental damage during the construction phase including physical disturbance, primarily comprising temporary compaction and soil disturbance from plant machinery and vehicles, as well as by construction activities that could cause impacts through pollution / run-off and dust.

7.5.106. To minimise impacts, access tracks for the Scheme will utilise existing ditch crossing points where possible, although 45 new culverts are proposed for access tracks. In addition, existing gaps in hedgerows and field entrance gates

will be used, with highly localised disturbance of very short sections of hedgerow surrounding existing access points potentially required (up to approximately 5m wide). The detail of works, where they affect hedgerows or ditches, are set out in the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** along with measures for runoff control and pollution prevention.

7.5.107. An underground cable network will provide infrastructure connections across various land parcels. It is anticipated that a cable plough or open trenching works would be used to install the 132 kV cables, and HDD would be required in more constrained locations. The habitats within the Order Limits are already subject to intensive management and use by machinery, therefore the habitats present are largely of negligible ecological importance. Mitigation will prevent impact occurring to sensitive habitats and impacts will therefore be **negligible-minor adverse** during construction and **Not Significant**.

Breeding Birds -excluding ground nesting and Schedule 1 species

7.5.108. The breeding bird assemblage (excluding ground nesting and Schedule 1 species) recorded within the previous Order Limits submitted within the previous PEIR chapter is typically representative of farmland habitats, and such species almost exclusively utilise field boundary features for nesting. Since the production of the working draft PEIR chapter that informed the non-statutory pre-application consultation, the Order Limits have evolved to include additional land parcels which were not subject to breeding bird surveys. These areas comprise a continuation of the widespread arable land which is present across much of the Order Limits. The 'additional' areas have been surveyed in 2025, and the results were consistent with the 2023 surveys, with a similar species assemblage recorded (see **Technical Appendix 7.2 [AS-014]**

7.5.109. Potential effects on birds during construction include the temporary loss of nesting and foraging opportunities (but only if construction takes place during the breeding season) through minor hedgerow removal, directly within the Order Limits, or indirectly within adjacent areas through disturbance.

7.5.110. Impacts from disturbance during construction could take place, although local bird populations will be expected to have become tolerant to existing background activity and disturbance from normal farm operations and local infrastructure (motorways, roads etc.).

7.5.111. In addition, construction disturbance will be short term, undertaken in phases (i.e. not the whole Order Limits at one time), and confined to land within the

Order Limits. The layout design includes suitable protection buffers around woodland, hedgerows and ditches which serve to separate potentially disturbing activities from locations most likely to be used by birds for foraging, shelter or breeding. These features will be retained and therefore available to nesting/foraging birds throughout the construction phases.

7.5.112. Disturbance during construction is likely to result in temporary displacement of breeding birds within or adjacent to active working areas (i.e. during individual phases of work where this occurs within the breeding season). This is considered to be minor adverse in the context of the availability of extensive nesting habitat locally and the overall retention/creation/enhancement of habitats suitable for nesting bird species within the embedded design.

7.5.113. Measures outlined in the Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3] in regard to breeding birds will be implemented during construction. These measures include vegetation clearance and groundworks timed to occur outside the breeding bird season (March - August). Should this not be possible, a search for nesting species should be undertaken by a competent ecologist. If an active bird nest is identified during works within the breeding bird season (March to August), the supervising ecologist will immediately inform the site manager and establish a 5m exclusion buffer around the nest. No works or disturbance-causing activities will take place within this buffer until the nest is confirmed by the ecologist to be inactive.

7.5.114. Nesting bird checks will be repeated during different phases of work or at different times during the nesting bird season (March to August) to ensure that none are impacted during works.

7.5.115. Subsequently, overall impacts to breeding bird species will be of **minor adverse** magnitude on a receptor of Regional value and sensitivity, which are consequently **Not Significant**.

Breeding Birds - Schedule 1 species

7.5.116. During surveys, one hobby territory was found within the Order Limits and two Cetti's warblers, one territory within the wider survey area and one territory outside the survey area that may utilise the wider survey area as part of a broader territory.. Please refer to **Technical Appendix 7.2a [APP-073a]** for further detail.

7.5.117. Works will be entirely on land within the Order Limits and habitat in the wider area will not be directly impacted by the Scheme. Trees, hedgerows, woodland and other boundary features within the Order Limits will be retained and protected thereby maintaining features likely to be used by these and other species. As a result, these Schedule 1 species will not experience direct adverse impacts resulting from habitat loss during construction.

7.5.118. These species may be subject to disturbance impacts if undertaken during the breeding season and if Schedule 1 species hobby or Cetti's warblers are breeding nearby. To safeguard these birds and ensure legislative compliance, suitable protection measures are included as part of the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** and **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]**, including pre-commencement surveys (repeated as necessary for different construction phases), timings of works in proximity to potential habitat that could support Schedule 1 species to avoid breeding season, and the implementation of targeted Bird Protection Plans including buffer zones if Schedule 1 species are found to be nesting in the vicinity of construction works. Such measures will be mandatory to ensure legislative compliance.

7.5.119. Overall, prior to mitigation impacts to breeding birds – Schedule 1 species, will be **minor adverse** magnitude on a receptor of Regional/County value and sensitivity, which is consequently **Not Significant**.

Breeding Birds – ground nesting species

7.5.120. Breeding bird surveys carried out in 2022 and 2023 found the following territories within the Order Limits boundary; of greylag goose (1 territory), grey partridge (9 territories), lapwing (20 territories), skylark (269 territories), yellow wagtail (94 territories), meadow pipit (12 territories) and corn bunting (3 territories). Further territories were found within the wider survey area and are detailed within **Appendix 7.2 Breeding Bird Survey Report [AS-014]**.

7.5.121. Whilst construction of the Scheme will be staggered, with different parcels of land starting construction at different times, there is the potential for disturbance and the loss of open habitat which these species require for breeding. This will be temporary (2.5 years overall), and it should be noted that upon completion of active construction, the long-term availability of habitat and new planting, including the creation of open areas of species diverse grassland and with the cessation of chemical applications leading to increased invertebrate resources, will provide enhanced foraging opportunities across the Order Limits.

7.5.122. Ground-nesting species will be deterred from breeding in the vicinity of the different phases of construction activities, where these occur during the breeding season, due either to land take or associated disturbance such as noise and/or human activity. This impact will be of limited duration during the phased periods of construction.

7.5.123. Certain ground-nesting species will also be deterred from nesting under the constructed solar panels over the long-term, as they require open ground and clear sightlines. As a result, the number and distribution of breeding territories within the Scheme is expected to change as a result of construction. It is noted that the numbers of pairs, and breeding success of ground nesting species under pre-existing agricultural management also varies depending on the year-to-year variations in the cropping regime (with some crops, or the timing of sowing or harvesting effectively preventing either nesting or successful rearing of young).

7.5.124. Given the numbers of territories of ground-nesting species such as skylark recorded across the Order Limits during surveys, it is considered that the impact of construction-related displacement of such species will be **major adverse** magnitude on a receptor of National-Regional/County value and sensitivity, which is **Significant** in the absence of additional mitigation.

7.5.125. Ground-nesting bird species recorded within the Order Limits include grey partridge, skylark, yellow wagtail, meadow pipit and corn bunting. These species are not qualifying features of the Humber Estuary SPA or Ramsar, but are protected and/or notable farmland bird species and form part of the ground-nesting breeding bird assemblage supported by the Order Limits.

7.5.126. Construction of the Scheme would result in the temporary displacement of ground-nesting birds from active construction areas and, following installation of solar panels, a long-term change in the availability and suitability of open ground-nesting habitat within the Order Limits. Although the Scheme will be constructed in phases, and not all areas will be affected at the same time, the scale of the Order Limits and the number of territories recorded mean that additional mitigation is required to maintain opportunities for the ground-nesting bird assemblage.

7.5.127. Additional mitigation is therefore required for grey partridge, skylark, yellow wagtail, meadow pipit and corn bunting. This mitigation is separate from, but complementary to, the mitigation proposed for non-breeding SPA/Ramsar bird species.

Non-breeding birds

7.5.128. Based on the Year 1 and Year 2 survey results, the non-breeding bird assemblage recorded within the Order Limits is typically representative of farmland habitats see **Appendix 7.3 Non-breeding Bird Survey Report (Year 1 and Year 2) [AS-015].**

7.5.129. The Order Limits largely surround Tween Bridge Wind Farm, which is an operational wind farm with 22 turbines, of which 19 are within the Order Limits.. It is therefore considered that this northern section of the Order Limits is already impacted for non-breeding birds due to displacement caused by the presence of the turbines.

7.5.130. An assessment of significance has been undertaken to determine if the Order Limits are considered to be 'functionally linked' to the Humber Estuary SPA/Ramsar, which is situated approximately 7.7km north. Functional linkage is not defined in case law, but is generally considered to be relevant when over 1% of a given SPAs population of qualifying features are regularly present and the site is considered 'important' in the life cycle of the qualifying species.

7.5.131. Greylag goose, lapwing, mallard, and pink-footed goose exceeded the 1% threshold of their WeBS 5-year mean [Ref: 7-50] from the Humber Estuary SPA within the Order Limits, indicating potential use of Functionally Linked Land (FLL). See **Appendix 7.3 Non-breeding Bird Survey Report (Year 1 and Year 2) [AS-015]**

7.5.132. Potential construction effects on non-breeding birds associated with the Humber Estuary SPA/Ramsar therefore include loss of functionally linked land for lapwing, pink-footed goose, greylag goose and mallard and disturbance to these species. Disturbance effects could arise from the movement of construction plant and vehicles, the presence of construction personnel, noise, vibration, lighting where required during low-light conditions, and general visual disturbance associated with phased construction activities.

7.5.133. These effects would not occur uniformly across the whole Order Limits at any one time, as construction would be undertaken in phases. However, where works are being undertaken within or close to fields used by non-breeding birds, there is potential for temporary displacement from otherwise suitable foraging or roosting habitat. This could affect species recorded within the Order Limits and the Wider Survey Area, including species associated with the Humber Estuary SPA and Ramsar site.

7.5.134. Potential impacts on non-breeding birds associated with the Humber Estuary SPA/Ramsar therefore include loss of functionally linked land for lapwing, pink-footed goose, greylag goose and mallard, as well as construction-related disturbance and displacement of these species. Consideration for golden plover in adjacent land during construction has also been had due to the numbers recorded beyond the Order Limits, but in proximity. Consequently, impacts are considered to be **moderate (adverse) magnitude** on a receptor of International value and sensitivity, which is **Significant** in the absence of additional mitigation.

7.5.135. The non-breeding bird surveys also recorded Schedule 1 species and other protected or notable bird species, including raptors such as hen harrier and marsh harrier. These species were recorded in low numbers and the Order Limits is not considered to be functionally linked land for these species. Construction-phase effects on these species are therefore limited to potential temporary disturbance or displacement of individuals using the Order Limits or adjacent land for foraging. Given the low numbers recorded, the temporary and phased nature of construction, and the availability of suitable foraging habitat in the wider area, effects on these species are assessed as minor adverse on a receptor of National-Regional/County value and sensitivity, which is Not Significant.

7.5.136. Field boundaries including ditches, drains and hedgerows will be retained and protected and these habitats will be enhanced as part of the embedded mitigation included in the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3],** with species diverse grassland along field margins and hedgerow planting. Details including management practices are set out within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** and **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]**.

7.5.137. Ditch habitats and ponds will be retained and water quality will improve due to a cessation in intensive agricultural farming, therefore creating an enhancement for water birds such as mallard and teal, and hen harrier and marsh harrier, which will also be able to continue to hunt along enhanced field boundaries. As a result, impacts to mallard, teal, hen harrier and marsh harrier will be **minor (positive) magnitude** on a receptor of National-Regional/County value and sensitivity, which is consequently **Not Significant**.

Bats – roosting

7.5.138. Trees, buildings and bat boxes with potential to support roosting bats are present within the Order Limits. These features are being retained and

protected as part of the Scheme design. As such, there is no anticipated direct loss of confirmed or potential bat roost features during construction.

7.5.139. In the event that minor works to trees or structures are required during construction, such works could result in disturbance, injury or mortality to roosting bats if suitable precautions are not implemented. However, this would be controlled through pre-construction checks, further survey where required, and the implementation of an appropriate European Protected Species Mitigation Licence if a roost is confirmed and impacts cannot be avoided.

7.5.140. Given the retention of potential roosting features and the absence of confirmed impacts to roosts, construction effects on roosting bats are assessed as negligible adverse magnitude on a receptor of Site value and sensitivity, which is Not Significant.

Bats – foraging and commuting

7.5.141. The Order Limits are dominated by intensively managed arable farmland, which provides limited suitability for foraging and commuting bats. Bat activity surveys completed in 2025 identified a typical assemblage of common and widespread bat species, with activity largely associated with linear features such as hedgerows, ditches, watercourses and woodland edges. Full details are provided within **Environmental Statement Appendix 7.13: Bat Activity Report (Rev 2) [AS-017].**

7.5.142. The Scheme has been designed to retain and protect these key linear features, and construction works will be focused predominantly within open arable land of lower value to bats. Potential construction impacts could include temporary disturbance from lighting, noise, dust and surface water run-off, particularly where works are located close to retained hedgerows, ditches, woodland edges and watercourses.

7.5.143. Construction works will generally take place during daylight hours and, where temporary lighting is required, this will be controlled through the **Outline Ecological Construction Management Plan [Document Reference 7.6 Revision 3]** to avoid illumination of retained boundary features and commuting corridors. Pollution prevention and dust control measures will also be implemented to protect retained habitats and associated invertebrate prey resources.

7.5.144. Given the low baseline suitability of the majority of the Order Limits for bats, the retention of the main commuting and foraging features, and the temporary and

localised nature of construction activities, construction effects on foraging and commuting bats are assessed as minor adverse magnitude on a receptor of Local value and sensitivity, which is Not Significant.

Badger

7.5.145. Badger information is provided within the Confidential Report - Badger Survey Report [APP-076]. The Scheme has been designed to retain and protect habitats most likely to be used by badgers, including woodland, hedgerows, ditches and field boundary habitats.

7.5.146. Potential construction effects on badgers could include disturbance to setts, damage to setts, temporary disruption of commuting routes, and accidental injury or mortality during construction activities, including through open excavations, trenches, pipework or stored materials. Badgers are mobile and can establish new setts within short periods of time; therefore, pre-construction surveys will be required to confirm the status of badger activity prior to works commencing.

7.5.147. Subject to pre-construction survey, implementation of appropriate buffers, ramping of excavations, contractor briefings, and licensing where necessary, construction effects on badger are assessed as minor adverse magnitude on a receptor of Site value and sensitivity, which is Not Significant.

Otter

7.5.148. Otter information is provided within the **Confidential Report - Otter and Water Vole Survey Report [APP-077].** Otter may use watercourses, drains, ditches and associated field boundary habitats within and adjacent to the Order Limits for commuting, foraging and occasional resting.

7.5.149. The Scheme has been designed to retain and buffer ditches, drains, watercourses and ponds. No direct loss of watercourse habitat is proposed. Potential construction effects could include disturbance to commuting or foraging otters, pollution or siltation of watercourses, temporary disruption to movement routes, and accidental injury or mortality associated with open excavations.

7.5.150. Given the retention of aquatic habitats, the use of buffer zones, pollution prevention measures and pre-construction checks, construction effects on otter are assessed as minor adverse magnitude on a receptor of Local value and sensitivity, which is Not Significant.

Water vole

7.5.151. Water voles have been recorded within the Order Limits and are assumed to be present within suitable ditch habitats on a precautionary basis. Water vole information is provided within the **Confidential Report - Otter and Water Vole Survey Report [APP-077]**.

