



**East Pye Solar
Environmental Statement
Volume 1: Chapter 8 – Ecology and Biodiversity**

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8 Ecology and Biodiversity

8.1 Introduction

- 8.1.1 This chapter of the Environmental Statement (ES) presents the findings of the Environmental Impact Assessment (EIA) and likely significant effects on Ecology and Biodiversity as a result of the Scheme.
- 8.1.2 This chapter identifies and proposes measures to address these likely significant effects during the construction, operational and maintenance, and decommissioning phases. It also considers proposed avoidance, mitigation and compensation measures and likely residual effects following the implementation of such measures.
- 8.1.3 Information considered in this Chapter includes relevant legislation, policy and guidance; an explanation of baseline conditions; and the methodologies and approaches used to inform the assessment.
- 8.1.4 The information presented within this chapter has been informed by the Scheme information provided in **ES: Chapter 4 The Scheme [EN0110014/APP/6.1.4]**.
- 8.1.5 This chapter is supported by the following figures, that can be found in **ES Volume 2**:
- Figure 8.1: Internationally Designated Sites within 10km;
 - Figure 8.2: Statutory Designated Sites within 5km (sheets 1-6);
 - Figure 8.3: Non-Statutory Designated Sites within 2km (sheets 1-6);
 - Figure 8.4: Irreplaceable Habitats within 2km (sheets 1-6);
 - Figure 8.5: Priority Habitats (sheets 1-9); and
 - Figure 8.6: Habitat Survey Results (sheets 1-33).
- 8.1.6 This Chapter is also supported by the following technical appendices, that can be found in **ES Volume 3**:
- Appendix 8.1: Ecological Desk Study and Extended Habitat Survey;
 - Appendix 8.2: Invertebrate Survey Report;
 - Appendix 8.3: Great Crested Newt Survey Report;
 - Appendix 8.4: Breeding Bird Survey Report;
 - Appendix 8.5: Ground Level Tree Assessment Report;

- Appendix 8.6: Bat Activity Survey Report;
- Appendix 8.7: Badger Survey Report (confidential);
- Appendix 8.8: Water Vole and Otter Survey Report;
- Appendix 8.9: Aquatic Habitat Assessment Report; and
- Appendix 8.10: Outline Protected Species Mitigation Strategy

8.2 Consultation

- 8.2.1 The content and assessment methodology contained within this Chapter has been informed by the Scoping Opinion from the Planning Inspectorate (PINS) dated 25 February 2025, statutory consultation responses received following the production of the Preliminary Environmental Information Report (PEIR), as well as through on-going consultation with key stakeholders in relation to ecology and biodiversity. These include but are not limited to: Natural England (NE), Environment Agency (EA), South Norfolk Council (SNC), Norfolk County Council (NCC), and Norfolk Wildlife Trust (NWT).
- 8.2.2 The issues raised during the consultation process in relation to Ecology and Biodiversity are summarised and responded to within the associated **Consultation Reports** that accompany the DCO submission **[EN0110014/APP/5.1 – 5.12]** which demonstrate how the matters raised are addressed in this ES.
- 8.2.3 The issues raised in the Scoping Opinion relating to Ecology are summarised and responded to within **Table 8.1**, which demonstrates how the matters raised in the Scoping Opinion are addressed in this ES.

Table 8.1: Relevant Scoping Opinion Comments from Statutory Bodies Relating to Ecology and Biodiversity

Consultee and Date	Comment and Scoping Opinion ID	How has the comment been addressed in the ES chapter	Location of response in the ES chapter
<p>The Planning Inspectorate, Scoping Opinion, February 2025</p>	<p>3.15.1: PINS noted that it is unclear whether there is hydrological linkage to these sites. As such, the ES should provide an assessment of this matter or provide a statement with robust justification as to why significant effects are unlikely to occur. This justification should include reference to the results of any relevant studies or surveys and show evidence of agreement with the relevant stakeholders.</p>	<p>The ES determines if hydrological connectivity is present with these sites and where required provides a robust mitigation approach to avoid significant effects. See Shadow Habitat Regulations Assessment (HRA) Report [EN0110014/APP/7.25]</p>	<p>Section 8.9</p>
<p>The Planning Inspectorate, Scoping Opinion, February 2025</p>	<p>3.15.2: Due to the intervening distance between the SPA and the Site, undulating topography and nature of the habitat on the Site, it is considered unlikely that the mobile qualifying features would utilise the site or surrounding area. On this basis, the Inspectorate is content to scope this matter out of the ES.</p>	<p>Effects upon the qualifying features of Broadland SPA (and associated avian qualifying features of the Broadland Ramsar site) will remain scoped out. See Shadow Habitat Regulations Assessment (HRA) Report [EN0110014/APP/7.25]</p>	<p>N/A</p>
<p>The Planning Inspectorate, Scoping Opinion, February 2025</p>	<p>13.15.3: For the avoidance of doubt, the ES should include consideration of the following SSSIs:</p> <ul style="list-style-type: none"> • Pulham Market Big Wood • Aslacton Parish Land • Forncett Meadows • Fritton Common • Shotesham-Woodton Hornbeam Woods • Sexton Wood • Flordon Common • Shotesham Common • Hedenham Wood • Tindall Wood <p>Ditchingham</p>	<p>These SSSIs are considered within the chapter.</p>	<p>Section 8.9</p>
<p>The Planning Inspectorate, Scoping Opinion, February 2025</p>	<p>13.15.4: The Scoping Report proposes to scope these matters out on the basis that there would be no clear impact pathways at this distance and no hydrological connections exist between the Scheme and these sites. PINS considers that insufficient information has been provided to support the claim that there are no impact</p>	<p>The chapter assesses any likely impacts on these sites within 2km from the Order Limits.</p>	<p>Section 8.9</p>

Consultee and Date	Comment and Scoping Opinion ID	How has the comment been addressed in the ES chapter	Location of response in the ES chapter
	pathways to these sites. As such, PINS is not in a position to scope this matter out. The ES should assess any potentially significant impacts on these sites.		
The Planning Inspectorate, Scoping Opinion, February 2025	3.15.5: The Scoping Report proposes to scope these matters out on the basis that there would be no clear impact pathways at this distance and no hydrological connections exist between the Scheme and these habitats. On this basis, the Inspectorate agrees that significant effects on priority habitats further than 250m from the Scheme are not likely to occur. This matter can be scoped out of the ES.	These are addressed within the chapter. Impacts upon these features greater than 250m from the Order Limits will remain scoped out.	Section 8.9
The Planning Inspectorate, Scoping Opinion, February 2025	3.15.6: Whilst PINS agrees that these habitats have limited ecological value, it is of the opinion that the amount of affected habitat may have significant implications. As such, PINS is not in a position to scope this matter out. The ES should assess any potentially significant effects as a result of impacts to these habitats.	These impacts are addressed within the chapter.	Section 8.9
The Planning Inspectorate, Scoping Opinion, February 2025	3.15.7: The Scoping Report proposed to scope this matter out on the basis that habitat in the Scheme generally has a negligible value for invertebrate populations and will likely result in improvements to invertebrate habitat through a commitment to BNG enhancements, cessation of insecticide use, and the provision of precautionary avoidance measures provided within the outline Operational Environmental Management Plan (OOEMP). On this basis, PINS agrees that significant impacts to Invertebrate populations are unlikely to occur during the operation of the Scheme. This matter can be scoped out of the ES.	Impacts upon terrestrial invertebrates during the operational phase are scoped out. Impacts during construction and decommissioning are assessed within the chapter.	Section 8.9
The Planning Inspectorate, Scoping Opinion, February 2025	3.15.8: The Scoping Report proposed to scope this matter out on the basis that the operational phase is not likely to impact upon great crested newt (GCN) populations and will likely result in improvements to habitat through a commitment to BNG enhancements and the provision of precautionary avoidance measures provided within the OOEMP. On this basis, PINS agreed that significant impacts to GCN populations are unlikely to occur during the operational phase. This matter can be scoped out of the ES.	Impacts upon GCN (and other amphibians) during the operational phase have remained scoped out. Impacts during construction and decommissioning are assessed within the chapter.	Section 8.9

Consultee and Date	Comment and Scoping Opinion ID	How has the comment been addressed in the ES chapter	Location of response in the ES chapter
The Planning Inspectorate, Scoping Opinion, February 2025	3.15.9: Impacts upon breeding birds as a result of operational maintenance and the replacement of a PV panels are unlikely to result in significant impacts on breeding birds. On this basis, PINS agreed that, assuming any habitat loss or changes in ability to access land are assessed as part of the construction assessment, the operational phase is unlikely to result in significant effects on these species. This matter can be scoped out of the ES.	Impacts upon breeding birds during the operational phase are scoped out, with the exception of skylark. Impacts during construction and decommissioning are assessed within the chapter.	Section 8.9
The Planning Inspectorate, Scoping Opinion, February 2025	3.15.10: The Scoping Report proposed to scope out an assessment of these species on the basis that the habitat on site is considered to be of negligible value for amphibians and reptiles, outside the range of hazel dormice and precautionary avoidance measures and enhancements would be sufficient to avoid impacts and create opportunities for these species. On this basis, and subject to the agreement of relevant consultees, the Inspectorate agreed that significant effects are unlikely to occur on these species and can be scoped out from the ES.	Impacts upon hazel dormice remain scoped out of this chapter. Based on the scoping response received from Norfolk County Council, a precautionary approach has been adopted, and operational and decommissioning phase impacts are assessed within this Chapter for reptiles, amphibians and priority mammal species	Section 8.9
The Planning Inspectorate, Scoping Opinion, February 2025	3.15.11: The Scoping Report proposed to scope out an assessment of impacts upon breeding birds within the CRC (all phases) on the basis that impacts during construction are considered to be short-term and non-significant and below ground infrastructure is to be left in-situ during decommissioning. The PINS agreed that significant impacts are unlikely to occur during operation and as such impacts during this phase can be scoped out of the ES. However, due to the potential presence of red listed species (such as skylark within the CRC, which utilise open cropland for breeding habitats), the PINS considered that there is the potential for significant impacts to breeding birds within the CRC during the construction phase. As such the PINS did not agree to scope this matter out and the ES should contain an assessment of the construction impacts on breeding birds within the CRC.	Impacts upon breeding birds within the CRC during the construction phase have been scoped into the chapter.	Section 8.9
The Planning Inspectorate, Scoping Opinion, February 2025	3.15.12: The Scoping Report proposed to scope this matter out on the basis that it is unlikely that mobile qualifying species associated with the surrounding SPA/Ramsar sites would regularly utilise the habitats within and surrounding the Scheme for foraging purposes and habitat retention or enhancement associated with the Scheme would result in an overall benefit to wintering/passage birds. On this basis, PINS was content to scope this matter out of the ES.	Impacts upon wintering/passage birds remain scoped out within this chapter.	N/A

Consultee and Date	Comment and Scoping Opinion ID	How has the comment been addressed in the ES chapter	Location of response in the ES chapter
<p>The Planning Inspectorate, Scoping Opinion, February 2025</p>	<p>3.15.13: The Scoping Report proposed to scope this matter out on the basis that embedded measures such as watercourse and ditch buffers will be utilised to avoid impacts during construction and decommissioning, the cessation of agricultural chemicals and implementation of biodiversity enhancements will result in benefits during operation and targeted surveys will be undertaken if impacts within the surrounding watercourses cannot be avoided.</p> <p>PINS considered that this approach did not cover all the potential risks to this species as they are mobile and can range beyond the proposed buffer zones. As such, the ES should either provide an assessment of the impact on these species, or provide a statement, supported by the results of Water Vole and Otter surveys, confirming their absence from the site.</p>	<p>These impacts are addressed within the chapter.</p>	<p>Section 8.9</p>
<p>The Planning Inspectorate, Scoping Opinion, February 2025</p>	<p>3.15.14: INNS are proposed to be scoped out on the basis that whilst invasive species such as Japanese Knotweed and Giant Hogweed are present on Site, they are not considered to be a significant environmental constraint, and the Applicant has committed to adhere to legislative compliance as standard.</p> <p>However, the Planning Inspectorate noted that this is not reflected in the Table of Commitments. Furthermore, PINS requested that the potential of introducing new INNS to the site which were not previously there should be considered. As such, PINS considered that there is insufficient information to scope this matter out and that the ES should assess all potential risks from the spread of invasive species within the Site.</p>	<p>These impacts are addressed within the chapter.</p>	<p>Section 8.9</p>
<p>The Planning Inspectorate, Scoping Opinion, February 2025</p>	<p>3.15.15: PINS agreed that with the implementation of standard construction management processes, significant effects on air quality during construction, operation and decommissioning are unlikely. This matter can be scoped out of the ES.</p>	<p>Specific air quality impact assessment has been undertaken, embedded mitigation measures such as dust impact prevention measures are referred to within the chapter.</p>	<p>Section 8.9</p>

Consultee and Date	Comment and Scoping Opinion ID	How has the comment been addressed in the ES chapter	Location of response in the ES chapter
<p>The Planning Inspectorate, Scoping Opinion, February 2025</p>	<p>3.15.16: Night-time lighting effects from a landscape and visual perspective were proposed to be scoped out of the assessment for the construction, operational and decommissioning phases as permanent lighting during operation would not be required, being limited to emergency and motion-activated security lighting, and lighting effects during construction and decommissioning are expected to be limited in extent, intensity and duration.</p> <p>PINS did not consider that sufficient information had been provided to scope out an assessment of night-time lighting and the ES should assess the lighting effects on ecological receptors such as bats, or to demonstrate that no likely significant effects will occur. The ES should include a detailed description of the lighting design and measures taken to avoid or minimise lighting impacts on ecological receptors. This should also include consideration of effects relating to intermittent lighting sources such as motion activated security lighting.</p>	<p>These impacts are addressed within the Chapter I reference to the Lighting Strategy [EN0110014/APP/6.3.7.11]</p>	<p>Section 8.9</p>
<p>The Planning Inspectorate, Scoping Opinion, February 2025</p>	<p>3.15.17: The Scoping Report does not consider the risk of EMF emissions to fish populations. PINS stated that the Hempnall Beck contains protected fish species. Therefore the ES should contain an assessment of the impact from electromagnetic fields (EMF) on fish or provide evidence that the depth the 400kV cables will be buried at Hempnall Beck is enough to avoid magnetic fields at levels detectable to fish.</p>	<p>These impacts are addressed within the Chapter.</p>	<p>Section 8.9</p>
<p>The Planning Inspectorate, Scoping Opinion, February 2025</p>	<p>3.15.18: Aquatic invertebrates should be scoped into the ES.</p>	<p>An assessment of the effects of the Scheme on aquatic invertebrates has been included in the chapter.</p>	<p>Section 8.9</p>
<p>The Planning Inspectorate, Scoping Opinion, February 2025</p>	<p>3.15.19: For the avoidance of doubt, buffer and root protection zones from ancient woodlands and ancient or veteran trees should be at least 15m from the boundary of the woodland or 15 times larger than the diameter of the tree.</p>	<p>These recommendations have been adopted, with a 30m buffer zone provided for ancient woodland. Impacts are assessed within the Chapter with reference to the Preliminary Arboriculture Impact Assessment [EN0110014/APP/ 6.3.7.10].</p>	<p>Section 8.9</p>

Consultee and Date	Comment and Scoping Opinion ID	How has the comment been addressed in the ES chapter	Location of response in the ES chapter
The Planning Inspectorate, Scoping Opinion, February 2025	3.15.20: PINS noted that the River Tas is located within the Application Site boundary, and that the River Tas is a chalk stream priority habitat with a current ecological status of Poor. Accordingly, the effects of the Scheme on the River Tas should be fully considered within the ES.	Tributaries of the River Tas (including Hempnall Beck) flow through the Site. However, the River Tas is located off-Site. Impacts upon these tributaries and rivers within 2km have been considered within this Chapter.	Section 8.9
The Planning Inspectorate, Scoping Opinion, February 2025	3.15.21: PINS notes the presence of White clawed crayfish on the River Tas. The Applicant should commit to survey for crayfish at relevant locations when works affecting watercourses are known.	The Scheme has been designed to avoid impact upon crayfish habitats; habitat suitability assessment survey has been undertaken. Impacts upon the species have been considered within this Chapter.	Section 8.9
The Planning Inspectorate, Scoping Opinion, February 2025	3.15.22: PINS noted that fish species have not been included within the scope of the desk study despite the fact that the CRC is proposed to cross a main river (Hempnall Beck). The desk study for the ES should be informed by EA fish population data.	The desk study has been updated as advised. Impacts upon freshwater fish are considered within this Chapter.	Section 8.9
The Planning Inspectorate, Scoping Opinion, February 2025	3.15.23: The ES should provide a description of any additional measures that are required to avoid significant effects. Effort should be made to agree any mitigation measures with the relevant stakeholders.	Additional mitigation measures (above those adopted within the embedded mitigation provisions) are not considered to be required.	N/A
Natural England, Scoping Opinion, February 2025	<u>Norfolk Valley Fens SAC</u> The Scoping Report states that there are several watercourses crossing the site. NE advises that impacts on water quality will need to be assessed as the proposed development may be hydrologically connected to the SAC.	Impacts are assessed within the Chapter. See Shadow HRA Report [EN0110014/APP/7.25] .	Section 8.9
Natural England, Scoping Opinion, February 2025	<u>The Broads SAC</u> There are five parcels of land covered by the Broads SAC within 10km of the Site. There are several water courses in proximity of the site. The Scoping Report has scoped out impacts from water quality from contamination and included measures to mitigate risk. Further assessment is required to determine if the five parcels are hydrologically linked to this SAC. Consideration should be given to any possible effects of the cable works upon watercourses linked to the SAC (e.g. methodology used for watercourse crossings). It is noted that such crossings will be 'avoided or minimised'.	Impacts are assessed within the Chapter. See Shadow HRA Report [EN0110014/APP/7.25] .	Section 8.9

Consultee and Date	Comment and Scoping Opinion ID	How has the comment been addressed in the ES chapter	Location of response in the ES chapter
<p>Natural England, Scoping Opinion, February 2025</p>	<p><u>Broadland SPA</u> The assessment states that due to the separation distances involved, and the undulating topography of the Sites and enclosed nature of many of the field compartments it is unlikely that Bewick's swan and Whooper swan would utilise the habitats around the site. NE agrees the risk of impact is relatively low and can be scoped out of the assessment.</p>	<p>This remains scoped out of the chapter. See Shadow HRA Report [EN0110014/APP/7.25].</p>	<p>N/A</p>
<p>Natural England, Scoping Opinion, February 2025</p>	<p><u>Broadland Ramsar</u> There are five parcels of land covered by the Broadland Ramsar within 10km of the Site. There are several water courses in proximity of the site. The Scoping Report has scoped out impacts from water quality from contamination and included measures to mitigate risk. Further assessment is required to determine if the five parcels are hydrologically linked to this SAC. Consideration should be given to any possible effects of the cable works upon watercourses linked to the SAC (e.g. methodology used for watercourse crossings). It is noted that such crossings will be 'avoided or minimised'.</p>	<p>These impact pathways have been considered within the ES. See Shadow HRA Report [EN0110014/APP/7.25].</p>	<p>Section 8.9</p>

Consultee and Date	Comment and Scoping Opinion ID	How has the comment been addressed in the ES chapter	Location of response in the ES chapter
<p>Natural England, Scoping Opinion, February 2025</p>	<p><u>SSSIs</u> NE advises that the Scheme is within or may impact on the following SSSI's:</p> <ul style="list-style-type: none"> • Pulham Market Big Wood • Aslacton Parish Land • Forncett Meadows • Fritton Common • Shotesham-Woodton Hornbeam Woods • Sexton Wood • Flordon Common • Shotesham Common • Hedenham Wood • Tindall Wood Ditchingham <p>NE states that the notified habitats at this site and the notified species they support may be sensitive to changes in air quality and water quality. An assessment of air quality impacts from construction traffic and dust and an assessment of a hydrological connection should be scoped into the ES.</p>	<p>These impact pathways have been considered within the ES.</p>	<p>Section 8.9</p>
<p>Natural England, Scoping Opinion, February 2025</p>	<p><u>Local Nature Recovery Strategy (LNRS)</u> Given the size and scale of the Scheme, there are opportunities not only for enhancing biodiversity in the locality, but also to create and enhance ecological connectivity in the area, contributing to the LNRS. The ES should make clear the Scheme's contribution to ecological connectivity in the area.</p>	<p>Ecological connectivity retention and enhancements are considered within the Chapter. The Schemes contribution towards the LNRS is also calculated as part of the Biodiversity Net Gain Report [EN0110014/APP/7.23].</p>	<p>Section 8.9</p>
<p>Natural England, Scoping Opinion, February 2025</p>	<p><u>Ancient Woodland, ancient and veteran trees</u> Dust has been scoped out of the assessment. However, there could be an impact to nearby ancient woodlands and therefore this needs consideration.</p>	<p>Dust impacts are considered within the Chapter, with reference to ES Vol 3 Appendix 13.1 - Construction and Decommissioning Dust Risk Assessment [EN0110014/APP/6.3.13.1]</p>	<p>Section 8.9</p>
<p>Natural England, Scoping Opinion, February 2025</p>	<p><u>Biodiversity Net Gain (BNG)</u> NE would encourage the Applicant to commit to at least 10% BNG across habitat, river and hedgerow units, illustrated via the use of the statutory biodiversity metric.</p>	<p>This target BNG has been adopted and calculated / assessed within the Biodiversity Net Gain Report [EN0110014/APP/7.23] and Biodiversity Net Gain Statutory Metric [EN0110014/APP/7.24].</p>	<p>N/A</p>

Consultee and Date	Comment and Scoping Opinion ID	How has the comment been addressed in the ES chapter	Location of response in the ES chapter
Environment Agency Scoping Opinion, February 2025	<u>EMF and Fish</u> Scope in the impact on fish from EMF in the ES. Provide evidence to show that where 400kV cables are crossing the Hempnall Beck at CRC7, cables will be buried deep enough so that magnetic fields are not at levels detectable by fish.	These impact pathways have been considered within the ES.	Section 8.9
Environment Agency Scoping Opinion, February 2025	<u>Heat Pollution from Cables</u> Concerns over thermal pollution from buried HV cables relating to the crossing at Hempnall Beck and the adjacent fenland habitat.	These impact pathways have been considered within the ES.	Section 8.9
Environment Agency Scoping Opinion, February 2025	<u>Desk Study</u> The ecological desk study should include freely available EA fish population data in order to inform the EIA.	These recommendations have been adopted and have informed the impact assessment process.	Section 8.9
Environment Agency Scoping Opinion, February 2025	<u>Aquatic Invertebrates</u> Provide mitigation to prevent adverse impacts on aquatic invertebrates e.g. "Sources of polarized light should be broken up by adding nonpolarizing patterns, areas or grids that block horizontal light. This approach, specifically using white borders and white grates has been shown to prevent insects being attracted to solar panels".	These impact pathways have been considered within the ES.	Section 8.9
Environment Agency Scoping Opinion, February 2025	<u>Water Vole/Otter</u> Undertake water vole and otter surveys to establish the presence of these species within the Site.	Water vole survey have informed the impact assessment within this Chapter.	Section 8.9
Environment Agency Scoping Opinion, February 2025	<u>White-clawed Crayfish</u> Surveys for white-clawed crayfish at this scoping stage may not be required, but a commitment should be included to survey for crayfish at relevant locations when works affecting watercourses are known.	The Scheme has been designed to avoid impact upon crayfish habitats; habitat suitability assessment survey has been undertaken. Impacts upon the species have been considered within this Chapter.	Section 8.9
Environment Agency Scoping Opinion, February 2025	<u>INNS</u> INNS has been scoped out for all three phases and the avoidance, management and/or eradication of these species will be detailed within the LEMP, OCEMP, OOEMP and ODEMP. This is not reflected in the Table of Commitments. This approach does not consider the potential to bring new INNS on to site not already present, particularly during construction and decommissioning.	Impacts associated with INNS have been assessed within this Chapter. Additional commitments are provided within the Outline CEMP [EN0110014/APP/7.1], Outline OEMP [EN0110014/ APP/7.2], and Outline DEMP [EN0110014/ APP/7.3].	Section 8.9

Consultee and Date	Comment and Scoping Opinion ID	How has the comment been addressed in the ES chapter	Location of response in the ES chapter
Environment Agency Scoping Opinion, February 2025	<p><u>Watercourse BNG</u></p> <p>Due to the presence of watercourses and associated wetland within the red line boundary, the EA requested that they would like to see the inclusion of watercourse BNG. The EA would welcome the opportunity to work with the Applicant on this matter and advise early engagement to ensure that the right biodiversity net gains are in the right places to deliver multifunctional benefits.</p> <p>The River Tas is a chalk stream priority habitat and a focus of EA activity, with opportunities for the Applicant to deliver ecological enhancements. BNG should be aligned with River Basin Management Plans, LNRS's, Water Framework Directives objectives/mitigation measures, and Catchment Plans.</p>	Watercourse data is calculated / assessed within the Biodiversity Net Gain Report [EN0110014/APP/7.23].and Biodiversity Net Gain Statutory Metric [EN0110014/APP/7.24].	N/A
South Norfolk Council Scoping Opinion, February 2025	<p><u>Great Crested Newts (GCN)</u></p> <p>NE advised that there is a limitation on the availability of compensation ponds in Norfolk in 2025 with District Level Licencing (DLL) being available for developments needing one or fewer compensation ponds. The Scheme should therefore consider undertaking surveys to ensure that you have sufficient data to inform a mitigation licence application if DLL is unavailable.</p>	GCN surveys have been included and the impacts assessed within this Chapter. Further detailed outline mitigation strategy is provided within the Outline PSMS [EN0110014/ APP/6.3.8.10].	Section 8.9
South Norfolk Council Scoping Opinion, February 2025	<p><u>Badgers</u></p> <p>The Badger Trust updated the badger surveys guidelines in 2024 which should inform the assessment.</p>	Badger surveys and impact assessment have been undertaken in reference to this guidance. Further detailed outline mitigation strategy is provided within the Outline PSMS [EN0110014/ APP/6.3.8.10].	Section 8.9
South Norfolk Council Scoping Opinion, February 2025	<p><u>Ancient/veteran trees</u></p> <p>Consideration should also be given to the buffers around veteran/ancient trees, and consideration to vehicle tracking movement in their vicinity.</p>	Impacts upon these features have been considered within the Chapter with reference to the Preliminary Arboriculture Impact Assessment [EN0110014/APP/ 6.3.7.10].	Section 8.9
South Norfolk Council Scoping Opinion, February 2025	<p><u>Ancient Woodland</u></p> <p>Consideration should be given to the possible presence of Ancient Woodland where parcels are smaller than 2ha.</p>	As a precautionary measure, the scheme has been designed to adhere to a minimum 15m buffer for all woodlands (which is the minimum buffer for ancient woodland parcels). Woodland impacts are considered further within the Chapter.	Section 8.9

Consultee and Date	Comment and Scoping Opinion ID	How has the comment been addressed in the ES chapter	Location of response in the ES chapter
South Norfolk Council Scoping Opinion, February 2025	<u>Bats (core sustenance zones (CSZs))</u> The Zone of Influence also needs to consider the CSZs for individual bat species.	Bat surveys have been completed and inform this chapter. This includes consideration of barbastelle bat CSZs.	Section 8.9
South Norfolk Council Scoping Opinion, February 2025	<u>Bats (tree roosts)</u> Consideration should be given to undertaking of surveys of trees within 15m of the site boundaries to consider impacts on roosts within proximity to the site which could be impacted.	Bat surveys have been completed and inform this chapter. As advised, this includes consideration of trees immediately surrounding the Order Limits.	Section 8.9
Norfolk County Council Scoping Opinion, February 2025	NCC requests that the following species/groups will need consideration in the ES: <ul style="list-style-type: none"> • Bats • Breeding birds • Wintering birds • Amphibians • Reptiles • Invertebrates • Badgers • Brown hare • Hedgehog • INNS With the above it will be relevant to develop several documents/sections within the ES covering pre commencement, construction, operation and decommissioning.	PINS and NE have agreed to scope out the impacts to wintering/passage bird species. Therefore, these are assessed within the ES. All other species/groups have been assessed within the Chapter. Further detailed outline mitigation strategy is provided within the Outline PSMS [EN0110014/ APP/6.3.8.10] .	Section 8.9

Consultee and Date	Comment and Scoping Opinion ID	How has the comment been addressed in the ES chapter	Location of response in the ES chapter
<p>Norfolk County Council Scoping Opinion, February 2025</p>	<p><u>Ecological Reporting</u> The scheme will need to consider all ecological effects, both during construction and in-operation. The scheme should adhere to the ecological mitigation hierarchy and avoid impacts in the first instance. Where impacts cannot be avoided, mitigation measures will need to be identified, and compensation provided. Impacts to Irreplaceable Habitats (e.g. Ancient Woodland) should be fully avoided. In addition, (dependant on timeline) the development will be expected to deliver the mandatory minimum 10% Biodiversity Net Gain (from late November 2025 for NSIPS) and contribute towards the Local Nature Recovery Strategy (LNRS).</p>	<p>This information is provided within the impact assessment within this Chapter. The Schemes contribution towards the LNRS is also calculated as part of the Biodiversity Net Gain Report [EN0110014/APP/7.23] and Biodiversity Net Gain Statutory Metric [EN0110014/APP/7.24]. Further detailed outline mitigation strategy is provided within the Outline PSMS [EN0110014/ APP/6.3.8.10].</p>	<p>Section 8.9</p>
<p>Norfolk County Council Scoping Opinion, February 2025</p>	<p><u>Ecological Survey Requirements</u> The sites identified should be carefully refined, taking account of all relevant ecological impacts, including locally designated wildlife sites. It is also important that any desk study should include the collation of all relevant habitat and species data from the Norfolk Biodiversity Information Service (NBIS), including all Local Wildlife Site information. All surveys carried out will require to be up to date, therefore given the potential timescales involved with such a scheme, it may be necessary to carry out regular surveys throughout the course of the design stage to ensure all surveys are no more than 18 months old.</p>	<p>Desk study approaches advised have been adopted to inform this Chapter. All surveys are up to date at the point of the Chapter submission.</p>	<p>Section 8.9</p>

8.3 Legislation, Planning Policy and Guidance

- 8.3.1 A summary of relevant legislation, planning policy and guidance documents against which the Scheme will be considered relating to Ecology and Biodiversity is set out in **ES: Appendix 2.3: Legislation, Planning Policy and Guidance [EN0110014/APP/6.3.2.3]**.
- 8.3.2 The legislation, planning policy and guidance against which the Scheme will be considered for the Ecology and Biodiversity assessment is listed below.

Legislation and Regulations

- 8.3.3 Legislation to inform the Ecology and Biodiversity assessment includes:
- The Ramsar Convention (Convention on Wetlands) 1971
 - The Conservation of Habitats and Species Regulations 2017 (as amended) (Ref 8-1) ('The Habitats Regulations') which has been amended by the Conservation of Habitats and Species Amendment (EU Exit) Regulations 2019 (Ref 8-2).
 - The Environment Act 2021 (Ref 8-3)
 - The Natural Environment and Rural Communities (NERC) Act 2006 (Ref 8-4);
 - Planning and Infrastructure Act 2025 (Ref 8-5);
 - The Countryside Rights of Way Act 2000 (Ref 8-6);
 - The Hedgerows Regulations 1997 (Ref 8-7);
 - The Protection of Badgers Act 1992 (Ref 8-8);
 - The Wildlife and Countryside Act 1981 (as amended) (Ref 8-9);
 - The Salmon and Freshwater Fisheries Act 1975 (Ref 8-10);
 - The Eels (England and Wales) Regulations 2009 (Ref 8-11);
 - Wild Mammals (Protection) Act, 1996 (as amended) (Ref 8-12);
 - The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Ref 8-13);
 - Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref 8-14); and
 - The Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations 2024 (Ref 8-15)

Policy

- 8.3.4 National and local policy relevant to this chapter is listed below:

- Overarching National Policy Statement (NPS) for Energy (EN-1)) 2025 (Ref 8-16);
- NPS for Renewable Energy Infrastructure (EN-3) 2025 (Ref 8-17);
- NPS for electricity networks infrastructure (EN-5) 2025 (Ref 8-18);
- The National Planning Policy Framework (NPPF) 2024 (Ref 8-19);
- Government Circular: ODPM Circular 06/2005; Defra Circular 01/2005 (2005) Biodiversity and Geological conservation – Statutory obligations and their impact within the planning system (Ref 8-20);
- The ‘Local planning policies within the South Norfolk Local Plan Development Management Policies Document (Adoption Version October 2015)’(Ref 8-21); and
- The Greater Norwich Local Plan (Document 1 – The Strategy) (Ref 8-22).

Guidance

8.3.5 Guidance and advice relevant to this chapter are listed below:

- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (V 1.3) (CIEEM) 2024 (Ref 8-23);
- Biodiversity Guidance for Solar Developments (British Research Establishment (BRE)) 2014 (Ref 8-24);
- Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development (Planning Inspectorate) 2025 (Ref 8-25);
- Natural Capital Best Practice Guidance: Increasing biodiversity at all stages of a solar farm’s lifecycle (Solar Energy UK) (Ref 8-26);
- Evidence review of the impact of solar farms on birds, bats and general ecology 2016 (NEER012) (Natural England) 2017 (Ref 8-27)
- Solar Habitat 2025: Ecological trends on solar farms in the UK (Solar Energy UK) 2025 (Ref 8-28);
- The Effect of Solar Farms on Local Biodiversity: A Comparative Study (Clarkson and Woods and Wychwood Biodiversity) 2015 (Ref 8-29);
- Solar farm management influences breeding bird responses in an arable-dominated landscape (J Copping et al) (Ref 8-30);
- Great crested newts: district level licensing for local planning authorities (NE and DEFRA) 2022 (Ref 8-31);

- Ancient woodland, Ancient Trees and Veteran Trees: advice for making planning decisions (DEFRA & The Forestry Commission) 2022 (Ref 8-32);
- Wildlife Licensing: comment on new policies for European protected species licences (NE) 2016 (Ref 8-33);
- Protected Species and Development: advice for local planning authorities (DEFRA and NE) 2014 (Ref 8-34);
- Interim Advice Note for Designing Strategically Significant Biodiversity Net Gain (BNG) (SNC) 2024 (Ref 8-35);
- Statutory Biodiversity Metric Tools and Guides (DEFRA) 2023 (Ref 8-36);
- Biodiversity Net Gain: Good Practice Principles for Development (CIEEM, IEMA, CIRIA) 2016 (Ref 8-37);
- British Standard BS42020:2013 Biodiversity: A Code of Practice for Planning and Development (BSI) 2013 (Ref 8-38);
- BS 8683:2021 Process for Designing and Implementing Biodiversity Net Gain – Specification (BSI) 2021 (Ref 8-39);
- Biodiversity Data Search Guidance for Ecological Consultants (Partnership for Biodiversity in Planning) 2019 (Ref 8-40);
- Norfolk Habitat and Species Action Plans (Norfolk Biodiversity Partnership) (Ref 8-41);
- Norfolk Local Nature Recovery Strategy (Norfolk and Suffolk Nature Recovery Partnership) (Ref 8-42); and
- Claylands Wilder Connections (NWT) (Ref 8-45).

8.3.6 In addition to these resources this Chapter (and associated technical appendices) will refer to multiple species/habitat specific guidance documents, informed by the results of the baseline ecology surveys presented below in **Section 8.5**.

8.4 Assessment Assumptions and Limitations

8.4.1 Baseline habitat and species information, referenced in the assessment and presented in this chapter, is based on surveys conducted in 2024, 2025 and 2026, published data, third party ecological records and web-based information obtained between 2024 and 2026.

8.4.2 Any assumptions and limitations relevant to each survey, are included within the relevant technical appendices that can be found in **ES Volume 3** and in the assessment below.

8.5 Assessment Methodology

- 8.5.1 This section sets out the scope and methodology used to inform the assessment which has been developed in line with the relevant industry guidance.

Scoping

- 8.5.2 In accordance with Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (V 1.3) (the 'CIEEM guidelines'), the assessment methodology only assesses in detail, impacts upon Important Ecological Features (IEF's) i.e. those that are considered important and potentially affected. It is not considered necessary to carry out detailed assessment of ecological features and species that are sufficiently widespread, unthreatened and resilient to project impacts and which will remain viable and sustainable.
- 8.5.3 Where ecological features are not considered important enough to warrant further consideration and where the Scoping Opinion has agreed, these have been scoped out from for further assessment, and justification for exclusion provided within **Table 8.2** below.

Table 8.2: Ecological Receptors Scoped Out

Ecological Receptor Scoped Out	Information
<p>Broadland Special Protection Area (SPA) & Broadland Ramsar (avian qualifying criteria only)</p> <p><u>Scoped out of all phases</u></p>	<p>Scoped out on the basis that qualifying mobile species populations are considered highly unlikely to regularly utilise habitats within and surrounding the Sites, unsuitable topography, and separation distance.</p> <p>Dominant agricultural habitats within and immediately surrounding the Sites are considered unsuitable to provide an important role in maintaining or restoring the population of qualifying species of the Broadland SPA/Ramsar site. In addition, due to the separation distances involved, and the undulating topography of the Sites and enclosed nature of many of the field compartments, it is considered highly unlikely that the more mobile qualifying species associated with the SPA/Ramsar (namely Whooper swan and Bewick’s swan) would regularly utilise habitats within and surrounding the Sites for foraging purposes when considering the availability of expansive areas of low-lying floodplains associated with the Yare and Chet catchments within and immediately surrounding the SPA/Ramsar site.</p> <p>The scoping response from the Planning Inspectorate stated: <i>‘The Scoping Report proposes to scope this matter out on the basis that due to the intervening distance, undulating topography and nature of the habitat on site, it is considered unlikely that the mobile qualifying features would utilise the site or surrounding area. On this basis, the Inspectorate is content to scope this matter out of the ES’.</i></p> <p>Non-avian qualifying criteria of the Broadland Ramsar site is scoped in and assessed further within this Chapter. Avian qualifying criteria of Broadland SPA/Ramsar site are addressed within the Shadow Habitats Regulations Assessment [EN0110014/APP/7.25].</p> <p>The Planning Inspectorate also agreed to scope out air quality impacts upon wintering bird species, which includes qualifying birds species of the Broadland SPA and Broadland Ramsar.</p>
<p>Priority habitats (or other habitats considered to be IEF’s)</p> <p><u>Habitats more than 250m from the Order Limits scoped out of all phases.</u></p>	<p>The Scoping Report proposed to scope these matters out on the basis that there would be no clear impact pathways for impacts above 250m from the Order Limits. The Planning Inspectorate agreed that significant effects on priority habitats further than 250m from the Order Limits are unlikely to occur. Therefore, impacts upon these habitats above and beyond 250m from the Order Limits are scoped out of this assessment.</p>
<p>Common and widespread habitats of low sensitivity and/or ecological interest</p> <p><u>Habitats located outside of the Order Limits scoped out of all phases.</u></p>	<p>The Scoping Report proposed to scope this matter out on the basis that these habitats are of low sensitivity, have limited ecological value and potential impacts can be mitigated through embedded design measures and biodiversity enhancements. The Planning Inspectorate agreed <i>‘these habitats have limited ecological value’</i>, however, requested that, due to the amount of affected habitat <i>‘the ES should assess any potentially significant effects as a result of impacts to this habitat’</i> within the Order Limits only. This approach has been adopted.</p>

Ecological Receptor Scoped Out	Information
<p>Terrestrial Invertebrates <u>Scoped out of the operational phase only</u></p>	<p>The Sites are dominated by intensively managed agricultural cropland and grazing pasture, considered to be of negligible value for invertebrate assemblages. The provision of BNG measures (see Biodiversity Net Gain Report [EN0110014/APP/7.23]) within the operational sites and cessation of the use of agricultural insecticides and pesticides within these will lead to a clear benefit for invertebrate populations across a large proportion of the Order Limits during the Schemes operational phase.</p> <p>The Scheme’s operational phase is therefore scoped out and considered likely to benefit wider invertebrate assemblages through habitat improvements created for wider BNG purposes and with the provision of precautionary pollution prevention measures provided within the Outline Operational Environmental Management Plan (Outline OEMP) [EN0110014/APP/7.2]. The Planning Inspectorate concurred stating that <i>‘significant impacts to Invertebrate populations are unlikely to occur during the operation of the Proposed Development. This matter can be scoped out of the ES’</i>.</p>
<p>Great Crested Newts (and widespread amphibians) <u>Scoped out of the operational phase only</u></p>	<p>Evidence of great crested newt (GCN) presence was confirmed during 2024 and 2025 eDNA surveys. The Scheme’s operational phase is scoped out and considered likely to benefit the species through habitat improvements created for wider BNG purposes and with the provision of precautionary pollution prevention measures provided within the Outline OEMP [EN0110014/ APP/7.2]. The Planning Inspectorate agreed that significant impacts to GCN populations are unlikely to occur during the operational phase, and this matter can be scoped out of the ES.</p>
<p>Reptiles <u>Scoped out of the operational phase only</u></p>	<p>The Sites are dominated by intensively managed agricultural cropland and grazing pasture, considered to be of negligible value for widespread reptiles. The Planning Inspectorate agreed that <i>‘subject to the agreement of relevant consultees, the Inspectorate agrees that significant effects are unlikely to occur on these species’</i> and the matter could be scoped out, however, based on the scoping response received from Norfolk County Council, a precautionary approach has been adopted, and operational and decommissioning phase impacts will be assessed within this Chapter. The Scheme’s operational phase is scoped out and considered likely to benefit the species through habitat improvements created for wider BNG purposes and with the provision of precautionary pollution prevention measures provided within the Outline OEMP [EN0110014/ APP/7.2].</p>
<p>Wintering/passage birds (Scoped out of all phases)</p>	<p>Dominant agricultural habitats within and immediately surrounding the Sites are considered unsuitable to provide an important role in maintaining or restoring the population of qualifying avian species of the Broads Special Protection Area (SPA)/Ramsar site. In addition, due to the separation distances involved, and the undulating topography of the Sites and enclosed nature of many of the field compartments, it is considered highly unlikely that the more mobile qualifying species associated with the SPA/Ramsar (namely Whooper swan and Bewick’s swan) and other locally-important numbers of waterbirds would regularly utilise habitats within and surrounding the Sites for foraging purposes. This conclusion considers the availability of expansive areas of low-lying floodplains associated with the Yare and Chet catchments within and immediately surrounding the SPA/Ramsar site. Habitat retention and enhancement will result in overall gains for wintering passerine species, increasing opportunities for winter foraging for a diverse range of species. On this basis, the Planning Inspectorate agreed to scope this ecological receptor out of the ES.</p>

Ecological Receptor Scoped Out	Information
<p>Breeding birds</p> <p><u>Scoped out of the operational phase, except for skylark, which has been considered within the operational phase impact assessment (Sites 1-10 and BESS Site only).</u></p> <p><u>All breeding bird species scoped out of the operational and decommissioning phase within temporary impact areas (CRC & Highway Works areas).</u></p>	<p>Breeding birds are likely to benefit from habitat improvements under BNG and removal of intensive farming from the Sites environment (i.e. increased invertebrate prey abundance as a result of the cessation of the regular use of pesticides). Any potential for operational impacts is limited to the replacement of panels/frames and batteries, and potential impacts from periodic disturbance through maintenance visits. The scoping response from the Planning Inspectorate agreed, stating <i>'on this basis, the Inspectorate agrees that, assuming any habitat loss or changes in ability to access land are assessed as part of the construction assessment, the operational phase is unlikely to result in significant effects on these species. These matters can be scoped out from the ES'</i>. However, based on the breeding bird survey results detailed within ES Vol I, Chapter 8 - Appendix 8.4: Breeding Bird Survey Report which recorded skylark breeding within the Site (which are potentially impacted by land use change over the operational phase), this species has been included within the operational phase impact assessment (within Sites 1-10 and BESS Site only). The Planning Inspectorate also agreed that operational/decommissioning phase impacts within areas subject to temporary impacts only (most notably the CRC) can be scoped out of the assessment during the operational and decommissioning phases, with these areas considered for the construction phase impact assessment only.</p>
<p>Hazel Dormouse</p> <p><u>Scoped out of all phases</u></p>	<p>The Scheme is located outside the species' current range (Ref 8-44). Habitat enhancements undertaken under BNG commitments will enhance opportunities for the species in the unlikely event of future colonisation of this region of South Norfolk.</p>
<p>Other Priority Mammals</p> <p><u>Scoped out of the operational phase only</u></p>	<p>The Planning Inspectorate agreed that <i>'subject to the agreement of relevant consultees, the Inspectorate agrees that significant effects are unlikely to occur on these species'</i> and the matter could be scoped out, however, based on the scoping response received from Norfolk County Council, a precautionary approach has been adopted, and operational and decommissioning phase impacts will be assessed within this Chapter. The Scheme's operational phase is scoped out and considered likely to benefit these priority species through habitat improvements created for wider BNG purposes and with the provision of precautionary pollution prevention measures provided within the Outline OEMP [EN0110014/ APP/7.2].</p>

Sources of Information

8.5.4 **Table 8.3** presents the sources of information that have been consulted in the preparation of this chapter and its associated technical appendices:

Table 8.3: Sources of Information

Survey/Assessment	Sites and/or CRC	Date(s) Undertaken	Technical Appendix	Notes
Ecological Desk Study	Sites & CRC	Throughout 2024, 2025 & January 2026	Appendix 8.1 (& species-specific info provided in respective appendices)	Ecological Desk Study based on data purchased from Norfolk Biodiversity Information Service and Norfolk Barbastelle Group. In addition to multiple accessible online resources used to provide a relevant ecological baseline.
Extended Habitat Survey	Sites & CRC	April - September 2024, April 2025, August – September 2025, & January 2026	Appendix 8.1	-
Invertebrate Survey	Sites	August-September 2024 and 2025 (Site 2)	Appendix 8.2	-
GCN Environmental DNA (eDNA) Surveys	Sites & CRC	June 2024 and June 2025	Appendix 8.3	-
Breeding Bird Surveys	Sites	May – July 2024 & April - July 2026	Appendix 8.4	-
Ground Level Tree Assessment (GLTA) surveys	Sites & CRC	April - September 2024, April 2025, August – September 2025, & January 2026	Appendix 8.5	-
Bat Activity Surveys	Sites	September – October 2024 & April - October 2025	Appendix 8.6	-
Badger Surveys	Sites & CRC	April - September 2024, April 2025, August - September 2025, January 2026	Appendix 8.7	During the survey, all areas of suitable habitat were checked for evidence of badger activity. Where present, the surveyors recorded all badger field signs were recorded and mapped. The presence of other mammals was also recorded,
Otter Surveys	Sites & CRC	September 2025	Appendix 8.8	All ditches/watercourses were assessed for otter potential, with targeted surveys to confirm presence/ absence along these features. Badger surveys (above) would also record the presence of any terrestrial otter features (holts, couches etc) if present.

