Green Hill Solar Farm

EN010170

Environmental Statement

Chapter 9: Ecology and Biodiversity

Revision A (Tracked)

Prepared by: Clarkson and Woods Ltd.

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Schedule of Changes

Revision	Section Reference	Detail of Changes	Reason for Revision
A	Throughout	Updates to document references as required for submission at Deadline 1.	As required for submission at Deadline 1.
	Throughout	Updated to include additional baseline habitat walkover survey results from Cable Route Corridor in Spring/Summer 2025.	As required for submission at Deadline 1.
	Throughout	Updated following the completion of final surveys at Green Hill A.2 relating to breeding birds, bats, and otter/water voles, in Spring 2025.	As required for submission at Deadline 1.
	Throughout	Updated BNG assessment outcomes as per Appendix 9.13 Biodiversity Net Gain Assessment **[EX1/GH6.3.9.13_A]**	As required for submission at Deadline 1.
	Section 9.9	Updated open-cut trenching of watercourses avoidance period to October - mid-June following consultation with Environment Agency on spawning coarse fish.	As required for submission at Deadline 1.
	9.9.13	Updated area of mitigation land for Functionally Linked Land	As required for submission at Deadline 1.

Contents

9	Ecology and Biodiversity	3
9.1	Introduction	4
9.2	Consultation	6
9.3	Legislation, Planning Policy and Guidance	54
9.4	Assessment Methodology and Significance Criteria	61
9.5	Assessment Assumptions and Limitations	73
9.6	Baseline Conditions	75
9.7	Potential Sources of Impact	122
9.8	Embedded Mitigation Measures	125
9.9	Assessment of Likely Significant Effects	130
9.10	Decommissioning Phase	197
9.11	Cumulative Effects	198
9.12	Summary	211
References		229

Issue Sheet

Report Prepared for: Green Hill Solar Farm

~~DCO Submission~~
Examination Deadline 1

Environmental Statement
Chapter 9: Ecology and Biodiversity
Revision A

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~~9~~ Ecology and Biodiversity

9.1 Introduction

9.1.1 This chapter presents the findings of the Environmental Impact Assessment (EIA) concerning the likely ecology and biodiversity effects of the Scheme during the construction, operation and maintenance, and decommissioning phases.

9.1.2 The following features will form the basis of the ecological impact assessment process:

- Statutory and non-statutory sites designated for nature conservation at international, national and local levels;
- Habitats and species of principal importance for the conservation of biodiversity; and
- Other legally protected, red-listed or notable species of conservation interest.

9.1.3 This chapter will describe the ecological baseline derived from extensive site and desk-based surveys and assess the possible level of effects likely to arise, together with any avoidance, mitigation and compensation measures likely or capable of being adopted to reduce these, in accordance with nature conservation, legislation and planning policy. Proposals for ecological enhancement to contribute to local conservation priorities and achievement of Biodiversity Net Gain (BNG) in line with the Environment Act 2021 (to the extent applicable to the Scheme) and national and local policies are also presented.

9.1.4 Habitat and species information, referenced in the assessment and presented in this chapter, is based on site surveys conducted in 2023, 2024 and 2025, published data, third party ecological records and web-based information obtained at the time of writing. Any assumptions and limitations relevant to each survey, and how any limitations have been overcome, are included within the relevant technical reports (provided in the Appendices to this Chapter) and in the assessment set out below.

9.1.5 For project description details, please refer to Chapter 4: Scheme Description [~~EN010170/APP~~EX1/GH6.2.4_A] of this Environmental Statement (ES).

9.1.6 This chapter ~~have~~has been prepared by Clarkson and Woods Ltd. (see Statement of Competence [~~EN010170/~~APP~~/GH6.3.1.1~~-065]).

Appendices and Figures

9.1.7 This chapter is supported by the following appendices:

- Appendix 9.1: Preliminary Ecological Appraisal [~~EN010170/~~APP~~/GH6.3.9.1~~-084]
- Appendix 9.2: Habitat Surveys ~~[EN010170/APP~~(Revision A) [EX1/GH6.3.9.2_A]
- Appendix 9.3: Desk Study [~~EN010170/~~APP~~/GH6.3.9.3~~-086]
- Appendix 9.4: Consultation Responses [~~EN010170/~~APP~~/GH6.3.9.4~~-087]
- Appendix 9.5: Badger Surveys [~~EN010170/~~APP~~/GH6.3.9.5~~-088]

- Appendix 9.6: Bat Surveys ~~[EN010170/APP~~(Revision A) [EX1/GH6.3.9.6_A]
- Appendix 9.7: Otter and Water Vole Surveys ~~[EN010170/APP~~(Revision A) [EX1/GH6.3.9.7_A]
- Appendix 9.8: Breeding Bird Surveys ~~[EN010170/APP~~(Revision A) [EX1/GH6.3.9.8_A]
- Appendix 9.9: Wintering Bird Surveys [~~EN010170/~~APP~~/GH6.3.9.9~~-092]
- Appendix 9.10: Arable Weed Surveys [~~EN010170/~~APP~~/GH6.3.9.10~~-0840]
- Appendix 9.11: Confidential Schedule 1 Bird Information [~~EN010170/~~APP~~/GH6.3.9.11~~-094]
- Appendix 9.12: Schedule of Protective Ecological Buffers [~~EN010170/~~APP~~/GH6.3.9.12~~-095]
- Appendix 9.13: Biodiversity Net Gain Assessment ~~[EN010170/APP~~(Revision A) [EX1/GH6.3.9.13_A]

9.1.8 This chapter is supported by the following tables:

- **Table 9.1: Relevant Scoping Opinion Comments**
- **Table 9.2: Statutory Consultation Comments**
- **Table 9.3: Habitat Types within the Sites and their Extent and Importance**
- **Table 9.4: Habitat Types within the Cable Route Corridor and their Extent and Importance**
- **Table 9.5: Summary of Ecological Evaluation**
- **Table 9.6: Skylark Mitigation Calculations**
- **Table 9.7: Summary of Residual Effects for Ecology and Biodiversity (Construction Phase)**
- **Table 9.8: Summary of Residual Effects for Ecology and Biodiversity (Operational Phase)**

9.2 Consultation

Engagement

Natural England Discretionary Advice Service

9.2.1 Engagement was made with Natural England (NE) via their Discretionary Advice Service (DAS) to agree certain matters at an early stage.

9.2.2 An initial meeting to discuss the scope of ecological surveys was held on 16 January 2024. This meeting provided confirmation that the proposed survey scope regarding all species groups (except wintering birds associated with the Upper Nene Valley Gravel Pits SPA) was appropriate. Surveys were then implemented to the agreed scope.

9.2.3 Further queries surrounding the survey scope to inform the assessment of potential impacts of the Scheme on wintering birds associated with the Upper Nene Valley Gravel Pits SPA were made between February-August 2024. At the time of writing the Preliminary Environmental Information Report (PEIR), consultation with Natural England regarding the scope of wintering bird surveys across the Scheme was still ongoing due to conflicting advice regarding acceptable wintering bird survey scopes.

9.2.4 The survey scope proposed at Green Hill A, B, C, D, E, F and BESS (comprising six diurnal and three nocturnal wintering bird surveys across all Sites within 10km of the SPA) was confirmed as acceptable to inform an impact assessment of the Scheme. Initially, NE confirmed that two years of wintering bird survey data would not be required, and one year of survey information (as per the scope proposed above) would be sufficient to inform an assessment of potential impacts upon the Upper Nene Valley Gravel Pits SPA.

9.2.5 The survey scope was eventually clarified by NE during Statutory Consultation, where two years of wintering bird survey information to support the Scheme was requested; **Table 9.2:** Statutory Consultation Comments refers.

9.2.6 Written correspondence is provided in Appendix 9.4: Consultation Responses **[~~EN010170/~~APP~~/GH6.3.9.4~~-087]**.

9.2.7 The final agreed survey scopes are set out in Section 9.4.

Scoping Opinion

9.2.8 An EIA Scoping Report was submitted to the Planning Inspectorate (PINS) in July 2024 (Ref 9.1), with a formal request for a Scoping Opinion **[EN010170/APP/GH6.3.2.1-066 – APP-074]**. PINS subsequently issued the Scoping Opinion on 30th August 2024 [EN010170/APP/GH6.3.2.2-075].

Table 9.1: Relevant Scoping Opinion Comments

Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
The Planning Inspectorate 30 August 2024 ID 2.1.2	Summer Leys Local Nature Reserve (LNR) is described as a nature reserve "easily qualifying as a LWS". It is unclear whether this site comprises both an LNR and a Local Wildlife Site (LWS). This should be clarified in the ES.	Summer Leys is designated both as a Local Nature Reserve and Local Wildlife Site.	Designations of this site set out in Section 9.6 and Appendix 9.3: Desk Study Appendix 9.4: Consultation Responses**[EN010170/APP/GH6.3.9.3-086].**
The Planning Inspectorate 30 August 2024 ID 2.1.12	It is stated that hedgerows on the application site will be managed on a rotational basis to enable wildlife to benefit from them year-round. Details of how this would be managed and where the commitment to it is secured should be included in the ES and cross-reference made to related documents as appropriate. The Inspectorate notes that an Outline Landscape and Ecological Management Plan (LEMP) is proposed to be submitted with the DCO application.	An Outline Landscape and Ecological Management Plan (OLEMP) **[EN010170/APPRevision A [EX1/GH7.4_A]** has been produced, which outlines how habitats may be managed during the operational phase of the Scheme.	Paragraph 9.9.116
The Planning Inspectorate 30 August 2024	The Inspectorate agrees that hazel dormice can be scoped out of the assessment on the basis that the data search did not return any records within the 2km search area, the habitats are	Noted. Dormice are not considered within this assessment.	

Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
ID 3.3.1	considered sub-optimal and according to the information that hazel dormice rarely occur in Northamptonshire.		
The Planning Inspectorate 30 August 2024 ID 3.3.2	The Inspectorate agrees that this matter may be scoped out according to the justification provided that significant effects on terrestrial wildlife from EMFs are highly unlikely due to the burial and sheathing of all of the cables; and the relatively low voltage of the 33kV and 132kV cabling. The Inspectorate notes that it is identified that fish species with sensitivity to EMFs could be subject to disturbance resulting from installation of a 400kV cable and that where it is proposed that any such cables cross watercourses the potential effects of EMF will be considered.	EMF impacts on fish are discussed in this ES chapter.	Paragraph 9.9.341
The Planning Inspectorate 30 August 2024 ID 3.3.3	The Inspectorate agrees that impacts on these sites may be scoped out on the basis that they are designated solely for their geological interest, the features of which will be discussed in other relevant ES chapters.	Noted. These sites are not considered within this assessment.	
The Planning Inspectorate 30 August 2024	The Inspectorate notes that The Hedgerows Regulations 1997 are included in the list of legislation relevant to the biodiversity and ecology assessments. The baseline information	All hedgerows have been assessed as to their importance under the Hedgerows Regulations 1997 and are identified in relevant plans.	Information presented in Important Hedgerows Plan **[~~EN010170/~~APP~~/GH6.4.3.2~~-192]**

Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
ID 3.3.4	contained within the ES should identify hedgerows within the site according to the above regulations, that may be affected by the Proposed Development. An assessment should be provided where significant effects are likely to occur.		
The Planning Inspectorate 30 August 2024 ID 3.3.5	The potential for white-clawed crayfish to be present in watercourses that cross the site should be considered and an assessment provided where significant effects are likely to occur.	Potential for this species to be present and appropriate mitigation is discussed in this ES chapter.	Paragraph 9.9.313
The Planning Inspectorate 30 August 2024 ID 3.3.6	It is stated in para 8.3.9 that the desk study and data search outlined in para 8.3.8 included the Cable Route Search Area, although the wording therein largely refers only to the solar array/AD Sites. It is also explained that existing records of protected and notable species within 2km of each Site were obtained from the relevant local records centres and that data is also held for the entirety of the Cable Route Search Area. However, the information on species provided subsequently (from para 8.3.21) largely refers only to the Sites. The baseline information contained within the ES should encompass and clearly describe the baseline for the whole of the	Desk study data is held for the entirety of the Cable Corridor.	Desk study data set out in Section 9.6 and Appendix 9.3: Desk Study **[~~EN010170/~~APP~~/GH6.3.9.3~~-086]**.

Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
	application site, including the Cable Corridor.		
The Planning Inspectorate 30 August 2024 ID 3.3.7	It is stated that the scope of wintering bird surveys will vary depending on whether the solar array/AD Sites fall within or outside of the 10km consultation zone (considered to be land functionally linked to the Special Protection Area (SPA)) surrounding the Upper Nene Valley Gravel Pits SPA. It is not explained why this is the only criteria that has been applied to determine the scope of such surveys or confirmed that would encompass the need to undertake such surveys in other locations which could be affected by the Proposed Development. However, the Inspectorate notes that wintering bird surveys have been or are scheduled to be undertaken for all of the solar array/AD Sites. The methodology should be clarified in the ES. Para 8.3.17 states that the proposed survey scope was confirmed by Natural England (NE) as acceptable to provide an assessment of the Proposed Development. However, it is unclear whether the Discretionary Advice Service (DAS) response from NE contained in Appendix 8.1 applies to the Cable Corridor, parts of which may be through land functionally linked to the	Natural England DAS discussions confirmed that bird surveys of the Cable Corridor would not be needed, as these are disproportionate to the temporary nature of any impacts.	Written correspondence provided in Appendix 9.4: Consultation Responses **[~~EN010170/~~APP~~/GH6.3.9.4~~-087]**. Final survey scope set out in Section 9.4.

Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
	SPA. This should be clarified and evidenced within the ES.		
The Planning Inspectorate 30 August 2024 ID 3.3.8	It is explained that any of Sites B-G and the BESS site that fall within 10km of any part of the Upper Nene Valley Gravel Pits SPA will be subject to nocturnal wintering bird surveys. Site A is excluded on the basis that it lies 11.5km from the SPA and Site A.2 on the basis that only a very small section of its southernmost field lies just within the 10km consultation zone. The Inspectorate notes that NE agreed the approach in relation to Site A and that a response regarding Site A2 (and Site G) is awaited. NE's agreement or otherwise should be evidenced in the ES.	Natural England DAS discussions confirmed that nocturnal bird surveys would only be needed at Green Hill B-G, plus BESS.	Written correspondence provided in Appendix 9.4: Consultation Responses **[~~EN010170/~~APP~~/GH6.3.9.4~~-087]**. Final survey scope set out in Section 9.4.
The Planning Inspectorate 30 August 2024 ID 3.3.9	It is stated that the survey scope for the Cable Route Search Area has not yet been finalised and a 'proportionate' survey scope is proposed on the basis that the cable installation works would be of a temporary nature. No breeding bird surveys are proposed for the Cable Corridor on the basis that the cable installation works would be temporary and progress linearly and due to their nature would minimise disturbance to birds. The Inspectorate notes that Table 8.1 provides information only in relation	Natural England DAS discussions confirmed that bird surveys of the Cable Corridor would not be needed, as these are disproportionate to the temporary nature of any impacts.	Written correspondence provided in Appendix 9.4: Consultation Responses [~~EN010170/~~APP~~/GH6.3.9.4~~-087]. Final survey scope set out in Section 9.4.

Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
	to the solar array/AD Sites and that the DAS response from NE contained in Appendix 8.1 agrees the scope of the surveys, which include breeding bird surveys. It is unclear whether this response applies only to the solar array/AD Sites. Full ecological surveys should be undertaken at locations where LSE could arise. The scope of the ecological surveys for the entire site, including the Cable Corridor, should be agreed with Natural England and other key consultees, such as the relevant Councils, where possible, and the level of agreement should be evidenced in the ES. Cross-reference should be provided to relevant information contained in other application documents such as the Consultation Report.		
The Planning Inspectorate 30 August 2024 ID 3.3.10	The Inspectorate notes that horizontal directional drilling (HDD) or opencut trenching may be used for the construction of the Cable Corridor. The ES should identify the technique to be used at the relevant locations and provide details of the programme and the works, including identifying if any night-time working is anticipated. Justification should be set out for use of the preferred technique at the particular locations and identification of potential impacts and an	Crossing points where HDD has been specified are identified in the Crossings Schedule. At all other crossing points, optionality for HDD/ open-cut trenching is retained, with final construction methodologies to be informed by update site inspections during the construction phase, as set out in the OEPMS	Paragraphs 9.8.8; 9.9.47; 9.9.127; 9.9.316; 9.9.317; 9.9.333.

Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
	assessment where LSE could occur should be provided.	~~[EN010170/APP~~Revision A **[EX1/GH7.5_A]**. An assessment of effects for either method is discussed in this ES chapter.	
The Planning Inspectorate 30 August 2024 ID 3.3.11	Table 8.2 refers to the designated sites scoped into the assessment and sets out their distance from the solar array/AD Sites. An equivalent table within the ES should also include the same information for the Cable Corridor. It may be clearer for the reader if the nationally and locally designated sites were separated out.	Tables are provided in the desk study appendix showing the designated sites scoped into the assessment within the search radii of each site and for the Cable Route Corridor.	Appendix 9.3: Desk Study **[~~EN010170/~~APP~~/GH6.3.9.3~~-086]**.
The Planning Inspectorate 30 August 2024 ID 3.3.12	It is explained that searches for records of protected and priority species within the Cable Route Search Area will be provided once available. This information should be provided with/appended to the ES.	Desk study data is held for the entirety of the Cable Route Corridor.	Desk study data set out in Section 9.6 and Appendix 9.3: Desk Study **[~~EN010170/~~APP~~/GH6.3.9.3~~-086]**.
The Planning Inspectorate 30 August 2024 ID 3.3.13	The Inspectorate notes that GCN District Level Licensing (DLL) is currently being pursued as a mitigation option for the Proposed Development. The Inspectorate understands that the DLL approach includes strategic area assessment and the identification of risk zones and strategic opportunity area maps. The ES should include information to demonstrate whether the Proposed	GCN DLL is being pursued for this Scheme via the NatureSpace Partnership. Measures to ameliorate the risk of accidental killing/injury of great crested newts within specific high-risk zones within the Scheme will be incorporated into the Best Practice Principles associated with the District	Paragraph 9.9.219

Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
	Development is located within a risk zone for GCN. If the Applicant enters into the DLL scheme, NE will undertake an impact assessment and inform the Applicant whether their scheme is within one of the amber risk zones and therefore whether the Proposed Development is likely to have a significant effect on GCN. The outcome of this assessment will be documented on an Impact Assessment and Conservation Payment Certificate (IACPC). The IACPC can be used to provide additional detail to inform the findings in the ES, including information on the Proposed Development's impact on GCN and the appropriate compensation required. It is stated that if DLL is not taken forward the assessment will instead be informed by eDNA survey work of all accessible ponds within the application site and within 250m of any of the Sites or Cable Corridor, where access permission can be obtained. In the event that this option is pursued, the ES should identify any limitations to the information-gathering process and assess the WCS for any areas that cannot be surveyed	Licence, when this is approved. Measures implemented in each case will be proportionate to the suitability of the habitats within the working area, as well as the District Licensing Impact Risk Zone that each working area falls within.	

Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
	that are considered to have potential for GCN presence.		
The Planning Inspectorate 30 August 2024 ID 3.3.14	It is proposed that reptile surveys are not undertaken given the 'relatively low' risk to individual reptiles during the construction and operational phases due to the majority of suitable habitat being located at the field peripheries; and the size of the Sites. It is stated that potential impacts such as habitat loss/fragmentation and the risk of individuals being killed/injured during the construction phase will be assessed and mitigation proposed. The Inspectorate notes that some common reptile species may be present and that some areas of particularly suitable habitat have been identified within the Sites. It is proposed that invertebrate surveys are not undertaken on the basis of the "relatively low distinctiveness" of the Sites' habitats and the nature of the Proposed Development. The Inspectorate notes that a small number of notable invertebrate species records were returned during the desk study and that habitats within the Sites provide suitable opportunities for a range of species. It is unclear whether these statements also apply to the Cable	DAS discussions and meeting with LPA Ecologists confirmed suitability of survey scope, with reptile and invertebrate surveys scoped out.	Written correspondence provided in Appendix 9.4: Consultation Responses **[~~EN010170/~~APP~~/GH6.3.9.4~~-087]**. Final survey scope set out in Section 9.4.

Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
	Corridor Search Area and also how appropriate mitigation can be proposed in the absence of baseline data. In the absence of information such as evidence demonstrating clear agreement with relevant statutory bodies, the Inspectorate is not in a position to agree to scope out reptile and invertebrate surveys. Accordingly, the ES should include such baseline information, including for the Cable Corridor, or evidence demonstrating agreement with the relevant consultation bodies and the absence of a LSE.		
The Planning Inspectorate 30 August 2024 ID 3.3.15	It is explained that the majority of the diurnal wintering bird surveys started in October 2023 and continued until February 2024 but that, due to its (later) addition to the Proposed Development in December 2023, two additional surveys are scheduled for October and November 2024 at Site F only. This is inconsistent with Table 8.1 which indicates that no surveys have yet been undertaken for Sites G and A.2 and are scheduled to take place between October 2024 and March 2025. The baseline survey information must be consistent within the ES.	Survey scope is clearly set out in this ES chapter, with differences in wintering bird survey effort between Sites clarified.	Final survey scope set out in Section 9.4.

Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
The Planning Inspectorate 30 August 2024 ID 3.3.16	No specific fish surveys are proposed. The Inspectorate notes that the Environment Agency (EA), within its scoping consultation response contained in Appendix 2, highlights the availability of its fish survey data. This should be used to inform the baseline, so that receptors and potential impacts can be identified.	Baseline fish information (including Environment Agency open-source fish data) has been gathered.	Paragraph 9.6.164
The Planning Inspectorate 30 August 2024 ID 3.3.17	The Inspectorate notes that Northamptonshire Council is working with NatureSpace to create a district-wide mitigation strategy to address impacts on ground-nesting birds, particularly from solar farms (see Appendix 2 of this Opinion). It is recommended that the Applicant engage with the Council on this matter should LSE on ground-nesting birds be predicted and mitigation and/or compensation measures be required.	This option has been discussed with NatureSpace, but has not been pursued due to the strategy not yet being available.	Ground-nesting bird mitigation is discussed in Section 9.9: Breeding Birds of Open Habitats.
The Planning Inspectorate 30 August 2024 ID 3.17.1	The Inspectorate is content that a standalone quantitative lighting assessment can be scoped out on the basis that lighting impacts will be considered in the Landscape and Visual and Ecology chapters of the ES and will include consideration of potential impacts of directional and intermittent lighting and describe mitigation measures as required. This should include impacts of	This ES Ecology and Biodiversity Chapter includes an assessment of potential lighting effects on ecological receptors and cross references to the lighting strategy set out in the management plans.	Paragraphs 9.8.10; 9.8.18; 9.9.178; 9.9.183 Outline Construction Environmental Management plan (OCEMP) **[EN010170/APPEX1/GH7.1_A]** Outline Decommissioning Statement (ODS) **[EN010170/APPEX1/GH7.3_A]**

Consultee and Date	Comment	How has the comment been addressed	Location of response in chapter
	night-time lighting. The Inspectorate notes that an OCEMP and ODS will be submitted with the DCO application and will include a lighting strategy intended to minimise light spill to receptors. Cross-reference should be made from the ES to the relevant measures contained within the management plans.		

Statutory Consultation

9.2.9 Further consultation in response to formal pre-application consultation was undertaken through the Preliminary Environmental Information Report (PEIR). Table 9.2: outlines the statutory consultation responses relating to Ecology and Biodiversity and how these have been addressed through the ES.

9.2.10 Responses to the Statutory Consultation are outlined in the Consultation Report **[~~EN010170/APP~~EX1/GH5.1_A].**

Table 9.2: Statutory Consultation Comments

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
Mears Ashby Parish Council 12 December 2024	Corridors between solar panels with high fencing on each side, and security cameras, will create hostile environments which will constrain wildlife in all directions and likely to result in the loss of wildlife habitats for badgers, foxes, deer, and various bird species.	Impacts on designated sites, habitats and species are detailed in this ES chapter. Fencing will be permeable to mammals such as badgers and foxes, while deer have been regularly recorded within operational solar farms by ecological monitoring work conducted by Clarkson and Woods Ltd. The arrays themselves will provide suitable habitats for a range of species, alongside designated mitigation and enhancement provisions.	Section 9.9
Wilby Parish Council 16 December 2024 Item 1	The council is aware of the many expressions of concern from residents within the community. Not the least of these being bridleways and footpaths that will be changed forever. Corridors between solar panels with high fencing on each side, and security cameras, will	Impacts on, and mitigation measures for, designated sites, habitats and species are detailed in this ES chapter. Fencing will be permeable to mammals such as badgers. The arrays themselves will provide	Section 9.9

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	create hostile environments which will constrain wildlife in all directions and be likely to result in the loss of wildlife habitats for badgers, foxes, deer, and various bird species. …Including the protection, restoration, and enhancement of natural, and historic assets. Provide appropriate measures to protect locally designated sites and priority habitats for protected species.	suitable habitats for a range of species, alongside designated mitigation and enhancement provisions.	
Bedford Borough Council 18 December 2024 ID §9.3.2	'Buffers from field boundary habitats have been recommended according to a set of ecological importance criteria'. This intent is supported by BBC but actual widths need to be specified and safeguarded, preferably in perpetuity.	Buffer widths are specified in this ES chapter, and are viewable in Appendix 9.12: Schedule of Protective Ecological Buffers. These buffers will be established during construction and safeguarded for the lifetime of the Scheme.	Paragraph 9.8.4.
Bedford Borough Council 18 December 2024 ID §9.3.3	The ecological avoidance, mitigation and compensation measures determined to be necessary for cable route installation will be detailed within the Construction Environmental Management Plan (CEMP)'. Arising avoidance, mitigation and compensation measures/ actions are supported by BBC but these needs to be assessed in the body of the	Likely effects are assessed in this ES chapter including the assessment of mitigation measures, but the OEPMS **[~~EN010170/APP~~EX1/GH7.5_A]** serves to set these measures out for the construction phase.	Paragraph 9.8.10

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	Environmental Statement rather than been assigned to the CEMP.		
Bedford Borough Council 18 December 2024 ID §9.3.4	(Landscape and Ecological Management Plan (LEMP)) BBC would suggest that a) the landscape and habitat instatement is completed within the first two-years of inception of construction (to mitigate effect); b) that the works are monitored for a 15-year period (to ensure long-term establishment); c) that in any Replacement Phase, the same conditions would apply as a) and b); d) that the Proposer has a custodial responsibility to the landscape and habitat planting including up to the end of the Decommissioning Phase including if replacement planting/ mitigation is required; and e) is written accordingly to address ~~longterm~~long-term maintenance and management, possibly as 10-year cycles of works, for the duration of the Proposed Development.	The OLEMP sets out the timeframes for planting and management responsibilities for the duration of operation, including replacement planting, as well as a schedule of ecological monitoring.	OLEMP **~~[EN010170/APP~~**Revision A **[EX1/GH7.4_A]**
Bedford Borough Council 18 December 2024	Woodlands: BBC would like to see minimum 8m buffer zones to all Ancient woodlands and woodlands.	A minimum 30m buffer from ancient woodland and 20m buffer from other woodland types is proposed.	Paragraph 9.8.4.

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
ID §9.4.4			
Bedford Borough Council 18 December 2024 ID §9.4.5	'The potential for loss of hedgerows and trees is very limited as existing hedgerow gaps will be utilised wherever possible to gain access for construction and operation'. This statement is NOT supported by the Proposer's own evidence regarding visibility splays at access points (refer to BBC Scoping Response §4.10).	An assessment of hedgerow losses is set out in this ES chapter and further evaluated in the BNG assessment. Existing hedgerow gaps have been used wherever possible in the design and layout of the construction and maintenance accesses. Whilst some hedgerow loss will occur, such as at visibility splays, this will be fully compensated for by new planting and the enhancement of existing hedgerows through ecologically sensitive management regimes.	Paragraph 9.9.109
Bedford Borough Council 18 December 2024 ID §9.4.6	'The small size of any crossings required will not result in any significant fragmentation effects on the local ditch/ watercourse network'. This statement does not address the fact that a major Cable Corridor will be required across the Upper Nene Valley Gravel Pits Special Protection Area and Ramsar site.	The Cable Corridor does not pass through the SPA/ Ramsar site itself. Where the corridor crosses the River Nene and tributaries near the SPA, the cable will be laid via trenchless techniques such as HDD to avoid impacts to the watercourse and its associated riparian habitats.	Paragraph 9.9.120

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
Bedford Borough Council 18 December 2024 ID §9.4.9/ 9.4.10	'Insufficient information is currently available to fully evaluate the scope and significance of habitat fragmentation impacts on otters and water voles during the construction phase; this will be assessed in full in the ES'. In all cases, this should include an assessment of fencing proposals to the Proposed Development which may fragment habitats and severely restrict accessibility and movement of fauna.	Detailed otter and water vole surveys have been completed to inform the assessment. Fencing will not restrict the movement of these species. This is discussed in this ES chapter.	Paragraph 9.9.190
Bedford Borough Council 18 December 2024 ID §9.4.9/ 9.4.10	A general observation regarding this chapter is that the Proposer does not address any effect that may occur or cause harm during the Replacement Phase – this is omitted in totality.	Consideration of impacts through the replacement of panels and batteries during the operational phase is discussed for each relevant receptor in this ES chapter.	Section 9.9
Milton Keynes City Council 18 December 2024	The ecological assessment considers non-statutory ecological designations such as County Wildlife Sites and Local Wildlife Sites but does not appear to consider Biological Notification Sites or Milton Keynes Wildlife Corridors, both of which are considered equivalent to Local Wildlife Sites in Milton Keynes. Both are present within 2km of Site G therefore, the assessment for this site	These designations are now included in the remit of the desk study and sites are detailed in this ES chapter.	Section 9.6

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	should be expanded to include these designations.		
	The ecological assessment highlights the difficulty in identifying *Myotis* sp. of bat to species level based on call analysis. Given Myotis activity could be from rare bat species such as Bechstein's bat, it would be expected that areas highlighted to have increased levels of Myotis activity would be subject to survey work using advanced trapping techniques in order to establish the species of Myotis present. This would be of particular importance near or adjacent to areas of ancient woodland. The limitations to the Tinsley et al (2023) study are noted however other research including Barré et al (2023) have also suggested possible negative effects on bat activity from Solar arrays. The fact remains that further research is needed in this area before the impacts of solar farm developments on bats can be accurately predicted. Due to the deficiency in primary research, it is not possible to definitively determine either way what the impact the proposed development will have on bat activity. Given the nature and scale of the proposed development it would be	Advanced trapping work has not been completed and is not considered necessary to inform impacts; since Bechstein's bats are woodland specialists there is very limited risk of impacts since suitable woodland is all offsite and buffered by at least 20m from the development (30m for ancient woodland). Furthermore, all intervening dispersal corridors will be retained and buffered. A regime of bat monitoring during the operation of the Scheme is detailed in the OLEMP.	Survey scope set out in Section 9.4 Buffers set out in Section 9.8. Monitoring detailed in OLEMP ~~**[EN010170/APP**~~Revision A **[EX1/GH7.4_A]**.

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	expected that periodic monitoring of bat activity would occur during the operational phase in order to confirm no significant impacts have occurred as predicted or to inform any remediation measures which need to be implemented should adverse impacts be recorded. The monitoring information will also provide real life data to inform future similar developments.		
	No information such as metric calculation has been submitted to evidence that the development will meet the 10% net gain target set out in the documentation. It would be beneficial to see an initial BNG assessment and calculation prior to submission of the development consent order (DCO). It would also be beneficial to know whether the 10% target is for each site or across the whole scheme given the development is cross boundary.	A BNG assessment is completed based on a detailed baseline assessment and detailed proposals. It was not possible to run this assessment iteratively prior to submission of the DCO. This said, a large gain was assured and the development will commit to a minimum 10% across the Scheme as a whole.	Appendix 9.13: Biodiversity Net Gain Assessment ~~[EN010170/APP~~Revision A **[EX1/GH6.3.9.13_A]**
	The use of buffers as built in mitigation is agreeable however, it should be noted that the Badger Protection Best Practice Guidance (Badger Trust 2023) states use of heavy machinery within 30m of any badger sett entrance or light	A 15m undeveloped buffer will be implemented around any outlying badger setts. However, any works within 30m will be subject to restrictions, such as being preceded by an inspection	Paragraph 9.9.138

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	machinery within 20m of any badger sett entrance may need a licence as it could cause disturbance therefore, the 15m buffer for "outlying" setts would not be sufficient in line with this guidance. Additional restrictions on use of machinery would be required outside of the 15m buffer for this type of sett.	by an ecological clerk of works (ECoW), and the use of hand tools only if required. This radius may be reduced where the tunnel direction faces away from the working area. An updated badger survey will be completed prior to construction commencing, and if there are any setts where work with heavy machinery will be required within 30m, then the ECoW will determine the best course of action at the time, including monitoring for activity, then works undertaken under a watching brief or a mitigation licence secured to exclude the sett.	
	The development proposes to enter into the NatureSpace District Licence scheme for Great Crested Newt. Engagement with the District Licence Officer for each relevant LPA should be made at the earliest opportunity.	NatureSpace District Licensing is confirmed as the approach to be used for this Scheme. The relevant certificates will be submitted with the DCO for review by LPA officers.	Paragraph 9.9.221
Sywell Aerodrome 18 December 2024	Birds are a serious threat to aircraft and can bring down an aircraft if ingested resulting in engine failure. Any scheme to move nesting birds from their habitat in Green Hill C and nearby to Sywell	Fields allocated for ground-nesting bird mitigation will aim to mitigate displaced birds which were already present in the wider landscape, rather than	Paragraph 9.9.248