7.5.152. The Scheme has been designed to retain ditches and watercourses, with buffers of at least 5m to non-IDB ditches and 9m to IDB watercourses. Access tracks will utilise existing crossing points where possible, and works within or adjacent to ditches will be avoided where practicable.

7.5.153. Potential construction effects on water vole could include damage to burrows, disturbance, habitat degradation, pollution of ditch habitats, and accidental injury or mortality where works are required close to suitable ditch banks. If construction works are required within 5m of suitable ditch habitat, pre-construction water vole surveys will be undertaken and appropriate mitigation implemented.

7.5.154. Taking account of the presence of water vole, but also the retention and buffering of ditch habitats, construction effects on water vole are assessed as minor adverse magnitude on a receptor of Regional/County value and sensitivity, which is Not Significant following the implementation of the embedded measures set out in the **Outline Ecological Construction Management Plan [Document Reference 7.6 Revision 3].**

Amphibians

7.5.155. Great crested newt eDNA surveys completed in 2023 and 2025 returned negative results for great crested newt DNA from surveyed waterbodies. Full details are provided within Environmental Statement **Appendix 7.7: Great Crested Newt Presence / Absence Survey Report [REP1 -018].**The majority of habitats within the Order Limits comprise intensively managed arable farmland, which is of limited suitability for amphibians. However, ponds, ditches, hedgerows, woodland, scrub and field margins provide some opportunities for common amphibian species, including toad *Bufo bufo* and for amphibian dispersal.

7.5.156. All ponds within the Order Limits will be retained and protected, and retained boundary features will be buffered during construction. Potential construction effects on amphibians could include accidental injury or mortality during vegetation clearance, ground works or movement of construction plant,

particularly where works occur close to ponds, ditches, hedgerows or rough grassland margins.

7.5.157. Given the negative great crested newt survey results, the limited suitability of suitable terrestrial habitat, and the retention of ponds and boundary features, construction effects on amphibians are assessed as minor adverse magnitude on a receptor of Local value and sensitivity, which is Not Significant.

Reptiles

7.5.158. The Order Limits are dominated by intensively managed arable farmland, which is of negligible suitability for reptiles. Limited suitable habitat is present along field boundaries, hedgerows, ditch margins, woodland edges, scrub and grassland margins. These features will largely be retained and protected as part of the Scheme design.

7.5.159. Potential construction effects on reptiles could include accidental injury or mortality during vegetation clearance or ground works where these occur within or close to suitable reptile habitat. However, impacts are likely to be highly localised and restricted to small areas of habitat at field margins or existing access points.

7.5.160. Given the low suitability of the majority of the Order Limits, the retention of suitable boundary habitats, and the implementation of Reasonable Avoidance Measures through the **Outline Ecological Construction Management Plan [Document Reference 7.6 Revision 3]**, construction effects on reptiles are assessed as minor adverse magnitude on a receptor of Local value and sensitivity, which is Not Significant.

Invertebrates

7.5.161. The Order Limits are dominated by intensively managed arable land, which is of limited value for invertebrates due to regular cultivation and the use of agrichemicals. Higher value invertebrate habitat is associated with retained ditches, watercourses, ponds, hedgerows, woodland, scrub and field margins. Further information is provided within **Environmental Statement Appendix 7.11: Invertebrate Scoping Report [APP-081]**.

7.5.162. Potential construction effects on invertebrates could include temporary disturbance, localised habitat loss, dust deposition, pollution and surface water run-off affecting retained habitats, including aquatic habitats associated with designated ditch networks. However, the majority of higher value habitats will

be retained and buffered, and construction works will be focused predominantly within habitats of low invertebrate value.

7.5.163. Given the limited value of the dominant arable habitat, the retention of higher value features, and the implementation of pollution prevention and dust control measures, construction effects on invertebrates are assessed as minor adverse magnitude on a receptor of Local value and sensitivity, which is Not Significant.

White-clawed crayfish and European eel

7.5.164. One record of white-clawed crayfish was returned from North Soak Drain, outside the Order Limits, and one record of European eel was returned from Folly Drain, approximately 1.8km from the Order Limits. Some drains and ditches within and adjacent to the Order Limits may provide limited suitability for these species, although habitat quality is generally considered to be low due to poor water quality and the lack of suitable refuge features.

7.5.165. The Scheme has been designed to retain and protect aquatic habitats, with works avoiding ditches and watercourses wherever practicable. Potential construction effects could include pollution, siltation, changes in water quality or temporary disturbance to aquatic habitats.

7.5.166. Given the absence of records from within the Order Limits, the retention of ditch and watercourse habitats, and the implementation of pollution prevention and control measures through the Outline Ecological Construction Management Plan [Document Reference 7.6 Revision 3], construction effects on white-clawed crayfish and European eel are assessed as negligible adverse magnitude on a receptor of County value and sensitivity, which is Not Significant.

Other priority mammals

7.5.167. Brown hare, hedgehog, harvest mouse, polecat and roe deer may use habitats within and adjacent to the Order Limits, particularly hedgerows, woodland, scrub, ditches, grassland margins and field boundary features. The intensively managed arable fields that dominate the Order Limits are of lower value for these species, although brown hare may use open farmland.

7.5.168. Potential construction effects could include temporary disturbance, displacement from active working areas, localised habitat loss, severance of commuting routes, and accidental injury or mortality during vegetation clearance or ground works. However, the majority of habitats likely to be of greatest value to these species will be retained and protected.

7.5.169. Construction effects on other priority mammals are assessed as minor adverse magnitude on a receptor of Site value and sensitivity, which is Not Significant.

Invasive non-native species

7.5.170. Water fern has been recorded within the Order Limits and Pontic rhododendron has been recorded adjacent to the Order Limits. Invasive non-native species could be spread during construction through vegetation clearance, movement of soil, plant, machinery or contaminated water.

7.5.171. Without appropriate controls, construction activities could result in the spread of invasive non-native species within the Order Limits or to adjacent habitats. This would be a potential adverse effect on retained habitats and associated ecological receptors. However, pre-construction checks, biosecurity controls, toolbox talks and, where necessary, species-specific treatment or management measures will be implemented through the Outline Ecological Construction Management Plan [Document Reference 7.6 Revision 3].

7.5.172. With these measures in place, construction effects associated with invasive non-native species are assessed as minor adverse magnitude on a receptor of Local value and sensitivity, which is Not Significant.

Operation

7.5.173. Operational effects are defined as effects following the construction of the Scheme. For designated sites, operational effects may include ongoing changes in habitat availability and suitability for mobile qualifying species, changes in land management, changes in water quality associated with the cessation of intensive agricultural management, low-level disturbance from maintenance activity, and any operational lighting, where required.

7.5.174. There would be no operational land take within Thorne and Hatfield Moors SPA, Thorne Moor SAC, Hatfield Moors SAC, Humber Estuary SPA, Humber Estuary Ramsar, Humber Estuary SAC, or any national statutory designated site. There would also be no direct operational habitat loss from any statutory designated site. Operational effects on these sites are therefore limited to indirect effects, including effects on mobile qualifying species using land within the Order Limits, potential changes to water quality or hydrological pathways, and disturbance associated with routine operation and maintenance.

Thorne and Hatfield Moors SPA

7.5.175. Thorne and Hatfield Moors SPA is designated for breeding nightjar. The assessment set out above identifies that no nesting nightjar were recorded within the Order Limits, that no moorland nesting habitat is present within the Order Limits, and that the habitats within the Order Limits are principally intensively managed arable farmland of limited value for nightjar. However, previous radio-tracking data indicates that parts of the Order Limits may be used on occasion by nightjar for foraging, particularly along retained boundary features.

7.5.176. During operation, there would be no additional habitat loss beyond that assessed for construction. The operational Scheme would not be permanently lit and would be subject to low levels of human activity associated with routine inspection, maintenance and habitat management. As such, operational disturbance to nightjar is likely to be limited.

7.5.177. The main operational effect prior to additional mitigation would be the change in availability and suitability of foraging habitat within the Order Limits. The loss of intensively managed arable habitat is not considered likely to result in a significant adverse effect on nightjar, given its limited suitability for this species. Retained boundary habitats, including hedgerows, woodland edges and ditch corridors, would continue to provide foraging and commuting opportunities. The creation of species-rich grassland margins, wider grassland areas and enhanced field boundaries would increase invertebrate availability and provide improved foraging opportunities for nightjar compared to the existing arable baseline.

7.5.178. The provision of grassland mitigation areas will also result in enhanced foraging opportunities for nightjar compared to the existing situation. In addition, grassland buffers are to be provided around the perimeter of solar array parcels and along non-statutory designated drains, with a minimum 5m buffer from the top of the bank, extended to 9m from the top of the bank for Internal Drainage Board watercourses, and approximately 40m to the bank top of the River Torne. Grassland buffers are also to be provided to retained hedgerows and around Whittaker's Plantation Candidate Local Wildlife Site. These buffers will comprise tussocky grassland, creating enhanced foraging opportunities for nightjar and strengthening green corridors through the Order Limits.

7.5.179. Operational effects on Thorne and Hatfield Moors SPA, in relation to nightjar, are therefore assessed as minor positive magnitude on a receptor of International value and sensitivity, which is Not Significant prior to additional mitigation.

Humber Estuary SPA

7.5.180. Humber Estuary SPA is designated for an assemblage of wintering, passage and breeding birds. The construction assessment identifies that the Order Limits are considered to provide Functionally Linked Land for lapwing, pink-footed goose, greylag goose and mallard, with consideration also given to golden plover recorded in adjacent land during the non-breeding bird surveys.

7.5.181. During operation, there would be no additional land take over and above that assessed during construction. However, the presence of solar panels, fencing and associated infrastructure would result in a long-term change in the character and suitability of parts of the Order Limits for open-field foraging and roosting species. This operational effect is different to the temporary disturbance effects associated with construction, as it would continue for the operational lifetime of the Scheme.

7.5.182. In the absence of additional mitigation, the operational Scheme could reduce the availability and suitability of open foraging and roosting habitat for lapwing, pink-footed goose, greylag goose and mallard. This would be most relevant to species which require open vistas or open arable / grassland for foraging and roosting. The effect would be long-term, although it would not affect the entirety of the Order Limits equally, as retained fields, buffers, margins, ditches, ponds and boundary habitats would remain available, and the wider landscape contains extensive agricultural land.

7.5.183. Operational disturbance from maintenance activity would be limited, temporary and infrequent. The operational Scheme would not be permanently lit, and routine activities are expected to result in lower levels of disturbance than current intensive agricultural operations.

7.5.184. Prior to additional mitigation, operational effects on Humber Estuary SPA qualifying species using Functionally Linked Land within the Order Limits are assessed as moderate adverse magnitude on a receptor of International value and sensitivity, which is Significant.

Humber Estuary Ramsar

7.5.185. Humber Estuary Ramsar is designated for estuarine habitats, grey seal, migratory fish and its non-breeding waterfowl assemblage. Due to the distance between the Ramsar and the Order Limits, there would be no direct operational effects on estuarine habitats, coastal habitats, grey seal or bird species which are exclusively associated with coastal and maritime habitats.

7.5.186. Operational effects on the Humber Estuary Ramsar are therefore limited to potential effects on mobile bird species using land within the Order Limits, potential effects on connected watercourses, and potential benefits arising from changes in land management.

7.5.187. As set out for the Humber Estuary SPA, the presence of solar panels, fencing and associated infrastructure would result in a long-term change in the suitability of parts of the Order Limits for open-field foraging and roosting birds. In the absence of additional mitigation, this could affect Ramsar waterfowl assemblage species which use the Order Limits or adjacent land, including lapwing, pink-footed goose, greylag goose and mallard.

7.5.188. Operational effects associated with water quality are anticipated to be beneficial rather than adverse. The cessation of intensive arable management would reduce agricultural inputs and associated run-off into the ditch network within the Order Limits. This is likely to improve water quality and habitat condition within retained ditches, drains and ponds over time. However, this beneficial effect does not remove the need to assess the long-term operational reduction in open foraging and roosting habitat for relevant bird species.

7.5.189. Prior to additional mitigation, operational effects on Humber Estuary Ramsar waterfowl assemblage species using land within the Order Limits are assessed as moderate adverse magnitude on a receptor of International value and sensitivity, which is Significant.

Other statutory and non-statutory designated sites

7.5.190. For other statutory and non-statutory designated sites, operational effects are likely to be beneficial or neutral. The Scheme would retain and protect designated drains, watercourses, ponds, hedgerows and woodland, with buffers managed in accordance with the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3].** The cessation of intensive arable management and associated reduction in agrichemical inputs is likely to improve water quality within the ditch network and provide long-term benefits to aquatic and marginal habitats.

7.5.191. The operational Scheme would be subject to low levels of human activity, limited to routine maintenance and habitat management. It would not be permanently lit. As such, operational disturbance, lighting and pollution effects on other statutory and non-statutory designated sites are assessed as negligible adverse to minor positive magnitude, depending on the receptor, and are Not Significant

prior to additional mitigation.**Landscape Ecological Management PlanLandscape Ecological Management Plan**

Habitats

7.5.192. BNG will be delivered through habitat enhancements within the Scheme and provided initially as part of the post construction phase, and thereafter maintained and managed throughout the operational lifetime of the Scheme. This will include the creation of new habitats of ecological value, such as species diverse grassland and hedgerow planting.

7.5.193. During the operational period the new and existing semi-natural habitats within the Order Limits boundaries will be subject to long-term management by suitably qualified/experienced professionals, informed by a regular ecological monitoring programme and biodiversity objectives during the operational project lifespan. Habitat management can be secured through the implementation of the an **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** submitted separately to this ES.

7.5.194. The operational Scheme will be subject to very low levels of human activity, with disturbance, restricted to occasional maintenance and inspections. The **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3],** however, includes protection measures to safeguard priority habitats such as woodland and hedgerows during such activities.

7.5.195. The Scheme will include the management of retained and new habitats informed by the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3],** with the objective creating more diverse, resilient and connected habitat networks of biodiversity value (measurable via BNG), enhancing ecological connectivity between The Scheme and the wider landscape, including nearby designated sites.

7.5.196. These enhanced habits will be maintained over the lifetime of the Scheme, thereby providing long-term stable resources for a variety of other species to move through the landscape, forage, breed and find shelter.

7.5.197. Subsequently, impacts to habitats during the operational phase will be of **high (positive) magnitude** on a receptor of Local value and sensitivity, which are consequently **Significant beneficial** effect.

Non-breeding birds

7.5.198. Once constructed, the Scheme will be fenced and there will be limited disturbance, noise or lighting associated with the Scheme. The operational solar facility will not be lit, with lighting for example typically restricted to the entrance doorways of the small number of structures that require occasional maintenance visits, and designed to minimise light spill. The operational Scheme is likely to result in less overall human activity and disturbance than is associated with current normal farming practices, to which local bird populations have already become relatively tolerant. Periodic cleaning and maintenance of PV modules will take place although will be temporary and not considered significant.

7.5.199. There would be no additional habitat loss over and above that assessed under construction.

7.5.200. However, during operation, the presence of solar panels, fencing and associated infrastructure would reduce the availability and suitability of open foraging and roosting habitat within the Order Limits for non-breeding bird species associated with the Humber Estuary SPA/Ramsar. This operational effect relates to the species lapwing, pink-footed goose and mallard. Consideration has also been given to golden plover recorded in adjacent land during the non-breeding bird surveys. In the absence of additional mitigation, operational effects on these species are assessed as moderate adverse on a receptor of International value and sensitivity, which is Significant.

7.5.201. Other non-breeding bird species recorded during surveys, including teal, hen harrier and marsh harrier, were recorded in low numbers and the Order Limits is not considered to be Functionally Linked Land for these species. Operational effects on these species would be limited to low-level changes in foraging opportunities and occasional disturbance associated with maintenance activities. Given the low numbers recorded, the retention of ditches, ponds, hedgerows and field boundary habitats, and the creation and management of new habitats within the Order Limits, operational effects on these species are assessed as minor positive magnitude on a receptor of National-Regional/County value and sensitivity, which is Not Significant.