Survey/Assessment	Sites and/or CRC	Date(s) Undertaken	Technical Appendix	Notes
Water Vole Surveys	Sites & CRC	September 2025	Appendix 8.8	All ditches/watercourses were assessed for water vole suitability. With target surveys to confirm presence/ absence.
River Habitat Survey, White-clawed Crayfish, Aquatic Macroinvertebrates, and Fish Suitability Assessment	Sites & CRC	September – October 2025	Appendix 8.9	Field surveys comprised bankside walkover appraisals which assessed habitat features for the potential to support important aquatic species assemblages.

Study Area

- 8.5.5 A 'zone of influence' (ZOI) for a development is the area over which ecological and biodiversity features may be affected by biophysical changes as a result of the development and associated activities.
- 8.5.6 The ZOIs for the Scheme are acknowledged to extend beyond direct land-take required. They have been identified in view of the nature of the Scheme as described in **ES: Chapter 4 The Scheme [EN0110014 APP/6.1.4]** and have been based on consultations, the Scoping process and current CIEEM and NE guidance. On this basis the ZOIs will vary for different IEF's depending on their sensitivity to environmental change.
- 8.5.7 The Study Area for this Chapter is based on the ZOIs. It has been developed to capture all IEFs sensitive to direct and indirect impacts
- 8.5.8 Taken together, the ZOIs for the Scheme and within which baseline information will be established collectively comprise the Study Area. ZOIs identified are as follows:
- European/International Sites: Comprising Special Areas of Conservation (SACs), SPA's and Ramsar sites (non-avian qualifying features) (Ref 8-46) within 5km of the Order Limits, extended to 10km of the Order Limits if the designated site has hydrological connectivity with the Scheme (Ref 8-47);
 - Statutory designated sites: Comprising Sites of Special Scientific Interest (SSSIs) and Local nature reserves (LNRs) within 5km of the Order Limits;
 - Non-statutory designated sites: comprising County Wildlife Sites (CWSs) and Roadside Nature Reserves (RNRs) within 2km of the Order Limits;
 - Irreplaceable habitats (Ref 8-48): within 2km of the Order Limits;
 - Priority habitats (Ref 8-49) (or other habitats considered to be IEF's): within 250m of the Order Limits;
 - Widespread habitats and vegetation within the Order Limits;

- Protected and priority species: within the Order Limits and up to 2km from the Order Limits (unless otherwise stated).
- 8.5.9 European/international sites extended to 10km from the Order Limits are provided in **ES: Figure 8.1 Internationally Designated Sites within 10km [EN0110014 APP/6.2.8.1]**, Statutory designated sites within 5km of the Order Limits are provided in **ES: Figure 8.2 Statutory Designated Sites within 5km [EN0110014 APP/6.2.8.2]**, and non-statutory designated sites located within 2km of the Order Limits are presented in **ES: Figure 8.3 Non-Statutory Designated Sites within 2km [EN0110014 APP/6.2.8.3]**. Irreplaceable habitats are provided in **ES: Figure 8.4 Irreplaceable Habitats within 2km [EN0110014 APP/6.2.8.4]**, and priority habitats are provided in **ES: Figure 8.5 Priority Habitats [EN0110014 APP/6.2.8.5]**.
- 8.5.10 The specific survey area, in which ecological field surveys have been undertaken to establish the ecological baseline, is defined as the land within the Order Limits for all habitats and species, with the exception of breeding birds surveys and bat activity surveys (undertaken within the Sub-Sites/BESS Site only).
- 8.5.11 Where accessible, physical surveys are extended up to 30m from the Order Limits to search for badger setts/otter holts/rest sites which could be affected by the Scheme. Breeding bird surveys include land immediately bordering the individual Sites, though include recording territorial song and behaviour up to 100m from the Sites. Surveys for the presence or likely absence of GCNs have been undertaken on accessible ponds within 250m of the Order Limits.

Impact Assessment Methodology

- 8.5.12 This Ecology and Biodiversity assessment deviates from the standard approach provided within **ES: Chapter 2 EIA Methodology [EN0110014/APP/6.1.2]** and follows the approach to undertaking Ecological Impact Assessment (EclA) in accordance with the CIEEM guidance with regards to defining the methodology for attributing sensitivity of receptors, magnitude of effects and the significance of effects is described below.
- 8.5.13 The CIEEM guidance is used to evaluate existing baseline conditions, and to assess likely significant effects on IEFs that may arise during construction, operation and maintenance, and decommissioning of the Scheme. This involves determining the relative importance of each ecological feature and undertaking an impact assessment pre and post-implementation of mitigation measures. From this, any residual effects likely to occur can be identified along with an appreciation of their significance.
- 8.5.14 In terms of Ecology and Biodiversity, the impact assessment process involves:
- Identifying and characterising impacts and their effects;

- Incorporating embedded mitigation measures;
- Assessing the significance of any residual effects after mitigation;
- Identifying additional mitigation and/or appropriate compensation measures to offset significant residual effects; and
- Identifying opportunities for ecological enhancement.

8.5.15 The terms impact and effect are used within this Chapter in accordance with the following definitions referred to within the CIEEM guidelines:

- Impact: actions resulting in changes to an ecological feature. For example, the construction activities of a development removing a hedgerow; and
- Effect: outcome to an ecological feature from an impact. For example, the effects on a GCN population from loss of a pond.

Evaluation of Ecological Importance

8.5.16 When evaluating the baseline importance of natural features found on or in proximity to the Scheme, the baseline conditions will all be attributed an ecological importance. The importance, or potential importance, of an ecological feature will be described in a geographical context. A category of ‘Site’ importance will be applied to a feature which is present or potentially present within the Order Limits, but where its importance to nature conservation is of relatively low value in the context of the wider landscape.

8.5.17 In line with the guidelines set out by CIEEM Guidelines, the impacts of the Scheme will only be assessed on those features with importance equal to, or higher than Local level, or those for which mitigation is required to ensure legal compliance (i.e. the IEFS). The geographical scale of reference at which IEF’s are assigned value is provided within **Table 8.4**.

Table 8.4: Geographical Scales of Reference in relation to ecological receptors

Geographic Scale of Importance	Definition examples
International / European	Greater than a UK scale, typically valued at a European level. For example, internationally-designated sites (SPA, SAC and/or Ramsar sites), large areas of a habitat listed in Annex I of the Habitats Directive or smaller areas of such habitat which are essential to maintain the viability of the larger whole, large population of an internationally-important species or site supporting such a species (or supplying a critical element of their habitat requirement), or internationally important population of a species listed in Annex IV of the Habitats Directive.
National (UK)	England/UK. A nationally designated site e.g. SSSI or a discrete area which meets the selection criteria for national designation. An area of a priority habitat listed under the Section 31 of the Natural Environment and Rural Communities Act 2006 (NERC) which constitutes a significant proportion of the resource of that habitat in England or the UK as a whole. A regularly occurring, nationally significant population of a species listed as a Priority species under the Section 41 of the NERC Act 2006, and Species listed under

Geographic Scale of Importance	Definition examples
	Schedule 1 or Schedule 5 of the Wildlife and Countryside Act or Annex II or Annex IV of the Habitats Directive.
Regional (East Anglia)	Areas of priority habitat, which constitute a significant proportion of the Region's resource of that habitat. A regularly occurring, regionally significant population of any nationally important species listed as a Priority species under Section 31 of the NERC Act 2006, or a Species listed under Schedule 5 of the Wildlife and Countryside Act or Annex II or Annex IV of the Habitats Directive.
County (Norfolk)	Statutory designated LNR's, County designated sites (CWS and Roadside Nature Reserves). Areas of priority habitat which constitute a significant proportion of the County's resource of that habitat. Areas of irreplaceable habitat such as Ancient Woodland and lowland fen. A regularly occurring, County- significant population of any nationally important species listed as a Priority species under Section 31 of the NERC Act 2006, or a species listed under Schedule 5 of the Wildlife and Countryside Act or Annex II or Annex IV of the Habitats Directive.
Local	Local area around the Site, within the South Norfolk district area. For example, areas of Priority habitat which are not large enough to meet the criteria for County value, or small but sustainable populations of a protected or Priority species.
Site	Within the Order Limits. Features present but of value in relation to the Order Limits only.

Characterisation of Impacts

8.5.18 When describing ecological impacts and effects, they will be made to the following characteristics as required: beneficial (positive effect) or adverse (negative effect), extent, magnitude, duration, timing, frequency, and reversibility. Descriptions of these characteristics are presented in **Table 8.5**.

Table 8.5: Characterising Ecological Impacts

Characteristic	Description
Positive or Negative	A positive or negative effect that either supports or undermines biodiversity conservation objectives for IEF's.
Extent	The spatial or geographical area over which the impact/effect may occur under a suitably representative range of conditions.
Magnitude	The size, amount, intensity, and volume. It should be quantified if possible and expressed in absolute terms.
Duration	This should relate to the ecological receptor as well as human timeframes. It should account for impacts of short duration, but which may have longer term effects. Duration can be described as short, medium, or long-term and permanent and temporary although they should be defined in months/years.
Timing and Frequency	This relates to when an activity occurs, in particular with reference to sensitive periods for the receptor (e.g. breeding season) and the number of times the activity occurs.
Reversibility	An irreversible effect is one from which recovery is not possible within a reasonable time scale. Reversible effects include those which are spontaneous, or which can be counteracted by mitigation.

Magnitude of Effects

- 8.5.19 The judgements on magnitude may need to be adjusted (either up or down) to reflect the duration of the change (i.e. short, medium or long term) and whether it is potentially reversible. The assessment also identifies areas where no change is anticipated, and the resulting effect is described as 'not discernible' or 'none'.
- 8.5.20 For the purpose of this assessment effects have been described in terms of their duration as short, medium term and long-term as follows:
- Short term effects are defined as 0 to 2 years;
 - Medium term effects are defined as 2 to 5 years; and
 - Long term effects are defined as 5+ years.
- 8.5.21 Magnitude of effect, based on the effects that the Scheme would have upon the resource/receptor, is considered within the range of high, medium, low, negligible. Consideration is given to scale, duration of impact/effect (and extent of Scheme with reference to the definitions in **Table 8.4**). The assessment will consider how existing baseline conditions may change over time. For example, they could alter through operational land use, in the form of differing management and natural growth or succession of habitats.
- 8.5.22 The assessment of effects is based upon the assessments of magnitude of effects and sensitivity of the resource/receptor to form a professional judgement of how important this effect is. The magnitude of change which will affect ecological receptors is described as set out in **Table 8.6**. The likelihood or probability that an effect will occur is addressed as far as possible based on available information. Whilst it is reasonably straightforward to identify effects that are certain to occur, or conversely will not occur, it is generally more difficult to assign a quantified level to occurrences defined as likely, unlikely, or highly unlikely. In these circumstances, professional judgement has been used, with reasoning supported by available evidence.

Table 8.6: Magnitude of Effect

Magnitude	Criteria
High	Adverse: A permanent or long-term effect on an IEF, which may result in severe damage to key characteristics and implications for the integrity of the receptor or its conservation status.
	Beneficial: A permanent or long-term effect on the IEF, resulting in large increase in the key characteristics, ecological value or status.
Moderate	Adverse: Impacts resulting in partial loss of or damage to an IEF, which could have implications for the integrity of the IEF or its conservation status.
	Beneficial: Impacts resulting in substantial gain or enhancement to an IEF, which could have positive implications for the integrity of the IEF or its conservation status.
Low	Adverse: Short-term or temporary impacts resulting in only minor loss of or damage to an IEF, being unlikely to have implications for the integrity of the IEF or its conservation status.
	Beneficial: Short-term or temporary impacts resulting in only minor gain or enhancement of an IEF, being unlikely to have implications for the integrity of the IEF or its conservation status.
Negligible	No effect or only a short-term reversible impact with no long-term effect on the receptor.

Determining Significance of Effects

- 8.5.23 For the purpose of this Chapter and in adherence to the CIEEM guidance, a significant effect can be either a positive or negative effect that either supports or undermines biodiversity conservation objectives for IEF's or for biodiversity in general. Conservation objectives can be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy and legislation) or more wide-ranging (enhancement of biodiversity).
- 8.5.24 Consideration of whether impacts and effects are categorised as positive or negative impacts and effects will be determined according to whether the change is in accordance with nature conservation objectives and policy, and will follow the following principles:
- Positive – a change that improves the quality of the environment e.g. By increasing species diversity, extending habitat or improving water quality. This may also include halting or slowing an existing decline in the quality of the environment; and
 - Negative – a change which reduces the quality of the environment e.g. Destruction of habitat, removal of foraging habitat, habitat fragmentation, pollution.
- 8.5.25 Effects can be considered significant at a wide range of geographic scales from international to local, as shown in **Table 8.4**. However, the scale of significance of an effect may not be the same as the geographic context in which the feature is considered important. For example, an effect on a feature of county importance, may not have a significant effect at a county level but rather have impacts at a local or site level.
- 8.5.26 To determine the overall significance of each ecological effect, judgements on the sensitivity of the receptor(s) and the magnitude of impact from the Scheme are considered together. This serves to determine whether or not

an effect is likely to be significant. This involves a combination of quantitative and qualitative assessment and the application of professional judgement.

- 8.5.27 In line with CIEEM guidance, significance of residual effects will be described as being '**Significant**' or '**Not Significant**'. As CIEEM guidance avoids and discourages the use of a conversion matrix approaches to assign categories (e.g. Minor, Moderate or Major) to residual effects, 'Significant' residual effects will be qualified with reference to the appropriate geographical scale at which the effect is considered to be felt.

Ecological Desk Study Methodology

- 8.5.28 The full ecological desk study methodology is provided within **ES Vol 3, Appendix 8.1**. The ecological desk study was undertaken in accordance with the best practice methodologies current at the time of commissioning (Partnership for Biodiversity in Planning, 2019) (Ref 8-50).

Field Survey Methodology

- 8.5.29 A suite of baseline ecological surveys have been undertaken to inform the ES (and associated documents). The field survey effort and scope is presented in **Table 8.7** below, and reflects what is currently considered to be appropriate and proportionate to inform the EclA process based on CIEEM guidance and professional judgement.
- 8.5.30 Detailed survey methodologies are provided within the associated Appendix (ES Vol 3).

Table 8.7: Ecological Survey, Methodology and Schedule

Survey	Summary of Methodology	Sites 1, 3-10, and BESS	Site 2	Additional land parcels in Site 1	Minor access requirement/ highway improvement areas	CRC	Minor CRC amendments, Sub-Site 1D, highway improvement areas
Extended habitat survey	<p>Habitats were described and mapped following standard UK Habitats survey methodology (UKHab Ltd, 2023 (Ref 8-51)). The full extended habitat survey methodology is provided within ES Vol 3, Appendix 8.1. Habitat maps are provided in ES Vol 2, Figure 8.6.</p> <p>The surveys were extended to record field signs or notable ecological features such as protected species and invasive non-native species.</p> <p>The surveys were extended to include an assessment of habitat condition, in accordance with the guidelines set out within the Statutory Biodiversity Metric Technical Annex 1: Habitat Condition Assessment Sheets and Methodology (Ref 8-52). Habitat condition results are provided within the BNG Assessment Report which will accompany the DCO submission.</p>	May to September 2024	April 2025	August to September 2025	August to September 2025	August to September 2025	January 2026
Modular River Physical (MoRPh) survey	<p>MoRPh surveys of all watercourses crossed by the CRC or within 10m of the Order Limits. In adherence to MoRPh field survey methodology (Ref 8-53) and the River Type desk-based exercise (Ref 8-54).</p> <p>Survey results informed the watercourse BNG calculations and are included within the BNG Assessment Report which will accompany the DCO submission.</p>	September and October 2025					
Invertebrate scoping assessment	<p>Sites will be subject to a broad protocol for sampling following that developed for the Invertebrate Species-habitat Information System (ISIS) (Drake et al 2007) (Ref 8-55). Further information provided within ES Vol 3, Appendix 8.2</p>	August & September 2024	August & September 2025	N/A			
Aquatic invertebrate, Fish & White-	<p>Field surveys comprised bankside walkover appraisals at elected crossing locations. The River Habitat Survey (RHS) (Ref 8-56); which provides a standardised</p>	September and October 2025					

Survey	Summary of Methodology	Sites 1, 3-10, and BESS	Site 2	Additional land parcels in Site 1	Minor access requirement/highway improvement areas	CRC	Minor CRC amendments, Sub-Site 1D, highway improvement areas
Clawed crayfish assessment	<p>framework for evaluating habitat quality, was applied to support habitat characterisation during this assessment. The RHS documented features of relevance to fish populations, In addition, the methodology incorporated guidance from the EA's <i>Fisheries Technical Manual 4: Restoration of Riverine Salmonid Habitat (Ref 8-57)</i>, ensuring alignment with best practices for identifying and enhancing fish-supporting environments.</p> <p>Habitat suitability for white-clawed crayfish was assessed in accordance with EA technical guidance (Ref 8-58). Further information provided within ES Vol 3, Appendix 8.9.</p>						
Great crested newt survey	<p>Ponds within 250m of the Site parcels (where access allowed) / CRC were assessed for their suitability to support GCN following the Habitat Suitability Index (HSI) assessment methodology. The HSI assessment follows the Amphibian and Reptile Groups of the United Kingdom (ARG UK) methodology (Ref 8-59), which is a refined version of the Oldham et al. 2000 (Ref 8-60) method.</p> <p>Following from the HSI assessment, all suitable (and accessible) ponds were tested for GCN eDNA. The technique for determining presence/absence of GCN uses Polymerase Chain Reaction (PCR) laboratory techniques to detect the species eDNA within water samples. The protocol for sampling followed that outlined within Biggs et al, 2014 (Ref 8-61).</p> <p>Further information provided within ES Vol 3, Appendix 8.3.</p>	Accessible ponds within the Sites/CRC and within 250m were surveyed in June 2024 and June 2025.					
Breeding bird survey	<p>Breeding bird surveys are being undertaken within the Sites, methods were based on the standard breeding bird survey and common bird census methods developed by the British Trust for Ornithology (BTO) (Gilbert et al. 1998) (Ref 8-62), and updated Bird Survey</p>	Late May to July 2024 (x3 surveys)	April to July 2025 (x6 surveys)	May to July 2025 (x6 surveys)	N/A		

Survey	Summary of Methodology	Sites 1, 3-10, and BESS	Site 2	Additional land parcels in Site 1	Minor access requirement/highway improvement areas	CRC	Minor CRC amendments, Sub-Site 1D, highway improvement areas
	Guidelines methodology (Ref 8-63). Further information provided within ES Vol 3, Appendix 8.4.	followed by April to May 2025 (x3 surveys)					
Ground Level Tree Assessments (GLTA) for Roosting Bats	Daytime ground-based assessment of all trees within the Order Limits for potential to support roosting bats. The GLTA was undertaken in adherence with Bat Surveys for Professional Ecologists (Ref 8-64). Further information provided within ES Vol 3, Appendix 8.5.	April 2025		August – September 2025			January 2026
Bat activity survey	Night-time Bat Walkover (NBW) surveys comprised 16 transect routes in total, and were implemented on a seasonal basis (Spring, Summer, and Autumn) and in accordance with the most recent guidance from the Bat Conservation Trust (BCT) guidelines, 4th edition (Collins, 2023). A total of 29 automated bat detectors were deployed across the Site each month, from April to October. Surveys were conducted in accordance with BCT guidelines. Further information provided within ES Vol 3, Appendix 8.6.	September and October 2024, April to October 2025	April to October 2025	May –to October 2025	N/A		
Badger survey	Badger surveys were undertaken concurrently with the habitat surveys within the Site. Particular attention was paid to areas where the vegetation and/or the topography offered suitable sett sites. Holes attributed to badger were classified as well used, partially used or disused in line with the methodology given in the National Badger Survey (Cresswell et al., 1990) (Ref 8-69); Wilson et al., 1997 (Ref 8-70)) Further information provided within ES Vol 3, Appendix 8.7.	April-September 2024	April 2025	August – September 2025			January 2026

Survey	Summary of Methodology	Sites 1, 3-10, and BESS	Site 2	Additional land parcels in Site 1	Minor access requirement/highway improvement areas	CRC	Minor CRC amendments, Sub-Site 1D, highway improvement areas
Otter Survey	An assessment of the suitability of habitats was made for otter in conjunction with the water vole habitat suitability assessment and targeted water vole surveys, field signs of otter were also recorded. This survey conformed to standard methodology for otter survey (Chanin, 2003) (Ref 8-71). Further information provided within ES Vol 1, Appendix 8.8.	September 2025					January 2026
Water vole survey	A water vole habitat suitability assessment followed methodology which was originally presented by in the CIEEM's In Practice (Issue 122, Dec 2023) (Ref 8-72). Targeted surveys followed current guidance (Dean, M et al, 2018) (Ref 8-73). Further information provided within ES Vol 3, Appendix 8.8.	September 2025					January 2026

8.6 Baseline Conditions and Ecological Evaluation

- 8.6.1 The Scheme is located within the administrative areas of Norfolk County Council (NCC) and South Norfolk Council (SNC) who are the host authorities. A full description of the Order limits is provided in **ES: Chapter 4 The Scheme [EN0110014/APP/6.1.4]**.
- 8.6.2 This section provides ecological information describing the current ecological baseline conditions present across the Scheme derived from desk study and field survey data, together with a summary of the kinds of impacts on ecological features which may arise from the Scheme.

Ecological Desk Study

- 8.6.3 A summary of the ecological desk study results is provided below; further detailed information is available in **ES: Appendix 8.1 Ecological Desk Study & Extended Habitat Survey [EN0110014/APP/6.3.8.1]**. Supported by **ES: Figures 8.1 – 8.5 [EN0110014/APP/6.2.8.1 to 6.2.8.5]**.

International/European Statutory Designated Sites

- 8.6.4 No international/European designated sites for nature conservation are present within the Order Limits. Internationally/European designated sites present within 10km of the Order Limits are described in **Table 8.8**. Further detailed information regarding site descriptions and qualifying criteria is provided within **Appendix 8.1**.

Table 8.81: International/European Designated Sites within 10km of the Order Limits

Designated Site Name	Distance & Direction from the Closest Sub-SiteSub-Site	Distance & Direction from the Closest CRC/Highway Improvement Area
Norfolk Valley Fens SAC	2.38km NW of Sub-SiteSub-Site 4A	3.2km NW of CRC11
The Broads SAC	6.65km NE of Sub-Site 10E	6.85km NE of CRC14
Broadland SPA	6.65km NE of Sub-Site 10E (Ref 8-74)	6.85km NE of CRC14
Broadland Ramsar	6.65km NE of Sub-Site 10E (Ref 8-75)	6.85km NE of CRC14

National & Local Statutory Designated Sites

- 8.6.5 No national or local statutory designated sites for nature conservation are present within the Order Limits. Ten SSSI's and three LNR's are present within 5km of the Order Limits (Ref 8-76), including Shotesham-Woodton Hornbeam Woods SSSI located adjacent to Sub-Sites 7F, 7G, 7H, and Pulham Market Big Wood SSSI and Hedenham Wood SSSI located in close proximity to the Order Limits.

8.6.6 Data regarding the closest national or local statutory designated sites for nature conservation, within 5km of the Order Limits, is provided in **Table 8.9** below. Further detailed information regarding site descriptions and qualifying criteria is provided within **Appendix 8.1**.

Table 88.9: National and Local Statutory Designated Sites within 5km of the Order Limits

Designated Site Name	Distance & Direction from the Closest Sub-Site	Distance & Direction from the Closest CRC/Highway Improvement Area
Shotesham-Woodton Hornbeam Woods SSSI	SSSI Unit 1: 0.14km W of Sub-Site 8B SSSI Unit 2: adjacent to Sub-Sites 7F & 7G SSSI Unit 3: adjacent to Sub-Site 7H SSSI Unit 4: 0.55km S of Sub-Site 7K	SSSI Unit 1: 0.45km NW of CRC 10 SSSI Unit 2: 0.10km W of CRC 10 SSSI Unit 3: 0.15km N of CRC8 SSSI Unit 4: 0.31km S of CRC8
Pulham Market Big Wood SSSI	1.20km E of Sub-Site 2C	0.10km E of CRC4
Hedenham Wood SSSI	0.14km E of Sub-Site 10B	0.50km S of CRC14
Fritton Common SSSI	0.60km S of Sub-Site 5B	0.85km SE of CRC4
Tindall Wood, Ditchingham SSSI	1.75km SE of Sub-Site 10B	2.1km SE of CRC14
Shotesham Common SSSI	1.81km NW of Sub-Site 8B	2.20km NW of CRC13
Smockhill Common LNR	1.95km NW of Sub-Site 7D	2.20km NW of CRC12
Sexton Wood SSSI	2.20km S of Sub-Site 10A	3.30km S of CRC9
Aslacton Parish Land SSSI	2.40km NW of Sub-Site 1B	3.20km NW of CRC1
Flordon Common SSSI	2.40km NW Sub-Site 4A	3.22km NW of CRC11
Bath Hills LNR	3.72km SE of Sub-Site 10A	5.10km S of CRC14
Forngett Meadows SSSI	2.83km N of Sub-Site 1B	3.50km W of CRC4
Broome Heath LNR	4.72km SE of Sub-Site 10B	5.10km SE of CRC14

Non-Statutory Designated Sites

8.6.7 Two CWSs are present within the Order Limits, these being: Lower Spring Wood, partially located within CRC9, and Fritton Grange Meadows CWS partially located within CRC7. Four Roadside Nature Reserves (RNRs) are also partially located within the Order Limits, these being: Bussey's Loke RNR (Sub-Site 7G), Market Lane RNR (Sub-Site 8A), Parkers Lane RNR (Area 1) (CRC4), and Parkers Lane RNR (Area 2) (CRC4).

8.6.8 In addition to the non-statutory designated sites discussed above, a further 24, are located within 500m of the Order Limits. Data regarding non-statutory

designated sites for nature conservation within 500m is provided in **Table 8.10** below. Further detailed information regarding site descriptions, qualifying criteria and additional sites present between 0.5km and 2km from the Site is provided within **ES Vol III, Chapter 8, Appendix 8.1: Ecological Desk Study & Extended Habitat Survey [EN0110014/ APP/6.3.8.1]**.

Table 8.10: Non-Statutory Designated Sites within 2km of the Order Limits

Designated Site Name	Distance & Direction from the Closest Sub-Site	Distance & Direction from the Closest CRC/Highway Improvement Area
Fritton Grange Meadows CWS	adjacent to Sub-Site 7B	Partially located within CRC7
Lower Spring Wood CWS	0.85km east of Sub-Site 7K	Partially located within CRC9
Bussey's Loke RNR	Partially located within Sub-Site 7G	0.3km SE of CRC10
Market Lane RNR	Partially located within Site 8A	0.1km E of CRC10
Parkers Lane RNR (Area 1)	1.5km south of Sub-Site 4B	Partially located within CRC4
Parkers Lane RNR (Area 2)	2km south of Sub-Site 4B	Partially located within CRC4
Spring Wood, Hempnall CWS	Adjacent to Site 3	0.3km E of CRC6
Saxlingham Grove CWS	Adjacent to Sub-Site 7F	0.2km W of CRC10
Pope's Wood CWS	Adjacent to Sub-Site 7C	0.02km E of CRC11
Lodge Road RNR	Adjacent to Sub-Site 2B	Adjacent to CRC2
D'Oyly's Grove CWS	Adjacent to Sub-Site 7C	0.3km S of CRC12
Fylands Road RNR	Adjacent to Sub-Sites 7I & 7J	0.4km CRC8
Woodton Road RNR (24)	Adjacent Sub-Site 7K	0.9km N of CRC08
Woodton Road RNR (16)	0.13km N Sub-Site 7k	0.9km N of CRC08
The Krons Meadows CWS	0.2km SE of Sub-Site 7B	0.07km NE from CRC7
Tyrrel's Wood and New Plantation CWS	3.3km S of Sub-Site 5A.	0.1km E of CRC4
Beckett's Wood CWS	0.6km SE of Sub-Site 7L	0.1km S of CRC9
Nunn's Grove CWS	0.5km SW of Sub-Site 9	0.1km S CRC13
Brooke Wood CWS	0.1km W of Sub-Site 9	0.2km N of CRC13
Pye's Covert & Privett Plantation CWS	0.2km E of Sub-Site 8B	0.2km N of CRC13
Backwood Lane RNR	0.6km W of Site 9	0.2km N of CRC13
Tasburgh Red Poll Meadow CWS	0.3km N of Sub-Site 4A	1.4km W of CRC11
Wood Green CWS	2.3km south of Sub-Site 5A	0.4km east of CRC4
Round Wood CWS	0.9km west of Sub-Site 10C	0.4km N of CRC9
Rhees Green RNR	0.6km south of Sub-Site 4B	0.4km W of CRC4
Park Plantation CWS	0.4km E of Sub-Site 9	1.3km E of CRC13
Woodton Road RNR (25)	0.4km N of Sub-Site 7K	0.9km S of CRC13
Spring Wood CWS	0.83km W of Sub-Site 7L	0.42km north of CRC9
Brooke Road RNR	0.5km NW of Sub-Site 8B	0.9km NW of CRC13
Pecks Plantation CWS	0.5km W of Sub-Site 4A	2.1km NW of CRC4
Seething Observatory CWS	0.7km W of Sub-Site 10B	1.2km W of CRC14
Fox Burrows CWS	0.7km SW of Sub-Site 10A	1.8km S of CRC9
Great Wood CWS	0.7km W of Sub-Site 8B	1km NW of CRC10
Howe Lane CWS	0.7km N of Sub-Site 8B	0.9km N of CRC13
Long Row CWS	0.9km SE of Sub-Site 10B	1.2km SE of CRC14
Church Road Wood CWS	0.9km W of Site 9	1.9km E of CRC13

Designated Site Name	Distance & Direction from the Closest Sub-Site	Distance & Direction from the Closest CRC/Highway Improvement Area
Green Man Lane, Kirstead CWS	1km N of Sub-Site 10E	1.4km N CRC9
Kirstead CWS		
Creasy's Grove CWS	1.1km N of Sub-Site 8B	1.5km N of CRC13
Kirstead Hall Wood CWS	1.2km NE of Site 9	2.1km NE of CRC13
Grub Street RNR	1.2km N of Sub-Site 8B	1.8km NW of CRC13
Birch Way RNR	1.45km E of Sub-Site 10E	3.55km E of CRC9
Tibenham Airfield CWS	1.2km W of Sub-Site 1A	1.8km W of CRC1
Common Road RNR	1.1km NE of Sub-Site 1B	1.5km W of CRC4
Low Road RNR	1.2km SW of site 3	1.9km E of CRC4
Cooper's Grove CWS	1.6km SE of Sub-Site 10B	1.9km SE of CRC14
King's Road RNR	1.7km S of Sub-Site 7K	1.4km S of CRC8
Ditchingham Park CWS	1.7km S of Sub-Site 10B	2.3km SE of CRC14
Hill Farm Woodland CWS	1.7km SW of Sub-Site 4A	2.2km W of CRC4
Howe Grove CWS	1.8km N of Sub-Site 8B	2km N of CRC13
Gissing Common CWS	1.3km SW of the BESS	2.1km SW of CRC1
Shotesham Road RNR	1km N of Sub-Site 7D	1.7km N of CRC12
Atlas Gravel Working CWS	1.9km N of Site 9	2.5km N of CRC13
Smockmill Common CWS	1.9km N of Sub-Site 7C	2.2km N of CRC12
Primrose Hill RNR	2.23k S of Sub-Site 2A	1.8km SW of LSR3

Extended Habitat Survey Results

8.6.9 Details of the habitat recorded within the Sites and BESS areas (operational land) only is shown below in **Table 8.11**. The details and descriptions of each habitat is located in **ES: Appendix 8.1 Ecological Desk Study & Extended Habitat Survey [EN0110014/ APP/6.3.8.1]**.

Table 8.11: UKHab Classification habitat types recorded within the Operational Sites

UK Hab Classification Habitat Type	Area (ha) / Length (km)	% of Solar PV Site Areas	Condition Assessment Score*	Ecological Importance	Justification
Cropland					
c1 - Arable/horticulture (600 - Ploughed, 510 – bare ground)	29.86	2.83	Condition Assessment - N/A	Site	Non-priority habitat
c1a5 - Arable field margins - tussocky	5.79	0.55	Condition Assessment - N/A	Local	Priority Habitat
c1a6 - Arable field margins – pollen and nectar	5.75	0.54	Condition Assessment - N/A	Local	Priority Habitat

UK Hab Classification Habitat Type	Area (ha) / Length (km)	% of Solar PV Site Areas	Condition Assessment Score*	Ecological Importance	Justification
c1a8 - Arable field margins – wild bird mix	5.30	0.50	Condition Assessment - N/A	Local	Priority Habitat
c1b – Temporary grass and clover leys	114.76	10.88	Condition Assessment - N/A	Site	Non-priority habitat
c1c - Cereal crops	452.83	42.94	Condition Assessment - N/A	Site	Non-priority habitat
c1c5 - Winter stubble	88.61	8.40	Condition Assessment - N/A	Site	Non-priority habitat
C1c6 – Arable fields – wild bird mix	3.36	0.32	Condition Assessment - N/A	Site	Non-priority habitat
c1c7 - Other cereal crops	161.11	15.28	Condition Assessment - N/A	Site	Non-priority habitat
c1c8 - Arable fields - pollen and nectar	2.07	0.20	Condition Assessment - N/A	Site	Non-priority habitat
c1d5 - Miscanthus	17.70	1.68	Condition Assessment - N/A	Site	Non-priority habitat
c1d8 - Other non-cereal crops	61.33	5.82	Condition Assessment - N/A	Site	Non-priority habitat
Wetland					
f2e - Reedbed	0.09	0.01	Moderate	Local	Priority Habitat
Grassland					
g3c - Other neutral grassland	29.84	2.83	Good/Moderate/Poor	Site	Non-priority habitat
g4 - Modified grassland	60.62	5.75	Good/Moderate/Poor	Site	Non-priority habitat
Heathland and Shrub					
h3d - Bramble scrub	0.23	0.02	Condition Assessment – N/A	Site	Non-priority habitat
h3f – Hawthorn scrub	0.02	0.00	Moderate	Site	Non-priority habitat
h3h - Mixed scrub	0.55	0.05	Good/Moderate	Site	Non-priority habitat
h3j - Willow scrub	0.02	0.00	Good/Moderate	Site	Non-priority habitat
Waterbodies/watercourses					
r1g - Other standing water (pond – priority habitat)	0.74	0.07	Good/Moderate/Poor	Local	Priority Habitat
Urban					
u1b – Developed land, sealed surface	6.12	0.58	Condition Assessment – N/A	Site	Non-priority habitat
u1b6 – other developed land	0.35	0.03	Condition Assessment – N/A	Site	Non-priority habitat

UK Hab Classification Habitat Type	Area (ha) / Length (km)	% of Solar PV Site Areas	Condition Assessment Score*	Ecological Importance	Justification
u1c - Artificial unvegetated, unsealed surface	0.73	0.07	Condition Assessment – N/A	Site	Non-priority habitat
Woodland					
w1f - Lowland mixed deciduous woodland	1.08	0.10	Moderate	Local	Priority Habitat
w1f7 - Other Lowland mixed deciduous woodland	0.11	0.01	Poor	Site	Priority habitat
w1g - Other broadleaved woodland	2.86	0.27	Good/Moderate/Poor	Site	Non-priority habitat
w1h - Other woodland; mixed	0.29	0.03	Good/Moderate	Site	Non-priority habitat
w1h5 - Other woodland; mixed; mainly broadleaved	1.69	0.16	Good/Moderate	Site	Non-priority habitat
w2c – Other coniferous woodland	0.01	0.00	Good/Moderate	Site	Non-priority habitat
w2b - Other Scot's Pine woodland	0.10	0.01	Good/Moderate	Site	Non-priority habitat
Linear Habitats (Terrestrial)					
h2a - Native hedgerow (hedgerow with trees)	8.55	14.30	Good/Moderate/Poor	Local	Priority Habitat
h2a5 - Species-rich native hedgerow (hedgerow with trees)	39.41	62.5	Good	Local	Priority Habitat
h2a6 - Other native hedgerow (hedgerow with trees)	12.34	20.64	Good/Moderate/Poor	Local	Priority Habitat
w1g - Other broadleaved woodland (Line of trees, Ecologically Valuable Line of Trees)	1.47	2.45	Good	Local	Priority Habitat
w1h - Other woodland; mixed (Line of trees)	0.02	0.03	Good/Moderate/Poor	Site	Non-priority habitat
Linear Habitats (Watercourses)					
r1g - Other standing water (Ditch)	8.2	100	Good/Moderate/Poor	Site	Non-priority habitat

*Where habitats comprise more than one parcel, all conditions recorded across the Site is presented.

8.6.10 Details of the habitat recorded within the temporary impact areas (CRC/Highway Works) only is shown below in **Table 8.12**. All habitats recorded will be subject to temporary impacts only. The details and descriptions of each habitat is located in Appendix 8.1.

Table 8.12: UKHab Classification habitat types recorded within the CRC/Highway Works

UK Hab Classification Habitat Type	Area (ha) / Length (km)	% of CRC Areas	Condition Assessment Score	Ecological Importance	Justification
Cropland					
c1a – Arable field margin	0.01	0.01	Condition Assessment - N/A	Local	Priority Habitat
c1a5 - Arable field margins - tussocky	0.08	0.05	Condition Assessment - N/A	Local	Priority Habitat
c1a6 - Arable field margins – pollen and nectar	0.10	0.06	Condition Assessment - N/A	Local	Priority Habitat
c1a8 - Arable field margins – wild bird mix	0.22	0.14	Condition Assessment - N/A	Local	Priority habitat
c1b5 – Rye-grass and clover ley	6.43	4.06	Condition Assessment - N/A	Site	Non-priority habitat
c1c - Cereal crops	62.29	39.34	Condition Assessment - N/A	Site	Non-priority habitat
c1c5 - Winter stubble	17.95	11.34	Condition Assessment - N/A	Site	Non-priority habitat
C1c6 – Arable fields – wild bird mix	2.07	1.31	Condition Assessment - N/A	Site	Non-priority habitat
c1c7 - Other cereal crops	18.02	11.38	Condition Assessment - N/A	Site	Non-priority habitat
c1c8 - Arable fields - pollen and nectar	0.70	0.44	Condition Assessment - N/A	Site	Non-priority habitat
c1d – Non-cereal crops	1.58	1.00	Condition Assessment - N/A	Site	Non-priority habitat
c1d8 - Other non-cereal crops	18.92	11.95	Condition Assessment - N/A	Site	Non-priority habitat
Wetland					
f2a – Lowland fens	0.72	0.45	Good/Poor	County	Irreplaceable Habitat
Grassland					
g3c - Other neutral grassland	13.83	8.74	Good/Moderate/Poor	Site	Non-priority habitat
g3c5 - Arrhenatherum neutral grassland	0.02	0.01	Moderate	Site	Non-priority habitat
g4 - Modified grassland	8.87	5.60	Good/Moderate/Poor	Site	Non-priority habitat

UK Hab Classification Habitat Type	Area (ha) / Length (km)	% of CRC Areas	Condition Assessment Score	Ecological Importance	Justification
Heathland and Shrub					
h3d - Bramble scrub	0.01	0.01	Condition Assessment – N/A	Site	Non-priority habitat
h3h - Mixed scrub	0.17	0.11	Good/Moderate/Poor	Site	Non-priority habitat
h3j - Willow scrub	0.14	0.09	Good	Site	Non-priority habitat
Urban					
u1b – Developed land, sealed surface	5.92	3.71	Condition Assessment – N/A	Site	Non-priority habitat
u1b6 – other developed land	0.11	0.07	Condition Assessment – N/A	Site	Non-priority habitat
u1c - Artificial unvegetated, unsealed surface	0.37	0.24	Condition Assessment – N/A	Site	Non-priority habitat
Woodland					
w1d - Wet woodland	0.47	0.30	Good/Moderate	Local	Priority Habitat
w1d5 - Alder woodland on floodplain (H91E0)	0.23	0.14	Moderate	Local	Priority Habitat
w1f7 - Other Lowland mixed deciduous woodland	0.10	0.06	Poor	Local	Priority Habitat
w1g - Other broadleaved woodland	0.08	0.05	Moderate/Poor	Site	Non-priority habitat
Linear habitats - Habitats					
h2a - Native hedgerow	4.40	33.89	Good/Moderate	Local	Priority Habitat
h2a5 - Species-rich native hedgerow	7.75	59.71	Good	Local	Priority Habitat
w1g - Other broadleaved woodland (Line of trees)	0.83	6.39	Good	Local	Priority Habitat
Linear habitats – Watercourse					
r1 – Standing open water / canal	0.22	2.47	Good	Site	Non-priority habitat
r1g - Other standing water (Ditches)	8.42	94.71	Good/Moderate/Poor	Site	Non-priority habitat
r2b – Other river /stream	0.25	2.81	Good	Site	Non-priority habitat

Faunal Species

- 8.6.11 **Table 8.13** below provides a summary of protected and notable species (or groups of species) that have been identified as present, or potentially present within the Order Limits as determined through the desk study and/or through ecological field surveys.
- 8.6.12 **Table 8.13** also provides a preliminary assessment of each species' (or species group's) geographic importance, based on its rarity, known distribution, legislative/policy status, and suitability of habitat present (where appropriate).
- 8.6.13 The detailed results of the desk study, detailed survey methodologies and findings of the species-specific surveys conducted, are provided within the specific Appendices (as referenced in **Table 8.13**).

