
EAST YORKSHIRE SOLAR FARM

**East Yorkshire Solar Farm
EN010143**

Environmental Statement

**Volume 1, Chapter 8: Ecology
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8. Ecology

8.1 Introduction

- 8.1.1 This chapter of the Environmental Statement (ES) presents the findings of an assessment of the likely significant effects of the proposed East Yorkshire Solar Farm (hereafter referred to as the Scheme) on ecology, following the methodology outlined in section 8.4. For a description of the Scheme, refer to **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**.
- 8.1.2 This chapter identifies and proposes measures to address the potential impacts and likely significant effects of the Scheme on ecology, during the construction, operation, and decommissioning phases.
- 8.1.3 This chapter is supported by the following appendices in **ES Volume 2 [EN010143/APP/6.2]**:
- a. **Appendix 8-1: Legislation, Policy and Guidance (Ecology);**
 - b. **Appendix 8-2: Aquatic Ecology Report;**
 - c. **Appendix 8-3: Extended Phase 1 Habitat Survey Report;**
 - d. **Appendix 8-4: Hedgerow Report** (partially redacted for public use);
 - e. **Appendix 8-5: Survey Report for Breeding Birds** (including a Confidential Annex);
 - f. **Appendix 8-6: Survey Report for Non-Breeding Birds;**
 - g. **Appendix 8-7: Bat Survey Report;**
 - h. **Appendix 8-8: Badger Survey Report** (including a Confidential Annex);
 - i. **Appendix 8-9: Riparian Mammals Survey Report;** and
 - j. **Appendix 8-10: Great Crested Newt District Level Licensing Impact Assessment and Conservation Payment Certificate** (Confidential).
- 8.1.4 The **Hedgerow Report (Appendix 8-4, ES Volume 2 [EN010143/APP/6.2])** will be provided as a redacted version for the public and a confidential version for specific stakeholders¹. This is due to referencing of protected breeding bird species (owing to inclusion in Schedule 1 of the Wildlife and Countryside Act [WCA] 1981 (as amended) [Ref 8-1]) that were recorded during the surveys. Therefore, the public version will not specify which hedgerows comprise Schedule 1 birds; whilst the confidential version for specific stakeholders will. Similarly, where specially protected breeding bird species were recorded, then the locations of these have been plotted onto a separate figure and results presented in a separate document (**Appendix 8-5: Survey Report for Breeding Birds [Confidential Annex], ES Volume 2 [EN010143/APP/6.2]**) which will also be provided confidentially to specific stakeholders only.

¹ i.e., local authority, county ecologists and Natural England.

- 8.1.5 The survey report for badger is not included in full within this ES chapter, owing to the sensitivities of detailing information on the location of badger (*Meles meles*) setts. Therefore, the results, evaluation and conclusions section of **Appendix 8-8, ES Volume 2 [EN010143/APP/6.2]** will be provided confidentially to specific stakeholders only in a separate document – **Appendix 8-8: Badger Survey Report [Confidential Annex], ES Volume 2 [EN010143/APP/6.2]**.
- 8.1.6 A **Framework Construction Environmental Management Plan (CEMP) [EN010143/APP/7.7]**, **Framework Operational Environmental Management Plan (OEMP) [EN010143/APP/7.8]** and **Framework Decommissioning Environmental Management Plan (DEMP) [EN010143/APP/7.9]** have been prepared for the DCO Application to manage environmental effects of the Scheme and to demonstrate compliance with environmental legislation.
- 8.1.7 A **Framework Landscape and Ecological Management Plan (LEMP) [EN010143/APP/7.14]** has also been prepared for the DCO Application to set out the key measures required to avoid, mitigate and compensate for impacts and effects to biodiversity (and landscape) from the construction and operation of the Scheme. The Framework LEMP will also provide management prescriptions aimed at ensuring the Scheme delivers a net gain for biodiversity over the operational phase of the Scheme, as per the **Biodiversity Net Gain (BNG) Assessment Report [EN010143/APP/7.11]**.
- 8.1.8 Effects on ecological resources from solar energy projects can arise from direct and indirect impacts upon designated sites, habitats or species, and be of a temporary or permanent nature. Indirect effects can occur through pollution of air and water and via changes in lighting, noise or hydrology. This biodiversity chapter is therefore supported by information contained within the following chapters of the ES, **Volume 1 [EN010143/APP/6.1]**:
- a. **Chapter 6: Climate Change;**
 - b. **Chapter 9: Flood Risk, Drainage and Water Environment** (which includes hydrology and water pollution);
 - c. **Chapter 10: Landscape and Visual Amenity** (which includes lighting);
 - d. **Chapter 11: Noise and Vibration;** and
 - e. **Chapter 16: Other Environmental Topics** (which includes changes in air quality, and glint and glare).
- 8.1.9 This chapter is supported by the following figures in **ES Volume 3 [EN010143/APP/6.3]**:
- a. **Figure 8-1: International Sites Designated for Nature Conservation within 10km [kilometres] and other Statutory Designated Sites within 5km;** and
 - b. **Figure 8-2: Non Statutory Sites Designated for Nature Conservation within 2km.**
- 8.1.10 A glossary and list of abbreviations are defined in **Chapter 0: Table of Contents, Glossary and Abbreviations, ES Volume 1 [EN010143/APP/6.1]**.
- 8.1.11 A Non-Technical Summary of the ES is presented in **ES Volume 4 [EN010143/APP/6.4]**.

8.2 Legislation, Policy and Guidance

8.2.1 Legislation, planning policy, and guidance relating to Ecology and pertinent to the Scheme comprises of the documents listed below. More detailed information can be found in **Appendix 8-1, ES Volume 2 [EN010143/APP/6.2]**.

Legislation

8.2.2 Legislation considered includes:

- a. WCA 1981 (as amended) (Ref 8-1);
- b. Directive 2009/147/EC on the conservation of wild birds (the codified version of Council Directive 79/409/EEC as amended) ('Birds Directive') (Ref 8-2);
- c. Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ('Habitats Directive') (Ref 8-3);
- d. Regulation (EU) 1143/2014 on the introduction and spread of invasive alien species (Ref 8-4);
- e. Convention on Biological Diversity (Ref 8-5);
- f. COP15: Global biodiversity framework (2023) (Ref 8-6)
- g. Ramsar Convention (Ref 8-7);
- h. Environmental Improvement Plan 2023 (Ref 8-8);
- i. The Conservation of Habitats and Species Regulations 2017 (as amended) (Ref 8-9);
- j. The Countryside and Rights of Way Act 2000 (Ref 8-10);
- k. The Natural Environment and Rural Communities Act 2006 (NERC) (Ref 8-11);
- l. The Protection of Badgers Act 1992 (Ref 8-12);
- m. The Hedgerows Regulations 1997 (Ref 8-13);
- n. The Invasive Alien Species (Enforcement and Permitting) Order 2019 (as amended) (Ref 8-14);
- o. Animal Welfare Act 2006 (Ref 8-15);
- p. Salmon and Freshwater Fisheries Act 1975 (Ref 8-16);
- q. Eels (England and Wales) Regulations 2009 (Ref 8-17); and
- r. The Water Environment (Water Framework Directive) [WFD] (England and Wales) Regulations 2017 (Ref 8-18).

National Policy

8.2.3 National policy considered includes:

- a. Overarching National Policy Statement (NPS) for Energy (EN-1) (2011) (Ref 8-19);
- b. Draft NPS for Energy (EN-1) (2023) (Ref 8-20);
- c. NPS for Renewable Energy Infrastructure (EN-3) (2011) (Ref 8-21);

- d. Draft NPS for Renewable Energy (EN-3) (2023) (Ref 8-22);
- e. NPS for Electricity Networks Infrastructure (EN-5) (2011) (Ref 8-23);
- f. Draft NPS for Electricity Networks Infrastructure (EN-5) (2023) (Ref 8-24);
- g. National Planning Policy Framework (NPPF) (2023) (Ref 8-25); and
- h. The UK Biodiversity Action Plan (UKBAP) (Ref 8-79).

Local Policy

8.2.4 Local policy considered includes:

- a. East Riding Local Plan Strategy 2012-2029 adopted April 2016 (Ref 8-26);
- b. East Riding Local Plan Update 2020-2039 Draft Strategy Document Update (Ref 8-27);
- c. East Riding Local Plan, Lower Derwent Valley Supplementary Planning Document (Ref 8-28);
- d. Selby District Local Plan (2005) saved local policies (Ref 8-29);
- e. Selby District Core Strategy Local Plan Policy (October 2013) (Ref 8-30); and
- f. Emerging Selby Local Plan, Publication Version Consultation 2022 (Ref 8-31).

Guidance

8.2.5 Guidance considered includes:

- a. Biodiversity 2020: A strategy for England's Wildlife and Ecosystem Services with regards to marine habitats, ecosystems, and fisheries (Ref 8-72);
- b. 25-year Environment Plan (Ref 8-73);
- c. UK Post 2010 Biodiversity Framework (Ref 8-74)
- d. Institute of Air Quality Management (IAQM) Guidance on the assessment of dust from demolition and construction (Ref 8-42);
- e. Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for ecological impact assessment in the UK and Ireland: Terrestrial, Freshwater (Ref 8-32);
- f. Institute of Lighting Professionals Guidance Note 08/23 Bats and Artificial Lighting at Night (Ref 8-34);
- g. Institute of Lighting Professionals Guidance Note 1 for the reduction of obtrusive light 2021 (Ref 8-35);
- h. Natural England's The Biodiversity Metric 4.0 – User Guide & Technical Supplement (Ref 8-36);
- i. CIEEM, Institute of Environmental Management and Assessment (IEMA) and CIRIA's Biodiversity Net Gain: Good Practice Principles for Development, A Practical Guide (Ref 8-37);

- j. UKHab (2018-2022). The UK Habitat Classification System (Ref 8-38);
and
- k. Natural England's Technical Information Note TIN101. Solar parks:
maximising environmental benefits (Ref 8-39).

8.2.6 Guidance used for ecological surveys are detailed in **Table 8-3** and in **Appendix 8-2 to 8-9** in **ES Volume 2 [EN010143/APP/6.2]**.

8.3 Consultation

- 8.3.1 A scoping exercise was undertaken in September 2022 to establish the content of the assessment and the approach and methods to be followed.
- 8.3.2 The **Scoping Report (Appendix 1-1, ES Volume 2 [EN010143/APP/6.2])** was issued on 9 September 2022 and records the findings of the scoping exercise and details the technical guidance, standards, best practice and criteria to be applied in the assessment to identify and evaluate the likely significant effects of the Scheme on ecology.
- 8.3.3 The **Scoping Opinion** was received on 20 October 2022 (**Appendix 1- 2, ES Volume 2 [EN010143/APP/6.2]**). The feedback received from stakeholders at scoping and Applicant responses in relation to Ecology are presented in **Appendix 1-3, ES Volume 2 [EN010143/APP/6.2]**. This is also summarised in **Table 8-1**.

Table 8-1. Scoping opinion responses (Ecology)

Consultee	Summary of comment	How matter has been addressed	Location of response
Planning Inspectorate (PINS)	The Applicant proposes to scope out effects on statutory designated sites (without mobile species) located more than 2km from the Site. No justification is provided for scoping this matter out. PINS has considered the characteristics of the Scheme and is content to scope this matter out on the basis that significant effects are unlikely. However, the ES should justify why this study area is appropriate in line with established guidance, seeking agreement from relevant consultation bodies where possible.	The ES provides justification for the Study Area. As set out in paragraph 8.4.23 of this chapter, the ES considers any surface water bodies or water dependent ecological sites or habitats up to 2km from the Order limits if they might be hydrologically linked. This is to consider potential impacts relating to waterborne pollution and downstream flood effects. Statutory designated sites that lie more than 2km from the Order limits (without mobile species) will not be directly impacted by the Scheme through habitat loss or disturbance. At this distance, disturbance impacts to species using designated sites through increased noise, lighting or visual disturbance does not need to be considered as it is too far for a pathway for an effect.	Matters scoped in/out are discussed further in section 8.4. Section 16.2: Air Quality of Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1] .
PINS	The Scoping Report states that impacts to common and widespread habitats of low sensitivity and/or conservation interest is proposed to be scoped out. No justification is provided for scoping this matter out, however paragraph 8.7.2 of the Scoping Report outlines the overall assessment approach and states that the assessment will focus on ecological features which are considered important and have potential to be affected by the Scheme rather than the addressing all habitats (and species) with potential to occur within the	As per CIEEM guidance (Ref 8-32) and as set out in paragraph 8.7.2 of the Scoping Report (Appendix 1-1, ES Volume 1 [EN010143/APP/6.2]), the assessment focuses on habitats and species which are ‘relevant’, i.e., ecological features considered important and potentially affected by the proposed Scheme. In its guidance, CIEEM makes clear that there is no need to “...carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable”. However, the	Natural England Consultation – paragraph 8.3.22. Matters scoped in/out are noted in section 8.4. The biodiversity importance, or value, assigned to each relevant habitat and species and justification

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>study area. In the absence of information, such as evidence demonstrating clear agreement with relevant statutory bodies and details of the proposed habitats to be scoped out, PINS is not in a position to agree to scope this matter out. Accordingly, the ES should include an assessment of this matter, or information demonstrating agreement with the relevant consultation bodies and the absence of a Likely Significant Effect (LSE).</p>	<p>embedded mitigation (as detailed in section 8.6) will also help to safeguard wider biodiversity. Natural England, as the relevant consultation body has been contacted through the Discretionary Advice Service (DAS), to discuss the proposed methodology in accordance with PINS’s comment. Correspondence received from Natural England (letter dated 31 March 2023, reference 384466) states: <i>“We also note the proposal to scope out impacts to common and widespread habitats of low sensitivity and/or conservation interest within the EclA [Ecological Impact Assessment], in line with CIEEM guidance. Natural England agrees that this approach is reasonable, but would recommend justification is provided for why each of the habitats has been scoped out of further assessment.”</i></p> <p>As stated in paragraph 8.4.59 of this chapter, all relevant ecological features of Local value and above, where there is the potential for the Scheme to impact them directly or indirectly, have been taken forward to impact assessment and are the ‘relevant ecological features’ for the purposes of the Ecological Impact Assessment (EclA). The biodiversity importance, or value, assigned to each relevant habitat and species and justification for this, is provided in Table 8-8 and Table 8-9.</p>	<p>for this, is provided in Table 8-8 and Table 8-9.</p>
<p>Planning Inspectorate</p>	<p>Table 8-4 of the Scoping Report states that effects on great crested newts (GCN) (<i>Triturus cristatus</i>) are currently scoped in but may be</p>	<p>The DLL route has been pursued for the Scheme. Communication received from Natural England, via their DAS (email dated 27 March 2023)</p>	<p>Natural England Communication – paragraph 8.3.24.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>scoped out of the detailed impact assessment in the ES as District Level Licensing (DLL) is likely to be used to offset the effects of the Scheme on GCN. PINS understands that the DLL approach includes strategic area assessment and the identification of risk zones and strategic opportunity area maps. The ES should include information to demonstrate whether the Scheme is located within a risk zone for GCN. If the Applicant enters into the DLL scheme, Natural England will undertake an impact assessment and inform the Applicant whether their Scheme is within one of the amber risk zones and therefore whether the Scheme is likely to have a significant effect on GCN. The outcome of this assessment will be documented on an Impact Assessment and Conservation Payment Certificate (IACPC). The IACPC can be used to provide additional detail to inform the findings in the ES, including information on the Scheme's impact on GCN and the appropriate compensation required. For the avoidance of doubt, PINS agrees that this matter may be subsequently scoped out subject to the process set out above taking place and Natural England's agreement that it is appropriate. If the DLL route is not pursued, the Applicant should include an assessment within the ES, including baseline surveys in line with Natural England's Standing Advice for GCN which suggests considering the use of a</p>	<p>confirmed that "...there is no overlap with a DLL 'red risk zone' therefore this does not pose any barrier to the use of DLL for this project." On receipt of consent for the Scheme, the scheme will apply for a DLL. The Scheme currently holds a provisional IACPC from Natural England, which will be submitted as part of the DCO application as Appendix 8-10: Great Crested Newt District Level Licensing Impact Assessment and Conservation Payment Certificate, ES Volume 2 [EN010143/APP/6.2]. The Applicant is in the process of obtaining the full IACPC and will update the above appendix when it is in place. Proceeding with the DLL route negates the requirement to undertake full GCN presence likely absence and population size surveys on all relevant waterbodies within a suitable Zone of Influence (ZoI) of the Scheme. Natural England undertake an impact assessment, the outcome of which is documented in the IACPC, submitted as part of the DCO Application. The IACPC provides detail including information on the Scheme's impact on GCN and the appropriate compensation required. As such, significant effects on GCN populations as a result of the Scheme will be avoided.</p>	<p>Provisional IACPC from Natural England provided in Appendix 8-10: Great Crested Newt District Level Licensing Impact Assessment and Conservation Payment Certificate, ES Volume 2 [EN010143/APP/6.2].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>500 m study area. PINS notes the statement in paragraph 8.2.6 of the Scoping Report that GCN surveys may need to be undertaken according to survey areas based on “...widely accepted survey guidance”. Where guidance has been relied upon this should be clearly referenced within the ES.</p>		
PINS	<p>A 10km study area is used for internationally designated sites and a 5km study area is used for nationally designated sites that could be affected by the Scheme. The Scoping Report states in paragraph 8.2.2 that this area “...should be sufficient in which to assess all possible effects on ecology and biodiversity”. Where there is doubt as to the potential for effects to occur, a wider study area should be considered to ensure that all impact pathways are assessed, particularly where there is potential for the Site to act as functionally linked land for mobile species such as bats or birds. PINS considers that a 30km search area should be used for sites designated for bats, in line with standard practice.</p>	<p>Appropriate Study Areas have been considered to ensure that all impact pathways are assessed. As set out in section 8.4.23 and in line PINS’s comment, a 30km search area was used for Special Area of Conservation’s (SAC) designated for bats; however, none were found to be present and therefore the 10km study areas were taken forward.</p>	As set out in paragraph 8.4.23
PINS	<p>Paragraph 8.1.2 of the Scoping Report states that ecological surveys commenced in April 2022 and will continue into 2023. Table 8-4 of the Scoping Report states that breeding bird surveys are proposed to be completed from March to July inclusive. As such it is unclear</p>	<p>The breeding bird surveys commenced in late April 2022, when access became available to progress the surveys. Survey visits were undertaken between April and July 2022, within the Solar PV Site (details provided in Appendix 8-5: Survey Report for Breeding Birds, ES Volume 2</p>	<p>Appendix 8-5: Survey Report for Breeding Birds, ES Volume 2 [EN010143/APP/6.2].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>whether the breeding bird surveys commenced in April 2022 or whether the surveys will be conducted from March to July 2023. If the surveys commenced in April 2022 this would not represent comprehensive baseline ecological data, as per the required survey periods set out in Table 8-4. The ecological baseline should be evidenced by comprehensive surveys in line with relevant guidance, and this should be confirmed in the ES.</p>	<p>[EN010143/APP/6.2]). Whilst March surveys were not undertaken in 2022, sufficient visits and coverage across the breeding season was achieved in 2022 to allow mapping of breeding territories. Further surveys for breeding birds were undertaken in 2023, as required, to ensure that sufficient baseline data for the entirety of the Order limits was available to determine potential impacts and required mitigation in relation to breeding birds. The 2023 surveys were undertaken between late March/ early April and June in areas of the Solar PV Site that were not covered in 2022 (as they were not part of the Site at the time of the survey) and covered the Grid Connection Corridor and Interconnecting Cable Corridor where potential suitable habitat exists.</p>	
<p>Planning Inspectorate</p>	<p>The Scoping Report states that detailed bat surveys will not be conducted within the Grid Connection Corridor on the basis that the effects on habitat would be temporary in nature. Although Table 8-4 of the Scoping Report suggests that there would be no changes in lighting within the cable corridor, details of the lighting strategy are not provided at this stage. Furthermore, a lighting assessment is proposed to be scoped out of the assessment (as noted in paragraph 10.8.7 of the Scoping Report). In the absence of the proposed construction lighting strategy, as well as the anticipated duration of the construction</p>	<p>There are designated sites within the Grid Connection Corridor but none of these are designated for bats. There are no SACs designated for bats within 30km of the Site. Therefore, the Scheme is unlikely to have a significant effect on foraging resources used by bats associated with SACs designated for bats. Bat activity surveys which are proportionate to impacts have been carried out within the Solar PV Site. The majority of the habitats present within this area are largely arable which is of limited value to foraging and commuting bats. Habitats of higher value such as linear features and pockets of woodland will largely be retained and areas of</p>	<p>Details on bat surveys undertaken to inform the ES are provided in Appendix 8-7: Bat Survey Report, ES Volume 2 [EN010143/APP/6.2]. Embedded Mitigation – section 8.6 of this chapter. Information on lighting presented in Chapter 2: The Scheme, ES</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>phase (c. 18-24 months) and the location of designated sites within the proposed cable corridor, PINS considers that there is potential for effects on foraging/commuting bat species within the Grid Connection Corridor during construction. The ES should ensure that ecological baselines are supported by robust assessments. Detailed bat surveys should be conducted for the Site, including the Grid Connection Corridor, or the ES should provide evidence of agreement from relevant consultation bodies that such surveys are not required.</p>	<p>grassland, suitable for foraging bats (and other species) will be created as part of the Scheme. In accordance with the Bat Conservation Trust survey guidelines (Ref 8-33) low suitability habitats for bats require one survey visit per season in Spring, Summer and Autumn. Bat activity transect surveys within the Grid Connection Corridor and Interconnecting Cable Corridor were not carried out, as there will be minimal loss of habitats and impacts to bats would be limited to temporary construction works which may take place at night. However, baseline data was collected in Spring (May), Summer (July) and Autumn (September) 2023 through the use of automated static bat detectors at two locations within the Grid Connection Corridor, located close to where the Horizontal Directional Drilling (HDD) works are proposed to cross the River Derwent and River Ouse.</p> <p>The lighting strategy for the Scheme (including the construction phase) is discussed in detail in Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1] and construction phase measures are further outlined in the Framework CEMP [EN010143/APP/7.7]. Lighting will be directional with care to minimise potential for light spillage beyond the site particularly towards houses, live traffic, and habitats, and will be designed with reference to the Institute of Lighting Professionals Guidance Notes (in particular</p>	<p>Volume 1 [EN010143/APP/6.1]. Framework CEMP [EN010143/APP/7.7].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
		<p>GN08/23: Bats and Artificial Lighting at Night (Ref 8-34) and GN-1: Reduction of Obtrusive Light (Ref 8-35) in so far as it is reasonably practicable.</p> <p>During the construction phase, installation of the Interconnecting and Grid Connection Cables and works within the Solar PV Site will be restricted to daylight hours except HDD operations which are 24-hour where required/practicable, and hence require artificial lighting. HDD is currently identified at five locations within the Site (Featherbed drain and associated Public Right of Way [PRoW]; the Hull to Selby railway; River Derwent; Unnamed drain (identified by the Scheme as 'Watercourse DE53'); and River Ouse – as shown on Figure 2-4: Location of temporary construction compounds and indicative HDD [Horizontal Directional Drill] areas, ES Volume 3 [EN010143/APP/6.3]). Another three possible (preferred) HDD locations are identified: A63 or access track off the A63 (to avoid trenching works within the River Derwent SAC where it includes habitats outside of the river)²; crossing of the Drax cooling discharge pipe in New Road near Drax; and entry to National Grid Drax Substation. If directed by authorities, artificial lighting may also be temporarily required in areas of traffic management. Task-specific and fixed 'general' lighting may be required at construction</p>	

² However, this HDD may not be 24 hours and may be restricted to daytime only. This will be confirmed by the appointed Contractor.

Consultee	Summary of comment	How matter has been addressed	Location of response
		<p>Compounds in the months with reduced daylight hours (early mornings and up to 19:00) to meet safety requirements; however, bat activity would be reduced at these times of year. Additionally, lighting may be used by the roving security teams during their regular checks. Outside of core working hours security lights would be operated by motion sensors. No visible lighting will be needed for the CCTV security system as this will use infrared (IR) lighting to provide night vision functionality.</p> <p>Therefore, possible disturbance impacts to bats due to additional lighting during the active season would be minimal along the Grid Connection Corridor and Interconnecting Cable Corridor and likely restricted to those HDD locations which require lighting. Appropriate mitigation (detailed in Section 8.6) would be employed to ensure there are no adverse impacts to foraging and commuting bats and other nocturnal species should construction take place at night.</p> <p>No permanent additional lighting will be required along the Grid Connection Corridor and Interconnecting Cable Corridor. During operation of the Solar PV Site will not require artificial lighting other than during temporary periods of maintenance/repair, which with the exception of solar PV panel cleaning will be scheduled for daylight hours as far as is practicable. The Grid Connection Substation compounds (located in</p>	

Consultee	Summary of comment	How matter has been addressed	Location of response
		Solar PV Area 1c) will have inward facing motion sensor-controlled security lighting and maintenance activities will be scheduled for daylight hours as far as is practicable.	
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.	As set out in PINS's Annex to Advice Note 7 – Presentation of the Environmental Statement (Ref 8-75), specific survey and assessment data relating to sensitive or vulnerable ecological features (e.g., badger or barn owl (<i>Tyto alba</i>)) is provided in confidential annexes to the ES, as required. All other assessment information is included in the ES chapter with a placeholder explaining that a confidential annex has been submitted to PINS and may be made available subject to request.	Badger survey information in Appendix 8-8: Badger Survey Report [Confidential Annex], ES Volume 2 [EN010143/APP/6.2] . Barn owl survey information in Appendix 8-5: Survey Report for Breeding Bird [Confidential Annex], ES Volume 2 [EN010143/APP/6.2] .
Environment Agency	We would recommend that the applicant includes the East Yorkshire Rivers Trust to their consultation list.	The East Yorkshire Rivers Trust was approached as part of the stakeholder engagement for the Scheme.	Contact was made via the contact form on the website of East Yorkshire Rivers Trust on 24 August 2023. No response had been received at the time of writing this chapter

Consultee	Summary of comment	How matter has been addressed	Location of response
Environment Agency	<p>We welcome the Applicant’s commitment to provide Biodiversity Net Gain (BNG). It is stated that BNG of at least 10% will be delivered and will include field boundary enhancements and seed planting. We consider there are significant opportunities for BNG in this area, particularly around the Rivers Ouse and Derwent and we’d welcome further discussion with the Applicant in regard to this.</p>	<p>Consideration has been given to opportunities for BNG enhancements on-site. The mitigation hierarchy has been followed, avoiding impacts where possible and prioritising on-site enhancements. Main Rivers (Derwent and Ouse) are scoped out of the Watercourses Module in the BNG assessment as they will be crossed using non-open cut techniques (e.g., HDD), and therefore impacts to the watercourses are not anticipated.</p> <p>As the land within the Grid Connection Corridor and Interconnecting Cable Corridor is returned to the landowners (in pre-development condition) after construction, BNG will be delivered within the Solar PV Site which will remain within the Applicant’s control during the operational phase. Solar developments typically achieve BNG above 50% for area-based habitat units, and opportunities will be sought to achieve a 10% gain for linear habitats (including rivers and ditches) within the Solar PV Site. Habitats that are temporarily impacted by the Scheme will be accounted for appropriately within the metric, following the latest guidance.</p>	<p>BNG Assessment Report [EN010143/APP/7.11].</p>
Environment Agency	<p>We note the Applicant’s intent to undertake a Phase 1 Habitat Survey. We recommend the use of UKHab, which can be used to inform BNG. We are pleased to see that the Applicant is proposing eDNA surveys for GCN and support this approach.</p>	<p>As set out in Table 8-3, the Phase 1 habitat data has been captured in the field alongside habitat condition assessments in line with UKHab as per BNG standard guidance documents (Ref 8-36, Ref 8-37, Ref 8-38).</p>	<p>BNG Assessment Report [EN010143/APP/7.11]. GCN are scoped out of the ES due to pursuing</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
		<p>Some limited eDNA surveys were carried out in 2022, where access was possible. However, on receipt of consent for the Scheme, the Scheme will apply for a GCN DLL, negating the requirement to undertake full GCN presence/likely absence and population size surveys on all relevant waterbodies within a suitable Zol of the Scheme. Natural England undertake an impact assessment, the outcome of which is documented in the IACPC, of which the provisional certificate is being submitted as part of the DCO application as Appendix 8-10: Great Crested Newt District Level Licensing Impact Assessment and Conservation Payment Certificate, ES Volume 2 [EN010143/APP/6.2]. The Applicant is in the process of obtaining the full IACPC and will update the above appendix when it is in place. The IACPC provides detail including information on the Scheme's impact on GCN and the appropriate compensation required. As such, significant effects on GCN populations as a result of the Scheme will be avoided.</p>	<p>the DLL – as described in paragraph 8.4.20.</p>
<p>Environment Agency</p>	<p>Paragraph 2.4.14 [of the Scoping Report] confirms that a Framework Biodiversity and Landscape Management Plan will be submitted with the DCO Application and will specify mitigation and enhancement measures that will support BNG. We support the development of this framework and support the proposal for a DCO Requirement securing</p>	<p>A Framework LEMP [EN010143/APP/7.14] has been prepared for the DCO Application. This document sets out the principles for how the land will be managed throughout the operational phase, following the completion of construction, and specifies mitigation and enhancement measures that will support the delivery of BNG. A detailed LEMP will be produced following the grant of the</p>	<p>Framework LEMP [EN010143/APP/7.14].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	a more detailed Biodiversity and Landscape Management Plan to be produced post-consent.	DCO Application and the detailed design stage, prior to the start of construction (which will be secured by a DCO Requirement).	
Natural England	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 BNG. There might also be strategic approaches to take into account.	The assessment considers potential impacts upon relevant sites and other features of nature conservation interest. A BNG assessment has been undertaken (using Defra's Metric 4.0 (Ref 8-36)), to identify opportunities for contributing to BNG. These opportunities have been identified and are set out within the ES and BNG, in line with the requirements of relevant planning policy.	Assessments provided in section 8.7 and 8.9 of this chapter. BNG Assessment Report [EN010143/APP/7.11].
Natural England	EclA is the process of identifying, quantifying, and evaluating the potential impacts of defined actions on ecosystems or their components. EclA may be carried out as part of the EIA process or to support other forms of environmental assessment or appraisal. Guidelines have been developed by CIEEM. For additional information relating to Solar Parks please refer to the Technical Information Note: <i>Solar parks: maximising environmental benefits</i> (TIN101) (Ref 8-39), which provides a summary of advice about their siting, their potential impacts and mitigation requirements for the safeguarding of the natural environment.	Noted. The CIEEM guidelines have been taken into account as part of this EclA. TIN101 (Ref 8-39) has been reviewed and considered as suggested. It is noted that this Information Note has now been archived by Natural England.	N/A
Natural England	The Site is within or may impact on the following European/internationally designated nature conservation sites: Humber Estuary	A Habitat Regulations Assessment (HRA) has been undertaken to inform the ES and has been submitted with the DCO submission as a stand-	HRA Report [EN010143/APP/7.12].

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>SAC, Humber Estuary SPA, Humber Estuary Ramsar site, River Derwent SAC, Lower Derwent Valley SAC, Lower Derwent Valley Ramsar, Lower Derwent Valley SPA.</p> <p>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 SPAs, SACs, listed Ramsar sites, candidate SAC and proposed SPA. Article 6(3) of the Habitats Directive (Ref 8-3) 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.</p>	<p>alone document. The HRA Report [EN010143/APP/7.12] has been used to inform the ES Assessments provided in sections 8.7 and 8.9 of this chapter.</p>	<p>Assessments provided in section 8.7 and 8.9 of this chapter.</p>
<p>Natural England</p>	<p>Sites of Special Scientific Interest (SSSI) are protected under the WCA 1981 (as amended) (Ref 8-1). Further information on the SSSI and its special interest features can be found on MAGIC (Ref 8-40).</p> <p>The Site is within or may impact the following SSSIs: Humber Estuary SSSI; River Derwent SSSI; Brighton Meadows SSSI; and Derwent Ings SSSI.</p> <p>The potential impact pathways to these sites are the same as those set out in Table 1 of our response for their corresponding European sites.</p>	<p>The ES provides a full assessment of likely significant direct and indirect effects on the features of special scientific interest associated with the SSSIs which lie within the 5km Study Area. The assessment also identifies appropriate mitigation measures to avoid, minimise or reduce any adverse significant effects.</p>	<p>Assessments provided in sections 8.7 and 8.9 of this chapter.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>The ES should include a full assessment of the direct and indirect effects of the Scheme on the features of special interest within the SSSIs and identify appropriate mitigation measures to avoid, minimise or reduce any adverse significant effects.</p>		
<p>Natural England</p>	<p>The ES should assess the impact of all phases of the proposal on protected species (including, for example, GCN, reptiles, birds, water voles, badgers and bats). Natural England does not hold comprehensive information regarding the locations of species protected by law. Records of protected species should be obtained from appropriate local biological record centres, nature conservation organisations and local groups. Consideration should be given to the wider context of the site, for example in terms of habitat linkages and protected species' populations in the wider area.</p>	<p>An assessment of effects on relevant ecological features has been undertaken in this ES, which has been informed by desk study data and ecological surveys undertaken to date. Embedded mitigation and additional mitigation required over and above embedded mitigation is presented in this chapter.</p>	<p>An assessment of effects on relevant ecological features is presented in section 8.7, with residual effects presented in section 8.9. Embedded mitigation is set out in section 8.6 and additional mitigation required over and above embedded mitigation is presented in section 8.8</p>
<p>Natural England</p>	<p>Natural England is aware that the Applicant is considering applying to use the DLL scheme for GCN. Where strategic approaches such as DLL for GCN are used, a letter of no impediment (LONI) will not be required. Instead, the developer will need to provide evidence to the Examining Authority (ExA) on how and where this approach has been used in relation to the</p>	<p>The DLL approach is being pursued through engagement with Natural England, via their DAS, as discussed in paragraph 8.3.24. Communication received from Natural England (email dated 27 March 2023) confirmed that “...<i>there is no overlap with a DLL ‘red risk zone’ therefore this does not pose any barrier to the use of DLL for this project</i>”. Some limited eDNA surveys were carried out in 2022, where access was possible. However, on</p>	<p>Paragraph 8.3.24 of this chapter.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>proposal, which must include a counter-signed IACPC from Natural England, or a similar approval from an alternative DLL provider. The DLL approach is underpinned by a strategic area assessment which includes the identification of risk zones, strategic opportunity area maps and a mechanism to ensure adequate compensation is provided regardless of the level of impact. In addition, Natural England (or an alternative DLL provider) will undertake an impact assessment, the outcome of which will be documented in the IACPC (or equivalent). If no GCN surveys have been undertaken, Natural England's risk zone modelling may be relied upon. During the impact assessment, Natural England will inform the Applicant whether the Scheme is within one of the amber risk zones and therefore whether the Scheme is likely to have a significant effect on GCN.</p> <p>The IACPC will also provide additional detail including information on the Scheme's impact on GCN and the appropriate compensation required.</p> <p>By demonstrating that the DLL scheme for GCN will be used, consideration of GCN in the ES can be restricted to cross-referring to the Natural England (or alternative provider) IACPC as a justification as to why significant</p>	<p>receipt of consent for the Scheme, the scheme will apply for a DLL. The Scheme currently holds a provisional IACPC from Natural England, which will be submitted as part of the DCO application as Appendix 8-10: Great Crested Newt District Level Licensing Impact Assessment and Conservation Payment Certificate, ES Volume 2 [EN010143/APP/6.2]. The Applicant is in the process of obtaining the full IACPC and will update the above appendix when it is in place. Proceeding with the DLL route negates the requirement to undertake full GCN presence likely absence and population size surveys on all relevant waterbodies within a suitable Zol. Natural England undertake an impact assessment, the outcome of which is documented in the IACPC. The IACPC provides detail including information on the Scheme's impact on GCN and the appropriate compensation required. As such, significant effects on GCN populations as a result of the Scheme will be avoided.</p>	

Consultee	Summary of comment	How matter has been addressed	Location of response
Natural England	<p>effects on GCN populations as a result of the Scheme would be avoided.</p> <p>Priority Habitats and Species are of particular importance for nature conservation and included in the England Biodiversity List published under section 41 of the NERC Act 2006 (Ref 8-11). Most Priority habitats will be mapped either as Sites of Special Scientific Interest, on the MAGIC website (Ref 8-40) or as LWS. Lists of Priority habitats and species can be found here. Natural England does not routinely hold species data. Such data should be collected when impacts on Priority habitats or species are considered likely.</p> <p>Consideration should also be given to the potential environmental value of brownfield sites, often found in urban areas and former industrial land. Sites can be checked against the (draft) national Open Mosaic Habitat (OMH) inventory published by Natural England and freely available to download.</p> <p>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.</p> <p>The ES should include details of:</p>	<p>Information on the presence of Priority habitats has been obtained through review of the MAGIC website (Ref 8-40) and through habitat surveys. This included a search for OMH, as mapped on the MAGIC website.</p> <p>Appropriate ornithological and botanical surveys have been undertaken, as required. As detailed in Table 8-3 and Appendix 8-5: Survey Report for Breeding Birds, ES Volume 2 [EN010143/APP/6.2] (including any limitations), surveys for breeding birds were undertaken between April and July 2022 within the land identified as being within Solar PV Site at that time. Further surveys were undertaken between late March/early April and June 2023 where required, in areas of the Solar PV Site that were not covered in 2022 and the Interconnecting Cable and Grid Connection Corridors. Sufficient data was gathered during the late April to July surveys in 2022 (covering the middle and late season survey window) to enable determination of territories within these areas and, where there was any doubt, a precautionary approach to mapping was taken. Therefore, the omission of an earlier survey in 2022 is not considered a limitation. There may be some missing of first broods for some early common residents, but most of the territorial/breeding activity is April onwards.</p>	<p>Details relating to Priority habitats are provided in section 8.5 of this chapter and are shown on Figure 8-2, ES Volume 3 [EN010143/APP/6.3]. Details on habitat surveys undertaken to inform the ES and locations of Priority habitats can be found within Appendix 8-3: Extended Phase 1 Habitat Survey Report, ES Volume 2 [EN010143/APP/6.2].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<ul style="list-style-type: none"> • Any historical data for the Site affected by the proposal (e.g., from previous surveys); • Additional surveys carried out as part of this proposal; • The habitats and species present; • The status of these habitats and species (e.g., whether Priority species or habitat); • The direct and indirect effects of the development upon those habitats and species; • Full details of any mitigation or compensation measures; and • Opportunities for BNG or other environmental enhancement. 	<p>Monthly surveys for non-breeding birds (passage and over wintering) commenced in September 2022, continuing to March 2023.</p> <p>Due to the predominantly arable nature of the Solar PV Site and the Scheme largely retaining habitats of greater value to invertebrates (e.g., grassland margins, woodland, hedgerows) no detailed terrestrial invertebrate surveys were undertaken to inform the ES. Potential effects on likely invertebrate species has been included within the assessment, based on desk study and habitat types.</p> <p>The ES includes detailed information as per the bullet point list in Natural England’s comment.</p>	
<p>Natural England</p>	<p>The ES should assess the impacts of the proposal on any ancient and veteran trees, and the scope to avoid and mitigate for adverse impacts. It should also consider opportunities for enhancement.</p> <p>Ancient woodland and ancient and veteran trees are irreplaceable habitats of great importance for its wildlife, its history, and the contribution it makes to our diverse landscapes. Paragraph 180 of the NPPF (Ref 8-25) sets out the highest level of protection for irreplaceable habitats and development should be refused unless there are wholly</p>	<p>The ES includes an assessment of effects on ancient and veteran trees, there is no ancient woodland present within the 2km Study Area. The assessment presented in this chapter has been informed by the Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2].</p> <p>The assessment within the ES includes consideration of site access locations and any areas where traffic routing for HGV or Abnormal Indivisible Loads (AIL) may ingress on verges close to ancient or veteran trees.</p> <p>During the development of the design, the tree constraints data has been considered in relation to</p>	<p>The Arboricultural Impact Assessment is provided in Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2]. Assessment of effects on ancient and veteran trees is presented in section 8.7.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>exceptional reasons, and a suitable compensation strategy exists.</p> <p>Natural England and the Forestry Commission have prepared standing advice on ancient woodland, ancient and veteran trees.</p>	<p>the design and where there is potential for trees to be impacted by the design proposals further survey of these trees have been undertaken to accurately define the impacts that may occur and develop mitigation including altering the design to avoid features where practicable. The Site layout plan presented in Figure 2-3, ES Volume 3 [EN010143/APP/6.3] allows for a buffer of 15m around all trees (where reduction/removal is not required to facilitate access and/or cabling works) and the design parameters allow for a minimum 15m buffer for individual veteran/ancient trees (increased as necessary following identification of root protection zones [RPZ], through survey data) and are included in the ES.</p> <p>The operational lifetime of the Scheme (40 years), including possible shading implications, have been taken into consideration when specifying habitat creation/management, alongside the standard timings for delivery of BNG units. Yearly review of tree management requirements for the Solar PV Site will be undertaken and shared with East Riding of Yorkshire Council (the Solar PV Site lies only solely within the administrative area of East Riding of Yorkshire Council), and secured as part of the Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2].</p>	

Consultee	Summary of comment	How matter has been addressed	Location of response
Natural England	<p>Natural England notes and supports the Applicant’s aspiration to deliver over 10% BNG 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% BNG in all habitat types identified within the order limits, in accordance with the Environment Act 2021 (Ref 8-60). Natural England considers that major infrastructure developments should set the highest environmental standard. They should lead by example in showing how investment in sustainable infrastructure can better serve communities, including through the delivery of environmental goals, such as flood resilience, expanding natural habitats and contributing toward Net Zero greenhouse gas (GHG) emissions. Nature-based solutions built into infrastructure schemes provide one means for setting in place the UK government’s 25 Year Environment Plan (Ref 8-73).</p> <p>Natural England recognises the high opportunity for the development to deliver BNG on-site and it is recommended that the following guidance is applied in order to achieve this:</p>	<p>The BNG Assessment Report [EN010143/APP/7.11] has informed the ES and has been submitted with the DCO Application. The BNG approach follows all standard guidance and reporting structure, as well as aligning with BS 8683 (Ref 8-76). The approach for BNG will be at least 10% unit uplift for all habitats within the baseline (i.e., area, linear and river habitats where present). Landscaping/planting opportunities will be delivered with a collaborative approach between ecology, BNG and landscaping seeking multiple benefits where practicable and matching landscape character. BNG outputs will also detail the upcoming secondary legislation associated with the Environment Act (Ref 8-60), which is due early 2024 for planning proposals and in 2025 for NSIPs. The report appendices deal with the 10 Principles of BNG, clear metric calculations, habitat conditions and habitat classification conversions from any landscape plans. BNG reports also include a high-level plan for habitat enhancement and creation to reach target condition and this will feed directly into the Framework LEMP [EN010143/APP/7.14], submitted with the DCO Application.</p> <p>Comments on the Framework DEMP [EN010143/APP/7.9], submitted with the DCO Application, are noted and have been incorporated.</p>	<p>BNG Assessment Report [EN010143/APP/7.11], Framework LEMP [EN010143/APP/7.14] and Framework DEMP [EN010143/APP/7.9]</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>BNG: Good Practice Principles for Development (Ref 8-37) (BS 8683: 2021 Process for designing and implementing Biodiversity Net Gain. Specification (Ref 8-76): In addition, the Applicant should be aware of forthcoming guidance and legislation in relation to the Environment Act 2021 (Ref 8-60), which may be released in the interim prior to submission of the DCO Application. Natural England notes the requirement to provide a Framework Biodiversity and Landscape Management Plan as part of a DCO submission. It is recommended that this includes details specific to the approach to BNG including; how the mitigation hierarchy has been applied, metric calculations, management and future monitoring and the legal mechanism by which any BNG will be secured. It is also noted that the lifetime of the Scheme is predicted to span 40 years and it is stated that a Framework DEMP will be produced to ensure work will have regard to environmental legislation at the time of decommissioning at the end of this period. In order to align with Biodiversity Net Gain Good Practice Principle 8: Create a Net Gain Legacy (Ref 8-37) to achieve long-term benefits to nature, Natural England recommends that the Framework DEMP also includes and adheres to any ecological measures identified within</p>		

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>the CEMP and highlights the likely need for updated ecological surveys at the time of decommissioning.</p> <p>In order to maximise nature recovery and target habitat enhancement where it will have the greatest local benefit it is recommended that locally identified opportunities should be acknowledged and incorporated into the design of BNG (both on and off-site). This should include any locally mapped ecological networks and Priority habitats identified by East Riding of Yorkshire Council. In addition, Local Nature Recovery Strategies (LNRS) are a new mandatory system of spatial strategies for nature established by the Environment Act 2021 (Ref 8-60) which will contribute to the national Nature Recovery Network (NRN). Work is currently underway to develop these strategies, which will identify strategic priorities for nature protection, recovery, and enhancement. Given the size, scale and opportunities afforded by the DCO Application is therefore recommended that engagement with relevant local planning authorities, responsible authorities and statutory consultees (including Natural England) is undertaken to align habitat enhancement through the development with any emerging plans and policies in relation to LNRS.</p>		

Consultee	Summary of comment	How matter has been addressed	Location of response
Natural England	<p>The ES should consider potential impacts on access land, common land, PRoW and, where appropriate, the England Coast Path and coastal access routes and coastal margin in the vicinity of the development, in line with NPPF paragraph 100 (Ref 8-25) and there will be reference in the relevant NPS. It should assess the scope to mitigate for any adverse impacts. Rights of Way Improvement Plans (ROWIP) can be used to identify PRoW within or adjacent to the Site that should be maintained or enhanced.</p> <p>Measures to help people to better access the countryside for quiet enjoyment and opportunities to connect with nature should be considered. Such measures could include reinstating existing footpaths or the creation of new footpaths, cycleways, and bridleways. Links to other green networks and, where appropriate, urban fringe areas should also be explored to help promote the creation of wider green infrastructure. Access to nature within the development site should also be considered, including the role that natural links have in connecting habitats and providing potential pathways for movements of species.</p>	<p>The ES (socio-economics assessment) provides an assessment of the potential impacts on existing PRoW and other land that is currently accessible to members of the public and will assess the scope to mitigate for any adverse impacts. Consideration of the role that natural links have in connecting habitats and providing potential pathways for the movement of species has been considered as the design has progressed and has fed into the Framework LEMP [EN010143/APP/7.14].</p>	<p>Chapter 12: Socio Economics and Land Use, ES Volume 1 [EN010143/APP/6.1]. Framework LEMP [EN010143/APP/7.14].</p>
North Yorkshire County Council and	<p>In relation to the grid connection at Drax, it is worth noting that there are a number of other proposed projects within the area around Drax, some of which will have temporary impacts</p>	<p>The ES cumulative assessment and in combination assessment (as part of the HRA) has considered relevant projects and plans.</p>	<p>An assessment of cumulative effects is presented in section 8.10 of this chapter and</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
Selby District Council ³	and some permanent. This could result in cumulative impacts on habitats and species within the local area. I would like to see this considered as part of the cumulative and in combination assessment.		the HRA Report [EN010143/APP/7.12] .
North Yorkshire County Council and Selby District Council	There is potential for the Scheme to adversely affect existing boundary trees and vegetation. This should be reviewed, protected and retained where appropriate. A tree survey and arboricultural impact assessment will be required to BS5837:2012 (Ref 8-41). This is important if boundary vegetation is needed for ongoing screening of the Site.	Existing boundary trees and hedgerows will be retained and protected as far as practicable. A high-level tree constraints report based on desk based information and targeted surveys was used to inform ecology survey requirements (e.g. habitat suitability assessments for barn owl). Following this, an updated tree assessment has been made and is presented in Appendix 10-5 Arboricultural Impact Assessment and Tree Protection Report ES Volume 2 [EN010143/APP/6.2] .	Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2] .
North Yorkshire County Council and Selby District Council	The operational life of the Scheme should also be taken into account. We would wish to see certainty that site vegetation would be retained during the maintenance management period and not later removed as a consequence of the Scheme (e.g., managed due to potential shading).	The design lifetime of the Scheme (40 years), including possible shading implications has been taken into consideration when specifying habitat creation/management, alongside the standard BNG timings for unit delivery.	BNG Assessment Report [EN010143/APP/7.11]. Framework LEMP [EN010143/APP/7.14] .
North Lincolnshire Council	The proposal could affect the Humber Estuary SPA and Ramsar site. The proposals for wintering and passage bird surveys appear	The passage and wintering bird survey data has been used to inform an HRA and the assessment in the ES within this chapter.	HRA Report [EN010143/APP/7.12] .

³ On 1 April 2023 North Yorkshire County Council and its six constituent District Councils (including Selby District Council) were merged to become the Unitary Authority of North Yorkshire Council. The southern part of the Grid Connection Corridor lies within the boundary of the former Selby District and therefore this boundary has been used to give Regional context.

Consultee	Summary of comment	How matter has been addressed	Location of response
	appropriate to inform an HRA in terms of potential likely significant effects on the Humber Estuary SPA and Ramsar site.		Assessment of effects presented in section 8.7 of this chapter, with residual effects presented in section 8.9.
North Lincolnshire Council	The Scheme will need to be considered alone and in combination with other plans or projects that could affect the European Sites. For the in-combination assessment, it is recommended to use the in-combination database that is administered by the Humber Nature Partnership. North Lincolnshire Council would expect other Competent Authorities to lead on HRAs.	Appropriate and relevant sources have been used to inform the HRA in combination assessment.	HRA Report [EN010143/APP/7.12].

- 8.3.4 Further consultation in response to formal pre-application engagement was undertaken through the Preliminary Environmental Information Report (PEI Report), issued in May 2023. Responses to this statutory consultation are presented in the **Consultation Report [EN010143/APP/5.1]. Table 8-2** outlines the statutory consultation responses relating to Ecology and how these have been addressed through the ES.
- 8.3.5 Further detail on consultation can also be found in **ES Chapter 4: Consultation and Engagement, ES Volume 1 [EN010143/APP/6.1]**.

Table 8-2. Statutory consultation responses relating to Ecology

Consultee	Summary of comment	How matter has been addressed	Location of response
Environment Agency	We agree with the surveys being carried out and the conclusions for each.	Noted	N/A.
Environment Agency	We welcome the statement that <i>“Within the Solar PV Site a range of new habitats will be provided including grassland, hedgerow, tree and scrub planting to increase the biodiversity of the Site”</i> . We would request that some, if not all, of the Barn Owl boxes to be erected are included in a nest monitoring scheme.	Noted. The opportunity to participate in a monitoring scheme will be investigated with a local barn owl conservation group and will be included in the final LEMP if participating.	N/A.
Environment Agency	We consider that for robustness and increased life, the bird boxes to be provided should be made of woodcrete.	Noted. A proportion of the boxes will be woodcrete (or similar material subject to availability).	Framework LEMP [EN010143/APP/7.14].
Environment Agency	Checking for nests 24 or 48 hours before the vegetation clearance works starts risks bird starting to nest.	Noted. Vegetation clearance will be undertaken in advance of construction and at an appropriate time of year so as to avoid the nesting bird period. Therefore, construction will avoid the nesting bird period, i.e., March to August (inclusive) for vegetation clearance. Where vegetation clearance cannot avoid the inactive season and is proposed within the nesting bird period, these will be checked for the presence of any nests by a suitably experienced ornithologist, prior to vegetation removal, and if active nests are found, then appropriate buffer zones would be put in place and the area monitored until the young birds have fledged.	Embedded mitigation relating to breeding birds is set out in section 8.6 of this chapter. Measures are also set out in the Framework CEMP [EN010143/APP/7.7].

Consultee	Summary of comment	How matter has been addressed	Location of response
		<p>Checks for nesting birds listed under Schedule 1 of the WCA 1981 (as amended) (Ref 8-1), especially barn owl and hobby (<i>Falco subbuteo</i>) will be undertaken prior to construction (including the appropriate season prior to for monitoring purposes, and immediately prior to for vegetation clearance) and will be carried out where the Scheme intersects or passes close to suitable breeding habitats or known breeding locations for these species. If nesting Schedule 1 birds are found, a suitably qualified ecologist (ornithologist) will be consulted to advise whether a temporary no disturbance buffer around the nest is required to avoid disturbance to Schedule 1 breeding species, the size of which will be determined by the species, stage of nesting, and construction activity proposed. Works to any buildings used by barn owl will be suitably timed to avoid direct impacts to barn owl (injury/killing) and will be carried out only following inspection by a suitably licenced person and if absence is confirmed.</p>	
Environment Agency	<p>Invasive non-native plant species such as Himalayan balsam (<i>Impatiens glandulifera</i>) should be eradicated before work starts.</p>	<p>Pre-construction and pre-decommissioning surveys will be undertaken to provide an update on the presence and location of any invasive non-native species (INNS), the findings of which will inform the implementation of measures to prevent their further spread and where practicable locally eradicate these species within the construction boundary. This will include production of a Biosecurity Plan prior to</p>	<p>Embedded mitigation relating to INNS is set out in section 8.6 of this chapter. Measures are also set out in the Framework CEMP [EN010143/APP/7.7].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
		<p>construction (secured through the Framework CEMP [EN010143/APP/7.7]) which will set out procedures to ensure that no invasive species are brought onto the Site (e.g. WCA 1981 (as amended) (Ref 8-1) Schedule 9 species). In the event that any future infestations of INNS are identified prior to and or during the development process, exclusion zones will be established around them and a suitably qualified ecologist contacted for advice as required.</p>	
<p>Environment Agency</p>	<p>We request that ramps are put in any exposed trenches left overnight so if any animal falls in, it can escape. Also, that consideration is given to tansy beetle (<i>Chrysolina graminis</i>) habitat close to the River Ouse.</p>	<p>A means of escape (e.g., ramps) will be put in any open trenches overnight. Both the River Ouse and River Derwent will be crossed using HDD, thereby protecting the riparian and wetland habitat where tansy beetle may be present. Stand-off buffers of at least 30m will be maintained between the riverbank tops and the working areas. Pre-construction checks would be undertaken in appropriate areas near to watercourses. No tansy plants (<i>Tanacetum vulgare</i>) have been noted to date, but should any areas be found with tansy plants, these would be avoided where practicable, or subject to appropriate timing, to prevent impacts to tansy beetle. However they are not currently known to be present this far south along the River Ouse from York.</p>	<p>Embedded mitigation in section 8.6 of this chapter.</p>
<p>Environment Agency</p>	<p>The sensitive mowing regime suggested should consider the removal of cut grass to increase</p>	<p>Should species rich/ flower rich grasslands be mowed as opposed to grazed the cut grass will</p>	<p>Framework LEMP [EN010143/APP/7.14].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	botanical diversity over the medium term by lowering soil fertility.	be removed to appropriate storage areas on-site to encourage a more species diverse grassland. Should the semi-improved grassland beneath the solar PV panels be mowed as opposed to grazed the arisings will likely be left on-site.	
Environment Agency	We agree that an Ecological Clerk of Works should be employed.	Noted.	Requirement for an ECoW is included in the Framework CEMP [EN010143/APP/7.7] .
Environment Agency	We welcome and fully support the statement that the approach for BNG will be at least 10% unit uplift for all habitats within the baseline (i.e., area, linear and river habitats where present). More information on the BNG resulting from the Scheme should be provided to the Environment Agency when it becomes available following the completion of the BNG assessment.	Noted. The BNG assessment shows a 80%+ BNG for area-based habitat units and has committed to a 10% BNG in hedgerows and 10% BNG for watercourses (rivers & streams, and ditches) at detailed design.	BNG Assessment Report [EN010143/APP/7.11] .
Natural England	The Site is in close proximity to European designated sites (also commonly referred to as 'Natura 2000 sites'), and therefore has the potential to affect their interest features. European sites are afforded protection under the Conservation of Habitats and Species Regulations 2017, as amended (Ref 8-9) (commonly referred to as the 'Habitats Regulations'). Chapter 8: Ecology of the PIER identifies that the Scheme is in proximity to the following internationally designated sites; <ul style="list-style-type: none"> • River Derwent SAC; 	An HRA has been undertaken to inform the ES and is included with the DCO Application submission as a stand-alone document. The HRA has been used to inform the ES assessment provided in this chapter. The HRA considers LSEs and, where present, adverse effects on the integrity of relevant European sites (in relation to relevant impact pathways) has been undertaken. It is acknowledged that the Scheme is not directly connected with or necessary for the management of European sites.	HRA Report [EN010143/APP/7.12] . Sections 8.7 and 8.9 of this chapter.