<u>Breeding Birds - excluding ground nesting and Schedule 1 Species</u>

7.5.202. Once constructed, the Scheme will be fenced and there will be limited disturbance, noise or lighting associated with the Scheme. The operational solar facility will not be lit, with lighting for example typically restricted to the entrance

doorways of the small number of structures that require occasional maintenance visits, and designed to minimise light spill. The operational Scheme is likely to result in less overall human activity and disturbance than is associated with current normal farming practices, to which local bird populations have already become relatively tolerant. Periodic cleaning and maintenance of PV modules will take place outside of the nesting bird season (considered to be March-August inclusive), where practicable.

7.5.203. There would be no additional habitat loss (and hence loss of potential breeding areas) over and above that assessed under construction. The creation and enhancement of habitats as part of the Scheme, will create habitats favourable to bird foraging and breeding.

7.5.204. As a result, operational effects of the Scheme on breeding birds (excluding Schedule 1 and ground nesting species), once new planting and habitat creation have established, are assessed to be of **low (positive) magnitude** on a receptor of Regional/County value and sensitivity, which is beneficial but **Not Significant**.

Breeding Birds - Schedule 1 species

7.5.205. Once under operation the Scheme will have limited noise and lighting and be relatively undisturbed except for management of habitats and maintenance and cleaning of the infrastructure.

7.5.206. No further habitat loss will occur during operation above that already assessed in relation to construction. Habitat creation and enhancement will increase opportunities for Schedule 1 species hobby and Cetti's warbler through increased foraging opportunities and potentially breeding habitat provision.

7.5.207. As a result, operational effects of the Scheme on Schedule 1 species hobby and Cetti's warbler, once habitats are established, is assessed to be of **minor (positive) magnitude** on a receptor of Regional/County value and sensitivity, which is beneficial but **Not Significant.**

Breeding Birds – ground nesting species

7.5.208. No further habitat loss (in relation to breeding opportunities and nest locations) will occur during operation than that previously identified and assessed under construction. Foraging resources across the Order Limits for ground nesting species present both within the Order Limits and on neighbouring land will be enhanced through the creation of extensive species diverse grassland, with associated increased availability of seeds and invertebrate prey. This has been illustrated by studies by the RSPB (2020) **[REF. 7-34]**, Montag et al. (2016) **[REF.**

7-35] and Solar Energy UK (2023) **[REF. 7-36].** These studies gathered empirical evidence on bird-usage of solar farms. Both studies consistently recorded skylarks present; foraging and singing within operational solar farms (in fact as one of the most abundant species recorded), with skylarks also confirmed as nesting in field margins within one operational solar site. However, there is no evidence of regular nesting by skylarks within operational solar farms and it is likely that this species would be displaced in the absence of mitigation.

7.5.209. As a result, the impact of operational-related displacement of ground nesting species including skylark will be **major adverse** magnitude on a receptor of National-Regional/County value and sensitivity, which is **Significant** in the absence of mitigation.

Amphibians

7.5.210. During operation, ponds, ditches, hedgerows, woodland edges and scrub habitats will be retained and enhanced. The creation of species-rich grassland, habitat piles, hibernacula, beetle banks and wider habitat buffers will increase opportunities for foraging, sheltering, dispersal and hibernation by amphibians.

7.5.211. The operational Scheme will also be subject to lower levels of disturbance than the current agricultural baseline, with reduced cultivation and reduced agrichemical inputs.

7.5.212. Operational effects on amphibians are assessed as minor positive magnitude on a receptor of Local value and sensitivity, which is beneficial but Not Significant.

Bats – roosting

7.5.213. During operation, retained trees, buildings and other features with bat roosting potential will remain in place and will not be subject to regular disturbance. The Scheme will also include additional bat roost provision through the installation of bat boxes on suitable retained trees, as detailed within the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3].**

7.5.214. Operational activities will be limited to routine maintenance and habitat management. These activities are not anticipated to affect retained roosting features. In the event that future works to trees or buildings are required during operation, these would be subject to appropriate checks and survey where required.

7.5.215. Operational effects on roosting bats are assessed as minor positive magnitude on a receptor of Site value and sensitivity, which is beneficial but Not Significant.

Bats – foraging and commuting

7.5.216. During operation, the Scheme will not be subject to permanent nightly illumination. Operational lighting will be limited and used only where required for maintenance or safety, and will be designed to avoid light spill onto retained hedgerows, ditches, watercourses, woodland edges and newly created habitats.

7.5.217. The retention of linear features, cessation of intensive arable management, creation of species-rich grassland, hedgerow planting, woodland planting and long-term habitat management will increase the availability of invertebrate prey and strengthen commuting and foraging corridors across the Order Limits.

7.5.218. Operational effects on foraging and commuting bats are therefore assessed as minor positive magnitude on a receptor of Local value and sensitivity, which is beneficial but Not Significant.

Badger

7.5.219. During operation, the Scheme will be subject to low levels of human activity, limited to routine maintenance and habitat management. Retained hedgerows, woodland, ditches and grassland margins will continue to provide commuting and foraging opportunities for badgers. The perimeter security fencing will include suitable gaps or mammal gates to maintain movement through the Order Limits.

7.5.220. The creation of species-rich grassland, hedgerow planting and reduced disturbance compared with current agricultural operations will increase foraging opportunities for badger over the operational lifetime of the Scheme.

7.5.221. Operational effects on badger are assessed as minor positive magnitude on a receptor of Site value and sensitivity, which is beneficial but Not Significant.

Otter

7.5.222. During operation, watercourses, ditches and ponds will be retained and protected, with buffers managed in accordance with the Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]. The Scheme will not prevent otter movement along watercourses or across the Order Limits, with mammal gates and gaps in fencing allowing continued dispersal.

7.5.223. The cessation of intensive arable management and associated reduction in agrichemical inputs is likely to improve the quality of aquatic and marginal habitats over time.

7.5.224. Operational effects on otter are assessed as minor positive magnitude on a receptor of Local value and sensitivity, which is beneficial but Not Significant.

Water vole

7.5.225. During operation, ditch habitats will be retained and buffered, and management of adjacent habitats will be less intensive than under the current agricultural baseline. The cessation of intensive arable management and reduction in agrichemical inputs is likely to improve ditch and marginal habitat quality over time.

7.5.226. Operational management will be undertaken in accordance with the Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3], with monitoring and remedial measures implemented where required. This will maintain and enhance habitat conditions for water vole within suitable ditch networks.

7.5.227. Operational effects on water vole are assessed as minor positive magnitude on a receptor of Regional/County value and sensitivity, which is beneficial but Not Significant.

Reptiles

7.5.228. During operation, retained field boundary habitats will be enhanced through the creation and long-term management of species-rich grassland, scrub, hedgerow planting, hibernacula and habitat piles. These habitats will provide increased opportunities for reptile foraging, sheltering, dispersal and hibernation compared with the current arable baseline.

7.5.229. The operational Scheme will be subject to low levels of disturbance, limited to routine maintenance and habitat management.

7.5.230. Operational effects on reptiles are assessed as minor positive magnitude on a receptor of Local value and sensitivity, which is beneficial but Not Significant.

Invertebrates

7.5.231. During operation, the cessation of intensive arable management and reduction in agrichemical inputs will improve opportunities for terrestrial and aquatic

invertebrates. Species-rich grassland creation, hedgerow planting, scrub planting, beetle banks, insect hotels, hibernacula and enhanced ditch buffers will provide a more diverse and stable habitat resource than the current arable baseline.

7.5.232. Operational effects on invertebrates are assessed as medium positive magnitude on a receptor of Local value and sensitivity, which is a Significant beneficial effect.

White-clawed crayfish and European eel

7.5.233. During operation, ditches, drains and watercourses will be retained and buffered. The cessation of intensive arable management and associated reduction in agrichemical inputs is likely to improve water quality within retained aquatic habitats over time. This may provide a minor benefit to aquatic species, including European eel, should they be present within connected watercourses.

7.5.234. However, given the absence of records from within the Order Limits and the limited suitability of much of the ditch network for white-clawed crayfish, operational effects on white-clawed crayfish and European eel are assessed as negligible to minor positive magnitude on a receptor of County value and sensitivity, which is Not Significant.

Other priority mammals

7.5.235. During operation, retained and newly created habitats will provide increased foraging, sheltering, commuting and breeding opportunities for brown hare, hedgehog, harvest mouse, polecat and roe deer. The perimeter fencing will include suitable gaps or mammal gates to allow continued movement across the Order Limits and prevent habitat severance.

7.5.236. The operational Scheme will be subject to low levels of human activity and reduced disturbance compared with current agricultural operations.

7.5.237. Operational effects on other priority mammals are assessed as minor positive magnitude on a receptor of Site value and sensitivity, which is beneficial but Not Significant.

Invasive non-native species

7.5.238. During operation, ecological monitoring will identify any spread or recurrence of invasive non-native species within the Order Limits. Where invasive species are recorded, appropriate control or eradication measures will be implemented by

a suitably experienced contractor in accordance with the Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3].

7.5.239. Operational effects associated with invasive non-native species are assessed as negligible magnitude on a receptor of Local value and sensitivity, which is Not Significant.

Decommissioning

7.5.240. Baseline conditions within the Order Limits are likely to change over the 40 years of operation, and prediction of these conditions at this point is considered unreliable in terms of predicting likely future decommissioning effects on biodiversity. However, potential impacts from decommissioning are considered to be similar to those already described in relation to the construction phase, namely direct and indirect disturbance, temporary/permanent habitat loss and vegetation removal. Updated ecological desk study and species-specific surveys will therefore be necessary prior to decommissioning in order to record the presence of protected and notable species and habitats, identify potential effects and any necessary protection and mitigation measures in order to comply with planning policy and wildlife legislation applicable at the time.

7.5.241. Long term land management within the Order Limits post decommissioning phase will be largely based and managed in adherence to agricultural / land management government policies and agri-environment grant opportunities available at that time.

7.5.242. An Outline plan provided with DCO Submission Outline Decommissioning Environmental Management Plan (DEMP) [Document Reference 7.9.3] (secured by requirement of the DCO which would be finalised once the party responsible for undertaking decommissioning works on the Order Limit has been appointed) will form an integral element of the decommissioning phase. This will set out the methods by which decommissioning will be managed to avoid, minimise, and mitigate any adverse effects on the local and wider environment. Further information is provided below.

7.6. Additional Mitigation, Enhancement and Residual Effects

Statutory Designated Sites

7.6.1. Likely Significant Effects (LSE) have been identified for several internationally designated sites within the Zone of Influence and **Table 7-11** below summarises the sites and features 'screened in' for further assessment, potential effects, proposed 'embedded' mitigation and additional mitigation. This is further

detailed within report to inform Habitats Regulations Assessment [Document Reference 5.3 Revision 4]submitted separately to the Environmental Statement.

Table 7-11 Embedded mitigation measures and additional mitigation for internationally designated sites

Site	Qualifying Features	Likely Significant Effects	Embedded Mitigation	Additional Mitigation Needed?
Thorne and Hatfield Moors (SPA)	Breeding nightjar	Disturbance to nightjar utilising adjacent Moors during construction phase Degradation of habitat quality	Retention of hedgerows and wildflower margins, Adoption of Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3] and Outline Landscape Ecological Management Plan	No
Thorne and Hatfield Moors (SAC)	7120 Degraded raised bogs still capable of natural regeneration	Degradation of habitat quality Changes to hydrological regime	Adoption of Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3] and Outline Landscape Ecological Management Plan	No
Humber Estuary SPA	Hen harrier (wintering)	Loss of over-wintering foraging habitat	Provision of natural buffers along hedgerows and ditches to provide	No - Proposals for large areas of open, permanent

		Disturbance to foraging habitat adjacent to Order Limits	shelter for small mammals, thus providing continued foraging resource. Loss of open arable land and installation of solar panels may impede effectiveness of foraging, however, and not fully mitigate for habitat loss as birds have been recorded within Order Limits. Order Limits are not functionally linked to the Humber Estuary for this species, so effects to this regard are **Not Significant**.	pasture with scrapes will enhance landscape for this species.
	Golden plover (wintering)	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Order Limits are not functionally linked to the Humber Estuary for this species, so effects to this regard are **Not Significant**. Given their numbers in adjacent land there is potential that they could be disturbed during construction,	Not required, although provision of large areas of permanent pasture, with shallow scrapes and arable will provide suitable habitat

			mitigated through Adoption of Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]	
	Marsh harrier (breeding)	Loss of over-wintering foraging habitat Disturbance to foraging habitat adjacent to Order Limits	Provision of natural buffers along hedgerows and ditches to provide shelter for small mammals, thus providing continued foraging resource. Loss of open arable land and installation of solar panels may impede effectiveness of foraging, however, and not fully mitigate for habitat loss as birds have been recorded within Order Limits. Order Limits are not functionally linked to the Humber Estuary for this species, so effects to this regard are **Not Significant**.	No - Proposals for large areas of open, permanent pasture with scrapes will enhance landscape for this species.
	Assemblage qualification (non-breeding season)			

	Dark-bellied brent goose	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Adoption of measures detailed in **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure any birds using adjacent land outside of the Order Limits are not disturbed.	Surveys have confirmed the likely absence of this species both within and adjacent to the Order Limits, so there is no need for further mitigation. Proposals for large areas of open, permanent pasture with option for scrapes will enhance landscape for this species.
	Pink-footed goose	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Buffers and adoption of **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** not sufficient to mitigate for loss of land used by significant numbers of pink-footed geese, and considered to be functionally linked to Humber Estuary	Provision of large areas of permanent pasture, with shallow scrapes, and arable

	Wigeon	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Retention of ponds and ditch network will ensure that there is no loss of habitat for this species in the event they were to use such features in the future.	Surveys have confirmed only very small numbers of this species within and adjacent to the Order Limits, so there is no need for further mitigation.
	Teal	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Recorded during surveys in insignificant numbers – embedded mitigation will ensure this species has access to continued water features. **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will mitigate for any perceived disturbance events.	Surveys have confirmed only very small numbers of this species within and adjacent to the Order Limits, so there is no need for further mitigation.
	Mallard	Loss of over-wintering foraging/roosting habitat	Retention and enhancement of ditches, ponds and buffers and adoption of **Outline Ecological Construction**	Provision of large areas of permanent pasture, with shallow scrapes and arable.