Table 8.13: Protected and Notable Species present or potentially present within the Order Limits and Importance

Species/Species Group	Summary of Results	Legislation / Status	Ecological Importance	Associated Appendix
Terrestrial Invertebrates	<p>A relatively low proportion of recorded invertebrates have specialist habitat requirements. Of 462 species recorded, only 39 are specialists. The specialist habitat requirements are mostly those of open habitats.</p> <p>A total of twelve rare and scarce species were recorded during the surveys. In general terms, the rare and scarce species were of two kinds: those that are likely to be under-recorded because they come from taxonomic groups that are difficult for non-specialists to identify, and those that have undergone recent range expansions and whose status may justify revision.</p> <p>The data search provided 318 individual post-1990 records for 70 species; 50 of these are widespread but declining moth species with priority species status and are mostly habitat generalists. The 20 rare and scarce species include four specialists: two species associated with scrub edge, one species with rich flower resources, and one species of bare sand and chalk.</p>	<p>Multiple invertebrate species receive full legal protection listed under the Conservation of Habitats and Species Regulations 2017 (as amended) (the Habitats Regs) and the Wildlife and Countryside Act 1981 (as amended) (W&CA). A variety of invertebrates are listed as priority species under priority species under S.41 of the NERC Act 2006</p>	Local	ES Vol 3, Appendix 8.2
Aquatic Invertebrates	<p>Aquatic invertebrate records from the Ecology & Fish Data Explorer and Norfolk Biodiversity Information Services indicate a diverse assemblage of aquatic macroinvertebrates within nearby hydrologically connected watercourses, principally the River Tas, Pulham Beck and its tributaries. Although no macroinvertebrate surveys have been undertaken within the Order Limits, these existing records suggest that sensitive taxa, including mayflies (Ephemeroptera) and caddisflies (Trichoptera), are likely to occur in the flowing sections of Hempnall Beck and some of its principal tributaries.</p> <p>Dragonfly and damselfly species (Odonata) have been frequently recorded as adults within 2 km of the Order Limits. It is likely that larvae are also present in suitable aquatic habitats within the Order Limits, including ditches, ponds, fen, and areas of slow-moving water.</p> <p>In contrast, ephemeral ditches and isolated pools are more likely to support lower-diversity assemblages comprising species tolerant of harsher conditions, typical of lowland agricultural watercourses. These habitats typically favour opportunistic and pollution-tolerant taxa such as oligochaete worms, non-biting midges (Chironomidae), and hardy freshwater snails.</p>	<p>Based on Local Biodiversity Records Center data, a small number of protected aquatic invertebrates have been recorded in the vicinity of the Order Limits. These include Norfolk Hawker is protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and is listed as a Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities Act 2006. The Scarce Emerald Damselfly is listed as Species of Principal Importance under Section 41 of the NERC Act and is recognised as nationally scarce/notable species.</p>	Local	ES Vol 3, Appendix 8.9
White-clawed Crayfish	<p>No records of white-clawed crayfish were identified within the Order Limits on the NBN Atlas or Local Biodiversity Records Centre datasets. A single</p>	<p>The white-clawed crayfish <i>Austropotamobius pallipes</i> is</p>	Local	ES Vol 3, Appendix 8.9

Species/Species Group	Summary of Results	Legislation / Status	Ecological Importance	Associated Appendix
	<p>Environment Agency record is located approximately 6km downstream on the River Tas; however, aside from one record from 2020, all other records within the catchment are over 40 years old, indicating historic occurrence. One record of the invasive signal crayfish was provided from 2005 within a tributary of Hempnall Beck, 1.5km to the south-west of Site 3. Field surveys of Hempnall Beck and its tributaries recorded no burrows, exuviae, carcasses, or other crayfish field signs. Habitat suitability within the surveyed crossing reaches was assessed as low due to extensive fine sediment deposition, embedded substrates, limited stable refugia, and the episodic or ephemeral nature of several ditch sections. While some downstream sections contain occasional cobbles, shallow riffles, and woody material, these features are compromised by siltation and unstable banks. Overall, available data indicate the historic presence of white-clawed crayfish within the wider Tas catchment, but this is significantly reduced as a consequence of signal crayfish. There is no evidence to suggest that white-clawed crayfish is present within or immediately adjacent to the surveyed reaches; nevertheless, appropriate biosecurity, pollution prevention, and sediment control measures should be implemented to safeguard downstream habitats.</p>	<p>protected under the Wildlife and Countryside Act 1981, Schedule 5, the Conservation of Habitats and Species Regulations 2017, Schedule 2, and is listed as a species of principal importance under Section 41 of the Natural Environment and Rural Communities Act 2006.</p>		
Freshwater Fish	<p>No fish records were identified within the survey areas; however, hydrologically connected monitoring sites recorded typical lowland river species within the last 10 years, including brown/sea trout, three-spined stickleback, European eel, stone loach, dace, chub and bullhead were consistently recorded in connected reaches of the River Tas and Hempnall Beck, while eel was present in low numbers. Older Local Biodiversity Records Centre data (over 10 years old) from 3–6 km upstream and downstream include carp, trout, bullhead, and eel highlight long-term use. Overall, the wider catchment supports a typical flowing-water fish assemblage, and fish are likely to be present in the main connected channels, though ephemeral ditches within the Order Limits are unlikely to support significant populations.</p>	<p>European eel is protected under the Eels (England and Wales) Regulations. Brown trout are protected under the Salmon and Freshwater Fisheries Act. A variety of freshwater fish are listed as priority species under priority species under S.41 of the NERC Act 2006, including European eel and brown trout and bullhead.</p>	Local	ES Vol 3, Appendix 8.9
GCN (amphibians)	<p>Out of the 249 ponds identified within the Order Limits or within 250m of the Order Limit boundaries, the following results were received/recorded:</p> <ul style="list-style-type: none"> • 1 returned positive eDNA results (including 6 within the Order Limits); • 34 returned negative eDNA results (including fourteen within the Order Limits); • 17 returned inconclusive eDNA results (including six within the Order Limits); 	<p>GCN are fully protected under the Habitats Regs and the W&CA. The species (and common toad <i>Bufo bufo</i>) is listed as priority species under S.41 of the NERC Act 2006 and is a Norfolk BAP species.</p>	Local	ES Vol 3, Appendix 8.3

Species/Species Group	Summary of Results	Legislation / Status	Ecological Importance	Associated Appendix
	<ul style="list-style-type: none"> 47 ponds were not surveyed as they were dry (including eight within the Order Limits); 5 ponds are no longer present (including one within the Order Limits); 109 ponds were considered positive for GCN on a precautionary basis; 7 were confirmed positive for GCN via desk study; and 9 were confirmed negative for GCN via desk study. <p>The Scheme layout primarily impacts suboptimal arable farmland habitats for GCN and avoids impacts upon unsuitable aquatic habitats, additionally, existing suitable terrestrial habitats such as woodland, hedgerows, lowland fen, scrub are largely avoided and incorporated within the Scheme design.</p>			
Widespread Reptiles	<p>The dominant arable habitats are considered to be of negligible value for widespread reptile species. However, field margin (hedgerow, ditch, permanent grassland margins), woodland edge/scrub, ponds, watercourse riparian zones, and lowland fen (located in CRC7) are likely to potentially support low numbers of widespread reptile species.</p> <p>Desk study provided one recent (2019) record of grass snake <i>Natrix helvetica</i> approximately 1.5km north of Site 1, and a further four historic records of the species. There were no recent (within 10 years) records for any other reptile species although five historic records exist for slow worm <i>Anguis fragilis</i> between 0.35km and 2km from the Order Limits boundaries.</p>	All UK reptiles are protected under the W&CA and are listed as priority species under S.41 of the NERC Act 2006.	Site (included for legislative compliance only)	N/A – outline mitigation strategy provided in ES Vol 3, Appendix 8.10
Breeding Birds	<p>Breeding Bird Surveys confirmed three Birds of Conservation Concern (BoCC) (Ref 8-77) red list species as breeding within the Order Limits: linnets, skylark and yellowhammer and three amber list species: dunnock, moorhen and whitethroat. Seven notable species were recorded as probable breeding species including W&CA Schedule 1 species: barn owl, BoCC red list greenfinch and amber list species: kestrel, mallard, song thrush, woodpigeon and wren.</p> <p>Seven notable species were recorded as probable breeding species within the survey area: WCA Schedule 1 species – barn owl, BoCC red list species – greenfinch and amber list species – kestrel, mallard, song thrush, woodpigeon and wren;</p> <p>The breeding bird assemblage recorded included a large proportion of species generally typical of arable farmland with associated field margins and small areas of grazing pasture bordered by hedgerows, interspersed with blocks of woodland, scrub, ponds, ditches and scattered trees;</p>	All breeding birds and their nests are protected under the W&CA, with species listed under Schedule 1 of the Act receiving increased levels of legal protection (during breeding periods). 48 bird species are listed as priority species under S.41 of the NERC Act 2006 and 16 as Norfolk BAP species.	Local	ES Vol 3, Appendix 8.4

Species/Species Group	Summary of Results	Legislation / Status	Ecological Importance	Associated Appendix
	<p>The data search returned a total of 26 bird species recorded in the previous ten years. These records including BoCC Red and Amber list species and also included records of seven W&CA Schedule 1 species in the previous ten years.</p> <p>Multiple turtle dove records were returned from across the search area including historic records (from 1980s) from Sub-Sites 1B, 2B, 3, 7C and a more recent entry of three records from Sub-Site 7L dating from 2004-2012.</p>			
Bats (roosting)	<p>A total of 621 trees, across the Order Limits, were identified as having Potential Roost Features (PRF) (PRF-M 213 & PRF-I 217) or could not be fully inspected and were categorised as Further Assessment Required (FAR) (191), following the initial GLTA survey.</p> <p>Surrounding woodlands are known to support bat roosts including barbastelle maternity colonies and the Order Limits fall within the published 6km Core Sustenance Zone (CSZ) of nine of these known colonies. It is therefore considered likely that the habitats within the Order Limits provide potentially provide additional suitable roosting resources for this species. Maternity colonies located at Tyrells Wood, Little Wood, Brooke Wood, Spring Wood, and Saxlingham Grove are present in close proximity to the Order Limits, with CSZ's for these roosts (combined) covering the entire Order Limits area.</p>	<p>Bats are fully protected under the under the Conservation of Habitats and Species Regulations 2017 (as amended) (the Habitats Regs) and the Wildlife and Countryside Act 1981 (as amended) (W&CA).</p> <p>Six species are listed as priority species under S.41 of the NERC Act 2006.</p> <p>The barbastelle bat is an Annex II species under the Habitat Regs and is classed as vulnerable in the UK by the IUCN. Whilst rare, East Anglia is a known stronghold for the species nationally, in particular in Norfolk, where it is a Norfolk BAP species.</p>	National	ES Vol 3, Appendix 8.5
Bats (foraging/commuting)	<p>A total of eleven species were recorded during the bat activity surveys, common pipistrelle being the most abundant recorded species. Species distribution and activity levels across the Order Limits was fairly consistent, with between seven and 10 species recorded at each location. Five species; Barbastelle, brown long-eared bat, common pipistrelle, soprano pipistrelle and noctule were recorded at every location. Barbastelle activity across the Order Limits was high, with this species being the third most abundant species. The species most frequently detected within their typical emergence times were common pipistrelle and soprano pipistrelle which is reflective of the fact that they are the most common species within the Order Limits; Sub-Site 7C had a noticeably higher number of potential emergence registrations than the other survey areas including five different species (common pipistrelle, soprano pipistrelle, noctule, brown long-eared bat and barbastelle). This location is adjacent to an off-site woodland block and close to Hempnall Beck with its associated woodland habitats.</p> <p>Barbastelle were most frequently detected within their emergence times at Sub-Site 7H on edge of woodland block less than 1km from Saxlingham Grove where there is a known roost; Site 3 adjacent to Spring Wood, Hempnall CWS (known barbastelle roost site and foraging area), and Location 13 (7C) which</p>		National	ES Vol 3, Appendix 8.6

Species/Species Group	Summary of Results	Legislation / Status	Ecological Importance	Associated Appendix
	<p>had the most diverse and highest number of species and is located c.2km west of Saxlingham Grove.</p> <p>Overall, the Order Limits are assessed as having national importance. Species distribution and abundance across the Sub-Sites was consistent, with no significant variation in numbers of species present at each static location. Notably, barbastelle activity was recorded at every location across the survey area.</p>			
Badger	<p>The results of the badger survey indicate the presence of partially active setts in Sub-Site 5A (main and Annex sett), Sub-Site 7A (potential outlier), and CRC7 (outlier). A relatively low amount of field signs were recorded during the surveys, and it is estimated that there are up to six badger clans partially utilising habitats within the Order Limits.</p> <p>The data search from Norfolk Biodiversity Information Service (NBIS) returned seven historical records of badgers dating from 1961 to 2024, from within a 2km buffer of the Order Limits boundary. Only two were received from within the last 10 years (relating to roadkill).</p> <p>The Scheme avoids habitat impacts within 30m of badger setts (active or currently disused). Suitable terrestrial habitats used for regular foraging and commuting purposes such as woodland, hedgerows, scrub are largely avoided and incorporated within the Scheme design.</p>	<p>Badgers are a widespread species in England but are protected under the Protection of Badgers Act 1992 (as amended).</p>	<p>Site (included for legislative compliance only)</p>	<p>ES Vol 3, Appendix 8.7</p>
Otter	<p>No otter field signs were present during the surveys, and no otter holts/resting places were recorded away from ditches/watercourses during surveys. There are three records of otters within 2km of the Order Limits boundaries from the past ten years.</p>	<p>Otters are fully protected under the Habitats Regs and W&CA. Otter listed as priority species under S.41 of the NERC Act 2006 and is a Norfolk BAP species.</p>	<p>Site (precautionary - included for legislative compliance only)</p>	<p>ES Vol 3, Appendix 8.8</p>
Water Vole	<p>The results of the water vole habitat suitability assessment revealed that 6% of ditches reached an 'Optimal' score, 56% of were 'Sub-Optimal', 32% were sink/unsuitable and 6% were unsuitable, targeted surveys recorded no water vole field signs, and the species is considered absent from the Order Limits. There are three recent records of water vole in the data search from 2015, however two records had no clear location associated with them (1km square grid references only). The nearest definitive record to the Order Limits was from a location in Fritton 940m south of Sub-Site 5b.</p>	<p>Water voles are fully protected under the W&CA. The species is listed as priority species under S.41 of the NERC Act 2006 and is a Norfolk BAP species.</p>	<p>Site (precautionary - included for legislative compliance only)</p>	<p>ES Vol 3, Appendix 8.8</p>

Species/Species Group	Summary of Results	Legislation / Status	Ecological Importance	Associated Appendix
Other Priority Mammals: Brown Hare, Harvest Mouse, Hedgehog & Polecat	<p>Field margin habitats (hedgerow, ditch, permanent grassland margins), woodland edge/scrub, ponds, watercourse riparian zones, and lowland fen (located in CRC7) are considered likely to support these species. In addition, the open arable fields will likely be regularly utilised by foraging hares.</p> <p>Desk study records include multiple brown hare and hedgehog records, including recent hare records within the Order Limits, historic hedgehog (three) and harvest mouse (one) records are also located within the Order Limits. Five recent records were received of polecat within 2km.</p>	<p>Although scoped out of the assessment baseline information is presented for legislative compliance as these species are listed as priority species under S.41 of the NERC Act 2006.</p>	<p>Site (included for legislative compliance only)</p>	<p>N/A – outline mitigation strategy provided in ES Vol 3, Appendix 8.10</p>
Invasive Non-native Species (INNS)	<p>The following invasive non-native species (INNS) listed within Schedule 9 of the W&CA have been recorded within the Order Limits:</p> <ul style="list-style-type: none"> • Giant hogweed located in Sub-Site 5a in five locations; and • Himalayan balsam located along the watercourses and lowland fen habitat in CRC7 	<p>Legally controlled invasive species listed under Schedule 9 of the W&CA and the Invasive Alien Species (Enforcement and Permitting) Order 2019.</p>	<p>N/A</p>	<p>N/A – outline mitigation strategy provided in ES Vol 3, Appendix 8.10</p>

Ecological Evaluation Summary

8.6.14 **Table 8.14** summarises the ecological evaluation of the IEFs. In line with CIEEM Guidelines, the impacts of the Scheme will only be fully assessed on those features considered Important IEF's; those with importance equal to, or higher than Local level. For those that are not considered IEF's, but mitigation is required to ensure legislative compliance, these have also been included.

Table 8.14. Summary of Ecological Evaluation

Ecological Feature	Ecological Importance	IEF?	Further Information
International/European designated sites within 10km: <ul style="list-style-type: none"> • Norfolk Valley Fens SAC • The Broads SAC • Broadland Ramsar (non-avian qualifying criteria) 	International/ European	Yes	
Broadland SPA and Ramsar (avian qualifying criteria)		No	Assessment scoped out see Table 8-1
National Designated sites SSSI's within 5km: <ul style="list-style-type: none"> • Pulham Market Big Wood SSSI • Aslacton Parish Land SSSI • Forncett Meadows SSSI • Fritton Common SSSI • Shotesham-Woodton Hornbeam Woods SSSI • Sexton Wood SSSI • Flordon Common SSSI • Shotesham Common SSSI • Hedenham Wood SSSI • Tindall Wood Ditchingham SSSI 	National	Yes	
LNR's within 2km: <ul style="list-style-type: none"> • Smockhill Common LNR • Bath Hills LNR • Broome Heath LNR 	Regional	Yes	
Non-Statutory designated sites CWS & RNR (multiple sites within 2km)	County	Yes	
Irreplaceable habitats within 2km <ul style="list-style-type: none"> • Lowland fen • Ancient woodland • Ancient/veteran trees 	County	Yes	Although included as Priority habitats under the NERC Act, lowland fen habitat is also classified as 'irreplaceable habitat' (see above) and therefore considered at a County level of importance.
Rivers (watercourses) within 250m	Regional	Yes	The River Tas is classified as a chalk stream. Due to the habitat's international rarity (85% of the world population is found in the south and east of England (Ref 8-78)) it is attributed Regional ecological importance. Whilst the Hempnall Beck (CRC7), and its tributary (CRC6), and

Ecological Feature	Ecological Importance	IEF?	Further Information
			Tas tributary (Sub-Sites 8A/8B) (and other watercourses) are not considered to be chalk streams as such, it is considered that these are of Regional importance due to their linkage to the Tas catchment (Ref 8-79).
Priority habitats within 250m which include the following recorded within and surrounding the Scheme: <ul style="list-style-type: none"> • Arable field margins • Native hedgerows • Ponds • Lowland deciduous woodland • Floodplain grazing marsh • Reedbeds • Traditional orchard • Open mosaic habitat 	Local	Yes	Some parcels of lowland deciduous woodland Priority habitats are also classified as 'ancient woodland', which is classified as 'irreplaceable habitat', Where woodland parcels are listed as Ancient Woodland these will be considered at a County level of importance.
Non-priority habitats within the Order Limits considered to be IEF: <ul style="list-style-type: none"> • Neutral grassland • Non-priority woodlands (mixed habitat types) • Scrub • Ditches 	Local	Yes	
Common and widespread habitats with negligible ecological value include: <ul style="list-style-type: none"> • Modified grassland • Arable farmland • Developed surfaces/artificial unsealed surfaces 	Site (precautionary approach)	No	
Terrestrial invertebrates	Local	Yes	
Aquatic invertebrates	Local	Yes	While legally protected and priority invertebrate species are present within the wider landscape, there is no evidence that the Order Limits support populations of County, Regional, National or International importance. The ecological importance of protected invertebrates in relation to the proposed development is therefore assessed as Local.
White-clawed crayfish	Local	Yes	A single Environment Agency record from 2020 exists approximately 6 km downstream of the Order Limits on the River Tas. No field signs or suitable habitat were observed within the Order Limits. Given the absence of recent records within or immediately adjacent to the Order Limits, and the low habitat suitability on the surveyed reaches, any population within the Order Limits itself is unlikely. In the wider catchment, the species is known to occur, but the Order Limits does not support a population of County, Regional, National, or International importance.

Ecological Feature	Ecological Importance	IEF?	Further Information
			Its importance in relation to the Order Limits is therefore Local.
Freshwater Fish	Local	Yes	Flowing reaches of Hempnall Beck and its southern tributary pass through the Order Limits, and habitat assessments and an aquatic walkover indicate these reaches provide suitable conditions for fish such as brown/sea trout, bullhead, and European eel. Although no fish were directly sampled, desk-study information from hydrologically connected monitoring sites shows long-term presence of these species downstream and upstream of the Order Limits. The quality of the flowing habitat suggests that individuals could potentially use these watercourse sections within the Order Limits for foraging, refuge. Given their widespread distribution in the Yare and Tas catchment, the ecological importance of these fish in relation to the Order Limits is considered Local.
Widespread reptiles	Site	No	Included for legislative compliance reasons only.
Great crested newt	Local	Yes	
Breeding birds	Local	Yes	
Roosting bats	National	Yes	
Commuting and foraging bats	National	Yes	
Badger	Site	No	Included for legislative compliance reasons only.
Water vole	Site (precautionary)	No	Included for legislative compliance reasons only.
Otter	Site (precautionary)	No	Included in for legislative compliance reasons only.
Priority Mammal Species	Site	No	Included in for legislative compliance reasons only.
INNS	Local	No	Included for legislative compliance reasons only.

Future Baseline

- 8.6.15 It is considered that in the absence of the Scheme the future ecological baseline conditions will remain relatively static. The majority of the Order Limits would continue to be managed under intensive agricultural crop rotation patterns (which includes the regular use of insecticides and artificial/natural fertilisers), with biodiversity value limited to existing field boundary habitats. Continued use of intensive arable systems may further degrade the soil and thereby the quality of the habitats further.
- 8.6.16 Current active Countryside Stewardship Schemes (CSS) or similar have finite timescales. Future provision of features such as agricultural field

margins will be subject to national land management policies and/or legislative processes at that time.

- 8.6.17 Climate change projections suggest that summers will become warmer and drier, with an expected increase in maximum summer temperatures and overall significant decline in summer precipitation over the lifespan of the Scheme (Ref 8-80). It is therefore considered likely that, without sensitive management, the remaining semi-natural habitats (and associated species) within the Order Limits (i.e. habitats not subject to intensive agricultural practices) may potentially be subject to deterioration in abundance and condition.
- 8.6.18 The Hempnall Beck which passes through CRC7 and CRC6 is currently classified as having 'poor ecological status' (Ref 8-81). Three out of four factors contributing to the prevention of the watercourse reaching 'good' status are attributable to agriculture and rural land management (the fourth being water industry impacts), most notably through high phosphate leaching from agricultural land due to fertiliser application, poor livestock management, and poor soil management (resulting in sedimentation and pollution in watercourses). It is considered likely that similar intensive farming practices will continue on the land identified for the Scheme, and that detrimental impacts upon watercourses will continue.
- 8.6.19 Biodiversity value may reduce along boundary features such as ditches and woodlands if the spread of invasive species such as giant hogweed and Himalayan balsam continues within the Order Limits, along watercourses and in fen habitat.
- 8.6.20 Current national trends in decline of overall species diversity and abundance are likely to continue, including for farmland bird species as a result of the pressures of intensive agricultural processes (such as the negative impacts on ground-nesting species through the wholesale adoption of winter wheat production). It is considered likely that slow but negative trends in abundance of species for which intensively managed farmland represents suboptimal habitat for species such as bats are highly unlikely to change due to the incompatibility of creating optimal habitat, for instance woodland, wetlands and species-rich meadows with intensive agriculture. However, existing green and blue corridors present within the Order Limits (river corridors, hedgerows, ditches, ponds) interspersed with existing woodland blocks will still provide some opportunities for a variety of species, albeit potentially subject to the increased stress and pressures associated with climate change.

8.7 Potential Impacts

- 8.7.1 Prior to the implementation of any mitigation (embedded or additional) which has been incorporated into the design and construction of the Scheme and set out in **Section 8.8** below, the Scheme has the potential to have an effect

on ecological receptors (beneficial or adverse), during the construction, operational and maintenance, and decommissioning phases as follows.

Construction

8.7.2 Potential construction phase impacts to ecological receptors associated with the Scheme include:

- Species mortality – through construction activities including land clearance involving plant/machinery and vehicles.
- Disturbance – temporary disturbance measures upon species or species groups via increased noise, movement, vehicle/machinery movement, vibration, increased human presence during construction operations.
- Habitat loss or change – the most notable change will be the adoption of existing agricultural fields (mainly arable) for the solar PV arrays, including habitat change to grassland beneath and surrounding the panels. Limited loss of hedgerows may occur for access purposes. Habitat enhancements associated with BNG which commence during construction.
- Habitat fragmentation – the severing or weakening of green and blue linear features within the Scheme such as hedgerows, ditches, and watercourses that provide landscape-wide ecological connectivity.
- Habitat degradation– Impacts upon terrestrial and aquatic habitats and species associated with the release of chemicals, sedimentation, contaminant mobilisation in surface water runoff, air quality impacts (deposition), direct impacts associated with construction-related activities through vehicle and machinery/plant movements or activities and associated chemicals or fuel required during this process and the introduction/spread of invasive plant species during construction works.

8.7.3 In addition, the adherence to BNG requirements will result in the creation of extensive areas of new habitat and strengthening or improvement of existing habitats within the Scheme during the construction phase. Non-quantifiable biodiversity gains will also be included within the Scheme during the construction phase, including species-specific provisions such as artificial nesting and shelter provision for multiple species.

8.7.4 The construction phase will also mark the point that all land within the Scheme that is to be removed from agricultural use will result in the ecologically beneficial cessation of regular cultivation (with associated surface soil run-off) and fertiliser, herbicide or pesticide applications.

Operation

8.7.5 Potential operational phase impacts to ecological receptors associated with the Scheme include:

- Species mortality – Limited risk of direct harm to species or species groups, minimal risks associated with the movement of vehicles around the Sites during maintenance activities. Panel and battery replacement works will occur during the operational lifespan of the Scheme, which will potentially present increase risks of direct harm.
- Disturbance – Operational disturbance may occur during panel and battery replacement works, and during periodic maintenance activities. The presence of low-level noise associated with electrical equipment may potentially cause very localised disturbance. Human disturbance within the Scheme during the operational period is considered to be reduced in comparison with the current intensive agricultural activities regularly undertaken at present across the Order Limits.
- Habitat loss/change – Significant adverse impacts upon habitats associated with the operational period are considered to be highly unlikely. Maintenance activities and the periodic replacement of panels and batteries would not be expected to entail habitat loss or change, since the supporting infrastructure (panel frames, access/maintenance tracks, site access points, and BESS Site) will already be in place.
- Habitat fragmentation – Sensitive management of linear features of ecological importance retained, created and enhanced during the construction phase, allowing a wide variety of species and species groups enhanced opportunities to utilise linear habitats within the Scheme to move throughout the wider landscape. Perimeter fencing will allow the large majority of native fauna to pass beneath (via gaps in fencing) and continue to utilise habitats within the Scheme in relative safety. However, fencing will deter larger species (e.g. deer species) from utilising areas within the Order Limits boundary.
- Habitat degradation – The risk of these impacts during the operation period are considered to be very low with the implementation of standard pollution prevention measures and application of the **Outline OEMP [EN0110014/APP/7.2]** (which includes commitments to avoid the spread of invasive species). However unlikely, further potential impact is presented by fire risk associated with the BESS, most notably through ground-water contamination from polluted fire water, contaminant mobilisation in surface water runoff, groundwater recharge, and direct impacts associated with operation-related maintenance activities (panel and battery replacement works) through vehicle and machinery/plant movements or activities. Potential impacts relating to contaminated water

will be addressed specifically in **ES: Chapter 9 Water Environment [EN0110014/APP/6.1.9]**.

- Electro Magnetic Fields (EMF's) – Although there is limited research to fully conclude an assessment of this issue at this stage, it is considered possible that, where a CRC passes through watercourses, EMFs emanating from underground electrical cables could impact certain aquatic species or species-groups which may be sensitive to such changes (most notably fish and aquatic invertebrates). Non-ecological impacts relating to EMFs, such as effects on human health, are addressed specifically in **ES: Chapter 17 Electromagnetic Fields [EN0110014/APP/6.1.17]**.
- Cessation of agricultural practices - During the operational phase habitats will be sensitively managed (in adherence to the LEMP), and the ground will have been converted from agricultural use to grassland mosaics across the large majority of the areas used for solar PV arrays. As a consequence, adverse effects associated with existing intensive practices, including unmitigated airborne particle/dust impacts and sediment run-off upon ecological receptors from seasonal cultivation and ploughing, manure/slurry and chemical fertiliser run-off upon adjacent ecological receptors (including entering groundwater and watercourses), herbicide and pesticide drift impacting surrounding ecological receptors and invertebrate populations within the Order Limits will be largely avoided throughout the operational phase.

8.7.6 Additionally, habitat maintenance operations (informed by ecological monitoring and undertaken throughout the operational period) will support the establishment and enhancement of habitats within the Scheme during the operational lifetime.

Decommissioning

8.7.7 Decommissioning impacts will be informed by national policy and legislative processes at that time. Considering the anticipated 60-year operational lifespan of the Scheme, it is not possible to categorically identify all potential decommissioning impact pathways at this time. However, potential decommissioning phase impacts to ecological receptors associated with the Scheme could include:

- Species mortality– through asset removal and associated habitat clearance with plant/machinery and vehicles.
- Disturbance – temporary disturbance measures upon species or species groups via increased noise, movement, vehicle or machinery movement, increased human presence during decommissioning operations.
- Habitat loss/change – assuming that the fields will be able to be returned to agricultural use upon decommissioning. However, this will be subject

to national policy and legislative processes at the time and any countryside stewardship and/or agricultural payment schemes in place at that time which may encourage the retention of particular habitat features such as field margins and watercourse buffers.

- Habitat fragmentation – The removal and decommissioning of the development infrastructure is unlikely to result in significant habitat fragmentation, and due to the implementation of established linear BNG measures (i.e. hedgerow planting) during the construction phase, the post-decommissioning connectivity will likely be stronger compared to the current baseline. Perimeter fence removal will enable larger species (e.g. deer) to utilise the entire Order Limits footprint again.
- Habitat degradation – Impacts upon terrestrial and aquatic habitats and species associated with the release of chemicals, sedimentation or direct impacts by vehicle and machinery/plant movements or activities and associated chemicals or fuel required during this process. Risks of introduction of invasive species associated with vehicle and machinery/plant movements.

8.8 Embedded Mitigation

The Mitigation Hierarchy

- 8.8.1 Whilst not yet a mandatory requirement (Ref 8-82) for NSIP applications to demonstrate a quantifiable Biodiversity Net Gain (BNG) of at least 10%, the DCO submission will provide evidence of the deliverability of measurable BNG in accordance with the Environment Act 2021 and the National Policy Statements EN-1, 3 and 5. Therefore, the DEFRA Statutory Metric (Ref 8-83) will be utilised to quantify the change in biodiversity units associated with the Scheme and be submitted with the DCO application. The BNG is secured through the Outline LEMP **[EN0110014/APP/7.4]**.
- 8.8.2 For the purposes of impact assessment, the delivery of a quantifiable BNG will be considered as an inherent part of the Scheme. In other words, BNG will be regarded as embedded enhancement.
- 8.8.3 Compliance with policy in the Overarching NPS for Energy (EN-1) requires that the Scheme considers and adopts the mitigation hierarchy, requiring the highest level to be applied where possible. Further to the mitigation hierarchy, any commitment to BNG delivery should also take into account the BNG hierarchy as per current guidance. The mitigation hierarchy applied during the design of the Scheme follows a stepwise approach that must be taken throughout the lifecycle of a project where there is potential for impacts on relevant IEF's:

- Avoidance – actions taken to avoid causing impacts to the environment prior to beginning development (e.g. avoidance of installing solar PV arrays on or near IEFs to avoid direct and indirect impacts);
- 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);
- Restoration or rehabilitation – actions taken to repair environmental degradation or damage following unavoidable impacts caused by development; and
- 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).

8.8.4 The Scheme's design evolution has sought to avoid IEF's, such as field boundary hedgerow and ditch networks, watercourses, and woodlands. Temporary CRC works have avoided features such as watercourses and lowland fen through Horizontal Directional Drilling (HDD). Habitat enhancement/creation measures to be undertaken during construction have been proposed within the **Outline LEMP [EN0110014/APP/7.4]** in line with the *Biodiversity Guidance for Solar Developments* guidance published by the BRE. These measures will safeguard key habitats for the benefit of wildlife and enhance the ecological value of land currently under agricultural use. Further information regarding species-specific safeguards is provided within the **Outline PSMS [EN0110014/ APP/6.3.8.10]**

Construction Phase Embedded Mitigation

8.8.5 Embedded mitigation measures are those which aid the avoidance or reduction of impacts through the choices made in the design of the Scheme. 'Additional mitigation' (see above) applies to further measures required to reduce specific identified impacts; these are detailed within the assessment of likely significant effects in **Section 8.9**. Embedded mitigation measures inherent within the Scheme design comprise of the provisions detailed in the paragraphs below.

8.8.6 The potential for adverse effects during the construction phase has been avoided and 'designed out' where practicable. These will be controlled through standard good construction and environmental working practices as an integral part of the Scheme, detailed within the **Outline CEMP [EN0110014/APP/7.1]** submitted with the DCO Application. An ecologically sensitive approach to construction will be implemented through the provision of the Outline CEMP. The Outline CEMP details measures and approaches to be adopted which will limit the likelihood of impacts upon IEF's through damage, pollution and disturbance. Habitat protection buffers will be

maintained throughout the construction phase. They will be identified with appropriate exclusion fencing along with Site team briefings at 'toolbox talks' (see below).

- 8.8.7 The **Outline LEMP [EN0110014/APP/7.4]** has been produced to support the ES. The Outline LEMP summarises the principles which will be followed within the design of mitigation and enhancement for landscape and ecology. It sets out the location, objectives and methods for habitat mitigation and creation across the Scheme, such as for hedgerows, trees and grassland, specified as part of this Chapter. Whilst the Outline LEMP covers the long-term management of biodiversity and habitat enhancements through the operational phase, it also details habitat enhancements, creation and mitigation methodologies to be employed during the construction period. Through provision of the Outline LEMP, the Scheme will deliver construction phase habitat enhancements which will provide a clear benefit for a broad range of species.
- 8.8.8 Under a Requirement of the DCO, a detailed version of the LEMP will need to be approved by the relevant local authority which must be substantially in accordance with the **Outline LEMP [EN0110014/APP/7.4]**. This will include fully detailed Method Statements and schedules of work, as well as the details of personnel and organisations responsible for the LEMP's delivery.
- 8.8.9 The **Outline PSMS [EN0110014/ APP/6.3.8.10]** has been produced to support the ES. As with the Outline LEMP (see above), under a requirement of the draft DCO, a detailed version of the PSMS will need to be approved by the relevant local authority which must be substantially in accordance with the Outline PSMS. The Outline PSMS summarises the embedded mitigation measures and approaches to be adopted which will avoid impacts occurring upon associated species (and associated habitats) through killing/injury, damage, pollution and disturbance during the construction phase in order to enact the mitigation requirements set out in this Chapter. The document will apply to all aspects of the construction phase, including CRC works, energy storage, minor access works, (non-National Grid) substations, and solar array construction. The Outline PSMS contains (among others) the following measures:
- The Outline PSMS includes the provision of a toolbox talk provided by the Ecological Clerk of Works (ECoW) to the Site Manager(s) and contractors (either in-person or online). The toolbox talk will include details of the PSMS and will highlight the location and sensitivity of the various IEF's present within each area. The talk will establish the role of the ECoW and site personnel during works, and what to do if protected species/ecological constraints are found during works;
 - Criteria under which an ECoW would be required in order to oversee certain construction activities which have the potential to impact on protected species, such as localised habitat clearance, ditch/watercourse engineering works. These criteria would trigger the need for ECoW

attendance and, potentially, pre-commencement surveys or preparation by an ecologist, as well as follow up monitoring or reporting;

- Criteria under which certain potentially impactful operations would need to be restricted to particular months or seasons in order to lessen likely adverse ecological impacts. For example, hibernation or nesting season for particular species;
 - Task-specific Method Statements for potentially ecologically impactful works as identified in this Chapter. For example, ECoW monitoring during proposed horizontal directional drilling beneath the Hempnall Beck.
 - Detail on the location and specification of BPF installed prior to the onset of construction. The BPF zones of between 10 and 50m correspond to the ecological value of each boundary and/or its sensitivity to potential impacts.
 - Pollution prevention measures such as on the use of fuels and other contaminants in proximity to boundary features and other sensitive habitats and measures to limit the dust generating activities, such as when working in dry conditions, and measures to limit the mobilisation of sediments and run-off into IEF's.
- 8.8.10 Access for construction (of both Sites and the CRC) has been specifically designed to utilise existing field entrances and gaps in internal/external hedgerows and other linear habitats wherever possible. Where access (haul route/CRC access/site access) is required through linear features such as field margins/hedgerows/ditches these construction impact areas will be significantly reduced to a maximum of 10m working width. All temporary habitat impacts (haul routes/CRC work etc) will be reinstated and will be designed with input and site-specific knowledge from the ECoW and monitored for success during the construction works period. Further information is provided within the **Outline PSMS [EN0110014/ APP/8.10]**.
- 8.8.11 In addition to the measures set out above, the following embedded design measures are incorporated to safeguard aquatic receptors:
- Solar PV arrays, construction compounds and haul routes have been set back from main watercourses and drainage features, maintaining undeveloped buffer zones to protect riparian habitats and reduce risk of sediment or pollutant mobilisation.
 - Surface water management measures will be implemented during construction to prevent sediment-laden run-off entering watercourses. This will include use of silt fencing, settlement areas where required, and adherence to Environment Agency pollution prevention guidance.
 - No refuelling, storage of fuels, oils or chemicals will occur within buffer zones adjacent to watercourses.

- Trenchless installation (HDD) beneath sensitive watercourses avoids direct in-channel works, thereby removing the principal pathway for disturbance to aquatic habitats.
 - An Ecological Clerk of Works (ECoW) will oversee works in proximity to watercourses where required, including HDD operations, to ensure protection of aquatic habitats.
- 8.8.12 These measures are secured through the Outline CEMP and Outline PSMS and are considered embedded within the Scheme design.
- 8.8.13 Other embedded mitigation which will further limit Scheme effects on ecological receptors during the construction phase includes:
- Routing of construction traffic, which will avoid sensitive areas, including designated sites and other IEF's (**Outline Construction Transport Management Plan [EN0110014/APP/7.6]**);
 - Construction dust **ES Vol 3 Appendix 13.1 - Construction and Decommissioning Dust Risk Assessment [EN0110014/APP/6.3.13.1]** has included a process to identify the appropriate dust mitigation measures for inclusion in the **Outline CEMP [EN0110014/APP /7.1]** which accompanies the DCO Application;
 - Lighting strategy – Artificial lighting at night may potentially be utilised during construction. It is understood that construction activities will generally be limited to between 07:00 and 18:00 during weekdays and 08:00-13:30 on Saturday, thereby avoiding any nocturnal periods between mid-March and late-September. Where required, temporary construction lighting will be positioned to ensure that light is directed onto the area of works only with as minimal light spillage upon IEFs as possible. The use of LED lighting and cowls, hoods and other similar screens will also be adopted. Any requirement for lighting outside standard working hours will be set out within the detailed CEMP_ and **Lighting Strategy [EN0110014/APP/ 6.3.7.11]**, implemented in accordance with Requirements of the **draft DCO [EN0110014/APP/3.1]**;
 - The proposed works surrounding the immediately adjacent woodland/trees will adhere to BS5837:2012 *Trees in relation to design, demolition and construction (Ref 8-84)* as well as current guidance provided by NE (Ref 8-85). As veteran trees are considered irreplaceable habitats, the retention of these trees has been designed into the Scheme, and these features will be protected throughout construction (and the lifetime of the Scheme) where practicable;
 - HDD operations will involve the excavation of a launch pit at the drilling start point and a reception pit at the end point. Both the launch and reception pits will be situated a minimum of 10m from any watercourse

and will be fully backfilled and reinstated upon completion of the cable installation. The exact locations and dimensions of these pits will be finalised during detailed design.

- Additional measures to be implemented to prevent the spread of non-native invasive species (including Himalayan balsam, and giant hogweed which have been recorded within the Order Limits) are detailed within the **Outline Landscape and Ecological Management Plan (LEMP) [EN0110014/APP/7.4]**, **Outline Construction Environmental Management Plan (Outline CEMP) [EN0110014/APP/7.1]** and the **Outline Protected Species Mitigation Strategy (OPSMS) [EN0110014/APP/6.3.8.10]** submitted with the DCO Application, ultimately further secured in the supporting documents which will be secured via requirements of the DCO.

Operational Phase Embedded Mitigation

- 8.8.14 Operational effects are defined as effects following the construction of the Scheme and which will be experienced during its operation, including during maintenance and replacements periods. With the adoption of embedded mitigation and avoidance measures, operational effects will be largely reduced to minor short-term disturbance of habitats or species, and potential pollution events associated with operational maintenance regimes, and periodic solar panel and battery replacement works.
- 8.8.15 The **Outline LEMP [EN0110014/APP/7.4]** provides the outline strategy for long-term habitat and biodiversity enhancement, management, and monitoring across the Scheme, and provides guidance for reaching and managing the associated BNG commitments during the operational phase. Through provision of BNG and the Outline LEMP, the Schemes operational phase will deliver long-term habitat enhancements which will provide a clear benefit for a broad range of species.
- 8.8.16 The potential for adverse effects during the operational phase will be controlled through standard good environmental working practices as an integral part of the Scheme, detailed within the **Outline OEMP [EN0110014/APP/7.2]** submitted with the DCO Application. Under a Requirement of the DCO, a detailed version of the OEMP will need to be approved by the relevant local authority which must be substantially in accordance with the **Outline OEMP [EN0110014/APP/7.2]**.
- 8.8.17 Impacts upon adjacent trees/woodland will be avoided during activities such as battery and panel replacement work, by adopting protective buffer zones surrounding the immediately adjacent woodland/trees to minimise environmental effects from these activities. Minor vegetation management works (such as grassland management) will not be restricted by this guidance but will still employ precautionary measures to avoid unexpected impacts occurring.

- 8.8.18 There are no additional operational effects relating to land take other than those already addressed for the construction phase. Similarly to the **Outline CEMP [EN0110014/APP/7.1]**, an ecologically sensitive approach to maintenance and replacement operations will be implemented through the Outline CEMP, which will detail measures and approaches to be adopted which will limit the likelihood of impacts upon retained habitats through damage, pollution and disturbance. During panel and/or battery replacement and maintenance operations, exclusion fencing will be maintained and identified with appropriate fencing and signage along with Site team briefings at 'toolbox talks'.
- 8.8.19 The undeveloped buffer zones will safeguard important receptors for the lifetime of the Scheme. Such buffer zones will also provide sufficient and appropriate working areas to maintain habitats within the Scheme, such as hedgerows, without conflict with the routine operation and maintenance of the Scheme. The **Outline OEMP [EN0110014/APP/7.2]** contains habitat management measures to take place within the above-mentioned buffer zones which will provide net gains for biodiversity.
- 8.8.20 During the operational phase, the following embedded measures will safeguard aquatic habitats, these embedded measures reduce potential operational phase effects on aquatic receptors to negligible levels:
- Undeveloped buffer zones adjacent to watercourses within the operational sites will be retained for the lifetime of the Scheme.
 - Land within and surrounding the solar arrays will be managed under the **Outline LEMP [EN0110014/APP/7.4]**, reducing agricultural inputs (e.g., fertiliser and pesticide application) compared to the baseline arable use. This is anticipated to reduce nutrient enrichment and diffuse pollution reaching nearby watercourses.
 - Grassland establishment beneath and between panels will improve soil structure and increase infiltration rates, reducing surface water run-off and sediment transport compared to intensively cultivated arable land.
 - PV panels are designed with anti-reflective coatings to minimise glint and glare. Separation distances and intervening vegetation between panel arrays and watercourses further reduce the likelihood of reflected light affecting aquatic habitats.
- 8.8.21 A suitably qualified and experienced ECoW will be appointed prior to the commencement of panel and/or battery replacement activities and through whom appropriate ecological advice will be provided throughout. The ECoW will be responsible for undertaking and/or co-ordinating checks for protected species, providing watching briefs and providing confirmation that activities can commence in adherence with relevant legislation at that time. Further outline information is provided within the **Outline OEMP [EN0110014/APP/7.2]**.

- 8.8.22 Lighting is typically not required within Solar PV areas for the operational phase. Limited motion-sensing security lighting will be included within the Substations and BESS Sites. This will be used only for nocturnal maintenance operations, safe working conditions in winter months and security purposes. The lighting strategy for the operational phase is provided in the **Outline OEMP [EN0110014/APP /7.2]**. This details how artificial lighting will avoid adverse impacts on ecological receptors sensitive to artificial lighting, such as bats.
- 8.8.23 The **Outline OEMP [EN0110014/APP/7.2]** and associated BNG commitments ensure that appropriate habitat management practice methodologies are to be employed during the operational period. Through the ongoing Scheme-long BNG commitments informed by the LEMP (and ecological monitoring during this period), the Scheme will deliver habitat enhancements which will provide a clear benefit for a broad range of species.
- 8.8.24 Where land has been excluded from development within the Order Limits (such as Site 6), these areas have been examined during the design phase of the Scheme for their potential to be managed for ecological mitigation and enhancement (such as skylark mitigation), in order to provide BNG and contribute to policy-led green infrastructure and Local Nature Recovery Network principles. Where there is significant potential for this land to deliver ecological mitigation and/or BNG, this land has been retained within the Scheme and will be managed throughout the operational phase as ecological mitigation or enhancement land, taking account of any other environmental constraints and enhancements which may also be relevant. These measures are discussed in later sections within this document, and areas designated for ecological mitigation/enhancement are displayed in the **Outline LEMP [EN0110014/APP/7.4]**.
- 8.8.25 For the purpose of this assessment, and as described in **ES: Chapter 4 The Scheme [EN0110014/APP/6.1.4]**, it is assumed all habitats within the Solar PV Sites will be managed with machinery. However, should consent be granted, grazing (or partial grazing) by sheep will be explored, noting that there are no known landowner restrictive covenants or other reasons that would prevent such use.

Decommissioning Phase Embedded Mitigation

- 8.8.26 The Order Limits baseline conditions are likely to change over the operational period, and prediction of these conditions by 2091 is considered unreliable in terms of predicting likely future decommissioning effects on ecology and biodiversity. However, potential impacts from decommissioning are considered to be similar to those already described in relation to the construction phase, namely direct and indirect disturbance, temporary or permanent habitat loss, species mortality, habitat fragmentation, habitat degradation and vegetation removal. However, further mitigation measures

may be required, depending on the future baseline of the Scheme. As a result, pre-decommissioning surveys and assessments will be required to identify whether the embedded mitigation of the Scheme is fully appropriate for the future baseline of the Scheme at the time of the decommissioning phase, and to conform with all applicable biodiversity policies and legislation at the prevailing time.

- 8.1.1 Decommissioning will require vehicles and machinery as well as personnel to dismantle and remove solar arrays and all associated infrastructure apart from the National Grid Substation and reinstate the land to sole agricultural use. During this decommissioning phase, the adopted buffer zones established during construction and maintained during operation will be retained to avoid adverse impacts upon retained valuable habitats outside of the operational array.
- 8.8.27 The proposed decommissioning works surrounding the immediately adjacent woodland/trees will adhere to BS5837:2012 *Trees in relation to design, demolition and construction* as well as current guidance provided by statutory bodies at that time.
- 8.8.28 Embedded avoidance and mitigation measures are set out within and implemented through the Decommissioning Environmental Management Plan (DEMP), which will be substantially in accordance with the **Outline DEMP [EN0110014/APP/7.3]** submitted with the DCO Application. The Outline DEMP includes the appointment of a ECoW prior to the commencement of decommissioning activities and through whom appropriate ecological advice will be provided.
- 8.8.29 An updated **PSMS** will be produced to support the decommissioning phase, and informed (where considered necessary at that time) by pre-decommissioning surveys/checks by the appointed ECoW. The updated **PSMS** will summarise the embedded mitigation measures and approaches to be adopted which will avoid impacts occurring upon species (and associated habitats) through killing/injury, damage, pollution and disturbance during the decommissioning phase in order to enact the mitigation requirements set out in this Chapter.
- 8.8.30 The ECoW will be responsible for undertaking actions identified following pre-decommissioning baseline surveys and undertaking and/or co-ordinating checks for protected species before providing confirmation that decommissioning activities can commence. The ECoW will also maintain a watching brief as necessary throughout the decommissioning phase to ensure compliance with relevant legislation, including adhering to any protected species mitigation measures legally required at that time.

Additional Mitigation

- 8.8.31 Additional mitigation is any measure required to reduce a certain impact to acceptable levels where embedded mitigation alone is not sufficient. This is likely to take the form of a specific plan or strategy specific to a species, species group or habitat and will be detailed under each relevant IEF's subheading.
- 8.8.32 Additional mitigation measures are typically given where likely adverse effects are identified upon the IEFs. The mitigation measures will aim to reduce the overall effect, typically at the location at which the impact occurs. An assessment of residual effects, which takes account of the proposed additional mitigation, is then made. Due consideration is given to the reliability of mitigation measures and the likelihood that they will achieve their stated goals, using the terms defined above.
- 8.8.33 In some circumstances mitigation measures are also identified for species which did not qualify as IEF; due to their afforded legal protection under legislation, certain precautionary methodologies are therefore provided in order to for the Scheme to progress and be fully legislatively compliant.
- 8.8.34 Compensation measures may be appropriate for IEFs which are likely to experience significant negative effects once mitigation options have been exhausted. Compensation measures seek to offset these residual effects, for example through the provision of alternative habitat either elsewhere within or outside of the Order Limits. An examination of the uncertainty in achieving successful compensation will take place. Any remaining residual effects can then be assessed.

8.9 Assessment of Likely Significant Effects

- 8.9.1 This section considers the potential impacts outlined in Section 8.7 and, taking into account the embedded mitigation measures as detailed in Section 8.8, assesses the potential for the Scheme to generate effects using the methodology as detailed in Section 8.5. An assessment of likely significant effects decommissioning phase summary is provided at the end of this section of the Chapter. Any additional mitigation required to reduce these effects is then set out in Section 8.10 below. Thereafter, an assessment is made of the significance of any residual effects after all mitigation measures have been accounted for.