Consultee	Summary of comment	How matter has been addressed	Location of response
	<ul style="list-style-type: none"> • Lower Derwent Valley SAC; • Lower Derwent Valley SPA; • Lower Derwent Valley Ramsar; • Humber Estuary SAC; • Humber Estuary SPA; • Humber Estuary Ramsar; • Skipwith Common SAC; • Thorne and Hatfield Moors SPA; and • Thorne Moor SAC. <p>Natural England notes that an HRA has not yet been completed. It is Natural England's advice that the Scheme is not directly connected with or necessary for the management of the European site. You should therefore determine whether the Scheme is likely to have a significant effect on any European site, proceeding to the Appropriate Assessment (AA) stage where significant effects cannot be ruled out. The HRA screening should consider potential likely significant effects on the European Sites specified above. We recommend you consider potential likely significant effects on these sites arising from the impact pathways in addition to any other potential impact pathways identified during the assessment.</p>	<p>The Impact pathways for which LSEs cannot be excluded (i.e., loss of functionally linked habitat, noise and visual disturbance, water quality and atmospheric pollution from dust deposition) have all been taken forward to the AA stage, either to demonstrate that adverse effects on site integrity can be excluded on a reasonable scientific basis or for consideration of mitigation measures (where adverse effects could not be ruled out).</p>	

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Natural England	<p>We highlight that a River Restoration Plan has been produced for the River Derwent SAC (Ref 8-77). This is a joint Environment Agency/Natural England Strategic Plan which was developed to remedy the unfavourable condition of the River Derwent SSSI/SAC and there is ongoing work to deliver the plan actions. Delivery of the Plan actions is required to achieve Favourable Conservation Status of the qualifying SAC features in accordance with the Conservation Objectives for the site European Site Conservation Objectives for River Derwent SAC. Therefore, the River Restoration Plan should be considered in relevant assessments.</p>	<p>The River Derwent River Restoration Plan is considered in the HRA Report [EN010143/APP/7.12]. As the River Derwent is scoped out of the BNG assessment in the Watercourses Module (see above), mitigation for the River Derwent is not required for BNG.</p>	<p>HRA Report [EN010143/APP/7.12]. Measures are also set out in the Framework CEMP [EN010143/APP/7.7].</p>
Natural England	<p>In addition, we advise that potential water quality and water supply impacts (such as ‘frac-out’ events) detailed in PEI Report Volume 2 Chapter 9: Flood Risk, Drainage and Water Environment should be assessed in more detail in the context of internationally designated sites. We advise that the HRA should also include an assessment of potential impacts on the River Derwent SAC from intrusive crossings of watercourses within the River Derwent catchment, including sedimentation. This should include consideration of hydrological connectivity with the designated site, in addition to potential impacts on the relevant mobile designated features.</p>	<p>The potential for LSEs in relation to water quality on the River Derwent Valley SAC has been assessed in the HRA Report [EN010143/APP/7.12] and in this chapter, drawing on the assessment provided within Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]. A site-specific hydraulic fracture risk assessment will be developed prior to construction following further investigation of specific ground conditions at the crossing locations, and appropriate mitigation developed in line with best construction practice. This will be a DCO</p>	<p>HRA Report [EN010143/APP/7.12]. Sections 8.7 and 8.9 of this chapter. Framework CEMP [EN010143/APP/7.7]. Information on water impacts is provided in Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1].</p>

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Natural England	<p>Natural England notes that Table 8-9 of the PEIR [Preliminary Environmental Information Report] Chapter 8: Ecology refers to <i>“Sections of the Grid Connection corridor run parallel to the River Derwent SAC/SSSI and the Grid Connection corridor also crosses a section of the SAC/SSSI. There is potential for surface water run-off downstream of the site into the River Derwent, which could result in pollution impacts”</i> during operation. However, it is unclear what the mechanism is for surface water impacts associated with the Grid Connection Corridor during operation, particularly as 2.3.5 of PEIR Chapter 2: The Scheme states <i>“There will be no overhead electricity cables used or constructed as part of the Scheme, with all Grid Connection Cables buried.”</i> We therefore advise that further information is provided in the HRA.</p>	<p>requirement (secured via the Framework CEMP [EN010143/APP/7.7]).</p> <p>The potential for LSEs in relation to water quality on the River Derwent Valley SAC has been assessed in the HRA and in this chapter. All grid connection infrastructure is buried and therefore there will be no changes to runoff volume or quality. Construction impacts will be mitigated during the construction stage.</p>	<p>HRA Report [EN010143/APP/7.12]. Sections 8.7 and 8.9 of this chapter. Information on water impacts provided in Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1].</p>
Natural England	<p>Natural England broadly welcomes the proposed mitigation measures for potential construction and operational water quality impacts on the River Derwent SAC and advises that these should be considered at the appropriate assessment stage of the HRA. However, we also advise that potential impacts of the proposed mitigation measures on the</p>	<p>Security fencing will be set back from the River Derwent and River Ouse and will not prohibit the movement of otter along these watercourses, or Watercourse DE53. Otter have only been found to be using these three watercourses, and all three watercourses lie within the Grid Connection Corridor where fencing will only be used during construction and will not prevent access along</p>	<p>HRA Report [EN010143/APP/7.12]. Framework CEMP [EN010143/APP/7.7]. Sections 8.7 and 8.9 of this chapter.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	designated site should also be assessed in more detail. For example, potential impacts of proposed security fencing on connectivity of otter (<i>Lutra lutra</i>) habitats.	these watercourses for otter. In addition, the perimeter fencing will be permeable to otter at strategic locations. No permanent security fencing will be required in the Grid Connection Corridor.	
Natural England	We also note that PEIR Volume 2 Chapter 9: Flood Risk, Drainage and Water Environment (dated May 2023) refers to a number of additional potential impacts that have not been explicitly addressed in Chapter 8: Ecology. For example, it refers to water supply impacts, new drainage outfalls, panel cleaning methods and proposed Sustainable urban Drainage Systems (SuDS). We therefore advise that these potential impact pathways and/or mitigation measures are explored in more detail in the context of the relevant internationally designated sites in the HRA. We also advise that further detail should be provided regarding the proposed approach to foul water, including whether the existing septic tank has capacity for the predicted increase in usage during construction, and whether there is hydrological connectivity with the relevant designated sites.	No drainage outfalls are currently planned due to drainage systems being limited to the substations in Solar PV Area 3c and the lack of existing watercourse connections to this field. The SuDS incorporated into this system is to attenuate and infiltrate the runoff. More information can be found within Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1] . The HRA assesses the potential for the Scheme to result in LSEs and, where identified, adverse effects on the integrity of European sites. This includes the assessment of water supply impacts (screened out from AA) and panel cleaning methods (both screened out from AA). SuDS measures are considered with regard to their role in mitigating potential negative water quality impacts.	HRA Report [EN010143/APP/7.12]. Framework CEMP [EN010143/APP/7.7]. Framework OEMP [EN010143/APP/7.8]. Sections 8.7 and 8.9 of this chapter. Information on water impacts provided in Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1] .
Natural England	Natural England agrees with the overarching statement in Table 8-8 of the PEIR Volume 2 Chapter 8: Ecology (dated May 2023) that it is <i>"...not possible to determine likely significance of effect [on the River Derwent SAC] at this</i>	It is proposed that the existing track would be used to access the Site during the construction phase. The duration of construction works for the Grid Connection Cable is estimated to be 12 months.	HRA Report [EN010143/APP/7.12]. Sections 8.7 and 8.9 of this chapter.

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p><i>stage</i>” and welcomes the proposed ecology surveys to inform the HRA. We will therefore provide detailed advice once the relevant survey results and HRA are received. However, we highlight a number of comments regarding the preliminary assessment of effects – Ecology in PEIR Chapter 8 at this stage. 1.1.4. Damage to Terrestrial Habitat Chapter 8: Ecology, paragraph 8.8.4g, states that an existing track within the boundary of River Derwent SAC will be used for vehicular access to the Grid Connection Corridor during construction. It should be demonstrated that this track will be of a size sufficient to prevent damage to adjacent habitat from wheel rutting and compaction. Additional effects due to this should also be avoided, i.e., materials must not be stored on designated features. If it is identified there is potential for damage to adjacent habitat due to access via this road, then alternative access should be considered. Following this, mitigation in the form of habitat restoration measures should be considered if it is determined that there is still the requirement to use the track.</p>	<p>The Scheme has undertaken extensive traffic studies and confirmed that the track off A63 can accommodate the movement of HGV vehicles without trespass onto the verges. As the track is single lane, to ensure that vehicles do not enter and exit and meet on the access at the same time (risking trespass onto the verges), a controlled access system will be in place. Similarly, there would be no requirement for road widening or highway improvements at the junction with the A63 as all traffic would enter and exit from/to the west. These measures are described in the Framework Construction Traffic Management Plan (CTMP) (Appendix 13-5, ES Volume2 [EN010143/APP/6.2]). Use of the existing track for access would not require any clearance of terrestrial woodland, which is considered to be site fabric and not functionally linked to qualifying habitat and species in the River Derwent SAC, nor would it remove habitats associated with the SSSI. In summary, no loss of qualifying habitat within the SAC or SSSI boundary will occur due to the use of the track for site access, and this will not impact habitat for which the River Derwent SAC or SSSI is designated or functionally dependent upon. Dust would be managed in accordance with Chapter 16: Other Environmental Topics (ES</p>	<p>Framework CEMP [EN010143/APP/7.7]. Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1].</p>

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Natural England	<p>Air Quality Clarity is required over the zone of influence used for dust related impacts on ecological receptors. Chapter 16, paragraph 16.2.2 refers to a zone of influence of 350 m however paragraph 16.2.17 refers to 50 m. Natural England recommends that additional clarity is included to justify the Zol used. Natural England notes and agrees that River Derwent SAC has been identified as a sensitive receptor in Table 16.5 Dust Risk Assessment and has been considered as HIGH sensitivity. Paragraphs 16.2.44-16.2.45 state dust impacts will be mitigated via adoption of good practice measures as outlined in the IAQM guidance (Ref 8-42), and the measures will be secured within a CEMP and DEMP. It appears likely that the measures outlined will ensure that a significant effect is unlikely on designated sites. Natural England welcome the statement that the CEMP will be secured within the DCO and advise we should be consulted on the final version to ensure there will not be impacts to designated sites due to construction dust. Paragraph 16.2.20 states the impacts from dust are considered after proposed mitigation measures have been applied. Natural England is satisfied with this for the PEIR but as the mitigation is relevant to River Derwent SAC, the</p>	<p>Volume 1 [EN010143/APP/6.1] and the Framework CEMP [EN010143/APP/7.7].</p> <p>The Zol for Air Quality is detailed within section 16.2 within Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1]. The Zol discussed relates to dust deposition, and follows IAQM guidance (Ref 8-42). The screening criteria for undertaking a dust risk assessment for ecological sites is an:</p> <ul style="list-style-type: none"> • ‘ecological receptor’ within 50m of the boundary of the Site; or • ‘ecological receptor’ within 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the Site entrance(s). <p>This is stated as being deliberately conservative. Once an assessment is triggered, all receptors within 350m of the Order limits are considered, in addition the construction routes up to 50m either side, up to 500m from the Site entrance. In relation to dust deposition, the HRA makes reference to the 50m impact buffer zone (from the Scheme boundary or Affected Road Network [ARN] used by construction traffic) set out by the IAQM guidance. Accordingly, potential dust deposition impacts on the Lower Derwent Valley SPA/ Ramsar are screened out from AA. The River Derwent SAC, which is crossed by the Scheme, is taken forward to AA, as presented in</p>	<p>HRA Report [EN010143/APP/7.12]. Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1]. Framework CEMP [EN010143/APP/7.7].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>mitigation can only be considered under an AA to align with the requirements of the Habitats Regulations. For construction traffic air quality impacts we advise there are some paragraphs where the information is not accurate or of reduced relevance and Natural England recommend that this is addressed to avoid confusion. Examples are as follows:</p> <ul style="list-style-type: none">• Paragraph 16.2.2 states the Zol for sensitive receptors is 50m from roads for potential impacts from construction phase traffic. It should be noted that detrimental air quality impacts from vehicular emissions onto ecological receptors can result up to 200m from roads and that this is the zone of influence that Natural England would expect to be considered.• Paragraph 16.2.19 discusses ammonia and that it is released from vehicle exhausts but only in relation to ancient woodland. Ammonia is also relevant to most other ecological receptors through both deposition and direct atmospheric toxicity. As other air quality pollutants are not discussed as to their effects on receptors and as this paragraph sits under the dust assessment section, this paragraph appears to be irrelevant so removal is recommended to aid clarity.	<p>the HRA Report [EN010143/APP/7.12] and dust mitigation measures detailed in the Framework CEMP [EN010143/APP/7.7] are discussed. However, the section on emission-related atmospheric pollution uses a 200m Zol for atmospheric pollutants. Atmospheric pollution effects are screened out on the basis of the low number of two-way construction vehicle movements associated with the Scheme (under 100 Annual Average Daily Traffic [AADT]).</p>	

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	<p>Notwithstanding the above, Natural England has cross checked the HGV routes against Nationally and Internationally designated sites. As no other designated sites appear to fall within the 200m Zol of the HGV expected routing and considering the low numbers of HGV expected during this phase, we can confirm agreement that vehicle emissions from construction phase traffic will not result in significant effects and can be scoped out of further assessment. Should there be any change to the routing or number of HGVs then this will need to be revisited.</p>		
<p>Natural England</p>	<p>Chapter 8, Table 8-4 correctly identifies the designated features of the Lower Derwent Valley SPA. Loss of Functionally Linked Land SPAs are classified for rare and vulnerable birds. Many of these sites are designated for mobile species that may also rely on areas outside of the site boundary. These supporting habitats may be used by SPA bird populations or some individuals of the population for some or all of the time. These supporting habitats can play an essential role in maintaining SPA species populations, and proposals affecting them may therefore have the potential to affect the European site.</p>	<p>The potential for likely significant effects on the Lower Derwent Valley SPA, including loss of functionally linked land has been assessed in the HRA Report [EN010143/APP/7.12] and in this chapter.</p>	<p>HRA Report [EN010143/APP/7.12]. Sections 8.7 and 8.9 of this chapter.</p>
<p>Natural England</p>	<p>Table 8-1 in Chapter 8 of the PIER states that an assessment of the effect of development on</p>	<p>The potential for LSEs on the Lower Derwent Valley SPA/Ramsar, including loss of functionally</p>	<p>HRA Report [EN010143/APP/7.12].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>wintering and passage birds will be made available following full analysis of the bird survey data. We advise that as the land has been identified as having potential suitability as functionally linked land for Lower Derwent Valley SPA the survey results should be considered at AA stage of the HRA. If the Scheme is demonstrated to lead to loss of functionally linked land for designated bird species then the suitability of proposed mitigation should also be assessed in the HRA.</p>	<p>linked habitat has been assessed in the HRA Report [EN010143/APP/7.12]. The suitability of proposed mitigation has also been assessed in the HRA.</p> <p>The HRA highlights that arable fields within the Site are likely to be functionally linked to the Lower Derwent Valley SPA/Ramsar for golden plover (<i>Pluvialis apricaria</i>), pink-footed goose (<i>Anser brachyrhynchus</i>) and greylag goose (<i>Anser anser</i>). Therefore, mitigation land for these species will be provided in the Ecology Mitigation Area within the north-west part of the Site. The mitigation proposals have been developed in consultation with Natural England and are set out within the Framework LEMP [EN010143/APP/7.14].</p>	<p>Sections 8.7 and 8.9 of this chapter.</p> <p>Framework LEMP [EN010143/APP/7.14].</p>
<p>Natural England</p>	<p>In our response to the scoping consultation for the Scheme (letter dated 10 October 2022) we recommended that vantage point surveys should be undertaken when assessing whether a development site may constitute functionally linked land for wintering and passage birds. We wish to reiterate that this is the preferred methodology as it prevents flushing of birds which may occur when transect surveys are undertaken.</p>	<p>The consultation referred to was via the Natural England DAS service, as detailed in paragraph 8.3.7 0 of this chapter.</p> <p>The survey methodology with regards to requesting vantage point surveys has been discussed with Natural England in stakeholder meetings (dated 13 September 2023). AECOM have provided further clarification on the survey method used for surveys for non-breeding bird, including how the surveys utilised viewing points along transect routes to observe bird distribution and behaviour and measures in designing and undertaking the surveys that minimised disturbance by observers.</p>	<p>HRA Report [EN010143/APP/7.12]. Sections 8.7 and 8.9 of this chapter.</p> <p>A summary of the consultation with Natural England regarding the survey for non-breeding bird methodology is provided in paragraphs 8.3.7 to 8.3.14 of this chapter.</p>

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Natural England	<p>In addition to direct loss of functionally linked land due to siting of the solar PV panels, the HRA should also consider the potential for loss of suitability of adjacent land for birds due to disruption of open vistas. Also, Natural England advises that potential water quality and water supply impacts on mobile species outside the designated site should be considered in the context of functionally linked land associated with the Lower Derwent Valley SPA and Ramsar. Natural England produced a 2016 review of available literature on the impact of solar farms on birds (NEER012) (Ref 8-78) which may be useful when undertaking the HRA. Chapter 17: Cumulative Effects, paragraph 17.5.6 identifies that the Site overlaps or is in close proximity to other plans or projects. We advise that when considering in-combination impacts of loss of functionally linked land, the results of surveys undertaken for those developments should also be taken into account to understand whether there is a cumulative loss of land which can support wintering or passage birds.</p>	<p>The HRA Report [EN010143/APP/7.12] considers operational visual disturbance impacts on qualifying birds using functionally linked habitat, including the fact that the solar PV panels will not exceed the height of other elements within the landscape (e.g., hedgerows, trees and more significant woodland parcels). The evidence review Natural England refers to contains no information on the disturbance potential of solar infrastructure to habitats adjoining a development. Water quality and supply impacts (including those on mobile birds) are discussed in the bespoke sections on these impact pathways within the HRA Report.</p>	<p>HRA Report [EN010143/APP/7.12]. Sections 8.7 and 8.9 of this chapter.</p>
Natural England	<p>We note that Table 8-9 of the PEIR Chapter 8: Ecology considers the hydrological connection between Fleet Dike and the Lower Derwent Valley designated sites. We therefore advise that further assessment is provided in the HRA regarding the potential impacts and proposed</p>	<p>The HRA Report [EN010143/APP/7.12] provides a detailed discussion of potential water quality and supply impacts of the Scheme on all relevant European sites, including the River Derwent SAC, Lower Derwent Valley SAC/SPA/Ramsar (this incorporates Derwent Ings SSSI, which</p>	<p>HRA Report [EN010143/APP/7.12]. Sections 8.7 and 8.9 of this chapter.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>mitigation, in line with the relevant advice provided above for River Derwent SAC. Further information should also be provided regarding the other proposed crossing points and potential connectivity with the relevant designated sites.</p> <p>We note that Table 8-9 of the PEIR Chapter 8: Ecology also details additional hydrological connectivity between the site and Derwent Ings SSSI, which underpins the Lower Derwent Valley SAC and SPA site. However, connectivity between these watercourses, including Bottoms Drain, Birk Lane Drain, Authorships Drain and Old Moors Drain, and the internationally designated sites has not been assessed.</p>	<p>underpins the Lower Derwent Valley SAC and SPA site) and Humber Estuary SAC/SPA/Ramsar. This includes all waterbodies in the south-west part of the Site (e.g., Fleet Dike, Bottoms Drain, Birk Lane Drain, Authorships Drain and Old Moors Drain), which are likely to be in hydrological continuity with the Derwent European sites at all or certain times of the year.</p> <p>The AA discusses the potential for specific construction activities to result in negative water quality changes, primarily sedimentation. Mitigation to maintain the water quality in European sites is set out in the Framework CEMP [EN010143/APP/7.7].</p> <p>Potential hydrological effects have been considered within this chapter.</p>	
<p>Natural England</p>	<p>Noise and visual disturbance to the Lower Derwent Valley SPA and functionally linked land. Natural England has concerns about impacts on functionally linked land and noise from the construction and decommissioning is likely to be a factor. We note that wintering and passage bird surveys and the interpretation of these is ongoing. Without further information at this point we are unable to comment on this aspect.</p> <p>We advise the HRA should detail noise levels during both construction and decommission phases of the Scheme. There should be</p>	<p>Noise modelling has been undertaken on relevant Noise Generating Activities (NGA) required in the construction phase of the Scheme. Similar NGAs and noise levels are anticipated for the decommissioning phase. The predicted noise levels have been used to assess the potential disturbance effects on ecological receptors as appropriate, including birds utilising land that is functionally linked to the Lower Derwent Valley SPA/Ramsar.</p> <p>As detailed in the HRA Report [EN010143/APP/7.12], inevitably there is the potential for temporary noise and visual</p>	<p>HRA Report [EN010143/APP/7.12]. Sections 8.7 and 8.9 of this chapter.</p> <p>Framework CEMP [EN010143/APP/7.7].</p> <p>Framework OEMP [EN010143/APP/7.8].</p> <p>Framework DEMP [EN010143/APP/7.9].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>consideration of the impact of the noise levels on designated birds both on the designated site, and on birds utilising land functionally linked to the Humber Estuary SPA. The results of the wintering and passage surveys should be used to inform whether disturbing noise levels from the Scheme will reach land utilised by significant bird numbers.</p> <p>The HRA should also consider the potential for visual disturbance during construction and decommission of the Scheme via lighting and movement of large machinery.</p>	<p>disturbance to SPA/Ramsar birds, should they happen to be utilising the first tier of fields adjoining the Order limits. However, it should be noted that the occurrence of SPA/Ramsar birds was limited to a few observations of golden plover, none of which were recorded in fields adjoining the Site. The noise disturbance impact pathway is assessed in the context of the arable fields surrounding the Scheme being an operational farming landscape, in which qualifying birds are subject to similar magnitudes of noise from operational farming machinery/equipment. Noise fencing is not required to minimise noise disturbance risks to birds using functionally linked habitats.</p> <p>Potential visual disturbance impacts from the Scheme in the construction, operational and decommissioning phases are also noted. However, visual disturbance is mitigated through the use of various measures (e.g., directional lighting, minimum brightness/power rating, Passive Infra-Red (PIR) controlled lights), which will be secured in the Framework CEMP [EN010143/APP/7.7], Framework OEMP [EN010143/APP/7.8] and Framework DEMP [EN010143/APP/7.9]. Potential effects as a result of noise disturbance have been considered within this chapter.</p>	
<p>Natural England</p>	<p>Natural England notes PEIR Chapter 16: Other Environmental Topics, section 16.3, advises</p>	<p>The glint and glare modelling has been undertaken in accordance with industry guidance</p>	<p>HRA Report [EN010143/APP/7.12].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>that glint and glare impacts from the solar PV panels will be considered in the ES, however the potential for impacts on birds is not listed as a consideration. We advise the potential for the solar panels to affect flight paths of wintering and passage Lower Derwent Valley SPA birds which are utilising functionally linked land should be assessed within the HRA.</p>	<p>(presented in Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1]).</p> <p>There are no industry criteria for impacts of glint and glare on ornithology and therefore our understanding is reliant on research projects and monitoring at operational solar farms in the UK and internationally. This has been discussed in the HRA Report [EN010143/APP/7.12] in terms of effects on flight paths and impacts on functionally linked land.</p> <p>There is little conclusive evidence on the impacts of glint and glare from solar farms on birds. The HRA acknowledges that reflected light from photovoltaic panels may affect the behaviour of polarotactic insects, as well as representing a minor collision risk for birds attempting to drink from reflective surfaces. However, these risks are unlikely to apply to qualifying birds in the Lower Derwent Valley SPA/Ramsar and Humber Estuary SPA/Ramsar (none of which feed on the wing).</p> <p>The maximum height of the solar PV panels will be up to 3.5m (at maximum tilt). In the context of existing vegetation in the landscape, e.g., hedgerows, trees and woodland, the solar PV panels will not cause a physical impediment to bird movements across the landscape. Equally, birds transiting across the landscape are doing so on a broad front, i.e., there are no topographical or geographical features in the</p>	<p>Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
		<p>landscape to ‘funnel’ or concentrate bird movements, therefore, the exposure time to any possible reflected polarised light (glint or glare) is extremely low and is not considered further as part of the assessment.</p>	
<p>Natural England</p>	<p>PEIR Chapter 8: Ecology, Table 8-4 correctly identifies the designated features of the Lower Derwent Valley SAC.</p> <p>Further to its status as a protected species, we advise otter are also a notified feature of Lower Derwent Valley SAC, and therefore potential significant effects from the development on otter should be considered within the HRA. This may include the loss of or disturbance to supporting watercourses associated with the designated site which are utilised by otters.</p>	<p>The otter surveys carried out (as detailed in Appendix 8.9: Riparian Mammals Survey Report, ES Volume 2 [EN010143/APP/6.2]) identified signs of otter along the banks of the River Derwent, River Ouse and along one further drain which is partially located within the Grid Connection Corridor (Watercourse DE53, as shown on Figure 1 in Appendix 8-2: Aquatic Ecology Report, ES Volume 2 [EN010143/APP/6.2]) which appears to be connected to the River Derwent. Potential effects on otter have been considered within the HRA and in this chapter.</p> <p>The HRA Report [EN010143/APP/7.12] considers potential impacts of the Scheme on qualifying otter associated with the Lower Derwent Valley SAC and River Derwent SAC through visual/noise disturbance, water quality changes and temporary/permanent loss of supporting habitat.</p>	<p>HRA Report [EN010143/APP/7.12]. Sections 8.7 and 8.9 of this chapter.</p>
<p>Natural England</p>	<p>PEIR Chapter 8: Ecology, Table 8-4 correctly identifies the designated features of the Lower Derwent Valley Ramsar. Our advice on the potential impacts to the designated criterion of</p>	<p>The potential for likely significant effects on the Lower Derwent Valley Ramsar has been assessed in the HRA Report [EN010143/APP/7.12] and in this chapter.</p>	<p>HRA Report [EN010143/APP/7.12]. Sections 8.7 and 8.9 of this chapter.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
Natural England	<p>Lower Derwent Valley Ramsar are listed above (Lower Derwent Valley SPA and Lower Derwent Valley SAC).</p> <p>SPAs are classified for rare and vulnerable birds. Many of these sites are designated for mobile species that may also rely on areas outside of the site boundary. These supporting habitats may be used by SPA bird populations or some individuals of the population for some or all of the time. These supporting habitats can play an essential role in maintaining SPA species populations, and proposals affecting them may therefore have the potential to affect the European site. Table 8-1, Chapter 8: Ecology of the PIER states that an assessment of the effect of development on wintering and passage birds will be made available following full analysis of the data. We advise that as the land has been identified as having potential suitability as functionally linked land for the Humber Estuary SPA the survey results should be considered at AA stage of the HRA. If the Scheme is demonstrated to lead to loss of functionally linked land for designated bird species then the suitability of proposed mitigation should also be assessed in the HRA. In our response to the scoping consultation for this Scheme (letter dated 10 October 2022) we recommended that vantage point surveys should be undertaken when assessing whether</p>	<p>The potential for likely significant effects on the Humber Estuary, including potential loss of functionally linked land and combination effects, has been assessed in the HRA and in this chapter. The suitability of proposed mitigation has also been assessed in the HRA.</p> <p>The HRA highlights that arable fields within the Site are likely to be used by pink-footed goose and greylag goose associated with the Humber Estuary SPA/Ramsar. Therefore, mitigation land for these species will be provided in the Goose Mitigation Zones in the north-west part of the Order limits. The mitigation proposals have been developed in consultation with Natural England and will be secured in the Framework LEMP [EN010143/APP/7.14].</p> <p>The survey methodology with regards to requesting vantage point surveys has been discussed with Natural England in a stakeholder meeting (dated 13 September 2023). AECOM have provided further clarification on the survey method used for non-breeding bird surveys, including how the surveys utilised viewing points along transect routes to observe bird distribution and behaviour and measures in designing and undertaking the surveys that minimised disturbance by observers.</p>	<p>HRA Report [EN010143/APP/7.12]. Sections 8.7 and 8.9 of this chapter.</p> <p>Framework LEMP [EN010143/APP/7.14]. A summary of the consultation with Natural England regarding the survey for non-breeding bird methodology is provided in paragraphs 8.3.7 to 8.3.14 of this chapter.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>a development site may constitute functionally linked land for wintering and passage birds. We wish to reiterate that this is the preferred methodology as it prevents flushing of birds which may occur when transect surveys are undertaken. PEIR Chapter 17: Cumulative Effects, paragraph 17.5.6, identifies that the Site overlaps or is in close proximity to other plans or projects. We advise that when considering in combination impacts of loss of functionally linked land, the results of surveys undertaken for those developments should also be taken into account to understand whether there is a cumulative loss of land which can support wintering or passage birds. Natural England produced a 2016 review of available literature on the impact of solar farms on birds (NEER012) (Ref 8-78) which may be useful when undertaking the HRA.</p>		
<p>Natural England</p>	<p>Natural England welcomes the commitment to cross the River Ouse with non-intrusive, underground techniques (e.g., HDD) to mitigate for potential direct impacts within the Humber Estuary lamprey migration route. However, as detailed above for the River Derwent SAC, the HRA should also consider potential mortality, habitat fragmentation, short-term and long-term loss of supporting habitat outside the Humber</p>	<p>The potential for LSEs on the Humber Estuary, including potential loss of functionally linked land and combination effects, has been assessed in the HRA Report [EN010143/APP/7.12] and in this chapter.</p> <p>Crossing the River Ouse via HDD will minimise impacts on aquatic habitats/species, including the designated features of the Humber Estuary SAC. Therefore, the Humber Estuary SPA is not specifically assessed in relation to HDD.</p>	<p>HRA Report [EN010143/APP/7.12].</p> <p>Sections 8.7 and 8.9 of this chapter.</p> <p>Chapter 16: Other Environmental Topics, ES volume 1 [EN010143/APP/6.1].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>Estuary SPA for the relevant mobile designated species.</p>	<p>The mentioned impacts (habitat fragmentation, mortality and short-term loss of supporting habitat) are difficult to quantify/assess definitively. However, they are primarily mediated through processes, such as noise and vibration disturbance and water quality changes (which can form barriers to migration). Potential impacts of HDD regarding noise and vibration disturbance and water quality changes on mobile qualifying species of the Humber Estuary SAC are considered in the HRA and chapter (as they are in relation to the River Derwent SAC).</p>	
<p>Natural England</p>	<p>Natural England has concerns about impacts on functionally linked land and noise from the construction and decommissioning is likely to be a factor. We note that wintering and passage bird surveys and the interpretation of these is ongoing. Without further information at this point we are unable to comment on this aspect. Advise the HRA should detail noise levels during both construction and decommission phases of the Scheme, and consider the impact of the noise levels on designated birds which may be utilising land functionally linked to the Humber Estuary SPA. The results of the wintering and passage surveys should be used to inform whether disturbing noise levels from the development will reach land utilised by significant bird numbers.</p>	<p>Noise modelling has been undertaken on relevant areas of the Scheme. The results of which have been used to assess the potential effects on ecological receptors as appropriate, including birds utilising land functionally linked to the Lower Derwent Valley SPA. The Framework CEMP [EN010143/APP/7.7], Framework OEMP [EN010143/APP/7.8] and Framework DEMP [EN010143/APP/7.9] detail the construction, operation and decommissioning lighting requirements guidance that has been taken into account to minimise potential lighting impacts.</p>	<p>HRA Report [EN010143/APP/7.12]. Sections 8.7 and 8.9 of this chapter. Framework CEMP [EN010143/APP/7.7]. Framework OEMP [EN010143/APP/7.8]. Framework DEMP [EN010143/APP/7.9].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
Natural England	<p>Natural England notes PEIR Chapter 16: Other Environmental Topics, section 16.3 advises that glint and glare impacts from the solar PV panels will be considered in the ES, however the potential for impacts on designated birds is not listed as a consideration. We advise the potential for the solar PV panels to affect flight paths of wintering and passage Humber Estuary SPA birds utilising functionally linked land should be assessed within the HRA. NEER012 (Ref 8-78) may provide some useful evidence on this topic.</p>	<p>There is little conclusive evidence on the impacts of glint and glare from solar farms on birds. The HRA acknowledges that reflected light from photovoltaic panels may affect the behaviour of polarotactic insects, as well as representing a minor collision risk for birds attempting to drink from reflective surfaces. However, these risks are unlikely to apply to qualifying birds in the Lower Derwent Valley SPA/Ramsar and Humber Estuary SPA/Ramsar (none of which feed on the wing).</p> <p>The maximum height of the solar PV panels will be up to 3.5m (at maximum tilt). In the context of existing vegetation in the landscape, e.g., hedgerows, trees and woodland, the solar PV panels will not cause a physical impediment to bird movements across the landscape. Equally, birds transiting across the landscape are doing so on a broad front, i.e., there are no topographical or geographical features in the landscape to ‘funnel’ or concentrate bird movements; therefore, the exposure time to any possible reflected polarised light (glint or glare) is not considered further as part of the assessment.</p>	<p>HRA Report [EN010143/APP/7.12].</p>
Natural England	<p>We note that Table 8-7, Chapter 8: Ecology of the PEIR, identifies that river lamprey (<i>Lampetra fluviatilis</i>) are a feature of the Humber Estuary SAC, but does not identify sea lamprey (<i>Petromyzon marinus</i>). The table instead incorrectly states that Atlantic salmon</p>	<p>Table 8-9 in this chapter now correctly identifies sea lamprey as a feature of the Humber Estuary SAC. Qualifying species associated with the Humber SAC are also detailed in Table 8-6. The HRA Report [EN010143/APP/7.12] acknowledges that anadromous species (e.g.,</p>	<p>HRA Report [EN010143/APP/7.12]. Sections 8.7 and 8.9 of this chapter.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>(<i>Salmo salar</i>) are a feature within the citation of the SAC.</p> <p>River and sea lamprey associated with the Humber Estuary SAC may use connecting watercourses as part of their migration route; these watercourses should be considered as functionally linked land. Impacts to connecting watercourses will therefore need to be assessed within the HRA.</p> <p>Natural England welcomes the commitment to cross the River Ouse with non-intrusive, underground techniques (e.g., HDD) to mitigate for potential direct impacts within the Humber Estuary lamprey migration route. However, as detailed above for the River Derwent SAC, the HRA should also consider potential mortality, habitat fragmentation, short-term and long-term loss of supporting habitat outside the Humber Estuary SAC for the relevant mobile designated species.</p> <p>In addition, potential water quality and water supply impacts on SPA functionally linked land should be assessed in more detail in the HRA, following completion of the relevant surveys</p>	<p>river and sea lamprey) may use any hydrologically connected watercourses on migration and assumes functional linkage for all such waterbodies as a precautionary measure. The mentioned impacts (habitat fragmentation, mortality and short-term loss of supporting habitat) are difficult to quantify/assess definitively. However, they are primarily mediated through processes, such as noise and vibration disturbance and water quality changes (which can form barriers to migration). Potential impacts of HDD regarding noise and vibration disturbance and water quality changes on mobile qualifying species of the Humber Estuary SAC are considered in the HRA (as they are in relation to the River Derwent SAC).</p> <p>The HRA Report [EN010143/APP/7.12] considers all watercourses within the Zol of the Scheme to be functionally linked to the River Derwent SAC and Humber Estuary SAC in relation to migratory sea and river lamprey. Potential water quality impacts (AA chapter of the HRA) and water supply impacts (LSE screening chapter of the HRA) associated with the Scheme are discussed. The mitigation measures detailed in the Framework CEMP [EN010143/APP/7.7] are discussed, which will ensure that there are no adverse water quality effects in relation to migratory fish.</p>	<p>Framework CEMP [EN010143/APP/7.7].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
		<p>Surface water drainage will incorporate suitable quality controls to mitigate impacts to surrounding watercourses. Foul water will be collected and removed from Site for treatment.</p>	
<p>Natural England</p>	<p>Our advice on the potential impacts to the designated criterion of Humber Estuary Ramsar is stated above (Humber Estuary SPA and Humber Estuary SAC).</p>	<p>The potential for LSEs on the Humber Ramsar has been assessed in the HRA Report [EN010143/APP/7.12] and in this chapter.</p>	<p>HRA Report [EN010143/APP/7.12]. Sections 8.7 and 8.9 of this chapter.</p>
<p>Natural England</p>	<p>Natural England notes the application site is in close proximity to a number of nationally designated SSSIs, Chapter 8: Ecology of the PIER identifies the following:</p> <ul style="list-style-type: none"> • Humber Estuary SSSI; • Brighton Meadows SSSI; • Derwent Ings SSSI; • River Derwent SSSI; • Eskamhorn Meadows SSSI; and • Barn Hill Meadows SSSI. 	<p>An assessment of likely effects on SSSIs located within 5km of the Order limits has been carried out and is presented in this chapter.</p>	<p>Sections 8.7 and 8.9 of this chapter.</p>
<p>Natural England</p>	<p>Natural England’s advice regarding the Humber Estuary SAC/SPA/Ramsar applies to the assessment of potential impacts on the SSSI, where relevant. However, please note that the Humber Estuary SSSI is designated for a number of additional features. Therefore, these features should be considered in the assessment of potential impacts and mitigation required. Details of the Humber Estuary SSSI</p>	<p>Potential effects on the Humber Estuary SSSI and its features (as detailed in Table 8-6) have been assessed in this chapter.</p>	<p>Sections 8.7 and 8.9 of this chapter.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>citation and features can be found at SSSI detail on the Natural England website.</p>		
<p>Natural England</p>	<p>The advice regarding the Lower Derwent Valley SAC/SPA/Ramsar applies to the assessment of potential impacts on Brighton Meadows SSSI and Derwent Ings SSSI, where relevant. However, please note that Brighton Meadows SSSI and Derwent Ings SSSI are designated for a number of additional features; therefore, these features should be considered in the assessment of potential impacts and mitigation required. Details of the Brighton Meadows SSSI and Derwent Ings SSSI citation and features can be found at SSSI detail on the Natural England website.</p>	<p>Potential effects on Brighton Meadows SSSI and Derwent Ings SSSI and their features (as detailed in Table 8-6) have been assessed in this chapter.</p>	<p>Sections 8.7 and 8.9 of this chapter.</p>
<p>Natural England</p>	<p>Natural England’s advice regarding the River Derwent SAC also applies to the assessment of potential impacts on the River Derwent SSSI, where relevant. However, please note that the River Derwent SSSI is designated for a number of additional features, including ‘Outstanding assemblage of native fish’ and ‘Assemblages of breeding bird’ and ‘Aggregations of non-breeding birds, such as Bewick’s swan (<i>Cygnus columbianus bewickii</i>). Therefore, these features should also be considered in the assessment of potential impacts and required mitigation. The potential for noise and visual disturbance to River Derwent SSSI birds during</p>	<p>Potential effects on River Derwent SSSI and its features (as detailed in Table 8-6) have been assessed in this chapter.</p>	<p>Sections 8.7 and 8.9 of this chapter.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>construction will need to be assessed within the ES, along with the potential for temporary or permanent damage to designated habitat. Details of the River Derwent SSSI citation and features can be found at SSSI detail on the Natural England website.</p>		
<p>Natural England</p>	<p>Chapter 8: Ecology of the PEIR, Table 8-8 identifies that there may be hydrological connectivity between Site and Barn Hill Meadows SSSI. Natural England broadly welcomes the proposed mitigation measures for potential water quality impacts on Barn Hill Meadows SSSI. However, we advise that further information is included in the assessment, with regards to potential water quality and water supply impacts. Our above advice regarding internationally designated sites should be referred to where relevant in the context of the features of Barn Hill Meadows SSSI, details of which can be found at SSSI detail on the Natural England website.</p>	<p>Potential effects on Barn Hill Meadows SSSI and its features (as detailed in Table 8-6) have been assessed in this chapter.</p> <p>Surface water drainage will incorporate suitable quality controls to mitigate impacts to surrounding watercourses. Foul water will be collected and removed from Site for treatment.</p>	<p>Sections 8.7 and 8.9 of this chapter.</p>
<p>Natural England</p>	<p>Barn Hill Meadows SSSI - Air Quality: Natural England notes and agrees that Barn Hill Meadows SSSI is included as sensitive receptor within Table 16.5 Dust Risk Assessment and has been considered as HIGH sensitivity. We note that the proposed mitigation measures are included within a CEMP and DEMP and it</p>	<p>Noted.</p>	<p>Framework CEMP [EN010143/APP/7.7]. Framework DEMP [EN010143/APP/7.9].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	appears likely that the measures outlined will ensure that a significant effect is unlikely on the designated sites.		
Natural England	Natural England has not been able to review information in relation to potential impacts on protected species prior to the deadline for this S42 (Section 42) response. Natural England will provide this advice in a response to follow.	N/A.	N/A.
Natural England	Natural England welcome the statement in Table 8-1, Chapter 8: Ecology of the PEIR, which states the ES will provide an assessment of the potential effects of the Scheme on ancient woodland, and will include both a desk study and a field survey. Natural England and Forestry England have produced standing advice in relation to ancient woodland and ancient and veteran trees which should be considered when assessing the potential for impacts in the ES.	Potential effects on veteran and ancient trees are considered in this chapter. The impact of the Scheme on trees and woodlands is addressed in Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2] . This assessment considers the standing advice from Natural England and Forestry England in relation to ancient woodland and ancient and veteran trees. There are no areas of ancient woodland within the 2km Study Area.	Sections 8.7 and 8.9 of this chapter. Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES volume 2 [EN010143/APP/6.2] .
Natural England	Natural England welcome the Applicant's continued commitment to provide 10% BNG, particularly in respect to delivering above this, given the scale of the project and a history of successful delivery of BNG for solar projects. Note that paragraph 9.8.25 of the PEIR Chapter 9: Flood Risk, Drainage and Water Environment (dated May 2023) states "...the Grid Connection Cable and Interconnecting Cable watercourse	Noted. Modular River Physical (MoRPh) surveys have been completed by accredited surveyors where impacts to watercourses (and ditches) are proposed, and therefore appropriate mitigation will be recommended as an outcome of the BNG Assessment Report [EN010143/APP/7.11] (Watercourses Module).	BNG Assessment Report [EN010143/APP/7.11] .

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p><i>crossings aside from the River Ouse, River Derwent and Featherbed Drain are assumed to use intrusive open-cut techniques for cable installation” and outlines culvert extensions within paragraph 9.9.21. We highlight that these impacts will need to be assessed within the watercourse metric calculations. To undertake a River Condition Assessment assessors must be trained and accredited in the River Condition Assessment methodology.</i></p>		
<p>Natural England</p>	<p>We support the statement within PEIR Chapter 8: Ecology, Table 8-1 that a BNG Assessment is to be submitted with the ES and that this will align with standard guidance and BS 8683: 2021 Process for designing and implementing Biodiversity Net Gain – Specification (Ref 8-76). In addition, we advise the design of BNG should take into consideration the outcomes of the further surveys and data analysis undertaken as part of the ES and HRA process. BNG habitat creation and enhancement proposals should be compatible with existing ecological functions, functionally linked land and protect soil health of best and most versatile (BMV) agricultural land.</p>	<p>Noted. BNG habitat enhancement and creation proposals have taken into account existing ecological functions, linkages and soil health. The Applicant’s experts in ecology, landscaping and BNG have collaborated on BNG enhancements and creation. The BNG Assessment Report [EN010143/APP/7.11] includes high-level management prescriptions for habitats to achieve their target condition scores, which will feed into habitat management and monitoring plans. These are secured through the Framework LEMP [EN010143/APP/7.14].</p>	<p>BNG Assessment Report [EN010143/APP/7.11]. Framework LEMP [EN010143/APP/7.14].</p>
<p>Natural England</p>	<p>We note that temporary loss of terrestrial habitats is proposed to facilitate the laydown of cables and for HDD beneath the River Ouse, River Derwent and Featherbed Drain. We highlight that paragraphs 7.3.6-7.3.7 in the</p>	<p>Noted. Any delay in proposed habitat creation will be captured in the metric using the available multipliers provided.</p>	<p>BNG Assessment Report [EN010143/APP/7.11].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>Biodiversity Metric User Guide (Ref 8-36) provides guidance on how to assess temporary losses to habitat and should be applied in this instance.</p> <p>In relation to the above, it is also noted that the proposed route for the 132k Cable Corridor passes directly through a 'habitat provision area' associated with Drax Power Limited's Bioenergy with Carbon Capture and Storage Project and its delivery of BNG post-development. Paragraph 2.3.9. of the PEIR states "<i>...should this habitat provision be in place prior to the construction of the Scheme, impacts to this area will be avoided</i>", which is supported. However, we would also highlight that the phasing of both projects should be taken into account and if the temporary use of this land will result in a delay to the proposed habitat creation, then this should be reflected within the biodiversity metric calculations and BNG assessment.</p>		
<p>Natural England</p>	<p>Natural England welcomes the commitment outlined within paragraph 8.4.4 of the PEIR that "<i>In addition to the statutory consultation process, there will be ongoing engagement with other consultees to steer the development of the Scheme</i>". It is recommended that this approach is extended to the design of BNG to align the proposed habitat enhancement with</p>	<p>Noted.</p>	<p>BNG Assessment Report [EN010143/APP/7.11].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
North Yorkshire Council	<p>any emerging plans, policies or opportunities within the local landscape and community.</p> <p>The PEIR provides a good summary of the ecological survey work undertaken to date and highlights the key sites, habitats and species that could be impacted by the proposals. It is noted that the Scheme remains in development with ecological surveys and assessments on going.</p> <p>The approach to ecological assessment set out in the PEIR chapter is supported as it follows current best practice guidance.</p> <p>The PEIR sets out the current expected impacts – whilst acknowledging that this is only preliminary at this stage we generally agree with the assessment which appears reasonable in terms of the location, type and scale of the proposed works. We will consider the detailed impacts and specific mitigation proposals once the final assessment has been undertaken and submitted as part of the ES.</p> <p>We are fully supportive of the intention of this project to provide a minimum of 10% BNG in line with current guidance set out in the Environment Act 2021 (Ref 8-60). We support use of the most up to date version of Defra’s Biodiversity Metric (Ref 8-36) in presenting data on biodiversity losses and gains. The proposals for BNG should sit within a wider landscape and biodiversity strategy which has clear objectives</p>	Noted.	<p>BNG Assessment Report [EN010143/APP/7.11]. Framework LEMP [EN010143/APP/7.14].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	and sets out how monitoring and management will be delivered in the long term.		
Leeds City Council	We query the direct and in-direct impact of the proposal on Nature Reserves within the Leeds administrative district, in particular in respect of Royal Society for the Protection of Birds (RSPB) St Aidan's and RSPB Fairburn Ings. We would wish to see the application submission, including the scope of the ES, to include for assessment of this, together with the proposal's effect on birds and bird migration routes to and from Nature Reserves within Leeds. Please liaise with the RSPB on this matter, in addition to Natural England.	These RSPB reserves are c. 25km west of the Site. Due to the considerable distance between these reserves and the Solar PV Site, no direct or indirect impacts are anticipated on any bird species associated with these RSPB reserves and therefore these reserves are not considered in the ecology assessment.	N/A.

8.3.6 Further engagement has been undertaken with key stakeholders including Natural England, East Riding of Yorkshire Council and North Yorkshire Council, as outlined below.

Natural England

- 8.3.7 Natural England, as the relevant consultation body has been contacted through their DAS. Due to the presence and proximity of statutory designated sites to the Site, including those with birds as qualifying features (including Lower Derwent Valley SPA/Ramsar and The Humber Estuary SPA/Ramsar), advice was sought from Natural England regarding the bird surveys (breeding and non-breeding) and the proposed assessment methodology and approach to determine how the Scheme may impact designated sites and terrestrial habitats that play a supporting role in the function of designated sites (i.e., functionally-linked land), which has also informed the HRA (as presented in **HRA Report [EN010143/APP/7.12]**).
- 8.3.8 Natural England provided a response to this request for advice in a letter dated 31 March 2023 (Reference 384466). This response provided a summary of Natural England's advice for surveys of wintering and passage birds associated with European designated sites. In summary, this included vantage point surveys for wintering waders and wildfowl, covering the spring passage period as well as the autumn passage period. Two surveys per month were recommended, rather than one. Natural England recommended that if walkover transect surveys were undertaken that initial checks of fields were undertaken to determine if any birds were using the field prior to the start of the survey route. This is due to the potential for disturbance effects associated with the movement of the surveyor through the field. There should also be inclusion of information on the transect routes used and that the route should be designed to ensure the whole count area is viewed.
- 8.3.9 Following receipt of this initial advice, further correspondence with Natural England was undertaken to discuss the recommended survey methodologies, including two meetings which were held on 17 July and 13 September 2023. Detailed responses, with further information and clarification, to address Natural England's comments were provided.
- 8.3.10 In the meeting held on 13 September 2023, further detail was provided to Natural England on the surveys for non-breeding bird that were undertaken monthly between September 2022 and March 2023. It was explained to Natural England that although the spring passage period had not been covered by the 2022/23 surveys for non-breeding bird, surveys for breeding birds and territory mapping were conducted in both 2022 and 2023 (covering different areas within the Site), and that these surveys did not record the presence of passage waterbird species that could be considered to be associated with the Humber SPA/Ramsar or the Lower Derwent Valley SPA/Ramsar. The absence of such species provided evidence to support the conclusion that specific spring passage surveys are not required.
- 8.3.11 It was also clarified to Natural England that the proposed mitigation measures account for potential fluctuations in bird numbers and distribution and that the current survey effort, which involved monthly surveys between September 2022 and March 2023 (undertaken across a period of up to five days), provides a substantial understanding of bird behaviour across the

landscape. The Scheme's commitment to extensive mitigation measures was emphasised, to offset potential impacts on bird populations.

- 8.3.12 It was highlighted to Natural England that the Site is not significantly affected by tidal states in the Humber Estuary, given the distance, species recorded and availability of identical habitat in the wider landscape, and therefore, discussions regarding survey efforts linked to tidal states are considered irrelevant. Irrespective of this, the surveys did cover a range of tidal states across the duration of the survey programme.
- 8.3.13 The appropriateness of undertaking transect surveys as opposed to vantage point surveys was also discussed with Natural England. It was explained to Natural England that bird surveys were conducted using a transect-based method, where surveyors walked along existing field boundaries and hedgerows, stopping at regular intervals to scan large fields for birds. This approach was chosen due to the Site's large size and the presence of landscape features like hedgerows, field boundaries, woodlands, and residential properties. The use of a vantage point survey technique was deemed impractical for this type of Site, with a transect-based method with regular stopping points allowing for efficient coverage and the collection of data on non-breeding birds.
- 8.3.14 Concerns about disturbing or flushing birds during the survey were also addressed and it was emphasised that surveyors walked quietly along existing hedge lines and could identify birds before entering fields and that the full boundaries of each field were not walked. Natural England clarified the meaning of the "*vantage point surveys*" recommended, explaining that they were not necessarily advocating vantage point surveys following the method used for assessing impacts from onshore windfarms, i.e., NatureScot methods, but rather a 'hybrid' method. Natural England agreed that the vantage point survey method would be impractical for the large Site and landscape in question. Overall, it was agreed that the approach to surveys was not dissimilar to what Natural England were recommending but a more detailed explanation of the survey methods would be beneficial in resolving any remaining concerns over the methods used.

East Riding of Yorkshire Council and North Yorkshire Council

- 8.3.15 A meeting was held with representative ecologists from East Riding of Yorkshire Council and North Yorkshire Council on 27 July 2023 to discuss the following:
- a. Overview of updates to the Scheme since the PEI Report statutory consultation;
 - b. A summary of the completed and ongoing ecology baseline surveys (up to the date of the meeting);
 - c. A PEI assessment summary and initial response to feedback received;
 - d. The proposed EIA methodology;
 - e. Approach to the HRA, Natural England consultation and proposed mitigation;
 - f. Approach to the Framework LEMP; and
 - g. Proposed approach to the BNG assessment.

- 8.3.16 The representative ecologist from North Yorkshire Council confirmed that they are satisfied with the proposed EIA methodology and that the most up to date BNG metric is being used.
- 8.3.17 East Riding of Yorkshire Council was contacted on 22 September 2023, via email to seek to discuss the following proposed works within Wressle Verge LWS and Tottering Lane, Gribthorpe LWS, and appropriate measures to reduce potential impacts:
- a. Cable routing across the verge for both LWSs;
 - b. Creation of two new permanent site access across Tottering Lane, Gribthorpe LWS;
 - c. Upgrading of three existing access points, one across each LWS, and one just north of Wressle verge; and
 - d. Potential passing places.
- 8.3.18 However, a response was not received at the time of writing this chapter.
- 8.3.19 Following receipt of the PEI Report Ecology chapter, an email received from East Riding of Yorkshire Council on 17 August 2023 stated “*With regards cumulative effects construction and operation impacts are outlined up to 5km from the site boundary. For mobile species, associated with the Humber Estuary SPA/Ramsar and Lower Derwent, foraging ranges extend up to 12km from site boundaries for Lapwing and Golden Plover for these species the cumulative/in combination assessment should be expanded in relation to assessing to loss of functionally linked land.*” This was repeated in the official PEI Report response dated 22 September 2023.
- 8.3.20 In response to the initial email, an email was sent to East Riding of Yorkshire Council on 22 September 2023, prior to the receipt of the PEI Report response but potentially after it was drafted. The email detailed reasons why extending the Zol considered for the cumulative effects assessment as suggested (i.e., from 5km to 12km) would include areas far beyond 10km from these designated sites (i.e., Lower Derwent Valley SPA/Ramsar and Humber Estuary SPA/Ramsar) and therefore could reasonably be expected to not include functionally linked land on which a significant cumulative effect could occur. The email proposed not to extend the Zol for ecological receptors beyond the 5km that was previously agreed.
- 8.3.21 However, a response was not received at the time of writing this chapter.
- 8.3.22 In response to a comment from the Planning Inspectorate (detailed in Table 8-1 and Appendix 1-3, PEI Report Volume 4) which stated that agreement with statutory bodies regarding the scoping out of impacts to common and widespread habitats and species of low sensitivity and/or conservation interest should be demonstrated, advice was sought from Natural England on the proposed EclA methodology and approach. This specifically relates to the proposal to scope out impacts to common and widespread habitats of low sensitivity and/or conservation interest, in line with CIEEM guidance (Ref 8-32). Communication received from Natural England (letter dated 31 March 2023, Reference 384466) states “*We also note the proposal to scope out impacts to common and widespread habitats of low sensitivity and/or conservation interest within the EclA, in line with CIEEM guidance. Natural England agrees that this approach is reasonable, but would recommend justification is provided for why each of the habitats has been scoped out of*

further assessment.” As stated in paragraph 8.4.59 of this chapter, all relevant ecological features of Local value and above, where there is the potential for the Scheme to impact them directly or indirectly, have been taken forward to impact assessment and are the ‘relevant ecological features’ for the purposes of EclA. The biodiversity importance, or value, assigned to each relevant habitat and species and justification for this, is provided in **Table 8-10**.

- 8.3.23 A comment from the Planning Inspectorate (detailed in **Table 8-1**) stated that detailed bat surveys should be conducted for the Site, including the Grid Connection Corridor, or the ES should provide evidence of agreement from relevant consultation bodies that such surveys are not required. In response to this comment, baseline data was collated in spring, summer and autumn 2023 using static bat detectors at two strategic locations within the Grid Connection Corridor. The two static detectors were set out close to where the HDD works will be undertaken at the River Derwent and River Ouse, where 24-hour working may be required. Targeted bat activity transect surveys have been undertaken within the Solar PV Site and not within the Grid Connection Corridor and Interconnecting Cable Corridor, as there will be minimal (temporary) loss of habitats and impacts to bats would be limited to temporary construction works which will for the most part take place during daylight hours. Detailed information relating to lighting is presented in paragraphs 8.6.17 to 8.6.21 of this chapter.
- 8.3.24 The Scheme will apply for a DLL for GCN on receipt of consent for the Scheme. Communication received from Natural England, via DAS (email dated 27 March 2023) confirmed that “...*there is no overlap with a DLL ‘red risk zone’ therefore this does not pose any barrier to the use of DLL for this project*”. The provisional IACPC has been issued by Natural England, and will be submitted as part of the DCO application as **Appendix 8-10: Great Crested Newt District Level Licensing Impact Assessment and Conservation Payment Certificate, ES Volume 2 [EN010143/APP/6.2]**. The Applicant is in the process of obtaining the full IACPC and will update the above appendix when it is in place.
- 8.3.25 The North and East Yorkshire Ecological Data Centre (NEYEDC) was contacted in July 2022 to gain information on pre-existing ecological data (i.e., location of LWSs, existing records of protected, notable and INNS within 2km of the Order limits). NEYEDC was contacted again in August 2023 to refresh the data search. The data received has been considered when preparing this ES.
- 8.3.26 As a result of the non-statutory consultation, a local wildlife group Friends of the Lower Derwent Valley Conservation Trust (FLDVCT)⁴ contacted the Scheme resulting in a meeting on 4 November 2022. The aim of the meeting was to investigate the opportunities for FLDVCT and the Applicant to work together, for example through the purchase of local provenance seed from FLDVCT, or the involvement of FLDVCT in the ecological management of the operational solar farm. FLDVCT stated that the Scheme could afford the

⁴ FLDVCT are a registered charity set up to fund and deliver training, monitoring and research work within the Lower Derwent Valley National Nature Reserve (NNR). The funding is achieved via the sale of services (such as habitat creation works/monitoring/habitat management), sale of products (such as wildflower meadow seed, bird boxes, etc), grants and donations.

charity an opportunity to work outside of/beyond the National Nature Reserve (NNR) to deliver landscape scale conservation benefits. The FLDVCT were contacted again via email on 14 September 2023 to request further detail on the different seed mixes or habitat types which are available, however no response had been received at the time of writing this chapter.