		Disturbance to foraging/roosting habitat adjacent to Order Limits	**Management Plan [Document Reference 7.5 Revision 3]** and **Landscape Ecological Management Plan [Document Reference 7.5 Revision 3].** Landscape Ecological Management Plan Adoption of **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure that any birds utilising adjacent land are not subject to disturbance events	
	Pochard	Loss of over-wintering foraging/roosting habitat, although more typically associated with larger bodies of water than are present within and	Retention of ponds and ditch network will ensure that there is no loss of habitat for this species in the event they were to use such features in the future.	Surveys have confirmed the likely absence of this species both within and adjacent to the Order Limits, so there is no need

		adjacent to Order Limits Disturbance to foraging/roosting habitat adjacent to Order Limits		for further mitigation.
	Scaup	Loss of over-wintering foraging/roosting habitat, although more typically associated with larger bodies of water than are present within and adjacent to Order Limits Disturbance to foraging/roosting habitat adjacent to Order Limits	Retention of ponds and ditch network will ensure that there is no loss of habitat for this species in the event they were to use such features in the future.	Surveys have confirmed the likely absence of this species both within and adjacent to the Order Limits, so there is no need for further mitigation.
	Goldeneye	Loss of over-wintering foraging/roosting habitat, although more typically associated with larger bodies of water than are present within and adjacent to Order Limits Disturbance to foraging/roosting	Retention of ponds and ditch network will ensure that there is no loss of habitat for this species in the event they were to use such features in the future.	Surveys have confirmed the likely absence of this species both within and adjacent to the Order Limits, so there is no need for further mitigation.

		habitat adjacent to Order Limits		
	Oystercatcher	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Adoption of **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure that any birds utilising adjacent land are not subject to disturbance events.	Surveys confirmed the likely absence of this species within and adjacent to the Order Limits, so there is no need for further mitigation.
	Ringed plover	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Adoption of **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure that any birds utilising adjacent land are not subject to disturbance events.	Surveys confirmed the likely absence of this species within and adjacent to the Order Limits, so there is no need for further mitigation.
	Golden plover	Loss of over-wintering foraging/roosting habitat	Order Limits are not functionally linked to the Humber Estuary for this species, so effects to this regard are **Not Significant**.	Not required, although provision of large areas of permanent pasture, with shallow scrapes and arable will

		Disturbance to foraging/roosting habitat adjacent to Order Limits	Given their numbers in adjacent land there is potential that they could be disturbed during construction, mitigated through Adoption of **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]**.	provide suitable habitat.
	Grey plover	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Adoption of **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure that any birds utilising adjacent land are not subject to disturbance events.	Surveys have confirmed the likely absence of this species both within and adjacent to the Order Limits, so there is no need for further mitigation.
	Lapwing	Loss of over-wintering foraging/roosting habitat	Buffers not sufficient to mitigate for loss of land used by significant numbers of lapwing, and considered to be	Provision of large areas of permanent pasture, with shallow scrapes

		Disturbance to foraging/roosting habitat adjacent to Order Limits	functionally linked to Humber Estuary. Adoption of **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure that any birds utilising adjacent land are not subject to disturbance events.	
	Whimbrel	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Adoption of **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure that any birds utilising adjacent land are not subject to disturbance events.	Surveys have confirmed the likely absence of this species both within and adjacent to the Order Limits, so there is no need for further mitigation. Proposals for large areas of open, permanent pasture with option for scrapes will enhance landscape for this species.
	Curlew	Loss of over-wintering	Adoption of **Outline Ecological**	Surveys have confirmed only

		foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	**Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure that any birds utilising adjacent land are not subject to disturbance events.	very small numbers of curlew species both within the Order Limits, so there is no need for further mitigation. Proposals for large areas of open, permanent pasture with scrapes will enhance landscape for this species.
Humber Estuary Ramsar	Criterion 5 – waterfowl assemblage in non-breeding season	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Buffers not sufficient to mitigate for loss of land used by significant numbers of some qualifying species (mallard, pink-footed geese, lapwing), and considered to be functionally linked to Humber Estuary. Adoption of Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3] will ensure that any birds utilising	Provision of large areas of permanent pasture and arable, with shallow scrapes.

			adjacent land are not subject to disturbance events.	
	Criterion 6 – golden plover (passage)	Loss of over-wintering foraging/roosting habitat	Order Limits are not functionally linked to the Humber Estuary for this species, so effects to this regard are **Not Significant**.	Not required, although provision of large areas of permanent pasture, with scrapes will provide opportunities.
		Disturbance to foraging/roosting habitat adjacent to Order Limits	Given their numbers in adjacent land there is potential that they could be disturbed during construction, mitigated through Adoption of **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]**.	
	Criterion 6 – golden plover (wintering)	Loss of over-wintering foraging/roosting habitat	Order Limits are not functionally linked to the Humber Estuary for this species, so effects to this regard are **Not Significant**.	Not required, although provision of large areas of permanent pasture, with scrapes will

		Disturbance to foraging/roosting habitat adjacent to Order Limits	Adoption of **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure that any birds utilising adjacent land are not subject to disturbance events.	provide opportunities.
	Criterion 8 – migration route for river lamprey and sea lamprey	No direct impacts but potential for dust pollution/degradation of watercourses and could affect migration corridors	Adoption of Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3] will ensure that any birds utilising adjacent land are not subject to disturbance events.	No

7.6.2. In addition to the above, due to the high numbers of greylag geese recorded within the Order limits, impacts could occur to this species form loss of habitat and additional mitigation in the form of new habitat creation, including grassland and arable is required.

7.6.3. In summary, impacts relating to loss of functionally linked land for a select number of bird species associated with the Humber Estuary SPA/Ramsar cannot be mitigated for entirely through the embedded mitigation measures proposed. Additional mitigation is, therefore, proposed and discussed throughout this chapter.

Habitats

7.6.4. The majority of habitat loss will be of arable land, which is of negligible ecological importance. To prevent impacts to retained habitat during construction, specific measures detailed below will be implemented.

7.6.5. The layout of the Scheme has been designed to maintain a stand-off buffer of at least 15m wide between the solar layout and woodland (Whittaker's Plantation CLWS). Access routes will also avoid impacts to existing mature hedgerow trees and will adhere to British Standards BS5837:2012 *Trees in relation to design, demolition and construction* [REF. 7-32]. Woodland buffer zones will be subject to habitat enhancements (as detailed within the **Outline Landscape Ecological Management Plan Document Reference 7.5 Revision 3]** which will serve to complement and strengthen the woodland area over the long-term lifetime of the Scheme.

7.6.6. Thirty-meter buffers will be maintained surrounding the ponds within and adjacent to the Order Limits during the construction process, with a range of habitat enhancements to be provided within this buffer (as part of the delivery of BNG, habitat creation and the landscape scheme, for the benefit of species associated with these water bodies and the wider Scheme biodiversity value, with further detail provided within the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]**.

7.6.7. Retained hedgerows and trees will be protected from construction by protective fencing in line with British Standards BS5837:2012 [REF. 7-32] to prevent accidental damage, with further detail provided within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES.

7.6.8. Access tracks for the Scheme will utilise existing ditch crossing points, existing gaps in hedgerows and existing field entrance gates to assist with preventing impacts from habitat loss and soil compaction, with only highly localised disturbance of very short sections of hedgerow surrounding existing access points potentially required (up to approximately 5m wide) with further detail

provided within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES.

7.6.9. Measures to prevent impacts from runoff including silt, mud and pollution and airborne pollutants including dust to retained habitats will be undertaken using standard construction measures, with further detail provided within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES.

7.6.10. Any hedgerow removal will be more than compensated for by replacement and extensive new native species hedgerow planting as part of the habitat creation and landscape planting proposed within the Scheme. Embedded avoidance and protection measures incorporated within the Scheme design include the provision of a minimum 5m 'buffer zones' either side of hedgerows and ditches, which will be subject to habitat creation comprising meadow grassland during the construction period, thereby protecting and enhancing the ecological capacity of these linear features and strengthening their function given the current baseline position of intensive agricultural activity in close proximity to hedgerows and ditches , with further detail provided within the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]**.

7.6.11. Existing modified grassland field margins (where present) will be temporarily impacted by the Scheme construction activities, however, these will be enhanced and extended, with the provision of grassland field margin planting surrounding solar parcels throughout the Order Limits.

7.6.12. Construction of the Scheme will generally occur in daylight hours and working areas will not be lit, thereby maintaining dark corridors across the entire Order Limits, including along boundary habitats such as ditches/drains, woodland edges and hedgerows. Where temporary, limited task lighting is a requirement at any point during the phased construction period such as during late afternoon in winter (when bats are inactive), measures for the selection, use and alignment of temporary lighting to minimize the risk of illuminating wildlife movement corridors and to prevent light spill are set out in the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]**, and are informed by current guidance provided within *Bats and Lighting in the UK: Bats and the Built Environment Series* (BCT. 2018) **[REF. 7-37].**

7.6.13. Beneficial effects will result from the replacement of lower value arable land by more diverse permanent meadow/grassland and other habitats which will deliver positive long-term change. The change in land management from regular

ploughing, will also facilitate carbon capture with implementation of undisturbed grassland. The commitment to deliver measurable BNG gains through wide-scale habitat enhancements and new habitat creation within the Order Limits as part of the design and construction process (as detailed within the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]).** The Scheme will deliver clear habitat enhancements, resulting in biodiversity gains within the Order Limits and the wider environment.

Breeding Birds – All species

7.6.14. The design of the Scheme includes a range of inherent measures designed to avoid impacts to nesting bird populations, including the retention of field boundary habitat features, such as hedgerows, ditches, and woodlands.

7.6.15. A possible effect of construction is the direct impacts to nesting birds through disturbance to species associated with field boundary habitats and direct impacts to ground nesting species, if works are undertaken in the breeding season (March to August inclusive).

7.6.16. The construction at the site will be completed in phases and in order to avoid impacts on nesting birds and to ensure compliance with the provisions of the Wildlife and Countryside Act 1981 (as amended), vegetation removal within phased construction areas will take place outside of the bird breeding season. If vegetation works (including any crop removal required to facilitate development) are necessary during the breeding season, any suitable nesting habitat to be affected by works will be checked by a suitably experienced ecologist prior to works commencing. Works would be permitted to proceed only when the ecologist is satisfied that no offence will occur under the corresponding legislation, which can be secured through the adoption of the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3].**

7.6.17. Nesting bird checks will be repeated during different phases of work or at different times during the nesting bird season to ensure that none are impacted during works. Further information relating to the protection of breeding birds is detailed within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES.

7.6.18. A variety of artificial nesting features (generally boxes but using a variety of designs attractive to different species) will be added within existing habitats, such as on mature trees, within the hedgerow network and across woodland; prior to construction commencing to ensure additional nesting resources are

available and that bird species have a wide variety of increased long-term nesting opportunities right across the Order Limit. These enhancements are detailed within the Landscape Ecological Management Plan appended and will include the following:

- At least five barn owl nest boxes will be installed on suitable mature trees within the Order Limits, away from main roads;
- At least five kestrel nest boxes positioned in woodland/mature hedgerow trees located within the Order Limits; and
- At least 90 small open-fronted and hole-fronted nest boxes of various design, positioned within existing hedgerow and trees within the Order Limits.

Breeding Birds – Schedule 1 species

7.6.19. Nesting bird checks will also include visual searches for Wildlife and Countryside Act Schedule 1 species known or suspected to have previously nested within or immediately surrounding the Order Limits, including hobby and Cetti's warbler. These species have elevated levels of legal protection which protects the species from disturbance-related offences. Any suitable nesting habitat to be affected by works during the nesting season will be checked by a suitably experienced ecologist prior to works commencing, the principles of which are set out within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES. Works would be permitted to proceed only when the ecologist is satisfied that no disturbance-related offences will occur under the legislation, with appropriate protection measures set in place as necessary and supervised by the ECoW.

7.6.20. Scrub planting for the Scheme as detailed within **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** may increase breeding habitat provision for Cetti's warbler. The Scheme is likely to increase foraging opportunities for Schedule 1 species, including hobby and Cetti's warbler with the habitat creation and enhancement measures proposed, such as insect hotels and beetle banks, which in turn may attract small mammals.

Bats – Roosting

7.6.21. Trees and the buildings present within the Order Limits will be retained, protected during construction, and incorporated into the overall design. If plans change and trees and/or building require removal/felling as part of the Scheme (for instance to aid access requirements or for health and safety purposes), prior to removal, in accordance with current Bat Conservation Trust (BCT)

guidance **[Ref. 7-26]** trees/building will be subject to a preliminary roost assessment (PRA). This will assess the potential to support roosting bat species. Buildings with bat roost potential will be subject to detailed emergence/re-entry surveys in the appropriate season. If bats are confirmed roosting, no works will take place until a European Protected Species Mitigation Licence (EPSML) licence (issued by Natural England) has been issued and necessary mitigation measures set in place under the supervision of a licensed ecologist. This will ensure there are no adverse impacts on roosting bats and will maintain the favourable conservation status of the roosting bat species in the wider environment. This can be secured through the adoption of the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES.

7.6.22. If works on trees with 'PRF-I' potential are necessary, these will be felled using reasonable avoidance measures (RAMs). In line with BCT guidance; the trees will be soft felled in sections and then lowered to the ground and left overnight (not stacked) before removal. Should a bat (or nesting bird) be found during this process then works will cease immediately and an ecologist contacted immediately for advice. To replace the loss of potential roosting resources should such trees require removal, replacement bat boxes will also be positioned on retained trees as close as possible to the tree to be lost.

7.6.23. If trees with 'PRF-M' require works or removal, further survey work comprising repeat climbed inspections or nocturnal emergence surveys will be completed to establish the presence/likely absence of bats within. Should any roosting bats be encountered, a EPSML will be required from Natural England should the roost become impacted.

7.6.24. These above measures will ensure there are no adverse impacts on roosting bats and will maintain the favourable conservation status of the roosting bat species in the wider environment.

7.6.25. Further information regarding bat roost protection is provided within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES.

7.6.26. Additional bat roost provision will be made through the inclusion of a minimum of 100 bat roost boxes on suitable mature and semi-mature trees along field boundaries and within the woodland within the Order Limits. Boxes will be erected in suitable habitats, at an appropriate height (ideally above 4m in height) and with clear flight paths to utilise field boundary features. These

enhancements are detailed within the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]**.

Bats – Foraging and commuting

7.6.27. The field boundary habitats comprising predominantly of species-poor hedgerows, ditch networks, as well as ponds and woodland will be retained and therefore direct impacts on commuting/foraging bats avoided.

7.6.28. The majority of construction works are unlikely to continue past sunset. However, during the late afternoon in the winter months, and where works are required after sunset, measures will be put in place to manage temporary lighting used within the Order Limits during the construction phase. This is set out within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES and informed by current guidance provided within *Bats and Artificial Lighting At Night* (Bat Conservation Trust and Institution of Lighting Professionals. 2023 **[REF. 7-37]**) to avoid the potential for construction-related impacts from lighting. These measures are indicated as a precaution, however, as bat activity in the winter months is considered to be exceptionally low during hibernation periods.

7.6.29. Indirect impacts to retained foraging/commuting habitats and associated invertebrate prey of foraging bats as a result of construction related pollution (such as airborne dust impacts and surface water runoff) will be managed through adopted measures, and are summarised within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES.

7.6.30. Extensive habitat creation and enhancement measures proposed will improve and increase the foraging and commuting opportunities for bat species, especially when compared to current seasonal cropping regimes, with further detail provided within the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** submitted separately to this ES.

7.6.31. New species-rich neutral grassland is to be created and managed around the site underneath solar panels, in the margins of the fields where solar is proposed and also in large sections that comprise the specific ecology mitigation areas, as well as additional locations such as alongside the canal. This new habitat provision will create a network of species-rich neutral grassland around the Order Limits enhancing foraging and commuting opportunities in an east to west and north to south direction.

7.6.32. In addition, native woodland block planting is proposed within sections of the site that will further enhance foraging and commuting opportunities for bats compared to the current situation.

7.6.33. The increase in flying insect prey which will result from the long-term habitat changes across the Scheme and associated cessation of application of agricultural chemicals will increase the foraging value and the wider connectivity of the Order Limits in the wider area for foraging bat species, thereby reducing the reliance of bats on existing narrow linear field boundary habitats within this area.

Badger

7.6.34. Confidential badger information is provided within **Appendix 7.5 Confidential Report - Badger Survey Report [APP-076].**

7.6.35. The Scheme layout has been designed to avoid impacting habitats potentially used by badgers for foraging and commuting (predominantly field boundary features and woodland). These habitats will be retained and protected and can be secured through the adoption of the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES.

7.6.36. The perimeter security fence will incorporate suitable gaps/badger gates at the base, which can be secured through the adoption of the Outline Landscape Ecological Management Plan, to allow free movement of badgers and as the solar panels are raised off the ground, there will be no habitat loss or severance effects as a consequence of the proposals. Habitat interest for badgers is likely to increase across the Order Limits due to enhanced foraging opportunities and lack of disturbance.