International/European Statutory Designated Sites

- 8.9.2 In addition to the assessment below, an assessment on whether the Scheme will have a likely significant effect upon the above Sites is also considered further in the **Shadow Habitat Regulations Assessment (SHRA) Report [EN0110014/APP/7.25]** that accompanies the DCO application

Construction Phase

Potential Effects

- 8.9.3 During scoping process, it was agreed with the Planning Inspectorate and Natural England (Scoping Opinion: Proposed East Pye Solar. Case Ref: EN0110014. 25th February 2025) that due to the separation distances involved/lack of habitat suitability, that potential direct impact pathways are not identified on the Broadland SPA and avian qualifying features of Broadland SPA Ramsar. Therefore, the Ecological Impact Assessment (construction phase) is limited to the potential for hydrological and air quality habitat degradation impacts (from construction) arising. Further information is provided below.
- 8.9.4 The assessment includes the following International/European statutory designated sites:
- Norfolk Valley Fens SAC;
 - The Broads SAC; and
 - Broadland Ramsar (non-avian qualifying criteria).

Assessment

- 8.9.5 An assessment has been made of the hydrological connectivity between International/European sites and the Order Limits, which is set out in **ES: Appendix 9.1: Flood Risk Assessment [EN0110014/APP/6.3.9.1]**. The above assessment found that the International/European sites are located at a distance from the Scheme, and are situated at a higher elevation, and/or are within different catchments such that no hydrological connectivity has been identified.
- 8.9.6 Accordingly, there are no hydrological links which would allow pollution, siltation, changes in water levels or hydrological changes to the International/European sites as a result of works during construction (or operational or decommissioning phases). As such there are no impact pathways to the European sites from pollution, siltation, changes in water levels or hydrological changes from the Scheme in isolation, or in-combination with other plans or projects.
- 8.9.7 An assessment of potential increases in road traffic emissions during the construction, operation and maintenance, and decommissioning phases at International/European sites has been undertaken and is set out in **ES: Chapter 13 Air Quality [EN0110014/APP/6.1.13]**. This assessment demonstrates that increases in traffic on roads within 200m of International/European sites are below the relevant screening thresholds of 1,000 total AADT or 200 HDV AADT34.

- 8.9.8 Accordingly, changes to traffic flows associated with the Scheme are below published screening criteria and therefore will not result in any impact [pathways to any European site within the ZOI through nitrogen deposition.

Significance of Effects

- 8.9.9 Given the lack of hydrological and air pollution (deposition) impact pathways between the Scheme and the above International/European sites, no direct effects associated from air quality impacts and hydrological impacts are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.
- 8.9.10 Further information is provided within the **SHRA Report [EN0110014/APP/ 7.25]** that accompanies the DCO application. No additional mitigation is therefore likely to be required, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

- 8.9.11 The Ecological Impact Assessment (operational phase) is limited to the potential for hydrological and air quality habitat degradation impacts arising.

Assessment

- 8.9.12 For the reasons provided above (lack of impact pathways), operational phase impacts on these International/European sites are not anticipated. No further increased intrusive and potentially damaging/polluting activity is required, above those required for construction. Consequently, no operation and maintenance phase impacts on these International/European sites are anticipated. Given the lack of impact pathways between the Scheme and the above designated sites, no additional operation and maintenance phase mitigation measures are required, and no significant adverse effects are anticipated.

Significance of Effects

- 8.9.13 Given the lack of air quality (deposition) and hydrological impact pathways between the Scheme and the above International/European sites, no direct effects are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.
- 8.9.14 Further information is provided within the **SHRA Report [EN0110014/APP/ 7.25]** that accompanies the DCO application. No additional mitigation is therefore likely to be required, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

- 8.9.15 The Ecological Impact Assessment (decommissioning) is limited to the potential for hydrological and air quality habitat degradation impacts (from construction) arising.

Assessment

- 8.9.16 With the lack of air quality (deposition) and hydrological impact pathways between the Scheme and the above International/European sites, the potential for decommissioning phase negative effects upon the identified high sensitivity ecological receptors of international geographical scale importance is not significant.

Significance of Effects

- 8.9.17 No direct effects are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**. No additional mitigation is therefore likely to be required, and **no residual effects** are anticipated.

Statutory Designated National and Local Sites

- 8.9.18 Ten SSSI and three LNR are located within 5km and 2km of the Order Limits respectively, most notably; Shotesham-Woodton Hornbeam Woods SSSI Unit 2, is located directly adjacent to Sub-Sites 7F & 7G, and Unit 3 located directly adjacent to Sub-Site 7H. In addition, Hedenham Wood SSSI is located 0.1km east of Sub-Site 10B and Pulham Market Big Wood SSSI 0.1km east of CRC4. Seven other SSSI's and three LNR's (all included within this assessment and listed within **Table 8.13**) are located within 5km, see **ES Vol 3, Figure 8.2 Statutory Designated Sites within 5km [EN0110014/APP/6.2.8.2]**.

Construction Phase

Potential Effects

- 8.9.19 Potential construction phase effects include:
- Habitat loss or change; and
 - Habitat degradation.

These potential impacts are discussed below.

Assessment

- 8.9.20 The Scheme has been designed to avoid all direct impacts to statutory designated sites. The design principles for the Scheme are set out in the **Design Principles, Parameters and Commitments [EN011014/APP/ 7.18]** document which includes a series of environmentally led design principles, including in relation biodiversity. This includes restricting development in ecologically sensitive locations and applying appropriate offsets and buffers from important ecological receptors including the adherence to a minimum of 30m buffer from Shotesham-Woodton Hornbeam Woods SSSI.
- 8.9.21 The **Outline CEMP [EN0110014/APP /7.1]** and the **Outline Cable Route Construction Statement [EN0110014/APP/7.21]** ensure that sufficient embedded mitigation is in place and that the above-mentioned SSSI buffer zones adhered to during construction, so that any residual construction related disturbance, degradation, fragmentation, and habitat loss effects upon SSSI parcels will be avoided are not significant.
- 8.9.22 Standard measures to ensure run-off control, pollution prevention and construction phase dust impacts will be implemented through the **Outline CEMP [EN0110014/APP/7.1]** to protect all surrounding designated sites, and the proposed works surrounding Shotesham-Woodton Hornbeam Woods SSSI (Ancient Woodland) will adhere to *BS5837:2012 Trees in relation to design, demolition and construction (Ref 8-86)* and current guidance provided by Natural England (Ref 8-87). These measures will safeguard statutory designated sites adjacent to and located within 5km of the Order Limits.
- 8.9.23 Dust mitigation measures have been adopted within the **Outline CEMP [EN0110014/APP/7.1]** and will be adopted throughout the construction period, thereby, avoiding significant dust related impacts upon immediately adjacent sites and statutory designated sites within the wider 5km ZOI. Further information on dust avoidance measures is provided within the **Construction and Decommissioning Dust Risk Assessment [EN0110014/APP/6.3.13.1]**.
- 8.9.24 The Air Quality Assessment presented within **ES: Chapter 13 Air Quality [EN0110014/APP/6.1.13]** has found that changes in traffic flows attributed to construction are not considered to have the potential to result in a significant effect upon SSSI's within the ZOI.
- 8.9.25 The following statutory designated sites have identified in the **ES: Appendix 9.1 Flood Risk Assessment & Outline Surface Water Drainage Strategy [EN0110014/APP/6.3.9.1]** as having hydrological connectivity to the Order Limits. They have the potential to be impacted by the Scheme through the mobilisation of contaminants to surface water and groundwater receptors without appropriate mitigation during all phases of the Scheme:

- Shotesham Woodton Hornbeam Woods SSSI;
 - Hedenham Wood SSSI;
 - Fritton Common and Pulham Market SSSIs;
 - Shotesham Common SSSI;
 - Tindall Wood Ditchingham SSSI; and
 - Smockhill Common LNR.
- 8.9.26 With the adoption of embedded hydrological mitigation measures detailed within the ES: Appendix 9.1 Flood Risk Assessment & Outline Surface Water Drainage Strategy [EN0110014/APP/6.3.9.1] and the Outline CEMP [EN0110014/APP/7.1] the hydrological impacts of the Scheme on these receptors have been assessed as Not Significant, for further information see ES Vol 1, Chapter 9: Water Environment [EN0110014/APP/6.1.9].
- 8.9.27 The limited connectivity currently present between SSSI parcels will be maintained and enhanced as much as practicable during the construction phase, with hedgerows retained and subject to 10m buffer zone. Where temporary impacts are required for the CRC, where possible trenchless solutions will be utilised, or if this is not possible, minor sections of hedgerow (maximum of 10m) will be removed to facilitate the temporary access/cable works before being reinstated thereafter. Additionally, during the construction phase, new habitat planting will be integrated within the Scheme designs as detailed within the **Outline LEMP [EN0110014/APP/7.4]**, will provide enhanced ecological connectivity, thereby strengthening the ecological resilience of the immediately surrounding SSSI habitats.

Significance of Effects

- 8.9.28 Following the implementation of the above embedded mitigation measures, the resulting magnitude of impacts associated with habitat loss/change and habitat degradation are anticipated to be negligible, resulting in a Negligible effect which is **not significant**.
- 8.9.29 No additional construction phase mitigation measures are required, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

- 8.9.30 Potential operational phase effects include:
- Habitat loss or change;
 - Cessation of agricultural practices; and

- Habitat degradation.

These potential impacts are discussed below.

Assessment

- 8.9.31 The Scheme has been designed to avoid all direct impacts to the SSSI's in the Zone of Influence, with the 30m buffer zones set out in the **Design Parameters and Design Principles [EN011014/APP/7.18]** being retained and enhanced through sympathetic management practices detailed within the **Outline LEMP [EN0110014/APP/7.4]** and networks of linear habitats created and maintained, aiding connectivity between sites.
- 8.9.32 The **Outline OEMP [EN0110014/APP/7.2]** sets out embedded mitigation measures by which operational activities (most notably panel replacement works) will be managed to avoid, minimise and mitigate any adverse effects on SSSI's and LNR's. Ensuring that there is no pathway for significant direct or indirect effects. The Outline OEMP adopts a minimum 30m buffer zone in relation Units 2 and 3 of Shotesham-Woodton Hornbeam Woods SSSI, with all maintenance activities (apart from habitat management measures) avoided in these areas, including panel/battery replacement works. Resulting in no direct loss of habitats within the designated sites and no indirect habitat degradation effects.
- 8.9.33 It is considered that with good practice measures (as detailed within the Outline LEMP) and the management of habitat buffers will benefit surrounding SSSI parcels, increasing connectivity with ecologically resilient natural corridors in the landscape compared to the current baseline, which comprises predominantly of intensively managed farmland bordering the Shotesham-Woodton Hornbeam Woods SSSI.
- 8.9.34 Negative impacts (such as pesticide/herbicide/dust drift and natural/artificial fertiliser run-off) associated with existing agricultural land management practices within Sub-Site 8A, will be avoided throughout the operational phase due to Sub-Site 8A being withdrawn from current agricultural practices.

Significance of Effects

- 8.9.35 Given that embedded mitigation measures will be incorporated into the Scheme to avoid impacts on surrounding designated sites during the operational phase and the cessation of agricultural activities within the developed Sites, the resulting magnitude of impacts associated with habitat loss/change and habitat degradation are anticipated to be negligible, resulting in a Negligible effect which is **not significant**
- 8.9.36 No additional mitigation measures are required, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.37 Potential decommissioning phase effects include:

- Habitat loss or change; and
- Habitat degradation.

8.9.38 These potential impacts are discussed below.

Assessment

8.9.39 The Decommissioning Phase is not anticipated to exceed the number of vehicles forecast during the Construction Phase which are not considered to have the potential to result in a significant effect, and it is expected that the period will be similar in duration.

8.9.40 The assessment of decommissioning effects takes into account the measures set out in the **Outline Decommissioning Environmental Management Plan [EN0110014/APP/7.3]** which accompanies the ES and will be secured by a DCO Requirement. Activities relating to the removal of solar panel frames, underground cabling, substations and concrete footings, access and energy storage would be expected to have similar (or no worse) direct effects as those described in the construction phase impacts above. Reduced levels of ground disturbance and associated dust impacts from the movement of vehicles and personnel would also be expected, as the large majority of underground cabling within the CRC and National Grid Substation is expected to remain in situ.

8.9.41 Dust mitigation measures have been adopted within the **Outline DEMP [EN0110014/APP/7.3]** and will be adopted throughout the decommissioning period, thereby, avoiding significant dust related impacts upon immediately adjacent sites and statutory designated sites within the wider 5km ZOI. Further information on dust avoidance measures is provided within the **Construction and Decommissioning Dust Risk Assessment [EN0110014/APP/6.3.13.1]**.

8.9.42 Standard measures to ensure run-off control and pollution prevention will be implemented through the **Outline DEMP**. The proposed works surrounding the immediately adjacent SSSIs will adhere to BS5837:2012 Trees in relation to design, demolition and construction, and the decommissioning activities will retain the 30m buffer zones in relation to the protection of SSSI woodland habitats. These measures will safeguard habitats located within the SSSIs immediately adjacent to the Site and the wider ZOI.

8.9.43 The Air Quality Impact Assessment process presented within **ES Vol 1, Chapter 13: Air Quality [EN0110014/APP/6.1.13]** has found that road

traffic emission impacts of the Scheme during the decommissioning period will be no worse than the construction phase which are assessed as being negligible. The air quality effects from decommissioning phase road traffic on sensitive ecological receptors are considered to be not significant in EIA terms.

- 8.9.44 The hydrological impacts of the Scheme on statutory designated sites have been assessed within **ES Vol 1, Chapter 9: Water Environment [EN0110014/APP/6.1.9]**. With the adoption of embedded hydrological mitigation measures detailed within the **ES Vol 3, Appendix 9.1 – Flood Risk Assessment & Outline Surface Water Drainage Strategy** and the **Outline DEMP [EN0110014/APP/7.3]** the hydrological impacts of the Scheme on these receptors have been assessed as Not Significant.

Significance of Effects

- 8.9.45 Following the implementation of the above embedded mitigation measures, effects associated with habitat loss/change and habitat degradation are anticipated to be negligible, resulting in a Negligible effect which is **not significant**.
- 8.9.46 No additional construction phase mitigation measures are required, and **no residual effects** are anticipated.

Non-statutory Designated Sites

- 8.9.47 Two County Wildlife Sites (CWS) are present within the Order Limits, these being: Lower Spring Wood, partially located within CRC9, and Fritton Grange Meadows CWS partially located within CRC7. Four Roadside Nature Reserves (RNR) are also partially located within the Order Limits, these being: Bussey's Loke RNR (Sub-Site 7G), Market Lane RNR (Sub-Site 8A), Parkers Lane RNR (Area 1) (CRC4), and Parkers Lane RNR (Area 2) (CRC4). Seven of the non-statutory designated sites are also located immediately adjacent to the Order Limits. In addition to the non-statutory designated sites discussed above, a further seventeen are located within 500m of the Order Limits.

Fritton Grange Meadows CWS & Lower Spring Wood CWS

- 8.9.48 The proposed CRC route passes through Fritton Grange Meadows CWS at CRC7 and through Lower Spring Wood CWS at CRC9, therefore impacts upon these two sites have been addressed separately.

Construction Phase

Potential Effects

- 8.9.49 Potential construction phase effects include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.50 These potential impacts are discussed below.

Assessment

- 8.9.51 The proposed CRC route passes through Fritton Grange Meadows CWS at CRC7 and through Lower Spring Wood CWS at CRC9, both via the use of trenchless HDD techniques. The HDD route will avoid all impacts upon the CWS's associated with fragmentation, degradation, and habitat loss, with the cable depth buried at a minimum of 5m below the surveyed riverbed at Fritton Grange Meadows CWS and a minimum of 5m below Lower Spring Wood CWS. Embedded avoidance and mitigation measures associated with the HDD operations are provided within **Outline CEMP [EN0110014/APP /7.1]** and the **Outline Cable Route Construction Statement [EN0110014/ APP /7.21]**.
- 8.9.52 The construction phase operations will adhere to a 15m buffer zone surrounding both of these CWS, thereby avoiding direct habitat loss. Dust mitigation measures have been adopted within the **Outline CEMP [EN0110014/APP/7.1]** and will be adopted throughout the construction period, thereby, avoiding significant dust related impacts upon these sites. Further information on dust avoidance measures is provided within the **Construction and Decommissioning Dust Risk Assessment [EN01100 14/APP/6.3.13.1]**.
- 8.9.53 Standard measures to ensure run-off control and pollution prevention will be implemented through the **Outline CEMP [EN0110014/APP /7.1]**. A minimum 30m buffer zone will be observed to prevent construction impacts (such as sedimentation). With associated drilling operations being undertaken outside of this buffer zone between existing farmland parcels on either side of the CWS's.
- 8.9.54 With the inclusion of the embedded mitigation measures summarised above and detailed within Section 9.7 of **ES Vol 1; Chapter 9 – Water Environment [EN0110014/APP/6.1.9]** and the associated embedded mitigation measures presented within the **Flood Risk Assessment and Outline Surface Water Drainage Strategy [EN011 0014/APP/6.3.9.1]** significant direct habitat degradation impacts associated with run-off and other hydrological impacts will be avoided.

Significance of Effects

- 8.9.55 No effects are anticipated upon Fritton Grange Meadows CWS & Lower Spring Wood CWS of county importance, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.
- 8.9.56 No additional mitigation measures are required, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

- 8.9.57 Potential operational phase effects include:
- Habitat loss or change;
 - Habitat fragmentation;
 - Cessation of agricultural practices; and
 - Habitat degradation.
- 8.9.58 These potential impacts are discussed below.

Assessment

- 8.9.59 During the operational phase there will be active underground cabling passing beneath Fritton Grange Meadows CWS within CRC7 and Lower Spring Wood CWS within CRC9. Buried, cables will be fluid-free to reduce the risk of leaching of pollutants within the CWS's and will be left in situ during the operational phase. The thermal dynamics of the sheathed cables are limited to their immediate proximity and therefore will not significantly affect the thermal dynamics in the CWS.
- 8.9.60 The **Outline OEMP [EN0110014/APP/7.2]** sets out embedded mitigation measures by which operational activities (most notably panel replacement works) will be managed to avoid, minimise and mitigate any adverse effects on CWS. Ensuring that there is no pathway for significant direct or indirect effects on the sites. The Outline OEMP adopts a minimum 30m buffer zone in relation to the protection of CWS's, with all maintenance activities (apart from habitat management measures) avoided in these areas. These measures will safeguard habitats for which the CWS's are designated.
- 8.9.61 Impacts associated with existing land management practices, including potential herbicide or pesticide drift impacts from existing agricultural fields and manure or fertiliser run-off Fritton Grange Meadows CWS will be avoided throughout the operational phase due to the cessation of current agricultural practices within the Sub-Site 7B.

8.9.62 With the cessation of intensive agricultural practices, the inclusion of the embedded operational mitigation measures summarised within **ES: Chapter 9 Water Environment [EN0110014/APP/6.1.9]**, and the adherence to the **Outline OEMP [EN0110014/APP/7.2]**, the potential for operational phase adverse effects associated with habitat degradation, loss and fragmentation will be avoided.

Significance of Effects

8.9.63 Given that embedded mitigation measures will be incorporated into the Scheme to avoid operational activities impacting on surrounding designated sites during the operational phase, no direct effects are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**, and no additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.64 Potential decommissioning phase effects include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.65 These potential impacts are discussed below.

Assessment

8.9.66 During the decommissioning phase underground cabling passing beneath Fritton Grange Meadows CWS within CRC7 and Lower Spring Wood CWS within CRC9 will remain buried and will be left in situ. CRC land immediately bounding either side of Lower Spring Wood CWS and to the south of Fritton Grange Meadows CWS will not be subject to decommissioning phase works (agricultural land with underground cable left in situ) thereby significantly reducing any decommissioning phase disturbance within and surrounding these sites, compared to the construction phase works.

8.9.67 The assessment of decommissioning effects takes into account the measures set out in the **Outline Decommissioning Environmental Management Plan [EN0110014/APP/7.3]** which accompanies the ES and will be secured by a DCO requirement and provides standard measures to ensure run-off control and pollution prevention. Dust mitigation measures have been adopted within the **Outline DEMP [EN0110014/APP/7.3]** and will be adopted throughout the decommissioning period, thereby, avoiding significant dust related impacts. Further information on dust avoidance

measures is provided within the **Construction and Decommissioning Dust Risk Assessment [EN01100 14/APP/6.3.13.1]**.

Significance of Effects

- 8.9.68 Following the implementation of the above embedded mitigation measures, no significant effects associated with habitat loss/change, loss and habitat degradation are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.
- 8.9.69 No additional decommissioning phase mitigation measures are required, and **no residual effects** are anticipated.

County Wildlife Sites Located up to 2km from the Order Limits

- 8.9.70 There are a further 34 CWS located within the 2km ZOI (as detailed within **Table 8.9**) all of which are included within the assessment below, including the following located directly adjacent to the Order Limits:
- Spring Wood, Hempnall CWS;
 - Saxlingham Grove CWS;
 - Pope's Wood CWS; and
 - D'Oyly's Grove CWS.

Construction Phase

Potential Effects

- 8.9.71 Potential construction phase effects include:
- Habitat loss or change;
 - Habitat fragmentation; and
 - Habitat degradation.

- 8.9.72 These potential impacts are discussed below.

Assessment

- 8.9.73 Standard measures to ensure run-off control, pollution prevention and construction phase dust impacts will be implemented through the **Outline CEMP [EN0110014/APP /7.1]**. A minimum 30m 'buffer zones' in relation to the protection of CWS's will be adopted throughout the construction period which will serve to prevent construction impacts. With the inclusion of the

embedded mitigation measures within the Outline CEMP and specific embedded hydrological impact avoidance measures detailed within **Section 9.7 of ES Vol 1; Chapter 9 – Water Environment [EN0110014/APP/6.1.9]** and the associated **Flood Risk Assessment and Outline Surface Water Drainage Strategy [EN011 0014/APP/6.3.9.1]**, the potential for construction phase adverse effects (associated with habitat degradation, fragmentation, and loss) upon this ecological receptor of county importance would be negligible.

8.9.74 The Air Quality Impact Assessment process presented within **ES Vol 1, Chapter 13: Air Quality [EN0110014/APP/6.1.13]** has found that changes in traffic flows attributed to construction are not considered to have the potential to result in a significant effect upon Ancient Woodlands (of which many of the surrounding CWS are designated as). Further information on embedded dust avoidance measures is provided within the **Construction and Decommissioning Dust Risk Assessment [EN01100 14/APP/6.3.13.1]**.

8.9.75 New soft landscape planting integrated within the Scheme designs as detailed within the **Outline LEMP [EN0110014/APP/7.4]**, will provide enhanced ecological connectivity surrounding adjacent Ancient Woodlands thereby strengthening the ecological resilience of this woodland block.

Significance of Effects

8.9.76 Following the implementation of the above embedded mitigation measures, no direct effects are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.

8.9.77 No additional construction phase mitigation measures are required, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

8.9.78 Potential operational phase effects include:

- Habitat loss or change;
- Habitat fragmentation;
- Cessation of agricultural practices; and
- Habitat degradation.

8.9.79 These potential impacts are discussed below.

Assessment

- 8.9.80 The **Outline OEMP [EN0110014/APP/7.2]** details the embedded mitigation, and avoidance measures by which operational activities (most notably panel/battery replacement works) will be managed to avoid, minimise and mitigate any adverse effects on surrounding CWS's. It will ensure that sufficient mitigation is in place, so that any residual adverse operational related effects upon the CWSs within 2kms of the Order Limits are not significant. The Outline OEMP adopts a minimum 30m buffer zone in relation to the protection of CWS's, with all maintenance activities (apart from habitat management measures) avoided in these areas. These measures will safeguard habitats for which the CWS's are designated.
- 8.9.81 Habitats within the Order Limits (which are adjacent to D'Oyly's Grove CWS, Pope's Wood CWS, Saxlingham Grove CWS, Spring Wood, Hempnall CWS) will be maintained in accordance with the **Outline LEMP [EN0110014/APP/7.4]**. This will maintain strengthened habitat connectivity to the current baseline, which comprises predominantly of intensively managed farmland bordering the CWS's.
- 8.9.82 Negative impacts (such as pesticide/herbicide/dust drift and natural/artificial fertiliser run-off) associated with existing agricultural land management practices, will be avoided throughout the operational phase within the Solar PV areas due to them being withdrawn from current agricultural practices.

Significance of Effects

- 8.9.83 Given that embedded mitigation measures will be incorporated into the Scheme to avoid operational activities impacting on surrounding designated sites during the operational phase, no direct effects are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**, and no additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Decommissioning Phase

- 8.9.84 Potential decommissioning phase effects include:
- Habitat loss or change;
 - Habitat fragmentation; and
 - Habitat degradation.
- 8.9.85 These potential impacts are discussed below.

Assessment

- 8.9.86 As with the assessment provided above for Fritton Grange Meadows CWS and Lower Spring Wood CWS, the decommissioning phase is not

anticipated to exceed the level of work required during construction and with the large majority of works being focussed within the operational solar PV sites/BESS site (CRC cabling being left in-situ and the NG substation remaining within the Order Limits), and it is expected that the period will be similar in duration. Therefore, impacts are expected to be no greater than the construction phase.

- 8.9.87 There will be no direct works undertaken within the boundaries of these CWS, thereby avoiding direct habitat loss/fragmentation.
- 8.9.88 The assessment of decommissioning effects takes into account the measures set out in the **Outline Decommissioning Environmental Management Plan [EN0110014/APP/7.3]** which accompanies the ES and will be secured by a DCO requirement, provides standard measures to ensure run-off control and pollution prevention within these CWS. Dust mitigation measures have been adopted within the **Outline DEMP [EN0110014/APP/7.3]** and will be adopted throughout the decommissioning period, thereby, avoiding significant dust related impacts. Further information on dust avoidance measures is provided within the **Construction and Decommissioning Dust Risk Assessment [EN01100 14/APP/6.3.13.1]**.

Significance of Effects

- 8.9.89 Following the implementation of the above embedded mitigation measures, no direct effects associated with habitat loss/change, loss and habitat degradation are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.
- 8.9.90 No additional decommissioning phase mitigation measures are required, and **no residual effects** are anticipated.

Roadside Nature Reserves within (and surrounding) the Order Limits

- 8.9.91 Nineteen RNR's are located within the 2km ZOI, including the following sites located partially within or adjacent to the Order Limits:
- Bussey's Loke RNR (partially located within Sub-Site 7G);
 - Market Lane RNR (partially located within Site 8A);
 - Parkers Lane RNR (Area 1) (partially located within CRC4);
 - Parkers Lane RNR (Area 2) (partially located within CRC4);
 - Lodge Road RNR (adjacent to sub-site 2B and CRC2);
 - Fylands Road RNR (adjacent to Sub-Sites 7I & 7J); and
 - Woodton Road RNR (24) (adjacent to Sub-Site 7K).

8.9.92 Impacts upon all nineteen RNR's within the ZOI are assessed below.

Construction Phase

Potential Effects

8.9.93 Potential construction phase effects include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.94 These potential impacts are discussed below.

Assessment

8.9.95 All RNR's are designated for their remnant grasslands (and associated species abundance), by its very nature, this habitat is low in height, which will pose little risk to highway visibility for Order Limits access. However, adjacent overgrown hedgerows or overhanging tree canopies within the footprints of the RNR's may require temporary reduction measures during the construction phase, to aid access and visibility splays. No other construction related activities are proposed within the RNR's boundaries and where practicable, construction phase activities (apart from the actual use of the road surface) will implement a 30m buffer surrounding the RNR's.

8.9.96 Standard measures to ensure run-off control, pollution prevention and construction phase dust impacts will be implemented through the **Outline CEMP [EN0110014/APP/7.2]** and avoidance measures detailed within the **Outline PSMS [EN0110014/ APP/6.3.8.10]** These measures will safeguard RNR's within the ZOI.

Significance of Effects

8.9.97 Following the implementation of the above embedded mitigation measures, no direct effects are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.

8.9.98 No additional construction phase mitigation measures are required, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

8.9.99 Potential operational phase effects include:

- Habitat loss or change;

- Habitat fragmentation; and
- Habitat degradation.

8.9.100 These potential impacts are discussed below.

Assessment

8.9.101 Direct operational phase activities will be distant from the RNR's within and adjacent to the Order limits and it is anticipated that these sites (located on public highways) will continue to be managed by the local authorities for conservation purposes (Ref 8-88). Vehicles utilising existing public roads will pass these RNR's as part of their routine maintenance programmes, and periodic temporary periods of increased vehicle use (associated with BESS/PV replacements) will be experienced. However, no direct impacts associated with these operational phases are anticipated and standard measures to ensure run-off control, pollution prevention and construction phase dust impacts will be implemented through the **Outline CEMP [EN0110014/APP/7.2]**.

Significance of Effects

8.9.102 No direct effects associated with habitat fragmentation, loss, and degradation are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**. Accordingly, no significant adverse effects on the RNRs are anticipated as a result of the operational phase of the Scheme. No additional mitigation measures are required, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.103 Potential effects during the decommissioning phase effects include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.104 These potential impacts are discussed below.

Assessment

8.9.105 The decommissioning phase is not anticipated to exceed the number of vehicles forecast during construction and with the large majority of works being focussed within the operational solar PV sites/BESS site. The CRC cabling will largely be left in-situ and the NG substation remaining within the Order Limits thereby avoiding works surrounding Parkers Lane RNR (Area 1)

(partially located within CRC4) and Parkers Lane RNR (Area 2) (partially located within CRC4); it is expected that the period will be similar in duration to the construction period.

- 8.9.106 There are no direct works currently considered likely to be undertaken within the boundaries of these RNR's, thereby avoiding direct habitat loss/fragmentation. However, (as with the construction period) adjacent overgrown hedgerows or overhanging tree canopies within the footprints of the RNR's may require management to aid access and visibility splays; however, due to the reduced extent of decommissioning works relative to construction, the requirement for this will likely be much reduced. No other decommissioning related activities are proposed within the RNR's boundaries and where practicable, decommissioning activities (apart from the actual use of the road surface) will implement a 30m buffer surrounding the RNR's.
- 8.9.107 The assessment of decommissioning effects also takes into account the measures set out in the **Outline Decommissioning Environmental Management Plan [EN0110014/APP/7.3]** which accompanies the ES and will be secured by a DCO requirement, provides standard measures to ensure run-off control and pollution prevention within these RNR's.

Significance of Effects

- 8.9.108 Following the implementation of the above embedded mitigation/avoidance measures, no direct effects associated with habitat degradation/loss/fragmentation are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.
- 8.9.109 No additional decommissioning phase mitigation measures are required, and **no residual effects** are anticipated.

Irreplaceable Habitats within 2km of the Order Limits

Lowland Fen

- 8.9.110 Three areas of lowland fen habitat lie within 2km of the Order Limits, primarily associated with the Hempnall Beck (tributary of the River Tas) in the north-western part of the Order Limits. According to habitat mapping provided within the MAGIC website, the closest of these lies adjacent to the southern boundary of Sub-Site 7B within CRC7 (within Fritton Grange Meadows CWS).
- 8.9.111 An additional area of lowland fen (five individual blocks of habitat) is located further west along the Hempnall Beck to the north of Sub-Site 4A (150m north at its closest point). A further block of habitat is located approximately 1.92km to the north-east of Sub-Site 4A, which is connected to further areas

of lowland fen within Flordon Common SSSI. These areas are located along a tributary of the River Tas downstream of the Order Limits; these are addressed below.

Construction Phase

Potential Effects

8.9.112 Potential effects during the construction phase potentially include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.113 These potential impacts are discussed below.

Assessment

8.9.114 The proposed CRC route (CRC7) passes through Fritton Grange Meadows CWS via the use of HDD (of which lowland fen is a designated feature). Consequently, the construction phase effects upon this have also been assessed within the sections above. The HDD route will avoid all impacts upon the habitat, with the cable depth buried at a minimum of 5m below the surveyed riverbed and below the existing peat deposits on which the lowland fen habitat is formed. Embedded avoidance and mitigation measures associated with the HDD operations are provided within **Outline CEMP [EN0110014/APP /7.1]** and the **Outline Cable Route Construction Statement [EN0110014/APP/7.21]**.

8.9.115 In addition, the lowland fen habitat (reedbed) which extends into Sub-Site 7B will be retained and appropriately buffered during the construction period, with the eastern section of Sub-Site 7B to be subject to habitat retention and enhancement measures detailed within the **Outline LEMP [EN0110014/APP/7.4]**.

8.9.116 Standard measures to ensure run-off control and pollution prevention will be implemented through the **Outline CEMP [EN0110014/APP /7.1]**. A minimum 30m 'buffer zones' in relation to the protection of Fritton Grange Meadows CWS and the Hempnall Beck will also serve to protect the Lowland Fen habitat associated with the CWS, and 10m watercourse/ditch buffer zones for minor watercourses and ditches will serve to prevent construction impacts (such as sedimentation). These measures will safeguard lowland fen habitats associated with the Hempnall Beck within and adjacent to the Order Limits and lowland fen habitats further downstream within the River Tas.

8.9.117 With the inclusion of the embedded mitigation measures summarised above and detailed within Section 9.7 of **ES Vol 1; Chapter 9 – Water**

Environment [EN0110014/APP/6.1.9] and the associated embedded mitigation measures presented within the Flood Risk Assessment and **Outline Surface Water Drainage Strategy [EN011 0014/APP/6.3.9.1]**, the potential for construction phase adverse effects (associated with habitat degradation, fragmentation, and loss) upon the ecological receptor of county importance would be negligible. Resulting in a Negligible magnitude effect at the Site scale with no long-term negative effect, which is considered not significant. Accordingly, no significant adverse effects upon lowland fen are anticipated.

Significance of Effects

- 8.9.118 Given that embedded avoidance and mitigation measures to rivers (and therefore the lowland fen habitats associated with them), will be incorporated into the Scheme during the construction phase, no direct effects associated with habitat fragmentation, degradation or loss are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.
- 8.9.119 No additional mitigation measures are required, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

8.9.120 Potential during the operational phase potentially include:

- Habitat loss or change;
- Habitat fragmentation;
- Cessation of agricultural practices; and
- Habitat degradation.

8.9.121 These potential impacts are discussed below.

Assessment

8.9.122 The proposed CRC route (CRC7) passes through Fritton Grange Meadows CWS (of which lowland fen is a designated feature). Consequently, operational phase effects upon this have been assessed within the sections above. In addition, the lowland fen habitat (reedbed) which extends into Sub-Site 7B will be retained, appropriately buffered, and sensitively managed during the operational period in adherence with the **Outline LEMP [EN0110014/APP/7.4]**.

8.9.123 The **Outline OEMP [EN0110014/APP/7.2]** sets out embedded mitigation measures by which operational activities (most notably panel replacement

works) will be managed to avoid, minimise and mitigate any adverse effects on lowland fen habitats associated within the Hempnall Beck and River Tas. Ensuring that there is no pathway for significant direct or indirect effects on the habitat. The Outline OEMP adopts a minimum 30m buffer zone in relation to the protection of Fritton Grange Meadows CWS (and its associated lowland fen habitat), with all maintenance activities (apart from habitat management measures) avoided in this area. These measures will safeguard lowland fen habitats associated with the Hempnall Beck within and adjacent to the Order Limits and lowland fen habitats further downstream within the River Tas.

- 8.9.124 Impacts associated with existing land management practices, including potential herbicide or pesticide drift impacts from existing agricultural fields and manure or fertiliser run-off into watercourses supporting connected lowland fen habitats will be avoided throughout the operational phase due to the cessation of current agricultural practices within the developed sites.
- 8.9.125 Cables buried beneath the peat layer that forms the lowland fen will be fluid-free to reduce the risk of leaching of pollutants to the surrounding hydrogeological environment and will be left in situ during the operational phase. The thermal dynamics of the cables are limited to their immediate proximity and therefore will not significantly affect the thermal dynamics in the lowland fen.
- 8.9.126 With the cessation of intensive agricultural practices, the inclusion of the embedded operational mitigation measures summarised within **ES Vol 1; Chapter 9 – Water Environment [EN0110014/APP/6.1.9]**, and the adherence to the **Outline OEMP [EN0110014/APP/7.2]**, the potential for operational phase adverse effects associated with habitat degradation, loss and fragmentation will be avoided. Therefore, the potential for direct operational phase negative impacts (including those associated with contaminant mobilisation in surface water run-off and groundwater recharge) upon the ecological receptor of county importance will be not significant.

Significance of Effects

- 8.9.127 Given that embedded mitigation measures will be incorporated into the Scheme to avoid operational activities impacting lowland fen during the operational phase, no direct effects are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.
- 8.9.128 No additional mitigation measures are required, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.129 Potential effects during the construction phase potentially include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.130 These potential impacts are discussed below.

Assessment

8.9.131 Cabling beneath the lowland fen habitat within CRC7 will be left in situ, and not subject to decommissioning and excavation processes. This will result in reduced impacts in comparison to the construction phase, with no HDD works undertaken beneath the habitat, thereby avoiding temporary habitat fragmentation. The decommissioning of the BESS site and removal of solar PV apparatus and associated infrastructure is considered likely to result in short-term impacts such as surface soil disturbance and disturbance of adjacent habitats. However, it is considered that measures detailed within the **Outline DEMP [EN0110014/APP/7.3]**; such as run-off control and pollution prevention will be sufficient to prevent short-term decommissioning impacts upon lowland fen within the Order Limits and surrounding ZOI.

Significance of Effects

8.9.132 Given that embedded avoidance and mitigation measures to protect lowland fen, will be incorporated into the Scheme during the decommissioning phase the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.

8.1.1 No additional decommissioning phase mitigation measures are required, and **no residual effects** are anticipated.

Ancient Woodland

8.9.133 There are 31 areas of woodland listed as ancient woodland within the Ancient Woodland Inventory (AWI) (Ref 8-89) located within 2km of the Order Limits. Six of the ancient woodland parcels are located directly adjacent to the Order Limits

8.9.134 Impacts upon the large majority of these Ancient Woodlands have already been assessed previously under the 'statutory designated national and local sites' and 'non-statutory designated sites' sections above, these are not assessed again here. Areas of Ancient Woodland which have not been

assessed (due to them not being a statutory or non-statutory designated site) and therefore are subject to assessment here are:

- Ringers Grove (directly adjacent to Sub-Site 8A);
- The Grove (0.31km east of CRC4); and
- Privet Wood (0.19km south-east of CRC9).

Construction Phase

Potential Effects

8.9.135 Potential effects during the construction phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.136 These potential impacts are discussed below.

Assessment

8.9.137 The Scheme has been designed to avoid all direct impacts to Ancient Woodland parcels. The design principles for the Scheme are set out in the **Design Parameters and Design Principles [EN011014/APP/7.18]** document which includes a series of environmentally led design principles, including in relation biodiversity. This includes restricting development in ecologically sensitive locations and applying appropriate offsets and buffers from important ecological receptors including the adherence to a minimum of 30m buffer from off-site Ancient Woodland parcels.

8.9.138 The **Outline CEMP [EN0110014/APP /7.1]** and the **Outline Cable Route Construction Statement [EN0110014/APP/7.21]** ensure that sufficient embedded mitigation is in place and that the above-mentioned buffer zones are adhered to during construction, so that any residual construction related effects upon the above-mentioned Ancient Woodland parcels are not significant.

8.9.139 Standard measures to ensure run-off control, pollution prevention and construction phase dust impacts will be implemented through the **Outline CEMP [EN0110014/APP/7.1]** and the proposed works surrounding Ancient Woodland (all woodland) will adhere to *BS5837:2012 Trees in relation to design, demolition and construction (Ref 8-90)* and current guidance provided by Natural England (Ref 8-91) (see **ES Vol 3, Appendix 7.10: Preliminary Arboriculture Impact Assessment [EN0110014/APP/ 6.3.7.10]** for further information) and adopt a minimum 30m 'buffer zones.

These measures will safeguard Ancient Woodland habitats adjacent to the Order Limits. Further information on dust avoidance measures is provided within the **Construction and Decommissioning Dust Risk Assessment [EN01100 14/APP/6.3.13.1]**.

8.9.140 The Air Quality Impact Assessment process presented within **ES Vol 1, Chapter 13: Air Quality [EN0110014/APP/6.1.13]** has found that changes in traffic flows attributed to construction are not considered to have the potential to result in a significant effect upon Ancient Woodlands.

8.9.141 New soft landscape planting integrated within the Scheme designs as detailed within the **Outline LEMP [EN0110014/APP/7.4]**, will provide enhanced ecological connectivity surrounding adjacent Ancient Woodlands thereby strengthening the ecological resilience of this woodland block.

Significance of Effects

8.9.142 No direct or indirect habitat loss, degradation or fragmentation effects on Ancient Woodland are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.

8.9.143 No additional construction phase mitigation measures are required, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

8.9.144 Potential effects during the operational phase include:

- Habitat loss or change;
- Cessation of agricultural practices; and
- Habitat degradation.

8.9.145 These potential impacts are discussed below.

Assessment

8.9.146 The Scheme has been designed to avoid all direct impacts to Ancient Woodland parcels, the 30m buffer zones set out in the **Design Parameters and Design Principles [EN011014/APP/7.18]** being retained and enhanced through sympathetic management practices detailed within the **Outline LEMP [EN0110014/APP/7.4]**.

8.9.147 The **Outline OEMP [EN0110014/APP/7.2]** sets out embedded mitigation measures by which operational activities (most notably panel replacement works) will be managed to avoid, minimise and mitigate any adverse effects on Ancient Woodland sites. Ensuring that there is no pathway for significant

direct or indirect effects on the habitat. The **Outline OEMP** adopts a minimum 30m buffer zone in relation to Ancient Woodlands, with all maintenance activities (apart from habitat management measures) avoided in these areas.

8.9.148 Habitats will be maintained within the adjacent Sub-Site 8A in accordance with the **Outline LEMP [EN0110014/APP/7.4]**. This will maintain strengthened habitat connectivity between the Ancient Woodland parcels and the wider landscape to the west and south. The **Outline LEMP** will also maintain habitat buffers of a minimum of 30m surrounding Ringers Grove thereby adhering to *BS5837:2012 Trees in relation to design, demolition and construction* and current guidance provided by Natural England.

8.9.149 It is considered that with good practice measures and the management of habitat buffers within Sub-Site 8B, Ringers Grove will benefit from connectivity with ecologically resilient natural corridors in the landscape compared to the current baseline, which comprises predominantly intensively managed farmland.

8.9.150 Negative impacts (such as pesticide/herbicide/dust drift and natural/artificial fertiliser run-off) associated with existing agricultural land management practices within Sub-Site 8A, will be avoided throughout the operational phase due to the Sub-Site being withdrawn from current agricultural practices.

Significance of Effects

8.9.151 Given that embedded mitigation measures will be incorporated into the Scheme to avoid impacts on surrounding ancient woodland parcels during the operational phase, no effects associated with habitat degradation and/or loss/change are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.

8.9.152 No additional construction phase mitigation measures are required, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.153 Potential effects during the decommissioning phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.154 These potential impacts are discussed below.

Assessment

- 8.9.155 The Scheme has been designed to avoid all direct impacts to Ancient Woodland parcels. The design principles for the Scheme are set out in the **Design Parameters and Design Principles [EN011014/APP /7.18]** document which includes a series of environmentally led design principles, including in relation biodiversity. This includes restricting development in ecologically sensitive locations and applying appropriate offsets and buffers from important ecological receptors including the adherence to a minimum of 30m buffer from off-site Ancient Woodland parcels.
- 8.9.156 The **Outline DEMP [EN0110014/APP /7.3]** ensures that sufficient embedded mitigation is in place such as the protective 30m decommissioning works buffers surrounding ancient woodland parcels, so that any residual construction related effects upon the above-mentioned Ancient Woodland parcels are not significant. Standard measures to ensure run-off control, pollution prevention and construction phase dust impacts will be implemented through the **Outline DEMP** and the proposed works surrounding Ancient Woodland (all woodland) will adhere to *BS5837:2012 Trees in relation to design, demolition and construction (Ref 8-90)* (see within **ES Vol 3, Appendix 7.10: Preliminary Arboriculture Impact Assessment [EN0110014/APP/6.3.7.10]**) and current guidance provided by Natural England (Ref 8-91) and adopt a minimum 30m 'buffer zone' surrounding ancient woodland parcels. These measures will safeguard Ancient Woodland habitats adjacent to the Order Limits. Further information on dust avoidance measures is provided within the **Construction and Decommissioning Dust Risk Assessment [EN01100 14/APP/6.3.13.1]**.
- 8.9.157 The Air Quality Impact Assessment process presented within **ES Vol 1, Chapter 13: Air Quality [EN0110014/APP/6.1.13]** has found that road traffic emission impacts of the Scheme during the decommissioning period will be no worse than the construction phase which are assessed as being negligible and therefore are not considered to have the potential to result in a significant effect upon Ancient Woodlands, and therefore decommissioning effects are considered likely to be equally low.

Significance of Effects

- 8.9.158 No direct or indirect habitat loss, degradation or fragmentation effects on Ancient Woodland are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **Not Significant**.
- 8.9.159 No additional decommissioning phase mitigation measures are required, and **no residual effects** are anticipated.

Ancient / Veteran Trees

8.9.160 There is a total of seventy trees within and immediately surrounding the Order Limits with veteran features. In addition, multiple ancient trees in the wider 2km ZOI are mapped within the Woodland Trusts Ancient Tree Inventory¹. These are all included within the assessment below. Further detailed information is provided within **ES Vol 3, Appendix 7.10: Preliminary Arboriculture Assessment [EN0110014/APP/6.3.7.10]**.

Construction Phase

Potential Effects

8.9.161 Potential effects during the construction phase include:

- Habitat loss or change; and
- Habitat degradation.