8.4 Assessment Methodology

Assumptions, Limitations and Uncertainties

- 8.4.1 The assessment presented in this chapter reflects the information and stakeholder responses obtained and evaluated at the time of reporting, and has referenced published data, records and web-based information obtained to date.
- 8.4.2 The assessment includes consideration of the construction, operation (including maintenance) and decommissioning phases of the Scheme, and is based upon the design information for the Scheme (refer to **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]** and **Figure 2-3, ES Volume 3 [EN010143/APP/6.3]**). It has focussed on the Solar PV Site, Ecology Mitigation Area, Interconnecting Cable Corridor, Grid Connection Corridor; although not specifically mentioned in the assessment, the Site Accesses are included in the description of the baseline conditions and consideration of the overall effects. Site access locations and any areas where traffic routing for HGV or AIL may ingress on verges close to ancient or veteran trees have also been assessed. As noted in **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**, subject to the DCO Application being granted consent and following a final investment decision, the earliest construction could start is in 2025. Construction of the Grid Connection Cable is anticipated to require 12 months, whereas construction of the remainder of the solar farm will require an estimated 24 months, with operation therefore anticipated to commence in 2027. Should the construction programme be extended this will not change the results of the EclA with respect to flora, as the impact is not affected by the duration of activity but rather the change or loss of any habitats. The impact on fauna is likely to be similar if the construction period is extended, with respect to any habitat loss. The assessment is also considered to represent a worst case in terms of impacts to species. For example, although it is acknowledged that a longer construction period could result in prolonged disturbance, this is unlikely to occur for the majority of the Site due to the sequential nature of the construction programme.
- 8.4.3 As described in **Chapter 3: Alternatives and Design Evolution, ES Volume 1 [EN010143/APP/6.1]**, the design of the Scheme has evolved since the PEI Report was issued in May 2022. This has included the incorporation of additional land within the Grid Connection Corridor, between the River Ouse and National Grid Drax Substation. This change was actioned after the appropriate over-wintering bird survey window had closed in 2023; however, some data (for February and March 2023) is available for neighbouring land. Furthermore, works within agricultural fields inside the Grid Connection Corridor will be temporary in nature to enable cable installation (where it deviates from the roadway south of the River Ouse) and therefore will not result in the permanent loss of land available to birds. The Grid Connection Corridor works during the construction phase will be

- undertaken in the dryer summer months where practicable. Therefore, this is not considered to be a significant limitation to the survey.
- 8.4.4 The construction phase of the Scheme is likely to lead to a small increase in the number of vehicles on the local highway network for the duration of the construction works (see **Chapter 13: Transport and Access, ES Volume 1 [EN010143/APP/6.1]**). IAQM guidance (Ref 8-48) sets out criteria to establish the need for an air quality assessment for the construction phase of a development as being a change of Heavy Duty Vehicle (HDV) (also known as HGV) flows of more than 100 AADT outside an Air Quality Management Area (AQMA).
- 8.4.5 As detailed in section 16.2 (Air Quality) of **Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1]**, owing to the levels of traffic expected to be generated by the Scheme being below criteria set out in IAQM guidance (Ref 8-48) a detailed dispersion modelling exercise has not been undertaken for the Scheme and the effect can be considered to be not significant. Therefore, this chapter does not consider potential effects on ecological features (i.e., habitats, sites and species) as a result of changes in air quality due to construction phase traffic, as no significant effects are anticipated.
- 8.4.6 Similarly, as described in **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**, there would be no normal requirement for HGV movements during the operation of the Scheme (it is anticipated that any deliveries, including the removal of wastes from the Site, would be via LGV or cars and would not be frequent) and therefore, no impacts to ecological features due to changes in air quality are anticipated during operation of the Scheme due to vehicle emissions – see also section 16.2 (Air Quality) of **Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1]**, which has scoped out assessment of the operational effects the Scheme on air quality due to the low level of traffic generated resulting in no significant effects being predicted.
- 8.4.7 In accordance with IAQM guidance (Ref 8-42), section 16.2 (Air Quality) of **Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1]** also presents a Dust Risk Assessment which examines the risk of construction dust on to ecological sites within 1km of the Order limits. The assessment considered the following sites; River Derwent SSSI/SAC, Barn Hill Meadows SSSI, Tottering Lane, Gribthorpe LWS, Wressle Verge LWS, Bubwith – Holme-on-Spalding-Moor Disused Railway Line LWS, North Howden Fish Ponds LWS, Barnhill Candidate LWS, Yarmshaw Plantation LWS, Old Clay Pits, Highfield Historic LWS and Brockholes SINC. Therefore, an assessment of the risk of dust from construction is not presented in this chapter.
- 8.4.8 It is acknowledged that the precise location of the cables within the Interconnecting Cable and Grid Connection Corridors retain necessary flexibility. The ecology field survey areas have incorporated these cable corridors (and suitable buffers) where required, to account for potential movement of the preferred cable routes inside these corridors. Any limitations relevant to each survey, including how any limitations have been overcome, are included within the relevant technical reports presented in **Appendices 8-2 to 8-9, ES Volume 2 [EN010143/APP/6.2]**. The assessment of likely effects on important and relevant ecological features

presented in this chapter acknowledges that the cable routes are flexible within the relevant corridors.

- 8.4.9 It is also acknowledged that the internal access routes may need to be adjusted within the Site. However, the access routes will retain 15m buffers (minimum) from trees where practicable. If this cannot be fully adhered to then further ecology surveys would be required to determine whether the tree(s) have suitability for roosting bats and nesting WCA 1981 (as amended) (Ref 8-1) Schedule 1 bird species. Further hedgerow surveys may also be required if existing gaps cannot be used. These surveys will be undertaken as part of the pre-construction survey requirements at the detailed design stage sufficiently far in advance of construction works to account for seasonality constraints and to allow time for the implementation of any necessary mitigation, prior to construction. This requirement is secured in the **Framework CEMP [EN010143/APP/7.7]** and **Framework LEMP [EN010143/APP/7.14]**.
- 8.4.10 Existing and Phase 1 habitat and condition assessment data has been used to inform the **BNG Assessment Report [EN010143/APP/7.11]**. The surveys undertaken in 2022 to inform the BNG assessment were carried out using Biodiversity Metric 3.1 Habitat Condition Assessment criteria; however, Biodiversity Metric 4.0 (Ref 8-36) was issued on 28 March 2023. Therefore, Biodiversity Metric 4.0 has been used for the BNG assessment and habitat condition information collected in the field surveys has been translated into the Biodiversity Metric 4.0 Habitat Condition Assessment criteria and converted into UK Habitat classifications.
- 8.4.11 Specific assumptions and limitations relevant to each survey, including how any limitations have been overcome, are included within the relevant technical reports presented in **Appendices 8-2 to 8-9, ES Volume 2 [EN010143/APP/6.2]**. There are no survey-specific constraints that represent a significant limitation or data gap and the baseline that has been established is suitably robust.
- 8.4.12 The assessment is also based on the following scenarios in the design with regards to ecology:
- a. Both Wressle Verge LWS and Tottering Lane, Gribthorpe LWS will be impacted, with temporary effects through the installation of interconnecting cables, and permanent access entrances across Tottering Lane and Wressle Verge;
 - b. The cable route will cross the Drax cooling discharge pipe in New Road, near National Grid Drax Substation, using HDD or careful excavation, however the worst case (careful excavation) will be assessed in this chapter.
 - c. The cable route into National Grid Drax Substation will be open cut or HDD. Again, the worst case (open cut) will be assessed in this chapter; and
 - d. Working within River Derwent SAC/SSSI can be avoided by using HDD beneath the A63, but with an alternative method of installing the cable along the existing access track to be used to access the fields, either by HDD or open cut (as presented in **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**). Again, the worst-case (i.e., open cut) is considered and assessed in this chapter.

Matters Scoped in/Scoped out

- 8.4.13 The scope of the assessment has not deviated from the initial proposed scope as presented in the **Scoping Report (Appendix 1-1, ES Volume 2 [EN010143/APP/6.2])**.
- 8.4.14 Statutory designated sites (without mobile qualifying criteria) located greater than 2km from the Order limits are scoped out. As per **Table 8-1**, the Planning Inspectorate is content that this matter is scoped out as significant effects are unlikely.
- 8.4.15 Statutory designated sites that lie more than 2km from the Order limits (without mobile species) will not be directly impacted by the Scheme through habitat loss or disturbance. At this distance, disturbance impacts to species using designated sites through increased noise, lighting or visual disturbance will not lead to significant effects and therefore does not need to be considered.
- 8.4.16 In accordance with IAQM guidance (Ref 8-42), section 16.2 (Air Quality) of **Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1]** presents a Dust Risk Assessment which examines the risk of construction dust to ecological sites holding a National or European designation within 50m of the Order limits or within 50m from a route used by construction vehicles on the public highway (up to 500m from the Site's access point) within 1km of the Order limits. LWSs have also been considered, although it is acknowledged that explicit consideration as part of the Dust Risk Assessment is not required in accordance with the IAQM guidance.
- 8.4.17 As detailed in section 16.1 (Air Quality) of **Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1]**, owing to the levels of traffic expected to be generated by the Scheme being below criteria set out in IAQM guidance, a detailed dispersion modelling exercise has not been undertaken for the Scheme and the effect can be considered to be not significant. Therefore, this chapter does not consider potential effects on ecological features (including designated sites) as a result of changes in air quality due to construction traffic, as no significant effects are anticipated.
- 8.4.18 Similarly, as described in **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**, and section 16.2 (Air Quality) of **Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1]** there would be no normal requirement for HGV movements during the operation of the Scheme. It is anticipated that any deliveries, including the removal of wastes from the Site, would be via LGV or cars and infrequent, therefore only low levels of traffic generated, resulting in no significant effects being predicted. As a result, no impacts to ecological features due to changes in air quality are anticipated during operation of the Scheme due to vehicle emissions.
- 8.4.19 Impacts to common and widespread habitats of low sensitivity and/or conservation interest are scoped out, in accordance with CIEEM guidance (Ref 8-32), which states that there is no need to "...carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable". As per **Table 8-1**, Natural England, as the relevant consultation body has been contacted through the DAS process, to discuss the proposed methodology in accordance with the Planning Inspectorate's comment. Correspondence

received from Natural England (letter dated 31 March 2023, Reference 384466) states *“We also note the proposal to scope out impacts to common and widespread habitats of low sensitivity and/or conservation interest within the EclA, in line with CIEEM guidance. Natural England agrees that this approach is reasonable, but would recommend justification is provided for why each of the habitats has been scoped out of further assessment”*. The biodiversity importance, or value, assigned to each relevant habitat and species and justification for this, is provided in **Table 8-8** and **Table 8-9**. However, the embedded mitigation (as detailed in section 8.6) will also help to safeguard wider biodiversity.

- 8.4.20 Effects on GCN are scoped out of the detailed impact assessment in the ES as DLL will be used to offset the effects of the Scheme on GCN. As discussed in paragraph 8.3.24, communication received from Natural England (email dated 27 March 2023) confirmed that *“...there is no overlap with a DLL ‘red risk zone’ therefore this does not pose any barrier to the use of DLL for this project”*. Natural England’s assessment is documented on the provisional IACPC in **Appendix 8-10: Great Crested Newt District Level Licensing Impact Assessment and Conservation Payment Certificate, ES Volume 2 [EN010143/APP/6.2]**. The provisional IACPC includes information on the Scheme’s impact on GCN and the appropriate compensation required, and will be updated with the full IACPC once received. The full DLL is applied for once a DCO is granted.

Study Area

- 8.4.21 The Study Area was defined to include ecological features likely to be at risk from direct and indirect impacts that might arise from the Scheme and is the initial basis for determining the Zol. CIEEM guidance (Ref 8-32) defines a Zol as: *“...the area over which biodiversity features may be affected by biophysical changes as a result of the proposed project and associated activities”*.
- 8.4.22 All designated sites, sensitive habitats, and protected and notable species that occur within the ecological Zol of the Scheme have been considered in this assessment. The extent of the Zol varies according to the ecological feature in question.
- 8.4.23 For the Scheme, the ecological Study Areas are defined below:
- Within the Site and up to 10km from the Order limits for all statutory designated sites of international nature conservation value (e.g., SACs, SPAs and Ramsar sites, as well as proposed or potential sites). This is extended to 30km for SACs designated for bats;
 - Within the Site and up to 5km from the Order limits for other statutory designated sites of national nature conservation value (e.g., SSSIs, NNRs and LNRs);
 - Within the Site and up to 2km from the Order limits for non-statutory sites for conservation (e.g., LWS, Sites of Importance for Nature Conservation [SINC]), ancient woodland and other notable habitats (e.g., Priority habitats);
 - Within the Site and up to 50m from the Order limits for ancient and veteran trees not located in areas of ancient woodland;

- e. Within the Site and up to 2km from the Order limits for records dated within the last ten years of protected and notable species, or the closest hydrologically connected monitoring location in the case of aquatic ecological records;
 - f. Within the Site and up to 2km from the Order limits for the status of water bodies subject to the WFD (Ref 8-18) which are assessed in **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]** and informed by the assessment of aquatic ecology receptors presented in this chapter. As water pollution may spread downstream or there could be downstream flood risk effects, to identify all the relevant ecological, chemical and physical features of waterbodies that may be impacted and that contribute to the waterbodies' overall importance, the study area was extended beyond 2km for hydrologically-linked surface water bodies.
- 8.4.24 These distances reflect standard professional good practice and the distances that statutory consultees would typically expect to be considered for identification of features external to the Order limits that could be affected.
- 8.4.25 Habitat and species surveys were undertaken within the Site and its immediate vicinity and were extended to outside of the Order limits as appropriate (such as identifying badger setts up to 50m from the Order limits – see **Table 8-3**).
- 8.4.26 The avoidance of potential effects through implementation of good practice avoidance measures, such as those described within the **Framework CEMP [EN010143/APP/7.7]** (e.g., control measures for dust suppression), have been taken into account during the determination of the Zol for ecological features and biophysical changes.
- 8.4.27 The Zol of habitats and sedentary species lost to site clearance for construction are easiest to define as they should be restricted to the footprint of the Scheme. However, for those biophysical changes that can extend beyond the boundary of the Scheme, the Zol has been determined by the nature of the biophysical change and the sensitivity to this change of the ecological feature in question. For example, a badger may be subject to disturbance from light pollution only, such as sudden increases in light, if directly adjacent to their sett or foraging site; whereas bats may be subject to disturbance and certain species, but not all, may actively avoid habitats subject to light pollution over a much wider area.
- 8.4.28 Taking account of this, the extent of the Zol beyond the Order limits was determined based on professional judgement, with reference to data (where available) relating to the sensitivity of specific ecological features, and in consultation with other environmental technical specialists (i.e., for air quality and water). This is broadly reflected within the Study Area for each receptor (as detailed in **Table 8-3**), to the extent at which the desk study and surveys have been conducted to.
- 8.4.29 The Study Areas described above and set out in **Table 8-3** are considered representative of the Zols for those receptors identified as important ecological features within this chapter. There are no SACs, SPAs, Ramsar sites present between 5km and 10km of the Order limits with either hydrological connections or mobile qualifying species that would be present

within the Site. Nor are there SACs within 30km which are designated for bat species. Thorne and Hatfield Moors SPA is present at approximately 9.24km; however, this has a qualifying species of nightjar (*Caprimulgus europaeus*), with a foraging distance less than this distance, plus their favoured habitats are absent from the Site. These sites have therefore been screened out as part of the **HRA Report [EN010143/APP/7.12]** and are not relevant when considering a Zol for the Scheme.

- 8.4.30 For the purposes of the cumulative assessment, the statutory designated sites within their Study Area or potential pathway for effect resulting in a biophysical change, a Zol of 5km is considered appropriate to include statutory designated nature conservation sites due to the identification of potential effects from loss of Functionally Linked Land (FLL). The Zol for otters can be considered as over 20km based on the reported home range of otters depending on the sex, status and habitat quality (sometimes even 30km to 50km) (Ref 8-70); however, given that the Scheme does not directly impact upon watercourses where otter are known to be present, there are no pathways to an effect at such a distance. The full cumulative effects assessment is provided in section 8.10 of this chapter.

Methodology

- 8.4.31 This section sets out the scope and methodology for the assessment of the ecological impacts of the Scheme.

Establishment of Baseline Conditions

- 8.4.32 Establishment of the baseline environment (within the Study Area, survey areas and resulting Zol) involved reference to existing data sources where available and from the field surveys.

Sources of Information – Desk Study

- 8.4.33 A desk study was undertaken to identify sites designated for nature conservation and records of protected and/or notable habitats and species (ecology features) and INNS that are relevant to the Site. The desk study also identified the status of water bodies covered by the WFD (Ref 8-18) in order to identify those likely to be impacted from an ecological perspective.
- 8.4.34 The different Study Areas (as defined in paragraph 8.4.23) apply to different ecological features.
- 8.4.35 The NEYEDC was contacted in July 2022 and in August 2023 to gain information on pre-existing ecological data (i.e., locations of local designated sites, existing records of protected, notable and INNS within 2km of the Order limits). The data received have been considered when preparing this chapter.
- 8.4.36 Online data resources that were reviewed for the desk study include:
- The Natural England website (Ref 8-43) for information on statutory designated sites of nature conservation interest and to confirm reasons for designation and their condition;
 - The MAGIC website (Ref 8-40) to identify the location (and details) of statutorily designated sites, ancient woodland, Priority habitats and for any granted European Protected Species Licence applications within 2km of the Order limits;

- c. The Joint Nature Conservation Committee (JNCC) website (Ref 8-44) for site information and designation details of SACs, SPAs and Ramsar Sites identified within the relevant Study Areas;
 - d. Woodland Trust Ancient Tree Inventory (Ref 8-45) for records of veteran and ancient trees located within and up to 50m from the Order limits;
 - e. Environment Agency Ecology and Fish Data for species records of fish, macroinvertebrate and macrophytes species within the study area (Ref 8-46);
 - f. National Biodiversity Network (NBN) Atlas (Ref 8-86) for records of notable aquatic species and INNS, where data licensing conditions allow.
 - g. Environment Agency Catchment Data Explorer for data on WFD water bodies within the study area (Ref 8-47);
 - h. East Riding of Yorkshire Biodiversity Action Plan (ERYBAP) Strategy (Ref 8-49) for biodiversity action plan habitats and species; and
 - i. Selby BAP (Ref 8-50) for biodiversity action plan habitats and species.
- 8.4.37 Protected and notable habitats and species comprise those listed under Schedules 1, 5 and 8 of the WCA 1981 (as amended) (Ref 8-1); Schedules 2, 4 and 5 of the Habitat Regulations (Ref 8-9); and species and habitats of principal importance for nature conservation in England listed pursuant to Section 41 of the NERC Act 2006 (Ref 8-11). Other habitats and species are also considered and have been assessed, e.g., those included in national, regional or local Red Data Books and Lists but not protected by legislation.
- 8.4.38 Records of INNS, as listed under Schedule 9 of the WCA 1981 (as amended) (Ref 8-1) and the Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref 8-14), have been considered when assessing the likely significant ecological effects of the Scheme. The presence of such species is generally detrimental for ecology and there is legislation in place to control the spread of such species. Hence, it is important to consider the potential for the spread of any such invasive species and the likely significant effects resulting from this, and any mitigation that may be required to prevent it. The removal of such species may be desirable and beneficial for ecology. Likewise, measures should be taken to ensure that such invasive species are not inadvertently brought onto the Site. Therefore, while the species concerned are not relevant, ecological features for the purposes of EclA, there is still a need to consider them in terms of their potential relevance to delivery of legislative compliance (see section 8.2 of this chapter and **Appendix 8-1, ES Volume 2 [EN010143/APP/6.2]**), for their potential to contribute to the amplification of any adverse effects arising from the Scheme, or their potential to conflict with biodiversity mitigation and enhancement proposals.

Sources of Information – Field Surveys

- 8.4.39 The requirement for ecological field surveys was informed by the desk study and extended Phase 1 habitat survey (as presented in **Appendix 8-3, ES Volume 2 [EN010143/APP/6.2]**) in addition to analysis of the evolving Scheme design.

- 8.4.40 The Phase 1 habitat survey followed the standard JNCC method 'Handbook for Phase 1 habitat survey: A technique for environmental audit' (Ref 8-51). In summary, this comprised walking over the habitat within and up to 50m of the Order limits (where safely accessible) and recording the habitat types and boundary features present. The survey was 'extended' to include an appraisal of the potential suitability of the habitats present to support protected and notable species of plants or animals. Field signs, habitat features with potential to support protected species and any sightings or auditory evidence were recorded when encountered.
- 8.4.41 An aquatic scoping survey was completed to assess the quality of targeted aquatic habitats (watercourses and ditches). This involved undertaking a habitat appraisal where potential impacts were considered likely and to assess the potential for water bodies to support protected or notable species and inform further survey work. Where deemed suitable, macrophyte surveys over 100m and also aquatic macroinvertebrate surveys were conducted on selected waterbodies (included within **Appendix 8-2, ES Volume 2 [EN010143/APP/6.2]**).
- 8.4.42 Field surveys were then undertaken to characterise the ecological baseline within the relevant Survey Areas, as presented in **Table 8-3**. Further details regarding the definition of these Survey Areas and any limitations are presented in the associated survey reports within **Appendices 8-2 to 8-9, ES Volume 2 [EN010143/APP/6.2]**.
- 8.4.43 On receipt of consent for the Scheme, the scheme will apply for a GCN DLL. The Scheme currently holds a provisional IACPC from Natural England, which will be submitted as part of the DCO application as **Appendix 8-10: Great Crested Newt District Level Licensing Impact Assessment and Conservation Payment Certificate, ES Volume 2 [EN010143/APP/6.2]**. The Applicant is in the process of obtaining the full IACPC and will update the above appendix when it is in place. Proceeding with the DLL route negates the requirement to undertake full GCN presence likely absence and population size surveys on all relevant waterbodies within a suitable Zol of the Scheme. Natural England undertake an impact assessment, the outcome of which is documented in the IACPC. The IACPC provides detail including information on the Scheme's impact on GCN and the appropriate compensation required. As such, significant effects on GCN populations as a result of the Scheme will be avoided. Therefore, GCN are not considered further in this chapter.
- 8.4.44 Detailed field surveys for terrestrial invertebrates were not undertaken following the desk study, extended Phase 1 habitat survey and through analysis of the Scheme's evolving design. The Site contains a variety of habitats, but the dominant habitat type is arable, which is unlikely to support notable invertebrate assemblages. The majority of habitat that may support notable terrestrial invertebrates (e.g., tansy beetle – although not currently known to be present along this section of the River Ouse) or invertebrate communities (e.g., riverbanks, wetland, woodland, scrub and arable margins) will be largely retained and/or avoided during construction of the Scheme. Observations of notable invertebrate species have been recorded through the desk study and during other ecological surveys of the Site were noted. Consideration for any embedded mitigation required for terrestrial invertebrates is included in this chapter. It is anticipated that the proposed

landscape design for the Scheme (as presented in the **Framework LEMP [EN010143/APP/7.14]**) will be largely beneficial for terrestrial invertebrates.

- 8.4.45 Detailed field surveys for reptiles were not undertaken following the desk study, extended Phase 1 habitat survey and through analysis of the evolving design. Although it is acknowledged that the four more common and widespread reptile species (e.g., grass snake (*Natrix helvetica*)), may be present within the Site, where permanent land take is required, this is dominated by agricultural fields which are of low suitability for reptiles. The most suitable reptile habitat recorded within the Solar PV Site includes areas of semi-improved grassland (e.g., along field margins, hedgerow bases, ditches and woodland areas). The majority of these habitats will be retained and protected, or will be subject to only temporary disturbance. There are larger areas of semi-improved grassland (e.g., in Solar PV Areas 1e, 1f and 3c) that would be temporarily disturbed during construction of the Scheme. New areas of grassland will be created under and around the solar PV panels and margins will be retained around field edges (at least 10 m margins between boundary hedgerows and the parameter fence, extended to at least 15 m where hedgerow trees are present). In addition to this, larger areas of grassland will be created where solar PV panels are not required, which will offer more beneficial habitat for reptiles. Observations of reptile species have been recorded through the desk study and consideration for any embedded mitigation required for reptiles is included in this chapter. It is anticipated that the proposed landscape design for the Scheme (as presented in the **Framework LEMP [EN010143/APP/7.14]**) will be overall beneficial for reptiles.
- 8.4.46 Separate species-specific surveys for hedgehog (*Erinaceus europaeus*), brown hare (*Lepus europaeus*), polecat (*Mustela putorius*) and harvest mouse (*Micromys minutus*) were not undertaken as part of the assessment, as observations of these species have been obtained through the desk study and recorded during other ecological field surveys of the Site. Hedgehog and brown hare are assumed to be present within the Site, with incidental sightings of brown hare noted during the ecology field surveys. Consideration for any embedded mitigation required for hedgehog, brown hare, polecat and harvest mouse is included in this chapter. It is anticipated that the proposed landscape design for the Scheme (as presented in the **Framework LEMP [EN010143/APP/7.14]**) will be largely beneficial for these species.
- 8.4.47 Surveys have not been carried out in specific relation to common amphibian species (e.g., common frog (*Rana temporaria*), common toad (*Bufo bufo*), smooth newt (*Lissotriton vulgaris*) and palmate newt (*Lissotriton helveticus*)). Ponds and ditches located within and close to the Site may support common amphibian species and observations of these species have been obtained through the desk study. The Site also offers suitable terrestrial habitats for these species in the form of hedgerows, scrub, semi-improved grassland and woodland. The mitigation proposed for reptiles and other species will also reduce potential effects on common amphibian species, along with the retention of and buffers applied to the ponds present on-site. It is anticipated that the proposed landscape design for the Scheme (as presented in the **Framework LEMP [EN010143/APP/7.14]**) will be largely beneficial for these species.

8.4.48 **Table 8-3** presents details of the coverage, methods and survey periods of field surveys undertaken within the relevant Survey Areas.

Table 8-3. Ecological surveys undertaken to characterise baseline conditions

Survey	Survey method	Survey period	Survey Area	Justification for the Survey Area
<p>Extended Phase 1 habitat survey and habitat condition assessment to inform BNG assessment. Invasive non-native plant species were also recorded where observed.</p> <p>Presented in Appendix 8-3, ES Volume 2 [EN010143/APP/6.2].</p>	<p>Extended Phase 1 habitat survey was undertaken in accordance with the JNCC method (Ref 8-51). The survey was supplemented by UK Habitat Classification and condition assessments in accordance with Defra's Biodiversity Metric 4.0 Technical Supplement (Ref 8-36) (the most up-to-date version of the metric at the time the surveys commenced was 3.1 but the data has been converted), as described in paragraph 8.4.10.</p>	<p>Between April and September 2022 and April and September 2023.</p>	<p>The Site and to a maximum of 50m from the Order limits, where viewable or access is permitted. Habitat condition assessments were undertaken within the Site only.</p>	<p>The Site, plus a maximum 50m buffer is standard and an appropriate survey area, acknowledging that habitats that are likely to be impacted by the Scheme are within the Site.</p>
<p>Targeted grassland survey.</p> <p>Presented in Appendix 8-3, ES Volume 2 [EN010143/APP/6.2].</p>	<p>Selected grassland areas (including set-aside and Tottering Lane, Gribthorpe LWS and Wressle Verge LWS) where likely to be impacted by the Scheme, were surveyed in more detail (i.e., species lists with abundance ratings) for notable species and species composition to help inform mitigation, habitat compensation and enhancement proposals.</p>	<p>June 2023.</p>	<p>The areas of grassland surveyed within the Site were identified from the initial Phase 1 habitat survey and desk study information.</p>	<p>Habitat within the Site is an appropriate Survey Area, acknowledging that habitats that are likely to be impacted by the Scheme are mainly within the Site.</p>
<p>Hedgerow survey.</p> <p>Presented in Appendix 8-4, ES</p>	<p>Selected hedgerows within the Site, where likely to be impacted by the Scheme, were surveyed</p>	<p>August to September</p>	<p>The Site plus a 50m buffer from the Order limits.</p>	<p>The Site and 50m buffer is an appropriate Survey Area, acknowledging that the hedgerows</p>

Survey	Survey method	Survey period	Survey Area	Justification for the Survey Area
Volume 2 [EN010143/APP/6.2].	and assessed for their 'importance' against the Wildlife and Landscape Criteria, detailed in the Hedgerows Regulations (Ref 8-13).	(including 1 October) 2023.		that are likely to be impacted by the Scheme are within the Site, but surveys of some hedgerows potentially affected may go beyond the Order limits. No access was possible beyond 50m unless along public roadside.
Aquatic scoping survey. Presented in Appendix 8-2, ES Volume 2 [EN010143/APP/6.2].	Walking accessible and safe stretches of targeted waterbody banks, noting physical habitat features (such as riparian cover, channel substrate, habitat type, modifications, and in-stream vegetation) to assess the potential for waterbodies to support protected, notable or invasive species and inform further survey work.	June 2023.	Within the Site.	Targeted waterbodies within the Site that are potentially subject to open cut crossings or other impacts, such as culverting.
Aquatic macrophyte and macroinvertebrate surveys, including the presence of any INNS. Presented in Appendix 8-2, ES Volume 2 [EN010143/APP/6.2].	During the habitat appraisals where the habitat was deemed suitable, surveys for macrophytes and macroinvertebrates were undertaken using Environment Agency standardised methodologies (Ref 8-83 and Ref 8-84).	June 2023.	Within the Site.	Targeted waterbodies within the Site that are potentially subject to open cut crossings or other impacts, such as culverting.
Breeding birds. Presented in Appendix 8-5, ES	Surveys for breeding birds were based on a standard territory mapping method for surveying	Surveys within the Solar PV Site were undertaken	Within the Site plus to a maximum of 50m buffer where	Standardised Survey Areas for assessing the impacts of development on bird populations do

Survey	Survey method	Survey period	Survey Area	Justification for the Survey Area
<p>Volume 2 [EN010143/APP/6.2].</p>	<p>breeding birds as detailed in ‘Bird Monitoring Methods’ (Ref 8-52) and ‘Bird Census Techniques’ (Ref 8-53).</p>	<p>between April and July 2022. Additional surveys were undertaken between late March and June 2023 within the Grid Connection Corridor and areas of the Solar PV Site that were not covered in 2022 (as detailed in Appendix 8-5, ES Volume 2 [EN010143/APP/6.2]).</p>	<p>visible from the Site to record the general breeding bird assemblage. The Survey Area was increased to 200m from the Site to record specially protected species (i.e., WCA (Ref 8-1) Schedule 1 birds); however, this was viewed from inside the Site.</p>	<p>not exist; however, the Survey Area will provide information on the breeding birds within the area immediately surrounding the Order limits and includes areas contiguous with the Site, where birds may potentially be adversely affected. Depending on the sensitivity of the species, birds occurring outside of the Survey Area may also be adversely affected (such as those listed on Schedule 1 of the WCA (Ref 8-1) and therefore where any such species are recorded beyond the 50m radius Survey Area (up to 200m from the Order limits), these were also recorded. However, the 50m radius Survey Area is sufficient to determine the likely impacts of the Scheme on breeding bird species occurring in the Survey Area.</p>
<p>Non-breeding (wintering and passage) birds. Presented in Appendix 8-6, ES Volume 2 [EN010143/APP/6.2].</p>	<p>Surveys of non-breeding birds utilised transect-based walkovers across the Site, following methods as detailed in ‘Bird Monitoring Methods’ (Ref 8-52) and ‘Bird Census Techniques’ (Ref 8-53).</p>	<p>September 2022 to March 2023.</p>	<p>The Site plus to a maximum of 50m from the Order limits where visible.</p>	<p>Standardised Survey Areas for assessing the impacts of development on non-breeding bird populations do not exist; however, the Survey Area used provides information on the wintering (non-breeding) birds within the area immediately surrounding the Site and includes areas contiguous with the</p>

Survey	Survey method	Survey period	Survey Area	Justification for the Survey Area
				Order limits, where birds may potentially be adversely affected and is sufficient to determine the likely impacts of the Scheme on wintering bird species occurring in the area, including qualifying species associated with the Lower Derwent Valley SPA and Humber Estuary SPA.
Bats – Preliminary Bat Roost Appraisal. Presented in Appendix 8-7, ES Volume 2 [EN010143/APP/6.2] .	Preliminary bat roost appraisal surveys were undertaken on targeted buildings and trees, following guidance as described in the Bat Conservation Trust (BCT) guidelines (Ref 8-33).	Preliminary bat roost appraisal survey undertaken in August 2022 for the buildings at the proposed Operations and Maintenance base at Johnson’s Farm (Solar PV Area 1e as identified on Figure 8-8-17 in Appendix 8-7, ES, Volume 2 [EN010143/APP/6.2]). Preliminary bat roost appraisal survey undertaken	The Site, plus targeted trees along the wider road network where the potential for impacts were identified, as shown on Figure 8-7-18 in Appendix 8-7, ES Volume 2 [EN010143/APP/6.2] .	The surveys targeted trees which are likely to be impacted by the Scheme through access roads and visibility splays. Information was collated on the location of trees and buildings identified as potentially affected and were assessed for their suitability for roosting bats. This has informed the Scheme’s design, along with offset buffers, to avoid direct and indirect effects upon potential roost sites (and avoidance of trees and woodland with higher ecological value irrespective of bats which should be avoided), with the exception of one tree at this stage (T872/T619) ⁵ on Pear Tree Ave, which will be addressed during detailed design to adjust the taper of

⁵ T872 refers to the tree number allocated within **Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2]** and T619 refers to the tree number allocated in **Appendix 8-7: Bat Survey Report, ES Volume 2 [EN010143/APP/6.2]**.

Survey	Survey method	Survey period	Survey Area	Justification for the Survey Area
		on targeted trees in July and August 2023.		the access bellmouth in order to retain the tree.
Bats – Roost Surveys	Areas of potential tree loss have been assessed for their suitability for use by bats, and any trees identified as having ‘moderate’ or ‘high’ suitability have been avoided through design adjustments of the Scheme with the exception of one at this stage (T872/T619) ⁵ on Pear Tree Ave. Therefore, no bat roost emergence surveys have been undertaken.	N/A.	N/A.	<p>Tree 872/619⁵ was initially due to be retained as per other trees of moderate or high potential. This is a horse chestnut (<i>Aesculus hippocastanum</i>) of moderate suitability. It is currently showing as potentially lost due to close proximity to the edge of a bellmouth, however this will be addressed during detailed design to adjust the taper of the access bellmouth in order to retain the tree.</p> <p>Pre-construction surveys will be undertaken to support the baseline survey findings where building and tree removal/reduction cannot be avoided. The purpose of the pre-construction surveys is to ensure mitigation during the construction phase is based on the latest protected species information, and will need to take account of any changes to guidance since the original surveys were conducted. Should additional features be identified for removal/reduction which are suitable for roosting bats and are</p>

Survey	Survey method	Survey period	Survey Area	Justification for the Survey Area
<p>Bats – Foraging/ Commuting. Presented in Appendix 8-7, ES Volume 2 [EN010143/APP/6.2].</p>	<p>Five targeted walked transect routes to cover representative areas of affected habitats within the Solar PV Site. The survey methodology is based upon BCT guidance (Ref 8-33), tailored as necessary to suit the Solar PV Site. The surveys were supplemented by the deployment of static bat detectors, one per transect, plus a sixth deployed in another Solar PV Area (Area 2a). Two further static detectors were deployed inside the Grid Connection Corridor, close to the proposed HDD locations at the River Derwent and River Ouse.</p>	<p>Solar PV Site: summer (August) 2022, autumn (September/ October) 2022 and spring (May) 2023. Grid Connection Corridor (static detectors): spring (May), summer (July), autumn (September) 2023.</p>	<p>Targeted areas within the Solar PV Site and Grid Connection Corridor.</p>	<p>unavoidable, further surveys will be undertaken as necessary, which may identify the requirement for additional mitigation and/or a Natural England mitigation licence, where impacts to roosting bats cannot be avoided.</p> <p>The Solar PV Site is predominantly arable, offering low suitability for foraging/commuting bats, with the majority of higher value boundary habitats (i.e., hedgerows, watercourses, woodland) being avoided and retained through design. Detailed bat activity transect surveys have not been undertaken along the Grid Connection and Interconnecting Cable Corridors due to the impacts and disturbance to habitats being short-term and temporary in nature. The majority of construction works will be undertaken during daylight hours and no permanent changes in lighting are required. Further details on proposed lighting are contained within Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]. The surveys were undertaken in line with BCT guidance (Ref 8-33) that state that surveys should be proportionate</p>

Survey	Survey method	Survey period	Survey Area	Justification for the Survey Area
				to the likely impacts of a proposed development.
Badger. Presented in Appendix 8-8, ES Volume 2 [EN010143/APP/6.2].	A walkover survey searching for signs of badger activity as described in the Mammal Society's 'Surveying Badgers' publication (Ref 8-54). The survey was undertaken in combination within the Phase 1 habitat survey.	Between April to September 2022 and April to August 2023.	The Site and up to a maximum of 50m buffer from the Order limits.	50m is an appropriate Survey Area as it covers the 30m distance at which direct effects could occur, and acknowledging that setts present beyond this distance are unlikely to be impacted by the Scheme, e.g., through construction disturbance.
Otter and water vole. Presented in Appendix 8-9, ES Volume 2 [EN010143/APP/6.2].	The survey involved a habitat suitability assessment and searching for field signs along targeted watercourses where impacts are likely, in accordance with standard industry guidance (Ref 8-55, Ref 8-56, Ref 8-57, Ref 8-58 and Ref 8-59).	For water vole, one or two surveys were undertaken as required on each targeted watercourse and ditch – one in the first half of the breeding season (April to June) and one in the second half of the breeding season (July to September). Otter surveys were undertaken in combination with the water vole	Up to 200m up and downstream of each crossing point (where open cut techniques required) and up to 5-10m from each bank as appropriate. The otter survey area was extended to cover a section of the River Derwent which lies parallel to the Grid Connection Corridor and where HDD works will be undertaken at the River Derwent and	The Survey Area is sufficient to determine presence or absence of otter and water vole and to assess potential impacts on both species.

Survey	Survey method	Survey period	Survey Area	Justification for the Survey Area
		survey and additionally in March 2023.	River Ouse (as detailed in Appendix 8-9, ES Volume 2 [EN010143/APP/6.2]).	
INNS. Presented in Appendix 8-3, ES Volume 2 [EN010143/APP/6.2] .	INNS species observations were recorded when noted during the Phase 1 habitat survey, aquatic ecology surveys, and other ecology field surveys. They will also be recorded during pre-construction surveys and construction work.	Between April and September 2022 and April and September (including 1 October) 2023 as part of the Phase 1 and hedgerow surveys, with other survey observations made during other surveys.	Within the Site.	All areas of the Site will need INNS monitoring to avoid and reduce the spread of any INNS species before, during and after construction.

Impact Assessment Method

- 8.4.49 The impact assessment detailed in this chapter has been undertaken in accordance with CIEEM's guidelines (Ref 8-32) as summarised below. The aims of the ecology assessment are to:
- a. Identify relevant ecological features (e.g., designated sites, habitats, species or ecosystems) which may be impacted;
 - b. Provide a scientifically rigorous and transparent assessment of the likely ecological impacts and resultant likely significant effects of the Scheme. Impacts and effects may be positive (beneficial) or negative (adverse);
 - c. Facilitate scientifically rigorous and transparent determination of the consequences of the Scheme in terms of national, regional and local policies relevant to nature conservation and biodiversity, where the level of detail provided is proportionate to the scale of the development and the complexity of its potential impacts; and
 - d. Set out what steps will be taken to adhere to legal requirements relating to the relevant ecological features concerned.
- 8.4.50 The principal steps involved in the CIEEM approach can be summarised as:
- a. Ecological features that are both present and might be affected by the Scheme are identified (both those likely to be present at the time works begin and those predicted to be present at a set time in the future) through a combination of targeted desk-based study and field survey work to determine the relevant baseline conditions;
 - b. The importance of the identified ecological features is evaluated, placing their relative biodiversity and nature conservation value into geographic context, which is then used to define the relevant ecological features that need to be considered further;
 - c. The changes or perturbations predicted to result as a consequence of the Scheme (i.e., the potential impacts) and which could potentially affect relevant ecological features are identified and their nature described. Established best-practice, legislative requirements or other incorporated design measures to minimise or avoid impacts are also described and are taken into account;
 - d. The LSEs (positive or negative) on relevant ecological features are then assessed, and where possible quantified;
 - e. Measures to avoid or reduce any LSEs, if practicable, are then developed in conjunction with other elements of the design (including mitigation for other environmental disciplines) and if necessary, measures to compensate for LSEs on features of nature conservation importance are also included;
 - f. The residual effects of the Scheme are reported; and
 - g. Scope for ecological enhancement is considered.
- 8.4.51 The CIEEM guidelines (Ref 8-32) make clear that there is no need to “...carry out detailed assessment of ecological features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable”. Therefore, it is not necessary for the assessment to

address all habitats and species with potential to occur in the relevant Study Area and instead the focus is on those that are “relevant”, i.e., ecological features that are considered to be important and potentially affected by the Scheme. As stated in section 8.3 of this chapter, Natural England has been contacted through the DAS, to discuss this standard approach in order to address a Planning Inspectorate comment within the **Scoping Opinion (Appendix 1-2, ES Volume 2 [EN010143/APP/6.2])**. This does not mean that efforts will not be made to safeguard wider biodiversity.

- 8.4.52 To support a focussed assessment, there is a need to determine the scale at which the relevant ecological features identified through the desk studies and field surveys undertaken for the Scheme are of value. The value of each relevant ecological feature has been defined with reference to the geographical level at which it matters.
- 8.4.53 The frames of reference used for this assessment, based on section 4.7 of the CIEEM guidelines (Ref 8-32), are:
- a. International (Very High) importance/value (i.e., Ramsar Sites, SACs and SPAs) (normally within the geographic area of Europe);
 - b. UK or national (High) importance/value (i.e., Great Britain, but considering the potential for certain ecological features to be more notable (of higher value) in England, with context relative to Great Britain as a whole);
 - c. Regional (High) importance/value (i.e., Yorkshire and the Humber);
 - d. County (Medium) importance/value (i.e., East Riding of Yorkshire, North Yorkshire);
 - e. District (Medium) importance/value (i.e., town or parish area, e.g., Selby, Howden); and
 - f. Local (Low) importance/value (i.e., ecological features that do not meet criteria for valuation at a District or higher level, but that have sufficient value to merit retention or mitigation).
 - g. Site (Very Low) importance/value (i.e., common and widespread ecological features of such low priority that they do not require retention or mitigation at the relevant location to otherwise maintain a favourable nature conservation status).
- 8.4.54 Species populations are valued on the basis of their size, recognised status (such as recognised through published lists of species of conservation concern and designation of Biodiversity Action Plan (BAP) status) and legal protection. For example, bird populations exceeding 1% of published information on biogeographic populations are considered to be of international importance; those exceeding 1% of published data for national populations are considered to be of national importance; and so on.
- 8.4.55 In assigning values to species populations, it is important to consider the status of the species in terms of any legal protection. However, it is also important to consider other factors such as its distribution, rarity, population trends and the size of the population which would be affected. For example, whilst otter is protected as a European Protected Species under the relevant legislation and therefore conservation of the species is of significance at the international level, this does not mean that every population of otter is

internationally important. It is important to consider the particular population in its context. Therefore, in assigning values to species the geographic scale at which they are important has been considered. The assessments of value rely on the professional opinion and judgment of suitably experienced ecologists.

- 8.4.56 Plant communities are assessed both in terms of their intrinsic value and as habitat for protected species whose habitat is also specifically protected and for species of nature conservation concern which are particularly associated with them.
- 8.4.57 Due regard will also be paid to the legal protection afforded to species during the development of mitigation and compensation measures to be implemented for the Scheme. For European Protected Species, there is a requirement that the Scheme should not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.
- 8.4.58 Assessing the value of features requires consideration of both existing and future predicted baseline conditions. Therefore, the description and valuation of ecological features takes account of any likely changes, such as trends in the population size or distribution of species, likely changes to the extent of habitats and the effects of other proposed developments or land use changes; as explained in the '*Future Baseline*' section within this chapter.
- 8.4.59 All ecological features of Local value and above, where there is the potential for the Scheme to impact them directly or indirectly, have been taken forward to impact assessment and are the 'relevant ecological features' for the purposes of this EclA.
- 8.4.60 In line with Section 1.21 of the CIEEM guidelines (Ref 8-32), the terminology used within the EclA draws a clear distinction between the terms 'impact' and 'effect'. For the purposes of this EclA these terms are defined as follows:
- a. Impact – actions resulting in changes to an ecological feature. For example, construction activities of a development removing a hedgerow; and
 - b. Effect – outcome resulting from impact acting upon the conservation status or structure and function of an ecological feature. For example, the effects on a population of bats as a result of the loss of a bat roost.
- 8.4.61 When describing potential impacts (and where relevant the resultant effects) consideration is given to the following characteristics likely to influence this:
- a. Positive or negative – i.e., is the change likely to be in accordance with nature conservation objectives and policy and is that change:
 - i. Positive – a change that improves the quality of the environment, or halts or slows an existing decline in quality, e.g., increasing the extent of a habitat of conservation value; or
 - ii. Negative a change that reduces the quality of the environment, e.g., destruction of habitat.
 - b. Spatial extent – the spatial or geographical area or distance over which the impact or effect may occur under a suitably representative range of conditions;

- c. Magnitude – the ‘size’, ‘amount’ or ‘intensity’ and ‘volume’ of an impact – this is described on a quantitative basis where possible;
- d. Duration – the time over which an impact is expected to last prior to recovery or replacement of the resource or feature. Consideration has been given to how this duration relates to relevant ecological characteristics such as a species’ lifecycle. However, it is not always appropriate to report the duration of impacts in these terms. The duration of an effect may be longer than the duration of an activity or impact;
- e. Timing and frequency – i.e., consideration of the point at which the impact occurs in relation to critical life-stages or seasons; and
- f. Reversibility – i.e., is the impact temporary or permanent. A temporary impact is one from which recovery is possible or for which effective mitigation is both possible and enforceable. A permanent effect is one from which recovery is either not possible or cannot be achieved within a reasonable timescale (in the context of the feature being assessed).

8.4.62 Combined, these characteristics form the magnitude criteria for effects of the Scheme on important ecological features as summarised in **Table 8-4**.

Table 8-4. Magnitude criteria for effects

Magnitude	Magnitude criteria
High	Changes to an ecological feature that almost always have an adverse effect on its integrity or conservation status. Such changes are usually long-term and often permanent and/or irreversible.
Medium	Adverse changes on an ecological feature that, in some circumstances, may affect its integrity or conservation status. Although such changes may be long-term, they are potentially reversible.
Low	Adverse changes on an ecological feature that do not usually change its integrity or conservation status. Such changes are often short-term and/or reversible.
Very low	There is no noticeable change on the ecological feature.

8.4.63 Cumulative effects result from the combined impacts of multiple developments on a receptor, as well as ‘in-combination’ multiple in-scheme impacts. For example, combined noise and lighting impacts on the same sensitive receptor.

Significance Criteria

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

- a. Not significant – no effect on structure and function, or conservation status; and
- b. Significant – structure and function, or conservation status is affected.

- 8.4.65 Sections 5.24 to 5.28 of the CIEEM guidelines (Ref 8-32) state that effects should be determined as being significant when “...*an effect either supports or undermines biodiversity conservation objectives for ‘important ecological features’ or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national / local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local. A significant effect is an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project. In broad terms, significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution)*”.
- 8.4.66 Using this information and judgment, it is determined whether the effects will be significant or not on the structure and integrity (of site or ecosystems) or conservation status (of habitats and or species) of each ecological feature and the effect significance is determined at the appropriate geographical scale.
- 8.4.67 There are a number of approaches for determining the significance of effects on ecological features. Whilst the CIEEM guidelines (Ref 8-32) recommends the avoidance of the use of the matrix approach for categorisation (i.e., major, moderate and minor), in order to provide consistency of terminology within the ES, as presented in **Chapter 5: Environment Impact Assessment Methodology, ES Volume 1 [EN010143/APP/6.1]**, the findings of the CIEEM-based assessment have been translated into the classification of effects scale, as outlined in **Table 8-5**, but still remain consistent with the CIEEM guidelines.

Table 8-5. Relating CIEEM assessment terms to those used in other EIA chapters

Effect classification terminology used in the ES	Equivalent CIEEM assessment terminology
Major beneficial	Beneficial effect on structure/function or conservation status at Regional, National or International level.
Moderate beneficial	Beneficial effect on structure/function or conservation status at County and District level.
Minor beneficial	Beneficial effect on structure/function or conservation status at Local level.
Neutral/Negligible	No effect on structure/function or conservation status.
Minor adverse	Adverse effect on structure/function or conservation status at Local level.
Moderate adverse	Adverse effect on structure/function or conservation status at County and District level.
Major adverse	Adverse effect on structure/function or conservation status at Regional, National or International level.

8.4.68 As a rule, major and moderate effects are considered to be ‘significant’, whilst minor and neutral/negligible effects are considered to be ‘not significant’. However, professional judgement will be applied, including taking account of whether the effect is permanent or temporary, its duration and frequency, whether it is reversible, and/or its likelihood of occurrence.

Biodiversity Net Gain

8.4.69 The Environment Act 2021 (Ref 8-60) mandates at least 10% BNG for projects, which comes into effect from January 2024, and will include NSIPs in 2025.

8.4.70 BNG is a quantitative process applied to development and can be defined as “...an approach to development, land and marine management that leaves biodiversity in a measurably better state than before the development took place” (Ref 8-61 Ref **8-61**).

8.4.71 The principle behind BNG is to ensure that any impacts on biodiversity, arising from any development, are taken into consideration and compensated with additional gains.

8.4.72 For a development to achieve BNG, it is important that the principles of the mitigation hierarchy are followed. There are four sequential steps that must be taken throughout the lifecycle of a project:

- a. Avoidance – actions taken to avoid causing impacts to the environment prior to beginning development (e.g., moving part of the development to a different location);
- b. Minimisation – measures taken to reduce the duration, intensity, extent and/ or likelihood of the unavoidable environmental impacts caused by development (e.g., adapting the development design to minimise impacts);
- c. Restoration or rehabilitation – actions taken to repair environmental degradation or damage following unavoidable impacts caused by development; and
- d. Offsets – measures taken to compensate for any adverse environmental impacts caused by development which cannot be avoided, minimised and/ or restored (e.g., including habitat creation to offset losses).

8.4.73 Biodiversity metrics provide a measure of overall biodiversity value based on habitat type, area, condition, strategic significance and distinctiveness. The current approved metric is Defra’s Metric 4.0 (Ref 8-36) and this metric is a tool that allows a value to be measured, in this case biodiversity, which is calculated pre and post-development for three habitat components: habitat; rivers and streams; and hedgerows. The change in biodiversity units is calculated for each component and indicates either a net loss, a net gain or no change in biodiversity.

8.4.74 The **BNG Assessment Report [EN010143/APP/7.11]** accompanies the DCO Application. Prescriptions for the establishment, long term management and monitoring of habitat creation measures are included within the **Framework LEMP [EN010143/APP/7.14]**. The BNG score reported in the BNG Assessment Report is +80.42% for area-based units, +3.89% for hedgerow units and >10% for watercourse units. Opportunities to

enhance biodiversity will be explored further at detailed design stage and the assessment will be updated. The Scheme is committed to a 10% BNG in hedgerows and 10% BNG for watercourses (rivers and streams, and ditches) at detailed design stage.

8.5 Baseline Conditions

8.5.1 This section describes the baseline ecological characteristics for the Site and surrounding areas.

Data Sources

8.5.2 In preparation of this chapter, the sources of published information that have been used to establish the baseline conditions are set out in section 8.4 of this chapter.

Existing Baseline

Sites statutorily designated for biodiversity importance

8.5.3 The relevant Study Areas for the different ecological features considered in this chapter are presented in section 8.4 of this chapter. There are ten international statutory sites for nature conservation (i.e., SACs, SPAs and Ramsar sites) within the relevant 10km Study Area. No SACs designated for bats were identified within 30km of the Site and no proposed Ramsar sites, possible SACs, or potential SPAs are present within the 10km Study Area.

8.5.4 Ten other statutory designated sites for nature conservation (national designations: SSSIs, NNRs, LNRs) are present within the relevant Study Area.

8.5.5 The locations of these statutory sites, relevant to the Site, are shown in **Figure 8-1, ES Volume 3 [EN010143/APP/6.3]**, and designation details of all statutorily designated sites are summarised in **Table 8-6** in ascending order, with those closest to the Order limits listed first.

Table 8-6. Statutory sites designated for nature conservation within 10km (international) and 5km (national) of the Site

Site name	Description	Approximate distance (km) and direction from closest point of the Order limits	Importance/ Value
River Derwent SAC	<p>Annex I of the Habitats Directive (Ref 8-3) habitats present as a qualifying feature, but not a primary reason for selection of this site:</p> <ul style="list-style-type: none"> • Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachio</i> vegetation. <p>Annex II of the Habitats Directive species that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> • River lamprey. The Derwent is one example of river lamprey populations which inhabit the many rivers flowing into the Humber estuary in eastern England. Only the lower reaches of the Derwent are designated, reflecting the spawning distribution of the species in the Derwent system. <p>Annex II of the Habitats Directive species present as a qualifying feature, but not a primary reason for site selection:</p> <ul style="list-style-type: none"> • Sea lamprey; • Bullhead (<i>Cottus gobio</i>); and • Otter. 	Grid Connection Corridor crosses this SAC.	International (Very high)
River Derwent SSSI	The Yorkshire Derwent is considered to represent one of the best British examples of the classic river profile. This lowland section, stretching from Ryemouth to the confluence with the Ouse,	Grid Connection Corridor crosses this SSSI.	National (High)

Site name	Description	Approximate distance (km) and direction from closest point of the Order limits	Importance/ Value
	<p>supports diverse communities of aquatic flora and fauna (e.g., a rich assemblage of invertebrates including dragonfly, and diversity of fish species), many elements of which are nationally significant. The riverine habitat also supports an excellent breeding bird community including common sandpiper (<i>Actitis hypoleucos</i>), dipper (<i>Cinclus cinclus</i>), kingfisher (<i>Alcedo atthis</i>), and yellow (<i>Motacilla flava</i>) and grey wagtails (<i>Motacilla cinerea</i>). During the winter the Lower Derwent is important in maintaining the internationally important population of Bewick's swans association with the adjacent Derwent Ings. The Derwent is also one of the few rivers in lowland Britain which still supports a breeding population of otters.</p>		
Barn Hill Meadows SSSI	<p>The site comprises of seven fields lying in the flood plain of the Old Derwent and is important for its herb-rich, unimproved, neutral grassland. The fields have been traditionally managed for hay. Boundary hedgerows and ditches form an integral part of the site.</p>	1.01km south of the Order limits.	National (High)
Eastrington Ponds LNR	<p>The site is a former brickworks and railway line with borrow pits from the construction of the railway. The large pond supports birds such as ducks, geese and great crested grebe (<i>Podiceps cristatus</i>), as well as invertebrates such as water</p>	1.17km south-east of the Order limits.	National (High)

Site name	Description	Approximate distance (km) and direction from closest point of the Order limits	Importance/ Value
	<p>beetles, pond skaters, dragonflies and damselflies. Daubenton's bats (<i>Myotis daubentonii</i>) fly over the water to hunt and water vole is present. The meadow areas support small mammals, including harvest mouse. Wildflowers include orchid species.</p>		
Howden Marsh LNR	<p>The site is an old fenland marsh much of which has never been drained. It is particularly rich in water beetles and supports water vole (<i>Arvicola amphibius</i>).</p>	1.70km south-east of the Order limits.	National (High)
Lower Derwent Valley SAC	<p>Annex I Habitats Directive (Ref 8-3) habitats that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> • Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>). <p>Annex I Habitats Directive habitats present as a qualifying feature, but not a primary reason for site selection:</p> <ul style="list-style-type: none"> • Alluvial forests with alder (<i>Alnus glutinosa</i>) and ash (<i>Fraxinus excelsior</i>) (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>). *priority feature <p>Annex II species present as a qualifying feature, but not a primary reason for site selection:</p> <ul style="list-style-type: none"> • Otter. 	1.30km north-west of the Order limits.	International (Very high)
Lower Derwent Valley Ramsar	<p>The site is designated for:</p> <ul style="list-style-type: none"> • Ramsar Criterion 1: The site represents one of the most important examples of traditionally 	1.30km north-west of the Order limits.	International (Very high)

Site name	Description	Approximate distance (km) and direction from closest point of the Order limits	Importance/ Value
	<p>managed species-rich alluvial flood meadow habitat remaining in the UK. The river and flood meadows play a substantial role in the hydrological and ecological functioning of the Humber Basin</p> <ul style="list-style-type: none"> • Ramsar Criterion 2: The site has a rich assemblage of wetland invertebrates including 16 species of dragonfly and damselfly, 15 British Red Data Book wetland invertebrates as well as a leafhopper (<i>Cicadula ornata</i>) for which Lower Derwent Valley is the only known site in Great Britain. • Ramsar Criterion 4: The site qualifies as a staging post for passage birds in spring. Of particular note are the nationally important numbers of ruff (<i>Philomachus pugnax</i>) and whimbrel (<i>Numenius phaeopus</i>). • Ramsar Criterion 5: Assemblages of international importance – Species with peak counts in winter: 31,942 waterfowl (5 year peak mean 1998/99-2002/2003). • Ramsar Criterion 6 – species/populations occurring at levels of international importance – Species with peak counts in winter: Wigeon (<i>Anas penelope</i>– now <i>Mareca penelope</i>) and Teal (<i>Anas crecca</i>). 		