7.6.37. Badger activity can show seasonal variation and badgers can quickly establish new setts. Considering the highly mobile nature of badgers and the seasonality of their activity, a pre-construction badger survey (within 30m of the Order Limits, where access allows) will be completed by a suitably qualified ecologist immediately prior to the commencement of development/clearance works to determine levels of badger activity and to check for any newly constructed setts in and surrounding the Order Limits.

7.6.38. If baseline conditions have altered and significant disturbance to badgers or their setts cannot be avoided, one or both of the following options will be incorporated:

- The development design will be further amended to avoid works which may impacts on the sett; and/or,
- A disturbance/mitigation licence will be obtained from NE before construction commences.

7.6.39. The implementation of the Panel Areas within the site will not result in significant construction activities, although the constriction of the security fencing and infrastructure such as cables could impact any badger setts that may be present. To ensure badgers are not impacted during construction all contractors working on the site will be briefed regarding their potential presence. Any trenches or deep pits that are to be left open overnight will be covered or provided with a means of escape should a badger enter, such as a roughened plank of wood place is the trench as a ramp to the surface. This will also avoid impacts to any other small or medium-sized mammals.

7.6.40. Any trenches or pits will be inspected each morning to ensure no badgers have become trapped overnight. Should a badger become trapped in a trench it will likely dig itself into the side of the trench, forming a temporary sett. Should a trapped badger be encountered, an appropriate expert will be contacted immediately for further advice.

7.6.41. The storage of topsoil or other 'soft' building materials on site should be given careful consideration. Badgers will readily adopt such mounds as setts, which would then be afforded the same protection as established setts. Such mounds will be regularly inspected to check for use by badgers throughout the construction period.

7.6.42. Post-development, the provision of new hedge and neutral grassland will provide continued opportunities for badger and overall, no impact to this species would occur.

7.6.43. Further information regarding badger protection is provided within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES.

Otter

7.6.44. Confidential otter information is provided within **Appendix 7.6 Confidential Report - Otter And Water Vole Survey Report [APP-077].**

7.6.45. The area for the Scheme layout has been designed to avoid impacting habitats potentially used by otters including watercourses, drains, ponds and connected

woodland and field boundaries. The Scheme will be largely undisturbed and gaps at the bases of fencing as described in relation to badgers will also be available for otters, thereby maintaining dispersal and movement opportunities both overland and along waterways. No works are proposed within watercourses and connectivity both within the Order Limits and wider area will be maintained.

7.6.46. Otter activity can show seasonal variation and otters can quickly establish new resting places/holts. Considering the highly mobile nature of otters and the seasonality of their activity, a pre-construction otter survey (within 100m of the Order Limits, where access allows) will be completed by a suitably qualified ecologist immediately prior to the commencement of development/vegetation clearance phased works to determine levels of activity and to check for any newly constructed resting places/holts in and surrounding working areas, which can be secured through the adoption of the Outline Landscape Ecological Management Plan [Document Reference 7.6] submitted separately to this ES.

7.6.47. If baseline conditions have altered and significant disturbance to otters or their resting places/holts cannot be avoided, one or both of the following options will be incorporated:

- The development design will be further amended to avoid works which may impact on the resting place/holt; and/or,
- A disturbance/mitigation licence will be obtained from NE before construction commences.

7.6.48. Further information regarding otter protection is provided within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES.

Water vole

7.6.49. Water voles have been found within the Order Limits. Information is provided within **Appendix 7.6 Confidential Report - Otter And Water Vole Survey Report [APP-077].**

7.6.50. The Scheme layout has been designed to avoid impacting habitats potentially used by water vole including watercourses and ditches, with minimum 5-9m buffers adopted and access tracks utilising existing crossing points. No works are proposed within watercourses and connectivity both within the Order Limits and wider area will be maintained.

7.6.51. As a precaution, if construction works are required within 5m of a ditch, these will be preceded by a pre-construction water vole survey. This will be completed by a suitably qualified ecologist prior to the commencement of construction works to determine the presence/likely absence of the species secured through the adoption of the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES.

7.6.52. Should signs of water vole presence be confirmed, works in or adjacent to the ditches will only proceed under suitable mitigation measures as advised by the project ecologist and, if necessary, under a Mitigation Licence issued by NE.

7.6.53. As mink are known to be present within the Order Limits, discussion will be undertaken with the Environment Agency, North Lincolnshire Council, the City of Doncaster Council and Natural England regarding any required control measures.

7.6.54. Further information regarding water vole protection is provided within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]**.

Amphibians

7.6.55. GCN eDNA surveys were carried out in June 2023 and results returned for all surveyed ponds were negative for GCN DNA. Thes surveys were updated in 2025 of all ponds within the Order Limits and within 250m were access was possible, with the results again negative for GCN.

7.6.56. Further information is provided within **Appendix 7.7 Great Crested Newt Presence / Absence Survey Report [REP1 -018].**

7.6.57. Surveys will be updated again prior to construction, and if in the unlikely event GCN are found to be present, the Scheme will be subject to a EPSML or alternative licensing method such as District Level Licensing (DLL) which ensures that the favourable conservation status of the local populations of the species will be maintained. Otherwise, Reasonable Avoidance Measures (RAMs) for amphibians will be sufficient to minimise any potential impacts on individual amphibians. The RAMs will include a 'tool box talk' and watching brief by a suitably qualified ECoW to minimise risk of accidental harm, further information is provided within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES.

7.6.58. The Scheme layout has been designed to avoid impact to hedgerows, ponds, and ditches within and surrounding the Order Limits. These habitats provide suitable terrestrial and aquatic habitats for amphibians and will be retained and protected. The habitat retention and proposed enhancements (hedgerow planting, species diverse grassland creation, hibernacula, insect hotels and beetle banks) will provide a clear habitat gain for amphibian species by providing enhanced terrestrial habitat for foraging, dispersal and hibernation purposes, thereby potentially removing amphibians' likely reliance on the retained field boundary features, with further detail provided within the **Outline Landscape Ecological Management Plan [Document Reference 7.6]** submitted separately to this ES.

Reptiles

7.6.59. The arable fields located within the Order Limits offer negligible opportunities for reptile species. However, field boundary features such as: hedgerows and ditches offer potentially suitable habitats, which will be retained and protected as part of the Scheme. Species diverse grassland will also be established within the Order Limits (as detailed within the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3**] submitted separately to this ES) and creation of hibernacula will provide increased habitat opportunities for reptile populations in and surrounding the Order Limits.

7.6.60. A series of RAMs will be implemented to avoid significant impacts on reptile populations. The RAMs will include a 'tool box talk' and watching brief by an appropriately qualified ecologist to minimise risk of accidental harm, further details are provided within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES.

Invertebrates

7.6.61. The arable fields and agricultural management regime in place along with the application of chemicals including pesticides within the Order Limits currently provides low value for invertebrate species. Field boundaries including hedgerows, watercourses and ditches provide higher value and may support a more diverse invertebrate assemblage. These habitats will be retained and protected with buffers, and measures to control runoff during construction and other management controls are detailed within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES.

7.6.62. The cessation of intensive agricultural farming and application of agrichemicals will enhance opportunities for invertebrates, including aquatic invertebrates associated with the designated sites.

7.6.63. The buffers to be provided to ditches and the designated sites will also reduce potential impacts to invertebrates, including solar arrays being mistaken for open water.

7.6.64. The Scheme will not result in the inclusion of permanent lighting, preventing impacts to any nocturnal invertebrates.

7.6.65. Enhancements for invertebrates will be delivered as part of the Scheme through habitat creation, landscape planting and ongoing management, with extensive and relatively undisturbed species diverse neutral grassland, hedgerow planting, insect hotels and beetle banks providing increased opportunities for invertebrate numbers and species diversity within the Order Limits, which can be secured through the adoption of **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** submitted separately to this ES.

7.6.66. The neutral grassland is to include pollinator species to benefit invertebrates, including species designed to benefit honey bees in particular, such as white clover *Trifolium repens* and borage *Borago officinalis*.

7.6.67. RAMs will be implemented to protect important retained habitat features such as hedgerows, trees, woodland, ponds, watercourses and ditches. These will also be designed to maintain awareness of and safeguard invertebrates associated with such features. The RAMs will include a 'tool box talk' and watching brief by an appropriately qualified ecologist to minimise risk of accidental harm, further details are provided within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES.

Other Priority Mammals

7.6.68. The commitment to provide measurable BNG includes embedded elements which avoid or reduce the potential for adverse ecological impacts amongst a range of associated species, including brown hare, hedgehog, polecat and harvest mouse. These measures include retaining identified higher value habitat features which would be used by such species when present, such as hedgerows, ditches, and woodlands, and the provision of extensive habitat enhancements which will provide opportunities for shelter, foraging, dispersal and breeding across the Order Limits (as detailed within the **Outline Landscape**

Ecological Management Plan [Document Reference 7.6 Revision 3] submitted separately to this ES).

7.6.69. As the solar panels are raised off the ground, and the perimeter security fence will retain suitable gaps/mammal gates at the base to allow free movement of priority mammal species, no habitat loss or severance effects will result. Roe deer have also been found to use mammal gates, and have on occasion been found passing through solar sites **[REF. 7-38]**.

7.6.70. A series of RAMs will be implemented to avoid significant impacts on mammal populations. The RAMs will include a 'tool box talk' and watching brief by an appropriately qualified ecologist to minimise risk of accidental harm, further details are provided within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** submitted separately to this ES.

Invasive Species

7.6.71. Water fen was identified within the Order Limits and Pontic rhododendron was recorded in an adjacent woodland parcel. In addition, mink are known to be in the local area.

7.6.72. These species are listed under Schedule 9 of The Wildlife & Countryside Act 1981 (as amended). It is an offence to plant or otherwise cause such species to grow in the wild. This includes allowing the species to grow/spread and spreading the species or transferring polluted ground material from one area to another.

7.6.73. Prior to the commencement of the construction programme an invasive species walkover survey will be undertaken during an appropriate time of year (May – October) in order to assess the distribution of invasive species within the Order Limits, in particular within or near construction working areas, which can be secured through the adoption of the **Outline Ecological Construction Management Plan[Document Reference 7.5 Revision 3].**

7.6.74. If required, an appropriate invasive species management and treatment programme will be implemented by a licensed and experienced invasive species contractor. A detailed method statement will be produced to inform these actions and prevent further spread within the Order Limits during the construction phases, detailing the commitment to control or undertake long-term eradication of the species from within the Order Limits. Further information is provided within the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** submitted separately to this ES.

7.6.75. The appointed ECoW, which can be secured through the adoption of the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3],** will include information regarding invasive non-native species within the toolbox talk, including providing informing contractors on avoidance / good practice measures required to avoid facilitating the spread of these species. Should further areas of spread / other invasive species be encountered within the Order Limits prior to or during construction, the advice of the appointed ECoW will be sought, and appropriate measures taken in order to achieve legislative compliance.

Operation

Habitats

7.6.76. Extensive habitat enhancement provision is embedded within the Scheme and provided as part of the construction phase which include the creation of new habitats of high ecological value and BNG. During the operational period created and existing semi-natural habitats within the Order Limits will be subject to long-term management by suitably qualified/experienced professionals. The management of these semi-natural habitats are detailed within the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** submitted separately to this ES.

7.6.77. A commitment to deliver quantifiable BNG will include the requirement for long-term ecological monitoring through the lifespan of the Scheme by a suitably qualified ecologist. These ecological monitoring surveys will assess the success of mitigation and enhancement measures detailed within the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]**Landscape Ecological Management Plan. If necessary, recommendations will be given for remedial actions required to achieve the biodiversity objectives detailed within the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]**Landscape Ecological Management Plan and/or adhere to relevant wildlife conservation legislation at that time.

7.6.78. Additional post-construction species specific monitoring may be required as stipulated as a legal requirement within a EPSML (or other species-specific mitigation licence); see construction section above. Any such monitoring will be in addition to the ecological monitoring discussed above, to ensure compliance with the licence conditions.

7.6.79. Operational phase ecological monitoring schedules and objectives are detailed within the **Outline Landscape Ecological Management Plan [Document**

Reference 7.6 Revision 3]Landscape Ecological Management Plansubmitted separately to this ES. Further mitigation to benefit species are described below.

Statutory and Non Statutory Designated Sites

7.6.80. As set out in the operational assessment above, prior to additional mitigation, significant adverse operational effects are identified for Humber Estuary SPA and Humber Estuary Ramsar qualifying / assemblage bird species which use the Order Limits as Functionally Linked Land or supporting habitat. These effects relate to the long-term change in the availability and suitability of open foraging and roosting habitat during the operational lifetime of the Scheme.

7.6.81. No significant adverse operational effects are identified for Thorne and Hatfield Moors SPA in relation to nightjar. The operational Scheme would not result in the loss of nesting habitat, would not be permanently lit, and would provide enhanced foraging opportunities through the creation and long-term management of species-rich grassland, margins and retained boundary habitats.

7.6.82. No significant adverse operational effects are identified for other statutory or non-statutory designated sites. Retained habitats will be protected and managed, and the cessation of intensive arable management is likely to provide long-term water quality and habitat condition benefits to ditch, drain and wetland habitats.

7.6.83. Additional mitigation is required to address the significant adverse operational effects identified for Humber Estuary SPA and Humber Estuary Ramsar bird species. This will be provided through the creation and long-term management of mitigation land, including open permanent pasture, scrapes and arable land managed for target non-breeding bird species, as detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019]** and secured through the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]**.

7.6.84. With the additional mitigation in place, residual operational effects on Humber Estuary SPA and Humber Estuary Ramsar qualifying / assemblage bird species are assessed as minor beneficial and Significant. This reflects the provision of habitat that will be secured and managed specifically for the benefit of target non-breeding bird species over the operational lifetime of the Scheme, compared with the existing baseline of intensively managed arable land where crop type and management are not secured for biodiversity or ornithological purposes.

7.6.85. The bird mitigation strategy also provides mitigation for ground-nesting bird species recorded within the Order Limits, including grey partridge, skylark, yellow wagtail, meadow pipit and corn bunting. These species are not qualifying features of the Humber Estuary SPA or Ramsar, but are notable farmland birds that would be affected by the loss or reduced suitability of open arable nesting habitat during construction and operation of the Scheme.

7.6.86. The mitigation for ground-nesting birds will comprise the creation and long-term management of open grassland and arable habitats within the mitigation areas. These areas will be managed to provide suitable nesting and foraging conditions, including a varied sward structure, appropriate cutting or grazing regimes, and retention of open areas away from boundary features where practicable. The mitigation areas will also provide increased invertebrate and seed resources compared to the existing intensively managed arable baseline.

7.6.87. The mitigation will be of particular benefit to skylark, which was recorded in the highest numbers within the Order Limits, but will also provide suitable habitat for grey partridge, yellow wagtail, meadow pipit and corn bunting. Grey partridge and corn bunting are more closely associated with arable field margins and rough grassland, while yellow wagtail, meadow pipit and skylark utilise open habitats. The proposed combination of open grassland, arable management, field margins and habitat enhancement will therefore provide a range of nesting and foraging opportunities for the ground-nesting bird assemblage.

7.6.88. The mitigation will be secured through the **Outline Landscape Ecological Management Plan [Document Reference 7.6]** and will be subject to monitoring and remedial measures. Where monitoring identifies that the mitigation areas are not achieving the required habitat conditions or are not supporting the intended ground-nesting bird assemblage, remedial measures will be implemented. These may include changes to cutting or grazing intensity, adjustment of sward height, changes to arable management, or additional habitat management measures.

Landscape Ecological Management PlanLandscape Ecological Management Plan*Birds – All species*

7.6.89. The establishment of newly created/enhanced habitats such as grassland and hedgerow, which will be managed and maintained in accordance with the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3],** will allow for the consistent long-term improvement in the quality and quantity of available foraging and potentially nesting habitats (for non-ground nesting species) when compared with current baseline opportunities.