8.9.162 These potential impacts are discussed below.

Assessment

8.9.163 No veteran/ancient trees will be removed to facilitate the construction of the Scheme or temporary access requirements. The **Outline CEMP [EN0110014/APP /7.1]** includes embedded mitigation requirements to be implemented to avoid any impacts upon such trees. Ancient or veteran tree Root Protection Areas (RPAs) or buffers will be avoided, and construction techniques will be used to avoid impacts to RPA where the cable route intersect the RPA. The buffer zones of the ancient or veteran trees within the Order Limits will be avoided in accordance with the Design Principles, which will ensure retained veteran/ancient trees are not adversely affected during the construction process. Further information is provided within **ES Vol 3, Appendix 7.10: Preliminary Arboriculture Impact Assessment [EN0110014/APP/6.3.7.10]**.

8.9.164 Measures to construction phase dust impacts will be implemented through the **Outline CEMP [EN0110014/APP/7.1]** and further information on dust avoidance measures is provided within the **Construction and Decommissioning Dust Risk Assessment [EN01100 14/APP/6.3.13.1]**.

Significance of Effects

8.9.165 No habitat loss / degradation effects upon ancient/veteran trees are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.

8.9.166 No additional construction phase mitigation measures are required, and **no residual effects** are anticipated.

¹ Available from: <https://ati.woodlandtrust.org.uk/>

Operational Phase

Potential Effects

8.9.167 Potential effects during the construction phase include:

- Habitat loss or change; and
- Habitat degradation.

8.9.168 These potential impacts are discussed below.

Assessment

8.9.169 Similarly to the above, no veteran/ancient trees will be removed to facilitate the Schemes operational requirements. The **Outline OEMP [EN0110014/APP/7.2]** includes embedded mitigation requirements to be implemented to avoid any impacts upon such trees. Any required solar PV/battery replacement works will incorporate best practice guidance appropriate at that time, which would ensure retained veteran/ancient trees are not adversely affected during the operational process. Further information is provided within **ES Vol 3, Appendix 7.10: Preliminary Arboriculture Impact Assessment [EN0110014/APP/6.3.7.10]**.

Significance of Effects

8.9.170 Given that embedded mitigation measures will be incorporated into the Scheme to avoid impacts on ancient /veteran trees during the operational phase, no habitat loss / degradation effects are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.

8.9.171 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.172 Potential effects during the construction phase include:

- Habitat loss or change; and
- Habitat degradation.

8.9.173 These potential impacts are discussed below.

Assessment

- 8.9.174 Decommissioning dust impacts upon ancient/veteran trees within the Order Limits and wider ZOI arising from on-site Site activities and off-site trackout by decommissioning vehicles will be controlled through the **Outline DEMP [EN0110014/APP/7.3]** and further information on dust avoidance measures is provided within the **Construction and Decommissioning Dust Risk Assessment [EN01100 14/APP/6.3.13.1]**.
- 8.9.175 Embedded mitigation measures adopted through the **Outline DEMP [EN0110014/APP/7.3]** will avoid, minimise and mitigate any adverse effects on ancient/veteran trees. It will ensure that there will be no significant negative direct or indirect effects on these IEF's located within the Order Limits and wider ZOI.
- 8.9.176 Standard measures to ensure run-off control and pollution prevention will be implemented through the **Outline DEMP**. The proposed works surrounding ancient/veteran trees will adhere to *BS5837:2012 Trees in relation to design, demolition and construction* and adopt appropriate buffer zones, which would ensure retained veteran/ancient trees are not adversely affected during the decommissioning process. Further information is provided within **ES Vol 3, Appendix 7.10: Preliminary Arboriculture Impact Assessment [EN0110014/APP/6.3.7.10]**.

Significance of Effects

- 8.9.177 No habitat loss / degradation effects upon ancient/veteran trees are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.
- 8.9.178 No additional decommissioning phase mitigation measures are required, and **no residual effects** are anticipated.

Priority Habitats

- 8.9.179 Through a combination of ecological desk study and extended habitat survey methodologies, ten priority habitats were recorded within the Order Limits and associated 250m ZOI, these being:
- Arable field margins;
 - Native hedgerows;
 - Ponds;
 - Rivers;
 - Lowland deciduous woodland;

- Floodplain grazing marsh;
- Reedbed;
- Lowland fens;
- Traditional orchard; and
- Open mosaic habitat on previously developed land.

8.9.180 For the purpose of this assessment, lowland fen has previously been addressed in the 'Irreplaceable Habitats' section above and will not be addressed here as a priority habitat.

8.9.181 A parcel of open mosaic habitats on previously developed land is mapped within the MAGIC website approximately 0.23km NW of Sub-Site 5A. However, the area mapped is now an operational natural and recycled materials plant subject to regular disturbance and therefore the identified habitat is not considered to be not present, so it will not be addressed here.

Arable Field Margins

Construction Phase

Potential Effects

8.9.182 Potential effects during the construction phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.183 These potential impacts are discussed below.

Assessment

8.9.184 The implementation of extensive 10m buffer zones surrounding field boundary hedgerows will cause no overall loss of arable field margin habitat. Ecological buffers applied to the design of the Scheme are buffer zones set out in the **Design Principles, Parameters and Commitments [EN011014/APP/7.18]**. Although arable field margins will not be buffered specifically, these habitats will primarily fall within the buffer zones of other habitats (such as 10m hedgerow and ditch buffers) and will themselves be retained and protected during the construction phase wherever practicable.

8.9.185 Whilst it is acknowledged that some areas of existing arable field margin may be temporarily impacted during the construction phase to allow CRC works/internal haul routes and Order Limits access points, these will be more

than adequately compensated for through the retention of wider, undeveloped buffer zones. By its very nature, this habitat is a temporary habitat, and reliant on rotational farming measures. Therefore, impacts upon parcels of arable field margin and creation / enhancement of new areas are not considered ecologically significant. Additional areas of arable field margin habitats will be created during the Construction Phase within retained undeveloped arable land within Sites 3, 6 and 9, and Sub-Sites 4B, 5B, 7C, 7E, 8A and 8B and retained areas of arable field margins will be enhanced. Taken together, these measures will mitigate for the loss of any existing habitat parcels.

8.9.186 Habitat creation and enhancement measures will be implemented during the construction period. They will be detailed within the **Outline LEMP [EN0110014/APP/7.4]**. Retained areas of arable field margin will be protected via the implementation of the **Outline CEMP [EN0110014/APP/7.1]**.

8.9.187 The **Biodiversity Net Gain Report [EN0110014/APP/7.23]** (prepared and submitted with the DCO Application) ensures that any losses in arable field margin habitats are fully compensated for through the creation of new areas of this habitat type, as well as the enhancement of areas of retained habitat during the construction phase.

Significance of Effects

8.9.188 Given that embedded measures to protect field boundary features (ditches and hedgerows) which also serve to protect arable field margins, will be incorporated into the Scheme during the construction phase, and additional habitat creation measures (within retained arable parcels) embedded into the Scheme design, the magnitude of impacts is therefore considered to be negligible, resulting in a Negligible effect, which is considered **not significant**. Accordingly, no significant adverse effects associated with habitat loss, fragmentation or degradation on arable field margins within the Order Limits are anticipated

8.9.189 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

8.9.190 Potential effects during the operational phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.191 These potential impacts are discussed below.

Assessment

- 8.9.192 The **Biodiversity Net Gain Report [EN0110014/APP/7.23]** imposes delivery targets on arable field margin habitats retained, enhanced and/or created during the construction phase. The **Outline LEMP [EN0110014/APP/7.4]** will provide long-term management guidance which will ensure the sensitive management of the field margins, thereby achieving long-term habitat enhancement (beneficial change) delivery.
- 8.9.193 The **Outline OEMP [EN0110014/APP /7.2]** will set out the methods by which operational activities (most notably panel/battery replacement works) will be managed to avoid, minimise and mitigate any adverse ecological effects. It will ensure that there will be no pathway for significant direct or indirect effects upon the arable field margin parcels; which would be extremely unlikely as these habitats will be managed and maintained within retained operational arable parcels.
- 8.9.194 With the adoption of the operational phase embedded mitigation measures summarised above, and adherence to the **Outline OEMP**, adherence to the **Outline LEMP** and BNG targets, potential beneficial long-term effects upon the arable field margin parcels of local geographic importance will be **not significant**. In EIA terms this would be a **minor beneficial** effect which is considered **not significant** at the local scale. No additional mitigation is therefore required.

Significance of Effects

- 8.9.195 With the adoption of the operational phase embedded mitigation measures summarised above, and adherence to the **Outline OEMP**, adherence to the **Outline LEMP** and BNG targets during the operational phase, the Scheme will avoid habitat loss/fragmentation and degradation and result in a magnitude of impact of low beneficial (habitat change), resulting in a Positive effect, which is considered **not significant** at a Site scale.
- 8.9.196 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.197 Potential effects during the decommissioning phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.198 These potential impacts are discussed below.

Assessment

8.9.199 During the decommissioning phase, arable field margins may potentially be subject to minor disturbance impacts through vehicle traffic and other activities and minor habitat degradation impacts. However, it is considered that standard pollution prevention measures and habitats impact avoidance measures detailed within the **Outline DEMP [EN0110014/APP/7.3]** will be sufficient to prevent significant decommissioning impacts.

8.9.200 Due to the habitats location within close proximity to retained boundary vegetation such as hedgerows and trees, arable field margins will largely be retained during the decommissioning process.

Significance of Effects

8.9.201 With the retention of habitats and adherence to the **Outline DEMP [EN0110014/APP/7.3]**, the magnitude of impact is therefore considered to be negligible, resulting in a Negligible effect, which is considered **not significant**. Accordingly, no significant adverse effects associated with habitat loss, fragmentation or degradation on arable field margins within the Order Limits are anticipated.

8.9.202 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Native Hedgerows (and Tree Lines)

Construction Phase

Potential Effects

8.9.203 Potential effects during the construction phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.204 These potential impacts are discussed below.

Assessment

8.9.205 The Scheme design has sought to retain existing hedgerow systems throughout the Order Limits. Also, the implementation of extensive 10m buffer zones surrounding field boundary hedgerows (extending to a minimum of 15m individual trees and groups of trees) will allow for the construction phase protection of hedgerows and enhancement of these linear features

during construction phase. Ecological buffers applied to the design of the Scheme are provided within the **Design Principles, Parameters and Commitments [EN011014/APP /7.18]**.

- 8.9.206 The retention of existing hedgerows and tree lines has been incorporated into the Scheme design, including the use of existing field access routes and hedgerow gaps for construction activities to avoid loss of hedgerows to accommodate access routes. As such, any removal of hedgerows has been much reduced. However, minor temporary hedgerow removal will be required (typically consisting of up to 10m sections) throughout the Order Limits during construction to facilitate CRC works/haul routes and access requirements will be required, this loss will be proportionately very small, and new hedgerow replacement planting will be implemented in the next planting season following the work to ensure that any losses are compensated for.
- 8.9.207 Any hedgerows lost for these reasons will be more than adequately compensated through the adherence to the **Biodiversity Net Gain Report [EN0110014/APP/7.23]** delivery targets. This will ensure the retention of wider undeveloped buffer zones surrounding hedgerows, planting of new lengths of hedgerow, and enhancement of existing hedges through additional planting in gaps and hedge laying. Hedgerow planting and other enhancement measures implemented during the construction period will be detailed within the **Outline LEMP [EN0110014/APP/7.4]**, and the extensive areas of retained hedgerow will be identified and protected via the implementation of the **Outline CEMP [EN0110014/APP /7.1]**.
- 8.9.208 Additionally, where practicable within the CRC, open cut trenching will be avoided in seventeen locations, with HDD trenchless solutions employed, thereby avoiding temporary hedgerow removals, these avoidance areas are detailed within the **Outline Cable Route Construction Statement [EN0110014/APP/7.21]**. A final Crossing Schedule of key infrastructure and environmental features will be provided for each stage of construction and secured via the **Outline CEMP [EN0110014/APP/7.1]**
- 8.9.209 Standard measures to ensure run-off control, pollution prevention and construction phase dust impacts will also be implemented through the **Outline CEMP [EN0110014/APP/7.1]**. These measures will safeguard retained hedgerows and trees within the Order Limits and surrounding landscape. Albeit these pollution impact pathways would not be anticipated to be significantly greater than the existing baseline position as a result of current agricultural activities such as ploughing and crop harvesting.

Significance of Effects

- 8.9.210 The magnitude of impacts associated with habitat loss, fragmentation and degradation as a result of construction activities would be negligible, (short-term reversible impact at the Site scale with no long-term negative effect) and which is considered **not significant**. Accordingly, no significant adverse

effects on hedgerows are anticipated as a result of the construction phase, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

8.9.211 Potential effects during the operational phase include:

- Habitat loss or change;
- Habitat fragmentation;
- Cessation of agricultural practices; and
- Habitat degradation.

8.9.212 These potential impacts are discussed below.

Assessment

8.9.213 Impacts on hedgerows and trees during operation are not anticipated, particularly when considering all ecological buffers which will be implemented and observed throughout the operational period. As a result, no significant adverse effects on hedgerows and trees are anticipated during the operational phase, and no additional mitigation measures are required.

8.9.214 Following their establishment, it is anticipated that the Scheme will result in a net-gain in hedgerows (and trees). Details of hedgerow losses and gains are provided within the **Biodiversity Net Gain Report [EN0110014/APP/7.23]** and ongoing management measures during the operational phase are provided within the **Outline LEMP [EN0110014/APP/7.4]**, which aims to maximise the biodiversity value of retained and newly planted hedgerows in the long term. This will include rotational cutting of the hedgerows to ensure a diversity of habitats and the availability of foraging resources (such as berries) throughout the year.

8.9.215 The cessation of intensive arable farming and use of pesticides and fertilisers is likely to be of benefit to the hedgerows and trees during the lifespan of the Scheme, encouraging the diversification of hedgerow ground flora.

Significance of Effects

8.9.216 With adherence to the adopted measures within the **Outline OEMP [EN0110014/APP/7.2]**, habitat degradation/loss/fragmentation impacts will be avoided and following the establishment of newly planted hedgerows and the implementation of the management prescriptions specified in the **Outline LEMP** over the course of the operational phase, it is anticipated that the magnitude of impacts is therefore considered to be moderate beneficial,

resulting in a Positive effect (positive habitat change), which is considered **significant** at a local scale.

8.9.217 No additional mitigation measures are deemed to be required, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.218 Potential effects during the decommissioning phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.219 These potential impacts are discussed below.

Assessment

8.9.220 The temporary impacts upon hedgerows associated with decommissioning works, will be much reduced in comparison with the construction phase. Cabling within the CRC will be retained and NG Substation retained, thereby much reducing the extent of decommissioning activity.

8.9.221 Hedgerows which are both present pre-construction and planted during the construction period will be largely retained within the landscape. Decommissioning works will seek to maintain the 15m hedgerow buffer zones. However, during the decommissioning phase there is the potential for some hedgerows to be subject to minor impacts for access purposes, although it is considered likely that existing access points will be utilised for such purposes. If minor hedgerow removal is required during decommissioning, this will be subject to reinstatement following the cessation of the decommissioning works.

8.9.222 Standard pollution prevention measures and habitats impact avoidance measures detailed within the **Outline DEMP [EN0110014/APP/7.3]** will be adopted and will be sufficient to prevent significant decommissioning impacts upon hedgerows. Taken together with the retention/protection of existing hedgerows, these measures will be sufficient to prevent significant decommissioning impacts upon hedgerows and tree lines.

Significance of Effects

8.9.223 Taking into account the embedded avoidance and mitigation measures adopted, this results in a magnitude of impact of negligible, resulting in a Negligible effect which is **not significant**. Accordingly, no significant adverse habitat loss/fragmentation/degradation effects on hedgerows (and lines of

trees) are anticipated as a result of the decommissioning phase of the Scheme

8.9.224 No additional decommissioning phase mitigation measures are required, and **no residual effects** are anticipated.

Ponds

Construction Phase

Potential Effects

8.9.225 Potential effects during the operational phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.226 These potential impacts are discussed below.

Assessment

8.9.227 The retention of all ponds within the Order Limits, and implementation of extensive buffer zones surrounding all ponds within the operational land parcels (sub-Site and BESS Site), will avoid all direct impacts during the construction phase. Adopted pond buffer zones (within the sub-Site and BESS Site) applied to the design of the Scheme are provided within the **Design Principles, Parameters and Commitments [EN011014/APP/7.18]**, these include 50m buffers surrounding ponds known to support GCN (or if no GCN survey has been undertaken a precautionary 50m buffer has been applied), and 30m buffers surrounding ponds which surveys have proven negative for GCN.

8.9.228 No permanent construction works (i.e. works within the sub-Site and BESS Site) will be undertaken within the 30m and 50m wet pond buffer zones, apart from proposed habitat enhancement works to be undertaken during the construction phase immediately surrounding the ponds, which will include the enhancement of existing ponds and existing dry ponds (reprofiling etc). In addition, a further seven ponds which will be created within the Scheme during the construction phase, located close to former pond sites or 'ghost ponds' (Ref 8-92). Habitat creation and enhancement measures are further detailed within the **Outline LEMP [EN0110014/APP/7.4]**.

8.9.229 The approach to pond avoidance within the temporary works areas (CRC and Highway Works Areas) is very much adhered to the information provided above with 50m/30m avoidance areas observed throughout these areas where possible, however, within some areas, limited temporary

construction works (cable burials and access works) may potentially impact small areas of field margin/hedgerow habitats within 50m of ponds.

- 8.9.230 Where located within the CRC, impacts will be temporary in nature and will not impact upon ponds directly. These consist of Pond 220 (CRC4), Ponds 221 & 222 (CRC8), and Ponds 226 and 227 (CRC13). The overall impact of working within 50m of these ponds is considered to be negligible, and the majority of impacts will occur within arable fields which are subject to regular disturbance from intensive agricultural practices.
- 8.9.231 Additionally, Ponds 234, 237, and 238 are located within 50m of Highway Works area LCH, and Ponds 106 and 108 are located within 50m of Highway Works area 'Slither 3' adjacent to Sub-Site 7D, and Ponds 232 and 233 located within 50m of Highway Works area LHL. Habitat impacts within these areas will be minimal, likely being restricted to hedgerow trimming/reduction and tree canopy reduction works which would not impact pond habitats.
- 8.9.232 All pond locations are provided within Appendix 8.3: Great Crested Newt Survey Report – Figure 1 [EN0110014/ APP/6.3.8.3).
- 8.9.233 An ecologically sensitive approach to construction will be implemented through the provision of the **Outline CEMP [EN0110014/APP/7.1]**. The Outline CEMP details measures including (but not limited to) the management of runoff and pollution, and the use of soil bunds and silt traps to ensure that appropriate run-off control and pollution prevention measures are adopted to avoid construction phase impacts upon ponds within the Order Limits and surrounding ZOI.

Significance of Effects

- 8.9.234 Given that embedded measures to protect ponds, will be incorporated into the Scheme during the construction phase, and additional habitat creation measures embedded into the Scheme design. No habitat loss, fragmentation or degradation effects upon ponds are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**, and no additional mitigation measures are deemed to be required, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

- 8.9.235 Potential effects during the operational phase include:
- Habitat loss or change;
 - Habitat fragmentation;
 - Cessation of agricultural practices; and

- Habitat degradation.

8.9.236 These potential impacts are discussed below.

Assessment

8.9.237 The cessation of intensive arable farming and use of pesticides and fertilisers is likely to be of benefit to pond ecology during the lifespan of the Scheme. Above the habitat management activities within the retained pond buffer zones, impacts surrounding ponds within the operational sites are not anticipated. Ongoing management measures during the operational phase are provided within the **Outline LEMP [EN0110014/APP/7.4]**, which aims to maximise the biodiversity value of retained and newly excavated ponds in the long term. This will include periodic excavation/de-silting to ensure continued water retention throughout the operational phase.

8.9.238 The **Outline OEMP [EN0110014/APP /7.2]** ensures that operational activities (most notably panel/battery replacement works) will be managed to avoid negative impacts upon ponds (existing and those created during construction). Therefore, there will be no pathway for significant pond habitat degradation or loss.

Significance of Effects

8.9.239 In adherence to the **Outline OEMP [EN0110014/APP /7.2]** and following the establishment of newly created ponds and the implementation of the management prescriptions specified in the **Outline LEMP [EN0110014 /APP/7.4]** over the course of the operational phase, it is anticipated that the magnitude of effect will be moderate beneficial, resulting in a Positive effect, which is considered **significant** at a local scale.

8.9.240 No additional mitigation measures are deemed to be required, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.241 Potential effects during the decommissioning phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.242 These potential impacts are discussed below.

Assessment

8.9.243 All ponds located within the Scheme will be retained and protected, e.g. by means of stand-off distances during the decommissioning phase. Embedded measures detailed within the **Outline DEMP [EN0110014/APP/7.3]**; such as run-off control and pollution prevention will prevent decommissioning impacts upon ponds within the Order Limits and surrounding ZOI. It is also considered likely that buffer zone habitats surrounding ponds developed through the operational phase will be retained during decommissioning.

Significance of Effects

8.9.244 It is considered that the measures detailed within the **Outline DEMP** will be sufficient to prevent decommissioning habitat loss, degradation and fragmentation impacts upon ponds. Therefore, with the inclusion of the embedded mitigation measures and adherence to the **Outline DEMP** the potential for decommissioning phase magnitude of effects upon the pond habitats is considered to be negligible, resulting in a Negligible effect which is **not significant**, and no additional mitigation measures are deemed to be required, and **no residual effects** are anticipated.

Rivers

Construction Phase

Potential Effects

8.9.245 Potential effects during the construction phase include:

- Habitat fragmentation; and
- Habitat degradation.

8.9.246 These potential impacts are discussed below.

Assessment

8.9.247 The proposed CRC route passes through four watercourses, including Hempnall Beck (in two places: CRC6 and CRC7), direct impacts upon the watercourses via the use of HDD. The HDD route will avoid all impacts upon the habitat, with the cable depth buried at a minimum of 5m below the surveyed riverbed. Embedded avoidance and mitigation measures associated with the HDD operations are provided within **Outline CEMP [EN0110014/APP/7.1]** and the **Outline Cable Route Construction Statement [EN0110014/APP/7.21]**.

8.9.248 The Scheme has been designed to retain and avoid all direct impacts to rivers present within and immediately adjacent to the Order Limits. The design principles for the Scheme are set out in the **Design Principles, Parameters and Commitments [EN011014/APP/7.18]** document which

includes a series of environmentally led design principles, including applying appropriate 10m minimum buffers from all watercourses.

- 8.9.249 Measures to ensure run-off control and pollution prevention will be implemented through the **Outline CEMP [EN0110014/APP /7.1]**, including (but not limited to) the management of runoff and pollution, and the use of soil bunds and silt traps. In addition, the HDD methodology employed within CRC7 will adhere to an increased buffer zone of a minimum of 30m surrounding Fritton Grange Meadows CWS and therefore will serve to also protect Hemphall Beck. A 10m ditch buffer zone will also serve to prevent construction impacts (such as sedimentation) entering the adjacent watercourses.
- 8.9.250 With the inclusion of the embedded mitigation measures summarised above and detailed within Section 9.7 of **ES Vol 1; Chapter 9 – Water Environment [EN0110014/APP/6.1.9]** and the associated embedded mitigation measures presented within the Flood Risk Assessment and **Outline Surface Water Drainage Strategy [EN011 0014/APP/6.3.9.1]**, the potential for construction phase effects (associated with habitat degradation and fragmentation) upon the ecological receptor of regional importance would be negligible.

Significance of Effects

- 8.9.251 Given that embedded avoidance and mitigation measures to protect rivers, will be incorporated into the Scheme during the construction phase the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.
- 8.9.252 **No additional construction phase mitigation** measures are required, and no residual effects are anticipated.

Operational Phase

Potential Effects

- 8.9.253 Potential effects during the operational phase include:

- Habitat fragmentation;
- Cessation of agricultural practices; and
- Habitat degradation.

- 8.9.254 These potential impacts are discussed below.

Assessment

- 8.9.255 During the operational phase there will be active underground cabling passing beneath watercourses within the CRC. Buried cables will be fluid-

free to reduce the risk of leaching of pollutants within the watercourses and will be left in situ during the operational phase. The thermal dynamics of the sheathed cables are limited to their immediate proximity and therefore will not significantly affect the thermal dynamics within the watercourse channels.

- 8.9.256 The **Outline OEMP [EN0110014/APP/7.2]** sets out embedded mitigation measures by which operational activities (most notably solar PV/battery replacement works) will be managed to avoid, minimise and mitigate any adverse effects on watercourses. Ensuring that there is no pathway for significant direct or indirect effects. The Outline OEMP adopts a minimum 10m buffer zone in relation to the protection of rivers (increased to a minimum of 30m for Fritton Grange Meadows CWS which Hempnall Beck flows through in CRC7), with all maintenance activities (apart from habitat management measures) avoided in these areas. These measures will safeguard aquatic habitats from degradation.
- 8.9.257 Impacts associated with existing land management practices, including potential manure or fertiliser run-off into watercourses will be avoided within the operational parcels (Solar PV panelled fields) throughout the operational phase due to the cessation of current agricultural practices.
- 8.9.258 Enhancement to watercourse riparian corridors located within (or within 10m of) operational sites are included within the **Biodiversity Net Gain Report [EN0110014/APP/7.23]** delivery targets. This will ensure watercourse buffers are maintained within the Order Limits and long-term enhancements are managed throughout the operational period. The operational phase management of river riparian corridor habitats enhanced during the construction period is detailed within the **Outline LEMP [EN0110014/APP/7.4]**, and the watercourses will be protected via the implementation of the **Outline OEMP [EN0110014/APP/7.2]**.

Significance of Effects

- 8.9.259 With the cessation of intensive agricultural practices, the inclusion of the embedded operational mitigation measures summarised within **ES Vol 1; Chapter 9 – Water Environment [EN0110014/APP/6.1.9]**, and the adherence to the **Outline OEMP [EN0110014/APP/7.2]**, the potential for operational phase adverse effects associated with habitat degradation, loss and fragmentation will be avoided. Therefore, the magnitude of impacts is therefore considered to be moderate beneficial, resulting in a Positive effect, which is considered **significant** at a local scale.
- 8.9.260 No additional mitigation measures are required, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.261 Potential effects during the decommissioning phase include:

- Habitat fragmentation; and
- Habitat degradation.

8.9.262 These potential impacts are discussed below.

Assessment

8.9.263 Cabling beneath watercourses will be left in situ, and not subject to decommissioning and excavation processes. This will result in reduced impacts in comparison to the construction phase, with no works undertaken within river corridors, thereby avoiding temporary habitat fragmentation. The decommissioning of the BESS site and removal of solar PV apparatus and associated infrastructure is considered likely to result in short-term impacts such as surface soil disturbance and disturbance of adjacent habitats. However, it is considered that measures detailed within the **Outline DEMP [EN0110014/APP/7.3]**; such as run-off control and pollution prevention will be sufficient to prevent short-term decommissioning impacts upon watercourses

Significance of Effects

8.9.264 Given that embedded avoidance and mitigation measures to protect rivers, will be incorporated into the Scheme during the decommissioning phase the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.

8.9.265 No additional decommissioning phase mitigation measures are required, and **no residual effects** are anticipated.

Lowland Deciduous Woodland (and other woodland)

8.9.266 Two lowland deciduous woodland priority habitat parcels are located within the Scheme at Sub-Site 4B and CRC9 (which forms Lower Spring Wood CWS which is assessed above and will not be included here). A further 52 parcels of lowland deciduous woodland are located within 250m of the Order Limits. Many of these parcels are also categorised as Ancient Woodland irreplaceable habitats and statutory/non-statutory designated sites, and as such have been considered above within the corresponding sections and not considered again within this section.

8.9.267 In addition to the priority habitat parcels, multiple areas of non-priority woodland and mixed woodland types are also located within and immediately surrounding the Order Limits. As the approach to avoidance and mitigation is identical for both priority and non-priority woodlands, both are included within the assessment of effects below.

Construction Phase

Potential Effects

8.9.268 Potential effects during the construction phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.269 These potential impacts are discussed below.

Assessment

8.9.270 All woodland blocks will be retained and avoided during the construction period. The implementation of a minimum 15m buffer zone surrounding woodlands will allow for the prevention of direct impacts during the construction phase. Ecological buffers being applied to the design of the Scheme are listed in are provided within the **Design Principles, Parameters and Commitments [EN011014/APP/7.18]**.

8.9.271 Measures to ensure run-off control, dust control and pollution prevention will be implemented through the within **Outline CEMP [EN0110014/APP/7.1]**, and the proposed works surrounding woodlands will adhere to *BS5837:2012 Trees in relation to design, demolition and construction*. These measures will safeguard woodland habitats within and adjacent to the Order Limits.

8.9.272 Whilst it is acknowledged that minor disturbance effects from construction may occur, it should be noted that a certain amount of noise disturbance, dust deposition and run-off would also be expected as a result of regular agricultural activities, and as such these impacts are considered likely to be similar to the current baseline conditions.

8.9.273 The Scheme design is guided by the **Biodiversity Net Gain Report [EN0110014/APP/7.23]** which ensures the retention of wider undeveloped buffer zones surrounding woodlands and the planting of new blocks of woodland habitats within the Scheme during the construction phase. This will deliver clear, quantifiable BNG for woodland habitats. Woodland planting and enhancement measures implemented during the construction period will be detailed within the **Outline LEMP [EN0110014/APP/7.4]**, and the woodlands will be protected via the implementation of the **Outline CEMP [EN0110014/APP/7.1]**. Woodland planting will contribute to the strengthening of habitat connectivity between existing woodland parcels and have been influenced by the local conservation objectives where gains from connecting habitat parcels are evident.

8.9.274 With the adoption of the construction phase embedded mitigation measures summarised above and adherence to the OCEMP, the potential for

significant construction phase adverse effects upon the lowland deciduous woodland habitats of local geographical importance is **not significant**. In EIA terms this would be a **negligible** effect which is considered **not significant**. No additional mitigation is therefore likely to be required.

Significance of Effects

8.9.275 Taking into account the embedded mitigations measures adopted, this results in a Negligible effect which is **not significant**. Accordingly, no significant adverse effects on the lowland deciduous woodland habitats are anticipated as a result of the operational phase of the Scheme

8.9.276 No additional construction phase mitigation measures are required, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

8.9.277 Potential effects during the operational phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.278 These potential impacts are discussed below.

Assessment

8.9.279 The nature of the operational activities (even during periods of battery/panels replacement works), will result in very little risk to woodland damage or removal. Due to the implementation and maintenance of ecological buffer zones surrounding woodlands during the entire operational period. The **Outline OEMP [EN0110014/APP/7.2]** sets out embedded mitigation measures by which operational activities (most notably panel/battery replacement works) will be managed to avoid, minimise and mitigate any adverse ecological effects, ensuring that there is no pathway for significant direct or indirect effects upon woodlands within and surrounding the Order Limits.

8.9.280 It is considered that with good practice management measures (as detailed within the **Outline LEMP [EN0110014/APP/7.4]**,) and the management of habitat buffers surrounding woodlands (in adherence with the aims of the **Biodiversity Net Gain Report [EN0110014/APP/7.23]**), habitat connectivity will be improved, with ecologically resilient natural corridors connecting woodlands, compared to the current baseline, which comprises predominantly of intensively managed farmland bordering woodlands. The cessation (within areas subject to development) of large-scale herbicide or

pesticide application and manure/fertiliser application within the Sub-Sites will also help protect existing and newly created woodlands within and surrounding the Order Limits.

Significance of Effects

8.9.281 Following the establishment of newly woodlands and the implementation of the management prescriptions specified in the **Outline LEMP** over the course of the operational phase, it is anticipated that the Scheme will result in a magnitude of impact of moderate beneficial, resulting in a Positive effect, which is considered **significant** at a local scale.

8.9.282 No additional mitigation measures are deemed to be required, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.283 Potential effects during the decommissioning phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.284 These potential impacts are discussed below.

Assessment

8.9.285 The temporary impacts associated with decommissioning works, will be much reduced in comparison with construction, with cabling within the CRC retained and NG Substation retained in situ. .

8.9.286 Woodlands (including priority woodland habitats) which are present pre-construction will be retained within the landscape, with decommissioning works seeking to adhere to the 15m buffer zones. It is also expected that woodland habitats planted during the construction period will be retained within the Order Limits. Decommissioning works surrounding woodlands will adhere to *BS5837:2012 Trees in relation to design, demolition and construction* (or the relevant guidance available at that time). The **Outline DEMP [EN0110014/APP/7.3]** provides outline embedded pollution prevention measures and woodland impact avoidance measures which will be sufficient to prevent significant decommissioning impacts upon woodland. Measures to construction phase dust impacts will also be implemented through the **Outline DEMP [EN0110014/APP/7.3]** and further information on dust avoidance measures is provided within the **Construction and Decommissioning Dust Risk Assessment [EN01100 14/APP/6.3.13.1]**.

8.9.287 With the retention of woodland habitats and adherence to the decommissioning phase embedded mitigation/avoidance measures detailed within the **Outline DEMP** the potential for decommissioning phase negative effects attributed to habitat loss/change, habitat fragmentation, and degradation of woodland habitats is considered to be negligible.

Significance of Effects

8.9.288 Taking into account the embedded avoidance and mitigation measures adopted, this results in a magnitude of impact of negligible, resulting in a Negligible effect which is **not significant**. Accordingly, no significant adverse effects on the lowland deciduous woodland habitats are anticipated as a result of the decommissioning phase of the Scheme

8.9.289 No additional decommissioning phase mitigation measures are required, and **no residual effects** are anticipated.

Floodplain grazing marsh (and Reedbed)

Construction Phase

Potential Effects

8.9.290 Potential effects during the construction phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.291 These potential impacts are discussed below.

Assessment

8.9.292 There are three parcels within 250m of the Order Limits. A section of one area of mapped habitat is located within the eastern section of Sub-Site 7B and northern section of CRC7. Additional areas are located adjacent to Sub-Site 4A and approximately 90m north of Sub-Site 4B.

8.9.293 The area of floodplain grazing marsh located within Sub-Site 7B (approximately 0.76ha) was identified as 'other neutral grassland' during the extended habitat survey, with little evidence to suggest that the habitat actually functions as floodplain grassland. In addition, there is a small (0.09ha) area of reedbed within the south-eastern section of Sub-Site 7B, which is associated with this grassland and as such both priority habitats are covered in this section. This area of other neutral grassland (and all of the associated reedbed) will be retained and protected in adherence to the **Outline CEMP [EN0110014/APP/7.1]** and enhanced during the construction

period in adherence to the **Outline LEMP [EN0110014/APP/7.4]** and the **Biodiversity Net Gain Report [EN0110014/APP/7.23]** commitments.

8.9.294 With the inclusion of the embedded mitigation measures summarised above and detailed within Section 9.7 of **ES Vol 1; Chapter 9 – Water Environment [EN0110014/APP/6.1.9]** and the associated embedded mitigation measures presented within the Flood Risk Assessment and **Outline Surface Water Drainage Strategy [EN011 0014/APP/6.3.9.1]**, the potential for construction phase adverse effects (associated with habitat degradation caused by aquatic impacts) would be avoided within on-site habitats and floodplain grazing marsh in the surrounding environs.

Significance of Effects

8.9.295 With the inclusion of the embedded mitigation measures provided within the **Outline CEMP**, and habitat retention and enhancement during the construction phase, the magnitude of impact on floodplain grazing marsh (and associated reedbed) as a result of construction activities would be negligible magnitude, (short-term reversible impact at the Site scale with no long-term negative effect) and which is considered **not significant**. Accordingly, no significant adverse effects on these habitats are anticipated as a result of the construction phase.

8.9.296 No additional mitigation is therefore likely to be required, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

8.9.297 Potential effects during the operational phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.298 These potential impacts are discussed below.

Assessment

8.9.299 With the cessation of intensive agricultural practices and the adherence to the **Outline OEMP [EN0110014/APP/7.2]**, the potential for operational phase adverse effects associated with habitat degradation, loss and fragmentation will be avoided within the Order Limits and within the priority habitat parcels present in the wider landscape.

8.9.300 Enhancement of the habitats within Sub-Site 7B is included within the **Biodiversity Net Gain Report [EN0110014/APP/7.23]** delivery targets. This

will ensure that the grassland/reedbed habitats identified as floodplain/grazing marsh will be maintained within the Sub-Site 7B and long-term enhancements are managed throughout the operational period in accordance with the **Outline LEMP [EN0110014/APP /7.4]** and protected via the implementation of the Outline **OEMP [EN011 0014/APP/7.2]**.

Significance of Effects

- 8.9.301 Given the embedded avoidance and mitigation measures that will be adopted during the operational phase, and the implementation of the management prescriptions specified in the **Outline LEMP** over the course of the operational phase, it is anticipated that the Scheme will result in a magnitude of impact of low beneficial, resulting in a Positive effect, which is considered **not significant** at a Site scale.
- 8.9.302 No additional operational phase mitigation measures are required, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.303 Potential effects during the decommissioning phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.304 These potential impacts are discussed below.

Assessment

- 8.9.305 The floodplain grazing marsh (other neutral grassland) and associated small area of reedbed located within the eastern section of sub-Site 7B will be retained, in accordance with the pre-construction habitat baselines during the decommissioning period. This will ensure ensuring that permanent impacts associated with the Scheme upon the habitat will be avoided. Floodplain grazing marsh habitats located within CRC7 will not be directly impacted as cabling beneath watercourses will be retained and not subject to decommissioning and excavation processes. This will result in reduced impacts in comparison to the construction phase.
- 8.9.306 Standard measures detailed within the **Outline DEMP [EN0110014/APP /7.3]** such as run-off control and pollution prevention will be sufficient to control potential decommissioning impacts upon the habitat within the Order Limits and the wider ZOI. Therefore, with the inclusion of the embedded mitigation measures and adherence to the Outline DEMP the potential for decommissioning phase negative effects attributed to habitat loss/change,

habitat fragmentation, and habitat degradation upon the floodplain grazing marsh ecological receptor is negligible.

Significance of Effects

- 8.9.307 With the inclusion of the embedded mitigation measures provided within the **Outline DEMP**, and habitat retention during the decommissioning phase, the magnitude of impact on floodplain grazing marsh (and associated reedbed) within the Order Limits and wider ZOI as a result of decommissioning activities would be of a negligible magnitude (short-term reversible impact at the Site scale with no long-term negative effect) and which is considered **not significant**. Accordingly, no significant adverse effects on these habitats are anticipated as a result of the decommissioning phase.
- 8.9.308 **No additional decommissioning phase mitigation** measures are required, and no residual effects are anticipated.

Traditional Orchard

Construction Phase

Potential Effects

- 8.9.309 Potential effects during the construction phase include:
- Habitat loss or change; and
 - Habitat degradation.

8.9.310 These potential impacts are discussed below.

Assessment

- 8.9.311 There are no areas of traditional orchard within the Order Limits although there are six parcels located within 250m. The closest is 70m to the east of Sub-Site 7D. Due to the separation distances involved, it is considered that standard measures detailed within the **Outline CEMP [EN0110014/APP/7.1]** such as run-off control and pollution prevention (including dust control) will be sufficient to prevent construction impacts (such as habitat degradation, fragmentation, and direct habitat loss) upon orchard habitats.

Significance of Effects

- 8.9.312 Given the separation distances and embedded mitigation measures within the Outline CEMP incorporated into the Scheme during the construction phase, no direct effects on orchards in the wider ZOI are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.

8.9.313 **No additional construction phase mitigation** measures are required, and no residual effects are anticipated.

Operational Phase

Potential Effects

8.9.314 Potential effects during the operational phase include:

- Habitat loss or change; and
- Habitat degradation.

8.9.315 These potential impacts are discussed below.

Assessment

8.9.316 As with the construction phase impacts, due to the separation distance and with the inclusion of the embedded mitigation measures in the **Outline CEMP [EN0110014/APP/7.1]** the potential for operational phase adverse effects (habitat loss/change, fragmentation, and degradation) is considered to be **negligible**.

Significance of Effects

8.9.317 No direct effects on traditional orchards are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.

8.9.318 No additional operational phase mitigation measures are required, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.319 Potential effects during the decommissioning phase include:

- Habitat loss or change; and
- Habitat degradation.

8.9.320 These potential impacts are discussed below.

Assessment

8.9.321 Due to the separation distances involved, it is considered that standard measures detailed within the **Outline DEMP [EN0110014/APP /7.3]** such as run-off control and pollution prevention (including dust control) will be sufficient to prevent construction impacts (such as habitat degradation,

fragmentation, and direct habitat loss) upon orchard habitats within the wider ZOI.

Significance of Effects

- 8.9.322 Given the separation distances and embedded mitigation measures within the **Outline DEMP** incorporated into the Scheme during the decommissioning phase, no effects on orchards in the wider ZOI are anticipated, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**.
- 8.9.323 No additional decommissioning phase mitigation measures are required, and **no residual effects** are anticipated.

Non-priority habitats within the Order Limits considered to be Important Ecological Features

Scrub

Construction Phase

Potential Effects

8.9.324 Potential effects during the construction phase include:

- Habitat loss or change; and
- Habitat degradation.

8.9.325 These potential impacts are discussed below.

Assessment

8.9.326 Scrub is considered to be a scarce habitat within the Order Limits, with approximately 1.14ha present. Scrub habitat will be retained during the construction phase, and the **Biodiversity Net Gain Report [EN0110014/APP/7.23]** includes targets to increasing the areas of scrub habitats within the Order Limits during the construction phase. Scrub planting measures implemented during the construction period will be detailed within the **Outline LEMP [EN0110014/APP/7.4]** and retained habitats will be protected via the implementation of the **Outline CEMP [EN0110014/APP/7.1]**.

Significance of Effects

8.9.327 Given that embedded measures will be incorporated into the Scheme during the construction phase, and additional habitat creation measures embedded into the Scheme design, the magnitude of impact on limited areas of scrub as a result of construction activities would be negligible, (short-term

reversible impact at the Site scale with no long-term negative effect) and which is considered **not significant**. Accordingly, no significant adverse effects on scrub habitats are anticipated as a result of the construction phase, and no additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

8.9.328 Potential effects during the operational phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.329 These potential impacts are discussed below.

Assessment

8.9.330 The nature of the operational activities (even during periods of battery/solar PV replacement works), will result in very little risk to areas of retained/created scrub as these are located away from open solar PV panelled areas/BESS area. The **Outline OEMP [EN0110014/APP/7.2]** sets out embedded mitigation measures by which operational activities (most notably panel/battery replacement works) will be managed to avoid, minimise and mitigate any adverse ecological effects, ensuring that there is no pathway for significant direct or indirect effects upon scrub habitats within and surrounding the Order Limits.

8.9.331 The long-term management of habitats created during the construction phase as informed by the **Biodiversity Net Gain Report [EN0110014/APP/7.23]** will be undertaken in adherence with the good practice management measures detailed within the **Outline LEMP [EN0110014/APP/7.4]**, resulting in the development of relatively species-rich and diverse areas of scrub habitats developing within the Order Limits, providing biodiversity gains for a range of species.

Significance of Effects

8.9.332 Following the establishment of new areas of scrub habitats and the implementation of the management prescriptions specified in the **Outline LEMP** over the course of the operational phase, it is anticipated that the Scheme will result in a magnitude of impact of moderate beneficial, resulting in a Positive effect, which is considered **significant** at a local scale, with no additional mitigation measures considered necessary, and **no residual effects** anticipated.

Decommissioning Phase

Potential Effects

8.9.333 Potential effects during the decommissioning phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.334 These potential impacts are discussed below.

Assessment

8.9.335 Scrub habitats present pre-construction and planted during the construction period will be retained within the landscape during the decommissioning activities, with the exception of the potential for some areas to be subject to minor impacts for access purposes, although it is considered likely that existing access points will be utilised for such purposes.

8.9.336 Standard pollution prevention measures and habitat impact avoidance measures detailed within the **Outline DEMP [EN0110014/APP/7.3]** will be adopted and will be sufficient to prevent significant decommissioning impacts upon scrub habitats.

Significance of Effects

8.9.337 Taking into account the embedded avoidance and mitigation measures adopted, this results in a magnitude of impact of negligible, resulting in a Negligible effect which is **not significant**. Accordingly, no significant adverse habitat loss/fragmentation/degradation effects on scrub habitats are anticipated as a result of the decommissioning phase of the Scheme

8.9.338 No additional decommissioning phase mitigation measures are required, and **no residual effects** are anticipated

Neutral Grassland

Construction Phase

8.9.339 Potential effects during the construction phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.340 These potential impacts are discussed below.

Assessment

- 8.9.341 There is approximately 43.69ha of other neutral grassland located within the Order Limits, this predominantly consists of field margins, with occasional larger areas present within the CRC and stand-alone areas present within Sub-Sites 10D and 7B for example.
- 8.9.342 The Scheme design has sought to retain existing field boundary habitats throughout the Order Limits, with the implementation of extensive 10m buffer zones surrounding field boundary hedgerows/ditches also allowing for the protection of other neutral grassland margins and enhancement of these linear grasslands during construction phase. Ecological buffers applied to the design of the Scheme are provided within the **Design Principles, Parameters and Commitments [EN011014/APP/7.18]**.
- 8.9.343 Minor and temporary impacts to other neutral grassland habitats will be required within the Order Limits during construction to facilitate CRC works/haul routes and access requirements, and grassland reinstatement planting will be implemented immediately following from the cessation of works within that area to ensure that any losses are adequately and speedily compensated for, further information regarding grassland replacement/creation is provided within the detailed within the **Outline LEMP [EN0110014/APP/7.4]**. Other areas of more extensive other neutral grassland habitats such as those present with 10D, will be retained and enhanced , in line with the **Outline LEMP**.
- 8.9.344 All other neutral grassland lost during the construction phase will be more than adequately compensated through the adherence to the **Biodiversity Net Gain Report [EN0110014/APP/7.23]** delivery targets implemented via the **Outline LEMP**. This will ensure the creation of new areas of other neutral grassland and the enhancement of retained areas. and the extensive areas of retained hedgerow will be identified and protected via the implementation of the **Outline CEMP [EN0110014/APP/7.1]**.
- 8.9.345 Standard measures to ensure run-off control and pollution prevention will also be implemented through the **Outline CEMP [EN0110014/APP/7.1]**. These measures will safeguard retained habitats within the Order Limits. Albeit these pollution impact pathways would not be anticipated to be significantly greater than the existing baseline position as a result of current agricultural activities such as ploughing and crop harvesting.