Site name	Description	Approximate distance (km) and direction from closest point of the Order limits	Importance/ Value
Lower Derwent Valley SPA	<p>Species currently occurring at levels of national importance:</p> <ul style="list-style-type: none"> • Higher Plants (<i>Lathyrus palustris</i>, <i>Sium latifolium</i>, <i>Oenanthe silaifolia</i>, <i>Persicaria laxiflora</i>, <i>Potamogeton trichoides</i>). <p>Species regularly supported during the breeding season:</p> <ul style="list-style-type: none"> • black-necked grebe (<i>Podiceps nigricollis</i>), bittern (<i>Botaurus stellaris</i>), garganey (<i>Anas querquedula</i>), common quail (<i>Coturnix coturnix</i>), spotted crake (<i>Porzana porzana</i>) and black-headed gull (<i>Larus ridibundus</i>). <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • whooper swan (<i>Cygnus cygnus</i>), gadwall (<i>Anas strepera</i>), mallard (<i>Anas platyrhynchos</i>), northern pintail (<i>Anas acuta</i>), northern shoveler (<i>Anas clypeata</i> – now <i>Spatula clypeata</i>) (<i>Anas clypeata</i>), water rail (<i>Rallus aquaticus</i>), golden plover and ruff (<i>Philomachus pugnax</i>). 	1.30km north-west of the Order limits.	International (Very high)

Site name	Description	Approximate distance (km) and direction from closest point of the Order limits	Importance/ Value
	<p>The site qualifies under Article 4.2 by regularly supporting a breeding population of:</p> <ul style="list-style-type: none"> • Shoveler. <p>The site qualifies under Article 4.2 as an area of international importance to waterfowl by regularly supporting over 20,000 waterfowl in winter. Within this number the site holds internationally important numbers of:</p> <ul style="list-style-type: none"> • Teal; and • Wigeon. <p>The site also supports nationally important numbers of the following migratory species:</p> <ul style="list-style-type: none"> • Shoveler; and • Ruff. 		
Brighton Meadows SSSI	<p>The site supports nationally and internationally important alluvial flood meadow plant community and its outstanding assemblage of breeding birds associated with lowland damp grasslands.</p> <p>Brighton Meadows forms part of a complex of similarly species-rich alluvial flood meadow sites in the Lower Derwent Valley which include the Derwent Ings, Melbourne and Thornton Ings and Newton Mask. Together these four sites represent one of the most important examples of agriculturally unimproved species-rich alluvial flood meadow habitat remaining in the UK.</p>	1.30km north-west of the Order limits.	National (High)

Site name	Description	Approximate distance (km) and direction from closest point of the Order limits	Importance/ Value
	<p>The site is important as a habitat for a range of breeding wetland bird species. Breeding waders include: snipe (<i>Gallinago gallinago</i>), lapwing (<i>Vanellus vanellus</i>), redshank (<i>Tringa tetanus</i>) and curlew (<i>Numenius arquata</i>). Breeding wildfowl include: shoveler, mallard and teal. Other breeding birds include: yellow wagtail and reed, sedge and grasshopper warblers (<i>Acrocephalus scirpaceus</i>, <i>Acrocephalus schoenobaenus</i> and <i>Locustella naevia</i>).</p> <p>National breeding wader populations on wet grasslands are now very small and in further decline. The largest numbers of waders are now found on a relatively few exceptional sites, one of which is the Lower Derwent Valley complex of species-rich alluvial flood meadows and which includes Brighton Meadows.</p>		
Lower Derwent Valley NNR	The site is comprised of a series of flood meadows, pastures and woodlands and supports a rich diversity of plant species and populations of breeding and wintering birds.	1.47km north-west of the Order limits.	National (High)
Derwent Ings SSSI	The site consists of a series of neutral alluvial flood meadows, fen and swamp communities and freshwater habitats lying adjacent to the River Derwent between Sutton upon-Derwent and Menthorpe. The site is important as a habitat for a wide range of breeding wetland bird species and	1.47km north-west of the Order limits.	National (High)

Site name	Description	Approximate distance (km) and direction from closest point of the Order limits	Importance/ Value
	<p>important wintering bird populations. Breeding wildfowl include: shoveler, shelduck (<i>Tadorna tadorna</i>), mallard, teal, pintail, gadwall and garganey. Breeding waders include: snipe, lapwing, redshank and curlew. Other breeding birds include: quail, barn owl, kingfisher, yellow wagtail and reed, sedge and grasshopper warblers. In winter the Ings support internationally important concentrations of waterfowl (>20,000 individuals) together with nationally important numbers (>1% British wintering population) of Bewick's swan, teal wigeon, mallard, pochard, golden plover and ruff. Nationally important numbers of whimbrel occur in late April and early May.</p> <p>The freshwater dyke system of the Ings support a rich diversity of plant species including two nationally scarce species, greater water-parsnip (<i>Sium latifolium</i>) and flat-stalked pondweed (<i>Potamogeton freisii</i>). The site has an outstanding assemblage of invertebrates with species associated with the dykes and the fen and swamp habitats being particularly significant. These include up to 16 species of damselflies and dragonflies, together with a variety of species of other invertebrate groups and including three nationally rare species, a snail killing fly (<i>Sciomyza</i></p>		

Site name	Description	Approximate distance (km) and direction from closest point of the Order limits	Importance/ Value
Eskamhorn Meadows SSSI	<p><i>dryomyzina</i>), a freshwater snail (<i>Lymnaea glabra</i>) and a Ptilid beetle (<i>Acrotrichis subcognata</i>).</p> <p>Eskamhorn Meadows SSSI is a nationally important site for species-rich neutral grassland. The relevant National Vegetation Classification (NVC) types are predominantly MG4 meadow foxtail <i>Alopecurus pratensis</i> – great burnet <i>Sanguisorba officinalis</i> grassland, and a community transitional between this type and the MG5 crested dog's-tail <i>Cynosurus cristatus</i> – common knapweed <i>Centaurea nigra</i> grassland. The site also supports small areas of MG5 and MG13 creeping bent <i>Agrostis stolonifera</i> – marsh foxtail <i>Alopecurus geniculatus</i> grassland. In addition, small numbers of curlews and lapwings breed in the meadows.</p>	2.42km south of the Order limits.	National (High)
Humber Estuary SAC	<p>Annex I (Ref 8-3) habitats that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> • Estuaries; and • Mudflats and sandflats not covered by seawater at low tide. <p>Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:</p> <ul style="list-style-type: none"> • Sandbanks which are slightly covered by sea water all the time; • Coastal lagoons (*priority feature); 	3.42km south of the Order limits.	International (Very high)

Site name	Description	Approximate distance (km) and direction from closest point of the Order limits	Importance/ Value
Humber Estuary SPA	<ul style="list-style-type: none"> • Salicornia and other annuals colonising mud and sand; • Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>); • “Embryonic shifting dune”; • “Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (“white dunes”); • “Fixed coastal dunes with herbaceous vegetation (“grey dunes”) (“Priority feature); and • Dunes with <i>Hippopha rhamnoides</i>. <p>Annex II species present as a qualifying feature, but not a primary reason for site selection:</p> <ul style="list-style-type: none"> • Sea lamprey; • River lamprey; and • Grey seal (<i>Halichoerus grypus</i>). 	3.42km south of the Order limits.	International (Very high)
	<p>The site qualifies under Article 4.1 by regularly supporting the following Annex 1 (Ref 8-3) species in any season:</p> <ul style="list-style-type: none"> • Avocet (<i>Recurvirostra avosetta</i>) (wintering and breeding); • Bittern (wintering and breeding); 		

Site name	Description	Approximate distance (km) and direction from closest point of the Order limits	Importance/ Value
	<ul style="list-style-type: none"> • Hen harrier (<i>Circus cyanea</i>) (wintering); • Golden plover (wintering); • Bar-tailed godwit (<i>Limosa lapponica</i>) (wintering); • Ruff (passage); • Marsh harrier (<i>Circus aeruginosus</i>) (breeding); and • Little tern (<i>Sternula albifrons</i>) (breeding). <p>The site qualifies under article 4.2 of the Birds Directive (Ref 8-2) as it is used regularly by the following regularly occurring migratory species other than those listed in Annex I in any season:</p> <ul style="list-style-type: none"> • Shelduck (wintering); • Knot (<i>Calidris canutus</i>) (wintering and passage); • Dunlin (<i>Calidris alpina</i>) (wintering and passage); • Black-tailed godwit (<i>Limosa limosa</i>) (wintering and passage); and • Redshank (wintering and passage). <p>Assemblage qualification: The site qualifies under article 4.2 of the Birds Directive as it is used regularly by over 20,000 waterbirds (waterbirds as defined by the Ramsar Convention) in any season:</p> <ul style="list-style-type: none"> • Dark-bellied brent goose (<i>Branta bernicla bernicla</i>), shelduck, wigeon, teal, mallard, 		

Site name	Description	Approximate distance (km) and direction from closest point of the Order limits	Importance/ Value
	<p>pochard(<i>Aythya ferina</i>), scaup (<i>Aythya marila</i>), goldeneye (<i>Bucephala clangula</i>), bittern, oystercatcher (<i>Haematopus ostralegus</i>), avocet, ringed plover (<i>Charadrius hiaticula</i>), golden plover, grey plover (<i>P. squatarola</i>), lapwing, knot, sanderling (<i>Calidris alba</i>), dunlin (<i>Calidris alpina</i>), ruff, black-tailed godwit, bar-tailed godwit (<i>Limosa lapponica</i>), whimbrel, curlew, redshank, greenshank (<i>Tringa nebularia</i>) and turnstone (<i>Arenaria interpres</i>).</p>		
Humber Estuary Ramsar	<p>The site is designated for:</p> <ul style="list-style-type: none"> • Ramsar Criterion 1: The site is a representative example of a near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/saline lagoons. • Ramsar Criterion 3: The Humber Estuary Ramsar site supports a breeding colony of grey seals at Donna Nook. Dune slacks at Saltfleetby-Theddlethorpe on the southern extremity of the Ramsar site are the most north-easterly breeding site in Great Britain of the natterjack toad (<i>Bufo calamita</i>). • Ramsar Criterion 5: Assemblages of international importance – non-breeding season: 153,934 waterfowl, non-breeding 	3.42km south of the Order limits.	International (Very high)

Site name	Description	Approximate distance (km) and direction from closest point of the Order limits	Importance/ Value
Humber Estuary SSSI	<p>season (5-year peak mean 1996/97-2000/2001) and (5-year peak mean 1998/99-2002/2003).</p> <ul style="list-style-type: none"> Ramsar Criterion 6 – species/populations occurring at levels of international importance: golden plover (passage and wintering); red knot (passage and wintering); dunlin (passage and wintering); black-tailed godwit (passage and wintering); redshank (passage and wintering); shelduck (wintering); and bar-tailed godwit (wintering). Ramsar Criterion 8: The Humber Estuary acts as an important migration route for both river lamprey and sea lamprey between coastal waters and their spawning areas. <p>The site contains nationally important habitats; the estuary itself (with its component habitats of intertidal mudflats and sandflats and coastal saltmarsh) and the associated saline lagoons, sand dunes and standing waters.</p> <p>The estuary supports nationally important numbers of wintering waterfowl, passage waders, and a nationally important assemblage of breeding birds of lowland open waters and their margins. It is also nationally important for a breeding colony of grey seals, river lamprey and sea lamprey, a</p>	3.42km south of the Order limits.	National (High)

Site name	Description	Approximate distance (km) and direction from closest point of the Order limits	Importance/ Value
Barlow Common LNR	<p>vascular plant assemblage and an invertebrate assemblage.</p> <p>The site has a mosaic of woodland, wetland, reedbeds and four large ponds. Two ponds attract wildfowl and migrating waders including shelduck, greenshank (<i>Tringa nebularia</i>) and sandpiper 140 species of birds have been recorded on this site. The woodland also supports birds. The colonised tip supports a rich flora and diversity of invertebrates (including 21 species of butterflies). Water vole (and other small mammals) have been recorded at the site.</p>	3.45km north-west of the Order limits.	National (High)
Skipwith Common SAC	<p>Annex I (Ref 8-3) habitats that are a primary reason for selection of this site are:</p> <ul style="list-style-type: none"> • Northern Atlantic wet heaths with cross-leaved heath (<i>Erica tetralix</i>); and • European dry heaths. 	5.56km north-west of the Order limits.	International (Very high)
Thorne and Hatfield Moors SPA	<p>The site is used regularly by 1% or more of the Great Britain population of nightjar. The site also supports small numbers (at non-qualifying levels) of other Annex 1 (Ref 8-3) species. Hen harrier (<i>Circus cyaneus</i>), merlin (<i>Falco columbarius</i>) and short-eared owl (<i>Asio flammeus</i>) hunt over the site in winter and at least one pair of hobby feed over the site in summer. Also notable are nightingales</p>	9.24km south of the Order limits.	International (Very high)

Site name	Description	Approximate distance (km) and direction from closest point of the Order limits	Importance/ Value
	<i>(Luscinia megarhynchos)</i> breeding at one of their most northerly regular sites in Britain.		
Thorne Moor SAC	The Annex I (Ref 8-3) habitat that is a primary reason for selection of this site is degraded raised bogs still capable of natural regeneration.	9.24km south of the Order limits.	International (Very high)

Non-Statutory Sites Designated for Nature Conservation

- 8.5.6 There are 13 non-statutory sites designated for nature conservation identified within the Study Area (as defined in section 8.4 of this chapter).
- 8.5.7 These sites have been designated as LWSs, SINCs and Candidate LWSs for their biodiversity value at a local level and are known to have supporting value to a wide variety of protected and ecologically important species and/or habitats. One of the non-statutory designated sites is a 'Historic LWS'. In communication with NEYEDC (email received on 17 July 2023) it was clarified that Historic LWS have not been surveyed under the current local wildlife sites system (i.e., since 2007), but unlike a Candidate LWS these sites lack evidence that the site is of any substantive value, but equally lack compelling evidence to support their deletion. These sites will stay at this status until such a time that a survey can be completed. Deleted LWSs have been surveyed and their value does not meet the current LWS guidelines. Historic LWSs have never been surveyed, but the habitat in question appears to still exist from examining aerial photography. However, the quality of the habitat is unknown. It is also noted that Candidate LWSs have not yet been designated, but are considered within this chapter, along with Historic LWSs, as they are being considered for designation and may become so within the life time of the Scheme.
- 8.5.8 These sites are shown on **Figure 8-2, ES Volume 3 [EN010143/APP/6.3]** and are summarised in **Table 8-7**. The data provided by NEYEDC also identified three 'deleted SINCs', and 17 Deleted LWSs within the Study Area. These sites are not included in **Table 8-7** and are not shown on **Figure 8-2** due to their deleted and therefore 'not current' status. These sites are not discussed further within this chapter. The non-statutory sites are listed in ascending order, with those closest to the Site listed first.

Table 8-7. Non-statutory designated sites within 2 km of the Site

Site Name	Description	Location	Importance/ Value
Wressle Verge LWS	Good quality established semi-natural verge, with hedgerows. Much of this verge contains common wayside grasses and herbs, typical of MG1 grassland in the National Vegetation Classification (NVC) system. The south-west facing verge of Brind Lane contains enclaves of species interest. Data received from NEYEDC shows that this LWS is also an 'East Yorkshire Roadside Verge', which also extends further south	The LWS is located in both the Interconnecting Cable and Grid Connection Corridors and runs north to south between Solar PV Areas 3a and 3b (along Wood Lane) and east to west along the northern boundary of Solar PV Area 3b (along Brind Lane).	County (Medium)

Site Name	Description	Location	Importance/ Value
	along Wood Lane, down to Station Road ⁶ .		
Tottering Lane, Gribthorpe LWS	Good quality established semi-natural verge. This hedgerow and verge runs north to south along a minor road between the villages of Foggathorpe and Spaldington. The verge is a mosaic of neutral grassland and marshy grassland with widespread tall fescue (<i>Schedonorus arundinaceus</i>) and reed canarygrass (<i>Phalaris arundinacea</i>). Data received from NEYEDC shows that this LWS is also an 'East Yorkshire Roadside Verge' ⁶ .	The LWS lies within the Interconnecting Cable Corridor between Solar PV Area 1a and Solar PV Areas 1b and 1e.	County (Medium)
Bubwith to Holme-on-Spalding-Moor Disused Railway Line LWS	The former railway between Bubwith and Holme-upon-Spalding-Moor is a circa 12km linear grassland and scrub site that has been divided into six shorter sections that have each had their own botanical survey. Habitats present include scrub, tall ruderals, hedgerows, trees, bracken and ephemeral/ short perennial.	50m north-west of the Order limits.	County (Medium)
Old Clay Pits, Highfield – Historic LWS	No information provided.	50m south-west of the Order limits (traffic calming area only).	County (Medium)
North Howden Fish Ponds LWS	The LWS contains nutrient rich standing water, noted for its water-violet (<i>Hottonia palustris</i>). This wetland comprises two adjacent large ponds/lakes used for fishing, with two smaller ponds on the south-east side, which are surrounded by dense scrub.	440m west of the Order limits.	County (Medium)

⁶ Information received from NEYEDC informs that these verges were identified for their potential wildlife interest, but did not meet the guidelines for a LWS. Over time, some have been surveyed and found to meet LWS standards and as such have since been designated separately in the LWS system. The North Yorkshire verge systems are not utilised in planning.

Site Name	Description	Location	Importance/ Value
Brockholes SINC	The SINC is a large fishing lake, surrounded by quite dense scrub and tree cover of a variety of species. The open water zone contains quite widespread algae and various emergent plants.	920m south-east of the Order limits.	County (Medium)
Yarmshaw Plantation LWS	A good quality mixed fen site, containing broad-leaved semi-natural woodland (willow carr).	1.02km south-west of the Order limits.	County (Medium)
Ponds on W Bank of R Derwent near Woodall Farm SINC	Old, established semi-natural neutral/calcareous grassland and nutrient-rich standing water. This site is a borrow pit excavated during flood bank construction. The resultant pond is moderately deep and steep-sided with aquatic vegetation featuring water starworts (<i>Callitriche spp.</i>) and amphibious bistort (<i>Persicaria amphibia</i>). The margins of the borrow pit support a mixture of fern and neutral grassland flora, with scattered scrub.	1.04km north-west of the Order limits.	County (Medium)
Eastrington Ponds LWS	The site contains a variety of habitats and land use features which, in total, provides considerable wildlife/natural history interest. As well as one large and several small open water zones, the latter variably colonised by swamp and tall herb-fen vegetation leading to willow-alder carr, the area also includes semi-mature broadleaved woodland running in a narrow strip along the disused railway. Dense scrub cover characterises several boundaries of the site; while one area of neutral quite species-rich grassland is found, along with areas of amenity grassland.	1.17km south-east of the Order limits.	County (Medium)
Barnhill Candidate LWS	Semi-improved grassland.	1.30km south-east of the Order limits.	County (Medium)
Howden Marsh LWS	The principal habitats present within the LWS are open water	1.72km south-east of the Order limits.	County (Medium)

Site Name	Description	Location	Importance/ Value
	(ponds); extensive swamp communities, drier tall ruderal habitats and dense scrub/carr.		
Aughton Common, Bubwith LWS	Good quality established semi-natural verge.	1.93km north of the Order limits.	County (Medium)
Hagg Lane Green SINC	Nutrient rich standing water. Fine-leaved water-dropwort (<i>Oenanthe aquatica</i>) and water violet (<i>Hottonia palustris</i>) are found here, which are noted to be very uncommon plants in North Yorkshire.	1.93km north-west of the Order limits.	County (Medium)

Habitats

- 8.5.9 There are no areas of ancient woodland within the 2km Study Area. As detailed in **Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2]**, due to the scale of the Scheme targeted tree surveys to BS5837:2012 (Ref 8-41) have been undertaken where impacts to trees are considered to be most likely to occur. This is supplemented by a desk study using National Tree Map (NTM) data with buffers applied to account for the likely area of constraint associated with trees. A Site-wide walkover to identify veteran or ancient trees has also been undertaken. The Site encompass approximately 1,276.5ha in total. The Site is dominated by arable fields (cultivated disturbed land – arable in **Table 8-8**) (c. 1,100ha), with a network of drainage ditches.
- 8.5.10 Other habitat (see **Table 8-8**) within the Site includes improved grassland (c. 48ha), mature trees and hedges (c. 74km), small areas of woodland (c. 26ha) and ponds (mostly dry or holding shallow water at the time of survey). The surrounding habitat is mainly arable with boundary hedgerows and watercourses/ditches, with areas of woodland and water bodies also present. There are individual and clusters of residential properties located adjacent to the Order limits. There are two existing modern agricultural buildings (barns), as well as a derelict building (former farmhouse) and a row of dilapidated brick built open-fronted barns present within the Solar PV Site at Johnson’s Farm (Solar PV Area 1e).
- 8.5.11 The broad terrestrial habitat types present within the Site were identified during the Phase 1 Habitat survey, undertaken between April and September 2022 and April and September 2023. These habitats were further defined by detailed habitat surveys, where required, such as for selected grassland areas and hedgerows, see **Appendix 8-3 and 8-4, ES Volume 2 [EN010143/APP/6.2]** that were undertaken between June and September 2023 (see **Table 8-3**). The broad habitats are summarised in **Table 8-8**, alongside area calculations (taken from digitised maps of the Phase 1 habitats) and their biodiversity importance. The locations of these habitats are presented in **Figure 8-3-1 of Appendix 8-3, ES Volume 2**

- 8.5.12 The MAGIC website (Ref 8-40) indicates the presence of Priority coastal and floodplain grazing marsh habitat immediately adjacent to the Solar PV Site, slightly encroaching into Solar PV Area 2b (as illustrated on **Figure 8-2, ES Volume 3 [EN010143/APP/6.3]**). The Phase 1 habitat survey recorded the area within Solar PV Area 2b as arable, bordered by a species-poor hedgerow with trees and a ditch (dry at the time of the Phase 1 habitat survey but later identified as a wet ditch during a MoRPh Survey to inform the BNG assessment in **BNG Assessment Report [EN010143/APP/7.11]**). An area of Priority coastal and floodplain grazing marsh habitat is also shown on the MAGIC website (Ref 8-40) inside the Grid Connection Corridor, in a field adjacent to Solar PV Area 2b, along the verges of Wood Lane, and inside a field to the west of Wood Lane. The two fields were recorded to be improved grassland during the Phase 1 habitat survey, with poor semi-improved grassland recorded along Wood Lane. A small area of lowland fen Priority habitat is shown on MAGIC (Ref 8-40) inside the Grid Connection Corridor, next to the River Derwent and Priority mudflat habitat is mapped along the banks of the River Ouse, also inside the Grid Connection Corridor (as shown on **Figure 8-2, ES Volume 3 [EN010143/APP/6.3]**).
- 8.5.13 A single area of Priority deciduous woodland habitat is shown on MAGIC (Ref 8-40) within the Solar PV Area 3b, other areas of Priority deciduous woodland are present adjacent to the Solar PV Site (Ref 8-40), outside of the Site, as shown on **Figure 8-2, ES Volume 3 [EN010143/APP/6.3]**.
- 8.5.14 Three areas of Priority deciduous woodland habitat are also present within the Grid Connection Corridor, close to National Grid Drax Substation, as shown on MAGIC (Ref 8-40) and **Figure 8-2, ES Volume 3 [EN010143/APP/6.3]**.
- 8.5.15 Areas of Priority orchard habitat are shown on MAGIC (Ref 8-40) adjacent to the Grid Connection Corridor, to the north-west of the A63 and also to the east of Solar PV Area 3b (as shown on **Figure 8-2, ES Volume 3 [EN010143/APP/6.3]**).
- 8.5.16 Habitat data, required to calculate the biodiversity net gain or net loss have been collected in the Phase 1 habitat survey and updated, as necessary, through subsequent surveys (such as hedgerow surveys) and condition assessments to ensure a comprehensive baseline of data for the BNG assessment (as presented in **BNG Assessment Report [EN010143/APP/7.11]**).
- 8.5.17 **Table 8-8** lists the Phase 1 habitat types (and their biodiversity importance) identified within the Site.

Table 8-8. Broad habitat types within the Site and their biodiversity importance

Habitat	Area (ha)/ length (km)	Biodiversity Importance	Rationale
A1.1.1 – Broadleaved woodland – semi-natural	3.15 ha	Up to County (Medium)	Habitat of principal importance – Lowland Mixed Deciduous Woodland and Wet Woodland. Woodland is a Selby BAP (Ref 8-50) habitat, which covers both ancient and non-ancient woodland. Some woodland types are listed as a ERYBAP habitat (Ref 8-49). An area of broadleaved semi-natural woodland which lies within the Grid Connection Corridor is identified on MAGIC (Ref 8-40) as Priority deciduous woodland. Additional areas lie adjacent to the Order limits.
A1.1.2 – Broadleaved woodland – plantation	22.87 ha	Up to County (Medium)	Woodland is a Selby BAP (Ref 8-50) habitat, which covers both ancient and non-ancient woodland. There are areas of broadleaved plantation woodland which lie within the Grid Connection Corridor that are identified on MAGIC (Ref 8-40) as Priority deciduous woodland. There are other areas of non-priority plantation woodland present within the Solar PV Site.
A1.3.1 – Mixed woodland- semi-natural	0.27 ha	Up to County (Medium)	Habitat of principal importance – Lowland Mixed Deciduous Woodland. Some woodland types are listed as a ERYBAP habitat (Ref 8-49). Woodland is also Selby BAP (Ref 8-50) habitat, which covers both ancient and non-ancient woodland. A strip of mixed semi-natural woodland which partially lies within Solar PV Area 3b is identified on MAGIC (Ref 8-40) as Priority deciduous woodland.
A1.3.2 – Mixed woodland-plantation	0.03 ha	Site (Very low)	Only a very small area of young mixed plantation woodland is present within the Site, inside the Grid Connection Corridor, which is likely to be of value at Site level only.
Scrub (A2.1 – dense/continuous	Dense/ continuous - 3.92 ha	Site (Very low)	Common and widespread species. Not a habitat of principal importance.

Habitat	Area (ha)/ length (km)	Biodiversity Importance	Rationale
and A2.2-scattered)	Scattered – 0.45 km		
Parkland/ scattered trees (A3.1– Broadleaved, A3.2- Coniferous, A3.3- Mixed)	Broadleaved (A3.1)- 5.12 km linear Coniferous (A3.2)- 0.05 km Mixed (A3.3) – 0.02 ha area	County (Medium), for veteran and/or ancient trees. Otherwise of Site (Very low) to Local (Low) importance.	Not a habitat of principal importance, unless veteran or ancient trees. Individual trees can provide suitable habitat for protected and notable species, including bats and barn owl. The data presented in the Arboricultural Impact Assessment and Tree Protection Report (Appendix 10-5, ES Volume 2 [EN010143/APP/6.2]) , states that a total of 206 features were identified as likely veteran with seven of these also meeting the criteria for ancient.
B2.2 – Neutral grassland – semi-improved	1.06 ha	Local (Low)	Whilst not a habitat of principal importance, there are areas of semi-improved neutral grassland present within the Site which lie within the boundaries of Tottering Lane, Gribthorpe LWS and Wressle Verge LWS (as shown on Figure 8-2, ES Volume 3 [EN010143/APP/6.3]). This is therefore considered separately as part of the LWSs. This habitat is also present along some field boundaries inside the Solar PV Site and in an open area inside an area of woodland within the Grid Connection Corridor.
B4 – Improved grassland	47.78 ha	Improved Grassland – Site (Very low) Coastal and Floodplain Grazing Marsh – County (Medium)	Whilst improved grassland is not a habitat of principal importance, there are grassland fields either side of Wood Lane that are improved grassland but are stated as a Priority habitat (Coastal and Floodplain Grazing Marsh), as identified on MAGIC (Ref 8-40).

Habitat	Area (ha)/ length (km)	Biodiversity Importance	Rationale
B6 – Poor semi-improved grassland	80.37 ha	Site (Very low)	Whilst not a habitat of principal importance, there are areas of poor semi-improved neutral grassland present within the Site which lie within the boundaries of Tottering Lane, Gribthorpe LWS and Wressle Verge LWS (as shown on Figure 8-2, ES Volume 3 [EN010143/APP/6.3]). Where this habitat lies within the LWSs it is considered as part of the designated sites.
C3.1 – Other tall herb and fern - ruderal	0.16 ha	Site (Very low)	Not a habitat of principal importance.
F2.1 – Marginal and inundation – marginal vegetation	0.20 ha	Site (Very low)	Not a habitat of principal importance.
G1 – Standing water	1.03 ha	Local (Low)	Ponds meeting certain criteria are a habitat of principal importance and can be defined as permanent (or seasonal) waterbodies up to 2ha in extent and qualify as being a Priority habitat if they meet one or more criteria for UKBAP (Ref 8-79) classification, including supporting species of high conservation importance. The ponds within the Site were generally found to be shallow or holding little water and were shaded by surrounding vegetation. Some of the ditches were also holding standing water. These waterbodies are not a stand-alone habitat within the wider area, as similar habitat can be found in the surrounding area. Therefore, the ponds within the Site are unlikely to reach the required level to fulfil the criteria of a Priority habitat and are considered as being of no more than Local importance. Any permanent ponds within the Site will be retained. Standing open water and canals is listed as a ERYBAP habitat (Ref 8-49). Ponds are also included in the Selby BAP (Ref 8-50).
G2 – Running water (including	1.24 ha (area) 13.67 km (linear)	The River Derwent is of National (High)	The River Derwent SAC is a UKBAP (Ref 8-79) Priority Habitat (due to the occurrence of the Habitat Directive Annex I (Ref 8-3) habitat H3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i>

Habitat	Area (ha)/ length (km)	Biodiversity Importance	Rationale
Rivers and wet ditches)		importance – Priority Habitat, with the River Derwent SAC and SSSI within the Site. The River Ouse and Foulness are of County importance (Medium). Drains (smaller watercourses and ditches) are of local (Low) importance only.	vegetation, and presence of six UKBAP Priority species (Ref 8-62). Both the River Derwent and Ouse are also included in the Selby BAP (Ref 8-50) and Rivers are listed in the ERYBAP (Ref 8-49). The River Derwent SSSI is currently in predominantly Unfavourable – Recovering condition (94%), and Favourable condition (5.5%), hence the assessment of National importance.
J1.1 – Cultivated/disturbed land – arable	1100.83 ha	Arable – Site (Very low) Arable field margins (herbaceous strips or blocks around arable fields) – Local (Low).	Excluding arable field margins, arable fields are not a habitat of principal importance and is widespread across the region and wider UK. Arable fields do, however, provide suitable habitat for a range of species, including birds. Arable farmland is listed as an ERYBAP habitat but is described as being widespread throughout the county (Ref 8-49). Arable farmland is a Selby BAP habitat (Ref 8-50), with a particular focus on the value of cereal field margins and over-winter stubbles to benefit wildlife (e.g., birds).
J1.2 – Cultivated/disturbed land – amenity grassland	0.03 ha	Site	Not a habitat of principal importance.

Habitat	Area (ha)/ length (km)	Biodiversity Importance	Rationale
Hedgerows (intact and defunct)	21.86 km	Up to County (Medium)	Habitat of principal importance, legally protected under the Hedgerows Regulations (Ref 8-13). Hedgerows is listed as a ERYBAP (Ref 8-49) habitat but is described as being widespread. Ancient and/or species-rich hedgerows are included in the Selby BAP (Ref 8-50).
Hedgerows with trees (intact and defunct)	52.25 km	Up to County (Medium)	Habitat of principal importance, legally protected under the Hedgerows Regulations (Ref 8-13). Hedgerows is listed as a ERYBAP (Ref 8-49) habitat but is described as being widespread. Ancient and/or species-rich hedgerows are included in the Selby BAP (Ref 8-50).
J2.6 – Dry ditch	24.39 km	Site (Very low)	Not a habitat of principal importance.
J3.6 – Buildings	0.10 ha	Site (Very low)	Not a habitat of principal importance.
J4 – Bare ground	1.08 ha	Site (Very low)	Not a habitat of principal importance.
Hardstanding	12.27 ha	N/A	Not considered in the assessment further

Legally Protected and Notable Species

- 8.5.18 The desk study data search, obtained in August 2023, returned records of protected and notable species within the 2km search radius from the Order limits and from the preceding ten years. These protected and notable species, including species of biodiversity importance are summarised in relevant technical reports, included as **Appendix 8-2 to 8-9, ES Volume 2 [EN010143/APP/6.2]**.
- 8.5.19 **Table 8-9** presents a summary of protected or notable animal species that have been identified as present, or potentially present, within the Site and their respective Survey Areas (see **Table 8-3**) alongside an evaluation including importance/value (sensitivity) and rationale of the ecological features for each species. Full descriptions of the baseline conditions are presented in **Appendices 8-2 to 8-9, ES Volume 2 [EN010143/APP/6.2]**.
- 8.5.20 The assessment of biodiversity importance of species has been made for the entirety of the Site. Where the biodiversity importance of a receptor is specific to a particular area of the Site (e.g., occurring within the Solar PV Site only), then this is specified with population size or specific species in **Table 8-9**.

Table 8-9. Summary of baseline details for legally protected and notable species, alongside assessment of biodiversity importance of ecological features

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
Terrestrial invertebrates	<p>The desk study returned two records of notable terrestrial invertebrates within the 2km Study Area, dated within the last ten years. None of these records fall within the Site; the closest record is of <i>Isochnus foliorum</i> a beetle species recorded in Bubwith c. 575m from the Order limits. Small heath (<i>Coenonympha pamphilus</i>) was also recorded c. 1.2km from the Order limits, associated with National Grid Drax Substation. A small heath butterfly was also noted while conducting water vole surveys, in a poor semi-improved grassland margin in Solar PV Area 2e. A high number of butterflies (mainly speckled wood (<i>Pararge aegeria</i>), plus red admiral (<i>Vanessa atalanta</i>) and large white (<i>Pieris brassicae</i>)) were also observed during the Phase 1 habitat survey in August 2023, using poor semi-improved grassland field margins adjacent to plantation woodland (willow plantation) and hedgerow in Solar PV Area 3c.</p>	<p>Notable terrestrial invertebrate species associated with grassland margins and woodland.</p>	<p>Local importance (Low) for general assemblage. National importance (High) for tansy beetle.</p>	<p>Some species are included as Priority Species under Section 41 of the NERC Act (Ref 8-10), notable Nationally Rare, Scarce or Red Data List species (Ref 8-63). The habitats recorded within the Site are common in a local and national context and therefore unusual or rare assemblages of invertebrates are not expected. The margins of Main Rivers will be avoided through HDD. Invertebrate assemblages which form part of the designated sites are assessed, where required, as part of the sites themselves.</p>

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
	<p>The Solar PV Site, where permanent land take is required, is dominated by agricultural fields which are unlikely to support notable invertebrate assemblages.</p> <p>The retained semi-improved grassland field margins and woodland areas are likely to be of more value to terrestrial invertebrates, than the remainder of the Site.</p> <p>The majority of these habitats will be retained and protected. New areas of grassland will be created under and around the panels and margins will be retained around field edges of at least 10m, increased to 15m in some areas). In addition to this, larger areas and corridors of grassland will be created where solar PV panels are not required, which will offer suitable habitat for invertebrates.</p> <p>One of the last remaining populations of the nationally scarce tansy beetle <i>Chrysolina graminis</i> (also a UKBAP (Ref 8-79) species and protected under the WCA 1981 (as amended) (Ref 8-1)) is known to be present along a 30km section of the River Ouse in York;</p>			

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
	<p>however, they are not currently known to be present this far south along the River Ouse. The beetle is a Priority species under the Selby BAP (Ref 8-50). The River Ouse will be crossed using HDD technique, therefore retaining associated riparian habitat that could be used by this beetle.</p>			
<p>Aquatic macroinvertebrate, as presented in Appendix 8-2, ES Volume 2 [EN010143/APP/6.2]</p>	<p>The desk study returned no records of notable species of aquatic macroinvertebrates within and up to 10m from the Grid Connection Corridor. The desk study also did not return any records of white clawed crayfish (<i>Austropotamobius pallipes</i>) within the last ten years from the Environment Agency. The INNS American signal crayfish (<i>Pacifastacus leniusculus</i>) was recorded in 2017, thus the former species can be considered absent at this location.</p> <p>The River Derwent supports a diverse assemblage of macroinvertebrates. The sections of the River Derwent and River Ouse that will be crossed by the Grid Connection corridor will be protected through the avoidance of open cut techniques.</p>	<p>Potential for notable species and species assemblage to be present.</p>	<p>Local (low)</p>	<p>No notable or protected species were identified during the surveys. Of the notable species identified in the desk study, all are considered likely absent from the Study Area, and impacts to those in the River Derwent and River Ouse will be avoided by the commitment to HDD crossing. It is possible that hydrologically connected watercourses within the Site could support notable species; however, with the avoidance of open cut techniques on major watercourses, the likelihood of these species being impacted is low.</p> <p>The sections of the River Derwent and River Ouse that will</p>

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
	<p>Several aquatic beetle species are included in the Selby BAP (Ref 8-50), including <i>Agabus ulignosus</i>, <i>Acilius canaliculatus</i>, <i>Agabus labiatus</i>, <i>Helophorus strigifrons</i> and <i>Dryops auriculatus</i>. The depressed river mussel (<i>Pseudanodonta complanata</i>) is also listed in the Selby BAP; none of these species were found during field surveys. Surveys recorded the leech (<i>Dina lineata</i>) (regionally notable) in drain FO01. The beetle <i>Agabus melanarius</i> (notable but not red data book) were present in drain FL19 East. Otherwise, no notable or protected species of macroinvertebrates were identified.</p>			<p>be crossed by the Grid Connection Corridor will be protected through the avoidance of open cut techniques. Of the smaller watercourses that have potential to be open cut, only Fleet Dike, which is to be crossed by the Interconnecting Cable Corridor 4km upstream from its confluence with the River Derwent, is connected to the Rivers Derwent or Ouse. Pollution management through the Framework CEMP [EN010143/APP/7.7] would prevent any impacts on receiving watercourses, including the River Derwent SAC.</p>
<p>Aquatic macrophytes, as presented in Appendix 8-2, ES Volume 2 [EN010143/APP/6.2]</p>	<p>The desk study returned only one notable macrophyte record; the tubular water-dropwort (<i>Oenanthe fistulosa</i>), which is listed as a UKBAP (Ref 8-79) Priority species and on the national species Red list (Vulnerable). Several macrophyte species are included in the Selby BAP (Ref 8-50). These include tasteless water pepper</p>	<p>Macrophyte assemblage may be notable in context of those species listed in the citation of nearby designated sites</p>	<p>Local (low)</p>	<p>The species recorded during the field surveys are common in a local and national context and therefore unusual or rare assemblages of aquatic macrophytes are not expected. The margins of main rivers will be avoided through HDD.</p>

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
	<p>(<i>Persicaria mitis</i>), pillwort (<i>Pilularia globulifera</i>) and greater water-parsnip. Surveys found limited aquatic macrophytes within the channels surveyed with no notable species identified. The INNS <i>Elodea nuttallii</i> was identified during the macrophyte survey in Watercourse DE53 (as shown on Figure 1 in Appendix 8-2: Aquatic Ecology Report, ES Volume 2 [EN010143/APP/6.2]), which is listed under The Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref 8-14).</p>			
<p>Fish Appendix 8-2, ES Volume 2 [EN010143/APP/6.2]</p>	<p>The desk study returned records of bullhead (UKBAP (Ref 8-79)), brown trout (<i>Salmo trutta</i>) and European eel (<i>Anguilla anguilla</i>) (both Section 41 and species of principal importance (SPI)) within the 2km Study Area and within the last ten years. The River Derwent also supports sea lamprey, bullhead and river lamprey (species included in the citation for the SAC). The Humber Estuary SAC citation also lists river and sea lamprey, with the estuary being an important migratory corridor, and the</p>	<p>Protected fish species could occur within the Site.</p>	<p>County (Medium)</p>	<p>All fish and their habitats are protected under the Salmon and Freshwater Fisheries Act 1975 (Ref 8-16) – it is an offence to: wilfully disturb spawn, spawning fish or spawning areas, cause pollution likely to harm fish, cause impedance to fish passage (notably salmon or trout), and other offences in relation to specific fish species. Bullhead, Atlantic salmon, European eel, river lamprey, and sea lamprey are listed in the</p>

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
	<p>River Ouse tributaries providing breeding grounds for the two species. Several notable fish species are also listed in the Selby BAP (Ref 8-50): Atlantic salmon, bullhead, sea and river lamprey, allis shad (<i>Alosa alosa</i>) and grayling (<i>Thymallus thymallus</i>). The aquatic walkover identified limited suitable habitat and spawning habitat for these fish species in the watercourses and ditches to be impacted, and as such it was deemed appropriate to scope out further surveys for fish.</p>			<p>Habitats Directive Annex II (Ref 8-3), which requires significant populations of these species to be protected through the UK's National Site Network (i.e., SACs). European eel, Atlantic salmon, river lamprey, sea lamprey, and brown trout are listed as SPI under the NERC Act 2006 (Ref 8-11). Bullhead are listed as UKBAP (Ref 8-79) Priority species. European eel is afforded further protection under the Eel Regulations 2009 (Ref 8-17) which places a requirement on developers to ensure continued eel passage and to prevent eel entrainment. There is potential for fish species to migrate upstream from the River Ouse, into the River Derwent (via the Barmby Barrage fish pass) and then into connected water body Fleet Dike which is potentially being crossed using open cut techniques; however, no suitable spawning habitat was identified</p>

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
Breeding birds, as presented in Appendix 8-5, ES Volume 2 [EN010143/APP/6.2]	79 bird species were recorded within the Survey Area during surveys for breeding birds, with territories for 39 species confirmed and ten possible or probable territories, resulting in a breeding bird assemblage of 49 species across the Site. The breeding assemblage included: three species on Schedule 1 of the WCA 1981 (as amended) (Ref 8-1); thirteen species listed as Priority Species in the UK; eleven species included on the Birds of Conservation Concern (BoCC) Red List (Ref 8-64); thirteen species included on the BoCC Amber List (Ref 8-64); and seven species listed as ERYBAP 'important' species (Ref 8-49).	Common nesting bird species and an assemblage of notable birds (general breeding bird assemblage) breeding within the Site.	Local (Low)	in the water bodies to be impacted. All nesting birds are protected under the WCA 1981 (as amended) (Ref 8-1). Habitat present across the extent of the Site supports nesting birds. The arable land within the Site supports a number of Priority Species during the breeding season, including yellowhammer (<i>Emberiza citronella</i>), linnet (<i>Linaria cannabina</i>) and skylark (<i>Alauda arvensis</i>), but species diversity does not meet criteria for being of greater importance. Majority of species populations do not approach the 1% level of the national or county populations.
	Data search shows two recorded locations of curlew present within the 2km Study Area. The closest record is from the Spaldington area, within or just outside of the Site. Up to three breeding territories of curlew were recorded within the Survey Area.	Curlew breeding territories within the Solar PV Site.	Up to County (Medium)	The Site supporting, in part, breeding territories of curlew, a ground-nesting bird species included as a Priority Species (Ref 8-11) and on the BoCC Red List (Ref 8-64) is of likely County

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
	<p>Although registrations of curlew were made within Solar PV Areas, it is considered that the majority of each territory, including any nest location, was located outside of the Solar PV Site, with a confirmed nest outside of the Solar PV Site, to the west of Solar PV Area 2c in 2023.</p> <p>One breeding territory was present to the north of Solar PV Area 1a in 2022, with breeding territories in the vicinity of the River Foulness (Ecology Mitigation Area 1h and Solar PV Area 2c) and Solar PV Areas 2a and 2c in 2022 and 2023.</p> <p>Whilst 'territories' were recorded as such throughout the survey period, it was evident from registrations of curlew, that this species was using the Solar PV Site as part of their 'home range' (with birds recorded foraging within the Solar PV Site), but no evidence of nesting was recorded within the Solar PV Site. Territories were, however, confirmed on the basis of presence of this species throughout the breeding season.</p>			Importance in East Riding of Yorkshire.

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
	<p>Data search shows five recorded locations of skylark present within the 2km Study Area (dated within the last ten years). The closest record is from the Spaldington area, within or just outside of the Site.</p> <p>Surveys for breeding birds identified 125 skylark breeding territories spread across the arable farmland within the Site.</p>	<p>Breeding population of skylark within the Solar PV Site.</p>	<p>District (Medium)</p>	<p>The breeding population of skylark, a ground-nesting bird species included as a Priority Species (Ref 8-11) and on the BoCC Red List (Ref 8-64) is of likely District Importance.</p>
	<p>Territories of three specially protected species, included in Schedule 1 of the WCA 1981 (as amended) (Ref 8-1) confirmed or thought probably or possibly to be holding territories within the Survey Area.</p> <p>Quail was recorded singing on several occasions within the Solar PV Site, with single territorial male considered to be present.</p> <p>Although not confirmed as breeding within the Survey Area, barn owl was recorded on a number of occasions and suitable nesting sites are present within the Survey Area. Territory analysis methods do not allow for calculation of territories of barn owl, although based</p>	<p>Breeding territories of quail, hobby and barn owl within the Site.</p>	<p>Local (Low)</p>	<p>Specially protected species owing to inclusion on Schedule 1 of the WCA 1981 (as amended) (Ref 8-1). However, populations do not approach the 1% level of the national or county populations.</p>

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
	<p>on the number of features present (alongside sightings made) there may be up to five territories/ pairs of barn owl within the vicinity of the Solar PV Site. Hobby were recorded on several occasions within the Survey Area, with an active nest confirmed as present within the Survey Area.</p>			
<p>Non-breeding birds, as presented in Appendix 8-6, ES Volume 2 [EN010143/APP/6.2]</p>	<p>72 bird species recorded during the wintering bird surveys within the Site.</p>	<p>Assemblage of non-breeding birds within the Site.</p>	<p>Species diversity is up to County (Medium) importance.</p>	<p>No wintering bird population approaches the 1% level of the national population, which would constitute a nationally significant wintering bird population.</p> <p>Seven species, listed on Annex 1 of the Birds Directive (Ref 8-2) were recorded within the Survey Area.</p> <p>Fourteen Priority Species (Ref 8-11) were recorded within the Survey Area.</p> <p>Fifteen species, included on the BoCC Red List (Ref 8-64) and 24 species, included on the BoCC Amber list (Ref 8-64), were recorded within the survey area. The remaining species are all included on the BoCC Green list (Ref 8-64) and are of least</p>

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
				<p>conservation concern. Majority of individuals of species recorded were all relatively low and are unlikely to represent significant proportions (i.e., 1% or more) of the county populations.</p> <hr/> <p>Population of non-breeding skylark is of likely District Importance.</p> <p>Using professional judgement, the peak count of skylark may be of greater importance than local and therefore a precautionary assumption of district importance has been made for this species.</p>
<p>Bats, as presented in Appendix 8-7, ES Volume 2 [EN010143/APP/6.2]</p>	<p>The desk study returned 33 bat records within the 2km Study Area (within the last ten years, up to 2023). None of these are within the Site. These included 19 common pipistrelle (<i>Pipistrellus pipistrellus</i>) records, three noctule (<i>Nyctalus noctula</i>) records, two soprano pipistrelle (<i>Pipistrellus pygmaeus</i>) records, three brown long-eared bat (<i>Plecotus auritus</i>) records, one Natterer's bat (<i>Myotis nattereri</i>) five <i>Myotis</i> sp. records. The closest record is circa 305m from the Order limits and relates to a common pipistrelle roost near Newsholme. A review of MAGIC</p>	<p>Foraging/ commuting bats, with potential for roosts within and close to the Order limits.</p>	<p>Foraging/ commuting habitat for the overall bat assemblage – up to County (Medium) Importance for <i>Myotis</i> sp. and Local Importance for other species found to be present.</p>	<p>All bat species and their roosts are legally protected in the UK under the WCA 1981 (as amended) (Ref 8-1) and Habitats Regulations (Ref 8-9), which implemented the Habitats Directive (Ref 8-3). Seven bat species are also included as Priority Species under Section 41 of the NERC Act (Ref 8-11). Biodiversity importance of foraging and commuting bats based on species rarity, estimated numbers of bats, presence of possible roosts and</p>

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
	<p>(Ref 8-40) indicates there were three previously approved Natural England bat mitigation licences within the 2km Study Area. The closest of these granted licenses (dated 2013-2016) is approximately 600m north-west of the Grid Connection Corridor and was for the following species: brown long-eared, Daubenton's (<i>Myotis daubentonii</i>), common pipistrelle and Natterer's.</p> <p>Species recorded on the activity surveys (activity transects and static bat detectors) in 2022/2023 comprised at least five species: common pipistrelle, soprano pipistrelle, noctule, Leisler's (<i>Nyctalus leisleri</i>), brown long eared, plus unknown <i>Myotis</i> species. The targeted preliminary bat roost appraisals of trees within the Site identified 46 trees with moderate or high bat roost suitability and 140 trees with low bat roost suitability. The buildings located within Solar PV Area 1e at Johnson's Farm are the only buildings that will be impacted by the Scheme. These buildings were subject to a preliminary bat roost appraisal in August 2022 and were assessed as having negligible</p>			<p>type/complexity of community/foraging features. All potential roosts currently to be retained and not disturbed. Further rationale for the value of the species found on-site is given in Appendix 8-7, ES Volume 2 [EN010143/APP/6.2].</p>

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
	<p>suitability for roosting bats. Surveys have informed the Scheme’s design, along with offset buffers, to avoid direct and indirect effects upon potential roost sites (and avoidance of trees and woodland with higher ecological value irrespective of bats which should be avoided), with the exception of one tree at this stage (T872/T619)⁷ on Pear Tree Ave. This is a horse chestnut of moderate suitability. It is currently showing as potentially lost due to close proximity to a bellmouth, however this will be addressed during detailed design to adjust the taper of the access bellmouth in order to retain the tree.</p>			
<p>Badger, as presented in Appendix 8-8, ES Volume 2 [EN010143/APP/6.2]</p>	<p>The desk study returned 22 badger records within the 2km Study Area dated within the last ten years. None of these records fall within the Site. The closest record is associated with National Grid Drax Substation and is approximately 1km from the Order limits.</p>	<p>Active badger setts.</p>	<p>Local (Low)</p>	<p>Badgers are protected under The Protection of Badgers Act 1992 (Ref 8-12). Badgers are relatively common in a local, regional and national context.</p>

⁷ T872 refers to the tree number allocated within **Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2]** and T619 refers to the tree number allocated in **Appendix 8-7: Bat Survey Report, ES Volume 2 [EN010143/APP/6.2]**.