Bats

7.6.90. Habitat creation and enhancement, which will be managed and maintained in accordance with the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** will also allow for the consistent long-term improvement in the quality and quantity of available foraging/commuting bat habitats and the protection of potential tree roosts within the Order Limits. This will provide extended opportunities for foraging/commuting bats compared to baseline opportunities which are largely concentrated within linear field margin habitats.

7.6.91. The Scheme will not be subject to permanent nightly illumination. Lighting during operation will be limited to temporary lighting required for access and maintenance in the unlikely event that such actions are required after dark. Such temporary lighting design will adopt 'ecologically sensitive' lighting in-line with current guidance **[REF. 7-37],** which can be secured through the adoption of the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]**Landscape Ecological Management Plan. All temporary lighting will avoid the illumination of existing field margin habitats, woodland, and created semi-natural habitats associated with the construction phase, thereby allowing the continued usage of the Order Limits by bats.

Badgers & other priority mammal species

7.6.92. Habitat creation and enhancement establishment could also benefit badger species through increased provision of undisturbed habitat and prey resource when compared with current baseline opportunities.

Amphibians and Reptiles

7.6.93. Habitat piles will be created (using cut vegetation arising from habitat management practices during the operational phase) within the Order Limits, potentially providing suitable refuges for amphibian and reptile species. Further information is provided within the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** submitted separately to this ES.

Invasive Species

7.6.94. Ecological monitoring as detailed in the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** will assess the success of the invasive non-native species eradication measures discussed in the construction mitigation measures. If further infestations are recorded, an

appropriate invasive species treatment program will be implemented by a licensed and experienced invasive species contractor.

Decommissioning

7.6.95. Baseline conditions within the Order Limits are likely to change significantly over the 40 years of operation, and prediction of these conditions at this point is considered unreliable in terms of predicting likely future decommissioning effects on biodiversity. However potential impacts from decommissioning are considered to be similar to those already described in relation to the construction phase, namely direct and indirect disturbance, temporary/permanent habitat loss and vegetation removal.

7.6.96. Updated ecological surveys will be undertaken prior to decommissioning in order to record the presence of protected and notable species and habitats and identify potential effects and any necessary protection and mitigation measures in order to comply with planning policy and wildlife legislation applicable at the time, secured through adoption of the Decommissioning Environment Management Plan [Document Reference 7.9.3].

Additional Mitigation

7.6.97. Additional Mitigation has been identified in relation to those effects which have been assessed as Significant adverse. Specifically, these are restricted to construction effects on qualifying bird interests associated with designated sites (non-breeding bird species) and ground nesting bird species including skylark in the form of habitat loss and disturbance to land adjacent to the Order Limits.

Bird Mitigation Strategy (breeding and non-breeding birds)

7.6.98. The premise of the bird mitigation strategy is to mitigate for non-breeding birds that utilise the habitats within the Order Limits within the entirety of the Order Limits, through the provision of appropriate habitat that is managed for the benefit of the birds, including the retention of some areas of arable and the reversion of existing arable land to a permanent species-diverse pasture as detailed in the **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019]**

7.6.99. Multiple parcels have been selected across the Order Limits to provide such mitigation strategy (see **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019]).**These parcels have been selected so as to:

a) broaden the coverage of the mitigation parcels over larger areas, accessing different and unique micro-climates/ground conditions per area; and

b) allow birds to move between different areas and not be reliant on a single parcel. The locations are also beneficial as they are not proposed to be 'encompassed' by the proposed Panel Areas but share boundaries with retained area (i.e. the canal and surrounding agricultural land), providing more naturalised and preferred buffers to the mitigation areas.

7.6.100. The location of the areas that comprise the mitigation land are detailed in the **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019]).**

7.6.101. The mitigation strategy detailed in (**Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019])** demonstrates that there is enough land that can provide suitable mitigation for non-breeding birds. Bird Days calculations have been used to inform the approximate mitigation areas required, following consultation with Natural England, alongside habitat suitability and ecological knowledge of the carrying capacity of different habitat types as set out in **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [Document Reference 6.3.7.1 Revision 6]**.

7.6.102. The principles of management are set out in the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** submitted separately to this ES and comprise:

- Seeding grassland with an appropriate mix, and utilizing existing topography (or creating such with equipment) to create shallow scrapes which will not be intended to permanently hold water, but to occasionally hold water over-winter during periods of prolonged rainfall. Such areas are particularly beneficial for the non-breeding birds recorded within the Order Limits and associated with the Humber Estuary;

- Once the grassland is established, it will be maintained between 20-50cm during April to the start of August for the benefit of skylark (see further detail below). Then it will be cut to approximately 15cm in late summer after core breeding season. The cut will be rotational, so that not all of the mitigation parcels are cut at once – another benefit of having the mitigation response spread across multiple parcels. This will ensure that skylark and other ground-nesting birds have continued access to suitable nesting habitat;

- Second cut to 5cm in Autumn and retained as such until beginning of March (i.e. over the passage and over-wintering season);
- The second cut is important as it will ensure that smaller wading birds such as lapwing and golden plover have adequate access to the soil directly, where these species forage. Grass left too long would impede this ability. Geese would not compete with lapwing and golden plover as they forage upon the grass itself; and
- Providing arable land for the duration of the proposals within the Order Limits boundary, to ensure that foraging opportunities for pink footed and greylag geese is secured and provided, in addition to grassland areas. The main principles to be implemented as part of the arable management for the benefit of pink footed and greylag geese will include:
    - Use sugar beet where possible;
    - Use other appropriate crops on rotation when sugar beet is not being grown, such as winter cereal crops, oil seed rape, post-harvest cereal stubbles, potatoes **[REF. 7-40]**;
    - Post-harvest, the fields should be left until the spring before ploughing to maximise the foraging resource, with the geese foraging on roots chopped into fragments by the harvester, as well as unharvested roots; and
    - Avoidance of deep ploughing; Incorporation of a ley crop within the management rotation; Inclusion of permanent grass margins to the fields measuring a minimum 2 metres.

7.6.103. In addition to the above, the retention of ditches and ponds, the improvement in water quality as a consequence of the cessation of intensive agricultural management, and the management proposed and detailed in the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** to enhance these habitats, will enhance opportunities for species that would utilise them, including mallard.

7.6.104. Beetle banks are proposed and will be provided in areas proposed as bird mitigation to enhance foraging opportunities for skylark and other bird species.

7.6.105. **In addition, two skylark plots per hectare are to be provided in the arable mitigation area (M15) to further enhance foraging, as well as nesting opportunities for skylark.**

7.6.106. It is considered that the hectarage proposed in the mitigation areas could mitigate for up to 255 pairs of skylark, based on each hectare of suitable, tussocky grassland or arable being able to accommodate two skylark territories (approximately 127.5ha of mitigation land that includes 50m buffers to any boundary features is to be provided). The total number of skylark territories recorded within the Order Limits is 269.

7.6.107. In addition to the mitigation land being provided with 50m buffers, approximately 59.82ha of mitigation land within the 50m buffer will be available to skylarks. In addition, landscape areas of the Order Limits, such as along the canal and buffering the solar arrays will provide additional skylark potential habitat further compensating for the shortfall of 7ha (14 territories). Furthermore, there is the option of using off-site skylark plots if required to ensure the necessary extent of skylark mitigation is provided.

7.6.108. RSPB guidance on land management for Skylark states that skylarks nest on the ground, in vegetation that is 20–50 cm high and that unimproved, extensively grazed grassland can hold very high densities of breeding skylark. Therefore, management of the grassland will create these conditions through sheep grazing of the mitigation areas, or through the implementation of a mowing regime. Further detail is included in the Outline Landscape Ecological Management Plan [Document Reference 7.9.6].

7.6.109. Furthermore, the habitat under the solar panels is to be species rich grassland, which provides a good foraging resource for skylark which are known to incorporate solar sites within their territories **[Ref. 7-35]** and **[Ref. 7-36].**

7.6.110. As detailed in recent research on skylarks **[Ref. 7-51]** intensive farmland, which is the predominant habitat within the Order Limits, often provides a suitable nesting window only briefly, making only one or two skylark broods possible, and sometimes none. Therefore, the bespoke measures for skylark mitigation in the Order Limits includes specific measures to ensure optimal habitat is provided for skylark that will assist with increasing the carrying capacity of the habitats available. As detailed in research **[Ref-7-52]** in optimal habitat, skylarks can have up to four broods per year. Therefore, although the overall habitat extent in area may decrease post-construction, the carrying capacity and habitat conditions will increase, potentially enabling an increase in successful breeding and broods.

7.6.111. It must also be noted, that as confirmed by research **[Ref. 7-51]** not all potential territories recorded during surveys are necessarily successful nesting skylarks,

therefore, there are likely less nesting skylark within the Order Limits than territories recorded.

7.6.112. Research **[Ref. 7-51]** also states that skylark forage within solar farms and that It is possible that development sites with suitable grassland could provide 'nursery' habitat where nesting takes place on adjacent farmland and that if the carrying capacity of neighbouring habitat allows, some degree of 'absorption' of skylark territories into the surroundings is theoretically possible. Further to this, the article continues by stating that *'Where sites are in proximity to heaths, moorland or coastal grassland this may be more likely'*. Heaths and moorland are located in proximity to the Order Limits and therefore provide further likelihood of absorption of territories in the wider area.

7.6.113. Therefore, the proposed mitigation measures, comprising extensive areas of grassland within the mitigation areas managed specifically for skylarks, alongside areas of arable habitat, will substantially enhance nesting and foraging opportunities. These measures are expected to increase the carrying capacity of the available habitat and enable skylarks to raise three to four broods per year, compared with the one or two broods typically achieved under the current intensive arable land use.

7.6.114. In addition, the habitats surrounding the solar arrays will provide further enhanced foraging opportunities compared to the existing situation, allowing some territories to be absorbed within the surrounding landscape.

7.6.115. **Table 7.12** below provides a summary of the proposed mitigation and good practice measures.

Table 7-12 Mitigation and good practice measures

Ref	Measure to avoid, reduce or manage any adverse effects and/or to deliver beneficial effects	How measure would be secured		
		By Design	By legal agreement	By Requirements
1	Avoidance and protection of higher value habitats within and around the Order Limits, which are set out within the Outline Landscape Ecological	X		X

	Management Plan which will be secured by requirements.			
2	New habitat creation/enhancement, are set out within the Outline Landscape Ecological Management Plan and as part of BNG.	X		X
3	Pre-construction surveys for protected and invasive species and to inform additional avoidance or mitigation requirements during the construction phase.			X
4	Biodiversity protection measures (construction phase) to be included within the Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3].	X		X
5	Ground nesting bird and non-breeding bird mitigation strategy, with detail included in the Outline Landscape Ecological Management Plan.	X	X	X
6	Where breeding birds (including Schedule 1 species) are found to be present, bird exclusion zones will be implemented. Specific measures are set out within the Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3].			X

7	Badger / Otter / Water vole / GCN mitigation measures, including a mitigation strategy with RAMS and/or licensing, as appropriate.			X
8	Reptile and other priority mammals RAMS as set out within the Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3].			X
9	Invasive species treatment plan, as set out within the Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3] and Outline Landscape Ecological Management Plan, both submitted separately to this ES.			X

Enhancements

7.6.116. Proposed species habitat enhancements within the Order Limits include (this excludes the mitigation proposed for ground-nesting and non-breeding birds), which can be secured through the adoption of the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3].**

- Native species planting to increase biodiversity, improve nesting and resting opportunities for birds, small mammals and herpetofauna, as well as enhanced foraging opportunities for species groups such as birds, invertebrates and bats;
- Additional bird nesting provision, with the inclusion of 100 bird boxes, including barn owl and tawny owl boxes;
- Additional bat roosting provision, with the inclusion of 100 bat boxes;

- Inclusion of 100 hedgehog boxes;
- Inclusion of 100 insect hotels;
- Inclusion of 100 beetle banks;
- Inclusion of 50 hibernacula; and,
- Inclusion of 50 bee hives.

7.6.117. In addition to the above, approximately 65km of new native hedgerow and 450 new trees will also be planted within the Order Limits.

7.6.118. With regards to BNG, based on the habitats present that will be lost and those to be created, the development would result in a gain of 3727.44 habitat units, a gain of 345.56 hedgerow units, and a gain of 100.43 watercourse units. This is a percentage gain of 79.82% in habitat units, 178.57% in hedgerow units and 10.84% in watercourse units.

Residual Effects

7.6.119. With the above measures in place, there will be no significant adverse residual effects on any ecological features assessed as Not Significant, with significant positive effects arising from the embedded habitat enhancements associated with BNG delivery.

7.6.120. In addition, beneficial effects will take place for the SPA bird species that utilise the Order Limits, with habitats to be provided and managed specifically for their benefit. The Order Limits currently comprises intensively managed farmland, and although some of the SPA bird species utilise arable farmland, the current management can change and is not controlled or secured. Therefore, securing land and managing it specifically for the benefit of non-breeding birds that utilise the SPA will create a benefit to these SPA species and in particular, greylag geese, pink-footed geese, lapwing and golden plover. This habitat creation and management will also benefit other bird species and biodiversity in general.

7.6.121. Receptors that were assessed as having a likely significant effect are discussed below.

<u>Construction</u>

<u>Statutory Designated Sites</u>

7.6.122. **Table 7-13** below summarises the International and National designated nature conservation sites and associated features which are assessed for potential Likely Significant Effects (LSEs). Detail is included on the potential impact pathways, proposed mitigation and residual impact taking account of the proposed mitigation.