Significance of Effects

- 8.9.346 The magnitude of impact on other neutral grasslands as a result of construction activities would be negligible, (short-term reversible impact at the Site scale with no long-term negative effect) at the Site scale with no long-term negative effect) and which is considered **not significant**, no

additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

8.9.347 Potential effects during the operational phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.348 These potential impacts are discussed below.

Assessment

8.9.349 Operational activities (even during periods of battery/panels replacement works), will result in very little risk to areas of retained/created open neutral grasslands, which by their very nature are resilient to temporary impacts (impacts from maintenance vehicles / machinery for example). The **Outline OEMP [EN0110014/APP/7.2]** sets out embedded mitigation measures by which operational activities (most notably panel/battery replacement works) will be managed to avoid, minimise and mitigate any adverse ecological effects, ensuring that there is no pathway for significant direct or indirect effects upon other neutral grasslands within and surrounding the Order Limits.

8.9.350 The long-term management of grassland habitats created and/or enhanced during the construction phase as informed by the **Biodiversity Net Gain Report [EN0110014/APP/7.23]** will be undertaken in adherence with the good practice management measures detailed within the Outline LEMP **[EN0110014/APP/7.4]**, resulting in the development of mixed swards of relatively species-rich and diverse areas of grassland habitats developing within the Order Limits, providing clear quantifiable biodiversity gains.

8.9.351 The cessation (within areas subject to development) of large-scale herbicide or pesticide application and silage/artificial fertiliser application within the Sub-Sites will also help protect existing and newly created grasslands within and surrounding the Order Limits, especially helping with the gradual reduction in artificial nutrient levels within the ecosystem.

Significance of Effects

8.9.352 Following the establishment of extensive areas of other neutral grassland and the implementation of the management prescriptions specified in the **Outline LEMP** over the course of the operational phase, the Scheme will result in a quantifiable increase in the extent and the quality of grassland

locally, it is therefore anticipated that the Scheme will result in a magnitude of impact of moderate beneficial, resulting in a Positive effect, which is considered **significant** at a local scale. and no additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.353 Potential effects during the decommissioning phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.354 These potential impacts are discussed below.

Assessment

8.9.355 During the decommissioning phase, areas of neutral grassland will potentially be subject to minor disturbance impacts through vehicle traffic, pollution and other activities. However, it is considered that standard pollution prevention measures and habitat impact avoidance measures detailed within the **Outline DEMP [EN0110014/APP/7.3]** will be sufficient to prevent significant decommissioning impacts.

8.9.356 Impacts will be significantly reduced in comparison to the construction phase due to underground cabling being retained in situ within the CRC, and any road verge vegetation management likely only requiring hedgerow/overhanging canopy trimming/reduction works.

8.9.357 Due to the location of many of the blocks of neutral grassland in proximity to retained boundary vegetation such as hedgerows and trees, by proxy, neutral grassland in these areas will also be retained within the Scheme during the decommissioning process.

Significance of Effects

8.9.358 With the retention of habitats (where possible) and adherence to the **Outline DEMP [EN0110014/APP/7.3]**, the magnitude of impact upon neutral grassland within the Order Limits and wider ZOI is therefore considered to be negligible, resulting in a Negligible effect, which is considered **not significant**. Accordingly, no significant adverse effects associated with habitat loss, fragmentation or degradation on arable field margins within the Order Limits are anticipated.

8.9.359 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Ditches

Construction Phase

Potential Effects

8.9.360 Potential effects during the construction phase include:

- Habitat fragmentation; and
- Habitat degradation.

8.9.361 These potential impacts are discussed below.

Assessment

8.9.362 The Scheme design has sought to retain existing ditch systems throughout the Order Limits. Also, the implementation of extensive 10m buffer zones surrounding ditches will allow for their construction phase protection and the enhancement of the riparian environment surrounding these linear features during construction phase. Ecological buffers applied to the design of the Scheme are provided within the **Design Principles, Parameters and Commitments [EN011014/APP/7.18]**.

8.9.363 The retention of ditches has been incorporated into the Scheme design, including the use of existing field access routes for construction activities to avoid temporary impacts upon ditches. However, minor temporary ditch impacts will be required (typically consisting of a maximum of 10m intersections) during construction to facilitate access requirements/vehicle movements and CRC haul routes, this overall impact will be proportionately very small when compared to the extent of ditch systems within the Order Limits.

8.9.364 Where avoidance is not practicable, temporary construction access ramps would be used for these crossings. This will take of the following forms, which are listed in order of least to most impactful and are likely to be appropriate, respectively, for the most to least sensitive features:

- Temporary access construction ramps that do not interfere with the channel (banksides, bed or water column); or
- Temporary access construction ramps with in-stream supports or pre-cast structures with natural bed; or
- Temporary construction access ramps with closed culverts with artificial invert.

- 8.9.365 The type of crossing selected for the temporary construction access ramps will be determined at detailed design in consultation with the relevant local authority, which is secured through the **Outline CEMP [EN0110014/APP/7.1]**. These haul routes will be removed following installation of the cables and the habitat fully reinstated back to its original condition during the construction phase.
- 8.9.366 Additionally, there will be a requirement for cable route crossings through ditches within the CRC. Open trenching will be the likely method of cable installation, with habitats fully reinstated back to their original condition during the construction phase. The works associated with cable installation will be carefully managed through the **Outline CEMP [EN0110014/APP/7.1]**. Additionally, where practicable within the CRC, open cut trenching will be avoided in multiple locations, with HDD methodology employed, , these avoidance areas are detailed within the **Outline Cable Route Construction Statement [EN0110014 APP/7.21]**.
- 8.9.367 Any impacts upon ditches will be adequately compensated for via the embedded commitments to achieving a quantifiable BNG, further information is provided within the **Biodiversity Net Gain Report [EN0110014/APP/7.23]**. This will ensure the retention of wider undeveloped buffer zones surrounding ditches, and enhancement of existing ditches through the grassland riparian buffer zones. All enhancement measures implemented during the construction period will be detailed within the **Outline LEMP [EN0110014/APP/7.4]**, and the extensive areas of retained ditches will be identified and protected via the implementation of the **Outline CEMP [EN0110014/APP/7.1]**.
- 8.9.368 Standard measures to ensure run-off control, sedimentation and pollution prevention will also be implemented through the **Outline CEMP [EN0110014/APP/7.1]**. These measures will safeguard retained ditch networks within the Order Limits and surrounding landscape. Albeit these pollution impact pathways would not be anticipated to be significantly greater than the existing baseline impacts from sediment and fertiliser run-off associated with current agricultural activities such as ploughing, liquid fertiliser application and crop harvesting.

Significance of Effects

- 8.9.369 The magnitude of impact on ditch networks within the Order Limits as a result of construction activities would be negligible, (short-term reversible impact at the Site scale with no long-term negative effect) at the Site scale with no long-term negative effect) and which is considered **not significant**, No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

8.9.370 Potential effects during the operational phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.371 These potential impacts are discussed below.

Assessment

8.9.372 During the operational phase there will be active underground cabling passing beneath ditches within the CRC. Buried cables will be fluid-free to reduce the risk of leaching of pollutants within the ditch network and will be left in situ during the operational phase. The thermal dynamics of the sheathed cables are limited to their immediate proximity and therefore will not significantly affect the thermal dynamics within the ditch channels.

8.9.373 The **Outline OEMP [EN0110014/APP/7.2]** sets out embedded mitigation measures by which operational activities (most notably panel replacement works) will be managed to avoid, minimise and mitigate any adverse effects on ditches, ensuring that there is no pathway for significant direct or indirect effects. The Outline OEMP adopts a minimum 10m buffer zone in relation to the protection of ditches, with all maintenance activities (apart from habitat management measures) avoided in these areas. These measures will safeguard ditch habitats.

8.9.374 Impacts associated with existing land management practices, including potential manure or fertiliser run-off into watercourses will be avoided within the operational parcels (Solar PV panelled fields) throughout the operational phase due to the cessation of current agricultural practices.

8.9.375 With the cessation of intensive agricultural practices, the inclusion of the embedded operational mitigation measures summarised within **ES Vol 1; Chapter 9 – Water Environment [EN0110014/APP/6.1.9]**, and the adherence to the **Outline OEMP [EN0110014/APP/7.2]**, the potential for operational phase adverse effects associated with habitat degradation, loss and fragmentation will be avoided.

8.9.376 Enhancement to ditch riparian corridors located within operational sites are included within the **Biodiversity Net Gain Report [EN0110014/APP/7.23]** delivery targets. This will ensure watercourse buffers are maintained within the Sites and long-term enhancements are managed throughout the operational period. Habitat management measures to be implemented during the construction period are detailed within the **Outline LEMP**

[EN0110014/APP/7.4], and the ditches will be protected via the implementation of the **Outline OEMP [EN0110014/APP/7.2]**.

Significance of Effects

8.9.377 Following the implementation of the habitat management prescriptions specified in the **Outline LEMP** over the course of the operational phase, the Scheme will result in a quantifiable increase in the quality of ditch habitats, it is therefore anticipated that the Scheme will result in a magnitude of impacts moderate beneficial, which is considered to **Significant** at a Local level, no additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.378 Potential effects during the decommissioning phase include:

- Habitat loss or change;
- Habitat fragmentation; and
- Habitat degradation.

8.9.379 These potential impacts are discussed below.

Assessment

8.9.380 Impacts upon ditches will be significantly reduced in comparison to the construction phase due to underground cabling being retained in situ within the CRC, thereby avoiding the requirement for multiple ditch crossings and open trench cuts to facilitate haul routes and cable burial activities compared to the construction phase.

8.9.381 It is currently expected that ditch crossings can be avoided during the decommissioning phase, however, in the unlikely event that minor temporary ditch impacts are required for access purposes, these will typically consist of a maximum of 10m intersections to facilitate access requirements/vehicle movements. This overall impact will be proportionately very small when compared to the extent of ditch systems within the Order Limits.

8.9.382 Where avoidance is not practicable, temporary construction access ramps would be used for these crossings. This will take of the following forms, which are listed in order of least to most impactful and are likely to be appropriate, respectively, for the most to least sensitive features:

- Temporary access construction ramps that do not interfere with the channel (banksides, bed or water column); or

- Temporary access construction ramps with in-stream supports or pre-cast structures with natural bed; or
 - Temporary construction access ramps with closed culverts with artificial invert.
- 8.9.383 The type of crossing selected for the temporary decommissioning access ramps will be determined at detailed design in consultation with the relevant local authority, which is secured through the **Outline DEMP [EN0110014/APP/7.3]**. These temporary access points would be removed decommissioning and the habitat fully reinstated back to its original condition.
- 8.9.384 The decommissioning works will be carefully managed through the **Outline DEMP** and include (but not limited to) the management of runoff and pollution, and the use of soil bunds and silt traps. These measures will safeguard retained ditch networks within the Order Limits and surrounding ZOI. Albeit these pollution impact pathways would not be anticipated to be significantly greater than the existing baseline impacts from sediment and fertiliser run-off associated with current agricultural activities such as ploughing, liquid fertiliser application and crop harvesting.

Significance of Effects

- 8.9.385 The magnitude of impact on ditch networks within the Order Limits as a result of decommissioning activities would be negligible, (short-term reversible impact at the Site scale with no long-term negative effect) which is considered **not significant**, no additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Common and widespread habitats of low sensitivity and/or ecological interest

- 8.9.386 Habitats of low sensitivity and/or ecological interest dominate the Order Limits and predominantly consist of agricultural cropland (arable/non-arable crops and rye grass/clover ley), with smaller areas of heavily grazed modified grassland parcels and connecting areas of developed land (sealed and un-sealed tracks and roads). These, habitats are considered to offer ecological opportunities at the Site level only, however, adopting a precautionary approach, they have been assessed here.

Construction Phase

Potential Effects

- 8.9.387 Potential effects during the construction phase include:
- Habitat loss or change;

- Habitat fragmentation; and
- Habitat degradation.

8.9.388 These potential impacts are discussed below.

Assessment

8.9.389 The existing land within the Scheme is dominated by intensively managed arable farmland with assemblages of flora and fauna largely concentrated within linear networks such as field margin habitats, hedgerows, woodland blocks, ditch networks and watercourses which will largely be retained. The large majority of construction phase impacts will be to existing agricultural parcels, of low ecological importance. IEF's such as ditches and hedgerows will be appropriately buffered and habitats within these linear buffer zones will be enhanced during construction as described above. The design principles for the Scheme are set out in the **Design Principles, Parameters and Commitments [EN011014/APP/ 7.18]** document which includes a series of environmentally led design principles, including in relation biodiversity. This includes restricting development in ecologically sensitive locations and applying appropriate offsets and buffers from IEF's.

8.9.390 Habitat management practices within the Scheme will include the management of these important habitats; and extensive, newly created adjacent habitat, informed by an **Outline LEMP [EN0110014/APP/7.4]**, will create a more resilient and strengthened network of habitats of biodiversity value within the Site, thereby enhancing ecological connectivity between the Scheme and the wider landscape.

8.9.391 BNG (see **Biodiversity Net Gain Report [EN0110014/APP/7.23]**) will be delivered through habitat enhancement provision embedded within the Scheme design and provided as part of the construction phases, this will include the creation of new habitats of high ecological value, such as tussocky grassland, hedgerow, woodland belt planting, scrub planting and the creation of modified grassland (managed in an ecologically focused way) throughout the sub-Sites beneath and surrounding the solar PV areas, thereby eventually significantly enhancing the value of the existing habitat baseline (see operational phase).

8.9.392 Impacts to widespread habitats attributed to the CRC works will be short-term and will primarily impact existing agricultural parcels which are of low ecological importance.

8.9.393 Although short-term minor impacts cannot be avoided during the construction phase (such as the clearance of agricultural fields for development), this impact is outweighed by the implementation of extensive habitat enhancements within impacted land parcels. Therefore, is anticipated that the potential adverse effects (such as habitat degradation,

fragmentation, and direct habitat loss) upon widespread and common habitats will be short-term and have an overall negligible ecological impact.

Significance of Effects

8.9.394 Given the extensive habitat enhancements measures within the **Outline LEMP** incorporated into the Scheme during the construction phase, no direct effects on common and widespread habitats of low sensitivity and/or ecological interest are anticipated, and the resulting magnitude of impacts associated with habitat loss/fragmentation and degradation is negligible, resulting in a Negligible short-term effect which is **not significant**.

8.9.395 **No additional construction phase mitigation** measures are required, and no residual effects are anticipated.

Operational Phase

Potential Effects

8.9.396 Potential effects during the operational phase include:

- Habitat loss or change;
- Habitat fragmentation;
- Cessation of agricultural practices; and
- Habitat degradation.

8.9.397 These potential impacts are discussed below.

Assessment

8.9.398 During the operational period these created and existing widespread habitats within the sub-Sites will be subject to long-term management by suitably qualified and experienced professionals, informed by a regular ecological monitoring program and biodiversity objectives during the operational lifespan of the Scheme. The management of these widespread habitats will be informed by **Outline LEMP [EN0110014/APP/7.4]** resulting in increased habitat value and connectivity within the Order Limits.

8.9.399 The adoption of the Outline LEMP and adherence to the operational pollution prevention measures within the **Outline OEMP [EN0110014/APP/7.2]**, the adherence to BNG requirements provided within the **Biodiversity Net Gain Report [EN0110014/APP/7.23]**, and the cessation of environmentally damaging agricultural activities will result in the avoidance of habitat fragmentation, habitat degradation, and loss, and will result in beneficial operational phase effects.

Significance of Effects

- 8.9.400 Subsequently, the operational phase habitat management and enhancement process is considered to represent a Moderate positive magnitude long-term impact and is assessed as **Significant** at the Local level.
- 8.9.401 No additional mitigation measures are required, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

- 8.9.402 Potential effects during the decommissioning phase include:
- Habitat loss or change;
 - Habitat fragmentation; and
 - Habitat degradation.
- 8.9.403 These potential impacts are discussed below.

Assessment

- 8.9.404 Potential effects on widespread habitats during decommissioning include the direct loss, disturbance and fragmentation of widespread habitats throughout the sub-Sites (most notably the modified grassland beneath the solar PV areas) associated with the decommissioning of solar PV panels and apparatus and decommissioning of the batteries. The adopted DEMP **Outline LEMP [EN0110014/APP/7.3]** sets out embedded mitigation / avoidance measures by which decommissioning activities will be managed to avoid, minimise and mitigate any adverse effects as much as practicable.

Significance of Effects

- 8.9.405 It is therefore anticipated that the potential adverse effects (such as habitat degradation, fragmentation, and direct habitat loss) upon common and widespread habitats of low sensitivity and/or ecological interest of Site importance will be short-term adverse effects of Low magnitude and is assessed as **not significant**.
- 8.9.406 No additional decommissioning phase mitigation measures are required, and **no residual effects** are anticipated.

Terrestrial Invertebrates

- 8.9.407 During scoping process, it was concluded that operational phase impacts would be scoped out for terrestrial invertebrates. Therefore, the Ecological Impact Assessment is limited to the construction and decommissioning

periods. Nevertheless, embedded mitigation measures to avoid impacts on key habitats described for the construction phase, including implementation of buffer zones and pollution prevention measures, will also apply during operational replacement of panels and batteries and are set out in the **Outline OEMP [EN0110014/APP/7.2]**.

Construction Phase

Potential Effects

8.9.408 Potential effects during the construction phase include:

- Species injury/mortality;
- Disturbance;
- Species fragmentation; and
- Habitat degradation.

8.9.409 These potential impacts are discussed below.

Assessment

8.9.410 The current agricultural cropland which dominates the Order Limits (see Tables 1-4 and 1-5 for habitat totals) is considered to hold negligible value for terrestrial invertebrates. In comparison, semi-natural habitats within the Order Limits are small in scale and heavily fragmented. The permanent semi-natural areas of habitats are often narrow and linear features along the margins of fields, while areas of arable field margins are by their nature temporary habitats. There are also small pockets of longer-term semi-natural grassland, for example at CRC7 (Fritton Grange Meadows CWS). However, the current intensive arable management throughout the large majority of the Scheme likely results in reduced opportunities for invertebrates and, by association, the species that feed upon them. This is due to habitat degradation from agricultural activities, such as dust deposition or run-off and spray drift from herbicide and pesticide applications.

8.9.411 The vast majority of the land on which the Solar PV Sites will be sited, namely arable fields, (as stated above) represent habitat of negligible importance for invertebrates. An ecologically sensitive approach to construction will be implemented through the provision of the **Outline CEMP [EN0110014/APP/7.1]**. The Outline CEMP details measures and approaches to be adopted which will limit the likelihood of impacts upon invertebrate populations through Biodiversity Protection Buffers which will be maintained throughout the construction phase, this focused on the retention and buffering semi-natural habitats such as hedgerows, ditches, woodland edges, ponds, watercourses, and grasslands, which are to be largely retained and protected during construction period. Further details of

embedded protection measures are provided within the **Outline PSMS [EN0110014/APP/6.3.8.10]** submitted with the DCO Application. As a result, no significant adverse effects on terrestrial invertebrates associated with species mortality/disturbance/fragmentation and habitat degradation anticipated during the construction phase of the Scheme.

8.9.412 Cable route installation, haul routes and new Order Limits access locations will impact a relatively small sections of hedgerow (where a hedgerow intersects the cable route) and field boundary habitats temporarily, before being reinstated and Highway Improvement Works potentially resulting in minor canopy/hedgerow reduction works only. However, areas of more diverse semi natural habitat such as watercourses, Fritton Grange Meadows CWS, and Lower Spring Wood CWS will be avoided through trenchless crossings and the employment of HDD, in order to avoid impacts upon habitats of more diverse importance to invertebrates. However, with the adoption of the imbedded mitigation measures provided within the **Outline CEMP [EN0110014/APP/7.1]** and the **Outline PSMS [EN0110014/APP/6.3.8.10]** it is considered that any significant habitat degradation during the construction phase can be avoided.

8.9.413 Construction activities may result in dust/sediment deposition, leading to degradation of the varied habitats at the field boundaries, including woodland edge, hedgerows, and ditches/watercourses, which were considered to be the most value habitats within the Order Limits for invertebrates. These effects are only likely to be temporary and are likely to be of a similar scale and severity as that arising from current baseline agricultural activities.

Significance of Effects

8.9.414 Taking into account incorporation of generous ecological buffer zones during construction phase, the embedded mitigation provided and the BNG enhancement measures introduced during the construction phases and embedded within the project design, semi-natural habitats supporting terrestrial invertebrate populations within the Order Limits will be maintained and, in many cases, enhanced during the Construction period.

8.9.415 As such, the magnitude of impact on terrestrial invertebrate populations as a result of construction activities would be negligible, resulting in a Negligible magnitude effect (short-term reversible localised negative impacts at the Site scale) and which is considered **not significant**. Accordingly, no direct or indirect significant adverse effects on terrestrial invertebrate populations are anticipated as a result of the construction phase.

8.9.416 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.417 Potential effects during the decommissioning phase include:

- Species injury/mortality;
- Disturbance;
- Species fragmentation; and
- Habitat degradation.

8.9.418 These potential impacts are discussed below.

Assessment

8.9.419 Potential effects to invertebrate communities during decommissioning include the direct impact of habitat loss (most notably the loss of areas of modified grassland within the Solar PV sites), or indirectly within adjacent areas through disturbance. An ecologically sensitive approach to construction will be implemented through the provision of the **Outline DEMP [EN0110014/APP/7.3]**. The Outline DEMP details pollution prevention measures and approaches to be adopted which will limit the likelihood of impacts upon important ecological features which support invertebrate populations, this is focused on the retention and buffering semi-natural habitats such as hedgerows, ditches, woodland edges, ponds, watercourses, and field margins, which are considered likely to be largely retained and protected during the decommissioning period. However, this will be subject to national policy and legislative processes at the time, landowner requirements and any countryside stewardship and/or agricultural payment schemes in place at that time which may encourage the retention of particular habitat features such as field margins and watercourse buffers.

8.9.420 Decommissioning effects upon terrestrial invertebrates within the CRC and Highway Works Areas are considered to be negligible, with underground cabling remaining in-situ post-decommissioning and Highway Improvement Works resulting in only minor and localised vegetation reduction works.

8.9.421 With the retention of boundary habitats (enhanced over the operational period) and with the implementation of the **Outline DEMP**, this will be sufficient to prevent significant decommissioning impacts associated with mortality/disturbance/ fragmentation and habitat degradation upon retained habitats supporting diverse assemblages of invertebrates.

Significance of Effects

8.9.422 The magnitude of impact on terrestrial invertebrate populations as a result of decommissioning activities would be negligible, resulting in a Negligible

magnitude effect (short-term reversible localised impacts at the Site scale) and which is considered **not significant**. Accordingly, no direct or indirect significant adverse effects on terrestrial invertebrate populations are anticipated as a result of the decommissioning phase.

8.9.423 No additional mitigation measures are considered necessary, and **no residual** effects are anticipated.

Aquatic Invertebrates

Construction Phase

Potential Effects

8.9.424 Potential effects during the construction phase include:

- Species injury/mortality;
- Disturbance;
- Habitat fragmentation; and
- Habitat degradation.

8.9.425 These potential impacts are discussed below.

Assessment

8.9.426 Aquatic invertebrate assemblages of diverse taxa are present within watercourses intersecting the Order Limits, including those of sensitive taxa. Greater aquatic invertebrate diversity is expected in flowing reaches such as Hempnall Beck and its main southern tributary, which flow through pasture and unmanaged land have the potential to support more sensitive taxa. Headwater ditches and ephemeral reaches are likely to support only sparse and tolerant taxa, typical of lowland agricultural watercourses as described in Appendix 8.9: Aquatic Habitat Assessment Note. Overall, these assemblages are considered to be of Local ecological importance.

8.9.427 The majority of works associated with the Solar PV Sites are located within arable fields which do not represent aquatic habitat. Direct impacts to watercourses have been avoided through embedded design measures, including trenchless crossings HDD at sensitive locations. Launch and reception pits will be set back from watercourse banks and fully reinstated following installation.

8.9.428 Potential impacts upon aquatic invertebrates during the construction phase may include short-term increases in suspended sediments, accidental pollution incidents, or limited disturbance to marginal habitats where works occur in proximity to watercourses. These risks are reduced through the

Outline CEMP [EN0110014/APP/7.1], which includes pollution prevention measures, sediment control, and the buffers. Oversight by an Ecological Clerk of Works (ECoW) will be implemented where required.

8.9.429 No permanent in-channel works are proposed at sensitive crossings, and temporary works areas within the CRC will be reinstated following completion of cable installation in accordance with the **Outline LEMP [EN0110014/APP/7.4]**. As such, any disturbance would be short-term, localised and reversible.

Significance of Effects

8.9.430 Taking into account the embedded mitigation measures, including HDD beneath watercourses, pollution prevention controls and habitat reinstatement, the magnitude of impact on aquatic invertebrates as a result of construction activities would be negligible, resulting in a Negligible magnitude effect (short-term reversible disturbance impact at the Site scale with no long-term negative effect on aquatic invertebrate assemblages) which is considered **not significant**.

8.9.431 No likely significant effects on aquatic invertebrates within the Order Limits or wider ZOI during construction have therefore been found. No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

8.9.432 Potential effects during the operational phase include:

- Species injury/mortality;
- Disturbance;
- EMFs;
- Cessation of agricultural practices;
- Habitat fragmentation; and
- Habitat degradation.

8.9.433 These potential impacts are discussed below.

Assessment

8.9.434 During operation, there will be no routine in-channel works or direct disturbance to aquatic habitats. Underground cables will be installed at depth

and will be fluid-free, thereby avoiding pollution pathways associated with oil-filled transmission systems.

- 8.9.435 EMF's will be generated during operation (see **ES Vol I, Chapter 17: Electromagnetic Fields [EN0110014/APP/6.1.17]**). EMF strength decreases rapidly with distance from the cable. At watercourse crossings installed by HDD at depth beneath the channel bed, exposure at the sediment–water interface is predicted to be low. Available evidence indicates that only a limited number of invertebrate groups possess the ability to detect or respond to EMFs, and overall few invertebrates have been tested for electro- or magnetoreception. Where responses have been recorded, they relate to field observations of marine crustaceans (Ref 8-93) (Ref 8-94). Given the low intensity of EMFs generated by buried terrestrial infrastructure and the absence of specialised sensory systems in most freshwater invertebrates, any EMF-related effects during operation are expected to be negligible and not significant.
- 8.9.436 PV panels incorporate anti-reflective coatings designed to maximise absorption of solar radiation and minimise reflection, the modules will be a dark colour (black or blue), and the mounting structures will have a rough matt finish. Any glint or glare reaching adjacent watercourses would be intermittent, dependent upon solar angle, and attenuated by intervening vegetation and surface water movement. There is no established evidence that such reflection results in measurable effects on benthic invertebrate assemblages.
- 8.9.437 In addition, the conversion of arable land to grassland management beneath and between panels will reduce fertiliser application, soil disturbance and associated sediment or nutrient run-off into watercourses compared to the current baseline. This represents an improvement in diffuse pollution risk for the lifetime of the Scheme.
- 8.9.438 The **Outline OEMP [EN0110014/APP/7.2]** sets out embedded mitigation measures by which operational activities (most notably Solar PV/battery replacement works) will be managed to avoid, minimise and mitigate any adverse effects on aquatic environments (and therefore aquatic invertebrate assemblages). Ensuring that there is no pathway for significant direct or indirect effects. The **Outline OEMP** adopts a minimum 10m buffer zone in relation to the protection of watercourses/ditches and 30-50m for ponds within the Sites 1-10/BESS Site) with all maintenance activities (apart from habitat management measures) avoided in these areas. These measures will safeguard aquatic invertebrates.
- 8.9.439 Enhancement to ditch riparian corridors located within operational sites are included within the **Biodiversity Net Gain Report [EN0110014/APP/7.23]** delivery targets. This will ensure watercourse buffers are maintained within the Sites and long-term enhancements are managed throughout the operational period. Habitat management measures to be implemented during the construction period are detailed within the **Outline LEMP**

[EN0110014/APP/7.4], and the ditches will be protected via the implementation of the **Outline OEMP [EN0110014/APP/7.2]** significantly benefitting aquatic invertebrate populations.

- 8.9.440 Newly created ponds and enhanced existing ponds will be managed throughout the operational phase in line with the **Outline LEMP [EN0110014/APP/7.3]**, for the benefit of aquatic invertebrates. Impacts associated with existing land management practices, including potential manure or fertiliser run-off into watercourses will be avoided within the operational parcels throughout the operational phase due to the cessation of current agricultural practices.
- 8.9.441 With the cessation of intensive agricultural practices, the inclusion of the embedded operational mitigation measures summarised within **ES Vol 1; Chapter 9 – Water Environment [EN0110014/APP/6.1.9]**, and the adherence to the **Outline OEMP [EN0110014/APP/7.2]**, the potential for significant operational phase adverse effects associated with habitat degradation, injury/mortality, disturbance and fragmentation will be avoided.

Significance of Effects

- 8.9.442 When considering the above embedded mitigation measures and the beneficial changes in land management, the magnitude of impact on aquatic invertebrates during the operational phase would be a low beneficial effect, resulting in a Positive magnitude effect at the Site scale which is considered **not significant**.
- 8.9.443 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.444 Potential effects during the decommissioning phase include:

- Species injury/mortality;
- Disturbance; and
- Habitat fragmentation;

8.9.445 These potential impacts are discussed below.

Assessment

8.9.446 The assessment of decommissioning effects takes into account the measures set out in the **Outline DEMP [EN0110014/APP/7.3]** which accompanies the ES and will be secured by a DCO Requirement. Activities relating to decommissioning would be expected to have similar (or no worse)

direct effects as those described in the construction phase for aquatic invertebrates. Reduced levels of disturbance from movement of vehicles and personnel would also be expected, as the large majority of underground cabling within the CRC (and NG Substation) is expected to remain in situ and therefore, river habitats, home to aquatic invertebrate assemblages will not be impacted through decommissioning.

- 8.9.447 Habitat enhancements associated with ditch/watercourse corridors and pond enhancements managed throughout the operational phase are considered likely to remain in place during decommissioning thereby resulting in continued protection for these species groups.
- 8.9.448 On the basis of current conditions, effects can be expected to be lower than those described within the construction phase and likely (due to retained infrastructure/services) be considerably more reduced.

Significance of Effects

- 8.9.449 Taking into account the embedded mitigation measures, including retention of underground cabling, and pollution prevention controls provided within the **Outline DEMP [EN0110014/APP/7.3]**, the magnitude of impact on aquatic invertebrates as a result of decommissioning activities would be negligible, resulting in a Negligible magnitude effect (short-term reversible disturbance impact at the Site scale with no long-term negative effect on aquatic invertebrate assemblages) which is considered **not significant**.
- 8.9.450 No likely significant effects on aquatic invertebrates within the Order Limits and wider ZOI during decommissioning have therefore been found. No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

White-clawed Crayfish

Construction Phase

Potential Effects

- 8.9.451 Potential effects during the construction phase include:
- Species injury/mortality;
 - Disturbance;
 - Habitat fragmentation; and
 - Habitat degradation.
- 8.9.452 These potential impacts are discussed below.

Assessment

- 8.9.453 No records of white-clawed crayfish were identified within the Order Limits, and a single record exists approximately 6km downstream on the River Tas. Habitat suitability within affected watercourses within and surrounding the Order Limits is limited, with shallow or soft banks, few refuge features, and extensive siltation, the species is therefore considered unlikely to be present (see **ES Volume III, Appendix 8.9: Aquatic Habitat Assessment Report Ecology [EN0110014/APP/6.3.8.9]**).
- 8.9.454 Trenchless HDD crossings of watercourses avoid direct disturbance to watercourse beds and banks, removing the principal pathway for impact on crayfish should they be present. Pollution prevention measures secured within the **Outline CEMP [EN0110014/APP/7.1]** further reduce risk.

Significance of Effects

- 8.9.455 Taking into account the embedded mitigation measures and low likelihood of presence, the magnitude of impact on white-clawed crayfish during construction would be negligible, resulting in a Negligible magnitude effect which is considered **not significant**.
- 8.9.456 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

- 8.9.457 Potential effects during the operational phase include:
- Species injury/mortality;
 - Disturbance;
 - EMFs;
 - Cessation of agricultural practices;
 - Habitat fragmentation; and
 - Habitat degradation.

- 8.9.458 These potential impacts are discussed below.

Assessment

- 8.9.459 During operation, there will be no routine in-channel works or direct disturbance to aquatic habitats. Underground cables will be installed at depth

and will be fluid-free, thereby avoiding pollution pathways and habitat degradation associated with oil-filled transmission systems.

- 8.9.460 EMF's will be generated during operation (see **ES Vol I, Chapter 17: Electromagnetic Fields [EN0110014/APP/6.1.17]**). EMF strength decreases rapidly with distance from the cable. At watercourse crossings installed by HDD at a 5m depth beneath the channel bed, exposure at the sediment–water interface is predicted to be low. Given the low intensity of EMFs generated by buried terrestrial infrastructure, any EMF-related effects during operation are expected to be negligible and not significant.
- 8.9.461 In addition, the conversion of arable land to grassland management beneath and between panels will reduce fertiliser application, soil disturbance and associated sediment or nutrient run-off into watercourses compared to the current baseline. This represents an improvement in diffuse pollution risk for the lifetime of the Scheme, contributing to the local improvements in aquatic habitats for White-clawed crayfish (if present).
- 8.9.462 It is not proposed to undertake any in channel works during operational phase (avoiding direct species injury/mortality and disturbance) and the **Outline OEMP [EN0110014/APP/7.2]** sets out embedded mitigation /avoidance measures by which operational activities (most notably Solar PV/battery replacement works) will be managed to avoid, minimise and mitigate any adverse effects on aquatic environments (and therefore white-clawed crayfish). Ensuring that there is no pathway for significant direct or indirect effects. The Outline OEMP adopts a minimum 10m buffer zone in relation to the protection of watercourses within the Sites 1-10/BESS Site, with all maintenance activities (apart from habitat management measures) avoided in these areas. These measures will safeguard white-clawed crayfish within the Order Limits and wider ZOI.

Significance of Effects

- 8.9.463 When considering the above embedded mitigation measures and the beneficial changes in land management, the magnitude of impact on white-clawed crayfish during the operational phase would be negligible, resulting in a Negligible magnitude effect which is considered **not significant**.
- 8.9.464 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

- 8.9.465 Potential effects during the decommissioning phase include:
- Species injury/mortality;

- Disturbance; and
- Habitat fragmentation;

8.9.466 These potential impacts are discussed below.

Assessment

8.9.467 The assessment of decommissioning effects takes into account the measures set out in the **Outline DEMP [EN0110014/APP/7.3]** which accompanies the ES and will be secured by a DCO Requirement. Activities relating to decommissioning would be expected to have similar (or no worse) direct effects as those described in the construction phase for aquatic invertebrates. Reduced levels of disturbance from movement of vehicles and personnel would also be expected, as the large majority of underground cabling within the CRC (and NG Substation) is expected to remain in situ, and It is not proposed to undertake any in channel works during decommissioning (avoiding direct species injury/mortality and disturbance) and therefore, river habitats, potentially home to white-clawed crayfish will not be impacted through decommissioning.

8.9.468 On the basis of current conditions, significant effects can be expected not to exceed those described within the construction phases and likely (due to retained infrastructure/services) be considerably more reduced.

Significance of Effects

8.9.469 Taking into account the embedded mitigation measures, including retention of underground cabling, and pollution prevention controls provided within the **Outline DEMP [EN0110014/APP/7.3]**, the magnitude of impact on white-clawed crayfish as a result of decommissioning activities would be negligible, resulting in a Negligible magnitude effect, which is considered **not significant**.

8.9.470 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Freshwater Fish

Construction Phase

Potential Effects

8.9.471 Potential effects during the construction phase include:

- Species injury/mortality;
- Disturbance;

- Habitat fragmentation; and
- Habitat degradation.

8.9.472 These potential impacts are discussed below.

Assessment

8.9.473 Watercourses within the Order Limits are capable of supporting typical lowland freshwater fish assemblages and form part of the wider River Tas catchment. These watercourses are considered to be of Local to County ecological importance due to their connectivity within the catchment. Flowing reaches, including the Hempnall Beck main channel and its main southern tributary, provide suitable habitat for fish, whereas ephemeral ditches and headwater channels provide limited habitat value as described in Appendix 8.9: Aquatic Habitat Assessment Report. Desk study information from hydrologically connected monitoring sites and local records confirms long-term presence of key fish such as brown/sea trout, bullhead, and European eel upstream and downstream of the Order Limits highlighting potential use of the watercourses.

8.9.474 The majority of construction activities associated with the Solar PV Sites will occur within arable land of negligible value to freshwater fish. Direct impacts to watercourses have been avoided through embedded design measures, including trenchless HDD crossings and the maintenance of undeveloped buffer zones.

8.9.475 Potential impacts during construction may include temporary increases in suspended sediments or accidental pollution events where works occur near watercourses. Such impacts could temporarily reduce water quality or disturb fish behaviour.

8.9.476 These risks are reduced through implementation of the **Outline CEMP [EN0110014/APP/7.2]**, pollution prevention measures, and ECoW oversight where required. No permanent in-channel structures are proposed, and temporary works areas will be reinstated.

Significance of Effects

8.9.477 Taking into account the embedded mitigation measures and avoidance of direct in-channel works, the magnitude of impact on freshwater fish as a result of construction activities would be negligible, resulting in a Negligible magnitude effect (short-term reversible impact at the Site scale with no long-term negative effect on fish populations). Accordingly, **no significant effects** are anticipated.

8.9.478 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

8.9.479 Potential effects during the operational phase include:

- Species injury/mortality;
- Disturbance;
- EMFs;
- Cessation of agricultural practices;
- Habitat fragmentation; and
- Habitat degradation.

8.9.480 These potential impacts are discussed below.

Assessment

8.9.481 No routine disturbance to aquatic habitats will occur during the operational phase. EMF will be generated from buried cables; however, field strength decreases rapidly with distance and burial beneath watercourses via HDD maximises separation between cables and aquatic receptors (see **ES Vol I, Chapter 17: Electromagnetic Fields [EN0110014/APP/6.1.17]**). A range of freshwater fish species possess magneto receptive abilities, often through magnetite-based mechanisms, which allow them to use natural geomagnetic cues for navigation and migration. However, behavioural or developmental responses documented in the literature typically occur only under much higher magnetic field strengths than those predicted for the proposed Scheme. Responses in salmonids, for example, have been observed under constant magnetic fields of 500–1000 μT , which altered embryonic development rates and early behaviour (Ref 8-95) (Ref 8-96) (Ref 8-97), and under fields associated with high-voltage infrastructure ranging from 8–14 μT , which affected spatial orientation. In European eel, subtle behavioural responses to magnetic field variation have been recorded, but no evidence indicates disruption of overall migratory success (Ref 8-98) (Ref 8-99). Importantly, these studies largely concern exposure in immediate proximity to strong magnetic sources. Given that the maximum predicted magnetic field for the Scheme (95 μT at 1 m above ground) is markedly lower than intensities shown to produce clear biological effects in fish, and that magnetic fields from buried cables attenuate rapidly with distance, EMF exposure at watercourse crossings will be extremely limited. Consequently, operational EMFs from the proposed development are not expected to give rise to any ecologically significant effects on freshwater fish.

- 8.9.482 PV panels are designed to minimise reflection. Any glint or glare reaching adjacent watercourses would be transient and unlikely to result in behavioural disturbance to fish populations.
- 8.9.483 The reversion of arable land to grassland beneath and between panels will reduce diffuse nutrient and sediment inputs to adjacent watercourses compared to baseline conditions, thereby supporting improved water quality over the lifetime of the Scheme.
- 8.9.484 It is not proposed to undertake any in channel works during operational phase (avoiding direct species injury/mortality and disturbance) and the **Outline OEMP [EN0110014/APP/7.2]** sets out embedded mitigation /avoidance measures by which operational activities (most notably Solar PV/battery replacement works) will be managed to avoid, minimise and mitigate any adverse effects on aquatic environments (and therefore freshwater fish). Ensuring that there is no pathway for significant direct or indirect effects. The **Outline OEMP** adopts a minimum 10m buffer zone in relation to the protection of watercourses within the Sites 1-10/BESS Site, with all maintenance activities (apart from habitat management measures) avoided in these areas. These measures will safeguard freshwater fish within the Order Limits and wider ZOI.

Significance of Effects

- 8.9.485 When considering the above embedded mitigation measures and beneficial land management changes, the impact on freshwater fish during operation would be low beneficial, resulting in a Low magnitude positive effect which is considered **not significant**.
- 8.9.486 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

- 8.9.487 Potential effects during the decommissioning phase include:
- Species injury/mortality;
 - Disturbance;
 - Habitat fragmentation; and
 - Habitat degradation.
- 8.9.488 These potential impacts are discussed below.

Assessment

- 8.9.489 The assessment of decommissioning effects takes into account the measures set out in the **Outline DEMP [EN0110014/APP/7.3]** which accompanies the ES and will be secured by a DCO Requirement. Activities relating to decommissioning would be expected to have similar (or no worse) effects as those described in the construction phase for freshwater fish. Reduced levels of disturbance from movement of vehicles and personnel would also be expected, as the large majority of underground cabling within the CRC (and NG Substation) is expected to remain in situ, and It is not proposed to undertake any in channel works during decommissioning phase (avoiding direct species injury/mortality and disturbance) and therefore, freshwater fish will not be impacted through decommissioning.
- 8.9.490 On the basis of current conditions, effects can be expected not to exceed those described within the construction phases and likely (due to retained infrastructure/services) be considerably more reduced.

Significance of Effects

- 8.9.491 Taking into account the embedded mitigation measures, including retention of underground cabling, and pollution prevention controls provided within the **Outline DEMP [EN0110014/APP/7.3]**, the magnitude of impact on freshwater fish as a result of decommissioning activities would be negligible, resulting in a Negligible magnitude effect, which is considered **not significant**.
- 8.9.492 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Great Crested Newt (and widespread amphibians)

- 8.9.493 During scoping process, it was concluded that operational phase impacts would be scoped out for amphibians. Therefore, the Ecological Impact Assessment is limited to the construction and decommissioning periods. Nevertheless, embedded mitigation measures to avoid impacts on key habitats described for the construction phase, including implementation of buffer zones and pollution prevention measures, will also apply during operational replacement of panels and batteries and are set out in the **Outline OEMP [EN0110014/APP/7.2]**.

Construction Phase

Potential Effects

- 8.9.494 Potential effects during the construction phase include:
- Species injury/mortality;
 - Disturbance;

- Habitat fragmentation; and
- Habitat degradation.

8.9.495 These potential impacts are discussed below.

Assessment

- 8.9.496 The presence of GCN has been established (or in some cases assumed) in ponds within the Order Limits (six confirmed and six with assumed presence within the Order Limits) and in the surrounding landscape within 250m of the Order Limits (see **Appendix 8.3: Great Crested Newt Survey Report [EN0110014/ APP/6.3.8.3]**).
- 8.9.497 The vast majority of the land on which the Solar PV Sites will be sited, namely arable fields, represent habitat of negligible importance for GCN. More suitable habitat is generally confined to hedgerows, ditches, woodland edges, and uncultivated field margins, which are to be retained and protected during construction. An ecologically sensitive approach to construction will be implemented through the provision of the **Outline CEMP [EN0110014/APP/7.1]**. The Outline CEMP details measures and approaches to be adopted which will limit the likelihood of impacts upon GCN through Biodiversity Protection Buffers which will be maintained throughout the construction phase. Further details of embedded protection measures are provided within the **Outline PSMS [EN0110014/APP/6.3.8.10]** submitted with the DCO Application.
- 8.9.498 All potential breeding features (ponds) within the Solar PV Sites are proposed to be retained and protected through the construction phases through the introduction of avoidance areas embedded within the Scheme design, within which no construction work or storage of materials will take place. These buffers are set at 30m for all wet ponds, extending to 50m for ponds with confirmed (or presumed) evidence of GCN. See **ES Volume 1, Chapter 4 - The Scheme [EN0110014/APP/6.1.4]** for further details specific offsets/buffers from existing landscape features embedded into the design.
- 8.9.499 A number of ponds are present within the Cable Route Corridor and up to 250m beyond. Although all ponds within the Cable Route Corridor will be retained and not directly impacted by cable installation works. Working within 50m of ponds will occur within the CRC, however, the majority of impacts will occur within arable fields of negligible value to amphibians. Any, minor areas of suitable terrestrial habitat within the CRC, such as hedgerows, grasslands and field margins temporarily lost, will be fully reinstated in line with the **Outline LEMP [EN0110014/APP/7.4]** thereafter.
- 8.9.500 Potential impacts upon GCN during the construction phase may include limited terrestrial habitat degradation and terrestrial habitat loss associated with clearance of small sections of hedgerows or other field boundary habitats required for access or cable trenching. Impacts associated with this

have been reduced by specifically designing routes to utilise existing field entrances and gaps in internal/external hedgerows and other linear habitats wherever practicable. Where access (haul route/CRC access/Order Limits access) is required through linear features such as field margins/hedgerows/ditches these construction impact areas will be significantly reduced to a maximum of 10m working width. These field boundary habitat losses constitute a very small proportion of the overall habitat network, and as such there will be no significant loss of habitat for GCN in the context of the Scheme. All temporary habitat impacts (haul routes/CRC work, etc) will be reinstated. Further information is provided within the **Outline PSMS [EN0110014/APP/6.3.8.10]**. As a result, no significant adverse effects regarding species injury/mortality, disturbance, or fragmentation/degradation of terrestrial and aquatic habitats for GCN (and other amphibians) are anticipated as a result of the Scheme.

Significance of Effects

- 8.9.501 Taking into account incorporation of generous ecological buffer zones during construction, the embedded mitigation provided within the **Outline PSMS [EN0110014/APP/6.3.8.10]**, and the habitat enhancement measures introduced during the construction phases and embedded within the project design, opportunities for amphibian terrestrial and aquatic life stages within the Order Limits will be maintained and in many cases enhanced during the Construction period.
- 8.9.502 The magnitude of impact on GCN (and other amphibians), as a result of construction activities would be negligible, (short-term reversible habitat impacts at the Site scale with no long-term negative effect) and which is considered **not significant**. Accordingly, no significant negative effects on GCN are anticipated.
- 8.9.503 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.
- 8.9.504 For legislative compliance and to avoid impacts upon individual GCN the precautionary embedded mitigation measures detailed within the **Outline PSMS [EN0110014/APP/6.3.8.10]** will be adopted during the construction phase.