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
<p>Otter, as presented in Appendix 8-9, ES Volume 2 [EN010143/APP/6.2].</p>	<p>Five active or partially active badger setts and one disused sett were identified within and up to 50m of the Order limits. Of these five active or partially active setts there was one main sett, three subsidiary and one outlier sett.</p> <p>The desk study did not return any otter records within the 2km Study Area. No otter field signs were recorded within the Solar PV Site during the targeted surveys undertaken in 2022 and 2023. Otter field signs were recorded along the sections of the River Derwent and the River Ouse that were targeted for survey, in the form of spraint (faeces), footprints, slides and paths. A possible otter lying-up site was also noted along a drain, approximately 20m north of the Grid Connection Corridor (Watercourse DE53, as shown on as shown on Figure 8-2-1 in Appendix 8-2: Aquatic Ecology Report, ES Volume 2 [EN010143/APP/6.2]), a spraint was also recorded along the same drain. Watercourse DE53, which appears to be hydrologically connected to the River Derwent, will be crossed using HDD.</p>	<p>Populations of otter using the River Derwent, River Ouse and associated tributaries.</p>	<p>District (Medium)</p>	<p>Otter is protected under Schedule 5 of the WCA 1981 (as amended) (Ref 8-1) and under the Habitats Regulations (Ref 8-9). Otters have an estimated British population of 11,000 and are increasing in population size and range. They are of IUCN 'Least Concern Status' in England. The River Derwent SAC has otter as a qualifying species. The majority of otter field signs were recorded outside of the Site, with the exception of footprints along the River Ouse; however, the River Ouse will be crossed using HDD. No holts were recorded within the Survey Area, with one 'hover' (resting</p>

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
<p>Water vole, as presented in Appendix 8-9, ES Volume 2 [EN010143/APP/6.2]</p>	<p>The desk study returned six water vole records within the 2km Study Area, dated within the last ten years. None of these records fall within the Site; the closest record is associated with National Grid Drax Substation approximately 752m from the Order limits. Water vole has been recorded in Howden Marsh LNR and Eastrington Ponds LNR, approximately 1.7km and 1.2km from the Order limits respectively (as shown on Figure 8-2, ES Volume 3 [EN010143/APP/6.3]).</p> <p>No conclusive signs of water vole were recorded along the accessible sections of watercourse/ditch that were targeted for survey. Burrows of a suitable size were recorded; however, no other water vole field signs were recorded to confirm presence, indicating likely absence. Furthermore, American mink (<i>Neovison vison</i>) (which preys on water vole) was noted during a bird survey along a section of the River Foulness, which is hydrologically connected to the Solar PV Site. Field signs indicating the</p>	<p>Possible presence of water vole within the Site and wider area, on unaffected watercourses not subjected to surveys.</p>	<p>Up to District (Medium) – if present.</p>	<p>site) recorded just outside of the Grid Connection Corridor.</p> <p>Water vole is afforded legal protection under the WCA 1981 (as amended) (Ref 8-1). No conclusive evidence of water vole was recorded within the Survey Area, indicating likely absence of this species at this time. It is possible that water vole may be present on watercourse/ditch sections outside of the Survey Area, within and connected to the Order limits. However, the absence of conclusive water vole field signs within the Survey Area, combined with the confirmed presence of American mink along the River Foulness (hydrologically connected to the Solar PV Site), River Ouse and River Derwent indicates that water vole is likely absent from the Site, or, if present, in very low numbers.</p>

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
	<p>presence of American mink were also recorded on the River Derwent and River Ouse during the otter survey.</p>			
Hedgehog	<p>The desk study did not return any recent hedgehog records within the 2km Study Area (dated within the last ten years).</p> <p>An assessment of the mix of hedgerow, woodland, scrub and grassland habitat present within the Site and likelihood for hedgehog to occur, has concluded that hedgehog is likely to be present within the Site.</p>	<p>Assumed presence of hedgehog within the Site.</p>	Local (Low)	<p>Priority Species under Section 41 of the NERC Act (Ref 8-11). An assumption has been made this species is likely to be present across the Site. Hedgehog is widespread and abundant across the UK, but declining.</p>
Brown hare	<p>The desk study returned five brown hare records within the 2km Study Area (dated within the last ten years). None of these records are within the Site. The closest record is approximately 239m from the Site.</p> <p>Brown hares have been observed in arable land within the Solar PV Site during other ecological surveys and when considering the habitat quality, an assumption has been made this species is likely to be present across the Site.</p>	<p>Presence of brown hare within the Site.</p>	Local (Low)	<p>Priority Species under Section 41 of the NERC Act (Ref 8-11). An assumption has been made this species is likely to be present across the Site. Brown hare is widespread and abundant across the UK.</p>

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
Polecat	<p>The desk study returned one polecat record dated within the last ten years, approximately 210m from the Order limits. The ‘survey’ (or source) of this record (dated 2014) is cited as The Vincent Wildlife Trust Surveys. A document issued by The Vincent Wildlife Trust in 2016 (Ref 8-71) states that “...records in Yorkshire were concentrated in the eastern Yorkshire Dales, between Ripon and Harrogate, on the boundaries of vice counties Mid-west Yorkshire and North-west Yorkshire. The verifiable records were a combination of true polecats and polecat-ferrets” and “...A few records were received from South-west Yorkshire (two verifiable as true polecats and one as polecat-ferret), mostly concentrated on the boundaries of Nottinghamshire and North Lincolnshire. Three records were received from Southeast Yorkshire; one polecat-ferret and two unverifiable. A small number of records were received from North-east Yorkshire and these were all unverifiable”. Therefore, this indicates that the 2014 record received</p>	Possible presence of polecat within the Site.	Up to County (Medium) – if present.	<p>Priority Species under Section 41 of the NERC Act (Ref 8-11). According to the Mammal Society website, the Site is outside of this species’ known distribution range (Ref 8-65). If present, any polecat population would be of value up to County level due to its rarity in this area of the UK; however, it is unlikely to be present as noted in the baseline detail.</p>

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
	<p>from the record centre may not be a verified true polecat record.</p> <p>The Site does offer suitable habitat for polecat, which can be found in farmland with hedgerows and woodland areas present. However, it is considered unlikely that polecat is present within Site as this species is not commonly recorded in this area of the UK, but presence cannot be ruled out.</p>			
Harvest mouse	<p>The desk study did not return any records for this species dated within the last ten years. However, three historic records (most recent dated 2007) were returned within the 2km Study Area. This species has also been associated with the meadows of Eastrington Ponds LNR, which is located approximately 1.2km from the Order limits (as presented in Figure 8-2, ES Volume 3 [EN010143/APP/6.3]).</p> <p>The Site does offer suitable habitat for this species, which can be found in tall grassland, farmland and hedgerows.</p>	Possible presence of harvest mouse within the Site.	Local (Low)	Priority Species under Section 41 of the NERC Act (Ref 8-11). This species is thought to have become much scarcer in recent years (Ref 8-66).
Reptiles	The desk study returned ten grass snake records within the 2km Study Area, dated within the last ten years. No	Likely limited presence of widespread reptile	Local (Low)	Protected from intentional/reckless injury or killing within

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
	<p>reptile records were returned within the Site. A grass snake was observed alongside a drain, approximately 100 m north of the Grid Connection Corridor (reference DE53, as shown on Figure 8-2-1 in Appendix 8-2, ES Volume 2 [EN010143/APP/6.2]), during a water vole survey in July 2023. This drain will be crossed by the Grid Connection Corridor using HDD, avoiding direct impacts to the drain and associated grassland margins.</p> <p>The Solar PV Site, where permanent land take is required, is dominated by agricultural fields which are of low suitability for reptiles. The most suitable reptile habitat within the Solar PV Site includes areas of semi-improved grassland (e.g., along field margins, hedgerow bases, ditches and woodland areas). The majority of these habitats will be retained and protected, or will be subject to temporary disturbance impacts during construction rather than permanent loss. New areas of grassland will be created under and around the panels and margins will be retained around field edges (of at least</p>	<p>species (grass snake, slow worm (<i>Anguis fragilis</i>) and common lizard (<i>Zootoca vivipara</i>)) within the Site.</p>		<p>the WCA 1981 (as amended) (Ref 8-1). Species of principal importance within Section 41 of the NERC Act (Ref 8-11). Only widespread species of reptile are likely to be present and are unlikely to occur in significant numbers or assemblages due to the suitability of the habitats present within the Site.</p>

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
	<p>10m). In addition to this, larger areas and corridors of grassland will be created where panels are not required, which will offer habitat for reptiles.</p>			
<p>Other (more commonly recorded) amphibians</p>	<p>The desk study returned four common frog records, 13 common toad records, and five smooth newt records within the 2km Study Area (dated within the last ten years). No records were identified for within the Site.</p> <p>Ponds and ditches located within and close to the Site may support common amphibian species. Suitable terrestrial habitats in the form of hedgerows, scrub, semi-improved grassland and woodland is also present within the Site. Ponds and ditches will be retained. New areas of grassland will be created under and around the panels and margins will be retained around field edges (of at least 10m). In addition to this, larger areas and corridors of grassland will be created where panels are not required, which will offer habitat for amphibians.</p>	<p>Assumed presence of common amphibians within the Site.</p>	<p>Local (Low)</p>	<p>Protected from advertising and sale within the WCA 1981 (as amended) (Ref 8-1). Common toad is a Species of principal importance within Section 41 of the NERC Act 2006 (Ref 8-11). These species are common in local and national context and would therefore be of local value.</p>
<p>Flora</p>	<p>The desk study returned 24 records of the following protected/notable species within the 2km Study Area, rye brome</p>	<p>Protected/notable flora</p>	<p>Local (Low)</p>	<p>No rare plant species have been recorded within the Site. Bluebell has been recorded within the</p>

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
	<p>(<i>Bromus secalinus</i>), chamomile (<i>Chamaemelum nobile</i>), chicory (<i>Cichorium intybus</i>), bluebell (<i>Hyacinthoides non-scripta</i>), field scabious (<i>Knautia arvensis</i>), lesser spearwort (<i>Ranunculus flammula</i>), ragged-robin (<i>Silene flos-cuculi</i>), greater water-parsnip (<i>Sium latifolium</i>), wild strawberry (<i>Fragaria vesca</i>) and marsh stitchwort (<i>Stellaria palustris</i>).</p> <p>The closest record is of field scabious associated with Spaldington, approximately 154 m from the Order limits. Bluebell have been recorded on Site during the Phase 1 habitat surveys (TNs 28 and 29, as shown on Figure 8-3-1 in Appendix 8-3, ES Volume 2 [EN010143/APP/6.2]). Additionally, orchids (<i>Dactylorhiza</i> sp) have been noted on Site (TNs 30 and 31, as shown on Figure 8-3-1 in Appendix 8-3, ES Volume 2 [EN010143/APP/6.2]).</p>			<p>Site (TNs 28 and 29, as shown on Figure 8-3-1 in Appendix 8-3, ES Volume 2 [EN010143/APP/6.2]), however it is not confirmed whether this is the native bluebell.</p>
INNS	<p>Himalayan balsam has been recorded along ditches within or connected to the Site. New Zealand pigmyweed (<i>Crassula helmsii</i>) was also recorded just outside of the Site in an area of woodland (approximately half of this</p>	<p>Potential impacts upon native species and habitats within and outside the Order limits due to the spread of</p>	N/A	<p>Several confirmed INNS species are listed in Schedule 9 of the WCA 1981 (Ref 8-1) including Himalayan balsam. There are statutory constraints regarding their potential spread (as set out</p>

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
	<p>area of woodland lies within the Site). However, direct impacts to this woodland will be avoided.</p> <p>The data search returned records of several aquatic and terrestrial INNS within 2km of the Site and within the last ten years. These included records of 'demon shrimp' (<i>Dikerogammarus haemobaphes</i>), Himalayan balsam, giant hogweed (<i>Heracleum mantegazzianum</i>), pontic rhododendron (<i>Rhododendron ponticum</i>), and Nuttall's waterweed (<i>Elodea nuttallii</i>).</p> <p>Evidence of American mink has also been recorded during surveys for other species along the banks of the River Ouse and River Derwent and along the River Foulness.</p> <p>Field surveys recorded the following aquatic invasive species:</p> <ul style="list-style-type: none"> • Aquatic macrophytes: Nuttall's waterweed was identified along the surveyed stretch of Watercourse DE53. • Aquatic macroinvertebrates: the non-native but non-invasive New Zealand mud snail (<i>Potamopyrgus antipodarum</i>) in Fleet Dike and 	<p>invasive non-native species, and associated biosecurity risks, e.g. due to the spread of water-borne diseases such as crayfish plague and invasion of ditches by New Zealand Pigmyweed.</p>		<p>in Appendix 8-1, ES Volume 2 [EN010143/APP/6.2] as it is illegal to deliberately spread invasive species, and therefore mitigation will be required during construction to prevent their spread and where practicable locally eradicate these species within the construction boundary.</p>

Ecological feature	Baseline detail	Biodiversity conservation receptor	Biodiversity importance	Rationale
	<p>FL19, and the non-native but naturalised shrimp (<i>Crangonyx pseudogracilis/floridanus</i>) (in Watercourse DE28, FL19, Sewer Drain and Hall Dyke) were also recorded (as presented in Figure 8-2-1 of Appendix 8-2, ES Volume 2 [EN01043/APP/6.2]).</p>			

Future Baseline

- 8.5.21 This section considers those changes to the baseline conditions, described above, that might occur in the absence of the Scheme and during the time period over which the Scheme would have been in place.
- 8.5.22 In the absence of the Scheme, the habitats present or anticipated to be present within the Site (as detailed) will continue to provide a number of species with potential habitat, such as arable farmland for ground-nesting breeding birds. It is likely that habitats within the Site would continue to be under agricultural management and therefore the distribution of some species would change in response to cropping, whilst the assemblages may remain the same.

Construction Period

- 8.5.23 If the Scheme was not constructed, the majority of existing habitats are likely to continue being present, although some changes in habitat extent, composition and structure will occur as a result of ecological succession (e.g., the gradual establishment of tree and shrub seedlings). These resultant gradual changes in habitat composition are unlikely to materially alter the ecological baseline and therefore the habitats and species present are very unlikely to undergo significant change prior to the start of construction or within the construction period.

Operation (Including Maintenance)

- 8.5.24 Based on available information, in the absence of the Scheme being developed, there are no reasons to expect that there would be any marked change in the habitats within the Site over the 40-year lifespan (currently anticipated to be 2027 to 2067) of the Scheme, other than potential changes in farming practices or crop preferences. It is noted, however, that changing climatic conditions resulting from climate change may influence the resilience of certain habitats and species. Habitats such as broad-leaved trees and scrub would be more mature but are likely to support a broadly similar species assemblage and arable farmland will also be managed accordingly, maintaining broadly similar species assemblages.

Decommissioning

- 8.5.25 As described in **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**, the design life of the Scheme is 40 years and for the purposes of this ES chapter it is assumed that the entire Scheme is decommissioned 40 years after final commissioning (anticipated to be 2067) which provides a reasonable basis for the consideration of future baseline conditions. For ecology this is the worst-case scenario due to the increased disturbance that would occur, compared to a longer duration of loss of a small area of habitat under retained substations for example, that would have already been replaced/mitigated for elsewhere on the Site.
- 8.5.26 The future baseline conditions in 2067 without the Scheme being developed are currently unknown and more difficult to predict given the time period that would have elapsed. However, it is anticipated that baseline conditions at that time are likely to be similar to those presently observed within the Site, although habitats such as plantation woodland (excluding the cropped coppice willow which will be removed if the Scheme goes ahead) would have matured further. Species assemblages are also likely to have changed in

accordance with the Site conditions, reflecting for example the maturity of the habitats present.

8.5.27 Changes in biodiversity are likely to occur if climate change continues at its current pace. Adverse effects could include changes in species habitats and compositions and consequently changes in species assemblages and distribution. This could include via sea level rises which may affect tidal rivers such as the River Ouse.

Important Ecological Features

8.5.28 **Table 8-10** summarises the important ecological features that are relevant to the Scheme. Based on CIEEM guidelines (Ref 8-32) and using professional judgement, features of Site importance, i.e., less than Local (Low) importance, are not considered further in the assessment process.

Table 8-10. Summary of Important Ecological Features

Important Ecological Feature	Importance	Reason for valuation
River Derwent SAC, Lower Derwent Valley SAC, Lower Derwent Valley Ramsar, Lower Derwent Valley SPA, Humber Estuary SAC, Humber Estuary SPA, Humber Estuary Ramsar, Skipwith Common SAC, Thorn and Hatfield Moors SPA, Thorn Moor SAC.	International (Very high)	Internationally designated sites of biodiversity conservation importance.
River Derwent SSSI, Barn Hill Meadows SSSI, Howden Marsh LRN, Eastrington Ponds LRN, Beighton Meadows SSSI, Lower Derwent Valley NNR, Derwent Ings SSSI, Eskamhorn Meadows SSSI, Humber Estuary SSSI, Barlow Common LNR.	National (High)	National Statutory sites of biodiversity conservation importance.
Eight LWSs, one Candidate LWS, one historic LWS, and three SINCs (as detailed in Table 8-7).	County (Medium)	Non-statutory sites of biodiversity conservation importance.
Broadleaved semi-natural woodland	Up to County (Medium)	Habitat of ecological importance included as a Local BAP (LBAP) habitat, with areas of Priority woodland present within the Site.
Broadleaved plantation woodland	Up to County (Medium)	Habitat of ecological importance included as a LBAP habitat, with an area of Priority woodland (recorded as plantation during the Phase 1 habitat survey) present within the Site.

Important Ecological Feature	Importance	Reason for valuation
Mixed semi-natural woodland	Up to County (Medium)	Habitat of ecological importance included as a LBAP habitat, with areas of Priority woodland present within the Site.
Veteran and ancient trees	County (Medium)	Habitat of principal importance. Some with features suitable for protected and notable species, including bats and barn owl.
Scattered trees (non-veteran or ancient)	Up to Local (Low)	Not a habitat of principal importance, but individual trees can provide suitable habitat for protected and notable species, including bats and barn owl.
Hedgerows	Up to County (Medium)	Habitat of principal importance and LBAP habitat. The network of hedgerows across the Site will be of value to birds, bats, and other fauna.
Neutral semi-improved grassland	Local (Low)	Whilst not a habitat of principal importance, there are areas of semi-improved neutral grassland present within the Site which lie within the boundaries of Tottering Lane, Gribthorpe LWS and Wressle Verge LWS.
Arable field margins	Local (Low)	Habitat of principal importance and LBAP habitat.
Standing open water (ponds)	Local (Low)	Habitat of ecological importance included as a LBAP habitat. The ponds within the Site were generally found to be dry or holding little water. Some of the ditches were also holding standing water. These water bodies are not a stand-alone habitat within the wider area, as similar habitat can be found in the surrounding area. Therefore, the ponds within the Site are unlikely to reach the required level to fulfil the criteria of a Priority habitat.
Running water (including rivers and wet ditches)	River Derwent – National (High)	The section of the River Derwent which lies within the Site is designated as a SAC and SSSI and is discussed as the statutory

Important Ecological Feature	Importance	Reason for valuation
	River Ouse and River Foulness – County (Medium) Ditches/ drains (smaller watercourses) – Local (Low)	designated sites separately.
Priority habitat: coastal and floodplain grazing marsh, traditional orchard, mudflats, lowland fen	County (Medium)	Habitat of principal importance, shown on MAGIC (Ref 8-40) as present inside or adjacent to the Site.
Priority habitat: good quality semi-improved grassland, lowland meadows, reedbeds.	County (Medium)	Habitat of principal importance present in the wider 2km Study Area, outside of the Site.
Terrestrial invertebrate assemblage	Local (Low)	Habitats inside the Site are generally common in a local and national context and therefore unusual or rare assemblages of invertebrates are not expected. The river margins (where notable species may be present) will be avoided through HDD.
Tansy beetle	National (High)	One of the last remaining populations of the nationally scarce tansy beetle (also a UKBAP (Ref 8-79) species and protected under the WCA 1981 (as amended) (Ref 8-1) is known to be present along a 30km section of the River Ouse in York; however, they are not currently known to be present this far south along the River Ouse. The beetle is a Priority species under the Selby BAP (Ref 8-50). The River will be crossed using HDD technique; therefore, retaining associated riparian habitat that could be used by this beetle.
Aquatic macroinvertebrates	Local (Low)	Aquatic macroinvertebrate communities inside the Site are common in a local and national context and therefore unusual or rare assemblages of aquatic macroinvertebrates are not expected. River Derwent and

Important Ecological Feature	Importance	Reason for valuation
		River Ouse (where notable species may be present) will be avoided through HDD.
Aquatic macrophytes	Local (Low)	Aquatic macrophyte communities inside the Site are common in a local and national context and therefore unusual or rare assemblages of aquatic macrophytes are not expected. River Derwent and River Ouse (where notable species may be present) will be avoided through HDD.
Fish	County (Medium)	<p>The River Derwent SAC is within the Site and has river lamprey, sea lamprey and bullhead as qualifying species of its designation. It is also noted in the designation that these species spawn in the lower reaches.</p> <p>The Humber Estuary SAC is within 5km of the Order limits and the River Ouse, which is partially within the Site, flows into the Humber Estuary. River and sea lamprey are qualifying species for this SAC.</p> <p>Whilst both of these Main Rivers are to be crossed using HDD, there is hydrological connection to smaller waterbodies that will likely be open-cut; therefore, fish are considered of Medium importance.</p>
Breeding Birds – general breeding bird assemblage	Local (Low)	Populations of common and notable breeding bird species within the Site that do not meet the thresholds for significance in a national or county context and therefore qualifies as being of Low importance.
Breeding birds – breeding territories of curlew	Up to County (Medium)	The Site supporting, in part, breeding territories of curlew within the Solar PV Site qualifies as being of Medium importance.

Important Ecological Feature	Importance	Reason for valuation
Breeding birds – breeding population of skylark	District (Medium)	Breeding population of skylark within the Solar PV Site qualifies as being of Medium importance.
Breeding birds – breeding territories of specially protected species	Local (Low)	Breeding territories of quail, hobby and barn owl, qualifies as being of Low importance.
Non-breeding birds – non-breeding assemblage	Up to County (Medium)	Species diversity within the Site qualifies as being of Medium importance.
Non-breeding birds – non-breeding population of skylark	District (Medium)	Peak count of skylark is likely to be of greater importance than local, but does not meet the threshold for being of County importance.
Bats	Up to County (Medium) for Myotis species, and Local (Low) for all other species	Bat assemblage – foraging/commuting. Potential for roosts within the Site.
Badger	Local (Low)	Presence of at least four separate social groups within, or in the vicinity of, the Site. Five active or partially active badger setts and one disused sett were identified within and up to 50m of the Site.
Otter	District (Medium)	The River Derwent SAC (which partially lies within the Site) has otter as a qualifying species. Presence of this species confirmed, using the River Derwent, River Ouse and connecting drain. No Otter holts identified, but one possible laying up site recorded just outside of the Site.
Water vole	Up to District (Medium)	Legally protected species. Absence of this species is assumed within the Site as no conclusive evidence of this species recorded along the watercourses/ditches targeted for survey. Any population present would therefore be up to District (Medium) importance.

Important Ecological Feature	Importance	Reason for valuation
Reptiles	Local (Low)	Legally protected species and species of principal importance. Presence of grass snake confirmed within the Site.
Common amphibians (not GCN)	Local (Low)	Assumed present within the Site due to presence of suitable habitat. Common toad is a species of Principal importance.
Hedgehog, brown hare and harvest mouse	Local (Low)	Species of Principal importance. Presence of brown hare confirmed within the Site. Potential for hedgehog and harvest mouse to be present within the Site.
Polecat	Up to County (Medium)	Species of Principal importance. If present, any polecat population would be of value up to County level due to its rarity in this area of the UK; however, unlikely to be present as noted in the baseline detail.
Flora	Local (Low)	Bluebell recorded within the Site. Some of the semi-improved grassland areas, including those which support orchid species are considered to enrich the habitat resource and be of value within the site or local context.
INNS	N/A	There are statutory constraints regarding their potential spread (as set out in Appendix 8-1, ES Volume 2 [EN010143/APP/6.2])

8.6 Embedded Mitigation

8.6.1 Where practicable, mitigation measures have been incorporated into the Scheme design and/or how it shall be constructed. Through iterative assessment, potential impacts have been predicted and opportunities to mitigate them identified with the aim of preventing or reducing impacts as much as possible. This approach provides the opportunity to prevent or reduce potential adverse impacts from the outset. This embedded mitigation/mitigation by design approach has been taken into account when evaluating the significance of the potential impacts.

Construction and Decommissioning

- 8.6.2 Primary avoidance and mitigation measures have been embedded into the Scheme to minimise construction impacts on biodiversity and these are presented in the following sections.
- 8.6.3 The general principles to be followed in the decommissioning of the Scheme will include measures to mitigate likely significant decommissioning related effects on biodiversity. Whilst the majority of mitigation measures will be similar to those during construction (detailed below), pre-decommissioning surveys are likely to be required to inform any mitigation and protected species licensing, as required at the time of decommissioning. A detailed DEMP (based on the **Framework DEMP [EN010143/APP/7.9]**) will be prepared and agreed with the relevant authorities at the time of decommissioning, in advance of the commencement of decommissioning works, and would also include timescales and transportation methods.

Scheme Design

- 8.6.4 The Scheme design has evolved to avoid statutorily designated sites where practicable. Measures embedded within the Scheme design ensure that statutory designated sites are not impacted during construction, operation or decommissioning (e.g., through siting construction routes away from and outwith designated sites where practicable, incorporating suitable buffer zones and erection of temporary construction fencing to avoid incursion into exclusion zones). The River Derwent SAC/SSSI will be crossed using HDD, to avoid direct impacts to the River Derwent and associated riparian habitats. An existing track off the northern side of the A63 which passes through a small section of the edge of the River Derwent SAC (outside of any areas of qualifying features) will be used for access to the construction Compound D (as shown on **Figure 2-4, ES Volume 3 [EN010143/APP/7.9]**), but will remain within the existing track and verge along the edge of the arable field.
- 8.6.5 Most of the non-statutory designated sites within the 2km Study Area will not be directly impacted by the Scheme, with the exception of Tottering Lane, Gribthorpe LWS and Wressle Verge LWS. Tottering Lane, Gribthorpe LWS lies within the Interconnecting Cable Corridor between Solar PV Area 1a and Solar PV Areas 1b and 1e. Wressle Verge LWS is located in both the Interconnecting Cable and Grid Connection Corridors and runs north to south between Solar PV Areas 3a and 3b (along Wood Lane) and east to west along the northern boundary of Solar PV Area 3b (along Brind Lane) (as shown on **Figure 8-2, ES Volume 3 [EN010143/APP/6.3]**). To limit disturbance to habitat inside these LWS during construction, the working area for the cable installation across the verges will be kept to a minimum of 5m width inside the LWSs and no spoil, materials or vehicles will be stored within the LWS. Once the cable(s) have been installed, the removed turfs and soil from the LWS (stored separately to that of adjacent fields) will be backfilled and replaced promptly, retaining the original topsoil and seed bank. The adjacent hedgerows will be tunnelled underneath using an auger in order to retain the hedgerows and avoid additional effects on the verges; this will not be long enough to tunnel under the hedge and verge. Appropriate measures (e.g., fencing and signage) will ensure no encroachment into the LWSs, outside of the required working areas. As well as being crossed by cabling, vegetation clearance will be required for provision of the new and modified existing access tracks across the LWSs.

Two new access tracks into the fields along Tottering Lane will be required, as well as upgrading two existing access (one across Tottering Lane, Gribthorpe LWS, and one across Wressle Verge LWS). A further modified access to the north of Wressle Verge LWS will also be required, but lies outside of the LWS in its current design, including the visibility splay. Both a permanent bellmouth and visibility splay will be required for each; however, the replacement of the hedgerows and retention of the verge turfs for use along the inside of the bellmouths, has been included within the landscape design (as presented in the **Framework LEMP [EN010143/APP/7.14]**). Management of the grass verges where they fall within the required visibility splays may discourage species richness, depending on the requirements of the council highways team in line with their requirements in relation to highways safety. However, it is anticipated that the grassland towards the rear of these verges could be cut less frequently and/or to a higher height than the grassland at the front, to encourage species diversity. It is likely to be a requirement that the grassland at the front of the visibility splays is kept shorter for safety reasons. Some of these access points are already in existence and the associated visibility splays are currently managed in this way, with the LWSs remaining designated for their species rich verges. One approximately 10m section of hedgerow along the northern visibility splay for a new access on Tottering Lane will require removal; however, this is replaced within the field behind (outside of where it would affect visibility). Where temporary habitat loss is unavoidable, reinstatement will be undertaken after construction where practicable. Large areas of grassland creation is included within the landscape design throughout the Solar PV Areas, both around the solar PV panels and in the field margins of each field, as well as separate mitigation areas. This includes c. 112.4ha of species-rich grassland, c. 3.5ha of flower rich grassland and c. 797.9ha of semi-improved grassland (under and around the solar PV panels). Some of these areas of grassland, such as the field margins and separate mitigation areas, can be managed towards LWS criteria.

- 8.6.6 An area of habitat enhancement (18.26ha in size) within the eastern portion of Solar PV Area 1e, adjacent to the River Foulness, will be left free of solar PV panels and other infrastructure as part of the Scheme design, and will provide permanent wet grassland habitat for birds that prefer such habitats during the non-breeding season (e.g., golden plover, curlew and lapwing). This has been included within the landscape design (as presented in the **Framework LEMP [EN010143/APP/7.14]**).
- 8.6.7 Within the Solar PV Site, areas of undeveloped land (shown as 'Proposed Ecological Enhancement Areas' on the Landscape Masterplan (Appendix A of the **Framework LEMP [EN010143/APP/7.14]**)) totalling 20.5 ha, have been included within the Scheme which will be sown with floristically diverse seed mixes used to maximise both nesting habitat for ground-nesting birds such as Skylark, but also invertebrate prey for chicks (during the Skylark breeding season) as well as seeds for adults (in both winter and summer). Such areas will also be of benefit to reptiles, badger, bats and other mammals. Management of these areas will provide permanent habitat for other ground-nesting bird species (e.g., curlew and lapwing, both of which were recorded within the Solar PV Site during surveys for breeding birds). In addition to these larger undeveloped areas, wide margins (c.15-25 m) and undeveloped corners of fields have been left alongside numerous internal

access tracks and replacement habitat to new access. A similar treatment to the larger undeveloped areas will be applied to these linear habitats, providing nesting opportunities and mosaics of bare ground and diversity grassland for foraging and territory defence. This has been included within the landscape design (as presented in the **Framework LEMP [EN010143/APP/7.14]**).

Habitat Avoidance Measures

- 8.6.8 The Scheme has been designed with the view to avoid key nature conservation and ecological features present within or adjacent to the Site as far as practicable. Accordingly, the following minimum buffers from key habitat features have been applied where practicable (e.g., some features such as hedgerows and waterbodies will be crossed):
- a. 15m from woodlands (some cabling will lie within 15m of woodland);
 - b. 10m from hedgerows increasing to 15m where there are hedgerow trees;
 - c. 15m from individual trees; a minimum of 10m from watercourses (bank top) and ponds (except in a small number of cases for ponds where the full 10m is not feasible), to protect riparian habitats and to mitigate for potential hazards such as chemical and soils spills into watercourses/waterbodies. This buffer is extended to at least 30m for the River Derwent, River Ouse and Watercourse DE53.
- 8.6.9 Areas of willow plantation located in Solar PV Area 3c, which are currently grown and harvested for biofuel, will be lost as part of the Scheme.
- 8.6.10 Where watercourses/ditches (not Main Rivers) are crossed by cabling works and open cut techniques are required, habitats that are temporarily lost will be reinstated after installation. Where small watercourses/ditches (not Main Rivers) are crossed for access, either temporarily during construction or permanently during operation, new crossings will be clear span and wide enough to avoid the loss of in-channel and riparian habitats. Tracks will be permeable, and localised SuDS, such as swales and infiltration trenches, will be used to control runoff if required. No new culverts will be created as part of the Scheme. Where upgrades are required to existing culverts, they will be extended by a maximum of 2m and length-for-length equivalent watercourse enhancements would be required.

Framework CEMP

- 8.6.11 The implementation of the **Framework CEMP [EN010143/APP/7.7]**, secured through the DCO, includes measures to manage the environmental effects of the Scheme and to demonstrate compliance with environmental legislation. Accordingly, the Framework CEMP details the measures required to mitigate any construction related effects on biodiversity, including those associated with dust deposition, air pollution, pollution incidents, water quality, light, noise and vibration.
- 8.6.12 Likewise, the implementation of the **Framework DEMP [EN010143/APP/7.9]**, secured through the DCO, includes measures to manage the environmental effects of the Scheme and to demonstrate compliance with environmental legislation. Accordingly, the Framework DEMP details the measures required to mitigate any decommissioning related effects on biodiversity, including those associated with dust

deposition, air pollution, pollution incidents, water quality, light, noise and vibration.

Vegetation Clearance and Building Works

- 8.6.13 Vegetation clearance will be undertaken in advance of construction and at an appropriate time of year to avoid the nesting bird period and incidental injuring or killing of reptiles and amphibians. Therefore, construction will avoid the nesting bird period (i.e., March to August inclusive) for vegetation clearance and, in areas suitable for reptiles, would be undertaken at an appropriate time of year, concordant with requirements for other species (such as nesting birds and brown hare). Where vegetation clearance cannot avoid the inactive season and is proposed within the nesting bird period, these will be checked for the presence of any nests by a suitably experienced ornithologist, prior to vegetation removal, and if active nests are found, then appropriate buffer zones would be put in place and the area monitored until the young birds have fledged. Vegetation with the potential to support reptiles will be cut in a phased approach, firstly cutting to 30cm (centimetres), then, following a period of no less than 24 hours, to 15cm and then to ground level, after another 24 hours. Any habitat features within such areas which may conceal sheltering reptiles and amphibians (e.g., log piles, rubble mound bunds, any other debris) will not be dismantled during their inactive season (i.e., November to February inclusive).
- 8.6.14 Checks for nesting birds listed under Schedule 1 of the WCA 1981 (as amended) (Ref 8-1), especially barn owl and hobby will be undertaken prior to construction (including the appropriate season prior to for monitoring purposes, and immediately prior to for vegetation clearance) and will be carried out where the Scheme intersects or passes close to suitable breeding habitats or known breeding locations for these species. If nesting Schedule 1 birds are found, a suitably qualified ornithologist will be consulted to advise whether a temporary no disturbance buffer around the nest is required to avoid disturbance to Schedule 1 breeding species, the size of which will be determined by the species, stage of nesting and construction activity proposed. As a hobby nest has been identified adjacent to a site compound, the compound will be set up prior to the nesting season. Appropriate checks will be done to ensure they are not already present. Relevant noise reducing measures (as detailed in the **Framework CEMP [EN010143/APP/7.7]**), such as not letting vehicles idle, will help to limit noise in the areas. The site compound layout will be designed with input from an ornithologist to help locate more noisy elements away from the previously used nest site in case hobby decide to return to use it once the compound is in use. Nest baskets will be installed prior to the construction works in appropriate locations to encourage use of alternative nest sites.
- 8.6.15 Works to any buildings used by barn owl will be suitably timed to avoid direct impacts to barn owl (i.e., injury or killing) and will be carried out only following inspection by a suitably licenced person and if absence is confirmed. Barn owl boxes will be installed in suitable locations to provide suitable alternative roost/ nesting sites.

Security Perimeter Fencing

- 8.6.16 The Solar PV Site perimeter fence (stock proof mesh-type security fence with wooden posts) will be implemented early in the construction phase to secure the Solar PV Site and prevent construction activity in proximity to

peripheral habitats and retained habitats within the Solar PV Site. The fence design will include gaps at the base to allow mammals that may use retained habitats, including, badger, brown hare, and hedgehog, to pass underneath at strategic locations. Any temporary fencing present during construction (for example on the Grid Connection Corridor) and permanent Solar PV Site perimeter fencing will also allow continued movement of otter along watercourses where they have been found to be present.

Construction Lighting

- 8.6.17 During construction, works will be restricted to daylight hours wherever practicable to remove the need for artificial lighting, with focussed task-specific lighting provided where this is not practicable, e.g., HDD drilling operations (currently identified at Rivers Ouse and Derwent, Featherbed Drain, Watercourse DE53 in the Grid Connection Corridor and the Hull-Selby Railway), unless directed by authorities or areas requiring road closures. Other possible HDD locations within the Grid Connection Corridor (as previously listed) will, however, require smaller working areas and more limited working hours, in particular the A63 crossing.
- 8.6.18 Within construction compounds task specific and fixed 'general' lighting may be required in months with reduced daylight hours (early mornings and up to 19:00 for general workforce) to meet safety requirements. Additionally, lighting would be used by the roving security teams during their regular checks and 'emergency' visits (if an alert is triggered).
- 8.6.19 Outside of core working hours PIR controlled lights (motion sensors) will be used at construction compounds and at welfare areas. The CCTV will also use Infrared (IR) lighting to provide night vision functionality meaning that no visible lighting will be needed for the security system.
- 8.6.20 (further details on lighting design are found in **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**).
- 8.6.21 Where lighting is required, it will conform to best practice guidelines with respect to minimising light spill into adjacent habitats and prevent disturbance to bats and other species, including Institute of Lighting Professionals Guidance Notes (in particular GN08/23 Bats and Artificial Lighting at Night (Ref 8-34) which was produced in collaboration with the Bat Conservation Trust, and GN-1: Reduction of Obtrusive Light (Ref 8-35) in so far as it is reasonably practicable. The following such measures will be taken:
- a. Lights installed will be of the minimum brightness and/or power rating capable of performing the desired function;
 - b. Light fittings will be used that reduce the amount of light emitted above the horizontal (reduce upward lighting);
 - c. Light fittings will be positioned correctly, inward facing and directed downwards, and away from watercourses (in particular, the River Ouse and River Derwent);
 - d. Direction of lights will seek to avoid spillage onto neighbouring properties, habitats, highway or waterway; and
 - e. PIR controlled lights (motion sensors) will be used except where temporary focussed task specific lighting is required.

Drilling Methods for Watercourse Crossings

- 8.6.22 During construction of the Grid Connection Corridor and Interconnecting Cable Corridors, the River Derwent, River Ouse, Featherbed Drain and Watercourse DE53 (as shown on **Figure 2-4, ES Volume 3 [EN010143/APP/6.3]**) will be crossed using underground (HDD) techniques that would not disturb the watercourses. All cables will be installed a minimum of 1.5m below the bed of watercourses (excluding the River Ouse and River Derwent). Cables will be installed by HDD a minimum of 5m below the bed of the River Ouse and River Derwent.
- 8.6.23 As detailed in **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/9.1]**, there are expected to be 34 open-cut watercourse crossings for cable installation that will require open cut installation techniques. This will be subject to further refinement of the design post-consent and the number of crossings will be minimised where practicable. With the exception of one crossing of the WFD designated Fleet Dike, these are all agricultural drains and the indicative locations are shown in **Figure 9-2, ES Volume 3 [EN010143/APP/6.3]**.
- 8.6.24 For these crossings it is assumed that water flow would be maintained by damming and over pumping. These watercourses are generally ephemeral ditches and if works are carried out in the drier months this would reduce the risk of pollution propagating downstream, although this cannot be guaranteed.
- 8.6.25 Where crossings are not required, setbacks of a minimum 10m from the water/channel edge from all watercourses/ditches (extended to a minimum of 30m for the River Derwent, River Ouse and Watercourse DE53) of the working area is considered sufficient to mitigate for potential hazards such as chemical and soils spills into watercourses and avoid potential direct impacts to watercourses, as well as species which may use them (e.g., otter). It is noted that some will have access crossings using clear span bridges. The **Framework CEMP [EN010143/APP/7.7]** specifies requirements for the safe storage of chemicals and other hazardous materials (e.g., fuel) reaching watercourses during flood events during the construction phase. A full list detailing crossing methods and an explanation of these techniques is provided in **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]**.

Soil Handling

- 8.6.26 Measures to ensure the sustainable management of the soil resources which are disturbed by the Scheme (and their associated seedbanks) and which support the habitats within the Site will be based upon standard industry good practice measures, such as those in Defra's Code of Practice (Ref 8-80) ensuring that stored soils retain their quality and function. Additionally soils of different types or supporting different habitats will be stored separately and replaced in the area they were taken from so that the incorporated seedbank is not lost. These measures will be set out in a Soil Management Plan (SMP) to be provided in advance of construction, secured through a Requirement attached to the DCO (**Framework SMP [EN010143/APP/7.10]**).

Drainage Strategy

- 8.6.27 A **Framework Surface Water Drainage Strategy (Appendix 9-4, ES Volume 2 [EN010143/APP/6.2])** has been developed to manage surface water runoff and will reduce the likelihood and severity of potential pollution incidents and flooding affecting watercourses and the local ditch network to reduce or eliminate adverse effects for aquatic and riparian species and habitats. As agreed with the Ouse and Humber Drainage Board, the Framework Surface Water Drainage Strategy only considers the land within Solar PV Area 1c which will be the location of the two Grid Connection Substations. It will manage the surface water runoff in Solar PV Area 1c through attenuation storage methods.
- 8.6.28 There are strict obligations under the Environmental Damage (Prevention and Remediation) (England) Regulations 2015 (Ref 8-67) and the Environmental Permitting (England and Wales) Regulations 2016 (Ref 8-68), to prevent the pollution of watercourses. Construction site runoff will be minimised through a range of measures secured in the **Framework CEMP [EN010143/APP/7.7]**. Furthermore, temporary SuDS measures will be deployed to reduce runoff rates. The SuDS measures will protect the water environment from pollution impacts, there is a statutory obligation for construction projects to consider water quality impacts.

Wildlife Legislation Compliance

- 8.6.29 To comply with relevant wildlife legislation, pre-construction surveys, such as updated Phase 1 and badger walkovers, and bat roost assessments of trees to be lost, will be undertaken to support the baseline survey findings. The purpose of these pre-construction surveys is to ensure mitigation during the construction phase is based on the latest protected species information. This will also be required for any protected species licensing that may be identified as being necessary at detailed design stage. These surveys will also provide an update on the presence and location of any invasive species, the findings of which will inform the implementation of measures to prevent their spread into the wild. These surveys will inform the production of a Biosecurity Management Plan which will set out procedures to ensure that no invasive species are brought onto the Order limits (e.g., WCA 1981 (as amended) Schedule 9 species (Ref 8-1)) and will be secured through the **Framework CEMP [EN010143/APP/7.7]**. In the event that any future infestations of INNS are identified prior to and or during the development process, exclusion zones will be established around them, and an Ecological Clerk of Works (ECoW) contacted for advice as required.
- 8.6.30 During construction (and operation), Reasonable Avoidance Measures (RAMs), including appropriate buffers (up to 30m) around any identified badger setts, or retained trees with bat roost suitability (buffer of 15m) throughout the Site will be implemented.
- 8.6.31 Implementation of measures to avoid animals being injured or killed within construction working areas, such as through the inclusion of perimeter fencing and covering excavations or providing a means of escape, will exclude them from such areas and prevent them from becoming trapped in excavations.

8.6.32 Details of how the Scheme design's embedded avoidance and mitigation measures interact with important ecological features are presented in **Table 8-11**.

Table 8-11. Embedded Mitigation Measures

Baseline details	Embedded mitigation
<i>Designated Sites</i>	
Statutory designated sites (listed in Table 8-6)	<p>Scheme design: The Scheme design avoids any significant direct impacts on all of the statutory designated sites. The River Derwent SAC and SSSI lie within the Grid Connection Corridor but will be crossed using HDD.</p> <p>Construction: The Grid Connection Corridor crossing of the River Derwent SAC/SSSI will be undertaken using HDD methods to lay cabling; therefore, avoiding impacts to the in-channel and associated riparian habitats. The working areas (including construction compounds) will be at least 30m from the bank tops, which is considered sufficient to mitigate for potential hazards such as chemical and soils spills into the rivers and to avoid potential direct impacts to the SAC/SSSI habitat. This will also protect species using the watercourses and associated riparian habitats, including (but not limited to) otter, birds and fish, from direct impacts. Measures to ensure incursion into the River Derwent SAC/SSSI does not occur will be put in place (e.g., security fencing), which will be implemented at an early stage. A site-specific hydraulic fracture risk assessment would be developed prior to construction following further investigation of specific ground conditions at the crossing locations, and appropriate mitigation developed in line with best construction practice. This would be secured via the Framework CEMP [EN010143/APP/7.7].</p> <p>Where the Grid Connection Corridor crosses the A63 and passes through the edge of the River Derwent SAC/SSSI, the Applicant has committed to prioritising options of cable installation using HDD which would avoid passing through the River Derwent SAC/SSSI (i.e., routing north, outside of the SAC/SSSI and an HDD across the A63) unless unforeseen and engineering constraints/ground conditions are identified at detailed design stage making this option unachievable. The second option would involve open cut of the access track off the A63 and then HDD under the rest of the access track at the start of the SAC/SSSI boundary and into the field to the north outside of the SAC/SSSI boundary. The third option would utilise careful excavation along the track and potentially a small loss of verge habitat north of the existing track when entering the field (beyond that required for site access) within the SAC/SSSI boundary. See Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1] for further details.</p> <p>Vehicular access during construction along the existing track through the very edge of the River Derwent SAC/SSSI would be managed. Along with ensuring the health and safety of road users this would also ensure that there would be no requirement for road widening or highway improvements at the junction with the A63 or for</p>

Baseline details

Embedded mitigation

vehicles to progress along the track. The traffic management would also ensure that trespass of vehicles onto the verge is avoided. The access would require the construction of a temporary bellmouth in the verge habitat to the north of the existing access track when entering the field comprising construction Compound D, which would be fully reinstated at the end of the construction phase. It has been established that whilst the track and the verge habitat constitute site fabric, they are not functionally linked to qualifying habitat and species in the River Derwent SAC or of special interest/features for the SSSI.

Temporary lighting may be required during the HDD operations. Measures to minimise potential effects on the surrounding designated habitats by minimising sky glow, glare and light spillage are set out in paragraphs 8.6.17 to 8.6.21.

Standard environmental protection measures will be implemented and adopted during construction, formalised through a detailed CEMP (secured through DCO Requirement via the **Framework CEMP [EN010143/APP/7.7]**). The mitigation outlined in the Framework CEMP would also prevent any potential effects on the groundwater and therefore associated habitats dependent on groundwater. These measures will include dust suppression and pollution prevention, in addition to a Biosecurity Management Plan (also secured via the Framework CEMP) that will be prepared following DCO Application consent which will set out procedures to ensure that no invasive species are brought onto the Site or are spread. Consequently, construction related pollution will be mitigated and will not affect the integrity of any designated site.

Tottering Lane LWS and Wressle Verge LWS

Scheme design:

Tottering Lane, Gribthorpe LWS and Wressle Verge LWS will be crossed by the interconnection cable, and new and modified access tracks will be created across the verges and hedgerows along Wressle Verge LWS and Tottering Lane, Gribthorpe LWS (as this option avoids additional hedgerow loss elsewhere and loss of a veteran tree).

Construction:

To limit disturbance to habitat inside these LWS during construction, the working area will be kept to a minimum of 5m inside the two LWSs and no spoil, materials or vehicles will be stored within the LWS.

Once the cable(s) have been installed, the removed soil and turfs from the LWSs (stored separately to that of adjacent fields) will be backfilled and replaced promptly, retaining the original topsoil and seed bank.

Two new access tracks into the fields along Tottering Lane will be required, as well as upgrading two existing access points, one across Tottering Lane, Gribthorpe LWS, and one across Wressle Verge LWS. A further existing

Baseline details

Embedded mitigation

access requiring upgrading to the north of Wressle Verge LWS does not impinge on the LWS in its current design, including the required visibility splay. Both a permanent bellmouth and visibility splay will be required for each access point that fall within the LWSs; however, the replacement of the hedgerows and retention of the verge turfs for use along the inside of the bellmouths, has been included within the landscape design. Management of the grass verges where they fall within the required visibility splays may discourage species richness, depending on the requirements of the council highways team in line with their requirements in relation to highways safety. However, it is anticipated that the grassland towards the rear of these verges could be cut less frequently and/or to a higher height than the grassland at the front, to encourage species diversity. It is likely to be a requirement that the grassland at the front of the visibility splays is kept shorter for safety reasons. Some of these access points are already in existence and the associated visibility splays are currently managed in this way, with the LWSs remaining designated for their species rich verges.

One approximately 10m section of hedgerow along the northern visibility splay for a new access on Tottering Lane will require removal, however this is replaced within the field behind (outside of where it would affect visibility) and the verge will become wider at this point.

Where temporary habitat loss is unavoidable, reinstatement will be undertaken after construction where practicable. Large areas of grassland creation is included within the landscape design throughout the Solar PV Site, both around the solar PV panels and in the field margins of each field, as well as separate mitigation areas. This includes c. 112.4ha of species-rich grassland, c. 3.5ha of flower rich grassland and c. 797.9ha of semi-improved grassland (under and around the solar PV panels). Some of these areas of grassland, such as the field margins and separate mitigation areas, can be managed towards LWS criteria.

Appropriate measures (e.g., fencing and signage) will ensure no encroachment into the two LWSs, outside of the required working areas.

Where temporary habitat loss is unavoidable, reinstatement will be undertaken after construction.

Other LWSs and SINC

Scheme design:

With the exceptions of Tottering Lane, Gribthorpe LWS and Wressle Verge LWS (discussed above), the Scheme design avoids any direct impacts on the remaining eleven non-statutory sites of biodiversity conservation importance present within the 2km Study Area (see **Table 8-7**).

Construction:

Baseline details

Embedded mitigation

Standard environmental protection measures will be implemented and adopted during construction, formalised through a detailed CEMP (secured through DCO Requirement via the **Framework CEMP [EN010143/APP/7.7]**). These measures will include appropriate pollution prevention.

Habitats

Woodland (including Priority deciduous woodland and Priority orchard habitat) occurring within, or adjacent to, the Site

Scheme design:

The Scheme design retains all woodland habitats, with the exception of willow plantation located in Solar PV Area 3c. There is some potential incursion to the root protection areas (RPA) of woodland areas due to cabling works.

Construction:

As detailed in **Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2]**, RPA incursions can be managed so that there will be no detrimental impacts on the health or amenity of retained trees.

The **Framework CEMP, ES Volume 7 [EN010143/APP/7.7]** includes suitable pollution prevention measures.

Coastal and floodplain grazing marsh Priority habitat

Scheme design:

The Scheme has been designed to avoid this habitat as far as practicable, which is shown on MAGIC (**Ref 8-40**) to be inside the Site. However, The Phase 1 habitat survey recorded the area within Solar PV Area 2b as arable, bordered by a species-poor hedgerow with trees and a ditch (dry at the time of the Phase 1 habitat survey but later identified as a wet ditch during a MoRPh Survey to inform the BNG assessment in the **BNG Assessment Report [EN010143/APP/7.11]**). An area of Priority coastal and floodplain grazing marsh habitat is also shown on the MAGIC website inside the Grid Connection Corridor, in a field adjacent to Solar PV Area 2b, along the verges of Wood Lane, and inside a field to the west of Wood Lane. The two fields were recorded to be improved grassland during the Phase 1 habitat survey, with poor semi-improved grassland recorded along Wood Lane. Temporary loss/disturbance of a small area of the habitat which is mapped as priority coastal and floodplain grazing marsh (recorded as improved grassland and poor semi-improved grassland during the Phase 1 habitat survey) will occur during the installation of cables.

Construction:

Whilst the Scheme design cannot completely avoid this habitat, measures to ensure incursion into this habitat outside the working areas does not occur will be put in place, (e.g., security fencing), which will be implemented

Baseline details

Embedded mitigation

at an early stage to protect retained habitats from incursion during construction. The **Framework CEMP, ES Volume 7 [EN010143/APP/7.7]** includes suitable pollution prevention measures.

Priority lowland fen habitat

Scheme design:

MAGIC (Ref 8-40) indicates the presence of Priority lowland fen habitat within the Site, inside the Grid Connection Corridor, between the A63 and fields to the north. The majority of this area of habitat lies within the boundary of the River Derwent SAC/SSSI, with the habitat indicated to lie south of the existing access track off the A63, comprising the poor semi improved grassland verge, drain and area of woodland and ponds. The Scheme has been designed to avoid direct and indirect impacts to this habitat.

Construction:

Where the Grid Connection Corridor crosses the A63, the Applicant has committed to prioritising options of cable installation using HDD which would avoid passing through this habitat as mapped on MAGIC (Ref 8-40) (i.e., routing north, outside of the River Derwent SAC/SSSI and an HDD across the A63) unless unforeseen and engineering constraints/ground conditions are identified at detailed design stage making this option unachievable. The second option would involve open cut of the access track off the A63 and then HDD under the rest of the access track at the start of the SAC/SSSI boundary and into the field to the north outside of the SAC/SSSI boundary. The third option would utilise careful excavation along the track and potentially a small loss of verge habitat north of the existing track when entering the field (beyond that required for site access) within the SAC/SSSI boundary. See **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]** for further details. Vehicular access during construction along the existing track through the very edge of the River Derwent SAC/SSSI would be managed. Along with ensuring the health and safety of road users this would also ensure that there would be no requirement for road widening or highway improvements at the junction with the A63 or for vehicles to progress along the track. The traffic management would also ensure that trespass of vehicles onto the verge is avoided. This therefore avoids any encroachment into the priority lowland fen habitat.

Priority Mudflat habitat

Scheme design:

MAGIC (Ref 8-40) indicates that Priority mudflat habitat is present within the Grid Connection Corridor, along the banks of the River Ouse. The River Ouse and this associated habitat will be crossed using HDD.

Construction:

Baseline details

Embedded mitigation

The Grid Connection Corridor crossing of the River Ouse will be undertaken using HDD methods to lay cabling; therefore, avoiding impacts to any Priority mudflat habitat along its banks.

The working areas will be at least 30m from the bank tops, which is considered sufficient to mitigate for potential hazards such as chemical and soils spills into the river and to avoid potential indirect impacts to the Priority mudflat habitat. Measures to ensure incursion into the River Ouse does not occur will be put in place, (e.g. security fencing), which will be implemented at an early stage. The **Framework CEMP, ES Volume 7 [EN010143/APP/7.7]** includes suitable pollution prevention measures.

Neutral semi-improved grassland

Scheme design:

There are areas of semi-improved neutral grassland present within the Site which lie within the boundaries of Tottering Lane, Gribthorpe LWS and Wressle Verge LWS (**Figure 8-2, ES Volume 3 [EN010143/APP/6.3]**). This is therefore considered separately as part of the LWSs. This habitat is also present along some field boundaries inside the Solar PV Site. Field margins have been retained in the design as far as practicable, with strips of species-rich grassland included around the edges of fields.

Construction:

Measures to ensure incursion into retained areas of this habitat does not occur will be put in place, e.g. security fencing, which will be implemented at an early stage to protect retained habitats from incursion during construction.

Standing water

Scheme design:

The Scheme has been designed to retain existing ponds, which will be buffered by a minimum of 10m (except in a small number of cases where the full 10m is not feasible).

Construction:

Standing water present in Watercourse DE53 inside the Grid Connection Corridor will be crossed using HDD to avoid direct impacts.

Measures to ensure incursion into this habitat does not occur will be put in place, (e.g., security fencing), which will be implemented at an early stage to protect retained habitats from incursion during construction.

The **Framework CEMP [EN010143/APP/7.7]** specifies requirements for the safe storage of chemicals and other hazardous materials (e.g., fuel) reducing the risk of them reaching standing waters through flood events during construction.

Baseline details

Embedded mitigation

The **Framework CEMP, ES Volume 7 [EN010143/APP/7.7]** includes suitable pollution prevention measures.

Running water
(including wet ditches)

Scheme design:

The Scheme incorporates minimum 10m stand-off buffers from watercourses and ditches (10m from the bank top). This buffer is extended to a minimum of 30m for the River Derwent and River Ouse. Some watercourses and ditches will, however, be crossed for cabling and access.

Construction:

The use of existing watercourse crossing points will be used for construction access, where practicable. More information on the crossing points and methods are presented in **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]**.

The crossing of the River Derwent, River Ouse, Featherbed Drain and Watercourse DE53 will be undertaken using HDD methods to lay cabling, therefore avoiding direct impacts to these watercourses. The working areas (including construction compounds) will be at least 30 m from the bank tops, which is considered sufficient to mitigate for potential hazards (such as chemical and soils spills into these watercourses) and to avoid potential direct impacts to species which use these watercourses. A site-specific hydraulic fracture risk assessment would be developed prior to construction following further investigation of specific ground conditions at the crossing locations, and appropriate mitigation developed in line with best construction practice. This would be secured via the **Framework CEMP [EN010143/APP/7.7]**.

The working widths will be kept to a minimum where cables are laid using open cut methods to limit temporary habitat loss. It is assumed that where open-cut crossings are required that water flow would be maintained by damming and over pumping or fluming. Works will be carried out in the drier months where practicable as this would reduce the risk of pollution propagating downstream, particularly in the case of ephemeral watercourses.

The watercourses will be reinstated as found and water quality monitoring will be undertaken prior to, during and following on from the construction activity. Monitoring of the vegetation re-establishment of the banks will also be undertaken.

A Method Statement would be developed to ensure works within watercourse crossings include suitable measures to allow the continued passage of fish and riparian mammals throughout construction (i.e., during fluctuating water levels).

The **Framework CEMP [EN010143/APP/7.7]** specifies requirements for the safe storage of chemicals and other hazardous materials (e.g., fuel) reducing the risk of them reaching watercourses during flood events during

Baseline details

Embedded mitigation

construction. A full list of crossing methods and an explanation of these techniques is provided in **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]**. It also specifies that the design of the Scheme will comply with industry good practice and environmental protection legislation during both construction (and operation and maintenance), e.g., prevention of surface and ground water pollution, fugitive dust management, noise prevention or amelioration through measures such as watercourse inspections, vehicle wheel washing, use of sediment traps, water quality monitoring, and the prevention of sediment plumes during open-cut crossings. With the exception of the open trench crossing of watercourses for cable installation, where required, no works will be undertaken within at least 10m of watercourses (30m of the River Ouse, River Derwent and Watercourse DE53), which is considered sufficient to mitigate for potential hazards such as chemical and soils spills to avoid potential direct impacts to watercourses and any protected or notable species that use them.

Hedgerows

Scheme design:

The Scheme has been designed to ensure hedgerows are outside of the developable areas of the Scheme, with minimum 10m undeveloped stand-off buffers, increased to 15m where hedgerow trees are present.

Where practicable, the layout of the Scheme will use existing farm tracks and field openings as the preferred routes for construction access, minimising loss of hedgerows (sections of), where practicable. Therefore, the majority of this habitat will be retained, however, some sections of hedgerow will need to be removed to facilitate access and will be temporarily removed to facilitate construction of cable routes.

Construction:

Measures to ensure incursions into this habitat do not occur will be put in place, e.g. security fencing, which will be implemented at an early stage to protect retained habitats from incursion during construction.

The **Framework CEMP, ES Volume 7 [EN010143/APP/7.7]** includes suitable pollution prevention measures.

Trees, including veteran and ancient trees

Scheme design:

The Scheme has been designed to ensure that all veteran and ancient trees will be retained. The majority of trees which are not classed as veteran or ancient will be retained and buffered, and measures taken to avoid direct or indirect impacts. As detailed in **Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2]**, 52 individual trees, 17 groups of trees and 44 hedgerows are to be removed or part removed (in the case of hedgerows) to facilitate the Scheme (as shown on **Figure 10-5-1 in Annex C of Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2]**). The iterative design process during the development of the Scheme has been undertaken

Baseline details

Embedded mitigation

to avoid or minimise impacts to trees where practicable. Where practicable the detailed design (post-consent) will be further developed to avoid or minimise impacts to trees and in practice this is likely to reduce the level of arboricultural impacts reported. The final level of arboricultural impacts will be confirmed as part of an Arboricultural Method Statement as part of the detailed Construction Environmental Management Plan (CEMP) secured as a requirement of the Draft Development Consent Order (DCO) [EN010143/APP/3.1]. This is a commitment in the **Framework CEMP [EN01043/APP/7.7]**.