Table 7-13 Residual effects on internationally designated sites

Site	Qualifying Features	Likely Significant Effects and Category	Embedded Mitigation and Enhancements	Additional Mitigation and Enhancements	Residual Effect
Thorne and Hatfield Moors (SPA)	Breeding nightjar	Construction – disturbance: Disturbance to nightjar utilising adjacent Moors during construction phase Construction – disturbance: Degradation of habitat quality during construction	Construction lighting, noise, dust, pollution prevention, surface water management and timing restrictions secured through the Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]. Timing of construction works in proximity to the SPA to avoid the breeding period of nightjars where required. Noise reduced during construction and no	Provision of mitigation land, including species-rich grassland and managed habitat, as detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019]**, will provide enhanced foraging opportunities for nightjar compared to the existing intensively managed arable baseline.	Minor beneficial (**Not Significant**)

			lighting directed towards the SPA. Retention and protection of hedgerows and field boundary features. Creation of neutral grassland margins and species-rich neutral grassland in place of intensively managed arable land, with long-term habitat management secured through the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3].**Landscape Ecological Management Plan		

Thorne and Hatfield Moors (SAC)	7120 Degraded raised bogs still capable of natural regeneration	Construction – habitat degradation: Potential degradation of habitat quality during construction. Construction – water quality/hydrological change: Potential temporary changes to hydrological regime, water quality or water quantity during construction through pollution, siltation, run-off, dust.	Implementation of appropriate drainage strategy to prevent construction-phase impacts to water quality and quantity. Pollution prevention and surface water management measures secured through the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3**]. Long-term habitat management secured through the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3].** Operational water quality benefits are anticipated through	No additional mitigatio required beyond th embedded measures.	Minor beneficial (**Not Significant**)

			cessation of intensive arable management and reduced agrichemical inputs.Landscape Ecological Management Plan		
Humber Estuary SPA	Hen harrier (wintering)	Construction – loss of foraging habitat: Loss or reduction of over-wintering foraging habitat. Construction – disturbance: Disturbance to foraging habitat within or adjacent to the Order Limits.	Construction disturbance controls secured through the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3].** Provision of natural buffers along hedgerows and ditches to provide shelter for small mammals, thus providing continued foraging resource.	Creation and management of large areas of permanent pasture and scrapes within bird mitigation areas, as detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019],** providing enhanced foraging opportunities and prey availability compared to the existing intensively managed arable baseline.	Major beneficial (**Significant**)

Golden plover (wintering)	Construction – disturbance: Disturbance to foraging/roosting habitat adjacent to the Order Limits.	Adoption of measures detailed in the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure any birds using adjacent land outside of the Order Limits are not disturbed.	Although not required as the Order Limits are not considered functionally linked for this species, the creation and management of large areas of open permanent pasture with scrapes, as detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [**REP1-019**],** will provide additional suitable habitat and an enhancement compared to the existing intensively managed arable baseline.	Minor beneficial (**Not Significant**)
Marsh harrier	Construction – loss of foraging habitat:	Construction disturbance controls	Creation and management of large	Major beneficial

	(breeding)	Loss or reduction of foraging habitat. Construction – disturbance: Disturbance to foraging habitat within or adjacent to the Order Limits.	secured through the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3].** Provision of natural buffers along hedgerows and ditches to provide shelter for small mammals, thus providing continued foraging resource.	areas of permanent pasture and scrapes within bird mitigation areas, as detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019],** providing enhanced foraging opportunities and prey availability compared to the existing intensively managed arable baseline.	(**Significant**)
	Assemblage qualification (non-breeding season)				
	Dark-bellied brent goose	Construction – disturbance: Potential disturbance to foraging/roosting habitat adjacent to the Order Limits.	Adoption of measures detailed in the Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3] will ensure any birds using	No specific additional mitigation required as surveys confirmed the likely absence of this species within and adjacent to the Order Limits. The bird mitigation areas	Major beneficial (**Significant**)

			adjacent land outside of the Order Limits are not disturbed. Provision of large bird mitigation areas.	detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019]** may provide general additional habitat opportunities and an enhancement compared to the existing intensively managed arable baseline.	
	Pink-footed goose	Construction – loss of functionally linked land: Loss of over-wintering foraging/roosting habitat used by birds associated with the Humber Estuary SPA/Ramsar. Construction – disturbance: Disturbance to	Adoption of measures detailed in the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure any birds using adjacent land outside of the Order Limits are not disturbed. Retention of boundary	Additional mitigation will comprise creation and management of mitigation land, including large areas of open permanent pasture with scrapes and arable land managed for the benefit of pink-footed goose, as detailed within **Appendix 7.10**	Minor beneficial (**Not Significant**)

	foraging/roosting habitat within or adjacent to the Order Limits.	habitats. Embedded mitigation is not sufficient to mitigate for the loss of open land used by this species.	**Non-Breeding Bird Mitigation Strategy** [**REP1-019**]. Arable management will include suitable crop rotations and post-harvest management to provide foraging resources. The mitigation land will also provide an enhancement compared to the existing intensively managed arable baseline, as it will be secured and managed specifically for target non-breeding bird species.	
Greylag goose	Construction – loss of functionally linked land: Loss of over-wintering foraging/roosting	Adoption of measures detailed in the **Outline Ecological Construction Management Plan**	Additional mitigation will comprise creation and management of mitigation land, including large areas of	Minor beneficial (**Not Significant**)

	habitat used by birds associated with the Humber Estuary SPA/Ramsar. Construction – disturbance: Disturbance to foraging/roosting habitat within or adjacent to the Order Limits.	**[Document Reference 7.5 Revision 3]** will ensure any birds using adjacent land outside of the Order Limits are not disturbed. Retention of boundary habitats. Embedded mitigation is not sufficient to mitigate for the loss of open land used by this species.	open permanent pasture with scrapes and arable land managed for the benefit of greylag goose, as detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019].** Arable management will include suitable crop rotations and post-harvest management to provide foraging resources. The mitigation land will also provide an enhancement compared to the existing intensively managed arable baseline, as it will be secured and managed specifically for target	

			non-breeding bird species.	
Wigeon	Construction – disturbance: Potential disturbance to foraging/roosting habitat adjacent to the Order Limits. Construction – water quality/hydrological change: Potential temporary degradation of aquatic habitats during construction through pollution, siltation, run-off, dust or changes to water quality or quantity.	Retention of ponds and ditch network will ensure that there is no loss of habitat for this species in the event they were to use such features in the future. Drainage strategy, pollution prevention and surface water management measures secured through the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will prevent construction-phase impacts to water quality and quantity. Adoption of the **Outline Ecological Construction**	No specific additional mitigation required.	Negligible

		Management Plan [Document Reference 7.5 Revision 3] will ensure any birds using adjacent land outside of the Order Limits are not disturbed. Operational water quality benefits are anticipated through cessation of intensive arable management and reduced agrichemical inputs.		
Teal	Construction – disturbance: Potential disturbance to foraging/roosting habitat adjacent to the Order Limits. Construction – water quality/hydrological change: Potential temporary	Retention of ponds and ditch network will ensure that there is no loss of habitat for this species in the event they were to use such features in the future. Drainage strategy, pollution prevention and surface water management measures	No specific additional mitigation required.	Negligible

	degradation of aquatic habitats during construction through pollution, siltation, run-off, dust or changes to water quality or quantity.	secured through the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will prevent construction-phase impacts to water quality and quantity. Adoption of the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure any birds using adjacent land outside of the Order Limits are not disturbed. Operational water quality benefits are anticipated through cessation of intensive arable management		

		and reduced agrichemical inputs.		
Mallard	Construction – loss of functionally linked land: Loss or reduction of over-wintering foraging/roosting habitat used by birds associated with the Humber Estuary SPA/Ramsar. Construction – disturbance: Disturbance to foraging/roosting habitat within or adjacent to the Order Limits. Construction – water quality/hydrological change: Potential temporary degradation of aquatic habitats	Retention of ponds and ditch network will ensure that habitat used by this species is retained. Drainage strategy, pollution prevention and surface water management measures secured through the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will prevent construction-phase impacts to water quality and quantity. Adoption of the **Outline Ecological Construction Management Plan [Document Reference**	Additional mitigation will comprise creation and management of mitigation land, including large areas of open permanent pasture with scrapes and arable land, as detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019].** This will provide enhanced foraging and roosting opportunities compared to the existing intensively managed arable baseline.	Minor beneficial (**Not Significant**)

	during construction through pollution, siltation, run-off, dust or changes to water quality or quantity.	**7.5 Revision 3]** will ensure any birds using adjacent land outside of the Order Limits are not disturbed. Long-term management of retained habitats will be secured through the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3].** Operational water quality benefits are anticipated through cessation of intensive arable management and reduced agrichemical inputs.Landscape Ecological Management Plan		
Pochard	Construction – disturbance:	Retention of ponds and ditch network will	No specific additional mitigation required as	Negligible

	Potential disturbance to foraging/roosting habitat adjacent to the Order Limits. Construction – water quality/hydrological change: Potential temporary degradation of aquatic habitats during construction through pollution, siltation, run-off, dust or changes to water quality or quantity.	ensure that there is no loss of habitat for this species in the event they were to use such features in the future. Drainage strategy, pollution prevention and surface water management measures secured through the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will prevent construction-phase impacts to water quality and quantity. Adoption of the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure any birds using adjacent land outside	surveys confirmed the likely absence of this species within and adjacent to the Order Limits.	

		of the Order Limits are not disturbed. Operational water quality benefits are anticipated through cessation of intensive arable management and reduced agrichemical inputs.		
Scaup	Construction – disturbance: Potential disturbance to foraging/roosting habitat adjacent to the Order Limits. Construction – water quality/hydrological change: Potential temporary degradation of aquatic habitats during construction through pollution, siltation, run-off,	Retention of ponds and ditch network will ensure that there is no loss of habitat for this species in the event they were to use such features in the future. Drainage strategy, pollution prevention and surface water management measures secured through the **Outline Ecological Construction Management Plan [Document Reference**	No specific additional mitigation required as surveys confirmed the likely absence of this species within and adjacent to the Order Limits.	Negligible

	dust or changes to water quality or quantity.	**7.5 Revision 3]** will prevent construction-phase impacts to water quality and quantity. Adoption of the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure any birds using adjacent land outside of the Order Limits are not disturbed. Operational water quality benefits are anticipated through cessation of intensive arable management and reduced agrichemical inputs.		
Goldeney e	Construction – disturbance: Potential disturbance to	Retention of ponds and ditch network will ensure that there is no loss of habitat for this	No specific additional mitigation required as surveys confirmed the likely absence of this	Negligible

	foraging/roosting habitat adjacent to the Order Limits. Construction – water quality/hydrological change: Potential temporary degradation of aquatic habitats during construction through pollution, siltation, run-off, dust or changes to water quality or quantity.	species in the event they were to use such features in the future. Drainage strategy, pollution prevention and surface water management measures secured through the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will prevent construction-phase impacts to water quality and quantity. Adoption of the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure any birds using adjacent land outside of the Order Limits are not disturbed.	species within and adjacent to the Order Limits.	

		Operational water quality benefits are anticipated through cessation of intensive arable management and reduced agrichemical inputs.		
Oystercatcher	Construction – disturbance: Potential disturbance to foraging/roosting habitat adjacent to the Order Limits.	Adoption of measures detailed in the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure any birds using adjacent land outside of the Order Limits are not disturbed.	No specific additional mitigation required as surveys confirmed the likely absence of this species within and adjacent to the Order Limits. The bird mitigation areas detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019]** may provide general additional habitat opportunities and an enhancement compared to the	Major beneficial (**Significant**)

			existing intensively managed arable baseline.	
Ringed plover	Construction – disturbance: Potential disturbance to foraging/roosting habitat adjacent to the Order Limits.	Adoption of measures detailed in the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure any birds using adjacent land outside of the Order Limits are not disturbed.	No specific additional mitigation required as surveys confirmed the likely absence of this species within and adjacent to the Order Limits. The bird mitigation areas detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019]** may provide general additional habitat opportunities and an enhancement compared to the existing intensively managed arable baseline.	Major beneficial (**Significant**)

Golden plover	Construction – disturbance: Disturbance to foraging/roosting habitat adjacent to the Order Limits.	Adoption of measures detailed in the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3**] will ensure any birds using adjacent land outside of the Order Limits are not disturbed.	Although not required as the Order Limits are not considered functionally linked for this species, the creation and management of large areas of open permanent pasture with scrapes, as detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019**], will provide additional suitable habitat and an enhancement compared to the existing intensively managed arable baseline.	Minor beneficial (**Significant**)
Grey p	Construction – disturbance:	Adoption of measures detailed in the **Outline**	No specific additional mitigation required as	Major beneficial

	lover	Potential disturbance to foraging/roosting habitat adjacent to the Order Limits.	**Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure any birds using adjacent land outside of the Order Limits are not disturbed.	surveys confirmed the likely absence of this species within and adjacent to the Order Limits. The bird mitigation areas detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019]** may provide general additional habitat opportunities and an enhancement compared to the existing intensively managed arable baseline.	(**Significant**)
Lapwing		Construction – loss of functionally linked land: Loss of over-wintering foraging/roosting habitat used by birds	Adoption of measures detailed in the Outline Ecological Construction Management Plan [Document Reference	Additional mitigation will comprise creation and management of mitigation land, including large areas of open permanent	Minor beneficial (**Not Significant**)

	associated with the Humber Estuary SPA/Ramsar. Construction – disturbance: Disturbance to foraging/roosting habitat within or adjacent to the Order Limits.	7.5 Revision 3] will ensure any birds using adjacent land outside of the Order Limits are not disturbed. Retention of boundary habitats. Embedded mitigation is not sufficient to mitigate for the loss of open land used by this species.	pasture with scrapes managed for the benefit of lapwing, as detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019].** This will provide an enhancement compared to the existing intensively managed arable baseline, as land will be secured and managed specifically for target non-breeding bird species.	
Whimbrel	Construction – disturbance: Potential disturbance to foraging/roosting	Adoption of measures detailed in the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will	No specific additional mitigation required as surveys confirmed the likely absence of this species within and adjacent to the Order Limits. The bird	Major beneficial (**Significant**)

	habitat adjacent to the Order Limits.	ensure any birds using adjacent land outside of the Order Limits are not disturbed.	mitigation areas detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019]** may provide general additional habitat opportunities and an enhancement compared to the existing intensively managed arable baseline.	
Curlew	Construction – disturbance: Potential disturbance to foraging/roosting habitat adjacent to the Order Limits.	Adoption of measures detailed in the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure any birds using adjacent land outside	No specific additional mitigation required due to the low numbers recorded within and adjacent to the Order Limits. The bird mitigation areas detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy**	Major beneficial (**Significant**)

			of the Order Limits are not disturbed.	**[REP1-019]** may provide general additional habitat opportunities and an enhancement compared to the existing intensively managed arable baseline.	
Humber Estuary Ramsar	Criterion 5 – waterfowl assemblage in non-breeding season	Construction – loss of functionally linked land: Loss of over-wintering foraging/roosting habitat for species forming part of the waterfowl assemblage. Construction – disturbance: Disturbance to foraging/roosting habitat within or	Adoption of measures detailed in the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure any birds using adjacent land outside of the Order Limits are not disturbed. Retention of ponds, ditches and boundary habitats. Embedded mitigation is not sufficient to mitigate	Additional mitigation will comprise creation and management of mitigation land, including large areas of open permanent pasture with scrapes and arable land managed for the benefit of target non-breeding bird species, as detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019**]. This will	Minor beneficial (**Not Significant**)

		adjacent to the Order Limits.	for the loss of open land used by qualifying assemblage species.	provide an enhancement compared to the existing intensively managed arable baseline, as land will be secured and managed specifically for the SPA/Ramsar waterfowl assemblage.	
	Criterion 6 – golden plover (passage)	Construction – disturbance: Disturbance to foraging/roosting habitat adjacent to the Order Limits.	Adoption of measures detailed in the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure any birds using adjacent land outside of the Order Limits are not disturbed.	Although not required as the Order Limits are not considered functionally linked for this species, the creation and management of large areas of open permanent pasture with scrapes, as detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019],** will	Minor beneficial (**Not Significant**)

			provide additional suitable habitat and an enhancement compared to the existing intensively managed arable baseline.	
Criterion 6 – golden plover (wintering)	Construction – disturbance: Disturbance to foraging/roosting habitat adjacent to the Order Limits.	Adoption of measures detailed in the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** will ensure any birds using adjacent land outside of the Order Limits are not disturbed.	Although not required as the Order Limits are not considered functionally linked for this species, the creation and management of large areas of open permanent pasture with scrapes, as detailed within **Appendix 7.10 Non-Breeding Bird Mitigation Strategy [REP1-019],** will provide additional suitable habitat and an enhancement	Minor beneficial (**Not Significant**)

			compared to the existing intensively managed arable baseline.	
Criterion 8 – migration route for river lamprey and sea lamprey	Construction – water quality/hydrological change: Potential temporary degradation of watercourses through dust, pollution, siltation, run-off or changes to water quality, which could affect migration corridors.	Drainage strategy, pollution prevention and dust control measures secured through the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3].** Retention and protection of watercourses and ditch networks. Operational water quality benefits are anticipated through cessation of intensive arable management and reduced agrichemical inputs.	No additional mitigation required beyond the embedded measures.	Negligible

7.6.123. The feature-specific residual effects on internationally designated sites are set out in Table 7-13 above. For clarity, Table 7-14 provides an overall site-level summary of the residual construction effects on each internationally designated site, taking account of the embedded construction-phase controls, additional mitigation where required, and the residual effects identified for the relevant qualifying features.