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	Aerodrome, has the potential to move birds nearer or onto the Aerodrome, thereby putting aircraft at risk and the future of the Aerodrome at risk.	increase populations above the baseline. Additionally, airfields themselves are often highly suitable for ground-nesting birds such as skylark, and they would be expected to nest within the Aerodrome under baseline conditions. As such, it is not considered that the Scheme would result in a significant increase in the risk of bird strike.	
Beds, Cambs & Northants Wildlife Trust 19 December 2024	Although some of the ecological survey information has been collected, there are still many surveys which have not yet taken place. These include investigations for key species in this area including over-wintering birds connected to the internationally important Nene Valley Gravel Pits SPA and investigations into how bats might be using the landscape within the application sites. As a result, at this stage, the proposal does not include what measures it would take to avoid, mitigate and/or compensate for the impacts identified in the surveys. This is vital to our ability to assess the proposal's impact on wildlife, and we would therefore, welcome the inclusion of this information as soon as possible.	A full suite of surveys has been completed and an assessment of effects on each receptor is detailed in this ES chapter, including appropriate mitigation. Treatments of mitigation fields are shown on the landscape masterplans.	Sections 9.6-9.8. Landscape and Ecology Mitigation Plans (**GH6.4.4.10 – GH6.4.4.20**)

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	Without this, we are not able to fully assess the impacts of the scheme. The Indicative Masterplans, show areas of ecological mitigation/agricultural land but no details of what is proposed for these areas. We would be interested to know more about what is proposed for these fields as the information becomes available.		
	We note that only one year of over-wintering bird surveys have been carried out. These surveys particularly focus on the movements of Lapwing and Golden Plover, both of which are of particular significance to the SPA. The wider landscape is very important to the SPA because most species do not just live within the wetlands, they use a much larger area for foraging, roosting and/or commuting, with the SPA providing a focal point. Whilst the Preliminary Environmental Information Report (Green Hill Solar Farm, November 2024) states that the level of survey was agreed with Natural England, we would like to stress the dynamic nature of the areas used by Lapwing and Golden Plover. They seem to use different fields depending on a large range of factors including weather conditions. One year of study,	Revised scope of surveys has been put forward by Natural England and subsequently agreed, comprising two years of both diurnal and nocturnal wintering bird surveys at Sites within SPA consultation zone. Assessment of impacts on the SPA, including any losses of Functionally Linked Land (FLL), are discussed in this ES chapter, and in more detail in the HRA.	Agreed survey scope set out in Section 9.4. Assessment of impacts on SPA set out in Section 9.9.2 and Habitat Regulations Assessment (HRA) ~~**[EN010170/APP**~~Revision A **[EX1/GH7.21_A]**

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	therefore, should only be taken as a brief snapshot of areas functionally linked to the SPA and a precautionary approach taken to the assessment of the wider area. This is particularly important given the nature and scale of the proposal. Although the over-wintering bird surveys are yet to be completed, both Golden Plover and Lapwing have been noted across the sites and in the wider landscape. This included 70 Golden Plover in flight immediately adjacent to Green Hill D in late November. We would also like to stress that the North Northamptonshire Local Nature Recovery Strategy highlights an area close to Green Hill A2 as important for action NN09 which is to increase the area of land managed for priority birds including Lapwing and Golden Plover across Functionally Linked Land in proximity to the Upper Nene Valley Gravel Pits. Given the scale of the proposal we would consider it likely that it includes at least some land which is functionally linked to the SPA.		
	Paragraphs 9.8.2 – 9.8.8 of the Preliminary Environmental Information Report include a consideration of potential effects of the proposal on the	BESS3 has been removed from the Order Limits, so the BESS will not lie adjacent to the SPA and will lie more distantly than	Paragraph 9.9.2

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	SPA. We would recommend that the impact of noise, especially during the construction phase, is considered. This would be a particular issue at the BESS due to its proximity to the SPA.	the existing Grendon substation. An assessment of likely effects on the SPA is set out in this ES chapter.	
	Alongside the SPA, the area has a series of places that are important to wildlife and form vital parts of the wider ecological network across the landscape. These include LWS, PWV and PWS. PWS are sites which may be of importance to wildlife or are of some value but do not yet meet LWS criteria. These are currently not included in the assessment, and we would recommend that they are. At present, PWV are also not considered. Green Hill F includes both Grendon Verge PWV and Easton Maudit PWV, both of which have been recognised for their wildflower grasslands. Within the Indicative Masterplan, both verges are marked for reinforced native tree and hedgerow planting which is not compatible with their existing designation for grassland habitats. There is also a proposed access point within Grendon Verge PWV. This uses an existing field access but as yet details on any changes which would be required to this access that	Designated sites are considered in this ES chapter, including Local Wildlife Sites (LWSs) and Protected Wildflower verges (PWVs). Potential Wildlife Sites are not considered as designated sites since they have no standing designation. However, the habitats and species they support may be considered through broader assessment, particularly where priority habitats are present. Both Grendon Verge PWV and Easton Maudit PWV are on the outside edge of existing hedgerows, with all proposed hedgerow planting being on the inside edge. Both fields have been allocated for mitigation rather than PV solar, and no new accesses through Grendon Verge PWV or Easton Maudit PWV are required. Thus, these features will not be impacted.	Section 9.6 and Paragraph 9.9.37

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	would impact the PWV are not included.		
	We were very pleased to see that evidence of Water Voles using some areas of the proposed site were found during the survey work. Water Voles are now restricted to a very few parts of Northamptonshire. We noted that most of the watercourses on the Indictive Masterplan were marked for additional tree planting to strengthen green corridors. As Water Voles require more open grassland or marginal vegetation, we would recommend that a more diverse mix of habitats beyond tree planting along the watercourses would be preferable.	New tree planting alongside watercourses has been set back from the bankside or else removed in favour of riparian planting to maintain open bankside habitat for water voles.	Landscape and Ecology Mitigation Plans (**GH6.4.4.10 – GH6.4.4.20**)
Earls Barton Parish Council 19 December 2024 Item 1	We also have grave concerns over the impact an emergency or major disaster would have on the surrounding area. The sub-station is bordered by a SSSI and a Ramsar site. Any potential major disaster could result in toxic elements being released into these sites, decimating wildlife and biodiversity.	Potential impacts on the SPA from a battery fire are discussed in this ES chapter. A separate Outline Battery Storage Safety Management Plan (OBSSMP) is also provided with the application.	Section 9.9.2 Outline Battery Storage Safety Management Plan (OBSSMP) ~~**[EN010170/APP**~~Revision A **[EX1/GH7.7_A]**
Earls Barton Parish Council 19 December 2024	Further consideration needs to be given to the wildlife that already lives in the fields that are to be used for the solar farm. Whilst hares and partridges may	Extensive baseline surveys have been completed to assess the species already occupying the sites. An assessment of the	Sections 9.6-9.8.

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
Item 3	not be protected, they still need to move somewhere once their current habitat is removed. In addition, there are comments regarding the renesting of skylarks. How would you propose to do this effectively? Are there examples of how this has been done in other locations and how successful it was?	impacts on each species/ species group is provided in this ES chapter, including brown hare. Mitigation for skylarks, which entails the management of un-panelled fields to enhance the number of skylarks they can support, is also discussed.	
Forestry Commission 19 December 2024	The Standing Advice states that proposals should have a buffer zone of **at least** 15m from the boundary of ancient woodlands to avoid root damage which can result in loss or deterioration of the woodland. Where assessment shows impacts are likely to extend beyond this distance, you're likely to need a larger buffer zone. For example, the effect of air pollution from development. The Standing Advice states that proposals should have a buffer zone of **at least** 15 times larger than the diameter of ancient and veteran trees. The buffer zone should be 5 metres from the edge of the tree's canopy if that area is larger than 15 times the tree's diameter. This will create a minimum root protection area. We also note planned incursions into the Root Protection Areas of a number	Buffers have been implemented in the design, including 30m from ancient woodland, which exceeds the 15m minimum buffer under standing advice, and bespoke buffers for ancient and veteran trees.	Paragraph 9.8.4 ES Chapter 19 – Arboriculture **[~~EN010170/~~APP~~/GH6.2.19~~-056]**

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	of veteran trees. The Root Protection Zone (as specified in British Standard 5837) is there to protect the roots of trees, which often spread out further than the tree canopy and should be avoided if it all possible. Some effects on Ancient and veteran trees may not be immediately obvious, after any incursion into the root protection zone, the tree should be monitored for some time to ensure there are no effects. With plans in place to remediate any effect if deterioration is found.		
	Protection measures include taking care not to cut tree roots (e.g., by trenching) or causing soil compaction around trees (e.g., through vehicle movements or stacking heavy equipment) or contamination from poisons (e.g., site stored fuel or chemicals) and fencing off these areas to prevent unintended incursions into the root protection zone. Although the documents state that all work will be carried out outside of the buffer zones, it is unclear what size buffer zone has been used, especially considering the significant risk for the effects of dust pollution during the construction phase. We look forward to	Tree protection measures and dust pollution control measures are detailed in Chapter 19 (Arboriculture) and the OEPMS.	OEPMS **[~~EN010170/APP~~Revision A [EX1/GH7.5_A]** ES Chapter 19 – Arboriculture **[~~EN010170/~~APP~~/GH6.2.19~~-056]**

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	seeing the information on measures to reduce dust pollution during construction.		
	We would also recommend a lighting strategy is employed to prevent illumination of the woodland during the construction phase.	Minimal artificial lighting will be used during the construction and operational phases, and any lighting used will be directed away from areas of woodland and other sensitive habitats as far as possible. This is discussed in this ES chapter and in the OCEMP/EPMS.	Paragraph 9.9.83
	The biosecurity of all planting stock also needs to be considered. Woodlands need to be climate, pest and disease resilient. Planting should contribute to a resilient treescape by maximising connectivity across the landscape. Plans should also be in place to ensure the long term management and maintenance of any new and existing woodland, with access also needing to be considered for future management.	New planting has been selected to be locally appropriate and resilient to foreseeable changes in climate and disease. Management is detailed in the OLEMP.	OLEMP ~~**[EN010170/APP**~~Revision A **[EX1/GH7.4_A]**
Natural England 19 December 2024 Item 1.1	Due to the scale and proximity of the proposal to designated sites, in particular that of the BESS site and the potential for potential impacts arising from the proposal, it is imperative that a HRA screening is carried out which fully	An HRA has been prepared. Impacts are also discussed in this ES chapter.	Habitat Regulations Assessment (HRA) ~~**[EN010170/APP**~~Revision A **[EX1/GH7.21_A]** Paragraph 9.9.2

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	assess the potential impacts to designated sites. At present there is no evidence of the assessment of the environmental impact of the BESS directly adjacent to the SPA. This will need to be considered in great detail within an Environmental Statement (ES).		
Natural England 19 December 2024 Item 1.2	The loss of such parcels of open land surrounding The Upper Nene Valley Gravel Pits SPA has the potential to be integral in the decline of over-wintering species such as Golden Plover and Lapwing therefore it is vital that the loss of such valuable foraging land is avoided, and where not possible, adequately mitigated. In determining whether an adverse effect on the integrity (its structure and function, and ultimately, its ability to achieve its conservation objectives) of the SPA/Ramsar can be excluded it is necessary to confirm whether or not SPA birds are using specific fields via monthly counts across a winter period (which also take into account nocturnal foraging and any inter-annual habitat changes due to arable rotations). Where detailed monitoring confirms birds are present, an indication of	Wintering bird surveys have been conducted to determine the presence of FLL. Although initially agreed with Natural England that just one year of survey would be needed, subsequent amended advice from Natural England for two years of survey effort was advised. Both diurnal and nocturnal wintering bird surveys have been conducted for two years across Green Hill B-G, which lie within the SPA consultation zone, within the constraints of the submission programme. Where survey deficits exist (as for Green Hill F and G where it was not possible to complete two full years' of survey), the	Section 9.9.2 Habitat Regulations Assessment (HRA) ~~**[EN010170/APP**~~Revision A **[EX1/GH7.21_A]**

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	regularity of use and numbers of birds can then help to ascertain whether, in those locations where birds are observed, a given land parcel supports a significant proportion of the SPA/Ramsar population. In order to take both alone and 'in combination' effects (i.e. the combined value of many separate land parcels), the sum of all birds recorded across multiple fields potentially affected by development proposals must be taken into account. Where individual land parcels are not contiguous and survey effort is not coordinated, peak counts of birds can be added where recorded on separate dates. This sum total is typically considered to be a significant percentage of a SPA/Ramsar population of non-breeding birds if where it exceeds 1% of the SPA population of a given species. Where bird numbers have declined since classification, revised totals based on up to date counts will need to be applied to ensure significant use is not dismissed incorrectly. Applying this 1% threshold at a field level, where potential development spans a much larger area, could also incorrectly	results from completed surveys at these Sites have been considered to assess the likelihood of additional FLL being present, using a precautionary approach. In lieu of a formal Supplementary Planning Document for assessing and mitigating FLL (understood to be in preparation with no confirmed publication date), and given the lack of a clear steer from Natural England through the Discretionary Advice Service on this matter, including contradictory advice, FLL has been determined using a systematic approach, with individual fields being the spatial scale at which FLL is determined. This is considered appropriate as birds will select individual fields to use based on their relative topography and habitat suitability characteristics, rather than make a decision to use the whole 'site' or not. It is not practical to sum counts across multiple fields and on different dates, since there is no	

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	screen out damaging planning applications by sub-dividing predicted impact. Table 9.1 in Chapter 9 of the Green Hill Solar Farm – Preliminary Environmental Information Report (November 2024) states: "Two years of wintering bird survey data would not be required, and one year of survey information (as per the scope proposed above) would be sufficient to inform an assessment of potential impacts upon the Upper Nene Valley Gravel Pits SPA". Having engaged with the applicant through our Discretionary Advice Service, while we concur with the methodology of the aforementioned surveys, our advice to date has been that where a full suite (i.e. at least 2 years) of wintering bird surveys are not possible/feasible, a precautionary approach will need to be taken, which may require the delivery of mitigation for the loss of FLL. Therefore, Natural England advise that we do not agree with the statement that 'one year of survey information would be sufficient to inform an assessment of potential impacts upon the SPA'. Further	way of marrying this with threshold numbers (above 1% of the population), and considering regularity of use. In line with Natural England advice, revised counts of golden plover and lapwing SPA populations from 2021/2022 have been used to inform the assessment.	

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	information is needed before a HRA conclusions can be agreed.		
Natural England 19 December 2024 Item 1.2	Natural England highlight our research reports TIN101 and NEER012, which provide a useful review of the potential impacts of solar installations on birds. We would encourage the PEIR to consider these papers and address relevant topics.	These reports have been considered in the ES assessment.	Paragraph 9.9.242 to 9.9.308.
Natural England 19 December 2024 Item 6	The ES should consider any impacts upon local wildlife and geological sites, including local nature reserves. Local Sites are identified by the local wildlife trust, geoconservation group or another local group. The ES should set out proposals for mitigation of any impacts and if appropriate, compensation measures and opportunities for enhancement and improving connectivity with wider ecological networks. There may also be opportunities to enhance local sites and improve their connectivity to help nature's recovery. Natural England does not hold locally specific information on local sites and recommends further information is obtained from appropriate bodies such as the local records centre, wildlife trust, geoconservation groups or	Designated sites of relevance to ecology and biodiversity are considered in this ES chapter. Geological sites are scoped out of this assessment. Priority habitats and species are also considered, informed through desk study data purchased from local environmental records centres.	Section 9.6

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	recording societies. Emerging Local Nature Recovery Strategies (LNRS) may also provide further useful information and the PEIR makes reference to this influencing the design. Priority habitats and species are of particular importance for nature conservation and are included in the England Biodiversity List published under section 41 of the Natural Environment and Rural Communities Act 2006. Most priority habitats will be mapped either as Sites of Special Scientific Interest on the Magic website or as Local Wildlife Sites. A list of priority habitats and species can be found on Gov.uk. Natural England does not routinely hold species data. Such data should be collected when impacts on priority habitats or species are considered likely. Consideration should also be given to the potential environmental value of brownfield sites, often found in urban areas and former industrial land, further information including links to the open mosaic habitats inventory can be found here.		