Construction:

As detailed in **Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2]**, 101 features are subject to an incursion into their Root Protection Area (RPA) or canopy spread. This is generally limited to new cable and access routes with some minor incursions for panel locations and palisade fencing surrounding Grid Connection Substations. This includes two veteran trees and one ancient tree. In all cases RPA incursions will be managed so that there will be no detrimental impacts on the health or amenity of retained trees. Twenty-seven tree features have been identified as likely to require pruning to facilitate access, working space and visibility requirements. Proposed pruning will not significantly impact on the health or amenity of affected trees and will help to prevent any inadvertent damage during construction and where necessary, provide a framework for future management during operation.

One tree (T45) to be pruned is considered to be ancient and pruning may be required to facilitate a temporary clearance for vehicular access, the final extent of pruning is to be agreed on site with an arboriculturist, but is not considered likely to result in a detrimental impact to the tree due to its species (crack willow (*Salix fragilis*) which is tolerant of pruning), good vitality and due to the existing clearance maintained over the existing hard surfaced access route.

The final requirement for pruning will be reviewed and identified at the detailed design stage and will be confirmed in an Arboricultural Method Statement as part of the CEMP secured as a requirement of the Draft DCO [EN010143/APP/3.1]. This is a commitment in the Framework CEMP [EN01043/APP/7.7].

Tree loss will be mitigated with a robust and high quality scheme of new tree planting as detailed in the **Framework LEMP [EN010143/APP/7.14]**.

Measures to protect retained trees and their associated root protection zones will be put in place (e.g., fencing), which will be implemented at an early stage to protect these features from impacts during construction, as

Baseline details

Embedded mitigation

detailed in **Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2]**.

The **Framework CEMP, ES Volume 7 [EN010143/APP/7.7]** includes suitable pollution prevention measures.

Species

Terrestrial
invertebrates

Scheme design:

The Scheme design retains and avoids direct and indirect impacts to the majority of habitats of value to terrestrial invertebrates, including woodland, grassland margins, watercourse/ditch margins, scrub and hedgerows within the Solar PV Site. However, some loss (albeit mostly temporary) cannot be avoided. Habitat loss within the Grid Connection Corridor will be temporary.

Construction:

Whilst the Scheme design retains habitats of greater terrestrial invertebrate interest, measures to ensure incursion into retained habitats does not occur will be put in place (e.g. security fencing), which will be implemented at an early stage to protect retained habitats from incursion during construction.

The **Framework CEMP, ES Volume 7 [EN010143/APP/7.7]** includes suitable pollution prevention measures to protect retained habitat.

Aquatic macrophytes
and
macroinvertebrates

Scheme design:

The Scheme design retains and avoids direct and indirect impacts to the majority of habitats of value to aquatic macrophytes and macroinvertebrates, including watercourses and ditches, and their riparian zones.

Construction:

Whilst the Scheme design retains habitats of greater aquatic interest, measures to ensure incursion into these habitats does not occur will be put in place (e.g., security fencing), which will be implemented at an early stage to protect retained habitats from incursion during construction.

Where practicable, culverts extensions and any improved structure will be set 150mm (millimetres) below bed level to allow sedimentation and a naturalised bed to form, which will maintain longitudinal connectivity for aquatic fauna. Where a new drainage ditch crossing is required, an open span bridge crossing will be used, with the specific type of crossing selected being determined based on site specific factors and in consultation with the

Baseline details

Embedded mitigation

relevant authority (generally the Internal Drainage Board [IDB] or Lead Local Flood Authority [LLFA] for the Solar PV Site). This will also ensure that connectivity is maintained along the watercourses.

Where watercourses and ditches are crossed by open-cut techniques, impacts will be minimised by restricting the width of crossing where practicable. Habitats will be reinstated upon completion of the works, and allowed to re-vegetate naturally after which macroinvertebrates would re-colonise from adjacent habitats within two years. For these crossings it is assumed that water flow would be maintained by damming and over-pumping. These watercourses are generally ephemeral ditches and if works are carried out in the drier months this would reduce the risk of pollution propagating downstream, although this cannot be guaranteed.

The **Framework CEMP [EN010143/APP/7.7]** specifies requirements for the safe storage of chemicals and other hazardous materials (e.g., fuel) to reduce the potential of them reaching watercourses during flood events during construction. A full list of crossing methods and an explanation of these techniques is provided in **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]**.

Fish

Scheme design:

The River Derwent SAC/SSSI, River Ouse and Featherbed Drain will be crossed using non-open cut techniques, such as HDD.

Construction:

A hierarchy of mitigation measures for HDD activities will ensure that where required, HDD activity noise effects (disturbance to species and habitats) will be reduced as far as reasonably practicable. This hierarchy includes (but is not limited to) the potential for the use of lower noise and vibration techniques.

The core fish migration season of September to February, and May, will be avoided for HDD beneath the River Ouse and River Derwent, unless the depth of the HDD is confirmed to be of a sufficient minimum distance of approximately 10m below the riverbed to avoid noise and vibration effects. All cables will be installed a minimum of 1.5m below the bed of watercourses (excluding the River Ouse and River Derwent). Cables will be installed by HDD a minimum of 5m below the bed of the River Ouse and River Derwent.

Where watercourses and ditches are culverted, culverts will be designed to allow continued connectivity and fish passage along the watercourse. Where practicable, culverts extensions and any improved structure will be set 150mm below bed level to allow sedimentation and a naturalised bed to form, which will maintain longitudinal connectivity for fish, with no drop inlets or outlets. Where watercourses are open-cut for cable crossings, impacts

Baseline details

Embedded mitigation

will be temporary and habitats will reinstate within two years, with aquatic species re-colonising naturally from adjacent habitats.

Breeding birds –
general breeding bird
assemblage

Scheme design:

The Scheme design retains and avoids the majority of habitats of value to breeding birds, including woodland, grassland margins, scrub and hedgerows within the Solar PV Site. The Scheme design, therefore, ensures that notable farmland bird species that are reliant on such habitats, including species such as, yellowhammer, linnet, dunnock and reed bunting, are not impacted upon by the Scheme.

Construction:

The **Framework CEMP [EN010143/APP/7.7]** specifies requirements for vegetation clearance to avoid the nesting bird period, where practicable (i.e., March to August inclusive). Should any vegetation clearance be required within the nesting bird period this will be checked, prior to vegetation removal, for the presence of nesting birds, by a suitably qualified ornithologist. If active nests are found, then these will be avoided with appropriate buffer zones put in place and development will cease in these areas until the young birds have fledged and, or, the nesting attempt has ceased.

Breeding birds –
territories of ground-
nesting birds, such as
skylark, within the
Solar PV Site

Scheme design:

Within the Solar PV Site, areas of undeveloped land have been included within the Scheme to provide permanent habitat for ground-nesting birds such as skylark. These areas will be managed as grassland to provide permanent habitat for other ground-nesting bird species, such as curlew and lapwing, both of which were recorded within the Solar PV Site during surveys for breeding birds.

Breeding birds –
territories of specially
protected species

Scheme design:

The Scheme design will avoid the majority of habitats of value to specially protected bird species that were recorded as holding territory within the Solar PV Site, namely quail, hobby and barn owl. Woodland and mature trees (of potential value to hobby and barn owl) will be retained and avoided. The territory of quail was recorded outside of the developable area of the Scheme and will therefore be retained and avoided.

Construction:

The **Framework CEMP [EN010143/APP/7.7]** specifies requirements for pre-commencement surveys to be undertaken to determine the presence of breeding Schedule 1 birds. If present prior to construction commencing,

Baseline details

Embedded mitigation

then the ECoW (experienced ornithologist) will advise as to whether a no disturbance buffer is required to avoid disturbance to Schedule 1 breeding species.

Non-breeding birds

Scheme design:

The majority of habitats of value to the general non-breeding bird assemblage (such as woodland, scrub, hedgerows and field margins) will be retained and avoided as part of the Scheme design. Furthermore, undeveloped areas of grassland will be of benefit to species reliant on such habitats, such as skylark. Additionally, an area of habitat enhancement in the eastern portion of Solar PV Area 1e adjacent to the River Foulness will be left free of panels and other infrastructure as part of the Scheme design, and will provide permanent wet grassland habitat for birds that prefer such habitats during the non-breeding season, such as golden plover and lapwing. These areas have been included within the Landscape Masterplan (as presented in the **Framework LEMP [EN010143/APP/7.14]**).

Construction:

Measures to ensure incursion into retained habitats does not occur, will be put in place at an early stage in the construction phase, (e.g., security fencing).

Bats

Scheme design:

The Scheme design retains and avoids the majority of habitats of value to bats, including woodland, scrub, grassland margins and hedgerows. Some tree and hedgerow removal will be required to facilitate construction of the Scheme, as detailed in **Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2]**.

Surveys have informed the Scheme's design, along with offset buffers, to avoid direct and indirect effects upon potential roost sites (and avoidance of trees and woodland with higher ecological value irrespective of bats which should be avoided), with the exception of one tree at this stage (T872/T619)⁸ on Pear Tree Ave. This is a horse chestnut of moderate suitability. It is currently showing as potentially lost due to close proximity to the edge of a bellmouth; however, this will be addressed during detailed design to adjust the taper of the access bellmouth in order to retain the tree.

Construction:

⁸ T872 refers to the tree number allocated within **Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2]** and T619 refers to the tree number allocated in **Appendix 8-7: Bat Survey Report, ES Volume 2 [EN010143/APP/6.2]**.

Baseline details

Embedded mitigation

Whilst the Scheme design retains the majority of habitats of greatest value to bats, measures to ensure incursion into these habitats does not occur will be put in place (e.g., security fencing), which will be implemented at an early stage to protect retained habitats from incursion during construction.

The **Framework CEMP [EN010143/APP/7.7]** specifies requirements for the protection and retention of trees and hedgerows, along with other foraging habitats for bats such as ponds and watercourses.

As detailed in paragraphs 8.6.17 to 8.6.21, during construction, works will be restricted to daylight hours wherever practicable to remove the need for artificial lighting, with focussed task specific lighting provided where this is not practicable (e.g., HDD drilling operations). Where lighting is required, it will conform to best practice guidelines with respect to minimising light spill into adjacent habitats and prevent disturbance to bats and other species.

Trees with moderate and high bat roost suitability will be avoided through design. Where it is not practicable to retain trees with low bat roost suitability, these would require to be soft/section felled, under a Method Statement, in the presence of a suitability qualified Ecological Clerk of Works (ECoW), but no further survey types would be needed unless pre construction assessments showed an increase in potential for bats through additional features and the tree could not be avoided during detailed design.

Pre-construction bat roost appraisal surveys will be undertaken to support the baseline survey findings where tree removal or reduction/pruning cannot be avoided. The purpose of the pre-construction surveys is to ensure mitigation during the construction phase is based on the latest protected species information. Should additional trees with moderate or high bat roost suitability be identified for removal or reduction, further surveys (i.e., dusk emergence survey and/ or tree climb and inspection) will be undertaken as necessary, which may identify the requirement for additional mitigation and/or a Natural England mitigation licence, where impacts to roosting bats cannot be avoided. Where further surveys are necessary, and for the subsequent requirements and mitigation re loss of or disturbance to trees, the relevant guidance at the time would need to be followed where relevant, which may differ from that in place when previous surveys were conducted.

Otter and Water vole

Scheme design:

The Scheme incorporates minimum 10m stand-off buffers from watercourses/ditches (bank top). This buffer is extended to a minimum of 30m for the River Derwent, River Ouse and Watercourse DE53. Some wet ditches will, however, be crossed for cabling and access purposes.

Construction:

Baseline details

Embedded mitigation

The crossing of the River Derwent, River Ouse and Watercourse DE53, which are of known value to otter, will be undertaken using HDD methods to avoid direct impacts to these waterbodies, including their associated riparian habitats. Set-backs of a minimum of 30m from the bank tops of these waterbodies is considered sufficient to mitigate for potential hazards, such as chemical and soils spills and direct impacts to otter.

As detailed in paragraphs 8.6.16 to 8.6.17, during construction, works will be restricted to daylight hours wherever practicable to remove the need for artificial lighting, with focussed task specific lighting provided where this is not practicable (e.g., HDD drilling operations). Where lighting is required, it will conform to best practice guidelines with respect to minimising light spill into adjacent habitats and prevent disturbance to otter and other species using the watercourses.

The **Framework CEMP [EN010143/APP/7.7]** specifies requirements for the safe storage of chemicals and other hazardous materials (e.g., fuel) reaching watercourses during flood events during construction. A full list of crossing methods and an explanation of these techniques is provided in **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]**.

Where extensions to existing culverts are required, they will be designed appropriately to maintain connectivity along watercourses for riparian mammals, where these are shown to be present. Where practicable, culverts extensions and any improved structure will be set 150mm below bed level to allow sedimentation and a naturalised bed to form, which will maintain longitudinal connectivity for aquatic fauna. Where a new drainage ditch crossing is required, an open span bridge crossing will be used, with the specific type of crossing selected being determined based on site specific factors and in consultation with the relevant authority (generally the IDB or LLFA for the Solar PV Site). This will also ensure that connectivity is maintained along the watercourses.

Pre-construction surveys will be undertaken to support the baseline survey findings where intrusive crossing methods of watercourses are proposed within the Site. The purpose of these pre-construction surveys is to ensure mitigation during the construction phase is based on the latest protected species information. Should there have been any changes to otter or water vole distribution within the Site, mitigation measures (such as non-intrusive crossing for cabling) will be updated accordingly and the relevant Natural England protected species licence application would be applied for if disturbance was unavoidable.

Badger

Scheme design:

Baseline details

Embedded mitigation

The Scheme can be designed during detailed design stage, to avoid badger setts within the Site. All setts within the Scheme will have an appropriate exclusion zone of 30m around the sett to prevent disturbance and accidental damage where practicable.

Construction:

Pre-construction surveys will be undertaken to support the baseline survey findings. The purpose of these pre-construction surveys is to ensure mitigation during the construction phase is based on the latest protected species information. Where there have been any changes to badger distribution, mitigation measures will be updated accordingly and a Natural England protected species licence application would be applied for if disturbance was unavoidable.

Implementation of measures to avoid animals being injured or killed within construction working areas, through excluding them from such areas and preventing them from becoming trapped in excavations. If excavations are required to be left open overnight, ramps will be provided to allow animals a means of escape.

Reptiles

Scheme design:

The Scheme design retains and avoids the majority of habitats of value to reptiles, including woodland, grassland margins, ditches, scrub and hedgerows within the Solar PV Site.

Construction:

Vegetation clearance throughout the Site and, in areas of suitable reptile habitat, will be undertaken in advance of construction and at an appropriate time of year to avoid incidental injuring or killing of reptiles, concordant with the requirements for other species, such as nesting birds and brown hare. Works impacting suitable reptile habitat will be undertaken under RAMs and these measures have been formalised into the **Framework CEMP [EN010143/APP/7.7]**. RAMs will include ecological watching briefs and staged habitat manipulation. Any habitat features which may conceal hibernating reptiles (e.g., log piles, rubble mound bunds, any other debris) will not be dismantled during winter months (i.e., between November and February) and will be conducted during the reptile active season (i.e., March (dependent on weather) to October) during warm weather conditions (i.e., above 5°C) to avoid killing or injuring potential hibernating reptiles. If reptiles are discovered when habitat features are dismantled during the appropriate time of year they will be moved outside of the working area into suitable habitat by the overseeing ecologist if they are at risk of harm.

Baseline details

Embedded mitigation

Whilst the design of the Solar PV Site retains the majority of habitats of greatest value to reptiles, measures to ensure incursion into these habitats does not occur will be put in place (e.g., security fencing), which will be implemented at an early stage to protect retained habitats from incursion during construction.

The **Framework CEMP, ES Volume 7 [EN010143/APP/7.7]** includes suitable pollution prevention measures which will protect retained habitat.

Other mammals
(brown hare, polecat,
hedgehog) and
common amphibians

Scheme design:

The Scheme design retains and avoids the majority of habitats of value to other mammals and amphibians, including woodland, grassland margins, ponds, ditches, scrub and hedgerows within the Solar PV Site.

Construction:

Vegetation clearance will be undertaken in advance of construction and at an appropriate time of year to avoid incidental injuring or killing of animals, including brown hare and common toad and concordant with the requirements for other species, such as nesting birds and reptiles. The RAMs outlined above that will be applied to avoid incidental injury or killing of reptiles are also suitable to protect common amphibian species and notable mammals which may be present.

Implementation of measures to avoid animals being injured or killed within construction working areas, through excluding them from such areas (other mammals) and preventing them from becoming trapped in excavations. If excavations are required to be left open overnight, ramps will be provided to allow animals a means of escape.

Operation

8.6.33 The general principles to be followed in the operation of the Scheme include embedded mitigation measures such as:

- a. During operation, the Solar PV Areas will not require artificial lighting other than during temporary periods of maintenance/repair. All routine maintenance activities, except solar PV panel cleaning, will be scheduled for daylight hours as far as is practicable, and therefore it is anticipated that focussed task specific lighting should only be required in the event of emergency works/equipment failure requiring night-time working or panel cleaning operations. The solar PV panels would be cleaned at night when they are cool and not tracking. The current preferred solution for cleaning operations would be lit by tractor mounted lighting which is akin to that used during night-time arable harvesting operations which are currently undertaken within the Site. Containerised units at the Field Stations may also contain internal artificial lighting (to be manually activated when needed), but light spillage would be minimal (through doorway when open). It is anticipated that the compound for the two Grid Connection Substations will have inward facing PIR controlled security lighting installed at each corner of the compound. As for the Solar PV Areas, all routine maintenance activities will be scheduled for daylight hours as far as is practicable, and focussed task specific lighting should only be required in the event of emergency works/equipment failure requiring night-time working. It is anticipated that there will be internal lighting within the control buildings for the Grid Connection Substations, but that light spillage from these would be minimal (through open doorway only), outside task specific and fixed 'general' lighting may be required in months with reduced daylight hours (early mornings and evenings) to meet safety requirements. Outside of core working hours PIR controlled lights (motion sensors) will be used. At the operations and maintenance hub at Johnson's Farm task specific and fixed 'general' lighting may be required in months with reduced daylight hours (early mornings and evenings) to meet safety requirements. Outside of core working hours PIR controlled lights (motion sensors) will be used. The buildings will be fitted with internal lighting, but light spillage would be minimal (through open doorway and the windows of the offices only);
- b. Where lighting is required during operation, it will conform to best practice guidelines with respect to minimising light spill into adjacent habitats and prevent disturbance to bats and other species, see paragraph 8.6.21. Further details on lighting design are found in **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**;
- c. The Scheme's surface water drainage strategy (as presented in **Appendix 9-4: Framework Surface Water Drainage Strategy, ES Volume 2 [EN010143/APP/6.2]**) includes measures to manage surface water runoff during operation and will reduce the likelihood and severity of potential pollution incidents and flooding affecting watercourses and the local ditch network to reduce or eliminate adverse effects for aquatic and riparian species and habitats. A detailed Surface Water Drainage Strategy will be prepared by the contractor post-consent (as

secured by DCO Requirement through the Framework Surface Water Drainage Strategy);

- d. The security perimeter fence will be set back from the existing hedgerows and the design will include gaps to allow mammals that may use retained habitats, including, badger, brown hare and hedgehog, to pass underneath at strategic locations, thereby retaining connectivity across the Site; and
- e. The creation and subsequent management of habitats will seek to maximise floristic diversity, which will require low density and short frequency, sheep grazing (conservation grazing) or an appropriate, sensitive mowing regime. Further details on grazing are found in **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]** and **Appendix 2-1: Grazing Feasibility Study, ES Volume 2 [EN010143/APP/6.2]**.

8.7 Assessment of Likely Impacts and Effects

- 8.7.1 The Scheme has the potential to affect ecology (positively or negatively), during construction, operation and during decommissioning.
- 8.7.2 Potential impacts on ecological features during the construction and decommissioning phases include:
 - a. Habitat loss or gain – direct impacts associated with changes in land use resulting from the Scheme. For example, short-term temporary changes in land use associated with the installation of the Grid Connection and Interconnecting Cables, long-term temporary changes in land use (e.g., conversion from arable land to grassland and construction of Field Stations and access tracks) within the Solar PV Site and permanent change in land use owing to the conversion of agricultural land into areas of woodland habitat or screening within the Solar PV Site (assuming this would be retained past the end of the operational period);
 - b. Fragmentation of populations or habitats – indirect impacts due to the Scheme dividing a habitat, group of related habitats, sites or ecological network, or the creation of partial or complete barriers to the movement of species, with a consequent impairment of ecological function;
 - c. Disturbance – indirect impacts resulting from a change in normal conditions (i.e., light, noise, vibration, human activity) that result in individuals or populations of species changing behaviour or range;
 - d. Habitat degradation – direct or indirect impacts resulting in the reduction in the condition of a habitat and its suitability for some or all of the species it supports, e.g., changes in chemical water quality or changes in surface flow or groundwater;
 - e. Species mortality – direct impacts on species populations associated with mortalities due to construction activities, e.g., site clearance; and
 - f. Spread of INNS – construction methods resulting in spread of INNS, e.g., downstream of watercourses.
- 8.7.3 Impacts on ecological features during the operational phase of the Scheme (including maintenance activities) are likely to include:

- a. Changes to foraging and commuting habitats, e.g., from agriculture (arable crops, cattle grazing) to grassland (potentially cut or grazed);
- b. Potential attraction of aquatic invertebrates to the solar PV panels, potential noise attraction/disturbance, barrier effects;
- c. Potential for nesting and/or roosting in new infrastructure;
- d. Indirect beneficial impacts through a reduction of agriculture chemical inputs to watercourses or reduction in pesticide use on crops within the local area resulting in an increase in prey availability.
- e. Increases in permanent habitat of greater floristic diversity than arable farmland, increasing invertebrate assemblages and abundance;
- f. Increased connectivity through enhanced planting of woodland and hedgerows;
- g. Undeveloped fields and margins providing enhanced nesting and foraging habitats for farmland birds, small mammals, amphibians and reptiles;
- h. Potential attraction and increases in species foraging around and within the Site, such as bats and birds, from increases in prey items (e.g., flying insects); and
- i. Potential increases in abundance and distribution of species, due to lack of human disturbance and changes in habitat (such as agricultural practices) within the Site.

8.7.4 Impacts on biodiversity features during decommissioning of the Scheme are likely to be the same as the construction phase. However, field surveys would be required in advance of decommissioning commencing to define the ecological baseline at the time of decommissioning (currently anticipated to be 2067) and to ensure that impacts on ecological features are identified to ensure avoidance and if not feasible, mitigation. Upon decommissioning, it is assumed that all of the above-ground physical infrastructure will be removed, and the land within the Site will be returned to landowners in the condition as at the end of operation, including the established habitats and associated species.

8.7.5 Where practicable, mitigation measures have been incorporated into the Scheme design and/or how it shall be constructed. Through iterative assessment, potential impacts have been predicted and opportunities to mitigate them identified with the aim of preventing or reducing impacts as much as practicable. This approach provides the opportunity to prevent or reduce potential adverse impacts from the outset. This embedded mitigation/mitigation by design approach has been considered when evaluating the significance of the potential impacts in section 8.7.

8.7.6 The assessments below have been undertaken following consideration of the embedded mitigation measures as described in section 8.6. As discussed in paragraph 8.4.59, and in accordance with CIEEM guidance (Ref 8-32), all ecological features valued at local level or above, and with the potential to be affected by the Scheme have been taken forward for the assessment of likely significant effects. INNS listed under Schedule 9 of the WCA 1981 (as amended) (Ref 8-1) are also taken forward for assessment.

Construction Effects

- 8.7.7 **Table 8-12** provides a summary of the magnitude of impacts and likely significance of environmental effects on ecological features during the construction of the Scheme. The likely significant effects have been assessed considering that the embedded mitigation measures set out in section 8.6 are implemented.
- 8.7.8 Effects related to air quality are detailed within section 16.2 (Air Quality) of **Chapter 16: Other Environmental Topics [EN010143/APP/6.1]**. As stated above, HGV numbers generated by the construction phase are below the screening criteria for needing assessment, and as such road traffic impacts have been scoped out of the assessment. The potential for fugitive emissions of particulate matter from construction and decommissioning phase activities has been qualitatively assessed via a Dust Risk Assessment and are included in **Table 8-12** where appropriate.

Table 8-12. Assessment of construction impacts and significance of effects on important ecological features during construction

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
River Derwent SAC	International (Very high)	Habitat loss – temporary (short-term), very small area (one bellmouth), and reversible	<p>Loss of habitat within the SAC can be avoided through HDD for the Grid Connection Cable route crossing of the River Derwent. A minimum 30m stand-off buffer (from the bank top of the watercourse) will be maintained between the construction works and the SAC. Measures will be taken to ensure there is no incursion to the SAC (and stand-off buffer) e.g., security fencing erected early on in the construction process.</p> <p>Where the Grid Connection Corridor crosses the A63, HDD is also proposed which will avoid crossing the adjacent corner of the River Derwent SAC (comprising terrestrial and aquatic but not river habitat). In the unlikely event that this is found not to be practicable during detailed design, two alternative options include installing the cable along the small section of existing access track through the</p>	Very low	Minor adverse to Negligible once the bellmouth has been removed and habitat reinstated.	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>corner of the SAC, first by HDD thereby avoiding working within the SAC, or final option by open cut but confined within the existing access track until a small section of verge between the track and arable field will be crossed, which will be reinstated. The existing access track will also be used to access the field to the north of the track from the A63. Vehicular access along the existing track would be managed. Along with ensuring the health and safety of road users this would also ensure that there would be no requirement for road widening or highway improvements at the junction with the A63 or for vehicles to progress along the track. The traffic management would also ensure that trespass of vehicles onto the verge was avoided. The access would require the construction of a temporary bellmouth in the verge habitat to the north of the existing access</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>track when entering the field comprising construction Compound D, which would be fully reinstated at the end of the construction phase.</p> <p>None of the three proposed options for cable routing and installation, or the use of the access track for vehicles, would impact habitats which are functionally linked to qualifying habitat and species in the River Derwent SAC, and there would be no loss of irreplaceable habitat. Only site fabric comprising the existing access track and grass verge would be affected.</p>			
	International (Very high)	<p>Habitat degradation-impacts to water quality through pollution and construction run off. Temporary (short-term).</p>	<p>Standard environmental protection measures, as provided in the Framework CEMP [EN010143/APP/7.7], will be implemented during the construction phase. This includes suitable measures to suppress dust, reduce site runoff (particularly the mobilisation of fine sediment, one of the</p>	Very low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>dominant pressures in the River Derwent) and reduce spillage risk and water pollution risk from the trenchless HDD crossings within the Site.</p> <p>Furthermore, a site-specific hydraulic fracture risk assessment would be developed prior to construction following further investigation of specific ground conditions at the crossing locations, and appropriate mitigation will be developed in line with best construction practice to avoid impacts on water quality of the River Derwent SAC. This will be secured via the Framework CEMP [EN010143/APP/7.7].</p>			
	International (Very high)	Injury/mortality of associated species (as detailed in Table 8-6). Temporary (short-term).	<p>Direct impacts to species using the River Derwent SAC will be avoided through HDD. A minimum 30m stand-off buffer (from the bank top of the watercourse) will be maintained between the construction works and the SAC. This distance or greater will also be applied</p>	Very low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>between the HDD working area and the otter resting place along Watercourse DE53 in the Grid Connection Corridor. Access along the Watercourse DE53 to the River Derwent will be available to otter at all times for a general width of 30m, except for a clear span bridge installed temporarily for access, which maintains connectivity. Measures will be taken to ensure there is no incursion to the SAC (and stand-off buffer) such as security fencing erected early on in the construction process, with the exception of the use of the existing access track off the A63 through the corner of the SAC which will be managed to ensure vehicles (and cable installation if this option is implemented) remain within the existing access track and small verge crossing where it enters the arable field comprising Compound D to the north.</p> <p>Pre-construction surveys will be undertaken as required to</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			support the baseline survey findings and inform any additional mitigation and/or licencing requirements.			
	International (Very high)	Disturbance to associated species (as detailed in Table 8-6) through noise/lighting/visual disturbance. Temporary (short term).	<p>Suitable measures to minimise sky glow, glare and light spillage will be implemented during the construction phase. A minimum 30m stand-off buffer (from the bank top of the watercourse) will be maintained between the construction works and the SAC to minimise visual, lighting and noise disturbance. This distance or greater will also be applied between the HDD working area and the otter resting place along Watercourse DE53 to avoid disturbance.</p> <p>Noise levels resulting from the HDD working areas could be of sufficient levels to cause disturbance to otter using the River Derwent and Watercourse DE53 (refer to the HRA Report [EN010143/APP/7.12] for further details) prior to mitigation, for the period of approximately a week</p>	<p>Very low (lighting and visual disturbance)</p> <p>Low (noise disturbance)</p>	<p>Minor adverse (lighting and visual disturbance)</p> <p>Moderate adverse (noise disturbance)</p>	<p>No (lighting and visual disturbance)</p> <p>Yes (noise disturbance)</p>

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>for each HDD, although this will be confirmed by the appointed contractor. While otter are generally tolerant of similar noise levels in more urban areas, this part of the Grid Connection Corridor is a more rural area and otter present may not be habituated to these levels. No otter were found to be using watercourses within the Solar PV Site.</p> <p>The core fish migration season of September to February and May will be avoided for HDD beneath the River Ouse and River Derwent, unless the depth of the HDD is confirmed to be of a sufficient minimum distance of approximately 10m below the riverbed to avoid noise and vibration effects.</p> <p>Pre-construction surveys will be undertaken to support the baseline survey findings and inform any additional mitigation and/or licencing requirements,</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			further minimising potential disturbance.			
	International (Very high)	Introduction/ spread of invasive non-native plant species during construction of the Scheme through vehicles/ machinery and people. Temporary (short-term), and reversible.	Pre-construction checks for INNS will be undertaken to support the baseline survey findings. A Biosecurity Management Plan will be prepared (secured via the Framework CEMP 7 [EN010143/APP/7.7]) following any forthcoming consent which will set out procedures to ensure that no INNS are brought onto the Site or are spread.	Very low	Minor adverse	No
River Derwent SSSI	National (High)	Habitat loss— temporary (short-term), very small area (one bellmouth), and reversible	The loss of habitat within the SSSI can be avoided through HDD for the Grid Connection Cable route crossing of the River Derwent. A minimum 30m stand-off buffer (from the bank top of the watercourse) will be maintained between the construction works and the SSSI. Measures will be taken to ensure there is no incursion to the SSSI (and stand-off buffer) e.g., security fencing	Very low	Minor adverse to Negligible once the bellmouth has been removed and habitat reinstated	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>erected early on in the construction process.</p> <p>As stated above for the River Derwent SAC, the Grid Connection Corridor crossing of the A63 will likely be HDD and will also avoid the SSSI. Two further alternative options utilise the existing access track either by HDD or open cut. Vehicular access from the A63 into the arable field to the north of the SSSI will also utilise the existing access track.</p> <p>None of the three options for cable routing and installation, or the use of the access track off A63 for construction vehicles, would impact habitats which are of special interest/features for the SSSI, and there would be no loss of irreplaceable habitat. Only site fabric comprising the existing access track and grass verge would be affected.</p>			
	National (High)	Habitat degradation- impacts to water	Standard environmental protection measures, as provided in the Framework CEMP	Very low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		quality impacts through pollution and construction run off. Temporary (short-term).	<p>[EN010143/APP/7.7], will be implemented during the construction phase. This includes suitable measures to suppress dust, reduce site runoff (particularly the mobilisation of fine sediment, one of the dominant pressures in the River Derwent) and reduce spillage risk and water pollution risk from the trenchless HDD crossings within the Site.</p> <p>As stated for the River Derwent SAC above, a site-specific hydraulic fracture risk assessment would be developed prior to construction in line with best construction practice to avoid impacts on water quality of the River Derwent SSSI. This will be secured via the Framework CEMP [EN010143/APP/7.7].</p>			
	National (High)	Injury/mortality of associated species (as detailed in Table 8-6). Temporary (short-term).	Direct impacts to species using the River Derwent SSSI will be avoided through HDD. A minimum 30m stand-off buffer (from the bank top of the watercourse) will be maintained	Very Low	Minor Adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>between the construction works and the SSSI. This distance or greater will also be applied between the HDD working area and the otter resting place along Watercourse DE53. Access along the Watercourse DE53 to the River Derwent will be available to otter at all times for a general width of 30m, except for a clear span bridge installed temporarily for access, which maintains connectivity. Measures will be taken to ensure there is no incursion to the SSSI (and stand-off buffer) e.g., security fencing erected early on in the construction process, with the exception of the use of the existing access track from the A63 through the corner of the SSSI which will be managed to ensure vehicles (and cable installation if this option is required) remain within the existing access track and small verge crossing where it enters the arable field comprising Compound D to the north.</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			Pre-construction surveys will be undertaken as required to support the baseline survey findings and inform any additional mitigation and/or licencing requirements.			
	National (High)	Disturbance to cited species (as detailed in Table 8-6) through noise/lighting/visual disturbance. Temporary (short-term).	<p>Suitable measures to minimise sky glow, glare and light spillage. A minimum 30m stand-off buffer (from the bank top of the watercourse) will be maintained between the construction works and the SSSI to minimise visual, lighting and noise disturbance. This distance or greater will also be applied between the HDD working area and the otter resting place along Watercourse DE53 to avoid disturbance.</p> <p>Noise levels resulting from the HDD working areas within the Grid Connection Corridor could be of sufficient levels to cause disturbance to otter using the River Derwent and Watercourse DE53 (refer to the HRA Report [EN010143/APP/7.12] for further details) for the period of</p>	<p>Very low (lighting and visual disturbance)</p> <p>Low (noise)</p>	<p>Minor Adverse (lighting and visual disturbance)</p> <p>Moderate adverse (noise for otter)</p>	<p>No (lighting and visual disturbance)</p> <p>Yes (noise)</p>

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>approximately a week for each HDD, although this will be confirmed by the appointed contractor. While otter are generally tolerant of similar noise levels in more urban areas, this part of the Grid Connection Corridor is a more rural area and otter present may not be habituated to these levels. No otter were found to be using watercourses within the Solar PV Site.</p> <p>Any disturbance to cited bird species from works associated with the installation of the Grid Connection Cable will be temporary and localised to a very narrow area of the SSSI. Consequently, the potential for significant effects to individual species (see Table 8-1 for cited bird features) or the SSSI assemblage to arise is unlikely.</p> <p>Works will be programmed to ensure that the HDD will avoid the key fish migration seasons as stated for the River Derwent SAC</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>above, unless the depth of the HDD is confirmed to be of a sufficient distance below the riverbed to avoid noise and vibration effects.</p> <p>Pre-construction surveys will be undertaken to support the baseline survey findings and inform any additional mitigation and/or licencing requirements. This will include checks for otter and Schedule 1 listed bird species, e.g., kingfisher.</p>			
	National (High)	Introduction/ spread of invasive non-native plant species during construction of the Scheme through vehicles/ machinery and people. Temporary (short-term), and reversible.	<p>Pre-construction checks for INNS will be undertaken to support the baseline survey findings.</p> <p>A Biosecurity Management Plan will be prepared (secured via the Framework CEMP 7 [EN010143/APP/7.7]) following any forthcoming consent which will set out procedures to ensure that no INNS are brought onto the Site or are spread.</p>	Very Low	Minor Adverse	No
Barn Hill Meadows SSSI, Howden Marsh	Barn Hill Meadows SSSI and	Habitat loss/ fragmentation –	Barn Hill Meadows SSSI and Howden Marsh LNR are approximately 1km and 1.7km	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
LNR, Howden Marsh LWS	Howden Marsh LNR: National (High) Howden Marsh LWS: County (Medium)	temporary (short-term).	from the Solar PV Site respectively, and Howden Marsh LWS lies within the boundary of Howden Marsh LNR. Therefore, there will be no direct habitat loss or fragmentation within these statutory designated sites due to works carried out on the Site.			
	Barn Hill Meadows SSSI and Howden Marsh LNR: National (High) Howden Marsh LWS: County (Medium)	Indirect degradation impacts on the habitats within Barn Hill Meadows SSSI (which includes unimproved, neutral grassland, boundary hedgerows and ditches) and Howden Marsh LNR/LWS (including fenland marsh) due to runoff during construction or other waterborne pollution.	There are possible hydrological connections between the Site and these designated sites via the natural drainage network. Standard environmental protection measures (including dust suppression and pollution prevention) implemented through the Framework CEMP [EN010143/APP/7.7] will minimise indirect impacts on existing habitats in these sites due to runoff during construction or other waterborne pollution.	Very low	Minor Adverse to Negligible (Barn Hill Meadows SSSI and Howden Marsh LNR) Negligible (Howden Marsh LWS)	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		Temporary (short-term) and reversible.				
Barn Hill Meadows SSSI and Howden Marsh LNR: National (High) Howden Marsh LWS: County (Medium)		Direct (injury/mortality) and indirect (disturbance) impacts to associated species (as listed in Table 8-6).	<p>Barn Hill Meadows SSSI and Howden Marsh LNR are approximately 1km and 1.7km from the Solar PV Site respectively, and Howden Marsh LWS lies within the boundary of Howden Marsh LNR. Therefore, no direct mortality of any species associated with these designated sites would be expected to result from the construction of the Scheme.</p> <p>Preparation of the Site and the construction of the Scheme will result in dust generation, along with noise and visual disturbance. However, dust, noise and visual disturbance will not impact on the integrity or the functioning of these designated sites or the species using them, owing to the distances between the designated sites and the Scheme (further detail is provided in see section 16-2 (Air</p>	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
Quality) of Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1] in relation to dust).						
Lower Derwent Valley SAC/ SPA/Ramsar	International (Very high)	Habitat loss/ fragmentation –	The Site lies 1.3km south-east of the Lower Derwent Valley SAC/SPA/Ramsar. Therefore, there will be no direct habitat loss or fragmentation within these statutory designated sites due to works carried out on the Site.	N/A – No impact	No effect	No
	International (Very high)	Indirect degradation impacts on the habitats within the SAC/ SPA/Ramsar due to runoff during construction or other waterborne pollution. Temporary (short-term) and reversible.	The Lower Derwent Valley SAC/SPA/Ramsar are hydrologically connected to the Site via the River Derwent; however, the Lower Derwent Valley SAC/SPA/Ramsar is upstream of the Site. There is a further hydrological connection between the Site and the SAC/SPA/Ramsar via Fleet Dike. Standard environmental protection measures implemented through the Framework CEMP [EN010143/APP/7.7] will include suitable measures to suppress	Very low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			dust, reduce site runoff (particularly the mobilisation of fine sediment, one of the dominant pressures in the River Derwent) and reduce spillage risk and water pollution risk from the trenchless HDD crossings within the Scheme, as well as a site-specific hydraulic fracture risk assessment.			
	International (Very high)	Direct (injury/mortality) and indirect (disturbance) impacts to species inside the boundaries of the SAC/SPA/Ramsar.	The Site lies 1.3 km south-east of the Lower Derwent Valley SAC/SPA/Ramsar. Therefore, no direct mortality of any species associated with these designated sites would be expected to result from the construction of the Scheme. Preparation of the Site and the construction of the Scheme will result in dust generation, along with noise and visual disturbance. However, these will not impact on the species and habitats inside the boundary of the SAC/SPA/Ramsar, owing to the distance between the designated sites and the Site.	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
Lower Derwent Valley SPA/Ramsar	International (Very high)	Impacts to qualifying bird species of the SPA/Ramsar through the potential loss of functionally linked land (elements of the Site would be considered as such if qualifying migratory species from the SPA were found using them (e.g., evidence of birds going between parts of the Site and SPA)). Long-term (for the duration of the Scheme), reversible.	<p>No direct mortality of species associated with SPA/Ramsar will occur during construction.</p> <p>As stated within the HRA Report [EN010143/APP/7.12], of the species recorded on the Site which also feature as qualifying species for the Lower Derwent Valley SPA/Ramsar, only golden plover were found to be present on the Site in numbers exceeding the 1% of the SPA/Ramsar non-breeding population (36 individuals, representing approximately 1.1%). Therefore, following a precautionary approach, the Site is considered to constitute functionally linked land for this species where present (Solar PV Area 3b primarily).</p> <p>Whilst the embedded creation of an area of habitat enhancement in the eastern portion of the Solar PV Area 1e (which is part of the embedded design of the Scheme), along with several other areas of grassland habitat</p>	Medium	Major adverse	Yes

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			creation and enhancement as part of the landscape design, will provide some alternative habitat for this species, these areas alone are not sufficient in size, location, or proximity to solar panels, to fully replicate the field conditions required by golden plover.			
	International (Very high)	Disturbance to qualifying bird species present within the Site due to construction noise and visual disturbance, i.e., leading to a reduced occurrence of SPA qualifying bird species within terrestrial habitats that play a supporting role in the function of the designated site. Temporary (short-term).	As stated in the HRA Report [EN010143/APP/7.12] , there is the potential for disturbance to qualifying SPA/Ramsar birds utilising habitats within and around the Site, from construction noise and visual movements (as detailed in the HRA). The construction programme indicates that activities will be carried out in a sequential manner with teams responsible for a specific type of works moving from one Solar PV Area to the next upon completion. Therefore, during construction, multiple areas of the Site are likely to be under construction at	Very low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>any given time, resulting in a complex mosaic of activities.</p> <p>Any noise disturbance is likely to occur in conjunction with visual disturbance, such as arising from the presence of the workforce or heavy machinery within a field.</p> <p>Piling is among the construction techniques to be used within the Site, an activity that is associated with some of the highest disturbance impact potential to waterbirds. Five types of noise generating areas (NGAs) were identified, including the three types generating the highest levels being the construction of the main Grid Connection Substation, inverters, and HDD locations. Installation of cables and solar PV panels would be of lower noise levels but would occur more widely throughout the Site. During times of elevated noise exposure, qualifying birds are likely to move to less disturbed parts of affected fields or different fields. Qualifying birds</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>that have historically been using particularly disturbed areas or fields, may be habituated to higher noise levels generated from the active farming landscape, and have significantly higher tolerance thresholds.</p> <p>As detailed in the HRA Report [EN010143/APP/7.12], inevitably there is the potential for temporary noise and visual disturbance to SPA/Ramsar birds, should they happen to be utilising the first tier of fields adjoining the Order limits. However, it should be noted that the occurrence of SPA/Ramsar birds was limited to a few observations of golden plover, none of which were recorded in fields adjoining the Scheme. The potential for noise and visual disturbance arising from the Scheme needs consideration in the context of wider farming operations in the active farming landscape of East Yorkshire. Tractors and other agricultural</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>machinery, with similar noise impacts to tracked excavators (the noisiest type of plant used in the construction period), will be frequently used as part of routine farming operations in arable plots adjoining the Site. This implies that sound levels may, at any time, increase beyond the 55dB threshold above which disturbance may (though not necessarily will) occur, as discussed above. In practice, elevated noise levels in sub-sections of adjacent fields are considered to be part of the 'normal' baseline soundscape associated with the existing agricultural use. During times of elevated noise exposure, qualifying birds are likely to move to less disturbed parts of affected fields or different fields. Furthermore, qualifying birds that have historically been using particularly disturbed areas or fields, may be habituated to higher noise levels and have significantly higher tolerance</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>thresholds. Only a very small proportion of the overall arable foraging resources surrounding the Lower Derwent Valley SPA/Ramsar will be affected by elevated noise levels at any one time. In practice only a small fraction of the overall construction/decommissioning works would be undertaken close to the Order limits, with any works carried out towards the centre of the Site having little disturbance potential for functionally linked habitats outside the Order limits. All NGAs carried out for the Scheme would be temporary, with works in a given area typically to be completed in a matter of weeks. As such, much of the construction will occur during the months when golden plover are generally absent (April-September).</p> <p>Overall, therefore, it is concluded that the Scheme will not result in significant adverse effects on the</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
Lower Derwent Valley SAC	International (Very high)	Impacts to otter that are associated with the Lower Derwent Valley SAC (linked to the River Derwent, which is crossed by the Scheme) through disturbance due to increased noise, lighting and through visual disturbance. Temporary (short-term).	<p>integrity of the Lower Derwent Valley SPA/Ramsar regarding noise and visual disturbance in functionally linked habitats. A sufficiently large extent of farmland in the general area will remain undisturbed.</p> <p>Suitable measures to minimise sky glow, glare and light spillage have been incorporated into the Framework CEMP [EN010143/APP/7.7]. A minimum 30m stand-off buffer (from the bank top of the watercourse) will be maintained between the construction works and the River Derwent and River Ouse to minimise visual disturbance.</p> <p>Noise levels resulting from the HDD working areas of the Grid Connection Corridor could be of sufficient levels to cause disturbance to otter using the River Derwent and Watercourse DE53 (refer to the HRA Report [EN010143/APP/7.12] for further details) prior to mitigation, for the</p>	<p>Very low (lighting and visual disturbance)</p> <p>Low (noise)</p>	<p>Minor adverse (lighting and visual disturbance)</p> <p>Moderate adverse (noise for otter)</p>	<p>No (lighting and visual disturbance)</p> <p>Yes (noise)</p>

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
Brighton Meadows SSSI, Lower Derwent Valley NNR	National (High)	Habitat loss/ fragmentation	<p>Brighton Meadows SSSI is 1.3km from the Site and lies within the boundary of the Lower Derwent Valley SPA/SAC/Ramsar. Lower Derwent Valley NNR lies within the boundary of Brighton Meadows SSSI. Therefore, there will be no direct habitat loss or fragmentation within these</p>	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			statutory designated sites due to works carried out on the Site.			
	National (High)	Temporary indirect degradation impacts on the habitats within the SAC/ SPA/Ramsar due to runoff during construction or other waterborne pollution. Temporary (short-term) and reversible.	Brighton Meadows SSSI and Lower Derwent Valley NNR are both hydrologically connected to the Scheme via the River Derwent; however, the SSSI and NNR are both upstream of the Site. There is a further hydrological connection between the Site and the SSSI/NNR via Fleet Dike. Standard environmental protection measures implemented through the Framework CEMP [EN010143/APP/7.7] includes dust suppression and pollution prevention.	Very low	Minor adverse	No
	National (High)	Direct (injury/mortality) and indirect (disturbance) impacts to associated species (as listed in Table 8-6).	Brighton Meadows SSSI is 1.3km from the Site and lies within the boundary of the Lower Derwent Valley SPA/SAC/Ramsar. Lower Derwent Valley NNR lies within the boundary of Brighton Meadows SSSI. Therefore, no	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>direct mortality of any species associated with the designated sites would be expected to result from the construction of the Scheme.</p> <p>Preparation of the Site and the construction of the Scheme will result in dust generation, along with noise and visual disturbance. However, dust, noise and visual disturbance will not impact on the integrity or the functioning of these designated sites or the species using them, owing to the distances between the designated sites and the Scheme (see section 16-2 (Air Quality) of Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1] in relation to dust).</p>			
Derwent Ings SSSI	National (High)	Habitat loss/fragmentation	Derwent Ings SSSI is 1.47km north-west of the Site at its closest point and overlaps with the boundaries of the Lower Derwent Valley SPA/SAC/Ramsar. Therefore, there will be no direct habitat loss	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			or fragmentation within this statutory designated site due to works carried out on the Site.			
	National (High)	Temporary indirect degradation impacts on the habitats within the SSSI (including neutral alluvial flood meadows, fen and swamp communities and freshwater habitats) due to runoff during construction or other waterborne pollution. Temporary (short-term) and reversible.	Derwent Ings SSSI is hydrologically connected to the Site via the River Derwent; however, the SSSI is upstream of the Site. There is a further apparent hydrological connection between the Site and the SSSI via watercourses including Bottoms Drain, Birk Lane Drain, Autherthaws Drain and Old Moors Drain. Standard environmental protection measures implemented through the Framework CEMP [EN010143/APP/7.7] includes dust suppression and pollution prevention.	Very low	Minor adverse	No
	National (High)	Direct (injury/mortality) and indirect (disturbance) impacts to species inside the	Derwent Ings SSSI is 1.47km north-west of the Site at its closest point. Therefore, no direct mortality of any species associated with the designated site would be expected to result	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		boundary of the SSSI (as listed in Table 8-6).	<p>from the construction of the Scheme.</p> <p>Preparation of the Site and the construction of the Scheme will result in dust generation, along with noise and visual disturbance. However, dust, noise and visual disturbance will not impact on the integrity or the functioning of this designated site or the species using it, owing to the distance between the designated site and the Site (see section 16-2 (Air Quality) of Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1] in relation to dust).</p>			
Eskamhorn Meadows SSSI	National (High)	Habitat loss/ fragmentation	<p>Eskamhorn Meadows SSSI is c. 2.42 km south of the Site. Therefore, there will be no direct habitat loss or fragmentation within this statutory designated site due to works carried out on the Site.</p>	N/A – No impact	No effect	No
	National (High)	Habitat degradation-	There are no apparent hydrological connections	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		impacts to water quality through pollution and construction works runoff.	between this SSSI and the Site. The meadows lie within the River Aire floodplain (the River Aire connects to the River Ouse, which is crossed via the Site); however, the SSSI citation states that these fields are no longer subject to seasonal flooding, as the presence of large river embankments now prevent this (Ref 8-81).			
	National (High)	Direct (injury/mortality) and indirect (disturbance) impacts to associated species.	Eskhamhorn Meadows SSSI is 2.42km south of the Site; therefore, no direct mortality of any species associated with this designated site would be expected to result from the construction of the Scheme. Preparation of the Site and the construction of the Scheme will result in dust generation, along with noise and visual disturbance. However, dust, noise and visual disturbance will not impact on the integrity or the functioning of this designated site or the species using it, owing to the distance between the	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			designated site and the Site (see section 16-2 (Air Quality) of Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1] in relation to dust).			
Humber Estuary SAC/SPA/Ramsar/ SSSI	SAC/SPA/Ramsar: International (Very high) SSSI: National (High)	Habitat loss/ fragmentation	The Site lies 3.42km north of the Humber Estuary SPA/SAC/Ramsar/SSSI at its closest point. Therefore, there will be no direct habitat loss or fragmentation within these statutory designated sites due to works carried out on the Site.	N/A – No impact	No effect	No
	SAC/SPA/Ramsar: International (Very high) SSSI: National (High)	Indirect degradation impacts on the habitats within the SAC/ SPA/Ramsar/ SSSI due to runoff during construction or other waterborne pollution. Temporary (short-term), reversible.	The Humber Estuary SPA/SAC/Ramsar/SSSI is hydrologically connected to the Scheme via the River Ouse. Standard environmental protection measures implemented through the Framework CEMP [EN010143/APP/7.7] includes dust suppression and pollution prevention measures. The River Ouse will be crossed by the Grid Connection Corridor	Very low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			by HDD. As stated for the River Derwent SAC above, a site-specific hydraulic fracture risk assessment would be developed prior to construction and secured via the Framework CEMP [EN010143/APP/7.7] .			
	SAC/SPA/Ramsar: International (Very high) SSSI: National (High)	Direct (injury/mortality) and indirect (disturbance) impacts to species present inside the boundaries of the SAC/SPA/Ramsar/SSSI	The Site lies 3.42km north of the Humber Estuary SPA/SAC/Ramsar/SSSI at its closest point. Therefore, no direct mortality of any species associated with these designated sites would be expected to result from the construction of the Scheme. Preparation of the Site and the construction of the Scheme will result in dust generation, along with noise and visual disturbance. However, these will not impact on the species and habitats inside the boundary of the SAC/SPA/Ramsar/SSSI, owing to the distance between the designated sites and the Site (see section 16-2 (Air Quality) of Chapter 16: Other	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
Environmental Topics, ES Volume 1 [EN010143/APP/6.1] in relation to dust).						
SPA/Ramsar: International (Very high)	Impacts to qualifying bird species of the SPA/Ramsar through the potential loss of functionally linked land. Long-term (for the duration of the Scheme), reversible.	No direct mortality of species associated with SPA/Ramsar will occur during construction. As stated within the HRA Report [EN010143/APP/7.12] , of the species recorded on the Site which also feature as qualifying species for the Humber Estuary SPA and Ramsar and their numbers exceeded the 1% threshold of the designated site populations, they are not species which exhibit foraging ranges large enough to be considered species that would regularly make movements between the Humber and the Site. In addition, species such as greylag goose are sufficiently common and widespread across the entirety of East Yorkshire that it is unrealistic to associate individuals of this species recorded on the Site with populations associated with the	Medium	Major adverse	Yes	

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>Humber. Therefore, the Site does not constitute as being regularly used nor important to species associated with the Humber Estuary SPA/Ramsar. Pink-footed goose were recorded during surveys but the peak count of 80 individuals only represents approximately 0.3% of the SPA/Ramsar non-breeding population. This suggests that the species may occasionally use the Site and surrounding area and in acknowledging that there is likely to be annual fluctuations in occurrence on the Site, the HRA Report [EN010143/APP/7.12] has taken a precautionary approach and assumed that in any given year a small proportion of the Site may provide a foraging resource for pink-footed goose and therefore, the Site has been assessed on the basis of supporting functionally linked land. The assessment made in this chapter takes into account the above assessment presented in the</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>HRA, i.e., that the Site may be considered functionally linked to the Humber Estuary SPA/Ramsar and important in HRA terms, but when in determining the magnitude of the impact and overall significance of the effect also reflects that the recorded population of pink-footed goose falls well below the 1% threshold of the Humber Estuary SPA/Ramsar population and is not considered important at a 'county' level in the context of East Yorkshire.</p>			
<p>SAC/SPA/Ramsar: International (Very high)</p>	<p>Disturbance to qualifying bird species present outside the designated site boundary due to construction noise and visual disturbance, i.e., leading to a reduced occurrence of SPA qualifying bird</p>	<p>As stated in the HRA Report [EN010143/APP/7.12] there is the potential for disturbance to any qualifying SPA/Ramsar birds utilising habitats adjoining the Site from construction noise and visual movements (as detailed in the HRA). The construction programme predicts that activities will be carried out in a sequential manner with teams responsible for a specific type of works</p>	<p>Very low</p>	<p>Minor adverse</p>	<p>No</p>	