Decommissioning Phase

Potential Effects

- 8.9.505 Potential effects during the decommissioning phase include:
- Species injury/mortality;
 - Disturbance;

- Habitat fragmentation; and
- Habitat degradation.

8.9.506 These potential impacts are discussed below.

Assessment

8.9.507 The Decommissioning Phase is not anticipated to exceed the number of vehicles forecast during the Construction Phase, and it is expected that the period will be similar in duration. Additionally, CRC works will be avoided as subterranean cables and the NG Substation will remain in-situ post decommissioning. As with the construction phase any Highway Works Areas will only likely be subject to hedge and canopy trimming and will not impact upon terrestrial amphibians.

8.9.508 The assessment of decommissioning effects takes into account the measures set out in the **Outline DEMP [EN0110014/APP/7.3]** which accompanies the ES and will be secured by a DCO Requirement. Activities relating to the removal of solar panel frames, underground cabling, substations and concrete footings, access and energy storage would be expected to have similar (or no worse) effects as those described in the construction phase impacts for GCN. Reduced levels of disturbance from movement of vehicles and personnel would also be expected, as the large majority of underground cabling within the CRC and National Grid Substation is expected to remain in situ.

8.9.509 Habitat enhancements associated with pond enhancements/creation, field margin/hedgerow/woodland habitats managed throughout the operational phase are considered likely to remain in place during decommissioning thereby resulting in continued benefits for amphibians.

8.9.510 Decommissioning activities and associated potential for impacts on GCN (and other amphibians) will therefore be similar to the construction phase (albeit impacts during decommissioning are likely to be reduced compared to construction). Given the timescales prior to the progression of decommissioning activities, it is possible that the status of GCN could change, with any accurate assessment of effects necessarily depend on the population status at the time, which would likely need to be updated through up-to-date survey work, to inform the decommissioning phase.

8.9.511 On the basis of current conditions and the current legislative framework, significant effects can be expected not to exceed those described within the construction phases and likely (due to retained infrastructure/services) be considerably more reduced.

Significance of Effects

- 8.9.512 The magnitude of impact on GCN (and other amphibians), as a result of decommissioning activities would be negligible, (short-term habitat impacts at the Site scale with no long-term negative effect) and which is considered **not significant**. Accordingly, no significant negative effects on GCN (and other amphibians) are anticipated.
- 8.9.513 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Widespread Reptiles

- 8.9.514 During scoping process, it was concluded that operational phase impacts would be scoped out for reptiles. Therefore, the Ecological Impact Assessment is limited to the construction and decommissioning periods. Nevertheless, embedded mitigation measures to avoid impacts on key habitats potentially utilised reptile species, will also apply during operational replacement of panels and batteries and are set out in the **Outline OEMP [EN0110014/APP/7.2]**.

Construction Phase

Potential Effects

- 8.9.515 Potential effects during the construction phase include:
- Species injury/mortality;
 - Disturbance;
 - Habitat fragmentation; and
 - Habitat degradation.

- 8.9.516 These potential impacts are discussed below.

Assessment

- 8.9.517 The vast majority of the land on which the Solar PV Sites will be sited, namely arable fields, represent habitat negligible importance for widespread reptile species. More suitable habitat is generally confined to hedgerows, ditches, woodland edges, and uncultivated field margins, which are to be largely retained and protected during construction, thereby avoiding habitat fragmentation effects.
- 8.9.518 potential impacts to reptiles are identical to those presented for GCN in Section 8.9.65 above. An ecologically sensitive approach to construction will be implemented through the provision of the **Outline CEMP [EN0110014/**

APP/7.2]. The Outline CEMP details measures and approaches to be adopted which will limit the likelihood of impacts suitable reptile habitat through Biodiversity Protection Buffers which will be maintained throughout the construction phase. Further details of embedded protection measures are provided within the **Outline PSMS [EN0110014/APP /8.10]** submitted with the DCO Application, this includes guidance for seasonal working and ECoW supervision required to avoid direct impacts upon reptiles.

8.9.519 Most notably, the most suitable semi-natural habitats for reptiles are present along the Hempnall Beck in CRC7 and CRC6, trenchless HDD crossings are proposed in these areas thereby avoiding impacts to reptile populations potentially present.

Significance of Effect

8.9.520 Taking into the embedded mitigation provided within the **Outline PSMS [EN0110014/APP/ 8.10]**, and the BNG enhancement measures introduced during the construction phases and embedded within the project design, opportunities for reptiles within the Order Limits will be maintained and, in many cases, enhanced during the Construction period.

8.9.521 As such, the magnitude of impact on reptiles as a result of construction activities would be negligible, resulting in a Negligible magnitude effect (short-term reversible impact at the Site scale with no long-term negative effect on reptiles) which is considered **not significant**.

8.9.522 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.523 Potential effects during the decommissioning phase include:

- Species injury/mortality;
- Disturbance;
- Habitat fragmentation; and
- Habitat degradation.

8.9.524 These potential impacts are discussed below.

Assessment

8.9.525 Decommissioning activities and associated potential for impacts on reptiles will therefore be similar to the construction phase (albeit impacts during

decommissioning are likely to be reduced compared to construction). Reduced levels of disturbance from movement of vehicles and personnel would also be expected, as the large majority of underground cabling within the CRC and National Grid Substation is expected to remain in-situ.

- 8.9.526 The **Outline DEMP [EN0110014 /APP/7.3]** which accompanies the ES informs decommissioning activities, which are anticipated to be similar (or no worse) effects as those described in the construction phase impacts for reptiles, and includes pollution prevention measures designed to avoid impacts upon retained habitats suitable for reptiles.
- 8.9.527 Many of the habitat enhancements associated with field margin/hedgerow/scrub habitats managed throughout the operational phase are considered likely to remain in place during the decommissioning phase, thereby resulting in continued benefits for reptiles.
- 8.9.528 On the basis of current conditions and the current legislative framework, significant effects can be expected not to exceed those described within the construction phases and likely (due to retained infrastructure/services) be considerably more reduced.

Significance of Effects

- 8.9.529 The magnitude of impact on reptiles, as a result of decommissioning activities would be negligible, (short-term habitat impacts at the Site scale with no long-term negative effect) and which is considered **not significant**. Accordingly, no significant negative effects on reptiles are anticipated.
- 8.9.530 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Breeding Birds

- 8.9.531 During scoping process, it was concluded that operational phase impacts would be scoped out for breeding birds. However, due to the specific impacts to skylark, this species has been addressed separately within this Chapter, and includes construction, operational, and decommissioning phase impact assessments for this species.
- 8.9.532 Therefore, all other breeding bird species are included within this section and (in adherence to the scoping opinion) are limited to the construction and decommissioning periods. Nevertheless, embedded mitigation measures to avoid impacts on key habitats potentially utilised by breeding bird species, will also apply during operational replacement of panels and batteries and are set out in the **Outline OEMP [EN0110014/APP/7.2]**.

Construction Phase

Potential Effects

8.9.533 Potential effects during the construction phase include:

- Species injury/mortality;
- Disturbance;
- Habitat fragmentation; and
- Habitat degradation.

8.9.534 These potential impacts are discussed below.

Assessment

8.9.535 A total of 85 species were recorded during the Breeding Bird Surveys undertaken between May 2024 to July 2025 inclusive (**ES Vol 3, Appendix 8.4: Breeding Bird Survey Report [EN0110014/APP/6.3.8.4]**). These included three Birds of Conservation Concern (BoCC) (Ref 8-100) red list species confirmed as breeding within the survey area: linnet, skylark (which will be considered in a separate assessment below) and yellowhammer and three amber list species; dunnoek, moorhen and whitethroat. Seven notable species were recorded as probable breeding species within the survey area; W&CA Schedule 1 species barn owl, and greenfinch (BoCC red listed species) and amber listed species; kestrel, mallard, song thrush, woodpigeon and wren.

8.9.536 Potential effects on nesting birds during construction include the temporary loss of nesting opportunities through disturbance/habitat degradation if construction takes place during the breeding season or foraging habitat, either within the Order Limits or within adjacent areas. However, this is set against the activities associated with the intensive agricultural management regimes currently employed within the Scheme boundaries. Therefore, local bird populations are expected to be relatively tolerant to existing background activity.

8.9.537 The vast majority of the land on which the Scheme will be sited, namely arable fields, represent habitat of negligible importance to the nesting species recorded (apart from skylark) including W&CA species barn owl. Suitable habitat is generally confined to hedgerows, ditches, woodland edges, pond edges, and uncultivated field margins. An ecologically sensitive approach to construction will be implemented through the provision of the **Outline CEMP [EN0110014/APP/7.1]**. The Outline CEMP details measures and approaches to be adopted which will limit the likelihood of impacts upon nesting birds within these habitats through Biodiversity Protection Buffers which will be maintained throughout the construction phase. Further details

of embedded protection measures are provided within the **Outline PSMS [EN0110014/APP/6.3.8.10]** submitted with the DCO Application.

- 8.9.538 The design principles for the Scheme are set out in the **Design Principles, Parameters and Commitments [EN011014/APP/7.18]** document which includes a series of environmentally led design principles, including in relation biodiversity. This includes restricting development in ecologically sensitive locations and applying appropriate offsets and buffers from important ecological receptors including the adherence to a minimum of 15m from woodland, 10m from hedgerows, 10m from ditches and watercourses, and 30m from CWS's/SSSI's/Ancient Woodland sites within and immediately surrounding the Order Limits; thereby significantly reducing the potential for disturbance and direct/indirect effects on suitable nesting habitat.
- 8.9.539 Potential direct impacts upon nesting birds during the construction phase is limited to terrestrial habitat loss associated with clearance of small sections of hedgerows or other field boundary habitats required for access or cable trenching. Impacts associated with this have been reduced by specifically designing routes to utilise existing field entrances and gaps in internal/external hedgerows and other linear habitats wherever practicable. Where access (haul route/CRC access/Order Limits access) is required through linear features such as field margins/hedgerows/ditches these construction impact areas will be reduced to a maximum of 10m working width. These field boundary habitat losses constitute a very small proportion of the overall habitat network, and as such there will be no significant loss of habitat for nesting birds in the context of the Scheme. All temporary habitat impacts (haul routes/CRC work etc) will be reinstated thereafter.
- 8.9.540 Further embedded information is provided within the **Outline PSMS [EN0110014/APP/6.3.8.10]** which will avoid direct impacts associated with injury/mortality, and disturbance. As a result, no significant adverse effects on the extent of suitable nesting habitat are anticipated as a result of the Scheme and direct impacts upon nesting birds (apart from skylark) will be avoided by adherence to the **Outline PSMS**.

Significance of Effects

- 8.9.541 Given that embedded mitigation measures will be incorporated into the Scheme to avoid impacts on nesting birds (including the W&CA species; barn owl) during the construction phase, the magnitude of impact on breeding birds as a result of construction activities would be negligible any impacts (associated with minor habitat loss/disturbance) will be short-term and reversible at the Site scale with no long-term negative effect, therefore considered **not significant**. No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.542 Potential effects during the decommissioning phase include:

- Species injury/mortality;
- Disturbance;
- Habitat fragmentation; and
- Habitat degradation.

8.9.543 These potential impacts are discussed below.

Assessment

8.9.544 Potential effects on breeding birds during decommissioning include the temporary disturbance to suitable nesting habitat (but only if decommissioning takes place during the breeding season), directly within the Order Limits, or indirectly within adjacent areas through disturbance. Reduced levels of disturbance from movement of vehicles and personnel would also be expected, as the large majority of underground cabling within the CRC and National Grid Substation is expected to remain in-situ.

8.9.545 Due to the commitment to achieve measurable BNG within the Site, it is considered that the habitats retained within the Site during decommissioning will be of a greater importance for breeding birds in comparison to the current pre-construction baseline habitats.

8.9.546 Hedgerows and trees located along field boundaries both planted and retained during the construction process will likely be subject to only minor and localised indirect disturbance or displacement for a temporary period during the decommissioning process. This process will be informed by the **Outline DEMP [EN0110014 /APP/7.3]** and a final DEMP secured via the DCO which will adopt precautionary measures to avoid direct impacts upon nesting birds in adherence to current policy and legislation at that time, thereby avoiding significant fragmentation and habitat degradation impacts.

8.9.547 On the basis of current conditions and the current legislative framework, significant effects can be expected not to exceed those described within the construction phases and likely (due to retained infrastructure/services) be considerably more reduced.

Significance of Effects

8.9.548 The magnitude of impact on breeding birds, as a result of decommissioning activities would be negligible, (short-term impacts at the Site scale with no

long-term negative effect) and which is considered not significant.
Accordingly, no significant negative effects on breeding birds are anticipated.

8.9.549 No additional mitigation measures are considered necessary, and no residual effects are anticipated

Skylark

Construction Phase

Potential Effects

8.9.550 Potential effects during the construction phase include:

- Species injury/mortality;
- Disturbance;
- Habitat fragmentation; and
- Habitat degradation.

8.9.551 These potential impacts are discussed below.

Assessment

8.9.552 During the survey work undertaken (**ES Vol 3, Appendix 8.4: Breeding Bird Survey Report [EN0110014/APP/6.3.8.4]**), a total of 81 skylark breeding territories were recorded across the surveyed area, 70 of these were identified within areas which will be subject to permanent development. This is the only species of ground nesting bird that have been confirmed as a breeding within the Order Limits and which occupy open habitats such as arable and pasture grassland.

8.9.553 Skylarks are Red listed (reflecting their status as being of highest conservation concern and in particular substantial recent population declines) and are listed as priority species under Section 41 of the NERC Act 2006.

8.9.554 The Skylark in particular is widespread across the UK, traditionally linked to open farmland, meadows, and heathlands. The species has undergone major declines and numbers fell by around 60% between the mid-1970s and late 1990s, with slower declines continuing into the 21st century before a more recent upturn. This prolonged population decline led to the species' listing on the UK 'Red List' of BoCC.

8.9.555 Despite declines, Skylarks remain a familiar feature of the UK countryside, with an estimated 1.6 million breeding pairs in 2016 (Woodward *et al.*, 2020) (Ref 8-101). According to the most recently available BTO report (Heywood

- et al.*, 2025) (Ref 8-102), numbers have increased by 9% during the past decade and nearly 20% in the last five years in south-east England and the East Midlands for example. Population data at a county level is available for Norfolk, where the 2007 populations was estimated to be 25,000 to 30,000 breeding pairs (Taylor and Marchant, 2011) (Ref 8-103). Therefore, numbers of Skylark within the Order Limits represent <1% of county populations and accordingly, are unlikely to be considered significant in the national or county context.
- 8.9.556 A study by Fox (2022) (Ref 8-104), published in CIEEM's In Practice journal provided a succinct appraisal of the known and assumed impacts of solar farms on Skylarks, and included a prototype approach to mitigation. Fox noted that, while Skylarks are regularly observed on operational solar farms, nesting within the panel array is rare to non-existent. The shaded, fragmented, and enclosed environment beneath panels appears to increase predation risk and reduce visibility, which are key factors influencing nest site selection. Consequently, it is assumed that skylark will be deterred from nesting directly within fields supporting solar arrays (and other associated infrastructure such as BESS).
- 8.9.557 Nevertheless, the Scheme will not displace species entirely, with fields occupied by solar PV panels offering enhanced foraging opportunities for breeding pairs in surrounding land. The conversion of arable land to semi-permanent grassland within a solar farm is likely to lead to increased invertebrate abundance and diversity, and therefore food greater food resource for Skylarks at the local population level, through both reduced chemical inputs and a more stable ground structure due to cessation of tilling activities.
- 8.9.558 Whilst there is no evidence of Skylarks nesting within solar arrays, they are consistently recorded foraging and displaying above or adjacent to solar installations. This indicates that solar farm sites offer supplementary habitat for nearby pairs, which may not be available in the absence of habitat management associated with the solar farm (Solar Energy UK, 2024) (Ref 8-105). Solar Energy UK's Solar Habitat 2025 (Ref 8-106) report found that in 59% of surveyed solar farms, skylarks were recorded exhibiting foraging behaviour within or immediately adjacent to panel arrays, providing evidence of the use of solar farms as a foraging resource. Secker (2024) (Ref 8-107) noted six different Skylarks carrying food at two solar farms, all of which were observed during the late breeding season visit when skylarks spent a higher percentage of their time foraging on solar farms. Consequently, whilst breeding skylark will be displaced from nesting within the developed area, extensive areas of better-quality habitat will become available for nearby retained pairs and informed by the Schemes habitat management instructions within the **Outline LEMP [EN0110014/APP/7.4]**, potentially leading to increased breeding productivity for the local skylark population. This will provide a reliable food resource for the operational lifetime of the

Scheme, which is likely to be otherwise farming practices and any changes driven by market conditions.

- 8.9.559 The potential to enhance opportunities for the benefit of the wider local skylark population is further increased due to the geography of the Scheme. The nature of the Scheme layout, which often consists of linear stretches of single field parcels (as opposed to a single unit or large block of ‘stacked’ fields) would enhance the Scheme’s potential to support skylark populations without significant adverse effects upon breeding productivity locally.
- 8.9.560 Within areas required for temporary works (such as the CRC) a temporary loss of available ground nesting bird breeding habitat will occur during construction, although this impact will not be felt across the entire Scheme in synchrony, due to the progressive nature of construction.
- 8.9.561 To further mitigate the loss of skylark breeding opportunities as a result of the construction of the Scheme, ‘skylark plots’ (a small undrilled or sprayed fallow patch created inside a field of cereal crops, designed to provide habitat for breeding skylarks) will be created during the construction phase. Skylarks do not nest within the plots, rather the plots provide a valuable foraging area and enable the birds to access densely cropped fields from the ground (Fox, 2022). Two plots per hectare in winter cereals have been shown to significantly boost chick production. In order to reflect cropping rotations whilst ensuring skylark plots are provided within the most suitable areas, the precise locations of plots would necessarily vary from year to year, such that a larger area within the Order Limits of 60ha has been identified, within which at least 40ha arable land will be managed to include Skylark plots on a rotational basis (see Figure 2 Green Infrastructure Strategy within Appendix B of the **Outline Landscape and Ecology Management Plan [EN0110014/APP/7.4]** and further information is provided within the **Outline PSMS [EN0110014/APP/ 6.3.8.10]**
- 8.9.562 In addition to the opportunities provided by the creation of grassland margin habitats (and grassland within the Solar PV Sites) long-term breeding opportunities within the Order Limits will be provided by the creation of open grassland habitats within Sub-Sites 3, 4B, 8B and 10B. These areas will be created during the construction phase to enhance biodiversity, including enhancing opportunities for skylark. Further information regarding initial habitat creation methodology is provided within the **Outline LEMP [EN0110014/APP/7.4]**,

Significance of Effects

- 8.9.563 Embedded mitigation has been adopted to avoid impacts upon individual nesting locations; this is provided within the **Outline PSMS [EN0110014/APP/6.3.8.10]**. As a result, **no significant negative effects** on active nest locations are expected as a result of the Scheme and direct impacts upon skylark nests will be avoided by adherence to the Outline PSMS. In addition, the embedded mitigation, in the form of retained arable

land with skylark plots and creation of other valuable habitat for the species would provide continued opportunities for the species. The temporary loss of available skylark nesting habitats during CRC construction works will represent highly localised disturbance impacts.

8.9.564 Therefore, the magnitude of impact on skylark as a result of construction activities would be negligible, (short-term reversible impact at the Site scale with no long-term negative effect) and which is considered **not significant**. As such, no significant adverse effects are anticipated to skylark as a result of the construction. No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

8.9.565 Potential effects during the operational phase include:

- Species injury/mortality;
- Disturbance; and
- Habitat degradation.

8.9.566 These potential impacts are discussed below.

Assessment

8.9.567 Embedded mitigation measures to avoid impacts on ground nesting birds during the construction phase, will also apply during operational phase, during replacement of panels and batteries and are set out in the **Outline OEMP [EN0110014/APP/7.2]**. No significant negative direct impacts on skylark (which are assumed to be displaced from the areas of the Order Limits subject to solar PV panels, BESS etc) are anticipated to arise during the operation phase.

8.9.568 Retained agricultural land within the Order Limits will continue to be utilised for the provision of skylark plots, within which at least 40ha arable land managed with skylark plots annually on a rotational basis, further information is provided within the **Outline PSMS [EN0110014/APP/6.3.8.10]**.

8.9.569 Grassland created during the construction phase within Sub-Sites 3, 4B, 8B and 10B will be managed to enhance biodiversity, including enhancing opportunities for skylark. This increase in available ground nesting, will be informed by the **Outline LEMP [EN0110014/APP/7.4]**. Therefore, habitats will be of proportionately higher value for skylark than the current arable production.

8.9.570 Adverse impacts on skylark during the operation and maintenance of the Scheme are likely to be minimal, considering the adoption of ecological

buffer zones. Embedded mitigation measures to avoid impacts on key habitats described for the construction phase, including implementation of buffer zones and pollution prevention measures, will also apply during operational replacement of panels and batteries and are set out in the **Outline OEMP [EN0110014/APP/7.2]**.

Significance of Effects

- 8.9.571 No significant adverse impacts on skylark are anticipated to arise during the Operation Phase. Risks of killing and injury would be reduced by embedded mitigation measures to neutral and **non-significant levels**.
- 8.9.572 When considering the provision of habitats enhancement for the benefit of skylark detailed within the **Outline LEMP [EN0110014/APP/7.4]** it is considered that the Operational Phase of the Scheme would result in a magnitude of impact of moderate beneficial, resulting in a Positive effect, which is considered **significant** at a local scale. No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

- 8.9.573 Potential effects during the decommissioning phase include:
- Species injury/mortality;
 - Disturbance;
 - Habitat fragmentation; and
 - Habitat degradation.

8.9.574 These potential impacts are discussed below.

Assessment

- 8.9.575 Where decommissioning takes place during the breeding season potential effects on breeding skylark will be limited due to the unsuitability of field parcels with Solar PV development for breeding skylark. Impacts may include minor temporary disturbance to suitable retained/created nesting habitat, directly within the Order Limits (notably large areas of grassland created during the construction and maintained through the operational phase), or indirectly within adjacent areas through disturbance. Reduced levels of disturbance from movement of vehicles and personnel would also be expected, as the large majority of underground cabling within the CRC and National Grid Substation is expected to remain in-situ.

8.9.576 The decommissioning process will be informed by the **Outline DEMP [EN0110014 /APP/7.3]** and a final DEMP secured via the DCO which will adopt precautionary measures to avoid direct impacts upon nesting birds/retained habitats in adherence to current policy and legislation at that time, thereby avoiding direct impacts upon skylark nests and significant fragmentation and habitat degradation impacts.

8.9.577 On the basis of current conditions and the current legislative framework, significant effects can be expected not to exceed those described within the construction phases and likely (due to retained infrastructure/services) be considerably more reduced.

Significance of Effects

8.9.578 The magnitude of impact on skylark, as a result of decommissioning activities would be negligible, (short-term habitat impacts at the Site scale with no long-term negative effect) and which is considered **not significant**. Accordingly, no significant negative effects on skylark are anticipated.

8.9.579 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Bats (roosting)

Construction Phase

Potential Effects

8.9.580 Potential effects during the construction phase include:

- Species injury/mortality;
- Disturbance;
- Habitat fragmentation; and
- Habitat degradation.

8.9.581 These potential impacts are discussed below.

Assessment

8.9.582 The Order Limits include a number of trees including those containing potential roosting features (PRF), predominantly located within the field boundary hedgerows and tree lines. 621 trees are considered to have potential to support roosting bats; 577 of these are located within Sites 1-10 and BESS site, and 44 trees within the CRC and Highway Improvement Works boundaries. Any loss of trees capable of supporting roosting bats could result in direct harm, population fragmentation and habitat

degradation. However, the retention of individual in-field trees has been embedded into the design of the Scheme at an early stage, and trees are retained wherever practicable. Such have been buffered from development according to their Root Protection Zone and protected via the **ES Vol 3, Appendix 7.10: Preliminary Arboricultural Impact Assessment [EN0110014/APP/6.3.7.10]** and **Outline CEMP [EN0110014/APP/7.1]**.

- 8.9.583 The presence of nearby roosting bats has been confirmed (via NBIS), the closest being a brown long-eared bat and common pipistrelle roost located 32m south-west of Sub-Site 4B, whereby bats were observed roosting in stables and a dairy barn and a barbastelle roost within Saxlingham Grove CWS approximately 47m north-east of Sub-Site 7F, with additional maternity roosts for barbastelle bats confirmed by Norfolk Barbastelle Study Group (NBSG) located within the wider environment, the closest being 138m east of Sub-Site 7F, again within Saxlingham Grove. See **ES Chapter 3, Appendix 8.5: Ground Level Tree Assessment Report [EN0110014/APP/6.3.8.5]** for further information.
- 8.9.584 Impacts upon off-site bat roosts and trees with bat roosting potential within the Order Limits will be avoided during the construction phase through the avoidance and buffering of off-Site woodland habitats and specific stand-off distances from surrounding buildings, the following imbedded off-site habitat avoidance measures have been included within the **Design Principles, Parameters and Commitments [EN011014/APP/7.18]** to avoid impacts upon roosting bat species surrounding the Order Limits:
- Minimum of 30m construction exclusion zones surrounding existing SSSI, Ancient Woodland, and CWS woodland parcels (some containing known bat roosts);
 - Minimum of 15m exclusion zones surrounding woodland parcels; and
 - RPZ's associated with retained mature trees.
- 8.9.585 As set out above, embedded mitigation incorporates the retention of these features. Additionally, no trees identified as having the potential to support roosting bats (see **ES Chapter 3, Appendix 8.5: Ground Level Tree Assessment Report [EN0110014/APP/6.3.8.5]**) are identified for removal to facilitate the Scheme. As such, no significant loss of potentially important roosting features is anticipated during the construction phase. In the unlikely event that, upon the finalised detailed design stage (secured via DCO), if minor amendments result in impacts upon trees with bat roosting potential, the embedded migration measures detailed within the **Outline PSMS [EN0110014/APP/6.3.8.10]** will be followed to avoid impacts upon roosting bats or mitigate unavoidable impacts.
- 8.9.586 Potential construction phase lighting impacts will be avoided through the avoidance of extensive night-time working adopting an 07:00 to 18:00

maximum working hours pattern (March to September sunset times when bats are at their most active are generally after 18:00), Where required, temporary construction lighting will be positioned to ensure that light is directed onto the area of works only avoiding trees with roosting bat potential and off-site trees/woodland/buildings potentially utilised by roosting bat species. The use of LED lighting and cowls, hoods and other similar screens will also be adopted. Any requirement for lighting outside standard working hours will be set out within the detailed CEMP and **Lighting Strategy [EN0110014/APP/6.3.7.11]**.

- 8.9.587 Standard measures to ensure pollution prevention will be implemented through the **Outline CEMP [EN0110014/APP/7.1]**. These measures will safeguard trees/woodland within the Order Limits. Albeit these pollution impact pathways would not be anticipated to be significantly greater than the existing baseline impacts associated with current agricultural activities.
- 8.9.588 Given the retention and buffering of the existing trees and avoidance of trees with bat roosting potential, the potential for adverse impacts on roosting bats during construction phase activities would be limited to very minor disturbance effects through noise/visual disturbance associated with construction activities. Any such potential would be short-term and temporary prior to mitigation and not anticipated to be significantly greater than the existing baseline disturbance impacts associated with current agricultural activities. Further, measures set out within embedded mitigation as part of the **Outline CEMP [EN0110014/APP/7.1]**. This will ensure that potential for disturbance effects is avoided, resulting in a Negligible effect.

Significance of Effects

- 8.9.589 As detailed, embedded mitigation has been adopted to avoid impacts upon roosting bats, and the temporary construction works will represent highly localised disturbance impacts within the Order Limits only, with buffer zones protecting off-Site roost locations. Therefore, the magnitude of impact on upon roosting bats as a result of construction activities would be negligible, (short-term reversible impact at the Site scale with no long-term negative effect) and which is considered **not significant**. As such, no significant adverse effects are anticipated as a result of the construction. No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

- 8.9.590 Potential effects during the operational phase include:
- Species injury/mortality;
 - Disturbance; and

- Habitat degradation.

8.9.591 These potential impacts are discussed below.

Assessment

- 8.9.592 No permanent external artificial lighting is expected to be used within the Scheme once operational, other than motion sensing lighting which will be implemented around the National Grid Substation, substations and BESS and other critical electrical infrastructure to be used only for maintenance, safe working conditions in winter months and security purposes only. No lighting (permanent or temporary) lighting will be attached to the perimeter fencing. The **Lighting Strategy [EN0110014/APP/6.3.7.11]** and **Outline OEMP [EN0110014/APP/7.2]** include details of sensitive lighting design, which will be positioned to avoid the illumination of retained/ created habitats.
- 8.9.593 The **Outline LEMP [EN0110014/APP/7.4]** provides long-term management guidance which will ensure the sensitive management of habitats potentially used by roosting bats (including created woodland parcels which may eventually offer roosting potential within the Scheme's lifespan) and includes the enhancement and management of buffer habitats surrounding known bat roosts sites (including Saxlingham Grove which supports barbastelle maternity roosts and extensive areas within Sub-Site 4B which is located in close proximity to off-Site roosts) see **ES Chapter 3, Appendix 8.5: Ground Level Tree Assessment Report [EN0110014/APP/6.3.8.5]**) for further information, thereby achieving long-term habitat enhancement delivery for bats. The **Outline OEMP [EN0110014/APP/7.2]** also sets out the methods by which operational activities (most notably panel/battery replacement works) will be managed to avoid, minimise and mitigate any adverse ecological effects. It will ensure that there will be no pathway for significant direct or indirect effects upon roosting bats and associated important habitats.
- 8.9.594 The Outline LEMP also provides commitment to the provision and maintenance of a variety of artificial bat roosting boxes throughout the Order Limits for the entirety of the Scheme's operational period.

Significance of Effects

- 8.9.595 When considering the protection measures provided within the **Outline LEMP**, retention/protection of existing roosting opportunities, and the provision of enhancements for the benefit of roosting bats detailed within the **Outline LEMP [EN0110014/APP/7.4]** it is considered that the Operational Phase of the Scheme would result in a magnitude of impact of moderate beneficial, resulting in a long-term **Positive effect**, which is considered **significant at the Local scale**. No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.596 Potential effects during the decommissioning phase include:

- Species injury/mortality;
- Disturbance;
- Habitat fragmentation; and
- Habitat degradation.

8.9.597 These potential impacts are discussed below.

Assessment

8.9.598 Potential effects on roosting bats during decommissioning include the temporary disturbance to suitable roosting habitat, directly within the Order Limits, or indirectly within adjacent areas through disturbance, it is currently considered unlikely that trees will need to be removed to facilitate the decommissioning works. The **Outline DEMP [EN0110014 /APP/7.3]** will set out the methods by which decommissioning activities will be managed to avoid, minimise and mitigate any adverse effects such as these upon all trees (including those with roosting bat potential), including information regarding lighting management and tree protection measures to protect potential roost sites.

8.9.599 Potential decommissioning phase lighting impacts can be readily avoided through the avoidance of extensive night-time working and sensitive design of construction phase lighting (if required) and informed by appropriate guidance at that time to avoid the potential for construction-related impacts from lighting. Lighting would be designed to avoid the illumination of woodland, hedgerow and river corridor habitats potentially supporting roosts or being utilised by bats to access/exit roost sites.

8.9.600 Impacts upon roosting bats within the CRC are not considered likely as all buried cables will likely remain in-situ during post-decommissioning and these areas will remain impact free.

Significance of Effects

8.9.601 The magnitude of impact on roosting bats, as a result of decommissioning activities would be negligible, (short-term habitat impacts at the Site scale with no long-term negative effect) and which is considered **not significant**. Accordingly, no significant negative effects on roosting bats are anticipated.

8.9.602 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Bats (commuting and foraging)

Construction Phase

Potential Effects

8.9.603 Potential effects during the construction phase include:

- Habitat fragmentation;
- Disturbance; and
- Habitat degradation.

8.9.604 These potential impacts are discussed below.

Assessment

8.9.605 Based on the results of the bat activity surveys, the Order Limits (and surrounding landscape) is considered to support nationally important assemblages of foraging/commuting bats. A total of eleven bat species were recorded on-site during the surveys; common pipistrelle was the most abundant recorded species, and other species included locally rare species; Nathusius' pipistrelle, whiskered bat, serotine and Leisler's bat and most notably the nationally rare barbastelle. All bat species within the Order Limits are known to occur in East Anglia, with barbastelle being the 'rarest' bat in the UK (Reason & Wray, 2025) (Ref 8-108). Barbastelle activity across the Order Limits was high, with this species being the third most abundant recorded (see **ES Chapter 3, Appendix 8.6: Bat Activity Survey Report [EN0110014/APP/6.3.8.6]**). However, Norfolk is considered a stronghold for this species (Harris, 2020) (Ref 8-109). As such, it is not unexpected that barbastelle was recorded across all sample locations within the Order Limits. Whilst the Order Limits itself does not support notably significant areas of high quality habitat (its overall habitat suitability is moderate) it is well connected with off-site woodland and wetland habitats that are an important resource for this species and is likely to provide supporting habitats and features (e.g. hedgerows, tree lines, mature trees, field margins) that could be used for foraging and commuting habitats, and is located within multiple core sustenance zones (CSZ's) for barbastelle bat maternity roosts.

8.9.606 Due to the presence of nationally important bat assemblages, the Schemes design process has sought to embed avoidance and protection measures for foraging/commuting bat species, in order to enable bat species to continue to utilise habitats within the Order Limits throughout the construction phase. The Scheme design has sought to retain the large majority of existing hedgerow systems throughout the Order Limits. Also, the implementation of extensive 10m buffer zones surrounding field boundary hedgerows and ditches (extending to a minimum of 15m surrounding trees and woodland)

which will conserve field margin habitats which constitute key movement corridors along which foraging and commuting bats traverse the Order Limits. Ecological buffers applied to the design of the Scheme are provided within the **Design Principles, Parameters and Commitments [EN011014/APP/7.18]** retained habitat protection measures are committed to via the **Outline CEMP [EN0110014/APP/7.1]**.

- 8.9.607 Some minor areas of hedgerow/field boundary habitat loss will be necessary to facilitate the construction phase (namely for access purposes/haul routes/CRC works). Impacts associated with this have been reduced by specifically designing routes to utilise existing field entrances and gaps in internal/external hedgerows and other linear habitats wherever practicable. Where access (haul route/CRC access/Order Limits access) is required through linear features such as field margins/hedgerows/ditches these construction impact areas will be reduced to a maximum of 10m working width; which is not considered large enough to dissuade bat usage (with many existing gaps in such features being already present throughout the Order Limits). These field boundary habitat losses constitute a very small proportion of the overall habitat network, and as such there will be no significant loss of foraging/commuting routes in the context of the Scheme. All temporary habitat impacts (haul routes/CRC work etc) will be reinstated thereafter.
- 8.9.608 Additionally, where practicable within the CRC, open cut trenching will be avoided in multiple locations, with HDD trenchless solutions employed, thereby avoiding temporary habitat removals, these avoidance areas include CRC8A & 8B and CRC5A detailed within the **Outline Cable Route Construction Statement [EN0110014 APP/7.21]** which likely provide important connectivity to Shotesham-Woodton Hornbeam Woods SSSI, and HDD beneath a linear section of Lower Spring Wood CWS (avoidance area CRC9B), which is likely utilised for foraging/commuting by a barbastelle bat maternity colony within the CWS approximately 300m north of the Order Limits. HDD is also proposed beneath Fritton Grange Meadows CWS (avoidance area CRC7B), this area consists of lowland fen/river/wet woodland mosaics and also considered to be a valuable foraging resource for Barbastelles (along with a variety of other locally occurring species recorded during the bat activity surveys).
- 8.9.609 In addition to the large amount of field boundary retention, avoidance and buffering of field margin habitats, the following embedded avoidance measures have also been included within the design process to avoid impacts upon foraging and commuting bat species:
- Minimum of 30m construction exclusion zones surrounding existing SSSI, Ancient Woodland, and CWS woodland parcels;
 - 30-50m buffers surrounding wet ponds;

- Minimum of 10m construction exclusion zones surrounding rivers/watercourses;
 - Minimum of 15m exclusion zones surrounding woodland parcels/mature trees;
 - Areas of retained arable farmland within the Order Limits to be enhanced with arable field margin habitats, thereby enhancing foraging/commuting potential.
- 8.9.610 The retention of important habitat features will enable bats to continue to forage and commute throughout the Order Limits and maintain opportunities within the species CSZ's, most notably barbastelle bats.
- 8.9.611 Potential construction phase lighting impacts will be avoided through the avoidance of extensive night-time working adopting an 07:00 to 18:00 maximum working hours pattern (March to September sunset times when bats are at their most active are generally after 18:00), Where required, temporary construction lighting will be positioned to ensure that light is directed onto the area of works only with as minimal light spillage upon IEFs (such as hedgerows) as possible. The use of LED lighting and cowls, hoods and other similar screens will also be adopted. Any requirement for lighting outside standard working hours will be set out within the detailed CEMP and **Lighting Strategy [EN0110014/APP/6.3.7.11]**.
- 8.9.612 As set out above, embedded mitigation incorporates the retention of these features within appropriate development exclusion buffers outside of construction areas. As such, no significant loss of potentially important navigational features, commuting routes or foraging areas is anticipated. The removal of areas of arable land will result in the temporary loss of low-quality foraging habitats, with these areas being unlikely to support a significant invertebrate prey resource. In addition, this impact will not be felt across the entire Scheme in synchrony, due to the progressive nature of the construction phase.
- 8.9.613 Standard measures to ensure pollution prevention will be implemented through the **Outline CEMP [EN0110014/APP/7.1]**. These measures will safeguard retained habitat networks within the Order Limits and surrounding landscape. Albeit these pollution impact pathways would not be anticipated to be significantly greater than the existing baseline impacts associated with current agricultural activities.

Significance of Effects

- 8.9.614 As detailed, embedded mitigation has been adopted to avoid impacts upon foraging and commuting bats. The temporary loss of linear habitats during construction works will represent highly localised disturbance impacts. Therefore, the magnitude of impact on foraging/commuting bats as a result of construction activities would be negligible, (short-term reversible impact at

the Site scale with no long-term negative effect) and which is considered **not significant**. As such, no significant adverse effects are anticipated as a result of the construction. No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

8.9.615 Potential effects during the operational phase include:

- Habitat fragmentation;
- Disturbance; and
- Habitat degradation.

8.9.616 These potential impacts are discussed below.

Assessment

8.9.617 The consideration of operational effects is limited to the operational sites, with the CRC and Highway Improvement Area unlikely to be impacted during this period, and therefore subject to existing baseline conditions. The Scheme design incorporates the retention of hedgerows, field margins, tree lines, ditches, watercourses, and woodland blocks, which constitute key movement corridors along which foraging and commuting bats traverse the Order Limits along with the key focus of foraging features. Any habitats lost during construction will be more than adequately compensated through the adherence to the **Biodiversity Net Gain Report [EN0110014/APP/7.23]** delivery targets. This will ensure the delivery and long-term management of a quantitative increase in valuable habitats for foraging/commuting bats species throughout the operational phase.

8.9.618 The **Outline LEMP [EN0110014/APP/7.4]** provides long-term management guidance which will ensure the sensitive management of habitats for the benefit of foraging and commuting bat species (and wider biodiversity in general), thereby achieving long-term habitat enhancement delivery for bats. The **Outline OEMP [EN0110014/APP/7.2]** also sets out the methods by which operational activities (most notably panel/battery replacement works) will be managed to avoid, minimise and mitigate any adverse ecological effects. It will ensure that there will be no pathway for significant direct or indirect effects upon foraging/commuting bats and associated important habitats.

8.9.619 Habitat delivery measures proposed within the Figure 2: Green Infrastructure Strategy within **Appendix B** of the **Outline Landscape and Ecology Management Plan (Outline LEMP) [EN0110014/APP/7.4]** includes (but are not limited to) the following measures that will benefit bat species:

- Management of large areas of enhanced foraging habitat directly adjacent to Shotesham-Woodton Hornbeam Woods SSSI/Saxlingham Grove CWS (known barbastelle maternity roost site). This includes strengthened linear habitats connecting these sites to wider habitats (including the other parcels of SSSI woodland), and the creation of woodland/scrub/ scattered tree, grassland mosaics, thereby significantly enhancing opportunities for barbastelle and other bat species associated with these adjacent sites;
 - Habitat buffers surrounding Spring Wood, Hempnall CWS (known barbastelle roost site and foraging area) which consists of grassland mosaics, new hedgerows and native scrub planting; thereby providing increased connectivity to the CWS and enhancing foraging opportunities immediately surrounding the CWS;
 - Management/enhancement of large areas of grassland/scrub mosaics in Sub-Sites 4B, 5A, 5B, 7B, 7C, 7D, 8B, 9, 10A, 10B, and 10D thereby enhancing once habitats of largely low foraging/commuting value, thereby allowing for increased opportunities for bats to forage more widely within the Order Limits;
 - Management of extensive habitats within Sub-Sites 8A & 8B, located approximately 500m east of a large barbastelle maternity colony in Little Wood, this includes neutral grassland, tussocky grassland, broadleaved woodland, hedgerow and native scrub mosaics, which will provide significant local foraging enhancements for bat species associated with Little Wood; and
 - The management of large swathes of habitat mosaics located within retained buffer zones (see above operational impact section); which will provide significant landscape-scale gains for foraging and commuting bat species, enhancing connectivity between existing important bat areas.
- 8.9.620 Operational effects upon terrestrial invertebrates are scoped out due to the significant habitat gains for invertebrates associated with the commitment to BNG delivery and the cessation of insecticide use within the operational sites (apart from those areas of retained agricultural land). These benefits for invertebrate assemblages will also benefit bat species within and surrounding the Order Limits, by enabling increased foraging resources for bat species in the long-term.
- 8.9.621 No permanent external artificial lighting is expected to be used within the Scheme once operational, other than motion sensing lighting which will be implemented around the National Grid Substation, substations and BESS and other critical electrical infrastructure to be used only for maintenance, safe working conditions in winter months and security purposes only. No lighting (permanent or temporary) lighting will be attached to the perimeter fencing. The **Lighting Strategy [EN0110014/APP/6.3.7.11]** and **Outline OEMP [EN0110014/APP/7.2]** include details of sensitive lighting design,

which will be positioned to avoid the illumination of retained/ created habitats.

Significance of Effects

8.9.622 When considering the provision of habitats enhancement for the benefit of foraging/commuting bats detailed within the **Outline LEMP [EN0110014/APP/7.4]** it is considered that the Operational Phase of the Scheme would result in a magnitude of impact of moderate beneficial, resulting in a **Positive effect**, which is considered **significant at a local scale**. No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.623 Potential effects during the decommissioning phase include:

- Disturbance;
- Habitat fragmentation; and
- Habitat degradation.

8.9.624 These potential impacts are discussed below.

Assessment

8.9.625 On the basis of the survey work undertaken, the assemblage of commuting and foraging bats recorded within the Order Limits includes regular use by rarer species (i.e. Barbastelle), focused on commuting corridors (hedgerows/woodland edge for example) with the majority of open arable farmland habitats being of negligible value for foraging/commuting purposes. Decommissioning activities will be focussed on removal of infrastructure in line with the current baseline. Accordingly, no direct loss of potentially important navigational features, commuting routes or foraging areas is anticipated.

8.9.626 Impacts upon foraging/commuting bats within the CRC are not considered likely as all buried cables will likely remain in-situ during post-decommissioning and these areas will remain impact free.

8.9.627 Given the retention of the existing hedgerows, tree lines and mature vegetation with associated buffers, the potential for adverse impacts on foraging/commuting bats during decommissioning activities would be limited to disturbance through noise and lighting associated with decommissioning activities. The **Outline DEMP [EN0110014 /APP/7.3]** sets out the methods by which decommissioning activities will be managed to avoid, minimise and

mitigate any adverse effects upon important bat habitats within the Order Limits, including information regarding lighting management.

Significance of Effects

- 8.9.628 The magnitude of impacts on roosting bats, as a result of decommissioning activities would be negligible, (short-term habitat impacts at the Site scale with no long-term negative effect) and which is considered **not significant**. Accordingly, no significant negative effects on roosting bats are anticipated.
- 8.9.629 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated

Badger

Construction Phase

Potential Effects

8.9.630 Potential effects during the construction phase include:

- Species injury/mortality;
- Disturbance;
- Habitat fragmentation; and
- Habitat degradation.

8.9.631 These potential impacts are discussed below.

Assessment

- 8.9.632 **ES Volume 1, Chapter 4 - The Scheme [EN0110014/APP/6.1.4]** commits to a Development free buffer zone of 30m around all known badger setts within the Order Limits and will be implemented through the construction period in adherence with the embedded mitigation and avoidance measures provided within **Outline CEMP [EN0110014/APP/7.1]** and with the embedded protection measures are provided within the **Outline PSMS [EN0110014/ APP/6.3.10]** submitted with the DCO Application. All badger setts located within the Order Limits are located adjacent to/in close proximity to extensive areas of similar arable landscape located outside of the Order Limits or adjacent to retained suitable habitats, therefore significantly reducing the impacts of the loss of individual fields as foraging resources during construction and allowing badgers to continue to utilise and access setts during the construction period. Therefore, there are anticipated to be **no significant effects** arising from losses of or disturbance to badger setts within the Order Limits during the construction phase.