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
Natural England 19 December 2024 Item 8	Natural England welcomes the Scheme's design aims to increase green infrastructure and link up ecological networks. Natural England are keen to engage on ways in which this may be achieved to the benefit of the project and it's wider environment. Paragraph 8.4.1 of the Green Hill Solar Farm – Preliminary Environmental Information Report (November 2024) states: "Preliminary mitigation measures include the use of buffers embedded into the design of the Scheme to protect the landscape fabric of the Sites and the use of landscape mitigation planting including connective woodland planting, mixed grassland/ wildflower planting, enhanced riparian native planting, reinforced road-side screening and hedgerow reinforcement." We recognise that whilst this will be an important factor in ensuring ecological connectivity across the wider landscape, Functionally Linked Land (FLL) mitigation will need to be dealt with in an entirely different manner and whilst the report continues to state "the Scheme has been designed to retain the most valuable habitats and protect	This is acknowledged and FLL is dealt with separately.	Section 9.9.2

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	these with undeveloped buffer zones", impact to FLL cannot be accounted for in the same way		
Natural England 19 December 2024 Item 9	Created and enhanced habitats should seek, where practical and reasonable, to be local to any impact. They should also deliver strategically important outcomes for nature conservation. We recommend that opportunities should be sought to link delivery to relevant plans or strategies. This could include Green Infrastructure Strategies or Local Nature Recovery Strategies.	Habitat creation and enhancement measures have been delivered within proximity to sources of impact, where possible. Additionally, they have been designed to align with strategic objectives for nature conservation, considering habitat opportunity mapping and Local Nature Recovery Strategies, as well as local priority habitats and species.	Appendix 9.13: Biodiversity Net Gain Assessment ~~[EN010170/APP~~Revision A **~~]~~[EX1/GH6.3.9.13_A]**
Environment Agency 24 January 2025	The Salmon and Freshwater Fisheries Act 1975 and The Eels (England and Wales) Regulations 2009 have not been included in the list of legislation that is relevant to biodiversity. The legal responsibility on the developer pertaining to this fish specific legislation has not been considered. This infers that the impacts on fish from the construction, operation and decommissioning have not been fully considered. Both pieces of legislation should be listed as relevant in the biodiversity chapter of the ES and submitted as part of the DCO.	This legislation is referenced in this ES chapter.	Paragraph 9.3.11

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	Fish surveys or fish habitat surveys have not been included as part of the baseline data collection. Certain construction activities may have a negative impact on notable fish populations. Particularly where open cut trenching is proposed for cable crossing of waterbodies. A qualitative fish habitat assessment (coupled with the desk-based study) should be completed where cable crossings are proposed. This will inform necessary mitigation measures. Where quantitative fish surveys have not been completed, the precautionary approach should be taken and assumed that fish species present within the catchment will be present if habitat is suitable. Mitigation measures should be stringent to control pollution and fine sediment runoff into waterbodies. Where open trench crossings are proposed, it is assumed that waterbodies that will be flumed, or coffer dammed and thus require over-pumping. It may be necessary for a fish rescue and relocation to take place and for key spawning and migration periods to be avoided. Mitigation should be included within the Outline CEMP and submitted with the DCO application. Any over-	An approach is set out whereby either open-cut trenching or trenchless techniques such as including HDD will be used for cable crossing points. The final approach may be revised based on qualitative assessments to be completed pre-construction and outlined in the CEMP. Appropriate mitigation for fish species will be implemented in the event of open-cut trenching.	Paragraph 9.9.341 OEPMS ~~[EN010170/APP~~Revision A **[EX1/GH7.5_A]**

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	pumping should ensure that screens are fitted on inlets and outlets of pumps and that they are compliant with the Eels (England and Wales) Regulations 2009.		
	Impacts on fish from noise associated with vibration created by HDD has not been included. Sensitive fish species associated with the River Nene could be disturbed during construction and decommissioning activities. The EIA should include an assessment on the risk of fish populations within the River Nene and other main watercourses being impacted by noise from HDD during construction. Mitigation and management of any impacts should be detailed in the Outline CEMP. Standard mitigation would be to avoid this activity during sensitive fish migration and spawning times, or drilling to a depth where any significant noise becomes negligible to fish. Noisy construction activities such as HDD under watercourses may disturb fish during key periods of migration and spawning. In extreme cases, noise may kill fish. According to our records, the River Nene contains European eel (Section 41 priority species NERC),	This ES chapter assesses the likely impacts of noise and vibration on fish. The OEPMS details mitigation measures to be implemented.	Paragraph 9.9.341 OEPMS **~~[EN010170/APP~~**Revision A **[EX1/GH7.5_A]**

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	brook lamprey (*Lampetra planeri*) (Annex II Habitats Directive), bullhead (*Cottus gobio*) (Annex II Habitats Directive), spine loach (*Cobitis taena*) (Section 41 priority species NERC and Annex II Habitats Directive) and brown/sea trout (*Salmo trutta)* (Section 41 priority species NERC). It maybe that appropriate mitigation to avoid impacts on fish would be a sufficient buffer zone from water courses and/or noisy construction activities avoiding key periods of migratory and fish spawning		
	Table 9.1: Summary of Consultation and Responses doesn't include the Environment Agency.	Consultation with the EA is shown in this table.	Table 9.2: Statutory Consultation Comments
	Solar farms that have wetland habitats on site or are near wetland habitats should implement mitigation to prevent adverse impacts on aquatic invertebrates. Many species of aquatic invertebrates mistake the polarised light reflected from solar panels for open water, leading them to try and lay eggs on panels, which ultimately fail. Low-cost mitigation measures can be taken that do not impact on energy generation, such as including a pattern of roughened or painted glass or a	Studies on this matter are inconclusive, although there is some evidence to suggest that polarotactic invertebrates may be attracted to panels, which reflect polarised light. Wetland habitats were of limited extent within the Survey Area, meaning there is limited suitable habitats for aquatic invertebrates and a notable population is considered unlikely to be present. Moreover, buffers	Paragraph 9.9.322

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	horizontal light blocking grid so that they are no longer attractive to aquatic invertebrates.	to boundary habitats of elevated importance for aquatic invertebrates, such as the Grendon Brook, are substantial (at least 30m). Therefore, no significant adverse effects on aquatic invertebrates through polarised light are anticipated.	
	Watercourses present in some array areas (e.g. A, A1, B, C, D, & E) have been dismissed as agricultural drains, however, some appear to be spring fed natural watercourses and not artificial field drains. Lack of consideration of natural spring fed watercourses in array areas could result in morphological and ecological harm to headwater streams. Ensure that natural spring fed watercourses are correctly identified, in the proposed MoRPH surveys and BNG assessment as “other rivers and streams”, rather than “ditches”. Minor works to improve these watercourses could result in significant uplift for the project.	Relevant datasets have been consulted to determine the status of watercourses across the sites, supported by ground-truthing field surveys. Evaluation of these features and enhancement measures are detailed in this ES chapter.	Paragraph 9.9.135
Lavendon Parish Council December 2024	It has been noted that the current PEIR does not provide an ecological baseline for Site G and that there is currently no environmental assessment on the impact of the solar farm on the area.	Green Hill G was introduced later to the Scheme. A full baseline is now provided in this ES chapter, informed by extensive survey efforts.	Section 9.6

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	The proposed development area currently has very limited habitat diversity and is dominated by intensively farmed arable land, which nonetheless provides suitable habitat for farmland birds, including skylarks. While the range of species observed in a predominantly arable landscape is limited, wildlife activity within and around the edges of the Three Shires Woods (ancient woodland) is more notable and includes badgers, bats, and birds. The preliminary ecological assessment should focus on these species groups to evaluate the potential impact of the proposals on connectivity and foraging habitats and to design appropriate mitigation measures. Furthermore, local residents who frequently use the trails and bridleways crossing the Site may provide valuable anecdotal evidence to support the assessment. Early engagement with the Parish Council, as a key repository of local knowledge, is strongly encouraged.		
	Owing to its intensively arable character, the baseline unit score (BNG) is expected to be low. As such, significant unit gain is likely to be	New hedgerow planting is proposed to enhance green infrastructure, alongside creation of more varied habitats	Appendix 9.13: Biodiversity Net Gain Assessment ~~[EN010170/APP~~Revision A **~~]~~[EX1/GH6.3.9.13_A]**

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	achieved by the mere reversion of arable to grassland. However, Lavendon PC as the representative of the local community would expect the developer to part from the target-based quantification of post-intervention unit value and to concentrate, instead, on the true ecological needs of the Site, namely • the reestablishment of connectivity across the landscape; • the establishment of a more diverse habitat mix; and • a net reduction in surface water runoff through the implementation of nature-based solutions.	and flood mitigation solutions. This will result in significant BNG, as evidenced in the BNG assessment.	
	The Site, over time, has undergone the systematic removal of green infrastructure (represented by copses, hedgerows and grassed field margins) to make way for an increasingly industrial approach to agriculture. In particular, over the past 2-3 years the south-western and western boundaries of the Three Shires woods, along with the ditch stretching along the eastern boundaries of parcels GF7 and GF11, have been the subject of extensive woody vegetation clearance. There is	Whilst it has not been possible to incorporate all suggestions made in Figure 1, the landscaping proposals at Green Hill G serve to enhance green infrastructure and improve connectivity across the Site. This includes new hedgerow and tree planting along the edge of Three Shires woods; and planting along the ditch dividing GF7 and GF11 and between GF2 and GF6. Further,	Landscape and Ecology Mitigation Plans (**GH6.4.4.10 – GH6.4.4.20**)

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	an opportunity to reestablish lapsed field boundaries and enhance connectivity both across the Site and within the wider landscape by creating a network of native hedgerows, as outlined in Figure 1. This initiative would provide tangible benefits to local wildlife and, when combined with improved access resulting from the cessation of agricultural activity, would offer significant value to the community.	extensive tree, hedgerow and shrub planting is proposed across the Site.	
North Northamptonshire Council December 2024 Item 7.2	The desk top study though may need to broaden the criteria to include additional area including 'Potential Wildlife Sites' within North Northamptonshire, which may be directly or indirectly affected. For example, within Area C, there is a Potential Wildlife Site (PWS) (Sywell Bottom) running though the proposed development area. This would, based on the current plans presented, become the boundary between an area within the site identified for other ecological enhancements and the development area itself. Notwithstanding that the PWS would effectively be enlarged by the ecological enhancements on the adjacent part of the Site, the potential impact of the development should be acknowledged given its current	PWSs are not considered as designated sites within this ES Chapter, since they have no standing designation. However, the habitats and species they support may be considered through broader assessment, particularly if priority habitats are present.	Not Applicable

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	acknowledged value in developing any mitigation and enhancement proposals.		
North Northamptonshire Council December 2024 Item 7.3/ 7.4	Protected species and other species of note appear to be well accounted for in the initial surveys, but more information will be needed regarding specific locations, and proposals for how to protect existing populations. Current information is not sufficient to be able to determine the significance of impact on many of the species and species groups, and additional surveys will be required. The recommendations set out in the appendices identifying constraints and opportunities, address the need for additional surveys, in line with what was highlighted in 7.3 above. In particular, the proposed additional surveys for birds, breeding birds, arable weeds and margins, ponds/Great Crested Newts (GCN), badgers and bats will be required to provide sufficient information going forward to the next stages of the proposals and for full and effective consultation responses from NNC Ecology team	A full suite of surveys has been completed to support the baseline assessment.	Section 9.4

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
North Northamptonshire Council December 2024 Item 7.6	It is recommended that surveys be undertaken on an ongoing basis, rather than left only until closer to final submission of the plans, as data relating to the surveys' subjects over time across a large-scale site such as this, will give a better understanding of the true baseline information, rather than a later 'snapshot' view of the species use. In particular, a mobile species such as badger may change their use and distribution of the land significantly over the time required from now until the submission of final proposals within the DCO. As such a large area of land is to be impacted, a clearer view of any 'hotspots' and the dynamic of change may allow a more robust approach to be taken for final mitigation strategies as required.	Extensive baseline data have been gathered for various species groups, including two years of surveys for wintering birds, targeting mobile species which may be associated with the nearby SPA. Prior to construction, update surveys for species such as badger will be conducted to ensure they are not impacted during construction works.	Survey scope set out in section 9.4
North Northamptonshire Council December 2024 Item 7.7	Significantly more information will be needed on the distribution of bats within the search area, and the potential impacts of the change of use of the land as much as impacts on identified roost/hibernation sites. Details of the impact of any security or construction lighting should be provided, and lighting undertaken only when necessary, and	Detailed baseline information has been gathered for bats, and impacts assessed, including recommendations for sensitive lighting.	Paragraphs 9.6.53 and 9.9.176

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	in a manner sensitive to the impacts on wildlife.		
North Northamptonshire Council December 2024 Item 7.8	The impact of the proposals on Functionally Linked Land around the SPA needs more information, as identified in the PEA and appendices. Where necessary, the proposals should be adapted to enhance the potential of parcels of land for new wetland habitats and foraging for birds of interest.	Two years of surveys have been completed for wintering birds, targeting mobile species which may be associated with the nearby SPA. Assessment of impacts on the SPA, including any losses of FLL, are discussed in this ES chapter and in more detail in the HRA.	Agreed survey scope set out in Section 9.4. Assessment of impacts on SPA set out in Paragraph 9.9.2 and Habitat Regulations Assessment (HRA) ~~**[EN010170/APP**~~Revision A **[EX1/GH7.21_A]**
North Northamptonshire Council December 2024 Item 7.9	The current lack of information on Biodiversity Net Gain (BNG) means it is unclear whether the development will be able to, or intended to, meet the minimum 10% uplift within each of the identified sites, or whether this will be achieved across the whole development area. Given the wide geographical area and cross boundary nature of these proposals, more detail on the principles underlying the intended approach would have been beneficial at this stage. It is the view of NNC ecological officer that the BNG uplift should be achieved within each development parcel. Any impacts and BNG required due to the impacts from the cabling route should be delivered	BNG will be assessed across the Scheme as a whole. However, gains would be expected at all Sites due to the reversion of low scoring arable land to permanent grassland. BNG associated with the Cable Route Corridor has been calculated and both the BNG assessment for the Sites only, and with the inclusion of the Cable Route Corridor, is presented in the BNG report.	Appendix 9.13: Biodiversity Net Gain Assessment ~~**[EN010170/APP**~~Revision A **[EX1/GH6.3.9.13_A]**

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
	within the area of the cable route itself, or within the closest area for the placement of the solar array.		
North Northamptonshire Council December 2024 Item 7.10	More information is needed on the temporary/permanent effects of the cable routes. In the absence of site-specific information on this matter, it is not possible to assess the impacts in terms of severity nor for the scale of impact if the works are in fact to be very localised within the broader search area. Significantly more detail of location and methods of construction are needed before proper assessment can be made.	The cable corridor has been refined from the initial broader cable route search area. Works will be temporary, and habitat losses will be restored. A full assessment of impacts is detailed in this ES chapter.	Section 9.8
North Northamptonshire Council December 2024 Item 7.11	Within the submitted information, there is reference to the Site being fenced off. Details of fencing are unclear, and while this may be required for safety/security and other operational reasons, an assessment of any new fencing should be undertaken regarding impacts on the movement of wildlife through the countryside. Given the geographical spread of the proposals, and the size of some of the proposed Sites, inappropriate fencing has the potential to disrupt linkages and movement within the landscape.	Fencing will be permeable to small mammals and other wildlife. Impacts of fencing are assessed in this ES chapter.	Section 9.8

Consultee and Date	Comments	How has this comment been addressed	Location of response in the ES
CPRE Northamptonshire December 2024	It is concerning that the Upper Nene Valley Gravel Pits are not referred to as RAMSAR sites in Table 9.1 when referring to communications with Natural England. It should be confirmed that Natural England are aware of the RAMSAR status because it seems very surprising that they would allow only a single year's overwintering bird survey for land that is functionally linked to an internationally important site.	The SPA and Ramsar sites are overlapping designations. This is set out in this ES chapter. The agreed final survey scope, amended to two years of survey following a change in approach by Natural England, is also set out.	Agreed survey scope set out in Section 9.4. Designated sites discussed in Section 9.6.

9.3 Legislation, Planning Policy and Guidance

9.3.1 This section provides an overview of the legislation, planning policy and guidance against which the Scheme will be considered for Ecology and Biodiversity.

Legislation

UK Legislation

The Conservation of Habitats and Species Regulations 2017 ('The Habitats Regulations') (Ref 9.2)

9.3.2 The Habitats Directive (Council Directive 92/43/EEC) (the Directive), adopted by the European Commission (EC) in 1992, concerning the conservation of natural habitats and wild flora and fauna was transposed into UK legislation through the Conservation Regulations 1994. This has been superseded by the Conservation of Habitats and Species Regulations 2017. Habitats listed under Annex I to the Directive and species listed under Annex II (including otter and some species of bat) receive special legal protection. This is partly implemented through the creation of a network of protected sites (known through Europe as Natura 2000 network of Site of Community Importance) which, in the UK, is made up of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) which are designated under the Birds Directive (Directive 79/409/EEC) (transposed into UK law by The Wildlife and Countryside Act 1981). Under Regulation 63(1) of the Habitats Regulations, all developments with the potential to affect a European Site must undergo an assessment, known as an Appropriate Assessment, to determine the potential to cause harm to the features for which the SAC or SPA was designated.

The Environment Act 2021 (Ref 9.3)

9.3.3 This Act is comprised of eight Parts and sets out targets for conservation and environmental betterment along with a system for their implementation, including the creation of a new Office for Environmental Protection (OEP). Of pertinence to ecology is Part 6 – Nature and biodiversity, which includes a mandatory requirement for developments to deliver a minimum 10% biodiversity net gain (as quantified through an approved metric i.e. the Statutory Metric (Ref 9.4)). Such gains must be secured for a minimum of 30 years post-completion of development. Nationally Significant Infrastructure Projects (NSIPs) are not currently subject to the mandatory requirement to achieve 10% Biodiversity Net Gain, however this is expected to be in place in2025 and therefore the provision of a 10% gain has been considered as part of the Scheme.

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 9.5)

9.3.4 These regulations set out the requirements for environmental impact assessments in England and Wales.

The Natural Environment and Rural Communities (NERC) Act 2006 (Ref 9.6)

9.3.5 Specifically, section 41 which provides that the Secretary of State must publish a list of the living organisms and types of habitat which in the Secretary of State's opinion are of principal importance for the purpose of conserving or enhancing biodiversity.

The Countryside Rights of Way Act 2000 (Ref 9.7)

9.3.6 This Act aims to improve public access to the open countryside and nature conservation in England and Wales. It also strengthens protection for Sites of Special Scientific Interest and wildlife crime and provides for better management of Areas of Outstanding Natural Beauty.