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		<p>species within terrestrial habitats that play a supporting role in the function of the designated site (functionally linked land). Temporary (short-term).</p>	<p>moving from one Solar PV Area to the next upon completion. Therefore, during construction, multiple areas of the Site are likely to be under construction at any given time, resulting in a complex mosaic of activities. Any noise disturbance is likely to occur in conjunction with visual disturbance, such as arising from the presence of the workforce or heavy machinery within a field. NatureScot funded research suggests that visual stimuli could trigger behavioural responses in pink-footed goose at up to 1km (although a disturbance buffer of 500-1,000m is recommended) (Ref 8-82), however, this is likely to be dictated by the visibility within the landscape, i.e., topography and presence of screening features such as hedgerows and woodlands. In the context of the Scheme, this is likely to be determined by the relative size of fields and therefore, 500m may be a more</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>appropriate disturbance distance (the average size of an arable field).</p> <p>Piling is among the construction techniques to be used within the Site, an activity that is associated with some of the highest disturbance impact potential to waterbirds. The three types of construction activities generating the highest levels of noise were identified as being from the construction of the Grid Connection Substations, inverters, and HDD locations. Installation of cables and solar PV panels would be of lower noise levels but would occur more widely throughout the Site. During times of elevated noise exposure, qualifying birds are likely to move to less disturbed parts of affected fields or different fields. Qualifying birds that have historically been using particularly disturbed areas or fields, may be habituated to higher noise levels generated</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>from the active farming landscape, and have significantly higher tolerance thresholds.</p> <p>As detailed in the HRA Report [EN010143/APP/7.12], inevitably there is the potential for temporary noise and visual disturbance to SPA/Ramsar birds, should they happen to be utilising the first tier of fields adjoining the Order limits.</p> <p>However, it should be noted that the occurrence of SPA/Ramsar birds was limited to a few observations of pink-footed goose, none of which were recorded in fields adjoining the Scheme. The potential for noise and visual disturbance arising from the Scheme needs consideration in the context of wider farming operations in the active farming landscape of East Yorkshire. Tractors and other agricultural machinery, with similar noise impacts to tracked excavators (the noisiest type of plant used in the construction</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>period), will be frequently used as part of routine farming operations in arable plots adjoining the Site. This implies that sound levels may, at any time, increase beyond the 55dB threshold above which disturbance may (though not necessarily will) occur, as discussed above. In practice, elevated noise levels in sub-sections of adjacent fields are considered to be part of the 'normal' baseline soundscape associated with the existing agricultural use. During times of elevated noise exposure, qualifying birds are likely to move to less disturbed parts of affected fields or different fields. Furthermore, qualifying birds that have historically been using particularly disturbed areas or fields, may be habituated to higher noise levels and have significantly higher tolerance thresholds.</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>Only a very small proportion of the overall arable foraging resources available around the Humber Estuary SPA/Ramsar will be affected by elevated noise levels at any one time. These levels of peak noise activity, therefore, could initiate a reaction from birds in certain parts of an adjoining field, but it is more likely that visual stimuli will be the main trigger for disturbance of pink-footed goose, i.e., visibility within a given field is likely to be at a greater distance than the disturbing element of a noise event. In practice only a small fraction of the overall construction/ decommissioning works would be undertaken close to the Order limits, with any works carried out towards the centre of the Scheme having little disturbance potential for functionally linked habitats outside the Order limits. All NGAs carried out for the Scheme would be temporary, with works in a given area typically to be</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>completed in a matter of weeks. As such, much of the construction will occur during the months when pink-footed goose are generally absent (April-September).</p> <p>As set out in the HRA Report [EN010143/APP/7.12] and Appendix 8-6, ES Volume 2 [EN010143/APP/6.2], the occurrence of pink-footed goose within the survey area was limited to a few occasions, in a restricted number of areas, indicating that the Order limits and surrounding farmland, whilst providing potentially suitable habitat in any given year for foraging pink-footed goose, isn't regularly supporting significant numbers (it should be noted that the peak count falls some way short of the 1% threshold for the Humber Estuary SPA/Ramsar site, but in recognition that inter-year abundance could vary, a precautionary approach was applied in the HRA). The</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			availability and location of suitable arable farmland will change depending on the annual cropping regime, so any disturbance to adjoining fields during construction will be temporary, with birds already acclimatised to inter-year changes in foraging distribution. Overall, therefore, it is concluded that the Scheme will not result in significant adverse effects on the integrity of the Humber Estuary SPA/Ramsar regarding noise and visual disturbance in functionally linked habitats. A sufficiently large extent of farmland in the general area will remain undisturbed.			
Humber Estuary SAC		Potential impacts to qualifying fish species. River lamprey and sea lamprey are listed in the citation of the Humber Estuary SAC. There is	During construction of the Grid Connection Corridor and Interconnecting Cable Corridors, the River Derwent, River Ouse, Featherbed Drain and Watercourse DE53 will be crossed using underground (HDD) techniques that would not disturb the watercourses. All	Very low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		<p>potential to temporarily impact these protected fish species through downstream impacts associated with run-off and sedimentation from construction. Furthermore, there is potential to impact the upstream migration of salmon during construction, if construction is to take place close to riverbanks further upstream from the Humber Estuary SAC.</p> <p>Temporary (short-term), reversible.</p>	<p>cables will be installed a minimum of 1.5m below the bed of watercourses (excluding the River Ouse and River Derwent). Cables will be installed by HDD a minimum of 5m below the bed of the River Ouse and River Derwent.</p> <p>As stated for the River Derwent SAC above, a site-specific hydraulic fracture risk assessment would be developed prior to construction and secured via the Framework CEMP [EN010143/APP/7.7].</p>			
Barlow Common LNR	National (High)	Habitat loss/fragmentation	This LNR is c.3.45 km west of the Site; therefore, there will be	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			no direct habitat loss or fragmentation within this statutory designated site due to works carried out on the Site.			
	National (High)	Habitat degradation- impacts to water quality through pollution and construction works run off.	This LNR is 3.45km west of the Site and there are no apparent hydrological connections between this LNR and the Site.	N/A – No impact	No effect	No
	National (High)	Direct (injury/ mortality) and indirect (disturbance) impacts to species associated with the LNR.	Owing to its distance from the Site, no direct mortality of any species associated with this designated site would be expected to result from the construction of the Scheme. Preparation of the Site and the construction of the Scheme will result in dust generation, along with noise and visual disturbance. However, these will not impact on the species and habitats inside the boundary of the LNR owing to the distance between the designated site and the Scheme.	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
Skipwith Common SAC	International (Vey high)	Habitat loss/fragmentation	Skipwith Common SAC is located 5.56km north-west of the Site at its closest point. Therefore, there will be no direct habitat loss or fragmentation within this statutory designated site due to works carried out on the Site.	N/A – No impact	No effect	No
	International (Vey high)	Habitat degradation-impacts to water quality through pollution and construction works run off.	Skipwith Common SAC is located 5.56 km north-west of the Site at its closest point. There is a potential hydrological connection between Skipwith Common SAC and the River Derwent, which will be crossed by the Scheme (using HDD). The SAC is however upstream of the Scheme and therefore indirect impacts due to potential changes to water quality are highly unlikely.	N/A – No impact	No effect	No
	International (Vey high)	Direct (injury/killing) and indirect (disturbance) impacts to species	The SAC is located 5.56 km north-west of the Site at its closest point. Therefore, no direct mortality of any species associated with this designated site would be expected to result	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		associated with the SAC.	<p>from the construction of the Scheme.</p> <p>Preparation of the Site and the construction of the Scheme will result in dust generation, along with noise and visual disturbance. However, these will not impact on the species and habitats inside the boundary of the LNR owing to the distance between the designated site and the Site (see section 16-2 (Air Quality) of Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1] in relation to dust).</p>			
Thorne and Hatfield Moors SPA, Thorne Moor SAC	International (Vey high)	Habitat loss/fragmentation	<p>Thorne and Hatfield Moors SPA and Thorn Moor SAC share the same boundary and are both located 9.24km south of the Site. Therefore, there will be no direct habitat loss or fragmentation within this statutory designated site due to works carried out on the Site.</p>	N/A – No impact	No effect	No
	International (Vey high)	Habitat degradation-	<p>There is a potential hydrological connection between the</p>	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		impacts to water quality through pollution and construction works run off.	SPA/SAC and the Site via the River Ouse (crossed by the Grid Connection Corridor via HDD) and Swinefleet Warping Drain. However, due to the considerable distance between the Site and the SPA/SAC, no hydrological changes at the SPA or impacts through waterborne pollution are anticipated.			
	International (Vey high)	Direct (injury/killing) and indirect (disturbance) impacts to species associated with the SPA/SAC.	Thorne and Hatfield Moors SPA and Thorn Moor SAC share the same boundary and are both located 9.24km south of the Site. At this distance, there are no potential impact pathways to consider with regards to the disturbance of qualifying species (within the boundary of the SPA/SAC). The SPA is designated for its breeding population of nightjar which, although they fly long distances to feed (up to 6km from the nest site (Ref 8-69)) they favour deciduous woodland, open oak scrubland, young conifer plantations and heathland.	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			Therefore, the Site is unlikely to offer suitable habitat for this species and construction of the Scheme is unlikely to result in the loss of functionally linked land.			
Tottering Lane, County Gribthorpe LWS	County (Medium)	<p>Habitat loss/ fragmentation (temporary and permanent). Cable installation and new and upgraded accesses. The LWS will be crossed during installation of a cable which will have a temporary loss of habitat through the verge. In addition, two new access points and an upgraded access will cross the LWS and cause a permanent loss of habitat.</p>	<p>Cable will be installed beneath the hedgerows by tunnelling using an auger on a 360 machine/ excavator to drill horizontally from each field towards the road. The combined width of the hedgerow and verge prevents the auger reaching beneath both the hedge and the verge, and the verge will be open cut. Turves will be taken for the 5m working width and stored, managed, monitored and watered as needed, until can be replaced in the verge. Underlying verge topsoils and subsoils will also be stripped and stored off the LWS in adjacent fields (separately to soil from the fields). Once the cables are installed, the top and subsoil from the LWS will be backfilled</p>	<p>Very Low (cable) Low (accesses)</p>	<p>Negligible (cable) Minor adverse (accesses)</p>	<p>No No</p>

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>promptly, retaining the original soil profile and seed bank. The turves will then be replaced appropriately. This will be secured through a Requirement attached to the DCO (Framework SMP [EN010143/APP/7.10]). Appropriate measures (e.g., fencing and signage) will prevent additional encroachment on the LWSs, and will be secured via the Framework CEMP [EN010143/APP/7.7]. Two new access tracks into the fields along Tottering Lane will be required, as well as upgrading one existing access. Both a permanent bellmouth and visibility splay will be required for each; however, the replacement of the hedgerows and retention of the verge turfs for use along the inside of the bell mouths, has been included within the landscape design to retain the approximately 0.06ha affected by the bellmouths. Management of</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>the grass verges where they fall within the required visibility splays may discourage species richness, depending on the requirements of the council highways team in line with their requirements in relation to highways safety. This would affect approximately 635m length of verge (combined for all three access points) of varying widths as the visibility splays taper, of an LWS of 1.58km in length comprising both sides of the road; therefore, approximately 3.16km in total. However, it is anticipated that the grassland towards the rear of these verges could be cut less frequently and/or to a higher height than the grassland at the front, to encourage species diversity. It is likely to be a requirement that the grassland at the front of the visibility splays is kept shorter for safety reasons. Some of these access points are already in existence and the associated</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			visibility splays are currently managed in this way, with the LWSs remaining designated for their species rich verges. The landscape plan includes habitat creation embedded within the Scheme, including large areas (c. 112.4ha) of species-rich grassland that will be managed as part of the Framework LEMP [EN010143/APP/7.14] and BNG Assessment Report [EN010143/APP/7.14] over the duration of the Scheme, which can be done towards meeting LWS criteria, where appropriate, including areas adjacent to the LWS. There will also be c. 3.5ha of flower-rich grassland and c. 18.26ha of species-rich wet grassland.			
	County (Medium)	Habitat degradation-impacts to water quality through pollution and construction works run off.	Standard environmental protection measures formalised through the Framework CEMP [EN010143/APP/7.7] includes dust suppression and pollution prevention measures.	Very low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		Habitat degradation due to dust and other pollutants. Temporary (short-term), reversible.				
Wressle Verge LWS	County (Medium)	Habitat loss (temporary and permanent). Cable installation and upgraded access. The LWS will be crossed during installation of a cable which will have a temporary loss of habitat through the verge. In addition, two upgraded access will cross the LWS or intersect via visibility splay the LWS and cause a permanent loss of habitat.	The LWS will be crossed during installation of a cable which will have a temporary loss of habitat through the verge. In addition, an upgraded access will affect the LWS. As per Tottering Lane, Gribthorpe LWS, a cable crossing of the LWS will have a temporary loss of habitat through the verge. Methods of installation and mitigation will be as noted above, with habitat loss avoided for the hedgerows, and verges reinstated on completion. Two access tracks upgrades will be required. A permanent bellmouth and visibility splay will be required for one and a visibility splay will intersect from the second; however, the replacement of the hedgerows	Very low (cable) Low (accesses)	Negligible (cable) Minor adverse (accesses)	No No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>and retention of the verge turfs for use along the inside of the bellmouth, has been included within the landscape design. Management of the grass verges where they fall within the required visibility splays may discourage species richness, depending on the requirements of the council highways team in line with their requirements in relation to highways safety. This would affect approximately 106m length of verge of varying widths as the visibility splay tapers, of an LWS of 1.27km in length comprising both sides of the road; therefore, approximately 2.55km in total. However, it is anticipated that the grassland towards the rear of these verges could be cut less frequently and/or to a higher height than the grassland at the front, to encourage species diversity. It is likely to be a requirement that the grassland at the front of the visibility splays is kept shorter for</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>safety reasons. Some of these access points are already in existence and the associated visibility splays are currently managed in this way, with the LWSs remaining designated for their species rich verges.</p> <p>The landscape Masterplan (Appendix A of the Framework LEMP [EN010143/APP/7.14]) includes habitat creation embedded within the Scheme, including large areas (c. 112.4ha) of species-rich grassland that will be managed as part of the Framework LEMP [EN010143/APP/7.14] and BNG Assessment Report [EN010143/APP/7.14] over the duration of the Scheme, which can be done towards meeting LWS criteria, where appropriate, including areas adjacent to the LWS. There will also be c. 3.5ha of flower-rich grassland and c. 18.26ha of species-rich wet grassland.</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
	County (Medium)	Habitat degradation-impacts to water quality through pollution and construction run off. Habitat degradation due to dust and other pollutants. Temporary (short-term), reversible	Standard environmental protection measures formalised through the Framework CEMP [EN010143/APP/7.7] includes dust suppression and pollution prevention measures.	Very low	Minor adverse	No
Bubwith to Holme-on-Spalding-Moor Disused Railway Line LWS	County (Medium)	Habitat loss/fragmentation	The LWS is located 50 m north-west of the Solar PV Site at its closest point. However, the LWS measures approximately 12.2km in length and only a small section of the LWS lies close to the Site. Therefore, there will be no direct habitat loss or fragmentation within this statutory designated site due to works carried out on the Site.	N/A – No impact	No effect	No
	County (Medium)	Habitat degradation-impacts to water	There are apparent hydrological connections between the Site and the LWS via the existing	Low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		quality through pollution and construction works run off. Habitat degradation due to dust and other pollutants. Temporary (short-term), reversible.	drainage ditch network. Standard environmental protection measures formalised in the Framework CEMP [EN010143/APP/7.7] includes dust suppression and pollution prevention measures. Furthermore, only a short section of the LWS lies within 50m of the Site. The majority of the LWS lies at least 200m from the Site. Preparation of the Site and the construction of the Scheme will result in dust generation; however, the Dust Risk Assessment presented in section 16-2 (Air Quality) of Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1] concludes that the construction dust effects on this receptor would be not significant.			
North Howden Fish Ponds LWS, Barnhill Candidate LWS,	County for the LWS's (Medium)	Habitat loss	These five non-statutory designated sites all lie outside the Site, the closest of which is North Howden Fish Ponds LWS, which is 440m from the Order	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
Yarmshaw Plantation LWS, Eastrington Ponds	National (High) for the LNR		limits. Therefore, there will be no direct habitat loss or fragmentation within these designated sites.			
LWS/LNR and Aughton Common, Bubwith LWS	County (Medium) for the LWS's National (High) for the LNR	Habitat degradation- impacts to water quality through pollution and construction run off. Habitat degradation due to dust and other pollutants. Temporary (short-term), reversible.	There are possible hydrological connections between the Site and these designated sites via the existing drainage ditch network. Standard environmental protection measures formalised through the Framework CEMP [EN010143/APP/7.7] includes dust suppression and pollution prevention measures. Preparation of the Site and the construction of the Scheme will result in dust generation; however, the Dust Risk Assessment presented in section 16-2 (Air Quality) of Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1] concludes that the construction dust effects on Yarmshaw Plantation LWS and North Howden Fish Ponds LWS would be not significant- the	Very low	Negligible for the LWSs. Also considered to be negligible (rather than minor) for Eastrington Ponds LNR due to the distance (1.7km) between the LNR and the Site and the embedded mitigation measures applied.	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			remaining sites are too far from the Order limits to be considered in the Dust Risk Assessment.			
	County (Medium)	Direct (injury/killing) and indirect (disturbance) impacts to species associated with the LWSs. Temporary (short-term), reversible.	No direct mortality of any species associated with these LWSs would be expected to result from the construction of the Scheme. Preparation of the Site and the construction of the Scheme will result in noise and visual disturbance. Noise and visual disturbance will not impact on the integrity or the functioning of these LWSs or species using them, owing to the distance between each of them and the Site. Furthermore, the construction of the majority of the Scheme will be screened by existing vegetation. As per for the habitats, dust (which can harm aquatic species associated with these sites) will be controlled through the Framework CEMP [EN010143/APP/7.7] and is not significant for these receptors.	Very low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
Ponds on W Bank of R Derwent near Woodall Farm SINC, Brockholes SINC, Hagg Lane Green SINC	County (Medium)	Habitat loss/fragmentation	These three non-statutory designated sites are all outside the Site, the closest of which is Brockholes SINC, which is 920 m from the Site. Therefore, there will be no direct habitat loss or fragmentation within these designated sites.	N/A – No impact	No effect	No
	County (Medium)	Habitat degradation-impacts to water quality through pollution and construction runoff.	There are no apparent hydrological connections between the Site and Brockholes SINC or Hagg Lane Green SINC. The 'Ponds on the W Bank of R Derwent near Woodall Farm SINC' lies adjacent to the River Derwent; however, the SINC is upstream of the Site. Therefore, no changes to hydrology or impacts due to waterborne pollution or siltation are anticipated.	N/A – No impact	No effect	No
	County (Medium)	Direct (injury/killing) and indirect (disturbance) impacts to species	The closest of these, Brockholes SINC, is 920m from the Site. Therefore, no direct mortality of any species associated with these designated sites would be	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		associated with the SINC's.	expected to result from the construction of the Scheme. Preparation of the Site and the construction of the Scheme will result in dust generation, along with noise and visual disturbance. However, these will not impact on the species and habitats inside the boundaries of these SINC's owing to the distances between them and the Scheme – see section 16-2 (Air Quality) of Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1] in relation to dust.			
Old Clay Pits, Highfield – Historic LWS	County (Medium)	Habitat Loss/ fragmentation(temporary and permanent)	This non-statutory designated site lies outside the Site, at approximately 625 m from the Solar PV Site, and 50m from an area of traffic calming measures at the A163 and B1228 junction; however, this will primarily fall within the existing carriageway. Therefore, there will be no direct habitat loss or fragmentation within this designated site.	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
	County (Medium)	Habitat degradation- impacts to water quality through pollution and construction works run off. Temporary (short-term), reversible.	There are apparent hydrological connections between the Site and the LWS via the existing drainage ditch network. Standard environmental protection measures will be formalised through the Framework CEMP [EN010143/APP/7.7] .	Very low	Negligible	No
	County (Medium)	Direct impacts (injury/killing) to species associated with the LWS.	No direct mortality of any species associated with this designated site would be expected to result from the construction of the Scheme.	N/A – No impact	No effect	No
	County (Medium)	Indirect impacts to species associated with the LWS due to noise disturbance, dust. Temporary (short-term), reversible.	Any noise disturbance will be short-term, with the infrastructure constructed in stages across the Site, and kept to a minimum through measures set out in the Framework CEMP [EN010143/APP/7.7] . This includes dust suppression and pollution prevention. Furthermore, only a short area of traffic calming measures lies within 50m of the LWS. The	Very low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>majority of the Site lies at least 625m from the LWS. Preparation of the Site and the construction of the Scheme will result in dust generation, however the Dust Risk Assessment presented in section 16-2 (Air Quality) of Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1] concludes that the construction dust effects on this receptor would be not significant.</p>			
Semi-natural woodland (broad-leaved and mixed), including Priority woodland	Up to County (Medium)	Habitat loss	<p>Suitably sized buffers from such habitats are embedded into the design of the Scheme, with no loss of semi-natural woodland required. There is some potential incursion to the RPA of woodland areas due to cabling works. As detailed in Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2], RPA incursions can be managed so that there will be no detrimental</p>	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			impacts on the health or amenity of retained trees. Measures to prevent incursion into woodland habitat will be put in place e.g. security fencing. These measures are included within the Framework CEMP [EN010143/APP/7.7] .			
	Up to County (Medium)	Habitat degradation due to dust and other pollutants. Temporary (short-term), reversible.	Standard environmental protection measures will be implemented and adopted during construction, formalised through the Framework CEMP [EN010143/APP/7.7] .	Very low	Negligible	No
Broad-leaved plantation Woodland, including Priority woodland	Up to County (Medium)	Habitat Loss of plantation woodland. Long-term (for the duration of the Scheme), reversible (willow plantation).	No plantation woodland that is mapped as Priority woodland (Ref 8-40) will be lost during construction of the Scheme. Where Priority woodland is present within the Grid Connection Corridor loss of this habitat will be avoided by installing the cabling within the road rather than through the woodland. The only areas of broadleaved	Very low to Low	Negligible in the short-term, and Minor beneficial In the long-term once the planting has established.	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>plantation woodland that will be permanently lost are within Solar PV Area 3c; however, this willow plantation is currently grown and harvested for biofuel and is of site (Very low) importance. The other areas of broadleaved plantation woodland within the Site will be protected by suitably sized buffers which are embedded into the design of the Scheme. There is potential for incursion to the root protection RPAs of woodland areas due to cabling works. However, as detailed in Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2], RPA incursions can be managed so that there will be no detrimental impacts on the health or amenity of retained trees.</p> <p>Measures to protect retained trees and their associated root protection zones will be put in place (e.g., fencing), which will</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>be implemented at an early stage to protect these features from impacts during construction, as detailed in Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2]. These measures are included within the Framework CEMP [EN010143/APP/7.7].</p> <p>The embedded landscape design and BNG for the Scheme includes areas (c. 8.1ha) of native woodland planting, and shrub planting with trees and woodland edge planting. There is also 1.95ha of native traditional orchard.</p>			
	Up to County (Medium)	Habitat degradation due to dust and other pollutants. Temporary (short-term), reversible.	Standard environmental protection measures will be implemented and adopted during construction, formalised through the Framework CEMP [EN010143/APP/7.7] .	Very low	Negligible	No
Veteran and ancient trees	County (Medium)	Habitat Loss	Any veteran, or ancient scattered trees within/bordering the Site	Very low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>(including all those within hedges, tree lines or individual trees) will be retained and protected. Therefore, there will be no direct loss of veteran or ancient scattered trees. As detailed in Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2], 101 features are subject to an incursion into their RPA or canopy spread. This is generally limited to new cable and access routes with some minor incursions for panel locations and palisade fencing surrounding Grid Connection Substations. This includes two veteran trees and one ancient tree. In all cases RPA incursions will be managed so that there will be no detrimental impacts on the health or amenity of retained trees. One tree (T45) to be pruned is considered to be ancient and pruning may be required to</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>facilitate a temporary clearance for vehicular access, the final extent of pruning is to be agreed on site with an arboriculturist, but is not considered likely to result in a detrimental impact to the tree due to its species (crack willow) which is tolerant of pruning), good vitality and due to the existing clearance maintained over the existing hard surfaced access route.</p> <p>The final requirement for pruning will be reviewed and identified at the detailed design stage and will be confirmed in an Arboricultural Method Statement as part of the CEMP secured as a requirement of the Draft DCO</p> <p>[EN010143/APP/3.1]. This is a commitment in the Framework CEMP [EN01043/APP/7.7].</p> <p>Measures to ensure incursion into this habitat does not occur will be put in place (e.g., fencing), which is included within the Framework CEMP [EN010143/APP/7.7].</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
	County (Medium)	Habitat degradation due to dust and other pollutants. Temporary (short-term), reversible.	Standard environmental protection measures will be implemented and adopted during construction, formalised through the Framework CEMP [EN010143/APP/7.7] .	Very low	Negligible	No
Scattered trees (non-ancient/veteran)	Site (Very low) to Local (Low) importance.	Habitat loss. Temporary (long-term while trees planted establish), reversible.	Where practicable, the layout of the Scheme will use existing farm tracks and field openings as the preferred routes for construction access, minimising loss of individual trees. A 15m stand-off buffer will be applied to retained trees and measures to ensure incursion into root protection zones does not occur will be put in place (e.g. fencing), which is included within the Framework CEMP [EN010143/APP/7.7] . The iterative design process during the development of the Scheme has been undertaken to avoid or minimise impacts to trees where practicable. Where practicable the detailed design (post-consent) will be further developed to avoid or minimise impacts to trees and in practice	Low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>this is likely to reduce the level of arboricultural impacts reported. As detailed in Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2], 52 individual trees, 17 groups of trees and 44 hedgerows are to be removed or part removed to facilitate the Scheme. Furthermore, 101 features are subject to an incursion into their Root Protection Area (RPA) or canopy spread. This is generally limited to new cable and access routes with some minor incursions for panel locations and palisade fencing surrounding Grid Connection Substations. In all cases RPA incursions will be managed so that there will be no detrimental impacts on the health or amenity of retained trees. Twenty-seven tree features have been identified as likely to require pruning to facilitate access, working space and visibility requirements. Proposed pruning</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>will not significantly impact on the health or amenity of affected trees and will help to prevent any inadvertent damage during construction and where necessary, provide a framework for future management during operation.</p> <p>The final level of arboricultural impacts and requirement for pruning will be reviewed and identified at the detailed design stage and will be confirmed in an Arboricultural Method Statement as part of the CEMP secured as a requirement of the Draft DCO [EN010143/APP/3.1]. This is a commitment in the Framework CEMP [EN01043/APP/7.7].</p> <p>Tree loss will be mitigated with a robust and high quality scheme of new tree planting as detailed in the Framework LEMP [EN010143/APP/7.14].</p> <p>The embedded landscape design and BNG for the Scheme includes areas (c. 8.1ha) of native woodland planting, and</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			shrub planting with trees and woodland edge planting. There is also 1.95ha of native traditional orchard. In addition, 8.2km of new native hedgerows with trees will be planted.			
		Habitat degradation due to dust and other pollutants. Temporary (short-term), reversible.	Standard environmental protection measures will be implemented and adopted during construction, formalised through the Framework CEMP [EN010143/APP/7.7] .	Very low	Negligible	No
Semi-improved neutral grassland	Local (Low)	Temporary habitat loss to facilitate construction access and cable installation (c. 0.77ha). Temporary (short-term), reversible.	Correct handling of soils and associated seedbanks and reinstatement of the habitat will ensure that the loss is for the duration of the construction period only. Materials and vehicles will not be stored on the retained areas of this habitat. Where loss of the habitat for the permanent access tracks would occur, the spoil and turves will be reused within the bellmouths to maintain the habitat. The embedded landscape design and BNG for the Scheme	Medium (beneficial)	Minor beneficial	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			includes large areas (c. 112.4ha) of species-rich grassland, semi-improved grassland (c. 797.9 ha) and flower rich grassland (c. 3.5 ha).			
	Local (Low)	Habitat degradation due to dust and other pollutants. Temporary (short-term), reversible.	Standard environmental protection measures will be implemented and adopted during construction, formalised through the Framework CEMP [EN010143/APP/7.7] .	Very low	Negligible	No
Priority coastal and floodplain grazing marsh (as shown on MAGIC (Ref 8-40)), but recorded to be predominantly improved and poor semi-improved grassland during the Phase 1 habitat survey.	County (Medium)	Temporary habitat loss/disturbance to facilitate cable installation. Temporary (short-term), reversible.	Correct handling of soils and reinstatement of the habitat (identified to be improved grassland and poor semi-improved grassland during the Phase 1 habitat survey) will ensure that the loss is for the duration of the construction period only. Materials and vehicles will not be stored on retained areas of this habitat. Appropriate measures to ensure there is no incursion during construction into retained habitat and stand-off buffers will be put	Low	Minor Adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			in place to avoid damage (e.g. security fencing early on in the construction process).			
	County (Medium)	Habitat degradation due to dust and other pollutants. Temporary (short-term), reversible.	Standard (embedded) environmental protection measures will be implemented and adopted during construction, formalised through the Framework CEMP [EN010143/APP/7.7] .	Very low	Negligible	No
Hedgerows-Species-poor and species-rich hedgerows (intact and defunct), Species-poor and species-rich hedgerows with trees (intact and defunct), comprising both Important and non-important hedgerows.	Up to County (Medium)	Habitat Loss. Temporary (medium term while hedgerows planted establish), reversible.	Where practicable, the layout of the Scheme will use existing farm tracks and field openings as the preferred routes for construction access and cable installation, minimising loss of hedgerows. Where temporary removal of a section of hedgerow is required, new sections of hedgerow (of the same or improved condition) will be planted, although it is acknowledged these sections will take some years to mature. 10m stand-off buffers will be applied to protect retained hedgerows (extended to 15m for hedgerows where trees are present).	Low	Minor adverse, reducing to negligible in the medium- to long-term once new hedgerows and enhancements have established.	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>Appropriate measures to ensure there is no incursion during construction into retained habitat and stand-off buffers will be put in place to avoid damage (e.g. security fencing early on in the construction process). The embedded landscape design for the Scheme includes new and enhanced lengths of hedgerow and based on the current plans for the Site, the Scheme is predicted to result in a net gain of 3.89% for hedgerow units (BNG Assessment Report [EN010143/APP/7.11]). Improvements to the stated BNG at designed design stage could make this a minor beneficial effect in the long-term.</p>			
	County (Medium)	<p>Habitat degradation due to dust and other pollutants. Temporary (short-term), reversible.</p>	<p>Standard environmental protection measures will be implemented and adopted during construction, formalised through the Framework CEMP [EN010143/APP/7.7].</p>	Very low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
Protected and notable flora	Local (Low)	Loss/damage	Pre-construction checks will be undertaken to identify the presence of any notable plant species (e.g., native bluebell (<i>Hyacinthoides non-scripta</i>) in areas of habitat that will be temporarily impacted. If identified to be present, turves/topsoil will be taken (as appropriate) for the working width and stored, managed, monitored and watered as needed, until they can be replaced or relocated into retained or created woodland areas on Site. Underlying topsoils and subsoils will also be stripped and stored appropriately. Once the cables are installed, the top and subsoil will be backfilled promptly, retaining the original soil profile and seed bank. The turves will then be replaced appropriately.	Low	Negligible	No
Arable field margins	Local (low)	Habitat loss/fragmentation	Existing field margins will largely be retained, with buffers of at least 10m retained between boundary hedgerows and the perimeter fencing (increased to	Medium	Minor beneficial	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>15m where hedgerow trees are present). Existing grassland field margins will be improved using species-rich grassland mixes and will be appropriately managed to increase species diversity, as outlined in the Framework LEMP [EN010143/APP/7.14].</p>			
Running water, including wet ditches	Wet ditches/ drains (smaller watercourses) – Local (Low)	Habitat loss/ fragmentation (wet ditches/ drains only), where crossed using open-cut techniques for cable installation. Temporary (short-term), reversible.	<p>Working widths will be kept to an absolute minimum to minimise temporary habitat loss, with all machinery and materials stored at least 10m from watercourses. Where open-cut techniques are required to cross smaller watercourses (ditches/drains), water flow would be maintained by damming and over pumping or fluming. Impacts will be temporary, and habitats will reinstate within two years, with aquatic species re-colonising naturally from adjacent habitats. Watercourses will be reinstated as found and regular post-works observations, during vegetation re-establishment of the banks, especially following wet weather,</p>	Low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			will ensure that no adverse impacts have occurred.			
Running water, including wet ditches	Wet ditches/ drains (smaller watercourses) – Local (Low)	Permanent habitat loss/ fragmentation (wet ditches/drains only) where crossed for access.	<p>New crossings have been avoided wherever practicable in favour of using existing crossings. No new culverts will be created and where existing culverted crossings need upgrading, it is assumed they will be extended by no more than 2m (in length).</p> <p>Where extensions to existing culverts are required, they will be designed appropriately to maintain connectivity along watercourses for aquatic species and riparian mammals, where these are shown to be present.</p> <p>Where practicable, culverts extensions and any improved structure will be set 150mm below bed level to allow sedimentation and a naturalised bed to form, which will maintain longitudinal connectivity and fish passage for aquatic fauna.</p> <p>Length-for-length equivalent watercourse enhancements are</p>	Medium	Minor beneficial	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>required for any culvert extension.</p> <p>Where a new drainage ditch crossing is required, an open span bridge crossing will be used to minimise habitat loss.</p> <p>The BNG assessment will include a 10% gain for watercourses (rivers and streams, and ditches), details of which are presented in the BNG Assessment Report [EN010143/APP/7.11].</p>			
Running Water, including wet ditches	River Derwent-National (High) River Ouse and Foulness-County (Medium) Wet ditches/ drains (smaller watercourses) – Local (Low)	Habitat degradation due to construction pollution/siltation. Temporary (short-term), reversible.	With the exception of the open trench crossing of watercourses for cable installation, where required, no works will be undertaken within at least 10m of watercourses (30m of the River Ouse), which is considered sufficient to mitigate for potential hazards such as chemical and soils spills to avoid potential direct impacts to watercourses and any protected/notable species that use them. The Framework CEMP [EN010143/APP/7.7] specifies	Medium	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			requirements for the safe storage of chemicals and other hazardous materials (e.g., fuel) reaching watercourses during flood events during construction. Where open-cut techniques are required to cross smaller watercourses (ditches and drains), works will be carried out in the drier months where practicable as this would reduce the risk of pollution propagating downstream, particularly in the case of ephemeral watercourses. As stated for the River Derwent SAC above, a site-specific hydraulic fracture risk assessment would be developed prior to construction and secured via the Framework CEMP [EN010143/APP/7.7] .			
Standing open water (ponds)	Local (Low)	Habitat loss/degradation	All ponds present within the Site will be retained. A minimum of 10m stand-off buffers will be applied (except in a small number of cases where the full 10m is not feasible) and measures to avoid incursion	N/A – No impact	No effect	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			during construction will be undertaken (e.g. fencing).			
	Local (Low)	Habitat degradation due to dust and other pollutants. Temporary (short term), reversible.	Standard environmental protection measures will be implemented and adopted during construction, formalised through the Framework CEMP [EN010143/APP/7.7] .	Very low	Negligible	No
Priority habitat: Lowland fen, mudflat and traditional orchard	County (Medium)	Habitat loss/fragmentation	Direct impact on Priority mudflat habitat along the banks of the River Ouse will be avoided through the use of HDD to cross under the River Ouse. Direct impact on lowland fen habitat will be avoided through the use of an existing track immediately north of this habitat, which is sufficient to accommodate the size of vehicles. Direct impact on Priority orchard habitat will be avoided through the use of the existing roads.	N/A – No impact	No effect	No
	County (Medium)	Habitat degradation due to	Standard environmental protection measures will be implemented and adopted during construction, formalised through	Very low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		dust and other pollutants. Temporary (short-term), reversible.	the Framework CEMP [EN010143/APP/7.7] . Encroachment from the existing track north of the area of lowland fen habitat will be prevented as part of the measures to protect the River Derwent SAC/SSSI which also encompasses where this habitat lies.			
Priority Habitat: Good quality semi-improved grassland, lowland meadows, reedbeds	County (Medium)	Habitat degradation due to dust and other pollutants. Temporary (short-term), reversible.	MAGIC (Ref 8-40) indicates that these Priority habitats are present within the 2 km study area (outside of the Order limits), but they have not been recorded within the Site. Standard (embedded) environmental protection measures will be implemented and adopted during construction, formalised through the Framework CEMP [EN010143/APP/7.7] .	Very low	Negligible	No
Terrestrial Invertebrates	Local (Low)	Direct temporary loss and fragmentation of habitat, used by terrestrial invertebrates	The Scheme design retains and avoids direct and indirect impacts to the majority of habitats of value to terrestrial invertebrates, including woodland, grassland margins, watercourse/ditch	Low (habitat loss during construction)	Negligible Minor beneficial (due to extents of habitats created, once established)	No No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		resulting in species mortality. Temporary (short-term), reversible Habitat creation (long-term), reversible.	margins, scrub and hedgerows within the Solar PV Site. However, some loss (albeit mostly temporary) cannot be avoided. Habitat loss within the Grid Connection Corridor will be temporary. Measures to ensure incursion into retained habitats does not occur will be put in place (e.g., security fencing), which will be implemented at an early stage to protect retained habitats from incursion during construction of the Scheme. The Framework CEMP [EN010143/APP/7.7] specifies pollution prevention measures to protect retained habitat. The embedded landscape design (as shown on the Landscape Masterplan in Appendix A of the Framework LEMP [EN010143/APP/7.14]) includes c. 112.4ha of species rich grassland, c. 3.5ha of flower rich grassland and c. 797.9ha of semi-improved grassland. There is also an area of proposed	Medium (beneficial) for habitat creation		

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
Terrestrial Invertebrates (Tansy beetle)	National (High)	Direct loss and fragmentation of habitat (although no tansy plants noted), used by tansy beetle, resulting in species mortality. Temporary (short-term), reversible.	<p>species-rich wet grassland east of Solar PV Area 1e (c. 18.26ha), that would provide suitable habitat for a range of terrestrial invertebrates assemblages, as well as 8.1ha of native woodland planting and shrub planting with trees and woodland edge planting.</p> <p>Although not currently known to be present along the River Ouse in the vicinity of the Site, they are known to be present further upstream. No evidence has been found of their presence or the tansy plant during surveys. As a precaution, a pre-construction check for tansy plants will be completed in areas where it could occur (i.e., riverbanks, rough grassland, field margins, road verges, wetlands). Should any areas be found, habitats with tansy should be avoided, and timing of works should avoid periods where the adults and larvae are active. Adult Tansy beetles are active</p>	Very low (considered unlikely due to anticipated absence and avoidance of main habitat types)	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>around the tops of Tansy plants from April until June where they feed, mate, and lay eggs. They will be most obvious on warm, sunny days, and the female Tansy beetle is generally larger-bodied than the male. The eggs hatch between May and July into Larvae. Works where tansy is present should be avoided between April and July, and outside that period the ground in these areas should not be disturbed due to the possible presence of tansy beetle larvae.</p>			
Aquatic Macroinvertebrates	Local (Low)	<p>Direct impact on species assemblage through disturbance and mortality during open-cut trenching. Temporary (short term), reversible.</p>	<p>The construction of the Scheme will be offset >10m from the bank top of watercourses), as detailed in the embedded design mitigation. These offsets will prevent disturbance to aquatic and riparian habitats. The Grid Connection Corridor will utilise non-intrusive HDD methods to cross the River Derwent and River Ouse and the installation of Interconnecting Cables beneath Featherbed</p>	Low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
Aquatic macroinvertebrates	Local (Low)	Habitat degradation-impacts to water quality through pollution spills/surface runoff, leading to mortality of macroinvertebrates. Temporary (short-term), reversible.	Drain will also be via HDD. These crossing methods will avoidance disturbance to species, habitat loss and direct mortality for aquatic species. Open-trench crossings will be clear-cut, with as narrow a crossing width as possible. Habitats will be reinstated following construction, with the timescale of open-trenching as short as possible to maintain connectivity along watercourses and ditches. Standard environmental protection measures will be implemented and adopted during construction (as detailed in section 8.6), formalised through the Framework CEMP [EN010143/APP/7.7] , and will include measures such as dust suppression, silt fencing and pollution prevention.	Low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
Aquatic macrophytes	Local (Low)	Disturbance to macrophyte species during construction resulting from pollution impacts from surface water run-off and sedimentation. Where minor watercourses are to be crossed by open-trench methods, macrophytes may be removed. Temporary (short-term), reversible.	Standard environmental protection measures will be implemented and adopted during construction (as detailed in section 8.6), formalised through the Framework CEMP [EN010143/APP/7.7] . These measures will include dust suppression, silt fencing and pollution prevention. Following construction of open-trench crossings, habitats will be restored, allowed macrophyte species to re-establish naturally within two years.	Low	Negligible	No
Fish	County (Medium)	Disturbance to notable fish species during construction resulting from pollution impacts from surface water run-off, and sedimentation.	Standard (embedded) environmental protection measures will be implemented and adopted during construction (as detailed in section 8.6), formalised through the Framework CEMP [EN010143/APP/7.7] . These measures will include items such as dust suppression, silt fencing	Low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
Fish	County (Medium)	Direct mortality or disturbance to fish species due to open-trench	<p>and pollution prevention, and control of noise and light pollution.</p> <p>The construction of the Scheme will avoid the open trenching of ditches and watercourses which support fish where practicable and these will be retained and suitably buffered. The construction of the Scheme will be offset (at least 10m from the bank top) from any peripheral watercourses, as detailed in the embedded design mitigation. These offsets will prevent disturbance to aquatic habitats supporting fish. As stated for the River Derwent SAC above, a site-specific hydraulic fracture risk assessment would be developed prior to construction and secured via the Framework CEMP [EN010143/APP/7.7].</p> <p>Where watercourses are open-cut for cable crossings, impacts will be temporary and habitats will reinstate within two years, with aquatic species re-</p>	Low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		crossings of minor watercourses. Temporary (short-term), reversible.	colonising naturally from adjacent habitats; however, fish rescue and translocation may be required during construction where de-watering or over-pumping is required.			
Fish	County (Medium)	Noise and vibration disturbance to fish species, including through HDD crossing of the Rivers Ouse, Derwent, and Foulness. However, the most sensitive species that may be present, allis shad, is more likely to be present upstream than within the Study Area. Temporary (short-term), reversible.	Where practicable construction will be undertaken during daylight hours to avoid the need for artificial light, noting that HDD operations are 24-hour. The lighting strategy for the Scheme (described in Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1] and Framework CEMP [EN010143/APP/7.7]). All cables will be installed a minimum of 1.5m below the bed of watercourses (excluding the River Ouse and River Derwent). Cables will be installed by HDD a minimum of 5m below the bed of the River Ouse and River Derwent.	Low	Minor adverse	No
Fish	County (Medium)	Direct mortality or disturbance to fish	No new culverts will be created as a result of the Scheme. Where	Very Low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		due to culverting of watercourses. Temporary – short-term for construction accesses and long-term for operational accesses, reversible.	watercourses and ditches are already culverted and require an extension of the culvert by up to 2m, culvert extensions will be designed to allow continued connectivity and fish passage along the watercourse, with a natural bed and no drop inlet or outlet. Given the generally sub-optimal habitat for fish in the small drains and ditches proposed for culvert extensions, it is considered that the potential impacts are very low, and no additional mitigation is required.			
Breeding birds – general breeding bird assemblage	Local (Low)	Direct loss and fragmentation of habitat, used by breeding birds, resulting in species mortality. Temporary (short-term), reversible.	Habitats supporting the majority of the breeding bird assemblage, such as hedgerows and woodland areas will largely be retained, which will not affect the majority of breeding bird species found across the Scheme. The loss of any arable habitat will lead to the temporary displacement of ground-nesting breeding bird species reliant on this habitat, such as skylark	Low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>(although see below) and will require replacement habitat.</p> <p>The construction of the Scheme will be undertaken over many months and will not impact upon retained habitats used by breeding birds (such as woodland and hedgerows), which will maintain connectivity across the Site for the majority of breeding bird species (such as those using hedgerows). Therefore, there will be no fragmentation of habitats used by breeding birds.</p> <p>The construction of the Scheme, if undertaken within the bird breeding season (typically March to August inclusive) has the potential to cause mortality to breeding birds in habitats that are to be removed. The majority of vegetation clearance will be undertaken outside of this period. However, where construction cannot avoid nesting birds, then nesting bird checks will need to be undertaken by an ornithologist</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>prior to construction (where this occurs within the breeding season) to ensure nesting birds are avoided and there is no species mortality.</p> <p>The embedded landscape design of the Scheme provides large areas of grassland habitat, including areas free from panels, and field margins, that would provide alternative habitat for ground nesting birds.</p>			
	Local (Low)	<p>Disturbance, due to noise/visual. Temporary (short-term), reversible.</p>	<p>Good industry practice construction methods as detailed in the Framework CEMP [EN010143/APP/7.7] include implementation of measures to minimise noise, lighting and vibration disturbance to breeding birds to ensure that, where construction of the Scheme is undertaken within the bird breeding season (typically March to August inclusive), then disturbance to breeding birds in adjacent and retained habitats will be minimised.</p>	Low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
Breeding birds – population of Curlew	Up to County (Medium)	Direct loss of habitat, used by curlew during the breeding season. Temporary (short-term), reversible.	The loss of arable habitat within the Scheme will lead to a reduction in the available habitat used during the breeding season by curlew. However, this will be mitigated through the creation of the area of habitat enhancement, which will be used as an undeveloped mitigation area (see section 8.6), along with areas of panel free grassland habitats embedded into the landscape design, to provide permanent habitat available to curlew during the breeding season. However, there may be a short-term impact whilst habitats succeed.	Low	Minor Adverse	No
	County (Medium)	Disturbance, due to noise/visual. Temporary (short-term), reversible.	Good industry practice construction methods as detailed in the Framework CEMP [EN010143/APP/7.7] include implementation of measures to minimise noise, lighting and vibration disturbance and, consequently, where construction of the Scheme is undertaken within the bird breeding season (typically March to August	Low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			inclusive), then disturbance to breeding birds in adjacent and retained habitats will be minimised.			
Breeding birds – population of Skylark	District (Medium)	Direct loss of habitat, used by skylark during the breeding season. Temporary (short-term), reversible.	The loss of arable habitat within the Scheme will lead to a reduction in the available habitat used during the breeding season by skylark. However, this will be mitigated through the retention of existing grassland and through areas of panel free grassland habitats embedded into the landscape design, to provide permanent habitat available to skylark during the breeding season. However, there may be a short-term impact whilst habitats succeed.	Low	Minor adverse	No
	District (Medium)	Disturbance, due to noise/visual. Temporary (short-term), reversible.	Good industry practice construction methods as detailed in the Framework CEMP [EN010143/APP/7.7] includes implementation of measures to minimise noise, lighting and vibration disturbance and consequently, where construction	Low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
Breeding birds – territories of specially protected species	Local (Low)	Direct loss and fragmentation of habitat, used by breeding birds, resulting in species mortality. Temporary (short-term), reversible.	<p>of the Scheme is undertaken within the bird breeding season (typically March to August inclusive), then disturbance to breeding birds in adjacent and retained habitats will be minimised.</p> <p>There will be no direct loss of habitat occupied by breeding quail, hobby and barn owl during construction of the Scheme. Quail rely on arable farmland and grassland habitats to establish territories and the arable location of the single quail territory in 2023 is outside of the developable area of the Site and will be retained. Hobby rely on woodland, scrub and hedgerow habitats for nesting, the majority of which will be retained during construction. Barn owl nest in mature trees, buildings and in artificial nesting sites such as nest boxes. All trees with suitability for barn owl and existing nest boxes (where found within the Site) will be retained</p>	Low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>during construction. The buildings at Johnson’s Farm (Solar Area PV 1e) will be re-checked for the presence of barn owl prior to any works taking place to these buildings.</p> <p>Furthermore, there will be no fragmentation of habitats used by quail, hobby or barn owl during construction of the Scheme. Quail are largely sedentary when breeding and therefore the retention of habitats where a territory was recorded in 2023 will ensure there are no impacts on this species. Hobby feed on small birds and insects (such as dragonflies), which are taken on the wing. Therefore, construction of the Scheme will not impair this species’ ability to hunt. Barn owl forage in grassland (including margins and open grassland fields) and along ditches and woodland edge. These habitats will largely be retained and their area increased during construction of the Scheme and</p>			

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			therefore, there will be no impacts on foraging barn owl during construction of the Scheme.			
	Local (Low)	Disturbance, due to noise/visual. Temporary (short-term), reversible.	<p>Quail, hobby and barn owl are all species that are included on Schedule 1 of the WCA 1981 (as amended) (Ref 8-1) and all are potentially sensitive to disturbance. Best practice construction methods as detailed in the Framework CEMP [EN010143/APP/7.7] includes implementation of measures to minimise noise, lighting and vibration disturbance, which will reduce or remove potential impacts to breeding birds. Construction of the Scheme, where undertaken during the bird breeding season (typically March to August, inclusive) is likely to result in temporary disturbance to these species. There will be increased noise levels during construction works (e.g., site clearance), which may cause some disturbance; however, this</p>	Low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
Non-breeding (passage and over wintering) birds	Up to County (Medium)	Loss of habitat and fragmentation of habitats used by non-breeding birds. Temporary (short-term), reversible.	<p>would be temporary and with no permanent residual effect. Pre-construction surveys will be undertaken in areas of known or potential territories or nesting locations of specially protected species to ensure that disturbance to retained habitats supporting such species does not occur.</p> <p>The construction of the Scheme will lead to the loss of habitats used by non-breeding birds, although the amount of permanent habitat loss within the Site supporting the greatest diversity of species, e.g., hedgerows and woodlands, has been minimised as far as reasonably practicable to ensure the majority of wintering birds are not affected. Hedgerows and woodland areas will largely be retained and new habitats will be created, which will include the creation of an area of habitat enhancement in the eastern portion of Solar PV Area 1e and</p>	Low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>areas of solar PV panel free grassland habitats embedded into the landscape design.</p> <p>There will be no fragmentation of habitats used by the majority of non-breeding birds as the majority of hedgerows will be retained, which will retain connectivity across the Scheme.</p>			
	Up to County (Medium)	Disturbance, due to noise/visual. Temporary (short-term), reversible.	<p>Best practice construction methods, as detailed in the Framework CEMP [EN010143/APP/7.7] includes implementation of measures to minimise noise, lighting and vibration disturbance and consequently, this will minimise disturbance to non-breeding birds in adjacent and retained habitats.</p>	Low	Minor adverse	No
Non-breeding birds – population of skylark	District (Medium)	Loss of habitat and fragmentation of habitats used by non-breeding skylark. Temporary (short-term), reversible.	The construction of the Scheme will lead to the loss of arable habitats used by non-breeding Skylark, mitigated through the creation of an area of habitat enhancement east of Solar PV Area 1e and areas of panel free	Low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			grassland habitats embedded into the landscape design.			
	District (Medium)	Disturbance, due to noise/visual. Temporary (short-term), reversible.	Best practice construction methods, as detailed in the Framework CEMP [EN010143/APP/7.7] and secured through the DCO, includes implementation of measures to minimise noise, lighting and vibration disturbance and consequently, this will minimise disturbance to non-breeding birds in adjacent and retained habitats.	Low	Minor adverse	No
Bats	Up to County (Medium) for Myotis, Local for other species	Direct loss of roosts through tree removal, which could result in injuring/killing bats.	Trees with moderate and high bat roost suitability have and will continue to be avoided through design. with the exception of one at this stage (T872/T619) ⁹ on Pear Tree Ave. This tree was initially due to be retained. This is a horse chestnut of moderate suitability. It is currently showing as potentially lost due to close proximity to the edge of a	Very low	Negligible	No

⁹ T872 refers to the tree number allocated within **Appendix 10-5: Arboricultural Impact Assessment and Tree Protection Report, ES Volume 2 [EN010143/APP/6.2]** and T619 refers to the tree number allocated in **Appendix 8-7: Bat Survey Report, ES Volume 2 [EN010143/APP/6.2]**.