- 8.9.633 Perimeter security fencing is not considered to be a barrier to badger movement (the temporary security fencing is not proposed to be buried). The permanent fencing would be installed early on in the construction works where practicable to reduce the amount of temporary fencing needed. Naturally occurring undulations in the ground should be used to ensure sufficient space beneath fencing to facilitate badger access is available. If this is not possible, gaps suitable for small mammals (to include badgers and foxes) will be included around the security fence in suitable areas to support wildlife movement across the Order Limits.
- 8.9.634 There will be a short-term reduction in the extent of foraging habitat available to badgers due to the loss of the in-field habitats during construction, until new habitats establish. However, badgers are highly mobile and the temporary loss of habitats within the Sites during construction is anticipated to be similar in effect (i.e. causing disturbance or temporary displacement to badgers) to the regular agricultural activities or harvesting, sowing, harrowing and rolling that take place across much of the Scheme at present, and works will be undertaken in a staggered schedule within certain Sites and not within others etc, as opposed to a larger full site-wide impact. In addition, there will be significant habitat retention (and enhancements) during the construction phase, enabling badgers to continue to utilise habitats during the construction phase.
- 8.9.635 Artificial lighting at night may potentially be utilised during construction. It is understood that construction activities will be limited to between 07:00 and 18:00, thereby avoiding any nocturnal periods between mid-March and late-September. Where required, temporary construction lighting will be positioned to ensure that light is directed onto the area of works only with as minimal light spillage as possible. The use of LED lighting and cowls, hoods and other similar screens will also be adopted. Any requirement for lighting outside standard working hours will be set out within the detailed CEMP and **Outline Lighting Strategy [EN0110014/ APP/7.26]**.
- 8.9.636 All HDD methodologies will be temporary and undertaken outside of 30m badger sett buffer zones, most notably, where trenchless crossings are beneath Hempnall Beck (CRC7), the cable depth would be a minimum of 5m below the surveyed riverbed, thereby avoiding impacts to badgers' setts within the wider environment.
- 8.9.637 As a result, **no significant effects** arising from habitat fragmentation during the construction phase are anticipated

Significance of Effects

- 8.9.638 Taking into account incorporation of ecological buffer zones during construction, the embedded mitigation provided within the **Outline CEMP [EN0110014/APP/7.1]** and **Outline PSMS [EN0110014/ APP/6.3.8.10]**, and the habitat protection and retention measures embedded within the project

design, opportunities for badgers within the Order Limits will be maintained during the Construction period.

8.9.639 As such, the magnitude of impact on badgers as a result of construction activities would be negligible, (short-term reversible habitat impacts at the Site scale with no long-term negative effect) and which is considered **not significant**. As such, no significant adverse effects are anticipated to badgers as a result of the construction activities.

8.9.640 Construction phase likely significant effects upon badger populations within and surrounding the Order Limits have been found to be not significant, however, for legislative compliance and to avoid impacts upon individual badgers **Outline PSMS [EN0110014/ APP/6.3.8.10]** will be adopted during the construction phase.

Operational Phase

Potential Effects

8.9.641 Potential effects during the operational phase include:

- Species injury/mortality;
- Disturbance; and
- Habitat degradation.

8.9.642 These potential impacts are discussed below.

Assessment

8.9.643 As a consequence of the embedded habitat creation/enhancements and associated management undertaken in line with the **Outline LEMP [EN0110014/APP/7.4]**. It is anticipated that the Scheme will result in a significant long-term beneficial effect on the availability of suitable foraging and sett-building habitat for badgers, which would be significant at the Site level.

8.9.644 Further potential beneficial effects include reduced disturbance or habitat degradation during the operational phase compared to baseline levels, primarily due to the cessation of agricultural activities and increased sheltering and dispersal cover due to new hedgerow, scrub and woodland and tree planting and grassland habitat creation.

8.9.645 During the operational phase, badgers are likely to benefit from an improved abundance of food within the grassland under the arrays, as permanent grassland has been shown to contain a greater abundance of earthworms and soil invertebrates than arable soils (Ref 8-110).

- 8.9.646 With the embedded buffer zones in place, badgers are not considered likely to be affected by ongoing operational maintenance or during the replacement of panels and batteries for the duration of the operational phase of the Scheme. Routine maintenance will also not typically be conducted during the hours of darkness when badgers are most active.
- 8.9.647 Lighting is typically not required within Solar PV areas for the operational phase. Limited motion-sensing security lighting will be included within the Substations and BESS Sites. This will be used only for nocturnal maintenance operations and security purposes. The lighting strategy for the operational phase is set out in the **Outline Lighting Strategy [EN0110014/APP/6.3.7.11]**. This details how artificial lighting will avoid adverse impacts on ecological receptors sensitive to artificial lighting, such as badgers.

Significance of Effects

- 8.9.648 Following the implementation of the buffer zones and the deliverance of the habitats enhancements described in the **Outline LEMP [EN0110014/APP/7.4]**, and embedded precautionary measures detailed within the **Outline OEMP [EN0110014/APP/7.2]**, it is anticipated that the Scheme will result in a magnitude of impact of moderate beneficial, resulting in a Positive effect, which is considered **significant** at a local scale.
- 8.9.649 No additional mitigation is therefore likely to be required, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

- 8.9.650 Potential effects during the decommissioning phase include:

- Species injury/mortality;
- Disturbance;
- Habitat fragmentation; and
- Habitat degradation.

- 8.9.651 These potential impacts are discussed below.

Assessment

- 8.9.652 There may be potential indirect effects on badgers during decommissioning, including impacts associated with disturbance to suitable habitats or adjacent areas. The **Outline DEMP [EN0110014 /APP/7.3]** sets out the methods by which decommissioning activities will be managed to avoid, minimise, and mitigate any adverse environmental effects, including

avoidance measures of retained habitats (potentially occupied by badgers or used by badgers for foraging/commuting). The badger sett buffer zones and habitat buffers to protect retained habitats during the works will be adhered to during decommissioning thereby allowing the continued use of the Order Limits by the species.

- 8.9.653 Impacts upon badgers within the CRC are considered unlikely as all buried cables will remain in-situ following the decommissioning phase, Highway Improvement works (if required) will likely consist of minor vegetation clearance works (trimming of tree canopies/overgrown hedges etc), which again, will not impact upon badgers.
- 8.9.654 Given the timescales prior to the progression of decommissioning activities, it is possible that the status of badger could change, with any accurate assessment of effects necessarily depend on the population status at the time, which would likely need to be updated through up-to-date survey work, to inform the decommissioning phase.
- 8.9.655 On the basis of current conditions and the current legislative framework, significant effects can be expected not to exceed those described within the construction phases and likely (due to retained infrastructure/services) be considerably more reduced.

Significance of Effects

- 8.9.656 Taking into account incorporation of the embedded mitigation provided within the **Outline DEMP [EN0110014/APP/7.3]**, and the habitat retention measures associated with the decommissioning phase, opportunities for badgers within the Order Limits will be maintained during the decommissioning phase.
- 8.9.657 As such, the magnitude of impact on badgers as a result of decommissioning activities would be negligible, (short-term reversible habitat impacts at the Site scale with no long-term negative effect) and which is considered **not significant**. As such, no significant adverse effects are anticipated to badgers as a result of the decommissioning activities.
- 8.9.658 No additional mitigation is therefore likely to be required, and **no residual effects** are anticipated.

Riparian Mammals (Otter and Water Vole)

Construction Phase

Potential Effects

- 8.9.659 Based on the water vole and otter survey results detailed within the **ES Chapter, Vol 3, Appendix 8.8: Water Vole and Otter Survey Report** there are no potential effects due to both species being not present within the

Order Limits, however, adopting a precautionary principle, potential effects to these species within the wider ZOI during the construction phase include:

- Species injury/mortality;
- Disturbance;
- Habitat fragmentation; and
- Habitat degradation.

8.9.660 These potential impacts are discussed below.

Assessment

8.9.661 No otter or water vole field signs have been recorded within the Order Limits during the 2025 field surveys, and therefore, both species are currently considered to be absent from the Scheme (see **ES Chapter, Vol 3, Appendix 8.8: Water Vole and Otter Survey Report**) and therefore, impacts/disturbance are considered to be unlikely.

8.9.662 All HDD methodologies will be temporary and undertaken outside of 10m riverbank buffer zones, most notably, where trenchless crossings are beneath Hempnall Beck (CRC7), the cable depth would be a minimum of 5m below the surveyed riverbed, thereby avoiding impacts to riparian mammals within the wider environment.

8.9.663 Nevertheless, adherence with the embedded mitigation and avoidance measures provided within **Outline CEMP [EN0110014/APP /7.2]** and with the embedded protection measures provided within the **Outline PSMS [EN0110014/ APP/8.10]** submitted with the DCO Application, it will avoid negative impacts occurring upon these species (if colonisation occurs prior to commencement of the construction phase).

Likely Significant Effects

8.9.664 Accordingly, the magnitude of impact on either species as a result of construction activities would be negligible, (short-term reversible habitat impacts at the Site scale with no long-term negative effect) and which is considered **not significant**.

8.9.665 No additional mitigation is therefore likely to be required, and **no residual effects** are anticipated.

Operational Phase

Potential Effects

8.9.666 Adopting a precautionary principle, potential effects to these species within the wider ZOI during the operational phase include:

- Species injury/mortality;
- Disturbance;
- Habitat fragmentation; and
- Habitat degradation.

8.9.667 These potential impacts are discussed below.

Assessment

8.9.668 As a consequence of the embedded habitat creation/enhancements and associated management undertaken in line with the **Outline LEMP [EN0110014/APP/7.4]** and BNG commitments, it is anticipated that the Scheme will result in a significant long-term beneficial effect on the availability of suitable bankside habitats for the species (if present in the future), which would be significant at the Site scale.

8.9.669 Further potential beneficial effects include reduced disturbance or aquatic habitat degradation during the operational phase compared to baseline levels.

8.9.670 With the embedded buffer zones in place and lack of impact upon ditch / river networks during the operational phase, riparian mammals are not considered likely to be affected by ongoing operational maintenance or during the replacement of panels and batteries for the duration of the operational phase of the Scheme. Routine maintenance will also not typically be conducted during the hours of darkness when otters are most active, with a sympathetic lighting strategy for the operational phase set out in the **Outline Lighting Strategy [EN0110014/APP/6.3.7.11]**.

Likely Significant Effects

8.9.671 No significant adverse effects on riparian mammals are anticipated to arise during the operational phase. The retention and favourable management of areas of ditch/river bankside habitats and field margins within the Solar PV Sites, is likely to result in a magnitude of impact of moderate beneficial, resulting in a Positive effect, which is considered **significant** at a local scale.

8.9.672 No additional mitigation is therefore likely to be required, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.673 Potential effects to these species during the decommissioning phase may include:

- Species injury/mortality;
- Disturbance; and
- Habitat fragmentation.

8.9.674 These potential impacts are discussed below.

Assessment

8.9.675 The adopted **Outline DEMP [EN0110014/APP /7.3]** will set out the methods by which decommissioning activities will be managed to avoid, minimise and mitigate any adverse effects upon habitats associated with these species within the Order Limits and wider ZOI. The **Outline DEMP** also includes information regarding the adherence to retained embedded habitat buffers to protect linear watercourses and ditch networks during the works.

8.9.676 The likelihood of impacts upon otters and water voles (if present) within the CRC is considered to be negligible, as all buried cables will remain in-situ following the decommissioning phase.

8.9.677 It is considered that the linear riparian and aquatic habitats within the Order Limits will largely remain impact free during the decommissioning phase, thereby avoiding direct impacts.

8.9.678 Given the timescales prior to the progression of decommissioning activities, it is possible that the status of water vole and otter could change, with any accurate assessment of effects necessarily depend on the population status at the time, which would likely need to be updated through up-to-date survey work, to inform the decommissioning phase.

Likely Significant Effects

8.9.679 Accordingly, the magnitude of impact on either species as a result of decommissioning activities would be negligible, (short-term reversible habitat impacts at the Site scale with no long-term negative effect) and which is considered **not significant**.

8.9.680 No additional mitigation is therefore likely to be required, and **no residual effects** are anticipated.

Priority Mammal Species

8.9.681 It is considered that field margin and non-agricultural habitats located within the Order Limits provide opportunities for hedgehog, harvest mouse, polecat, and brow hare. With the latter species also utilising open agricultural land for foraging and other activities such territorial behaviour. Brown hare has been confirmed as present within the Order Limits during multiple species and habitat surveys undertaken between 2024 – 2026.

8.9.682 During scoping process, it was concluded that operational phase impacts would be scoped out for priority mammal species. Therefore, the Ecological Impact Assessment is limited to the construction and decommissioning periods. Nevertheless, embedded mitigation measures to avoid impacts on key habitats potentially utilised these species, will also apply during operational replacement of panels and batteries and are set out in the **Outline OEMP [EN0110014/APP/7.2]**.

Construction Phase

Potential Effects

8.9.683 Potential effects to these species during the construction phase include:

- Species injury/mortality;
- Disturbance;
- Habitat fragmentation; and
- Habitat degradation.

8.9.684 These potential impacts are discussed below.

Assessment

8.9.685 The vast majority of the land on which the Solar PV Sites will be sited, namely arable fields, represent habitat negligible importance for priority mammal species. More suitable habitat is generally confined to hedgerows, ditches, woodland edges, and uncultivated field margins, which are to be largely retained and protected during construction, thereby avoiding habitat fragmentation effects.

8.9.686 **ES Volume 1, Chapter 4 - The Scheme [EN0110014/APP/6.1.4]** commits to a development free buffer zone of specific habitats (such as ancient woodlands, ditches, hedgerows, watercourses etc) and designated sites and will be implemented through the construction period in adherence with the embedded mitigation and avoidance measures provided within **Outline CEMP [EN0110014/APP/7.1]** thereby benefitting these mammal species. Embedded species protection measures are provided within the **Outline PSMS [EN0110014/ APP/6.3.10]** submitted with the DCO Application which serve to protect these species during the construction phase.

8.9.687 Perimeter security fencing is not considered to be a barrier to species movement (the temporary security fencing is not proposed to be buried). The permanent fencing would be installed early on in the construction works where practicable to reduce the amount of temporary fencing needed. Naturally occurring undulations in the ground should be used to ensure sufficient space beneath fencing to facilitate mammal access is available. If

this is not possible, gaps suitable for small-medium mammals (up to badger/fox sized) will be included around the security fence in suitable areas to support wildlife movement across the Order Limits.

8.9.688 There will be a short-term reduction in the extent of foraging habitat available to brown hares due to the loss of the in-field habitats during construction, until new habitats establish. However, hares are highly mobile and the temporary loss of habitats within the Sites during construction is anticipated to be similar in effect to the regular agricultural activities that take place across much of the Scheme at present, and works will be undertaken in a staggered schedule within certain Sites and not within others etc, as opposed to a larger full site-wide impact. In addition, there will be significant habitat retention (and enhancements) during the construction phase, enabling mammals to continue to utilise habitats during the construction phase.

Significance of Effect

8.9.689 Taking into the embedded mitigation provided within the **Outline PSMS [EN0110014/APP/ 8.10]**, and the BNG enhancement/habitat protection measures introduced during the construction phases and embedded within the project design, opportunities for priority mammal species within the Order Limits and wider ZOI will be maintained and, in many cases, enhanced during the Construction period.

8.9.690 As such, the magnitude of impact on priority mammals as a result of construction activities would be negligible, resulting in a Negligible magnitude effect (short-term reversible impact at the Site scale with no long-term negative effect on the species) which is considered **not significant**.

8.9.691 No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Decommissioning Phase

Potential Effects

8.9.692 Potential effects during the decommissioning phase include:

- Species injury/mortality;
- Disturbance;
- Habitat fragmentation; and
- Habitat degradation.

8.9.693 These potential impacts are discussed below.

Assessment

8.9.694 In line with consideration in regard to construction impacts, the habitats offering greatest potential cover and foraging resources for priority mammal species are likely focussed on the field margins, hedgerows, treelines and woodlands. These will largely not be impacted by decommissioning works and be retained along with associated buffers such that they will remain unaffected during the decommissioning phase. Decommissioning activities will be focussed on removal of infrastructure and reversion to agricultural uses in line with the current baseline. Accordingly, no direct loss of current habitats or importance to priority mammal species is anticipated, albeit necessary loss of grassland areas (created and retained throughout the operational phase) would occur. However, such habitats would only have been brought about on a temporary basis as a result of the Scheme and therefore the overall magnitude of impacts arising from habitat fragmentation as a result of decommissioning is negligible.

8.9.695 Embedded mitigation measures to avoid direct impacts upon species and retained habitats supporting these species and avoid pollution/degradation impacts will be adhered to during the decommissioning phase and are set out in the **Outline DEMP [EN0110014/APP/7.3]** including the inclusion of an ECoW who will oversee work and ensure species impacts are avoided. No significant negative direct impacts on priority mammals are anticipated to arise during the decommissioning phase.

Significance of Effects

8.9.696 Taking into account incorporation of the embedded mitigation provided within the **Outline DEMP [EN0110014/APP/7.3]**, and the habitat avoidance measures associated with the decommissioning phase, opportunities for priority mammals within the Order Limits will be maintained during the decommissioning phase.

8.9.697 As such, the magnitude of impact on priority mammals as a result of decommissioning activities would be negligible, (short-term reversible habitat impacts at the Site scale with no long-term negative effect) and which is considered **not significant**. As such, no significant adverse effects are anticipated to priority mammals as a result of the decommissioning activities.

8.9.698 No additional mitigation is therefore likely to be required, and **no residual effects** are anticipated.

Invasive Non-Native Species

8.9.699 The presence of INNS will be considered throughout the phases of the Scheme and control / avoidance measures will be implemented in line with the **Outline PSMS [EN0110014/APP/6.3.8.10]** in accordance with the legislative requirements of the Wildlife and Countryside Act 1981 (as amended) and the Invasive Alien Species (Enforcement and Permitting) Order 2019 (or current specific legislation at the time).

8.9.700 Giant hogweed is present in Sub-Site 5A and Himalayan balsam in Site 9 and within CRC7. Potential effects during all phases consist of habitat degradation as a result of spread of invasive species, these potential impacts are discussed below.

Construction Phase

8.9.701 The **Outline PSMS [EN0110014/APP/6.3.8.10]** presents the embedded mitigation/avoidance measures to be adopted during the Construction Phase for invasive non-native species (INNS). This includes, avoidance of impacts, control of species currently present, and ongoing construction phase monitoring.

Likely Significant Effects

8.9.702 Embedded mitigation within the **Outline CEMP [EN0110014/APP/7.1]** includes measures to prevent the spread of these species and further specific information regarding embedded mitigation to control the spread of INNS is provided within the **Outline PSMS [EN0110014/ APP/8.10]**, and the resulting magnitude of impacts is negligible, resulting in a Negligible effect which is **not significant**. Accordingly, no significant adverse effects are anticipated.

8.9.703 No additional mitigation is therefore likely to be required, and **no residual effects** are anticipated.

Operational Phase

8.9.704 The **Outline OEMP [EN0110014/APP/7.2]** details associated management/avoidance commitments in regard to INNS and further specific information regarding embedded mitigation to control the spread of INNS is provided within the **Outline PSMS [EN0110014/APP/6.3.8.10]**.

Likely Significant Effect

8.9.705 Given the commitment to eradicate and control the spread of INNS within the Order Limits and as set out in the **Outline CEMP [EN0110014/APP/7.1]**, the magnitude of impact is negligible, resulting in a Negligible effect which is **not significant**.

8.3.303 No additional mitigation is therefore likely to be required, and **no residual effects** are anticipated.

Decommissioning Phase

8.3.304 The **Outline DEMP [EN0110014/APP/7.3]** commits to the adoption of appropriate measures to control the spread of INNS, decommissioning works impacts within the CRC are considered unlikely as all buried cables will

remain in-situ following the decommissioning phase, thereby significantly reducing the potential for INNS to be present within the works areas.

8.3.305 Due to the continued commitment to control the spread of INNS during the operational phase, it is not considered likely that INNS will present a significant ecological constraint. However, due to the timescales prior to the progression of decommissioning activities, it is possible that the status of INNS could change, with any accurate assessment of effects necessarily depending on the spread at the time, which would likely need to be updated through up-to-date survey work by the appointed ECoW, to inform the decommissioning phase.

Likely Significant Effect

8.3.306 Given the commitment to control the spread of INNS within the Order Limits and as set out in the **Outline DEMP [EN0110014/APP/7.3]**, the magnitude of impact is considered likely to be negligible, resulting in a Negligible effect which is not significant.

8.3.307 No additional mitigation is therefore likely to be required, and **no residual effects** are anticipated.

8.10 Assessment of Likely Significant Effects

Additional Construction Phase Mitigation Measures

8.10.1 Following from the provision of embedded mitigation measures, no significant negative effects are considered likely to occur, therefore no additional construction phase mitigation measures are required.

Additional Operational Phase Mitigation Measures

8.10.2 Following from the provision of embedded mitigation measures, no significant negative effects are considered likely to occur, therefore no additional construction phase mitigation measures are required.

Additional Decommissioning Phase Mitigation Measures

8.10.3 Based on the decommissioning phase is not being anticipated to exceed the impact or duration of the Construction Phase, following from the provision of embedded mitigation measures, no significant negative effects are considered likely to occur, therefore no additional decommissioning phase mitigation measures are considered likely to be required.

8.11 Residual Effects

- 8.11.1 This section summarises the residual effects of the Scheme on following the adoption of embedded and additional mitigation (if additional mitigation is proposed).
- 8.11.2 As there are no significant effects identified the effects will remain unchanged as those reported above in the assessment of likely effects.

8.12 Cumulative Effects Assessment

- 8.12.1 This section presents an assessment of cumulative effects between the Scheme and other existing and/or approved developments.
- 8.12.2 As set out in **ES Vol 1, Chapter 2: Environmental Impact Assessment Methodology [EN0110014/APP/6.1.2]**, a Cumulative Effects Assessment (CEA) has been undertaken as part of the EIA in accordance with PINS Advice on Cumulative Effects Assessment (September 2024) and has considered two types of cumulative effects.
- In-combination effects: the combined effect generated by individual effects on a particular receptor (presented within in **ES: Chapter 19 In-Combination Effects Assessment [EN0110014/APP/6.1.19]**); and
 - Cumulative effects: effects generated by the Scheme and other planned or approved developments on the same receptor (presented in **ES Vol 1, Chapters 6 to 17**).

In-Combination Effects

- 8.12.3 In-combination effects occur when receptors are subject to effects under more than one environmental topic. As such, the effects presented in **ES Vol 1, Chapter 19: In-Combination Effects Assessment [EN0110014/APP/6.1.19]** (regardless of whether they are classed as significant or not significant) have been reviewed to identify receptors subject to one or more types of effect to ensure that the interrelationship between each of the aspects of the environment likely to be affected by the Scheme has been properly evaluated and considered.
- 8.12.4 These have been summarised and tabulated to demonstrate where these effects have the potential to occur.
- 8.12.5 No likely significant in-combination effects relating to the IEF's which have been identified within the Chapter are considered likely to occur as a result of the construction or operational phases of the Scheme.

Cumulative Effects

- 8.12.6 Cumulative effects may arise as a result of effects associated with the Scheme combining with effects associated with other developments. The list of developments has been narrowed down to focus on those developments which are most likely to give rise to cumulative effects. A long list was generated which was then refined following consultation with relevant local planning authorities, this short-list forms the basis of this assessment.
- 8.12.7 A short list of cumulative developments/allocations can be found in **ES Vol 3, Appendix 2.4 Cumulative Schemes [EN0110014/APP/6.3.2.4]**.
- 8.12.8 As described in this chapter, taking into account the proposed embedded mitigation measures, the residual impacts as a result of the construction, operational and maintenance and decommissioning phases of the Scheme are not likely to be significant. On this basis there is no mechanism for cumulative effects on any other development/scheme as identified on the short-list provided in **ES Vol 3, Appendix 2.4 Cumulative Schemes [EN0110014/APP/6.3.2.4]**, nor will the Scheme result in a cumulative effect on those IEFs which have been identified within this chapter.

8.13 Conclusion

- 8.13.1 This chapter has set out and assessed the likely effects of the Scheme in relation to Ecology and Biodiversity. Likely effects have been assessed for the Construction, Operation and maintenance and Decommissioning Phases of the Scheme. Following the implementation of embedded mitigation as detailed in Section 8.8, no likely significant effects have been identified in relation to Ecology and Biodiversity during the Construction, Operation and maintenance and Decommissioning Phases
- 8.13.2 **Table 8.15** ecology and biodiversity sets out a summary of the ecological effects.

Table 8.15: Summary of Residual Effects for Ecology and Biodiversity

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
Construction Phase							
International / European Statutory Designated Sites	International	Potential air quality (deposition) impacts and hydrological impacts.	Negligible	No embedded mitigation required. Additional information within the and Shadow HRA Report	Not Significant	N/A	N/A
Statutory Designated National and Local Sites	National (SSSI) County (LNR)	Hydrological, air (dust) habitat degradation impacts. Direct habitat loss impacts	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Construction and Decommissioning Dust Risk Assessment, Flood Risk Assessment, Outline Cable Route Construction Statement and Outline Surface Water Drainage Strategy .	Not Significant	N/A	N/A
Fritton Grange Meadows & Lower Spring Wood County Wildlife Sites	County	Direct habitat loss/ fragmentation through habitat impacts, habitat degradation (including HDD operations, hydrological, sedimentation impacts)	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the and Flood Risk Assessment, Outline Surface Water Drainage Strategy, and Outline Cable Route Construction Statement .	Not Significant	N/A	N/A
County Wildlife Sites	County	Construction activities including hydrological, air (dust), direct habitat loss.	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Construction and Decommissioning Dust Risk Assessment, Outline LEMP, Flood Risk Assessment, and	Not Significant	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
				Outline Surface Water Drainage Strategy.			
Roadside Nature Reserves	County	Construction activities including construction pollution impacts, direct habitat loss.	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP .	Not Significant	N/A	N/A
Lowland Fen	County	Construction activities including HDD operations, hydrological (run-off), direct habitat loss.	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Outline LEMP, Flood Risk Assessment, Outline Surface Water Drainage Strategy, and Outline Cable Route Construction Statement.	Not Significant	N/A	N/A
Ancient Woodland	County	Construction activities - hydrological (run-off), air (dust), direct habitat loss	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Construction and Decommissioning Dust Risk Assessment, Flood Risk Assessment, and Outline Surface Water Drainage Strategy.	Not Significant	N/A	N/A
Ancient/veteran Trees	County	Construction activities - direct tree loss, construction pollution including dust impacts	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Outline Cable Route Construction Statement, Construction and Decommissioning Dust Risk Assessment and Outline LEMP.	Not Significant	N/A	N/A
Arable Field Margins	Local	Construction activities - direct habitat loss	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Biodiversity Net Gain Report.	Not Significant	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
Native Hedgerows (and tree lines)	Local	Construction activities - direct habitat loss, construction pollution (run-off and dust)	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Construction and Decommissioning Dust Risk Assessment, Flood Risk Assessment, and Outline Surface Water Drainage Strategy, Biodiversity Net Gain Report.	Not Significant	N/A	N/A
Ponds	Local	Construction activities - hydrological (run-off), direct habitat loss	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Construction and Decommissioning Dust Risk Assessment, Flood Risk Assessment, and Outline Surface Water Drainage Strategy, Biodiversity Net Gain Report.	Not Significant	N/A	N/A
Rivers	Regional	Construction activities - hydrological (run-off), HDD related impacts, direct habitat loss	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Construction and Decommissioning Dust Risk Assessment and Flood Risk Assessment, Outline Surface Water Drainage Strategy, and Outline Cable Route Construction Statement., Biodiversity Net Gain Report.	Not Significant	N/A	N/A
Lowland Deciduous Woodland	Local	Construction activities - direct habitat loss, construction pollution (run-off and dust)	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Construction and Decommissioning Dust Risk Assessment, Flood Risk Assessment, and Outline Surface	Not Significant	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
				Water Drainage Strategy, Biodiversity Net Gain Report.			
Floodplain Grazing Marsh	Local	Construction activities - direct habitat loss	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Construction and Decommissioning Dust Risk Assessment, Flood Risk Assessment, and Outline Surface Water Drainage Strategy, Biodiversity Net Gain Report.	Not Significant	N/A	N/A
Traditional Orchard	Local	Construction activities - habitat degradation, fragmentation	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Construction and Decommissioning Dust Risk Assessment, Flood Risk Assessment, and Outline Surface Water Drainage Strategy.	Not Significant	N/A	N/A
Scrub	Local	Construction activities - direct habitat loss	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Construction and Decommissioning Dust Risk Assessment, Flood Risk Assessment, and Outline Surface Water Drainage Strategy, Biodiversity Net Gain Report.	Not Significant	N/A	N/A
Other Neutral Grassland	Local	Construction activities - direct habitat loss	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Biodiversity Net Gain Report.	Not Significant	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
Ditches	Local	Construction activities: hydrological (run-off), direct habitat loss	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Construction and Decommissioning Dust Risk Assessment and Flood Risk Assessment, Outline Surface Water Drainage Strategy , and Outline Cable Route Construction Statement, Biodiversity Net Gain Report .	Not Significant	N/A	N/A
Common and widespread habitats of low sensitivity and/or ecological interest	Site	Construction activities - direct habitat loss	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Biodiversity Net Gain Report .	Not Significant	N/A	N/A
Terrestrial Invertebrates	Local	Construction activities - including minor impacts to field margin habitats.	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Outline PSMS .	Not Significant	N/A	N/A
Aquatic Invertebrates	Local	Construction activities - hydrological, or limited disturbance to marginal habitats	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Outline PSMS . in reference to the Construction and Decommissioning Dust Risk Assessment and Flood Risk Assessment, Outline Surface Water Drainage Strategy .	Not Significant	N/A	N/A
White-clawed Crayfish	Local	Construction activities - HDD impacts,	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Outline PSMS . in reference to the	Not Significant	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
		hydrological pollution impacts		Construction and Decommissioning Dust Risk Assessment and Flood Risk Assessment, Outline Surface Water Drainage Strategy, and Outline Cable Route Construction Statement.			
Freshwater Fish	Local	Construction activities - HDD impacts, hydrological pollution impacts	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Outline PSMS . in reference to the Construction and Decommissioning Dust Risk Assessment and Flood Risk Assessment, Outline Surface Water Drainage Strategy, and Outline Cable Route Construction Statement.	Not Significant	N/A	N/A
Great Crested Newt (amphibians)	Local	Construction activities - temporary loss of habitat, habitat degradation, killing, injury or disturbance of individuals	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Outline PSMS .	Not Significant	N/A	N/A
Reptiles	Site	Construction activities - temporary loss of habitat, habitat degradation, killing, injury or disturbance of individuals	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Outline PSMS .	Not Significant	N/A	N/A
Breeding Birds	Local	Construction activities loss of nesting opportunities, disturbance, temporary habitat	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Outline PSMS .	Not Significant	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
		loss, killing, injury or disturbance of individuals					
Skylark	Local	Construction activities - loss of nesting opportunities. killing, injury or disturbance of individuals New skylark plots and new grassland margin habitats to increase habitat and breeding opportunities.	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Outline PSMS .	Not Significant	N/A	N/A
Bats (roosting)	National	Construction activities - loss of habitat, disturbance, light impacts	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Outline PSMS .	Not Significant	N/A	N/A
Bats (foraging and commuting)	National	Construction activities - loss of habitat, disturbance, light impacts	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Outline PSMS .	Not Significant	N/A	N/A
Badger	Site	Construction activities - loss of habitat, disturbance, fragmentation, HDD impacts, light impacts	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Outline PSMS .	Not Significant	N/A	N/A
Water Vole and Otter	Site (precautionary)	Construction activities - HDD impacts, run-off pollution	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Outline PSMS .	Not Significant	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
Priority Mammal Species	Site	Construction activities - temporary loss of habitat, habitat degradation, killing, injury or disturbance of individuals	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Outline PSMS .	Not Significant	N/A	N/A
Invasive Non-Native Species	N/A	Construction activities: risk of introduction and spread	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline CEMP , in adherence with the Outline PSMS .	Not Significant	N/A	N/A
Operational Phase							
International/European Statutory Designated Sites	International	Potential air quality (deposition) impacts and hydrological impacts.	Negligible	No embedded mitigation required. Additional information within the and Shadow HRA Report	Not Significant	N/A	N/A
Statutory Designated National and Local Sites	National (SSSI) County (LNR)	Operational activities – habitat loss/change, habitat degradation, cessation of agricultural practices (positive change)	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline OEMP and Outline LEMP .	Not Significant	N/A	N/A
Fritton Grange Meadows & Lower Spring Wood County Wildlife Sites	County	Operational activities including hydrological, thermal, direct habitat loss/fragmentation.	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline OEMP , in adherence with the Outline Protected Species Mitigation Strategy, Biodiversity Net Gain Report. and Outline LEMP	Not Significant	N/A	N/A
County Wildlife Sites	County	Operational activity impacts, direct habitat loss/fragmentation.	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline OEMP .	Not Significant	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
Roadside Nature Reserves	County	Operational activity impacts, direct habitat loss/fragmentation.	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline OEMP .	Not Significant	N/A	N/A
Lowland Fen	County	Operational activities including hydrological, direct habitat loss/fragmentation/ degradation.	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline OEMP .	Not Significant	N/A	N/A
Ancient Woodland	County	Operational activities including hydrological, dust direct habitat loss/fragmentation/ degradation.	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline OEMP .	Not Significant	N/A	N/A
Ancient/veteran Trees	County	Operational activities including hydrological, dust direct habitat loss/fragmentation/ degradation.	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline OEMP, Biodiversity Net Gain Report .	Not Significant	N/A	N/A
Arable Field Margins	Local	Operational activities including degradation. Habitat creation and enhancement	Low (beneficial)	Incorporation of embedded mitigation measures provided within the within the Outline OEMP . Long-term habitat enhancements and management informed by the Outline LEMP, Biodiversity Net Gain Report .	Not Significant	N/A	N/A
Native Hedgerows (and tree lines)	Local	Operational activities including hydrological. Habitat creation and enhancement	Moderate (beneficial)	Incorporation of embedded mitigation measures provided within the within the Outline OEMP . Long-term habitat enhancements and management	Significant (local scale)	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
				informed by the Outline LEMP, Biodiversity Net Gain Report.			
Ponds	Local	Operational activities including hydrological, Habitat creation and enhancement	Moderate (beneficial)	Incorporation of embedded mitigation measures provided within the within the Outline OEMP. Long-term habitat enhancements and management informed by the Outline LEMP, Biodiversity Net Gain Report.	Significant (local scale)	N/A	N/A
Rivers	Regional	Operational activities - Habitat creation and enhancement	Moderate (beneficial)	Incorporation of embedded mitigation measures provided within the within the Outline OEMP. Long-term habitat enhancements and management informed by the Outline LEMP, Biodiversity Net Gain Report.	Significant (local scale)	N/A	N/A
Lowland Deciduous Woodland	Local	Operational activities Habitat creation and enhancement	Moderate (beneficial)	Incorporation of embedded mitigation measures provided within the within the Outline OEMP. Long-term habitat enhancements and management informed by the Outline LEMP, Biodiversity Net Gain Report.	Significant (local scale)	N/A	N/A
Floodplain Grazing Marsh	Local	Operational activities Habitat creation and enhancement	Low (beneficial)	Incorporation of embedded mitigation measures provided within the within the Outline OEMP. Long-term habitat enhancements and management informed by the Outline LEMP, Biodiversity Net Gain Report.	Not Significant	N/A	N/A
Traditional Orchard	Local	Operational activities – habitat degradation	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline OEMP.	Not Significant	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
Scrub	Local	Operational activities - Habitat creation and enhancement	Moderate (beneficial)	Incorporation of embedded mitigation measures provided within the within the Outline OEMP . Long-term habitat enhancements and management informed by the Outline LEMP , Biodiversity Net Gain Report .	Significant (local scale)	N/A	N/A
Other Neutral Grassland	Local	Operational activities - Habitat creation and enhancement	Moderate (beneficial)	Incorporation of embedded mitigation measures provided within the within the Outline OEMP . Long-term habitat enhancements and management informed by the Outline LEMP , Biodiversity Net Gain Report .	Significant (local scale)	N/A	N/A
Ditches	Local	Operational activities - Habitat creation and enhancement	Moderate (beneficial)	Incorporation of embedded mitigation measures provided within the within the Outline OEMP . Long-term habitat enhancements and management informed by the Outline LEMP , Biodiversity Net Gain Report .	Significant (local scale)	N/A	N/A
Common and widespread habitats of low sensitivity and/or ecological interest	Site	Operational activities - Habitat creation and enhancement	Moderate (beneficial)	Incorporation of embedded mitigation measures provided within the within the Outline OEMP . Long-term habitat enhancements and management informed by the Outline LEMP , Biodiversity Net Gain Report .	Significant (local scale)	N/A	N/A
Aquatic Invertebrates	Local	Operational activities - EMF, glint and glare, habitat degradation	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline OEMP , in adherence with the Outline PSMS .	Not Significant	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
White-clawed Crayfish	Local	Operational activities - EMF, habitat degradation	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline OEMP , in adherence with the Outline PSMS .	Not Significant	N/A	N/A
Freshwater Fish	Local	Operational activities - EMF, glint and glare, habitat degradation	Low (beneficial)	Incorporation of embedded mitigation measures provided within the within the Outline OEMP , in adherence with the Outline PSMS .	Not Significant	N/A	N/A
Skylark	Local	Operational activities-killing and injury Habitat creation and enhancement	Moderate (beneficial)	Incorporation of embedded mitigation measures provided within the within the Outline OEMP , in adherence with the Outline PSMS . Long-term habitat enhancements and management informed by the Outline LEMP .	Significant (local scale)	N/A	N/A
Bats (roosting)	National	Operational activities - disturbance Habitat creation and enhancement	Moderate (beneficial)	Incorporation of embedded mitigation measures provided within the within the Outline OEMP , in adherence with the Outline PSMS . Long-term habitat enhancements/provision of artificial roosting opportunities and management informed by the Outline LEMP .	Significant (local scale)	N/A	N/A
Bats (foraging and commuting)	National	Operational activities - disturbance Habitat creation and enhancement	Moderate (beneficial)	Incorporation of embedded mitigation measures provided within the within the Outline OEMP , in adherence with the Outline PSMS . Long-term habitat enhancements and management informed by the Outline LEMP .	Significant (local scale)	N/A	N/A
Badger	Site	Operational activities - fragmentation, disturbance Habitat creation and enhancement	Moderate (beneficial)	Retention and continued enhancement/management of riparian corridors, hedgerows, grasslands, woodland, and scrub within the operational sites in line with the Outline	Significant (local scale)	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
				LEMP. Incorporation of embedded mitigation measures provided within the within the Outline OEMP and detailed within the Outline PSMS .			
Water Vole and Otter	Site (precautionary)	Operational activities - Habitat creation and enhancement	Moderate (beneficial)	Retention and continued enhancement/management of riparian corridors within the operational sites in line with the Outline LEMP . Incorporation of embedded mitigation measures provided within the within the Outline OEMP and detailed within the Outline PSMS .	Significant (local scale)	N/A	N/A
Invasive Non-Native Species	N/A	Operational activities – risk of species spread/infestation	Negligible	Measures to avoid spread committed to within Outline OEMP and detailed within the Outline PSMS .	Not Significant	N/A	N/A
Decommissioning Phase							
International/European Statutory Designated Sites	International	Potential air quality (deposition) impacts and hydrological impacts.	Negligible	No embedded mitigation required. Additional information within the and Shadow HRA Report	Not Significant	N/A	N/A
Statutory Designated National and Local Sites	National (SSSI) County (LNR)	Hydrological, air (dust) habitat degradation impacts. Direct habitat loss impacts	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP , in adherence with the Construction and Decommissioning Dust Risk Assessment , Updated PSMS to inform the decommissioning phase will also serve to protect designated sites/habitats.	Not Significant	N/A	N/A
Fritton Grange Meadows & Lower Spring	County	Direct habitat loss/ fragmentation through habitat impacts, habitat degradation	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP .	Not Significant	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
Wood County Wildlife Sites		(including hydrological run off)		Updated PSMS to inform the decommissioning phase will also serve to protect designated sites/habitats.			
County Wildlife Sites	County	Construction activities including hydrological, air (dust), direct habitat loss.	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP , in adherence with the Construction and Decommissioning Dust Risk Assessment . Updated PSMS to inform the decommissioning phase will also serve to protect designated sites/habitats.	Not Significant	N/A	N/A
Roadside Nature Reserves	County	Construction activities including construction pollution impacts, direct habitat loss.	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP . Updated PSMS to inform the decommissioning phase will also serve to protect designated sites/habitats.	Not Significant	N/A	N/A
Lowland Fen	County	Construction activities, hydrological (run-off), direct habitat loss.	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP , Updated PSMS to inform the decommissioning phase will also serve to protect designated sites/habitats.	Not Significant	N/A	N/A
Ancient Woodland	County	Construction activities - hydrological (run-off), air (dust), direct habitat loss	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP , in adherence with the Construction and Decommissioning Dust Risk Assessment . Updated PSMS to inform the decommissioning phase will also serve to protect designated sites/habitats.	Not Significant	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
Ancient/veteran Trees	County	Construction activities - direct tree loss, construction pollution including dust impacts	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP , in adherence with the Decommissioning Dust Risk Assessment . Updated PSMS to inform the decommissioning phase will also serve to protect designated sites/habitats.	Not Significant	N/A	N/A
Arable Field Margins	Local	Construction activities - direct habitat loss	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP . Updated PSMS to inform the decommissioning phase will also serve to protect designated sites/habitats.	Not Significant	N/A	N/A
Native Hedgerows (and tree lines)	Local	Construction activities - direct habitat loss, construction pollution (run-off and dust)	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP , in adherence with the Construction and Decommissioning Dust Risk Assessment . Updated PSMS to inform the decommissioning phase will also serve to protect designated sites/habitats.	Not Significant	N/A	N/A
Ponds		Construction activities - hydrological (run-off), direct habitat loss	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP . Updated PSMS to inform the decommissioning phase will also serve to protect designated sites/habitats.	Not Significant	N/A	N/A
Rivers	County	Construction activities - hydrological (run-off), direct habitat loss	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP , in adherence with the	Not Significant	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
				Construction and Decommissioning Dust Risk Assessment. Updated PSMS to inform the decommissioning phase will also serve to protect designated sites/habitats.			
Lowland Deciduous Woodland	Local	Construction activities - direct habitat loss, construction pollution (run-off and dust)	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP , in adherence with the Construction and Decommissioning Dust Risk Assessment , Updated PSMS to inform the decommissioning phase will also serve to protect designated sites/habitats.	Not Significant	N/A	N/A
Floodplain Grazing Marsh	Local	Construction activities - direct habitat loss	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP . Updated PSMS to inform the decommissioning phase will also serve to protect designated sites/habitats.	Not Significant	N/A	N/A
Traditional Orchard	Local	Construction activities - habitat degradation, fragmentation	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP , in adherence with the Construction and Decommissioning Dust Risk Assessment . Updated PSMS to inform the decommissioning phase will also serve to protect designated sites/habitats.	Not Significant	N/A	N/A
Scrub	Local	Construction activities - direct habitat loss	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP .	Not Significant	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
				Updated PSMS to inform the decommissioning phase will also serve to protect designated sites/habitats.			
Other Neutral Grassland	Local	Construction activities - direct habitat loss	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP . Updated PSMS to inform the decommissioning phase will also serve to protect designated sites/habitats.	Not Significant	N/A	N/A
Common and widespread habitats of low sensitivity and/or ecological interest	Site	Construction activities - direct habitat loss	Low (adverse)	Incorporation of embedded mitigation measures provided within the within the Outline OEMP . Long-term habitat enhancements and management informed by the Outline LEMP , Biodiversity Net Gain Report .	Not Significant	N/A	N/A
Ditches	Local	Construction activities: hydrological (run-off), direct habitat loss	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP . Updated PSMS to inform the decommissioning phase will also serve to protect designated sites/habitats.	Not Significant	N/A	N/A
Terrestrial Invertebrates	Local	Construction activities - including minor impacts to field margin habitats.	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP . Updated PSMS to inform the decommissioning phase.	Not Significant	N/A	N/A
Aquatic Invertebrates	Local	Decommissioning activities - hydrological (run-off),	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP .	Not Significant	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
		air (dust), direct habitat loss		Updated PSMS to inform the decommissioning phase.			
Great Crested Newt	Local	Decommissioning activities - temporary loss of habitat, habitat degradation, killing, injury or disturbance of individuals	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP . Updated PSMS to inform the decommissioning phase.	Not Significant	N/A	N/A
Reptiles	Site	Decommissioning activities - temporary loss of habitat, habitat degradation, killing, injury or disturbance of individuals	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP . Updated PSMS to inform the decommissioning phase.	Not Significant	N/A	N/A
Breeding Birds	Local	Decommissioning activities - temporary loss of habitat, killing, injury or disturbance of individuals	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP . Updated PSMS to inform the decommissioning phase.	Not Significant	N/A	N/A
Skylark	Local	Decommissioning activities - temporary loss of habitat, killing, injury or disturbance of individuals	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP . Updated PSMS to inform the decommissioning phase.	Not Significant	N/A	N/A
Bats (roosting)	National	Decommissioning activities – disturbance effects	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP . Updated PSMS to inform the decommissioning phase.	Not Significant	N/A	N/A

Receptor	Scale of Importance	Summary of Potential Impacts	Magnitude of Impact	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation measures)
Bats (foraging and commuting)	National	Decommissioning activities – disturbance effects, habitat severance, loss of habitats	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP . Updated PSMS to inform the decommissioning phase.	Not Significant	N/A	N/A
Badger	Site	Decommissioning activities - - temporary loss of habitat, killing, injury or disturbance of individuals	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP . Updated PSMS to inform the decommissioning phase.	Not Significant	N/A	N/A
Water Vole and Otter	Site (precautionary)	Decommissioning activities (Direct and Indirect Effects)	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP . Updated PSMS to inform the decommissioning phase.	Not Significant	N/A	N/A
Priority Mammal Species	Site	Decommissioning activities - temporary loss of habitat, habitat degradation, killing, injury or disturbance of individuals	Negligible	Incorporation of embedded mitigation measures provided within the within the Outline DEMP . Updated PSMS to inform the decommissioning phase.	Not Significant	N/A	N/A
Invasive Non-Native Species	N/A	Decommissioning activities: risk of spread (Direct and Indirect Effects)		Incorporation of embedded mitigation measures provided within the within the Outline DEMP . Updated PSMS to inform the decommissioning phase.	Not Significant	N/A	N/A

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