The Hedgerows Regulations 1997 (Ref 9.8)

9.3.7 In England and Wales, the Hedgerows Regulations 1997 confer a level of protection on hedgerows (though hedgerows within or bordering domestic gardens are excluded), particularly those hedgerows classified as 'Important' under the legislation. The Regulations require those wishing to remove hedgerows to submit a Hedgerow Removal Notice to the Local Planning Authority (LPA), which will then determine whether the hedgerow affected is classified as 'Important' under the Regulations. If it is, the LPA will either approve the proposed hedgerow removal, or issue a retention notice. It is an offence to remove or destroy a hedgerow which is subject to a retention notice, or to remove one without a removal notice.

9.3.8 Routine management of hedgerows, removal of hedgerows for development which has been granted planning consent, and certain other situations are allowed under the Regulations, which also specifically exclude hedgerows within or bordering domestic gardens. Determination of whether a hedgerow should be classified as 'Important' is based on a number of criteria including assessment of its likely historic value (e.g. old parish boundary or part of an ancient monument), ecological value (e.g. presence of protected species, and/or diversity of tree/shrub species in the hedgerow), and landscape value (e.g. associated with a public footpath, or being associated with hedgebanks, ditches, hedgerow trees etc).

The Protection of Badgers Act 1992 (Ref 9.9)

9.3.9 Badgers and their setts are protected under the Protection of Badgers Act 1992 against damage or destruction of a sett, or disturbance, death or injury to the badgers. The Act defines a sett as "*any structure or place which displays signs indicating current use by a badger*". The definition of current use is subject to considerable debate. Natural England have produced guidance on the definition of current use. (Badgers and Development – A guide to best practice and development, Natural England 2011). Penalties for offences against badgers or their setts include fines of up to £5,000 and/or up to six months in prison.

The Wildlife and Countryside Act 1981 (Ref 9.10)

9.3.10 This Act aims to protect wild animals and plants from harm, exploitation, and extinction. The Act was enacted to comply with European and international conventions on wildlife conservation. The Act prohibits certain methods of killing or taking wild animals, especially protected species, and restricts the introduction of non-native animals and plants.

The Salmon and Freshwater Fisheries Act 1975 (Ref 9.11)

9.3.11 The Salmon and Freshwater Fisheries Act 1975 (SAFFA) is legislation that aims to protect freshwater fish, with a particularly strong focus on salmon *Salmo salar*,

and trout *Salmo trutta*. The legislation covers a broad range of topics, but of particular relevance to development are those sections covering water pollution, habitat disturbance and fish migration routes.

9.3.12 Under Section 2 (4) it is an offence to wilfully disturb spawn, spawning fish or spawning areas. Under Section 4 (1) it is an offence to knowingly permit the flow of poisonous matter and polluting effluents into watercourses that are poisonous or injurious to fish or the spawning grounds, spawn or food of fish. Sections 9 to 15 are concerned with fish passage and migration routes. It is the duty of the waterway owner to provide and maintain a facilitating fish pass for migrating salmon or trout when constructing dams, screens or sluices. Section 9 allows the regulator to serve notice on the owner or occupier of a dam or obstruction, to install a fish pass where necessary. This section applies to dams which are either new or have been altered to create an increased obstacle to the passage of migratory salmonids. It is also applicable where dams in a state of disrepair are rebuilt over at least one half of their length.

The Eels (England and Wales) Regulations 2009 (Ref 9.12)

EU Council Regulation (EC) No 1100/2007 establishing measures for the recovery of the stock of European eel *Anguilla anguilla*, was enacted across Europe in response to the global decline of this species. The Eels (England and Wales) Regulations 2009 implement Council Regulation (EC) No 1100/2007 in England and Wales. The Regulations are focussed on the management of commercial eel fisheries (licences, catch returns and restocking) and the passage/migration of eels. The regulations afford powers to the regulators (EA and Natural Resources Wales) to implement recovery measures in all freshwater and estuarine waters in England and Wales.

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Ref 9.13)

9.3.13 The Water Framework Directive (WFD), transposed into UK law by The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, introduced a comprehensive river basin management planning system to help protect and improve the ecological health of our watercourses, lakes, estuaries and coastal and groundwaters. This is underpinned by the use of environmental standards to help assess risks to the ecological quality of the water environment and to identify the scale of improvements that would be needed to bring waters under pressure back into a good condition. The Regulations require that for any activity which may negatively affect the water environment, there is a low risk that the activity will cause deterioration in status/potential or prevent good status/potential being achieved.

Planning Policy

National Planning Policy

Overarching National Policy Statement for Energy (EN-1) (Ref 9.14)

9.3.14 Section 4.3 – Environmental Effects/Considerations – This section states that proposals must be accompanied by an Environmental Statement (ES) describing the aspects of the environment likely to be significantly affected by the project,

and sets out that information submitted with the application should be proportionate to the scale of the project.

9.3.15 Section 4.6 – Environmental and Biodiversity Net Gain – This section states that Energy NSIP proposals should seek opportunities to contribute to and enhance the natural environment by providing net gains for biodiversity, and the wider environment where possible. Where possible, this should include a completed biodiversity metric calculation. This section also states that applications should be accompanied by a statement demonstrating how opportunities for delivering wider environmental net gains have been considered, and where appropriate, incorporated into proposals as part of good design.

9.3.16 Section 5.4 – Biodiversity and Geological Conservation – This section states that applicants should ensure that the ES clearly sets out any effects on international, national and local designated sites of ecological interest, as well as on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity, including irreplaceable habitats. It also states that applicants should consider any reasonable opportunities to maximise the restoration, creation and enhancement of wider biodiversity.

National Policy Statement for Renewable Energy Infrastructure (EN-3) (Ref 9.15)

9.3.17 Section 2.10 – Solar Photovoltaic Generation – This section sets out potential impacts which are specific to solar PV projects. It lists particular ecological receptors which may need to be assessed in solar applications, including habitats, ground nesting birds, bats and other protected and notable species (section 2.10.75 - 2.10.92). It also states that solar farms have the potential to increase the biodiversity value of a site, especially if the land was previously intensively managed, and that this can result in significant benefits and enhancements beyond Biodiversity Net Gain.

National Policy Statement for Electricity Networks Infrastructure (EN-5) (Ref 9.16)

9.3.18 Section 2.5 – Environmental and Biodiversity Net Gain – This section recognises that the linear nature of electricity networks infrastructure can provide excellent opportunities to provide green corridors and biodiversity stepping stones, thereby strengthening the connectivity of habitats in the local landscape.

9.3.19 Section 2.9 – Applicant Assessment – This section outlines the information that should be submitted with an application, including the consideration of impacts of Electric and Magnetic Fields (EMFs).

9.3.20 Section 2.11 – Secretary of State Decision Making – This section states that where biodiversity impacts are identified, the Secretary of State should be satisfied that all feasible options for mitigation have been considered and evaluated appropriately.

The National Planning Policy Framework (NPPF) (2024) (Ref 9.17)

9.3.21 Published in March 2012 and revised most recently in December 2023. With relevance to Ecology and Biodiversity, Section 15 of the NPPF; paragraphs 187-

195, identifies ways in which the planning system should contribute to and enhance the natural and local environment.

A Green Future: Our 25 Year Plan to Improve the Environment (2018) (Ref 9.18)

9.3.22 Sets out the government's plan to tackle environmental issues and effect beneficial change in the next 25 years, in particular, sections entitled "t*hriving plants and wildlife*", "*Reducing the risks of harm from environmental hazards"* and "*Mitigating and adapting to climate change*".

Biodiversity 2020: A strategy for England's wildlife and ecosystem services (Ref 9.19)

9.3.23 Builds on the Natural Environment White Paper and provides a comprehensive picture of how the government is implementing the country's international and EU commitments.

9.3.24 It sets out the strategic direction for biodiversity policy for the next decade on land (including rivers and lakes) and at sea.

DEFRA Biodiversity Net Gain Statutory Metric (and associated documents) (the Statutory Metric) (last updated February 2025) (Ref 9.20)

9.3.25 The standard metric to assess changes in biodiversity between baseline and post-development, in terms of quantifiable units, for use in England.

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 9.21)

9.3.26 This circular provides administrative guidance on the application of the law relating to planning and nature conservation. It complements the National Planning Policy Framework and the Planning Practice Guidance.

Local Planning Policy

Bedford Borough Council Local Plan 2030 (adopted 15th January 2020) (Ref 9.22)

9.3.27 This Plan sets out how much growth there should be in the borough in coming years and where it should take place. It includes policies with relevance to biodiversity – Policies 7S, 32, 35S, 38, 39, 40, 42S, 43.

Bedford Borough Council Local Plan 2040 (not adopted) (Ref 9.23)

9.3.28 This Plan builds on the Local plan 2030, and has currently reached the examination phase; with submission to the Secretary of State on 12 January 2023. If and when adopted, this will replace the Local Plan 2030.

Milton Keynes Council Plan: MK 2016-2031 (adopted March 2019) (Ref 9.24)

9.3.29 Section 12 (Environment, Biodiversity and Geodiversity) sets out the Council's policy with respect to these aspects, including expectations regarding development.

MK City Plan 2050 (not adopted) (Ref 9.25)

9.3.30 The MK City Plan 2050 is currently in draft, and a final version is intended to be consulted on in early 2025, with submission to the Secretary of State by the end of June 2025. If and when adopted, this will replace Plan: MK 2016-2031.

The Plan for the Borough of Wellingborough - Adopted Plan (adopted February 2019) (Ref 9.25)

9.3.31 Policies GI1-3 (Green Infrastructure) sets out the Borough's policy with respect to green infrastructure, including expectations regarding development.

North Northamptonshire Joint Core Strategy 2011-2031 (adopted July 2016) (Ref 9.27)

9.3.32 Policy 4 (Biodiversity and Geodiversity) sets out the Council's policy with respect to biodiversity, including expectations regarding development.

West Northamptonshire Joint Core Strategy Local Plan (adopted December 2014) (Ref 9.28)

9.3.33 Section 10 (Built and Natural Environment) sets out the Council's policies (BN2-4) with respect to biodiversity, woodland, and the Upper Nene Valley Gravel Pits SPA, including expectations regarding development.

Settlements and Countryside Local Plan for Daventry District 2011-2029 (adopted February 2020) (Ref 9.29)

9.3.34 Chapter 9 (The Built and Natural Environment) sets out the District's policies (ENV2-4) with respect to biodiversity, Green Infrastructure and woodland, including expectations regarding development.

Upper Nene Valley Gravel Pits Special Protection Area Supplementary Planning Document - August 2015 (Ref 9.30)

9.3.35 Provides guidance on assessment of development in the proximity to the Upper Nene Valley Gravel Pits Special Protection Area (SPA), with expectations for the surveys, assessments and mitigation measures.

Northamptonshire Biodiversity Supplementary Planning Document - August 2015 (Ref 9.31)

9.3.36 Provides guidance on developments with respect to biodiversity in Northamptonshire.

Guidance

Natural England Standing Advice. Protected species and development: advice for local planning authorities (last updated 2025) (Ref 9.32)

9.3.37 Provides guidance to local planning authorities (LPAs) to assess whether a planning application would harm or disturb a protected species and whether planning permission should be granted on these bases.

Northamptonshire Biodiversity Action Plan (3rd edition. 2015-2020) (Ref 9.33)

9.3.38 Sets out a framework for biodiversity action in Northamptonshire, in terms of species and habitats.

Chartered Institute of Ecological and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (version 1.2, April 2022) (Ref 9.34)

9.3.39 Industry standard guidance for carrying out ecological impact assessments for proposed developments.

CIEEM Biodiversity Net Gain: Good Practice Principles for Development (2016) (Ref 9.35)

9.3.40 Provides a set of principles for ensuring biodiversity net gains are appropriately considered and assessed for developments.

British Standard BS42020:2013 Biodiversity: a Code of Practice for Planning and Development (2013) (Ref 9.36)

9.3.41 The formal British Standard guide that sets out the expected level of consistency and standards in ecological input to the development planning process from scoping and pre-application stages through to construction management and post construction monitoring.

British Research Establishment (BRE) (2014). Biodiversity Guidance for Solar Developments. Eds G E Parker and L Greene (Ref 9.37)

9.3.42 Guidance document that sets out how to incorporate and maximise benefits for biodiversity in solar arrays.

Solar Energy UK (SEUK) (2022). Natural Capital Best Practice Guidance: Increasing biodiversity at all stages of a solar farm's lifecycle. (Ref 9.38)

9.3.43 Provides best practice advice on how to deliver gains for biodiversity, natural capital and other environmental features on solar power developments.

Natural England (2017). Evidence Review of the Impact of Solar Farms on Birds, Bats and General Ecology (NEER012) 1st Edition (Ref 9.39)

9.3.44 Document presenting evidence review on impacts posed by solar farms on various ecological receptors.

Montag H, Parker G and Clarkson T (2016). The Effect of Solar Farms on Local Biodiversity: A Comparative Study. Clarkson and Woods and Wychwood Biodiversity (Ref 9.40)

9.3.45 A study presenting findings from ecological monitoring of operational solar farms and advice on management.

Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747 (Ref 9.41)

9.3.46 Provides an assessment of the conservation status of the UK's birds.

Wray, S., Wells, D., Long, E. and Mitchell-Jones, T. (2010). Valuing Bats in Ecological Impact Assessment. In Practice, December 2010. Chartered Institute of Ecology and Environmental Management (Ref 9.42)

9.3.47 Provides a review of the evaluation of bats in impact assessment.

Northamptonshire Biodiversity Records Centre Habitat Opportunity Mapping (Ref 9.43)

9.3.48 A series of maps identifying opportunities for nature recovery via strategic habitat creation, restoration and enhancement. Last accessed May 2025.

North Northamptonshire Local Nature Recovery Strategy (Ref 9.43)

9.3.49 The North Northamptonshire LNRS, published in March 2025, aims to map and identify priority areas for habitat creation, restoration and enhancement to benefit biodiversity and support ecosystem resilience. It provides a strategic framework to guide habitat creation efforts at a county-wide level.

9.4 Assessment Methodology and Significance Criteria

9.4.1 The methodologies described in the following section have been developed in line with the relevant planning policy and appropriate industry guidance for assessing the likely significant effects of the Scheme on ecology and biodiversity.

Study Area and Ecological Context

9.4.2 The baseline conditions are derived from several desk and field-based studies, the methodologies of which are provided separately in the relevant technical appendices of this Chapter. The following section describes the method for the assessment of effects of the Scheme on these baseline conditions.

9.4.3 It should be noted that the Survey Areas utilised for each individual ecological survey (reported in the relevant technical appendices of this Chapter) were established at an early stage in the design of the Scheme. As such, they may encompass a slightly larger area on some Sites than that within the Order Limits owing to subsequent scheme revisions. The Assessment of Ecological Importance and the Assessment of Effects were carried out focussing on the survey results applicable to the Order Limits rather than the wider Survey Areas. The survey information collected in all instances is considered up to date and valid for determining effects within the Order Limits and any applicable adjacent Zone of Influence.

Green Hill A-G and BESS

9.4.4 As described in Chapter 3: The Development Site **[~~EN010170/APP~~**Revision A **[EX1/GH6.2.3_A]** and Chapter 4: Scheme Description **[~~EN010170/APP~~**Revision A **[EX1/GH6.2.4_A].**

9.4.5 The Sites generally occupy open fields on level or gently undulating ground. In the main, the Sites comprise arable farmland (both cereal and non-cereal crops and grass leys), with narrow uncultivated margins. Wider margins are, however, present at a number of sites, which are largely associated with environmental stewardship agreements. Permanent grassland is rarer and most prevalent at Green Hill E and F. This is managed via sheep or horse grazing, or else cut for silage. Small areas of grassland at field corners and margins are also present. A network of managed hedgerows and ditches lie at the boundaries of the fields.

9.4.6 Woodland and other habitats are rare within the Sites and limited to small plantation shelter belts or else small sections of larger woodland blocks which

chiefly lie outside the Sites. A number of woodland blocks are situated adjacent, including some ancient woodland.

9.4.7 In terms of wetland habitats, few ponds are present on site, with a small number a short distance away from field boundaries. Watercourses were recorded adjacent to and intersecting the Sites, including both wet and seasonally wet agricultural ditches. Flowing watercourses are present in the form of upstream feeder streams for more significant local watercourses (predominately the River Nene), in addition to other watercourses managed as agricultural drainage ditches.

Cable Route Corridor

9.4.8 As described in Chapter 4: Scheme Description [~~EN010170/APP~~Revision A [EX1/GH6.2.4_A], the Cable Route Corridor connects the Sites and runs in a general north to south orientation, with a relatively short section running west from the main route to Green Hill B.

9.4.9 This corridor, and in turn the Study Area used for ecological surveys of the cable route, has been refined down in scale from a broad 'Cable Route Search Area' (primarily used at PEIR stage) through ecological desk and field studies which identified potential constraints, as well as through consideration of responses to statutory consultation. For the purposes of ecological surveys, the Cable Route Survey Area comprised a 50-100m wide swathe of land for the most part, with larger or narrower areas where other constraints or uncertainties were present at the time of adopting the Cable Route Survey Area. The Cable Route Survey Area is provided in Appendix 9.2: Habitat Surveys [~~EN010170/APP~~Revision A [EX1/GH6.3.9.2_A]. Field surveys within this area took place before the Cable Route Corridor was finalised, however the Cable Route Corridor is wholly contained within the Cable Route Survey Area. While technical appendices provide baseline survey results pertaining to the wider Cable Route Survey Area, the baseline conditions and assessments provided in this chapter pertain to the Cable Route Corridor only and the proposed cable installation works within it.