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>bellmouth; however, this will be addressed during detailed design to adjust the taper of the access bellmouth in order to retain the tree. Where the removal/reduction of trees with low bat roost suitability is unavoidable, these trees will be soft felled in accordance with the Framework CEMP [EN010143/APP/7.7] and a Method Statement, under an ecological watching brief. Pre-construction surveys will be undertaken to support the baseline survey findings where tree removal/reduction cannot be avoided. Where impacts to roosting bats cannot be avoided a licence from Natural England will be obtained and suitable mitigation will be put in place.</p>			
Up to County (Medium) for Myotis, Local for other species	Disturbance to roosting bats due to construction noise/lighting. Temporary (short term), reversible.	A minimum of 15m stand-off buffers will be applied to retained trees to limit the potential for disturbance to roosting bats which may be present.	Low	Minor adverse	No	

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			During construction, works will be restricted to daylight hours wherever practicable to remove the need for artificial lighting, with focussed task specific lighting provided where this is not possible, e.g., HDD drilling operations. Where lighting is required, it will conform to best practice guidelines (Ref 8-34 and Ref 8-35) with respect to minimising light spill into adjacent habitats and prevent disturbance to bats and other species, and formalised through the Framework CEMP [EN010143/APP/7.7] .			
Up to County (Medium) for Myotis, Local for other species	Loss/severance of foraging or commuting habitat (e.g., hedgerows, watercourses, grasslands) during preparation of the Site, including habitat clearance. Temporary (short-term), reversible	The construction of the Scheme will be undertaken over many months and will largely avoid impacts upon hedgerows and other boundary features, which will retain connectivity across the Site for commuting and foraging bats. The replacement of arable fields with grassland (around the solar PV panels) and the creation of new open areas of grassland	Very low (habitat loss during construction) Low (beneficial) for habitats created	Negligible Minor beneficial for habitats created, once established	No No	

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		<p>during site preparation/ construction.</p> <p>Creation of habitats as part of embedded design.</p> <p>Long-term, reversible once landscaping has established.</p>	<p>and tree planting will offer large areas of suitable habitat for foraging bats.</p> <p>The embedded landscape design (as shown on the Landscape Masterplan in Appendix A of the Framework LEMP [EN010143/APP/7.14]) includes c. 112.4ha of species rich grassland, c. 3.5ha of flower rich grassland and c. 797.9ha of semi-improved grassland. There is also an area of proposed species-rich wet grassland east of Solar PV Area 1e (c. 18.26ha), that would provide suitable habitat for foraging bats, as well as 8.1 ha of native woodland planting and shrub planting with trees and woodland edge planting.</p>			
Badger	Local (Low)	<p>Damage/ disturbance to active badger setts.</p>	<p>The Scheme has been designed to avoid the loss of badger setts; therefore, the construction of the Scheme will retain and avoid the current locations of badger setts recorded within the Site, with</p>	Very low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		Temporary (short-term), reversible.	<p>appropriate buffers. These measures are included within the Framework CEMP [EN010143/APP/7.7].</p> <p>Pre-construction badger surveys will be undertaken to determine baseline conditions remain the same as currently recorded and, where badger setts are identified as being lost, or if any changes to badger distribution are identified then a Natural England licence will be required and mitigation measures updated accordingly.</p>			
		<p>Disturbance through construction noise/lighting and pollution</p> <p>Temporary (short-term), reversible.</p>	<p>During construction, works will be restricted to daylight hours wherever practicable, when badger are less active, to remove the need for artificial lighting. Focussed task specific lighting will be provided where this is not practicable, e.g., HDD drilling operations. Where lighting is required, it will conform to best practice guidelines with respect to minimising light spill into adjacent</p>	Low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			habitats and prevent disturbance to bats and other species. Standard environmental protection measures will be implemented and adopted during construction, formalised through the Framework CEMP [EN010143/APP/7.7] . These measures will include dust suppression and pollution prevention. Consequently, indirect effects to habitats supporting badger during construction will not occur.			
		Habitat loss/ fragmentation. Temporary (short-term), reversible.	There will be no fragmentation of habitats used by badger as the Scheme has embedded sufficient buffers from retained habitats to ensure that badger can move freely across the Site. Any perimeter fencing will be permeable to badgers at strategic locations. Implementation of measures to avoid animals being injured or killed within construction working areas, through excluding them from such areas and preventing	Low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>them from becoming trapped in excavations. If excavations are required to be left open overnight, ramps will be provided to allow animals a means of escape.</p>			
Otter	District (Medium)	<p>Disturbance to commuting/ foraging/resting otter through noise/visual disturbance/ lighting of construction within or near to watercourses. Temporary (short-term), reversible.</p>	<p>Works will be restricted to daylight hours wherever practicable to remove the need for artificial lighting, with focussed task specific lighting provided where this is not practicable, for example HDD drilling operations. Where lighting is required, it will conform to best practice guidelines with respect to minimising light spill into adjacent habitats and prevent disturbance to otter and other species using the watercourses. Stand-off buffers of a minimum of 30m from watercourses known to support otter will be applied to limit noise and visual disturbance. Connectivity along watercourses will be maintained when crossed, through use of clear span bridges.</p>	Low	Minor adverse	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			Pre-construction surveys will be undertaken to support the baseline survey findings where intrusive crossing methods of watercourses are proposed within the Site.			
	District (Medium)	Habitat degradation-impacts to water quality through pollution of watercourses. Temporary (short-term), reversible.	Works will not take place within 30m from the banks tops of the River Derwent, River Ouse and Watercourse DE53, which are of known value to otter. This is considered sufficient to mitigate for potential hazards such as chemical and soils spills and direct impacts to otter. The Framework CEMP [EN010143/APP/7.7] specifies requirements for the safe storage of chemicals and other hazardous materials (e.g., fuel) and appropriate pollution prevention measures.	Low	Minor adverse	No
	District (Medium)	Habitat loss/degradation where the Scheme crosses or lies	The crossing of the River Derwent, River Ouse and Watercourse DE53, which are of known value to otter, will be undertaken using HDD methods	Very low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
		near to watercourses. Temporary (short term), reversible.	to avoid direct impacts to these water bodies, including their associated riparian habitats. As stated for the River Derwent SAC above, a site-specific hydraulic fracture risk assessment would be developed prior to construction and secured via the Framework CEMP [EN010143/APP/7.7] .			
Water vole	District (Medium)	Habitat degradation- impacts to water quality through pollution of watercourses. Temporary (short-term), reversible.	Surveys undertaken on targeted watercourses (detailed in Appendix 8-9, ES Volume 2 [EN010143/APP/6.2]) indicate that water vole is currently absent from the sections of watercourse and ditch that will be impacted by the Scheme through open cut methods. Indirect impacts to water voles which may be present in the wider local area through the pollution of connected watercourses will be avoided through measures set out in the Framework CEMP [EN010143/APP/7.7] . Pre-construction surveys will be undertaken to determine baseline	Very low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>conditions remain the same as currently recorded and, where water vole are identified as being present within directly affected watercourses, then a Natural England licence will be required and mitigation measures updated accordingly.</p>			
Reptiles	Local (Low)	<p>Loss/ fragmentation of terrestrial and aquatic habitats used by reptiles for foraging, breeding, or shelter. Temporary (short-term), reversible. Creation of habitats as part of embedded design. Long-term, reversible once landscaping has established.</p>	<p>The Scheme design retains and avoids the majority of habitats of value to reptiles. The Scheme has embedded sufficient buffers from retained habitats to ensure that reptiles can move freely across the Site. New areas of suitable habitat, including grassland and woodland will be created as part of the Scheme. The embedded landscape design of the Scheme provides large areas of grassland habitat, including areas free from panels, and field margins, that would provide suitable habitat for reptiles (such as grass snake) as detailed below. The embedded landscape design (as shown on the Landscape</p>	<p>Low (habitat loss during construction) Medium (beneficial) (for habitat creation)</p>	<p>Negligible Minor beneficial (for habitat creation, once established)</p>	<p>No No</p>

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>Masterplan in Appendix A of the Framework LEMP [EN010143/APP/7.14] includes c. 112.4ha of species rich grassland, c. 3.5ha of flower rich grassland and c. 797.9ha of semi-improved grassland. There is also an area of proposed species-rich wet grassland east of Solar PV Area 1e (c. 18.26ha), as well as 8.1ha of native woodland planting and shrub planting with trees and woodland edge planting.</p>			
	Local (Low)	<p>Incidental killing, injury or disturbance of reptiles present in habitats on Site. Temporary (short-term), reversible.</p>	<p>The majority of the habitat affected is arable and of low value to reptiles. Vegetation clearance of other habitat types within the Site and, in particular where grass snake has been identified, will be undertaken in advance of construction and at an appropriate time of year so as to avoid incidental injuring or killing of reptiles, concordant with the requirements for other species, such as nesting birds. Works impacting suitable reptile</p>	Low	Negligible	No

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>Framework LEMP [EN010143/APP/7.14] includes c. 112.4ha of species rich grassland, c. 3.5ha of flower rich grassland and c. 797.9ha of semi-improved grassland. There is also an area of proposed species-rich wet grassland east of Solar PV Area 1e (c. 18.26ha), that would provide suitable habitat, as well as 8.1 ha of native woodland planting and shrub planting with trees and woodland edge planting.</p>	(for habitat creation)		
<p>Hedgehog, brown hare, harvest mouse and common amphibians: Local (Low) Polecat: Up to County (Medium)</p>	<p>Incidental killing, injury or disturbance Temporary (short-term), reversible.</p>	<p>Vegetation clearance will be undertaken in advance of construction and at an appropriate time of year so as to avoid incidental injuring or killing of animals, including brown hare and common toad and concordant with the requirements for other species such as nesting birds and reptiles. The RAMs that will applied to avoid incidental injury or killing of reptiles are also suitable to protect common</p>	Low	<p>Hedgehog, brown hare, harvest mouse and common amphibians: Negligible Polecat: Minor adverse</p>	No	

Ecological feature	Importance (Value)	Description of Impact	Assessment	Magnitude of Impact	Effect Category	Significant effect (Yes/No)
			<p>amphibian species and notable mammals which may be present. Implementation of measures to avoid animals being injured or killed within construction working areas, through excluding them from such areas (other mammals) and preventing them from becoming trapped in excavations. If excavations are required to be left open overnight, ramps will be provided to allow animals a means of escape.</p>			

Operational Effects

- 8.7.9 **Table 8-13** provides a summary of the magnitude of impacts and likely significance of environmental effects on ecological features during the operation of all elements the Scheme. The likely significant effects have been assessed considering that the embedded mitigation measures set out in section 8.6 are implemented.
- 8.7.10 The operational phase of the Scheme is not anticipated to result in any adverse impacts to the relevant ecological features (designated sites, habitats and species) detailed in **Table 8-10**.
- 8.7.11 There is little conclusive evidence on the impacts of glint and glare from operational solar farms on birds. The HRA Report [**EN010143/APP/7.12**] acknowledges that reflected light from photovoltaic panels may affect the behaviour of polarotactic insects, as well as representing a minor collision risk for birds attempting to drink from reflective surfaces. However, these risks are unlikely to apply to qualifying birds in the Lower Derwent Valley SPA/Ramsar and Humber Estuary SPA/Ramsar (none of which feed on the wing). The maximum height of the solar PV panels will be up to 3.5m (at maximum tilt). In the context of existing vegetation in the landscape, e.g., hedgerows, trees and woodland, the solar PV panels will not cause a physical impediment to bird movements across the landscape. Equally, birds transiting across the landscape are doing so on a broad front, i.e., there are no topographical or geographical features in the landscape to 'funnel' or concentrate bird movements, therefore, the exposure time to any possible reflected polarised light (glint or glare) is extremely low and is not considered as part of the assessment.
- 8.7.12 Artificial horizontally polarising surfaces (e.g., solar PV panels), the reflection-polarisation characteristics of which are similar to those of water, can attract water-leaving polarotactic insects posing a potential threat to these species. Aquatic macroinvertebrates in their terrestrial or airborne phase may be attracted to these surfaces, which may then disrupt their life-cycle. Some aquatic insects are attracted to solar PV panels although this is an unusual event dependent on the coincidence of a number of suitable conditions to trigger such behaviour. The likelihood of aquatic insects from the local aquatic habitat of Local (Low) Importance being attracted to large open areas of shiny surfaces is low given that such species will preferentially use smaller shiny surfaces. Most of the aquatic insect species recorded are of low conservation value, and do not use open water areas for any of their behaviours (i.e., few Odonata were recorded for example). The impact of solar PV panels on these aquatic insects would therefore be negligible.
- 8.7.13 A **Framework Surface Water Drainage Strategy (Appendix 9-4, ES Volume 2 [EN010143/APP/6.2])** has been developed to manage surface water runoff and will reduce the likelihood and severity of potential pollution incidents and flooding affecting watercourses and the local ditch network to reduce or eliminate adverse effects for aquatic and riparian species and habitats, including hydrologically connected designated sites, such as the River Derwent SAC/SSSI. In addition routine cleaning operations required for solar PV panels will be undertaken using a tractor-mounted systems with a rotating 'car-wash' type brush, assuming a worst-case, two-year cleaning cycle. The cleaning water will not contain chemical cleaning products due to

- the risk of damage to solar PV panels and therefore would not affect water quality or habitats within the Scheme.
- 8.7.14 The **Framework OEMP [EN010143/APP/7.8]** sets out the general environmental management principles to be followed in the operation of the Scheme. The provision of a detailed OEMP and implementation of the mitigation measures it contains will be secured through a DCO Requirement. The lighting strategy will be set out in and implemented through the detailed OEMP and is described in **Chapter 2: The Scheme, ES Volume 2 [EN010143/APP/6.1]** and summarised in section 8.6 of this chapter. There will be no artificial lighting along the Grid Connection or Interconnecting Cable Corridors. Areas of solar PV panels will not require artificial lighting other than during temporary periods of maintenance and repair, which will be scheduled for daylight hours as far as is practicable.
- 8.7.15 The CCTV will use thermal imaging and Infrared (IR) lighting to provide night vision functionality meaning that no visible lighting will be needed for security. It is anticipated that the compound for the two Grid Connection Substations will have inward facing PIR controlled security lighting installed at each corner of the compound. It is also anticipated that there will be internal lighting within the control buildings for the Grid Connection Substations, but that light spillage from these would be minimal (through open doorway only), outside task specific and fixed 'general' lighting may be required in months with reduced daylight hours (early mornings and evenings) to meet safety requirements. Outside of core working hours PIR controlled lights (motion sensors) will be used.
- 8.7.16 At the operations and maintenance hub at Johnson's Farm (in Solar PV Area 1e) task specific and fixed 'general' lighting may be required in months with reduced daylight hours (early mornings and evenings) to meet safety requirements. Outside of core working hours PIR controlled lights (motion sensors) will be used. The buildings will be fitted with internal lighting, but light spillage would be minimal (through open doorway and the windows of the offices only).
- 8.7.17 . Therefore, operational lighting is not anticipated to adversely impact protected and notable species including bats and badger.
- 8.7.18 During operation of the Scheme suitable gaps at the bottom of the perimeter fencing will be maintained to enable continued access into the Solar PV Site for mammals (e.g., badger), which is embedded into the Scheme design (section 8.6). Therefore, connectivity across the Site will be maintained.
- 8.7.19 Habitats within the Site will be suitably managed throughout the lifetime of the Scheme. The **Framework LEMP [EN010143/APP/7.14]** sets out the habitat management principles to be followed during the operation of the Scheme. The provision of a detailed LEMP and implementation the management prescriptions it contains will be secured through a DCO Requirement.
- 8.7.20 The undisturbed soils within the Solar PV Site will have been removed from intensive agriculture for a long time by the end of the operational period and are expected to have achieved improvements in soil structure and carbon sequestration over that time, see **Chapter 15: Soils and Agricultural Land, ES Volume 1 [EN010143/APP/6.1]**.

- 8.7.21 Although the land will be taken out of agricultural usage, and it is considered there would be a decrease in surface water runoff of agricultural additives to land (i.e., nutrients in the form of phosphates or nitrates, or from pesticides, herbicides or insecticides); it is however considered that this would not be a large enough change to result in an effect on the individual water features and therefore effects are considered to be neutral (refer to **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]**).
- 8.7.22 Due to the reasons described above, the operational phase of the Scheme is not anticipated to result in any significant effects on the relevant ecological features detailed in **Table 8-13**.

Table 8-13. Summary of impacts and significance of effects on important ecological features during operation

Ecology feature	Importance (Value)	Description of Impact	Magnitude of Impact	Effect Category	Significant effect (Yes / No)
River Derwent SAC, Lower Derwent Valley SAC, Lower Derwent Valley Ramsar, Lower Derwent Valley SPA, Humber Estuary SAC, Humber Estuary SPA, Humber Estuary Ramsar	International (Very High)	Surface runoff, panel cleaning, pollution incidents and flooding impacting designated sites that are hydrologically linked to the Scheme. Long-term, reversible.	Very low	Minor adverse	No
River Derwent SSSI, Barn Hill Meadows SSSI, Howden Marsh LRN, Eastrington Ponds LRN, Beighton Meadows SSSI, Lower Derwent Valley NNR, Derwent Ings SSSI, Eskamhorn Meadows SSSI, Humber Estuary SSSI, Barlow Common LNR	National (High)	Surface runoff, panel cleaning, pollution incidents and flooding impacting designated sites that are hydrologically linked to the Scheme. Long-term, reversible.	Very low	Minor adverse	No
Tottering lane, Gribthorpe LWS, Wressle Verge LWS, Howden Marsh LWS, Bubwith to Holme-on-Spalding-Moor Disused Railway Line LWS, North Howden Fish Ponds LWS, Barnhill Candidate LWS, Yarmshaw Plantation LWS, Eastrington Ponds LWS, Aughton Common, Bubwith	County (Medium)	Surface runoff, panel cleaning, pollution incidents and flooding impacting designated sites that appear to be hydrologically linked to the Site. Long-term, reversible.	Very low	Negligible	No

Ecology feature	Importance (Value)	Description of Impact	Magnitude of Impact	Effect Category	Significant effect (Yes / No)
LWS, Old Clay Pits, Highfield Historic LWS					
Habitats (as listed in Table 8-10)	Up to County (Medium)	Surface runoff, panel cleaning, pollution incidents and flooding impacting habitats. Long term, reversible.	Very low	Negligible	No
Bats, otter, water vole, badger, fish, birds	Up to County (Medium)	Disturbance to protected and notable species due to Additional lighting. Long term, reversible.	Very low	Negligible	No
Otter, water vole, badger, hedgehog, brown hare, polecat	Up to County (Medium)	Habitat fragmentation. Long-term, reversible.	Very low	Negligible	No
Aquatic macroinvertebrates	Local (Low)	Reflection of light from solar PV panels attracting macroinvertebrates in their aerial phase from their usual dispersal routes. Long-term, reversible.	Very low	Negligible	No

Decommissioning Effects

- 8.7.23 It has been assumed that decommissioning impacts will be similar to those occurring during construction, with retention, where reasonably practicable, of important ecological features present at the time of decommissioning and any impacts mitigated fully in line with relevant legislative and policy requirements in place at the time. It is anticipated that the existing protected species legislation would remain in place, or that any replacement legislation will offer the same level of protection. The assessment of effects at construction presented in **Table 8-12**, is therefore also considered to represent decommissioning effects.
- 8.7.24 Upon decommissioning, the above-ground physical infrastructure within the Solar PV Site (e.g., solar PV panels, Field Stations and the Field Station Units/Substations) will be removed. Where hardstanding has been created this will be removed and the original soil profile reinstated (using stockpiled site-won soils) returning the land to its predevelopment condition. It is noted that the future of the Grid Connection Substations and the Grid Connection Cables, would be agreed with asset owners prior to commencement of decommissioning. It is common practice for such infrastructure to be retained and used for another purpose after the development they were originally installed to support is decommissioned. This would be subject to separate agreements at the time. Consequently, the land will be returned to the landowners in the same condition (Agricultural Land Classification [ALC] grading) as prior to development and will be capable of supporting arable production (as present). It is anticipated that the areas of habitat and biodiversity mitigation and enhancement within the Solar PV Site will be left in situ given they could contain protected species and so relevant licences at the time would be obtained for any changes. It is anticipated, however, that the majority of the Solar PV Site will be returned to its original use and condition after decommissioning, although post-development land use (for instance re-establishment of arable use) would be up to the individual landowners.
- 8.7.25 The mode of cable decommissioning for the Grid Connection and Interconnecting Cables will be dependent upon government policy and best practice at that time of decommissioning taking place. Currently, the most environmentally acceptable option is considered to be leaving the cables in situ, as this avoids disturbance to overlying land and habitats and to neighbouring communities. Alternatively, the cables can be removed by opening up the ground at regular intervals and pulling the cable through to the extraction point, avoiding the need to open up the entire length of the cable route. The impact assessment in the ES is based on the 'worst-case' parameters.
- 8.7.26 A **Framework DEMP [EN/010143/APP/7.9]** is included with the DCO Application. This sets out the general principles to be followed in the decommissioning of the Scheme. A detailed DEMP be prepared and agreed with the relevant authorities at that time of decommissioning, in advance of the commencement of decommissioning works, and would include timescales and transportation methods.

8.8 Additional Mitigation, Enhancement, and Monitoring

8.8.1 Additional mitigation measures are only required where significant effects are identified following the application of embedded mitigation measures.

Additional Mitigation

Ecology Mitigation Area (1g and 1h)

- 8.8.2 As detailed in **Table 8-12**, the EclA and **HRA Report [EN010143/APP/7.12]** has concluded that, in the absence of mitigation, construction of the Scheme is likely to result in an overall reduction of arable farmland used by qualifying bird species of the Lower Derwent Valley SPA/Ramsar and the Humber Estuary SPA/Ramsar, with abundances of golden plover and pink-footed goose, just reaching or approaching the 1% population threshold (taking account of inter-annual variations in cropping patterns). In the absence of additional mitigation, construction of the Scheme could therefore have a significant effect on the integrity of these internationally designated sites.
- 8.8.3 To prevent significant adverse effects on the integrity of these European sites, mitigation in the form of maintained agricultural land and creation of permanent wet/damp grassland will be provided as part of the Ecology Mitigation Areas 1g and 1h. Within this area a minimum of 30 ha of land (an amount that mirrors the functional field size supporting recorded peak counts of golden plover and pink-footed goose) will be specifically maintained on an annual basis to deliver adequate habitat to offset the loss of arable farmland used by golden plover and pink-footed goose. This area has been determined by the peak number of individuals (i.e., 36 golden plover and 80 pink-footed goose) recorded during the 2022/23 surveys for non-breeding birds (as presented in **Appendix 8-6, Volume 2 [EN010143/APP/6.2]** and **HRA Report [EN010143/APP/7.12]**).
- 8.8.4 Mitigation will focus on optimising the management of existing arable farmland, to offset the losses generated by the Scheme. This is especially pertinent for pink-footed goose where natural habitats may be of lower value, i.e., arable, such as stubble with spilt grain and root vegetables, provide higher value over-wintering food resources. Under normal circumstances, geese must move around the landscape to find agricultural fields in optimal foraging conditions (depending on cropping regimes and sowing times). Improved management techniques on selected arable plots will ensure that suitable food sources are permanently available throughout winter, reducing the need for travel and associated energy expenditure. Additionally, by ensuring as little disturbance as practicable, there will be fewer stressors and foraging interruptions on birds. For golden plover, the creation of permanent grassland which is wet during the winter months, is likely to provide more reliable foraging opportunities with higher densities of soil invertebrates, than the temporary conditions provided by ploughing during winter months.
- 8.8.5 Therefore, mitigation will focus on providing the following:
- a. Golden plover: damp/wet permanent grassland to support high densities of invertebrates.
 - b. Pink-footed goose: sensitively managed arable farmland, i.e., through retention of winter stubbles through to at least February, following by sowing of cereal crop.

- 8.8.6 The location for delivering the required mitigation is land immediately west of the River Foulness, in Ecology Mitigation Areas 1g and 1h.
- 8.8.7 Within the Ecology Mitigation Area (shown on **Figure 2-3, ES Volume 3 [EN010143/APP/6.3]**), at least 15 ha of damp/wet permanent grassland will be created and managed for foraging and roosting golden plover adjacent to the River Foulness. This lies within flood zone 3 and is currently predominantly agricultural land farmed at risk due to periodic flooding from the River Foulness. This will be secured as part of the **Framework LEMP [EN010143/APP/7.14]**
- 8.8.8 A suitably sized area of land within the Ecology Mitigation Area (shown on **Figure 2-3, ES Volume 3 [EN010143/APP/6.3]**) will be farmed on a managed rotation to ensure that a minimum of 15 ha of land within that area is in the required regime (retention of winter stubbles followed by sowing of cereal crop) each year. This will be secured through an agreed management plan and is set out in the **Framework LEMP [EN010143/APP/7.14]**.
- 8.8.9 Benefits identified in using this area for mitigation include that both golden plover and pink-footed goose have been recorded in this area. Additionally, a major advantage of retaining agricultural land next to the damp/wet permanent grassland is that a mosaic of habitats would be provided. This could provide benefit to both golden plover (preferentially forage in damp/recently ploughed agricultural land and grassland with high invertebrate abundance) and pink-footed goose (preferentially forage in agricultural land on root vegetables and spilt grain). The identified mitigation areas are flat and open, which are important habitat characteristics for both species to allow early detection of threats. Having one large continuous mitigation area will also offset disturbance arising from having solar panels on adjoining land.
- 8.8.10 The overall objective of the mitigation is to ensure that there is no net loss in feeding opportunities for golden plover and pink-footed goose, based on the populations recorded during non-breeding bird surveys in 2022/23 (**Appendix 8-6, Volume 2 [EN010143/APP/6.2]** and **HRA Report [EN010143/APP/7.12]**).
- 8.8.11 A series of blind linear foot drains will be created horizontally across 15ha of the Golden Plover Mitigation Zone which will increase the likelihood of creating ideal conditions for the invertebrate assemblages on which golden plover rely. These drains will be created along the western side of the mitigation area within the more level ground, with the following criteria:
- Gently sloping edges for permitting access and maximising invertebrate habitat niches;
 - Designed to maintain shallow water levels and maximise the edge habitat, with a depth of 30cm;
 - Minimum width of 1-2m, with variable lengths to be refined as required within the locations, in accordance with the habitat and topography; and,
 - Good level of habitat provision per hectare of mitigation land delivered.
- 8.8.12 Given that the soils within the Site are dominated by heavy clays, the drains would predominantly retain perched water and/or be fed by rainfall. Despite the ephemeral nature of some of these water features, all would be expected

to hold water in winter. The drains can be adequately managed through low-intensity livestock grazing and/or annual mowing of margins. The **Framework LEMP [EN010143/APP/7.14]** accompanying the DCO submission outlines the drain provision and management that will be delivered.

Portable Noise Fencing

- 8.8.13 The forecast noise levels for HDD are within the observed noise tolerance range for otter recorded for highly urbanised areas, where otter are frequently observed (**HRA Report [EN010143/APP/7.12]**). Notwithstanding this, the foraging otter associated with the River Derwent SAC and Lower Derwent Valley SAC are habituated to lower rural noise background levels. Furthermore, noisy construction techniques can lead to disturbance up to 100m from works, particularly at sensitive locations (e.g., couches and holts). While such features were not recorded within the Order limits, otter may utilise new couches at any time, and a single hover/resting place (also known as a 'couch') was recorded along a large unnamed ditch (DE53) north of the River Derwent just outside the Order limits. To minimise any potential for noise disturbance to otter using the River Derwent, River Ouse and Watercourse DE53, noise fencing will be utilised surrounding the HDD entry points at HDD3, HDD5 and HDD6. Precautionary portable noise fencing will be utilised around the above three specific noise generating HDD locations. This fencing will be temporary and will be moved to another location as soon as the construction noise for the noise generating activity of concern is complete.

Enhancement

- 8.8.14 Habitat boxes will be installed on suitable features (buildings and trees) within the Site to provide additional nesting and roosting opportunities for bats and a range of bird species, including barn owl. Information on the types of boxes that will be installed is provided in the **Framework LEMP [EN010143/APP/7.14]**. The provision of a detailed LEMP and implementation of the prescriptions it contains will be secured through a DCO Requirement.
- 8.8.15 A number of reptile and amphibian hibernacula/refugia will be provided utilising logs created during the removal of trees, through small bunds over logs/inert rubble, or brush piles. These will be sited within 200m of the retained ponds across the Site.
- 8.8.16 In order to improve the condition of targeted watercourses within the Site as discussed in the **BNG Assessment Report [EN010143/APP/7.11]**, proposed enhancements include the following where appropriate:
- a. Fencing off the riparian zone to reduce bank top managed ground cover and allow the riparian zone to re-naturalise;
 - b. Removing bank face reinforcement to allow natural bank habitats to establish and allow natural bank erosion processes; and
 - c. Removing vegetation that is shading the ditch and removing filamentous algae and/or duckweed.

Monitoring

Pre-construction

- 8.8.17 Pre-construction surveys will be undertaken during the appropriate seasons prior to the construction of the Scheme. These will inform detailed design where needed, provide (e.g.,) up to date status of protected species that require mitigation during site clearance, and inform any protected species licensing that may be required should species distribution change or detailed design result in licencing requirements for species such as bats, badger or otter, which are currently not anticipated to be necessary.

Construction

- 8.8.18 Ongoing monitoring of habitats and species will be undertaken throughout construction, over seen by an appointed ECoW of suitable qualifications and experience, or in charge of a team of appropriately qualified ecologists. The ECoW will have the appropriate authority to review RAMS, oversee works and recommend action as appropriate, including temporarily stopping works where non-compliant working is observed, e.g., to safeguard protected species and their habitats, or where any other breaches of environmental legislation are likely to occur.

Operation

- 8.8.19 During the operational lifetime of the Scheme, habitats within the Site will be suitably managed and monitored, in accordance with prescriptions set out within a detailed LEMP which will be secured through a DCO Requirement and informed by the **Framework LEMP [EN010143/APP/7.14]**. Habitats will be monitored to ensure that the target conditions set out in the **BNG Assessment Report [EN010143/APP/7.11]** are being achieved. Additionally, the habitats within the Ecology Mitigation Area will also be monitored to ensure that they are continuing to meet the needs of the species that they have been created to support. Management prescriptions will be reviewed and potentially updated should monitoring indicate that the target conditions are not being achieved.

8.9 Residual Effects

- 8.9.1 This section summarises the residual significant effects of the Scheme on Ecology following the implementation of embedded and additional mitigation.
- 8.9.2 As detailed in **Table 8-12**, the EclA and **HRA Report [EN010143/APP/7.12]** has concluded that construction of the Scheme is likely to result in the loss of functionally linked habitat to the Lower Derwent Valley SPA/Ramsar and the Humber Estuary SPA/Ramsar, with abundances of qualifying species (i.e., golden plover and pink-footed goose), reaching or approaching the 1% population threshold. Additional mitigation (described above in Section 8.8) will therefore be implemented to avoid significant residual effects on these internationally designated sites. The likely residual effects on the Lower Derwent Valley SPA/Ramsar and the Humber Estuary SPA/Ramsar, taking into account the proposed additional mitigation, is presented in **Table 8-14**.
- 8.9.3 Additional mitigation in the form of noise fencing will be used during construction around required noise generating activities including HDD3, HDD5 and HDD6 entry points for otter which are a qualifying species of the River Derwent and Lower Derwent Valley SAC. Avoidance of the core

spawning seasons of migratory fish species, unless the HDD are of sufficient depth to avoid the effect, will reduce the likely impact of noise and vibration during HDD on these species. The likely residual effects on the Lower Derwent Valley SPA/Ramsar, the Humber Estuary SPA/Ramsar, the Lower Derwent Valley SAC and River Derwent SAC/SSSI, and their associated species, taking into account the proposed additional mitigation, is presented in **Table 8-14**.

- 8.9.4 With the implementation of suitable embedded mitigation (as detailed in section 8.6), the assessment of effects on the remaining important ecological features (presented in **Table 8-12**) has concluded that the construction phase of the Scheme is unlikely to result in significant adverse effects to these species, habitats and designated sites. Therefore, no additional mitigation is required, and the residual effects remain the same as the likely effects presented in **Table 8-12**.
- 8.9.5 With the implementation of suitable embedded mitigation (as detailed in section 8.6), residual effects during the operational and decommissioning phases of the Scheme will be the same as those described in paragraphs 8.7.9 to 8.7.25. It is therefore concluded that the operational and decommissioning phases of the Scheme are unlikely to result in significant adverse effects on important ecological features.
- 8.9.6 The embedded landscape design (as shown on the Landscape Masterplan in Appendix A of the **Framework LEMP [EN010143/APP/7.14]**) includes c. 112.4ha of species rich grassland, c. 3.5ha of flower rich grassland and c. 797.9ha of semi-improved grassland. There is also an area of proposed species-rich wet grassland east of Solar PV Area 1e (c. 18.26ha), that would provide suitable habitat for a range of species, as well as 8.1ha of native woodland planting and shrub planting with trees and woodland edge planting. Further to this, the Ecology Mitigation Area (shown on **Figure 2-3, ES Volume 3 [EN010143/APP/6.3]**), comprises at least 15ha of damp/wet permanent grassland creation and management, along with linear foot drains, for foraging and roosting golden plover adjacent to the River Foulness. In addition, a suitably sized area will be farmed on a managed rotation to ensure that a minimum of 15ha of land is in the required regime (retention of winter stubbles followed by sowing of cereal crop preferred by pink-footed goose) each year. These will be secured through an agreed management plan and is set out in the **Framework LEMP [EN010143/APP/7.14]**.

Conclusion

- 8.9.7 With the application of the mitigation measures set out above, there are no residual significant adverse effects that have been identified during construction, operation or decommissioning of the Scheme. Minor adverse effects remain for receptors including but not limited to the River Derwent SAC/SSSI, Lower Derwent Valley SPA/SAC/Ramsar/SSSI and Humber Estuary SPA/Ramsar/SAC, two LWSs, rivers, and species including birds (overwintering, curlew, skylark, special protected bird species), otter and fish. The majority of these are temporary effects, with those permanent/long-term being reversible.
- 8.9.8 With consideration of enhancement measures set out above, the Scheme has the potential to result in beneficial effects to a number of receptors including broad-leaved plantation woodland, watercourses (affected by

accesses), neutral grassland habitats, terrestrial invertebrates, reptiles, foraging bats, other mammals (hedgehog, brown hare, harvest mouse and polecat) and common amphibians. Potential remains for further beneficial effects on other habitats such as hedgerows at detailed design stage.

- 8.9.9 As detailed in **the BNG Assessment Report [EN010143/APP/7.11]**, based on the current plans for the Site, the Scheme is predicted to result in a net gain of 80.42% for area-based habitat units, a net gain of 3.89% for hedgerow units, and a net gain of 10.84% for watercourse units.
- 8.9.10 This is likely to underestimate the actual BNG that will be achieved by the Scheme, as the assessment has been carried out based on maximum design principles, including maximum footprint of infrastructure and maximum clearance of vegetation for construction. The Applicant therefore commits to achieving a minimum 10% BNG for all units and will demonstrate this via an updated BNG assessment prior to construction.
- 8.9.11 Overall, the Scheme is considered to deliver a substantial beneficial effect for biodiversity in the medium- to long-term as a result of the BNG. With both residual adverse and beneficial effects (not significant) remaining as part of the EIA assessment.

Table 8-14. Residual effects – Ecology (construction)

Receptor	Description of impacts including duration	Embedded mitigation	Significance of effect with embedded mitigation	Additional mitigation/enhancement measures	Residual effect
River Derwent SAC/SSSI	Disturbance to otter due to construction noise	Minimum 30m stand-off buffer (from the bank top of the watercourse) maintained between the construction works and the SAC/SSSI. This distance or greater will also be applied between the HDD working area and the otter resting place along Watercourse DE53. A hierarchy of mitigation measures for HDD activities will ensure that where required, HDD activity noise effects (disturbance to species and habitats) will be reduced as far as reasonably practicable. This hierarchy includes (but is not limited to) the potential for the use of quieter equipment as part of the CEMP.	Moderate adverse	Temporary mobile noise fencing	Minor adverse (Not significant)
Lower Derwent SPA/Ramsar	Impacts to qualifying bird species of the	Creation of an area of habitat enhancement east of Solar PV Area 1e, along with several	Major adverse	Maintained agricultural land and creation of permanent wet/damp grassland in Ecology Mitigation	Minor adverse (Not significant)

Receptor	Description of impacts including duration	Embedded mitigation	Significance of effect with embedded mitigation	Additional mitigation/enhancement measures	Residual effect
	SPA/Ramsar/SSSI through the potential loss of functionally linked land	other areas of grassland habitat creation and enhancement as part of the landscape design.		Areas 1g and 1h, suitable to support golden plover over the winter period, as detailed in paragraphs 8.8.2 to 8.8.10.	
Humber Estuary SPA/Ramsar	Impacts to qualifying bird species of the SPA/Ramsar through the potential loss of functionally linked land	Creation of an area of habitat enhancement east of Solar PV Area 1e, along with several other areas of grassland habitat creation and enhancement as part of the landscape design.	Major adverse	Maintained agricultural land in Ecology Mitigation Areas 1g and 1h, suitable to support pink footed goose over the winter period, as detailed in paragraphs 8.8.2 to 8.8.10.	Minor adverse (Not significant)
Lower Derwent Valley SAC,	Impacts to qualifying species of the SAC (otter) through noise disturbance	Avoidance through HDD for river crossing. A minimum 30m stand-off buffer (from the bank top of the watercourse) will be maintained. Measures will be taken to ensure there is no incursion stand-off buffer, e.g., security fencing erected early on in the construction process. A hierarchy of mitigation measures for HDD activities will ensure that where	Moderate adverse	Use of temporary mobile noise fencing.	Minor Adverse (Not significant)

Receptor	Description of impacts including duration	Embedded mitigation	Significance of effect with embedded mitigation	Additional mitigation/enhancement measures	Residual effect
		required, HDD activity noise effects (disturbance to species and habitats) will be reduced as far as reasonably practicable. This hierarchy includes (but is not limited to) the potential for the use of quieter equipment as part of the CEMP.			

8.10 Cumulative Effects

- 8.10.1 This section assesses the potential effects of the Scheme in combination with the potential effects of other proposed and committed plans and projects including other developments (referred to as 'cumulative schemes') within the surrounding area.
- 8.10.2 The cumulative schemes to be considered in combination with the Scheme have been agreed in consultation with relevant Local Planning Authorities and are listed in **Appendix 17-1: Shortlist of Cumulative Schemes, ES Volume 2 [EN010106/APP/6.2]**. The cumulative assessment methodology is presented within **Chapter 5: EIA Methodology [EN010106/APP/6.1]**.
- 8.10.3 For each receptor, this cumulative effect assessment identifies the areas where the predicted effects of the Scheme could interact with effects arising from other plans and, or projects on the same receptor based on a spatial and, or temporal basis.
- 8.10.4 The assessment considers the potential for cumulative impacts to ecological receptors within the Zol which may be either simultaneous (where developments would be observable at the same time) or successive (where an observer would be required to turn to experience multiple developments) and presents an assessment of resulting cumulative effects.
- 8.10.5 Cumulative ecological effects may result where effects resulting from a number of developments combine, increasing the prevalence of such effects. The likely significance of these effects relates to the number of developments affecting the particular ecological receptor, their scale, their inter-relationship and the sensitivity and ability of the particular receptor to accommodate this combined level of change from the developments.
- 8.10.6 Ecological receptors that have been assessed as having no or Negligible effects from the Scheme have not been included in the assessment of cumulative effects, as it is considered unlikely that the addition of a Negligible effect to the cumulative effects of other developments within the Zol would lead to a significant cumulative impact.
- 8.10.7 For the purposes of the cumulative ecological assessment, the worst-case scenario of all the shortlist developments being constructed and therefore present in the Zol simultaneously has been assumed; however, this is considered a highly precautionary approach and unlikely to occur. If construction were not to occur simultaneously then the reported cumulative effect would be reduced.
- 8.10.8 Potential ecological cumulative effects which may arise during the construction, operation and decommissioning phases of the Scheme are outlined in **Table 8-15 and Table 8-16**. The tables only discuss receptors and impacts where cumulative schemes have specifically referred to having an impact on, and therefore have potential of a cumulative effect with this Scheme. Those receptors where none of the cumulative schemes have stated to having an impact on, and therefore have no potential of cumulative effects arising, are not stated in the table.
- 8.10.9 In summary, the residual effects identified in Section 8.9 of this chapter (which confirms there are no likely significant effects associated with the Scheme) are not altered when considering any interactions with cumulative schemes, and as such there are no likely significant cumulative effects.

8.10.10 The substantial benefit from BNG associated with the Scheme would likely be enhanced further by other cumulative schemes achieving BNG, but given the geographical separation of most the cumulative schemes (and therefore not affecting the same local receptors), cumulative effects from BNG have not been considered further.

Table 8-15. Ecology Cumulative Effects Assessment – Construction and Decommissioning

Receptor	Importance (Value)	Description of Impact from the Scheme	Residual Effect Category	Scheme ID	Description of Cumulative Impact	Residual Cumulative Effect Category	Cumulative Significant Effect (Yes/No)
Lower Derwent Valley SPA/ Ramsar	International (Very high)	Impacts to qualifying bird species through potential loss of FLL (elements of the Site would be considered as such if qualifying migratory species from the SPA were found using them). Long-term (for the duration of the Scheme), reversible. Disturbance to qualifying bird species present within the Site due to construction noise and visual disturbance. Temporary (short-term).	Minor Adverse	1, 2, 3, 22, 24, 25, 26, 27, 62, 64, 65	Potential for temporary loss or disturbance of FLL if found to be present. Cumulative schemes Helios Renewable Energy Project, Solar Farm and Land Off Camela Lane, Wind Turbines at Newlands Farm, Lakeside Energy Storage, Recovery of Ash at Drax Power Station, Warehousing at Land South East Of Boothferry Lodge, Battery Energy Storage System at Home Farm Barlow Road and Solar Farm at Land North And South Of Camela Lane are all yet to submit an HRA and so it is not yet possible to make an informed assessment of the likely cumulative effects. However it is reasonable to assume that all schemes will implement good practice guidance to ameliorate effects. Given this and the dispersed locations of these cumulative schemes it can be assumed that the cumulative effect as a result of loss or disturbance of FLL will be no worse than the residual effect stated for the Scheme. Cumulative scheme 2 (Scotland to England Green Link (SEGL2)) has a temporary loss of FLL that will be re-instated post development. The routing of the underground DC cable corridor of cumulative scheme 3 (Scotland to England Green Link (SEGL2)) has been designed through the feasibility and early stage design phase to avoid direct impacts on the sensitive habitats associated with the Lower Derwent Valley SPA/Ramsar.	Minor Adverse	No

Receptor	Importance (Value)	Description of Impact from the Scheme	Residual Effect Category	Scheme ID	Description of Cumulative Impact	Residual Cumulative Effect Category	Cumulative Significant Effect (Yes/No)
					As such, the cumulative effect will be no worse than the residual effect stated for the Scheme.		
Humber Estuary SAC/SPA/ Ramsar/ SSSI	SAC/SPA/ Ramsar – International (Very high) SSSI – National (High)	Indirect degradation impacts on the habitats within the SAC/SPA/Ramsar/SSSI due to runoff during construction or other waterborne pollution. Temporary (short-term), reversible.	Minor Adverse	3	There is some potential for water pollution but embedded mitigation for cumulative scheme 3 Scotland to England Green Link (SEGL2) and the Scheme limits the potential for cumulative effects. Examples include routeing of the underground DC cable corridor designed through the feasibility and early stage design phase to avoid direct impacts on the sensitive habitats associated with the Humber Estuary SPA/Ramsar/SAC, and adoption of pollution prevention measures as detailed in an Outline Construction Environmental Management Plan. As such, the cumulative effect will be no worse than the residual effect stated for the Scheme.	Minor Adverse	No
	SPA/Ramsar – International (Very high)	Impacts to qualifying bird species of the SPA/Ramsar through the potential loss of Functionally Linked Land. Long-term (for the duration of the Scheme), reversible. Disturbance to qualifying bird species present outside the designated site boundary due to construction noise and	Minor Adverse	1, 2, 3, 5, 22, 24, 25, 26, 27, 64, 65	Potential for temporary loss or disturbance of FLL for cumulative scheme 3 (Scotland to England Green Link (SEGL2)). Given embedded mitigation for habitat loss by the Scheme and cumulative scheme (including routeing of the underground DC cable corridor designed through the feasibility and early stage design phase to avoid direct impacts on the sensitive habitats associated with the Humber Estuary SPA/Ramsar/SAC, and the narrow width and temporary nature of the proposed cable route in comparison to the amount of available agricultural land), and that all planning proposals are required to adequately mitigate their own habitat loss, the cumulative effect as a result of functionally	Minor Adverse	No

Receptor	Importance (Value)	Description of Impact from the Scheme	Residual Effect Category	Scheme ID	Description of Cumulative Impact	Residual Cumulative Effect Category	Cumulative Significant Effect (Yes/No)
		visual disturbance. Temporary (short-term).			<p>linked habitat loss will be no worse than the residual effect stated for the Scheme.</p> <p>The other cumulative schemes (Helios Renewable Energy Project, Solar Farm at and Land Off Camela Lane, Wind Turbines at Newlands Farm, Lakeside Energy Storage, Recovery of Ash at Drax Power Station, Warehousing at Land South East Of Boothferry Lodge, Battery Energy Storage System at Home Farm Barlow Road and Solar Farm at Land North And South Of Camela Lane) are all yet to submit an HRA and so it is not yet possible to make a detailed assessment of the likely cumulative effects. However it is reasonable to assume that all these cumulative schemes will implement good practice guidance to ameliorate effects, and that they will ensure they do not have a significant cumulative effect. Given this, and the dispersed locations of these cumulative schemes, it can be assumed that there will be no cumulative effect as a result of loss or disturbance of FLL.</p> <p>Given that each scheme is legally required to mitigate its own impact, this ensures that the Scheme will have no adverse effects in-combination with other projects and plans. While it is noted that individual habitat parcels may be subject to residual noise from multiple schemes, this noise is non-additive and would remain below the disturbance threshold even in-combination.</p>		

Receptor	Importance (Value)	Description of Impact from the Scheme	Residual Effect Category	Scheme ID	Description of Cumulative Impact	Residual Cumulative Effect Category	Cumulative Significant Effect (Yes/No)
Semi-improved neutral grassland	Local (Low)	Temporary habitat loss to facilitate construction access and cable installation. Temporary (short term), reversible.	Minor Beneficial	5, 7, 50, 65	<p>These cumulative schemes will result in habitat loss that will be addressed through embedded mitigation, resulting in at worst a Minor Adverse effect for each of those cumulative schemes. Whilst no public information is specifically available on these cumulative schemes, owing to their position in the planning system it is fair to assume that all of these developments will adhere to good industry practice guidance with regard to mitigating loss of habitats and the requirements embedded in policy to achieve biodiversity net gain.</p> <p>As such, the cumulative effect will be no worse than the residual effect stated for the Scheme.</p>	Minor Beneficial	No
Hedgerows-Species-poor or rich (intact, defunct and with or without trees), comprising both Important and non-important hedgerows	Up to County (Medium)	Habitat loss. Temporary (medium-term while hedgerows planted establish), reversible.	Minor Adverse during construction reducing to Negligible in the medium-to long-term once new hedgerows and enhancements replanted at the end of construction have become established.	5, 48, 50, 64	<p>The cumulative schemes will result in the loss of hedgerows during construction and will be addressed by embedded mitigation. Whilst no public information is specifically available on these cumulative schemes owing to their position in the planning cycle, it is fair to assume that all of these developments will adhere with industry good practice guidance with regard to mitigating loss of habitats and the requirements embedded in policy to achieve biodiversity net gain.</p> <p>As such, the cumulative effect will be no worse than the residual effect stated for the Scheme.</p>	Minor Adverse	No

Receptor	Importance (Value)	Description of Impact from the Scheme	Residual Effect Category	Scheme ID	Description of Cumulative Impact	Residual Cumulative Effect Category	Cumulative Significant Effect (Yes/No)
Running Water, including wet ditches	Wet ditches/drains (smaller watercourses) – Local (Low)	Habitat loss (wet ditches/drains only), where crossed using open-cut techniques for cable installation. Temporary (short term), reversible. Permanent habitat loss (wet ditches/drains only) where crossed for access.	Minor Adverse	2	The cumulative scheme could potentially impact water quality and associated aquatic ecology through spillages, silt laden run off and dust. Protection of water quality through pollution control measures should eliminate the impacts of the cumulative scheme, as listed within the submitted CEMP. As such, the cumulative effect will be no worse than the residual effect stated for the Scheme.	Minor Adverse	No
	River Derwent – National (High) River Ouse and Foulness – County (Medium) Wet ditches/drains (smaller watercourses) – Local (Low)	Habitat degradation due to construction pollution/siltation. Temporary (short term), reversible	Minor Adverse	2	The cumulative scheme could potentially impact water quality and associated aquatic ecology through spillages, silt laden run off and dust. Protection of water quality through pollution control measures should eliminate the impacts of the development, as listed within the submitted CEMP. As such, the cumulative effect will be no worse than the residual effect stated for the Scheme.	Minor Adverse	No
Terrestrial Invertebrates	Local (Low)	Habitat creation (long-term).	Minor Beneficial	65	The ES for this cumulative scheme indicated there would be significant adverse effects during construction of this scheme but a beneficial effect during its operation through long-term habitat creation. With embedded mitigation for the Scheme leading to a Minor Beneficial effect, the cumulative effect will be no different than the residual effect stated for the Scheme.	Minor Beneficial	No

Receptor	Importance (Value)	Description of Impact from the Scheme	Residual Effect Category	Scheme ID	Description of Cumulative Impact	Residual Cumulative Effect Category	Cumulative Significant Effect (Yes/No)
Fish	County (Medium)	<p>Potential disturbance to notable fish species during construction resulting from pollution impacts from surface water run-off, and sedimentation. Temporary (short-term), reversible.</p> <p>Open-trench crossings of minor watercourses, resulting in direct mortality or disturbance to fish species. Temporary (short-term), reversible.</p> <p>Potential for noise and vibration to disturb fish species, including through HDD crossing of the Rivers Ouse, Derwent, and Foulness. However, the most sensitive species, allis shad, is more likely to be present upstream than within the Study Area. Temporary (short-term), reversible.</p> <p>Culverting of watercourses may impact upon fish passage and cause</p>	Minor Adverse	5	The cumulative scheme does not have any publicly available information due to its position in the planning process. However, it is reasonable to assume that this scheme will adhere to good industry practice mitigation and avoidance to minimise the potential for impacts on water during construction and therefore it can be assumed that no additional cumulative impacts on fish will arise.	Minor Adverse	N/A

Receptor	Importance (Value)	Description of Impact from the Scheme	Residual Effect Category	Scheme ID	Description of Cumulative Impact	Residual Cumulative Effect Category	Cumulative Significant Effect (Yes/No)
		direct mortality or disturbance. Temporary (short term for construction accesses, long term for operational accesses), reversible.					
Breeding birds – population of curlew	Up to County (Medium)	Direct loss of habitat, used by curlew during the breeding season. Temporary (short-term), reversible. Disturbance, due to noise/visual. Temporary (short-term), reversible.	Minor Adverse	1, 2, 4, 5, 6, 7	There are no specific impacts on curlew listed in tables of effects for any of the cumulative schemes. PINS was not content to scope out impacts on breeding birds in response to Helios Renewable Energy Project pre-application during EIA Scoping. Cumulative scheme 3 Scotland to England Green Link (SEGL2) identified as having potential for significant effects on breeding birds. ES for Drax Carbon Capture indicates potential for significant adverse effects during construction on breeding bird community in the area, though curlew not specifically identified in effects table. Receptors (i.e., ecological features) scoped in for Humber Low Carbon Pipelines pre-application study included breeding birds. The ES for Drax Re-power concludes the Proposed Development would have no significant negative effects on biodiversity, including breeding birds. Embedded mitigation within these cumulative schemes and the Scheme address the impacts of the construction phase. As such, the cumulative effect will be no worse than the residual effect stated for the Scheme.	Minor Adverse	No

Receptor	Importance (Value)	Description of Impact from the Scheme	Residual Effect Category	Scheme ID	Description of Cumulative Impact	Residual Cumulative Effect Category	Cumulative Significant Effect (Yes/No)
Breeding birds – population of skylark	District (Medium)	Direct loss of habitat, used by skylark during the breeding season. Temporary (short-term), reversible. Disturbance, due to noise/visual. Temporary (short term), reversible.	Minor Adverse	50, 51, 65	There is potential for cumulative effects on populations of skylark (breeding) if cumulative scheme MJP45 Minerals Allocation and HOW G Allocation proceed. The distance of 2km from the Order limits to cumulative scheme MJP45 Minerals Allocation reduces the potential for cumulative effects since there will be a degree of buffering between this cumulative scheme and the Scheme. Skylark confirmed as breeding on cumulative scheme HOW G Allocation which is 0.17km from the Order limits. Due to their planning timeline, there is no current information available regarding mitigation; however, in keeping with legislation and policy it is reasonable to assume that these cumulative schemes will provide suitable best practice measures to reduce or offset impacts on breeding skylark such that no cumulative effects would be expected. There is potential for breeding birds to be displaced from farmland habitats (semi-improved grassland) during construction of the Solar Farm at Land North and South of Camela Lane. The risk of cumulative effects with the Scheme should construction periods overlap is considered low, especially when the timeframe for this cumulative scheme is currently unknown. As such, the cumulative effect will be no worse than the residual effect stated for the Scheme	Minor Adverse	No
Breeding birds – territories of specially	Local (Low)	Disturbance, due to noise/visual. Temporary (short-term), reversible.	Minor Adverse	50, 65	There is potential for cumulative effects on populations of Schedule 1 species (unidentified) if MJP45 Minerals Allocation	Minor Adverse	No

Receptor	Importance (Value)	Description of Impact from the Scheme	Residual Effect Category	Scheme ID	Description of Cumulative Impact	Residual Cumulative Effect Category	Cumulative Significant Effect (Yes/No)
protected species (Schedule 1)					<p>proceeds. The distance of 2km from the Order limits to MJP45 Minerals Allocation reduces the potential for cumulative effects since there will be a degree of buffering between this proposal and the Scheme. Due to their planning timeline there is no current information available regarding mitigation; however, in keeping with legislation and policy it is reasonable to assume that these schemes will provide suitable best practice measures to reduce or offset impacts on Schedule 1 breeding species (should they be found to be present) such that no cumulative effects would be expected.</p> <p>Loss and fragmentation of habitats from Solar Farm at Land North And South Of Camela Lane considered to be no more than a minor adverse impact. Embedded mitigation within these cumulative schemes and the Scheme address the impacts of the construction phase. As such, the cumulative effect will be no worse than the residual effect stated for the Scheme.</p>		
Non breeding (passage and overwintering) birds	Up to County (Medium)	Loss of habitat and fragmentation of habitats used by non-breeding birds. Temporary (short-term), reversible. Disturbance, due to noise/visual. Temporary (short-term), reversible.	Minor Adverse	1, 2, 3, 5, 7, 24, 27, 50, 51, 65	Cumulative schemes Scotland to England Green Link (SEGL2) and Solar Farm at Land North And South Of Camela Lane have a Minor Adverse (no significant) effect on passage and overwintering birds through temporary loss of FLL and Unaffected Land available for displaced individuals during construction. Whilst cumulative effects could be possible due to timing and distances from Scheme, including some with land that overlaps with the Order limits, these three	Minor Adverse	No

Receptor	Importance (Value)	Description of Impact from the Scheme	Residual Effect Category	Scheme ID	Description of Cumulative Impact	Residual Cumulative Effect Category	Cumulative Significant Effect (Yes/No)
					<p>cumulative schemes and the Scheme all have a Minor Adverse (not significant) effect. With the embedded mitigation by these cumulative schemes and the Scheme including controls over potentially disturbing activities and restricting access into wintering bird habitat, it is concluded that the cumulative effect will result in no change to the determination of a Minor Adverse (not significant) effect.</p> <p>Based on the plans submitted for Relief Road and Residential development at Land South Of Thorpe Hall Thorpe Road Howden, Natural England considered that this cumulative scheme will not have likely significant effects on the interest features of European Sites and has no objection to the cumulative scheme. Due to the timelines of Helios Renewable Energy Project, Humber Low Carbon Pipelines, Wind Turbines at Newlands Farm and Recovery of Ash at Drax Power Station, MJP45 Minerals Allocation and HOW-G Mixed Use Allocation there is no current information available regarding mitigation; however, in keeping with legislation and policy it is reasonable to assume that these schemes will provide suitable best practice measures to reduce or offset impacts on passage and over-wintering bird species that no cumulative effects with these cumulative schemes would be expected.</p>		
Non-breeding birds –	District (Medium)	Loss of habitat and fragmentation of habitats used by non-	Minor Adverse	7, 50, 65	Loss and fragmentation of habitats used by non-breeding skylark from these cumulative schemes is considered to be no more than a	Minor Adverse	No

Receptor	Importance (Value)	Description of Impact from the Scheme	Residual Effect Category	Scheme ID	Description of Cumulative Impact	Residual Cumulative Effect Category	Cumulative Significant Effect (Yes/No)
population of skylark		breeding skylark. Temporary (short-term), reversible. Disturbance, due to noise/visual. Temporary (short-term), reversible.			Minor Adverse effect. Embedded mitigation within these cumulative schemes and the Scheme address the impacts of the construction phase. As such, the cumulative effect will be no worse than the residual effect stated for the Scheme.		
Bats	Up to County (Medium) for Myotis, Local for other species	Disturbance to roosting bats due to construction noise/lighting. Temporary (short-term), reversible.	Minor Adverse	1, 2, 4, 6, 7, 48, 65	<p>Where cumulative schemes have identified that they will directly impact bats through the loss of bat roosts/potential roosting features and foraging habitat, this will be addressed with embedded mitigation resulting in a Minor Adverse effect. As embedded mitigation within the Scheme similarly addresses the impacts on bats during the construction phase, it is considered the cumulative effect will be no worse than the residual effect stated for the Scheme.</p> <p>Where cumulative schemes are yet to assess their impact on bats it is not possible to make a detailed assessment of cumulative effects. However, it is reasonable to expect that standard best practice mitigation measures to ameliorate effects on roosting bats will be incorporated into the applications and design for all schemes, and that they will ensure they do not have a significant cumulative effect. Given the legal and policy framework provided to protect roosting bats that will be assessed and evaluated during planning it is reasonable to conclude that there will be no cumulative effects on bats.</p>	Minor Adverse	No

Receptor	Importance (Value)	Description of Impact from the Scheme	Residual Effect Category	Scheme ID	Description of Cumulative Impact	Residual Cumulative Effect Category	Cumulative Significant Effect (Yes/No)
	Up to County (Medium) for Myotis, Local for other species	Creation of habitats as part of embedded design.	Minor Beneficial	65	The operational stage of this cumulative scheme is predicted to have a minor beneficial effect on bats. Embedded mitigation within this cumulative scheme (e.g. the habitats most suitable for foraging and commuting bats (i.e. scattered trees, woodland, hedgerows and ditches) will be retained other than minor losses to facilitate safe access, and the creation of new hedgerow, woodland, grass seeding and wildflower meadow will improve connectivity and foraging opportunities for bats) and that of the Scheme address the impacts of the construction phase. As such, the cumulative effect will be no worse than the residual effect stated for the Scheme.	Minor Beneficial	No
Otter	District (Medium)	Disturbance to commuting/foraging/resting otter through noise/visual disturbance/lighting of construction within or near to watercourses. Temporary (short-term), reversible. Habitat degradation-impacts to water quality through pollution of watercourses. Temporary (short-term), reversible.	Minor Adverse	2, 4, 5, 78	These cumulative schemes have either assessed that they will have a Minor Adverse impact on otter through direct effects on otter holts/couch sites or temporary loss of riparian habitat which will be addressed by embedded mitigation. Embedded mitigation within these cumulative schemes and the Scheme address the impacts of the construction phase. As such, the cumulative effect will be no worse than the residual effect stated for the Scheme. Where the cumulative schemes are yet to assess their impact on otter, it is reasonable to expect that standard good industry practice mitigation practices will be adhered to, to reduce or offset any such effects, and that they will ensure they do not have a significant cumulative effect. As such, it is reasonable to expect that there will be no additional potential	Minor Adverse	No

Receptor	Importance (Value)	Description of Impact from the Scheme	Residual Effect Category	Scheme ID	Description of Cumulative Impact	Residual Cumulative Effect Category	Cumulative Significant Effect (Yes/No)
					for cumulative effects on otter as a result of these cumulative schemes.		
Other mammals (polecat)	Polecat – Up to County (medium)	Incidental killing, injury or disturbance. Temporary (short-term), reversible.	Polecat – Minor Adverse	5	The Humber Low carbon pipeline overlaps with the Order limits of this cumulative scheme which has the potential to cause impacts on polecat during construction, operation and decommissioning. It is reasonable to assume that good industry practice mitigation measures will be applied by the cumulative schemes that will ameliorate effects such that no cumulative effects will occur.	Minor Adverse	N/A

Table 8-16. Ecology Cumulative Effects Assessment – Operation

Receptor	Importance (Value)	Description of Impact from the Scheme	Residual Effect Category	Scheme ID	Description of Cumulative Impact	Residual Cumulative Effect Category	Cumulative Significant Effect (Yes/No)
River Derwent SAC, Lower Derwent Valley SAC, Lower Derwent Valley Ramsar, Lower Derwent Valley SPA,	International (Very High)	Surface runoff, panel cleaning, pollution incidents and flooding impacting designated sites that are hydrologically linked to the Scheme. Long term, reversible.	Minor Adverse	All reviewed	None of the cumulative schemes were considered to have the potential for adverse effects with the Scheme once operational, with several referring to beneficial effects once they were operational. There is therefore no risk of a cumulative effect. Where cumulative schemes are yet to assess their impact on water quality there is no current information available regarding mitigation; however, in adherence with legislation and policy it is reasonable to assume that these schemes will provide	Minor Adverse	N/A

Receptor	Importance (Value)	Description of Impact from the Scheme	Residual Effect Category	Scheme ID	Description of Cumulative Impact	Residual Cumulative Effect Category	Cumulative Significant Effect (Yes/No)
Humber Estuary SAC, Humber Estuary SPA, Humber Estuary Ramsar					suitable good industry practice measures to reduce or offset impacts on water quality (should they be found to be present) such that no cumulative effects would be expected.		
River Derwent SSSI, Barn Hill Meadows SSSI, Howden Marsh LRN, Eastrington Ponds LRN, Beighton Meadows SSSI, Lower Derwent Valley NNR, Derwent Ings SSSI, Eskamhorn Meadows SSSI, Humber Estuary SSSI, Barlow	National (High)	Surface runoff, panel cleaning, pollution incidents and flooding impacting designated sites that are hydrologically linked to the Scheme. Long term, reversible	Minor Adverse	All reviewed	None of the cumulative schemes were considered to have the potential for adverse effects with the Scheme once operational, with several referring to beneficial effects once they were also operational. There is therefore no risk of a cumulative effect. Where cumulative schemes are yet to assess their impact on water quality there is also no current information available regarding mitigation; however, in adherence with legislation and policy it is reasonable to assume that these schemes will provide suitable good industry practice measures to reduce or offset impacts on water quality (should they be found to be present) such that no cumulative effects would be expected.	Minor Adverse	N/A

Receptor	Importance (Value)	Description of Impact from the Scheme	Residual Effect Category	Scheme ID	Description of Cumulative Impact	Residual Cumulative Effect Category	Cumulative Significant Effect (Yes/No)
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Common LNR							
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