Table 7-14 Overall residual effects on internationally designated sites

Designated site	Overall residual construction effect
Thorne and Hatfield Moors SPA	Following implementation of construction-phase controls, including measures for noise, lighting, dust, pollution prevention, surface water management and timing restrictions where required, no adverse residual construction effect is anticipated. The overall residual construction effect on Thorne and Hatfield Moors SPA is assessed as **negligible to minor adverse and Not Significant**.
Thorne Moor SAC and Hatfield Moors SAC	Following implementation of pollution prevention, surface water management, dust control and habitat protection measures, the overall residual construction effect on Thorne Moor SAC and Hatfield Moors SAC is assessed as **negligible and Not Significant**.
Humber Estuary SPA	Following implementation of embedded construction-phase controls and additional mitigation for non-breeding birds, including the provision of mitigation land for target species, the overall residual construction effect on Humber Estuary SPA is assessed as **minor beneficial and Not Significant**.
Humber Estuary Ramsar	Following implementation of embedded construction-phase controls and additional mitigation for non-breeding birds, including the provision of mitigation land for target species, the overall residual construction effect on Humber Estuary Ramsar is assessed as **minor**

	beneficial and Not Significant for the non-breeding waterfowl assemblage. Residual construction effects on other Ramsar features are assessed as **negligible and Not Significant**.
Humber Estuary SAC	Following implementation of pollution prevention, surface water management and watercourse protection measures, the overall residual construction effect on Humber Estuary SAC is assessed as **negligible and Not Significant**.

Operation

Statutory Designated Sites

7.6.124. There will be no operational negative effects on designated sites over and above those described in the Construction effects section above. It is considered that with the management of habitats buffers and good practice measures (as detailed within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** and **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** both submitted separately to this ES), there will be improved habitat connectivity with these sites as well as habitats within the wider environment. This will create a larger, stronger, and more ecologically resilient natural corridors in the landscape compared to the current baseline, which comprises intensively managed farmland bordering the designated sites.

7.6.125. Subsequently, impacts to statutory and non-statutory designated sites will be of medium (positive) magnitude on a receptor of International/European - Local value and sensitivity, which are consequently a **minor beneficial effect**.

Breeding birds - ground nesting species

7.6.126. There will be no operational negative effects on breeding birds (ground nesting species) over and above those described in the Construction effects section above. It is considered that creation and enhancements of habitats as part of the Scheme will be favourable to foraging ground nesting species.

7.6.127. Subsequently, overall impacts to ground nesting species will be of minor adverse magnitude on a receptor of National-Regional/County value and sensitivity, which is consequently not **Significant**.

7.7. Summary

Introduction

7.7.1. This chapter addresses the potential effects on ecological features during construction, operation and decommissioning of the Scheme. Effects have been assessed in accordance with guidance set out in Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1 (2018, Chartered Institute of Ecology and Environmental Management) **[REF. 7-1]**.

Baseline Conditions

7.7.2. The Scheme comprises an area of predominantly agricultural land between the towns of Thorne and Crowle. The Tween Bridge Wind Farm is largely surrounded by the Order Limits, and consists of twenty two operational wind turbines. Nineteen are within the order limits and a further three lie outside the order limits The Stainforth and Keadby Canal crosses the Order Limits from west to east. The River Torne is present adjacent to the south west of the Order Limits.

7.7.3. Habitats within the Order Limits are dominated by arable farmland, associated with species-poor hedgerow systems and watercourses with ponds and a parcel of plantation broad-leaved woodland. The Order Limits comprise of open fields of limited biodiversity value, and subject to intensive farmland management.

7.7.4. The Order Limits lie outside designated sites with the exception of Thorne & Hatfield Moors SPA, Thorne Moor SAC, Thorne, Crowle and Goole Moors SSSI and Hatfield Chase Ditches SSSI. Whilst the Moors SPA/SAC/SSSI lies within the Order Limit, they are outside the development footprint.

7.7.5. Comprehensive ecological surveys have been undertaken since 2022 to inform this assessment. With the aim of providing the required information regarding habitats along with protected species, such as breeding and non-breeding birds, badger, otter, water voles, amphibians and invertebrates. These surveys were used to inform the iterative design of the Scheme and avoidance of ecological features of value, such as hedgerows, woodland and watercourses, has been a core design principle.

Likely Significant Effects

7.7.6. Higher value habitats including woodlands, watercourses, trees and hedgerows are retained and protected, with construction phase effects largely confined to arable land of low ecological value, but which is noted to support both significant assemblages of both breeding and non-breeding birds, which is discussed separately.

7.7.7. The Scheme also includes embedded habitat enhancement provisions; which will be managed for the benefit of wildlife over the long term and will provide biodiversity gains for a wide variety of species including invertebrates and bats.

7.7.8. The proposed creation of diverse grasslands and hedgerow planting will also deliver a quantifiable BNG. Although not mandatory for NSIPs, the commitment to a BNG above mandatory or policy requirements, and adopted as a fundamental design principle ensures that the Scheme will deliver a substantial ecological benefit.

7.7.9. Effects from the construction phase have been assessed as not significant in relation to non-statutory designated sites, habitats and species.

7.7.10. This assessment has concluded that potential impact pathways are present for a number of qualifying features of the nearby statutory sites. Mitigation measures in terms of buffer zones and sensitive working methodologies are detailed within the accompanying **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3]** and are considered to adequately mitigate for most LSEs on the statutory designated sites identified.

7.7.11. However, the mitigation is not considered sufficient to mitigate for all LSEs on all qualifying features. Impacts on a number of qualifying bird species of the Humber Estuary SPA/Ramsar are expected through habitat loss and disturbance where these species are present in the Order Limits or adjacent land. Additional mitigation in the form of large areas of permanent pasture and also arable, both of which will be sensitively managed for the target species, is proposed. The principles of the management of this additional mitigation is included within the **Outline Landscape Ecological Management Plan [Document Reference 7.5 Revision 3],** which although in itself is embedded mitigation, includes the management of this mitigation land for non-breeding SPA bird species, in order to provide one concise management plan for the entire Order Limits..

7.7.12. Additional scrapes are to be created within the grassland areas to provide further habitat opportunities to bird species, which are not currently present.

7.7.13. A significant population of ground nesting species was recorded within the Order Limits. Ground-nesting bird mitigation will utilise on-site mitigation measures, comprising the provision of large areas of open, permanent pasture managed sensitively for skylark and skylark plots within arable, the principles of which are set out in the accompanying **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3**].

7.7.14. Once operational, solar farms function with little intervention or disturbance required. This is limited to occasional maintenance visits and ongoing management of grassland and other habitats around the Order Limits, including cutting or grazing the grassland and periodic hedgerow cutting. Habitat creation, which forms part of the operational design, includes extensive areas of grassland attractive to a range of species which maintains habitat connectivity within and around the Order Limits and provides enhanced opportunities for wildlife.

Mitigation

7.7.15. Measures are set out to avoid or mitigate against potentially adverse effects during both the construction, operation and decommissioning periods of The Scheme and these measures will be detailed within the **Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3], Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** and **Outline DEMP [Document Reference 7.9.3].**

7.7.16. Additional measures have been identified where required to ensure legislative compliance and the protection of wildlife, including pre-commencement/construction surveys and, where necessary, mitigation licences issued by Natural England which will ensure that the favourable conservation status of relevant species will be maintained. In addition, land provided and managed specifically for SPA species that utilise the Order Limits are to be provided and secured for the duration of the Scheme.

Enhancement

7.7.17. The included BNG for habitats, combined with other measures, will provide new and enhanced features that can be used for breeding, foraging, overwintering and refuge by a range of species, from birds and bats to amphibians, reptiles and invertebrates, all of which will also increase biodiversity.

7.7.18. The cessation of the use of agricultural chemicals across the Order Limits (following removal from farming use) will provide further benefit, in particular for invertebrate populations.

7.7.19. The habitat enhancements across the Order Limits will provide benefits by increasing opportunities for many of the species associated with designated sites and increase and improve ecological connectivity.

7.7.20. A number of boxes will be installed for birds, bats and hedgehogs as well as insect hotels, beetle banks, hibernacula and bee hives across the Order Limits, the principles of which are provided in the **Outline Landscape Ecological Management Plan [Document Reference 7.6 Revision 3]** submitted separately to this ES.

Conclusion

7.7.21. With embedded design measures and mitigation in place as described, The Scheme will not result in any significant adverse effects on any habitats or species, statutory or non-statutory designated sites.

7.7.22. Beneficial effects are anticipated as a result of habitat creation and diversification accompanied by long-term habitat management for the benefit of biodiversity.

7.7.23. **Table 7-15** contains a summary of the assessment of the likely significant effects of The Scheme.

Table 7-15 Summary of Effects, Mitigation and Residual Effects

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
Construction								
Statutory Designated Sites excluding qualifying bird species*	Habitat loss/damage. Disturbance to habitats & associated species Changes to hydrology – water	Indirect, temporary & permanen	High	Low	International- Regional/ County	Neutral	Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3] including pollution prevention and control measures Protection buffers. Phased construction to	Negligible

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
	quality and quantity. Run-off, pollution impacts including airborne such as dust						minimise vehicle movements. Construction Vehicle routes designed to minimise movements, avoid being located close to sensitive receptors as much as possible.	
Statutory Designated Sites - qualifying	Loss of overwintering habitat	Indirect, temporary &	High	High	International- Regional/County	Not Significant	Provision of large areas of open, permanent Buffers around	Minor beneficia

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
bird species*	Loss of foraging habitat (nightjar) Disturbance of nightjar during cosntruction	temporary temporary					watercourses and woodland Grassland managed sensitively to enhance foraging. Sensitive timing of construction works to avoid nesting period within 150m of SPA boundary. Use of appropriate machinery and methods during	(Not Significant)

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
							construction to minimise noise	
Non-statutory designated sites	Habitat loss/damage. Disturbance to habitats & species	Both direct and indirect, temporary	Medium	Negligible	Regional-Local	Not significant	Buffers around watercourses and woodland Pollution prevention and control measures included in Outline eCMP. Tree root protection zones. Native habitat creation in place of	Minor beneficia (Not Significant)

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
							intensive arable, increasing biodiversity and opportunities for wildlife, cessation of agrichemical input improving water quality.	
Habitats	Habitat loss/damage Disturbance	Direct, permanent and temporary	Medium-Low	High	Local	Not Significant	Buffers around watercourses and woodland Pollution prevention and control measures included in Outline Ecological	Minor beneficial (Not Significant)

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
							Construction Management Plan [Document Reference 7.5 Revision 3] Tree root protection zones. Native habitat creation in place of intensive arable, increasing biodiversity.	

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
Breeding Birds (excluding Schedule 1 and ground nesting species)	Disturbance Loss of habitat	Direct and indirect, temporary	Low	Low	Site/Local	Neutral	Buffers around watercourses and woodland Pollution prevention and control measures included in Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3] Tree root protection zones.	Negligible

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
							Native habitat creation in place of intensive arable, including hedgerows, woodland and species-rich grassland, increasing biodiversity and nesting / foraging opportunities for birds. Management to maximise nesting and foraging opportunities	

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
							detail in the Outline Landscape Ecological Management Plan.	
Breeding Birds (Schedule 1 species)	Disturbance Loss of habitat	Direct and indirect. temporary	Medium	Moderate	Regional/County	Neutral	Buffers around woodland and hedgerows Pre-commencement survey if construction during the breeding bird season	Negligible

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
							Mitigation measures implemented such as bird protection zones, if required. Native habitat creation in place of intensive arable, including hedgerows, woodland and species-rich grassland increasing biodiversity and nesting / foraging	

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
							opportunities for birds. Management to maximise nesting and foraging opportunities detail in the Outline Landscape Ecological Management Plan	
Breeding Birds (Ground nesting species grey	Habitat loss & disturbance	Direct & indirect. Permanent &	High-Medium	High	National-Regional/county	Not Significant	Pre-commencement survey if construction during the	Minor beneficia

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
partridge, skylark, yellow wagtail, meadow pipit and corn bunting)		temporary					breeding bird season Pollution prevention and control measures included in Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3] Provision of large areas of open, permanent pasture and arable	

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
							managed sensitively for target species.	
Non-breeding birds (non-SPA species)	Habitat loss & disturbance	Direct & indirect. Permanent & temporary	Medium	Low	County	Not Significant	Pollution prevention and control measures included in Outline Ecological Construction Management Plan [Document Reference 7.5 Revision 3] Provision of large areas of open, permanent pasture	Minor beneficial (Not Significant)

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
							and arable, managed sensitively for target species. New tree, hedgerow and woodland planting increasing opportunities	
Operation								
Statutory & non-statutory	Habitat creation & enhancement	Direct. Permanent	High-Low	Moderate	International/European - Local	Not significant	Establishment of habitats will create stronger and more	Minor beneficial

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
designated sites	Water quality						ecologically resilient corridors	(Not Significant)
Habitats	Habitat creation & enhancement	Direct. Permanent	Low	High	Local	Not Significant	Establishment of habitats will create stronger and more ecologically resilient corridors	Minor beneficial (Not Significant)
Non breeding birds	Habitat creation & enhancement	Direct. Permanent	High-Low	Moderate	International/European - Local	Not Significant	Order Limits will be subject to reduced disturbance compared to normal farming practices.	Minor beneficial (Not Significant)

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
	Water quality						Establishment of habitats will create stronger and more ecologically resilient corridors	
Breeding birds (excluding Schedule 1 and ground nesting species)	Minor disturbance for routine maintenance. Species habitat creation & enhancement	Direct & indirect. Permanent & temporary	Medium	Low	Site/Local	Not significant	Order Limits will be subject to reduced disturbance compared to normal farming practices. Habitat creation, appropriate management and installation of bird	Minor beneficial (Not Significant)

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
							boxes will benefit this group.	
Breeding birds (Schedule 1 species)	Minor disturbance for routine maintenance. Species habitat creation & enhancement	Direct & indirect. Permanent & temporary	Medium	Low	Regional/county	Neutral	Order Limits will be subject to reduced disturbance compared to normal farming practices. Habitat creation appropriate management and installation of bird	Negligible

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
							boxes will benefit this group.	
Breeding Birds (Ground nesting species grey partridge, skylark, yellow wagtail, meadow pipit and corn bunting)	No additional effects than construction	Direct & indirect. Permanent & temporary	High	Moderate	National	Not Significant	Order Limits will be subject to reduced disturbance compared to normal farming practices. Habitat creation and appropriate management will benefit this group.	Minor beneficial (Not Significant)

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GLOSSARY

Acronyms	Definition
ALC	Agricultural Land Classification
BESS	Battery Energy Storage System
BMV	Best and Most Versatile
BNG	Biodiversity Net Gain
CEMP	Construction Environmental Management Plan
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
DEMP	Decommissioning Environmental Management Plan
eCMP	Ecology Construction Management Plan
EIA	Environmental Impact Assessment
ES	Environmental Statement
FLL	Functionally Linked Land
FRA	Flood Risk Assessment
GHG	Greenhouse gases
GW	gigawatt
HDD	Horizontal Directional Drilling
HGV	Heavy goods vehicle
HRA	Habitats Regulations Assessment
IAQM	Institute of Air Quality Management
IEMA	Institute of Environmental Management and Assessment
kV	kilovolt
LCA	Landscape Character Area
LCT	Landscape Character Type
LEMP	Landscape and Ecological Management Plan
LNR	Local Nature Reserve
LSE	Likely Significant Effect
LWS	Local Wildlife Site
MMP	Materials Management Plan
MW	megawatt
NCA	National Character Area
NCN	National Cycle Network
NNR	National Nature Reserve
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
OEMP	Operational Environmental Management Plan

Acronyms	Definition
PEIR	Preliminary Environmental Information Report
PRoW	Public Rights of Way
PV	photovoltaic
SAC	Special Area of Conservation
SMP	Soil Management Plan
SPA	Special Protection Areas
SSSI	Site of Special Scientific Interest
SWMP	Site Waste Management Plan
tCO2e	tonnes of carbon dioxide equivalent
UK	United Kingdom
WFD	Water Framework Directive
ZoI	Zone of Influence
ZTV	Zone of Theoretical Visibility