Desk Study Methodology

Green Hill A to G and BESS

9.4.10 A desk study exercise was completed for the Scheme in June 2024. This developed on the exercise completed as part of the Preliminary Ecological Appraisal (PEA) (Appendix 9.1: Preliminary Ecological Appraisal [~~EN010170/~~APP~~/GH6.3.9.1~~-084]), accounting for additional sites subsequently brought into the Scheme.

9.4.11 Statutory designated sites for nature conservation and granted European Protected Species licences were identified using the Natural England/DEFRA web-based MAGIC map database (www.MAGIC.gov.uk).

9.4.12 Several Local Environmental Records Centres were also consulted for details of locally-designated and non-statutory sites for nature conservation, as well as records of protected and notable species and habitats. North Northamptonshire's Biodiversity Opportunity Mapping was also obtained. Local Environmental Records Centres from which data were gathered comprised: Northamptonshire

Biodiversity Records Centre; Bedfordshire and Luton Biodiversity Recording and Monitoring Centre; and Buckinghamshire and Milton Keynes Environmental Records Centre.

9.4.13 The following search criteria were used for designated sites, which formed the Study Area for each site:

- 'International' designated sites (e.g. Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites) were searched for within 10km from each Site. This was extended to 30km for any such sites for which migratory birds or bats are listed as a qualifying feature.
- 'National' sites (e.g. Sites of Special Scientific Interest (SSSIs) and Local Nature Reserves (LNRs) were searched for within 5km from each Site.
- 'Local' sites (Such as Local Wildlife Sites (LWSs), Country Wildlife Sites (CWSs), Protected Wildflower Verges (PWVs), Biological Notification Sites (BNSs), Wildlife Corridors and Wildlife Trust Reserves (WTRs)) were searched for within 2km from each Site.

9.4.14 A search for Habitats of Principal Importance (also known as Priority Habitats) within 2km of the Sites was undertaken using the list of Habitats of Principal Importance in England (Ref 9.44) and Ancient Woodland Inventory (Ref 9.45) datasets.

9.4.15 These search radii are typical distances used in ecological impact assessment for projects of this nature and scale and have been selected following the CIEEM guidelines on Ecological Impact Assessment (Ref 9.34). It is considered unlikely that the Scheme would give rise to effects on designated sites beyond these ranges.

9.4.16 Figures showing the relationship between the designated sites and the Sites are provided in Appendix 9.3: Desk Study **[~~EN010170/~~APP~~/GH6.3.9.3~~-086]**.

9.4.17 For protected and notable species and Priority Habitats, as well as Habitat Opportunity Areas, data were gathered from within 2km of the Sites. Species records data were filtered to exclude records from pre-year 2000, to ensure relevance.

9.4.18 The National Fish Populations Database, held by the Environment Agency (EA) and accessed through the EA's Ecology and Fish Data Explorer, was consulted for freshwater fish monitoring data within 2km of the Sites.

9.4.19 Designated sites and species records within the Study Area of the Sites are identified in Appendix 9.3: Desk Study **[~~EN010170/~~APP~~/GH6.3.9.3~~-086]**.

Cable Route Corridor

9.4.20 Data pertaining to designated sites, protected and notable species and habitats, and Habitat Opportunity Areas within the wider Cable Route Search Area were assessed during the desk study exercise using the same sources. Given the temporary and limited nature of impacts associated with the construction of the cable route, and that the entirety of the Cable Route Corridor lies within the wide Cable Route Search Area, acquiring data pertaining to a search radius around

the Cable Route Search Area itself was not considered relevant or proportionate. This desk study exercise was completed in June 2024.

9.4.21 Given that the wider Cable Route Search Area (primarily used at PEIR stage) has been narrowed down to a proposed Cable Route Corridor, desk study results provided in this chapter have been filtered to only include those that lie within 500m of the Cable Route Corridor itself, rather than those that lie within the now superseded Cable Route Search Area, to ensure relevance. This 500m buffer comprises the Study Area of the Cable Route Corridor.

9.4.22 Designated sites and species records within the Study Area of the Cable Route Corridor are identified in Appendix 9.3: Desk Study **[~~EN010170/~~APP~~/GH6.3.9.3~~-086]**.

Field Survey Methodologies and Scope

Green Hill A-G and BESS

9.4.23 A suite of baseline ecological surveys for the Scheme ~~has been~~was undertaken ~~since~~between August 2023 and ~~will continue into~~ May 2025.

9.4.24 The scope of wintering bird surveys completed varies between Sites, depending on whether the particular Site falls within or outside of the 10km consultation zone surrounding the Upper Nene Valley Gravel Pits SPA. All Sites within 10km of any part of the SPA (comprising Green Hill B-G and BESS) were subject to an enhanced scope of wintering bird surveys. Initially, as discussed in **Table 9.1:** above, only a single season of wintering bird surveys was required, alongside a single season of nocturnal surveys. Under this scope, survey effort could have been equalised across Green Hill B to G, plus BESS. However, Natural England requested two seasons of both diurnal and nocturnal surveys at these Sites. Due to the later addition of Green Hill F and G into the Scheme, it was not possible to complete a full second season of surveys at these Sites within the constraints of the submission timeframes.

9.4.25 Green Hill A lies approximately 11.5km to the north-west of the SPA at its closest point, and the majority of Green Hill A.2 lies outside of 10km from the SPA, with only a very small section of the southernmost field lying just within the 10km consultation zone. As a result, Green Hill A and A.2 have not been subject to either a second season of diurnal wintering bird surveys, or any nocturnal wintering bird surveys, as agreed with Natural England during DAS consultation.

9.4.26 With the exception of wintering bird surveys (as detailed above), all Sites ~~will be~~have been subject to the same survey scope at the point of the completion of survey work in May 2025. ~~At the time of writing, a lesser degree of survey work has been completed at Green Hill A.2 in comparison to the other Sites, as this Site was added into the Scheme most recently. Survey effort at this site will be completed in May 2025.~~

9.4.27 The field survey effort and scope presented below reflects what is believed, at the time of writing, to be appropriate and proportionate to inform the evaluation of baseline conditions for the Scheme based on CIEEM guidance (Ref 9.35), consultation with stakeholders, and our professional judgment. ~~Although some of the ecological surveys at Green Hill A.2 being incomplete at the time of writing presents a minor limitation for assessing likely significant ecological effects on~~

~~some species within this Site, the surveys yet to be completed are a very small proportion of the total ecological survey dataset, and therefore it is considered that sufficient data is currently held to adequately inform all ecological impact assessments within this ES Chapter. Following the completion of the outstanding survey work and the submission of the DCO application, an updated version of this ES Chapter informed by the full scope of ecological survey work will be submitted, along with any relevant updated technical appendices (where required), with all changes tracked.~~

9.4.28 The ecological field surveys which have been carried out across the Sites are described below, along with applicable methodological notes and survey scope rationale. Detailed survey methodologies, as well as survey dates and any relevant limitations, are provided within the relevant technical Appendices.

- **Extended UK Habitat Classification (UKHab) Survey and Habitat Condition Assessments** – All land within the Survey Area (completed August 2023 – July 2024), thus encompassing the Order Limits. The survey comprised a thorough walkover of all accessible land within the Survey Area, and up to 30m beyond this (where accessible and relevant) to collect baseline habitat inventory and condition information. The surveys paid close attention to any Habitats of Principal Importance or local priorities, including hedgerows. A detailed survey methodology is provided in Appendix 9.2: Habitat Surveys ~~**[EN010170/APP**~~ Revision A **[EX1/GH6.3.9.2_A]**. A qualitative assessment of habitat suitability for the following species/groups was undertaken at the same time to identify those which may be at risk from being impacted by the Scheme, to inform future survey needs:
  - Badgers;
  - Bats;
  - Otters and water voles;
  - Amphibians (particularly great crested newts);
  - Breeding birds;
  - Terrestrial and aquatic invertebrates; and
  - Reptiles.
- **Badger Walkover Survey** – A walkover survey to search for badger setts or other field signs was conducted in conjunction with above Extended UKHab Survey. Sett locations were recorded digitally, and setts were classified according to their likely status and activity. A detailed survey methodology is provided in Appendix 9.5: Badger Surveys **[~~EN010170/~~APP~~/GH6.3.9.5~~-088]**.
- **Ground Level Tree Assessments for Roosting Bats** – Daytime ground level assessments of individual trees and trees associated with hedgerows to assess their suitability to support roosting bats. Follows Bat Conservation Trust Good Practice Guidelines (3rd Edition) (Ref 9.47). A detailed survey methodology is provided in Appendix 9.6: Bat Surveys ~~**[EN010170/APP**~~Revision A **[EX1/GH6.3.9.6_A]**.

- **Building Inspections for Roosting Bats** – Daytime building suitability assessments of buildings within the Order Limits which may be impacted, to search for evidence of roosting bats and nesting birds, and to assess their suitability to support roosting bats. Follows Bat Conservation Trust Good Practice Guidelines (3rd Edition) (Ref 9.47). A detailed survey methodology is provided in Appendix 9.6: Bat Surveys ~~[EN010170/APP~~Revision A **[EX1/GH6.3.9.6_A]**.
- **Automated Bat Activity Surveys** – Monthly static bat detector surveys of all Sites utilising a total of 43 static detector locations between April – October inclusive (totalling seven survey visits). Follows Bat Conservation Trust Good Practice Guidelines (3rd Edition) (Ref 9.47). A detailed survey methodology is provided in Appendix 9.6: Bat Surveys **~~[EN010170/APP~~**Revision A **[EX1/GH6.3.9.6_A]**
  - ~~Given the later addition of Green Hill A.2 into the Scheme, bat activity surveys are ongoing at this Site at the time of writing, with the remaining two static bat detector deployments due to be completed in April and May 2025. This information will be submitted as a supplement, and factored into any revised impact assessment as necessary, as soon as possible after its completion.~~
- **Otter and Water Vole Surveys** – Spring and autumn walkover surveys of all watercourses and wet ditches to search for evidence of otters and water voles, and to assess the suitability of these features to support these species. Follows Water Vole Field Signs and Habitat Assessment guidance (Ref 9.48) and The Water Vole Mitigation Handbook by The Mammal Society (Ref 9.49). A detailed survey methodology is provided in Appendix 9.7: Otter and Water Vole Surveys **~~[EN010170/APP~~** Revision A **[EX1/GH6.3.9.7_A]**.
  - ~~Given the later addition of Green Hill A.2 into the Scheme, otter and water vole surveys are ongoing at this Site at the time of writing, with the remaining single survey visit completed in April 2025. This information will be submitted as a supplement, and factored into any revised impact assessment as necessary, as soon as possible once it is available.~~
- **Breeding Bird Surveys** – Seven survey visits of all land within the Sites, comprising six diurnal (post-dawn) surveys and a single additional survey timed shortly before dusk to detect species such as common quail, barn owl *Tyto alba* or nightingale *Luscinia megarhynchos*. Method follows British Trust for Ornithology (BTO) Common Bird Census techniques (Ref.47). A detailed survey methodology is provided in Appendix 9.8: Breeding Bird Surveys **~~[EN010170/APP~~**Revision A **[EX1/GH6.3.9.8_A]**.
  - ~~Given the later addition of Green Hill A.2 into the Scheme, breeding bird surveys are ongoing at this Site at the time of writing, with the remaining three survey visits due to be completed in April and May 2025. This information will be submitted as a supplement, and factored into any revised impact assessment as necessary, as soon as possible after its completion.~~

- **Wintering Bird Surveys (diurnal)**
  - One full season of diurnal wintering bird surveys (six survey visits across the winter period, October-early March) has been completed across all Sites, Green Hill A-G, plus Green Hill BESS. Method follows British Trust for Ornithology (BTO) Common Bird Census techniques as informed by http://birdsurveyguidelines.org (Ref 9.50). A detailed survey methodology is provided in Appendix 9.9: Wintering Bird Surveys [~~EN010170/~~**APP**~~/GH6.3.9.9~~-092].
  - For Sites lying within the 10km consultation zone of the Upper Nene Valley Gravel Pits SPA (comprising Green Hill B-G, as well as Green Hill BESS), a second season of diurnal wintering bird surveys was recommended to inform the impact assessment, as informed by consultation with Natural England. Two full seasons of diurnal wintering bird surveys have been completed across Green Hill B-E, as well as Green Hill BESS. However, due to the later addition of Green Hill F and G to the Scheme, two full seasons of surveys could not be completed within the submission timelines at these Sites. For Green Hill F, 10/12 diurnal survey visits have been completed; comprising four in Winter 2023/24 and six in Winter 2024/25. For Green Hill G, a single season of diurnal surveys has been completed, in Winter 2024/25, given the later addition of Green Hill G into the Scheme after the completion of the Winter 2023/24 survey season.
- **Wintering Bird Surveys (nocturnal/crepuscular)**
  - For Sites lying within the 10km consultation zone (as set out in Upper Nene Valley Gravel Pits Special Protection Area Supplementary Planning Document - Ref. 31) of the Upper Nene Valley Gravel Pits SPA; Green Hill B-G, plus Green Hill BESS, two seasons of nocturnal wintering bird surveys targeted at golden plover and lapwing (Ref 9.51) were recommended to supplement the diurnal surveys, as informed by consultation with Natural England. Three survey visits were carried out per season, spread across the winter period, October-early March. The methodology followed recommendations as informed by specific nocturnal survey guidelines shared by Bird Survey Guidelines (Ref 9.52). A detailed survey methodology is provided in Appendix 9.9: Wintering Bird Surveys [~~EN010170/~~**APP**~~/GH6.3.9.9~~-092].
  - Two full seasons of nocturnal wintering bird surveys have been completed across Green Hill B-F, plus Green Hill BESS. However, due to the later addition of Green G to the Scheme, only a single season of nocturnal surveys has been completed at this Site, in winter 2024/25.
- **Arable Weed Surveys** – completed on all arable fields where agri-environmental schemes were in place. Guidance follows Plantlife's Arable Indicator Survey instructions (Ref 9.57). A detailed survey methodology is provided in Appendix 9.10: Arable Weed Surveys [~~EN010170/~~**APP**~~/GH6.3.9.10~~-0840].

- **Modular River Physical Surveys and River Condition Assessments** – completed on all applicable watercourses to inform Biodiversity Net Gain Assessment. Follows best practice guidance (Ref 9.54). A detailed survey methodology is provided in Appendix 9.2: Habitat Surveys **~~[EN010170/APP~~**Revision A **[EX1/GH6.3.9.2_A].**

Cable Route Corridor

9.4.29 Construction-related impacts within the Cable Route Corridor will be limited in extent given the narrow width of cable trench required, and the fact that affected land along the cable route will be reinstated following a short construction period. The cable installation works will be temporary and will occur progressively, with operations moving in one direction, thereby minimising the disturbance or incursion into habitats at any one location along the length of the cable route. Works will be carried out via a combination of open cut trenching and trenchless techniques such as Horizontal Directional Drilling (HDD). HDD would be employed where ecological features of an increased importance or sensitivity (e.g. main rivers) are to be crossed by the route, and where less impactful routes could not be followed.

9.4.30 The survey scope for the Cable Route Survey Area (which contains the entirety of the Cable Route Corridor) was determined taking into account the habitats that will potentially be affected by the cable works, as well as the temporary nature of the cable installation works. The surveys completed within the Cable Route Survey Area (where access permission was obtained) therefore comprised the following:

- Extended UK Habitat Classification (UKHab) Survey (January – ~~March~~September 2025). A thorough walkover survey of all accessible land within the Survey Area, and where accessible and relevant up to 30m beyond this, to collect baseline habitat inventory and condition information. The survey paid close attention to any Habitats of Principal Importance or local priorities, including hedgerows. Permanent grassland habitats were visited within the optimal survey window of May – August inclusive, in order to ensure full habitat classification and condition information was obtained. A detailed survey methodology is provided in Appendix 9.2: Habitat Surveys **~~[EN010170/APP~~**Revision A [**EX1/GH6.3.9.2_A**].

  - ~~Given the time of year that the Cable Route walkover surveys were completed (Winter 2024/25 – Spring 2025), it was not possible to fully characterise all of the habitats present within the Cable Route Corridor during this initial survey. In particular, the species diversity and general ecological value of grassland habitats are often under represented outside of the optimal survey window. As a result, it is intended for all permanent grassland habitats within the Cable Route Corridor to be revisited within the optimal survey window of May – August inclusive in order to ensure full habitat classification and condition information is obtained and to validate the findings of the previous surveys. Following completion of the outstanding survey work, the results of the surveys will be submitted into the Examination and amendments to this Chapter will be made, if required.~~

- A qualitative assessment of habitat suitability for the following species/groups was undertaken at the same time to identify those which may be at risk from being impacted by proposals:
    - Badgers: badger walkover survey of suitable habitat within Survey Area that encompasses the Order Limits (setts and signs of activity was recorded in all accessible habitats). A detailed survey methodology is provided in Appendix 9.5: Badger Surveys **[~~EN010170/~~APP~~/GH6.3.9.5~~-088].**
    - Bats: ground based, daytime inspections of all trees and buildings present on or adjacent to the Survey Area for potential roost features and signs of roosting. Assessment of potential value of habitats to foraging and commuting bats. A detailed survey methodology is provided in Appendix 9.6: Bat Surveys **[~~EN010170/APP~~**Revision A **[EX1/GH6.3.9.6_A]**. Considering the nature of the proposals within the Cable Route Corridor being confined to temporary and reversible works (i.e. the impacted habitats will be reinstated once installation works have concluded) within a narrow working strip, it was not considered proportionate to carry out bat activity surveys within the Cable Route Corridor. The narrow, linear layout of the final cable route means that it would be impractical to collect meaningful data which would have a bearing on the siting of the cable. Furthermore, given the similarity of habitats and topography within the Cable Route Corridor relative to that found within the Sites, it is anticipated that bat activity within the Cable Route Corridor would be comparable to that recorded within the Sites.
    - Breeding birds: habitats in the Survey Area were appraised for their suitability for breeding birds, with a particular focus on the likely presence of Ground Nesting Birds such as skylark, yellow wagtail, quail and grey partridge, as well as Schedule 1 or priority species including barn owl, hobby, peregrine, turtle dove, nightingale, red kite and osprey.
    - Reptiles: habitats in the Survey Area were assessed for elevated suitability for reptiles.
    - Great crested newt (GCN) District Licensing via NatureSpace Partnership is being pursued for the entire Scheme (including the cable route), which does not require pond survey data to be collected. However, habitat condition assessment data of any ponds encountered within the Cable Route Survey Area were collected to inform the BNG assessment and the District Licensing assessment process.
- Modular River Physical Surveys and River Condition Assessments – completed on all applicable watercourses where accessible to inform Biodiversity Net Gain Assessment. Follows best practice guidance (Ref 9.54). A detailed survey methodology is provided in Appendix 9.2: Habitat Surveys **[~~EN010170/APP~~**Revision A **[EX1/GH6.3.9.2_A]**.

9.4.31 Further recommendations were made following this work either in the design of the Scheme (i.e. micro-siting the cable route working area to avoid potential impacts) or in the implementation of additional mitigation (such as pre-commencement surveys, sensitive seasonal timing of works and the use of Ecological Clerks of Works). Further information on these measures is provided in the Outline Ecological Protection and Mitigation Strategy ~~[EN010170/APP~~Revision A **[EX1/GH7.5_A]**.

Impact Assessment Methodology

9.4.32 The standard approach applied in the UK to Ecological Impact Assessment (EcIA) is that developed by the Chartered Institute of Ecology and Environmental Management (CIEEM) in 2018 and revised in 2022. This will be used to evaluate existing conditions, and to assess the significance of likely effects on ecological features 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.

Sensitivity of Receptors

9.4.33 When evaluating the baseline importance of natural features found on or in proximity to the Scheme, the following characteristics are considered:

- Habitats and species which are irreplaceable, rare or uncommon, either internationally, nationally or more locally.
- Ecosystems and habitats required by important species, populations or species assemblages.
- Species that are afforded legal protection or are the subject of local or regional policy or guidance.
- Priority Species and Habitats under the Natural Environment and Rural Communities (NERC) Act 2006.
- Endemic species or locally distinct sub-populations of a species.
- Species at the edge of their range or that are in decline.
- Species-rich assemblages of plants or animals.
- Habitat diversity, connectivity and/ or other synergistic associations.
- Notably large populations or concentrations of animals considered uncommon or threatened in a wider context.
- Plant communities that are considered to be typical of valued natural/ semi-natural vegetation types.

9.4.34 Taking the above into account, habitats, species and sites identified in 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 (i.e. International, National, Regional, County, District and

Local importance). A category of 'Site' importance will be applied to a feature which is present or potentially present at the site, but where its importance to nature conservation is of relatively low value in the context of the wider landscape. A further 'Negligible' category will be assigned to features of no particular intrinsic nature conservation importance.

9.4.35 In line with the guidelines set out by CIEEM EcIA Guidelines (Ref 9.34), 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. These features are referred to as Important Ecological Features (IEFs). Non-statutory designated sites will also be identified as IEFs where these lie within the Zone of Influence (ZoI) of the project.

9.4.36 Published selection criteria contained within the selection of biological SSSI can also be referred to aid the assessment of importance. Additionally, where significant habitats, such as Ancient Woodland, do not carry a designation, these are nevertheless considered at a specified geographic level.

Characterisation of Impacts

9.4.37 When assessing the impact of the Scheme and impacts on baseline conditions, predictions will be made which focus solely on the Zone of Influence for each IEF in the context of the lifetime of the Scheme (estimated to be 60 years for the purposes of this EIA). The Zone of Influence will be assessed separately for each individual feature. Attributes considered when defining the Zone of Influence of the Scheme on each IEF include the vulnerability of sites and habitats to the effects of construction and operation of the different elements of the Scheme, the mobility of species both on and surrounding the Sites, the sensitivity of species to noise and disturbance, the impacts on transient or migratory species and the importance of any particular species or habitats as keystone features within local ecological networks.

9.4.38 Each potential impact, on an IEF will be assessed at its respective geographical scale. The term impact pathway expresses the process or mechanism by which an impact reaches a receptor, although in many cases, the term is interchangeable. Where appropriate, the following parameters will be used in characterising impacts and their effects:

- Positive or negative;
- Magnitude (the size of the impact);
- Extent (area over which impact occurs);
- Duration (time impact expected to last before recovery);
- Reversibility (an impact may be permanent or temporary); and
- Timing and frequency (impact may be seasonal e.g. bird nesting season).

9.4.39 Impacts are described as being short-term, medium-term and long-term. Generally, short-term impacts are taken as those which are not anticipated to persist for longer than three years, medium-term impacts those which persist between four and ten years and long-term impacts are those which are anticipated to persist over a period in excess of ten years. It should be noted that

for certain species groups, such as invertebrates, a short-term impact of two years may constitute four generations and as such may be more consistent with a medium-term impact for this species group. Where short, medium or long-term are considered to deviate from the timeframes described above this is highlighted for that particular habitat or species.

Application of the Mitigation Hierarchy

9.4.40 The mitigation hierarchy which will be applied during the design of the Scheme follows a stepwise approach of first avoidance, then mitigation and finally compensation of impacts.

9.4.41 Negative impacts can be avoided altogether through fundamental Scheme design choices, such as consideration to which fields to include within the final Scheme design and the extent of the final Scheme boundary. Designed-in avoidance of impacts is termed embedded mitigation within this assessment. Other forms of embedded mitigation measures include any design measures needed for legal compliance or to implement good practice guidance, for example the use of protective fencing during the construction phase or the adoption of protective buffer zones free of development which ensure offsets from sensitive habitats.

9.4.42 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.

9.4.43 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 value, 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.

9.4.44 Mitigation measures are also identified for species which did not qualify as IEF, but which are afforded legal protection under legislation, and as such will require certain precautionary methodologies to avoid offences being committed.

9.4.45 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 Scheme boundary. An examination of the uncertainty in achieving successful compensation will take place. Any remaining residual effects can then be assessed.

9.4.46 Ecological monitoring is likely to form a key role in the success of any proposed mitigation or compensation measures, therefore any likely requirements will also be discussed and provided within the OLEMP, which will be secured under the draft DCO.

9.4.47 Ecological enhancement measures are those which are not expressly required in order to deliver mitigation or compensation but are included to provide further

benefits for nature conservation. The Environment Act 2021 (Ref 9.3) contains provisions that require that at least 10% net gain for biodiversity be demonstrated through a Biodiversity Net Gain assessment (using the Defra Statutory Biodiversity Metric). It is noted that these provisions are not currently in force for NSIPs, however, a Biodiversity Net Gain assessment forms part of the ES chapter. Paragraph 2.49 of The National Policy Statement for Renewable Energy Infrastructure (EN-3) indicates that the assessment "*should consider enhancement, management and monitoring of biodiversity*". It also indicates that *"solar farms have the potential to increase biodiversity value of a site, especially if the land was previously intensively managed. In some instances, this can result in significant benefits and enhancements beyond Biodiversity Net Gain, which result in wider environmental gains which is encouraged".*

Assessment of Effects and Determining Significance

9.4.48 The effects of the various identified potential impacts on IEFs will be assessed both prior to and following the application of any additional mitigation measures. 'Residual effects' are those which are predicted to remain once all mitigation has been factored in. In all cases, effects will be expressed in terms of their 'significance'. As CIEEM guidance discourages the use of the matrix approaches to assign categories (e.g. minor, moderate, major) to residual effects, effects will be qualified with reference to the appropriate geographical scale at which the effect is considered to be felt (e.g. "significant at County scale").

9.4.49 Following the methodology described by CIEEM, an ecologically significant effect is defined as "*an effect that either supports or undermines biodiversity conservation objectives for 'Important Ecological Features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local*".

9.5 Assessment Assumptions and Limitations

9.5.1 The methodology for the Ecology and Biodiversity assessment has considered the following assumptions:

- Where habitats within the Cable Route Corridor have not been accessible for an ecological walkover survey due to a lack of access permission, an assumption of the likely habitats present has been made, based on available desk study information (using satellite imagery and open-source datasets, where relevant), and the context of other habitats present within the local landscape. The precautionary principle has been applied to take account of the habitat type and condition of the highest ecological value which is likely to be present. Assumptions have also been made regarding the condition of particular habitats where these could not be fully surveyed (for example, due to limitations on the ability to complete comprehensive assessments of grassland types and conditions outside of the spring/summer period). Given the application of precautionary assessments where data are lacking, this limitation is not considered to be a significant impediment to the assessments presented in this Chapter.

- In lieu of the completion of modular river physical (MoRPh) surveys on limited sections of the Cable Route Corridor (due to a lack of survey access permission), an assumption of the type and condition of the watercourses in question has been made, based on available desk study information (using satellite imagery and open source datasets, where relevant), with a degree of precautionary principle applied to take account of the highest likely condition of the watercourse. Given the application of precautionary assessments where data are lacking, this limitation is not considered to be a significant impediment to the BNG assessments presented in Appendix 9.13: Biodiversity Net Gain Assessment ~~[EN010170/APP~~Revision A **[EX1/GH6.3.9.13_A]**.

- ~~In lieu of the completion of four of the six proposed breeding bird surveys at Green Hill A.2, an assumption of the Site's suitability for breeding birds has been made. This has been informed by analysis of the findings from the two surveys completed to date, as well as the habitats found to be present during the extended UKHab walkover surveys, and the completed breeding bird survey results at Green Hill A (which lies approximately 800m to the north west and comprises very similar arable habitats to Green Hill A.2). The assessment will be updated once surveys are completed, however given the application of precautionary assessments informed by existing baseline information where data are lacking, this limitation is not considered to be a significant impediment to the assessments presented in this Chapter.~~

- Given the later addition of Green F and G into the Scheme, it was not possible to complete a full suite of two years of diurnal and nocturnal wintering bird survey work at these Sites. An element of assumption has therefore been included in the wintering bird assessments and the assessment of FLL associated with the Upper Nene Valley Gravel Pits SPA. These assumptions were based on the findings from the surveys completed on each of these Sites to date, as well as survey data from the other nearby Sites and the habitat context. This approach, and the approach to the FLL assessment, was discussed and agreed with Natural England through their Discretionary Advice service. Further information relating to the assessment is provided in the HRA **~~[EN010170/APP~~**Revision A **[EX1/GH7.21_A]** and evidence of the consultation on the subject from Natural England is available in Table 9.1: and Table 9.2: , and Appendix 9.4: Consultation Responses [**~~EN010170/~~APP~~/GH6.3.9.4~~-087**].

- ~~In lieu of the completion of bat activity surveys at Green Hill A.2, which are taking place in April and May 2025, the Site's suitability for foraging and commuting bats has been based on the habitat context, bat activity survey data available at the time of writing (comprising monthly activity surveys between June – October 2024) as well as an element of assumption in lieu of the full suite of survey information. The assessments will be updated once surveys are completed, following the submission of the DCO Application. Given that the missing data comprises only a small part of the proposed survey scope (which has otherwise been fully completed), as well as the high level of baseline information held for all other Sites (including Green~~

Hill A, which lies approximately 800m to the north west and comprises very similar arable habitats to Green Hill A.2), this limitation is not considered to be a significant impediment to the assessments presented in this Chapter.

- In lieu of the completion of a spring otter and water vole survey at Green Hill A.2, the Site's suitability for otter/water vole has been based on the habitat context, otter/water vole surveys completed in autumn 2024 at this Site, as well as an element of assumption in lieu of the full suite of survey information. If necessary, the assessment will be updated once surveys are completed, following the submission of the DCO Application. Given that Green Hill A.2 does not contain any watercourses and only contained dry ditches (all of which were considered to be 'suitable but poor' or of 'negligible' suitability in the Autumn 2024 survey), this limitation is not considered to be a significant impediment to the assessment provided in this Chapter.

9.6 Baseline Conditions

9.6.1 This section describes the baseline environmental characteristics for the Scheme and surrounding areas with specific reference to Ecology and Biodiversity.

Existing Baseline

9.6.2 The existing baseline conditions are derived from several completed and other partially completed desk and field-based studies. As noted in Section 9.5, survey work relating to some habitat and species groups is partially incomplete at the time of writing. Where survey data is missing or assumptions have been made, these have clearly been marked.

Designated Sites

9.6.3 Detailed desk study results, including details of the designated sites within the search area of each Site are provided in Appendix 9.3: Desk Study **[EN010170/APP/GH6.3.9.3-086]**. This appendix also provides figures showing the relationship between designated sites and the Order Limits; Figures 9.3.1 – 9.3.7. This information is summarised below.

All Sites

9.6.4 The Upper Nene Valley Gravel Pits Special Protection Area (Upper Nene Valley GP SPA) comprises a network of exhausted sand and gravel pits extending across approximately 35km of alluvial deposits of the River Nene floodplain. It supports major overwintering bird assemblages with over 20,000 wildfowl and wading birds, including bittern *Botaurus stellaris*, coot *Fulica atra*, several duck species, great crested grebe *Podiceps cristastus*, golden plover *Pluvialis apricaria* and lapwing *Vanellus vanellus*. Annex 1 species (under Article 4.1 of Directive 2009/147/EC) include wintering bittern and golden plover. The presence and abundance of overwintering gadwall *Anas strepera* and mute swan *Cygnus olor* meet additional criteria supporting the identification of Wetlands of International Importance. A 10km consultation zone from the SPA has been defined (Ref 9.30), within which impacts must be considered.

9.6.5 All sites bar Green Hill A and A.2 fall within the SPA consultation zone. The SPA lies closest to Green Hill BESS.

9.6.6 Given its international designation, the Upper Nene Valley Gravel Pits SPA is considered to be of **International Importance**.

Green Hill A

9.6.7 The Upper Nene Valley GP SPA lies approximately 11.5km to the southeast of Green Hill A at its closest point.

9.6.8 Four Sites of Special Scientific Interest (SSSIs), four Local Wildlife Sites (LWSs) and one Wildlife Trust Reserve (WTR) were located within the Study Area of Green Hill A. The SSSIs were designated for their habitats, including open water, diverse pasture, and woodland. Rare plants and invertebrates are known to be present. The LWSs are similarly designated for grassland and woodland habitats~~;~~, with a diverse range of plants and invertebrates. The WTR encapsulates part of the Pitsford Water SSSI, with the chief interest being the wintering and passage waders it supports.

9.6.9 These sites are considered to be of **National Importance** (SSSIs) and **County Importance** (LWSs/ WTRs).

Green Hill A.2

9.6.10 The majority of Green Hill A.2 lies outside of 10km from the Upper Nene Valley Gravel Pits SPA, with only a very small section of the southernmost field lying just within the 10km consultation zone. For the purposes of the ecological survey scope and assessment of Functionally Linked Land associated with the SPA, Green Hill A.2 was considered to lie outside of the SPA consultation zone.

9.6.11 Four SSSIs and four LWSs were located within the Study Area of Green Hill A.2. The SSSIs were designated for their habitats, including open water, diverse pasture, and woodland. Rare plants and invertebrates are known to be present. The LWSs are similarly designated for grassland and woodland habitats~~;~~, with a diverse range of plants and invertebrates.

9.6.12 These sites are considered to be of **National Importance** (SSSIs) and **County Importance** (LWSs).

Green Hill B

9.6.13 The Upper Nene Valley Gravel Pits SPA lies approximately 7.39km to the south of Green Hill B at its closest point.

9.6.14 Three SSSIs, three Local Nature Reserves (LNRs), two LWSs and one WTR were located within the Study Area of Green Hill B. The SSSIs were designated for their habitats, including open water, diverse pasture and woodland. Rare plants and invertebrates are known to be present. The LNRs were designated for their grassland, hedgerow and woodland habitats. Lings Wood LNR supports breeding amphibians in the ponds. The LWSs are designated for their woodland habitats. The WTR encapsulates part of the Pitsford Water SSSI, with the chief interest being the wintering and passage waders it supports.

9.6.15 These sites are considered to be of **National Importance** (SSSIs/ LNRs) and **County Importance** (LWSs/ WTRs).

Green Hill C

9.6.16 The Upper Nene Valley Gravel Pits SPA lies approximately 5.83km to the southeast of Green Hill C at its closest point.

9.6.17 Three SSSIs, three LNRs and five LWSs were located within the Study Area of Green Hill C. The SSSIs were designated for their habitats, including open water, diverse pasture and woodland. Rare plants and invertebrates are known to be present. The LNRs were designated for their woodland and grassland habitats. Lings Wood LNR supports breeding amphibians in the ponds. The LWSs were designated chiefly for their woodland habitats. Sywell Reservoir and Country Park LWS also contains diverse grassland and swamp, whereas Hardwick Road Verge LWS comprises diverse grassland.

9.6.18 These sites are considered to be of **National Importance** (SSSIs/ LNRs) and **County Importance** (LWSs).

Green Hill D

9.6.19 The Upper Nene Valley Gravel Pits SPA lies approximately 4.91km to the southeast of Green Hill D at its closest point. The Upper Nene Valley Gravel Pits SSSI is an overlapping designation with the SPA and lies the same distance away from Green Hill D at its closest point.

9.6.20 In total, four SSSIs, two LNRs and four LWSs were located within the Study Area of Green Hill D. The SSSIs were designated for their habitats, including open water, diverse pasture and woodland. Two SSSIs support large numbers of breeding/ wintering birds. Rare plants and invertebrates are also known to be present. The LNRs were designated for their woodland and grassland habitats. Lings Wood LNR supports breeding amphibians in the ponds. The LWSs were designated for a range of habitats.

9.6.21 These sites are considered to be of **National Importance** (SSSIs/ LNRs) and **County Importance** (LWSs).

Green Hill E

9.6.22 The Upper Nene Valley Gravel Pits SPA lies approximately 2.61km to the southeast of Green Hill E at its closest point. The Upper Nene Valley Gravel Pits SSSI is an overlapping designation with the SPA, but an additional area is designated as the SSSI and not the SPA, which lies slightly closer to Green Hill E: within 2.5km.

9.6.23 In total, four SSSIs, four LNRs and five LWSs were located within the Study Area of Green Hill E. The SSSIs were designated for their open water, woodland and diverse grassland habitats. The Upper Nene Valley Gravel Pits SSSI supports large numbers of breeding/ wintering birds and the other SSSIs support diverse flora, which in turn support uncommon invertebrates. The LNRs were designated for their woodland, grassland and wetland habitats. Lings Wood LNR supports breeding amphibians in the ponds. Summer Leys LNR is an overlapping designation of the Upper Nene Valley Gravel Pits SSSI. The LWSs were designated for a range of habitats. Wilby Meadows Stream LWS may support water voles.

9.6.24 These sites are considered to be of **National Importance** (SSSIs/ LNRs) and **County Importance** (LWSs).

Green Hill BESS

9.6.25 The Upper Nene Valley Gravel Pits SPA and SSSI lie adjacent to the northeast of Green Hill BESS.

9.6.26 In total, three SSSIs, one LNR and sixteen LWSs were located within the Study Area of Green Hill BESS. The SSSIs were designated for their open water, diverse grassland, and woodland habitats. The Upper Nene Valley Gravel Pits SSSI supports large numbers of breeding/ wintering birds and the other SSSIs support diverse flora and invertebrates. Summer Leys LNR (also designated as a LWS) is a component of the Upper Nene Valley Gravel Pits SSSI and contains a range of wetland and grassland habitats. The LWSs were designated for a range of habitats, including a large number of waterbodies of importance to overwintering birds and amphibians; diverse grassland and woodland.

9.6.27 These sites are considered to be of **National Importance** (SSSIs/ LNRs) and **County Importance** (LWSs).

Green Hill F

9.6.28 The Upper Nene Valley Gravel Pits SPA lies approximately 1.98km to the northwest of Green Hill F at its closest point. The upper Nene Valley Gravel Pits SSSI is an overlapping designation with the SPA, and lies the same distance away from Green Hill F at its closest point.

9.6.29 In total, six SSSIs, one LNR, seventeen LWSs, three Protected Wildflower Verges (PWVs) and three County Wildlife Sites (CWSs) were located within the Study Area of Green Hill F. The SSSIs were designated for their open water, grassland and woodland habitats, with value to wintering birds, plants and invertebrates. The LWSs were designated for a range of habitats, including woodland, grassland, road verge, parkland and open water. The three PWVs, comprising Easton Maudit Verge, Grendon Verge and Bozeat Verge, were all designated for their valuable road verge habitats. The CWSs are all designated for their broadleaved, semi-natural, ancient woodland.

9.6.30 These sites are considered to be of **National Importance** (SSSIs/ LNRs) and **County Importance** (PWVs and CWSs).

Green Hill G

9.6.31 The Upper Nene Valley Gravel Pits SPA lies approximately 6.18km to the southeast of Green Hill G at its closest point.

9.6.32 In total, three SSSIs, one LNR, five LWSs, three CWSs and one Biological Notification Site (BNS) were located within the Study Area of Green Hill G. The SSSIs were designated for their grassland and woodland habitats, with value to plants and invertebrates. Harrold Odell Country Park LNR contains lakes, seasonally flooded woodland and meadows, supporting a diverse range of species. The LWSs and CWSs are all designated for their broadleaved, semi-natural, ancient woodland. Tree ~~sparrow~~sparrows are known to be present at two sites. Snip Wood BNS is a narrow wood used for pheasant rearing, with two permanent grass pheasant lawns.

9.6.33 A Milton Keynes Wetland Wildlife Corridor (River Great Ouse) is also present within the Study Area of Green Hill G.

9.6.34 These sites are considered to be of **National Importance** (SSSIs/ LNRs) and **County Importance** (LWSs/ CWSs/ BNSs/ Wetland Wildlife Corridors).

Cable Route Corridor

9.6.35 No statutory designated sites are located within the Cable Route Corridor.

9.6.36 Part of the Upper Nene Valley Gravel Pits SPA lies within the 500m Study Area of the Cable Route Corridor, and the majority of the Cable Route Corridor lies within the 10km SPA Consultation Zone. Two parts of the Upper Nene Valley Gravel Pits SSSI designation also lies within the 500m Study Area of the Cable Route Corridor.

9.6.37 As detailed within Volume 3, Appendix 9.3 of the PEIR, six non-statutory designated sites (all LWSs) were located within the previous Cable Route Search Area. The presence and location of these LWSs were taken into account when narrowing down the Cable Route Search Area to the Cable Route Corridor, and as a result, only one of the six previously identified LWSs (Earls Barton Meadow LWS) is located within the Cable Route Corridor. Ten further LWSs were recorded outside of the Cable Route Corridor itself, but within 500m of the Cable Route Corridor boundary.

9.6.38 These are summarised in Appendix 9.3: Desk Study **[~~EN010170/~~APP~~/GH6.3.9.3~~-086]**. All LWSs are considered to be of **County Importance**.

Habitats

9.6.39 The habitats recorded within the Sites are detailed in **Table 9.3** below. This table details the extent of each habitat and its proportion of the total area of the Sites (excluding the Cable Route Corridor and Grendon Substation), as well as a summary of the BNG condition assessments for each habitat type. Furthermore, it provides a justification of each habitat's importance, based on its rarity, extent and legislative/policy status.

9.6.40 Habitats recorded within the Cable Route Corridor are detailed in

9.6.41 **Table** 9.4 below. ~~Where it has not been possible to fully characterise habitats due to the sub-optimal time of year that the survey was completed (for example, in the case of permanent grasslands), or where~~Where access permission could not be secured to survey a particular area, an assumption has been made with regard to the likely habitats present. Assumptions have been based on a review of satellite imagery, the analysis of open source datasets such as the Priority Habitat Inventory, and the context of other habitats which have been surveyed in the local area. Where local contextual information has been limited, habitats have been assigned categories and conditions on a precautionary basis, taking into account the highest value habitat and condition which are considered likely to occur. Assumed habitats and their respective assumed conditions have been highlighted in separate rows (coloured grey) in

~~9.6.40~~9.6.42 **Table** 9.4.

~~9.6.41~~9.6.43 The following Habitats of Principal Importance all occur off-site within 2km of the Sites, and will therefore be considered during the assessment in terms of opportunities for enhancement and restoration of habitat networks:

- Coastal and Floodplain Grazing Marsh;
- Deciduous Woodland;
- Good Quality Semi-Improved Grassland;
- Lowland Calcareous Grassland;
- Lowland Fens;
- Lowland Meadows;
- Priority Ponds;
- Reedbeds;
- Traditional Orchards; and
- Wood-pasture and Parkland.

~~9.6.42~~9.6.44 This information should be read in conjunction with the UKHab habitat survey maps provided in Appendix 9.2: Habitat Surveys **[~~EN010170/APP~~Revision A [EX1/GH6.3.9.2_A]**. Information relating to individual trees should also be read in conjunction with Chapter 19: Arboriculture **[~~EN010170/~~APP~~/GH6.2.19~~-056]**.

Table 9.3: Habitat Types within the Sites and their Extent and Importance

Habitat	Area (ha) / length (km)	% of Order Limits	Sites Where Recorded	Condition Assessment Score	Notable Habitat?	Ecological Importance	Rationale
Cropland	**1031.4**	**87.7**					
Cereal crops	690.6	58.8	A, A.2, BESS, D, E, F, G	N/A	No	Site	As they are of negligible botanical interest, the arable fields are considered to be of Site Importance.
Non-cereal crops	115.5	9.8	A, C, D, E	N/A	No	Site	
Temporary grass and clover leys	114.6	9.8	A, E, G	N/A	No	Site	
Winter stubble	73.3	6.2	C, E	N/A	No	Site	
Arable field margins game bird mix	8.3	0.7	A, C, E, F	N/A	Arable field margins are a Habitat of Principal Importance (HPI) and listed on the Northamptonshire BAP.	Local	Given their status as Habitats of Principal Importance and Local BAP habitats, arable margins are considered to be of Local Importance.
Arable field margins pollen and nectar	14.5	1.2	A, B, C, E, F	N/A		Local	
Arable field margins tussocky	14.5	1.2	A, B, C, D, E, F	N/A		Local	
Grassland	**115.2**	**9.8**					
Modified grassland	94.1	8.0	A, B, C, D, E, F, G	Good – 23.2% Moderate – 19.0% Poor – 57.7%	No	Site	Not a HPI, and of limited ecological value.

Habitat	Area (ha) / length (km)	% of Order Limits	Sites Where Recorded	Condition Assessment Score	Notable Habitat?	Ecological Importance	Rationale
Other neutral grassland	21.1	1.8	A, C, E, F, G	Good – 1.8% Moderate – 76.2% Poor – 22.0%	No	Local	Not a HPI, but of elevated ecological value.
Heathland and shrub	**6.5**	**0.6**					
Blackthorn scrub	1.2	0.1	E	Poor	No	Site	Not a HPI, and of limited ecological value given small extent.
Bramble scrub	3.4	0.3	D, E, F	N/A	No	Site	
Mixed scrub	1.9	0.2	A, B, C, E	Good – 8.9% Moderate – 91.1%	No	Site	
Willow scrub	0.05	0.004	A	Moderate	No	Site	
Woodland and forest	**5.9**	**0.5**					
Other woodland; broadleaved	3.4	0.3	A, BESS, C, E, F, G	Good – 7.0% Moderate – 73.5% Poor – 19.4%	Lowland mixed deciduous woodland is a HPI and listed on the Northamptonshire BAP, however none of the woodland on site qualified as this habitat type.	Local	Not a HPI, but of significant ecological value.
Other woodland; mixed	2.5	0.2	A, C, E	Moderate – 24.0% Poor – 76.0%		Local	

Habitat	Area (ha) / length (km)	% of Order Limits	Sites Where Recorded	Condition Assessment Score	Notable Habitat?	Ecological Importance	Rationale
Lakes	**0.3**	**0.03**					
Ponds (priority habitat)	0.3	0.03	A, B, E, F, G	Moderate – 57.4% Poor – 42.6%	Ponds are a HPI and listed on the Northamptonshire BAP.	District	Ponds qualify as being a priority habitat if they support species of high conservation importance, including UKBAP species. All on-site ponds have therefore been assumed to constitute priority habitat given the likelihood that toads and other amphibians (including great crested newts) may be present. Ponds are therefore considered to be of District Importance.
Sparsely vegetated land	**6.4**	**0.5**					
Ruderal/ephemeral	6.1	0.5	A, C, D, E, F	Good – 40.5% Moderate – 27.8% Poor – 31.7%	No	Site	Not a HPI, and of limited ecological value.
Tall forbs	0.2	0.02	C, E, F	Good – 78.4% Moderate – 21.6%	No	Site	
Urban	**8.8**	**0.7**					

Habitat	Area (ha) / length (km)	% of Order Limits	Sites Where Recorded	Condition Assessment Score	Notable Habitat?	Ecological Importance	Rationale
Artificial unvegetated, unsealed surface	0.9	0.1	A, E, F	N/A	No	Negligible	Of negligible ecological value
Bare ground	0.6	0.1	A.2, E	Good – 15.4% Poor – 84.6%	No	Negligible	
Developed land; sealed surface	7.3	0.6	A, B, C, F, G, BESS	N/A	No	Negligible	
Individual Trees	**92 no.**	**-**					
Individual Trees – Very large	27 no.	-	A.2, A, B, C, E, F, G, BESS	Good	Yes	Ancient and Veteran Trees – District Other Trees – Local	Ancient and Veteran trees are Irreplaceable habitats, and all trees are of significant ecological value.
Individual Trees - Large	34 no.	-	A.2, A, B, C, D, E, F, G	Good – 76.5% Moderate – 23.5%	Yes		
Individual Trees – Medium	26 no.	-	A.2, A, C, D, E, F, G, BESS	Good – 61.5% Moderate – 38.5%	Yes		
Individual Trees - Small	5 no.	-	E, G	Moderate	Yes		
Hedgerows	**84.2**	**-**					

Habitat	Area (ha) / length (km)	% of Order Limits	Sites Where Recorded	Condition Assessment Score	Notable Habitat?	Ecological Importance	Rationale
Native hedgerow	25.9	-	A, B, C, D, E, F, G, BESS	Good – 57.7% Moderate – 35.8% Poor – 6.5%	Hedgerows are a HPI and listed on the Northamptonshire BAP.	Local	Given their status as Habitats of Principal Importance and BAP habitats, all hedgerow types are considered to be of Local Importance.
Native hedgerow – associated with bank or ditch	12.0	-	A, B, C, D, E, F, G, BESS	Good – 72.7% Moderate – 25.9% Poor – 1.4%		Local	
Native hedgerow with trees	11.9	-	A, B, C, D, E, F, G, BESS	Good – 71.1% Moderate – 22.2% Poor – 6.7%		Local	
Native hedgerow with trees – associated with bank or ditch	9.0	-	A.2, A, B, C, D, E, F, G, BESS	Good – 70.4% Moderate – 26.6% Poor – 3.0%		Local	
Species-rich native hedgerow	4.2	-	A.2, A, C, D, E, F, G	Good – 87.4% Moderate – 12.6%		Local	

Habitat	Area (ha) / length (km)	% of Order Limits	Sites Where Recorded	Condition Assessment Score	Notable Habitat?	Ecological Importance	Rationale
Species-rich native hedgerow – associated with bank or ditch	4.8	-	A, A.2, B, F, G	Good – 76.2% Moderate – 13.7% Poor – 10.0%		Local	
Species-rich native hedgerow with trees	7.4	-	A.2, A, B, C, D, E, F, G, BESS	Good – 49.9% Moderate – 40.2% Poor – 9.9%		Local	
Species-rich native hedgerow with trees – associated with bank or ditch	9.0	-	A.2, A, B, C, D, G	Good – 90.1% Moderate – 9.9%		Local	
Lines of trees	**11.1**						
Line of trees	8.7	-	A, B, C, E, F, BESS	Good – 21.8% Moderate – 62.9% Poor – 15.3%	Lines of trees are a separate habitat type to hedgerows, although fall under the umbrella of linear, wooded features. Hedgerows are a	Local	Given their equivalent standing to hedgerows, which are Habitats of Principal Importance and BAP habitats, all line of tree types are considered to be of Local Importance.
Line of trees – associated with bank or ditch	2.2	-	A, E, G	Moderate – 67.4% Poor – 32.6%			

Habitat	Area (ha) / length (km)	% of Order Limits	Sites Where Recorded	Condition Assessment Score	Notable Habitat?	Ecological Importance	Rationale
Ecologically valuable line of trees	0.1	-	F	Moderate	HPI and listed on the Northamptonshire BAP. For the purposes of the assessment of 'notable' habitat, lines of trees are considered equivalent to hedgerows.		
Watercourses	**21.8**						
Ditches	6.9	-	A, B, C, G, G, BESS	Good – 15.9% Moderate – 9.7% Poor – 74.4%	No	Local	Although the ditch network is relatively extensive, most ditches supported low botanical diversity. The ditches on Site can be attributed a Local Importance.
Other rivers and streams	14.7	-	A, B, C, D, E, F	Moderate – 4.6% Fairly Poor – 81.9% Poor – 13.5%	Rivers are a HPI and listed on the Northamptonshire BAP.	District	These habitats are rarer in the local landscape and have elevated ecological value. This, combined with their Habitats of Principal Importance and BAP status, leads to an ascription of District importance.

Habitat	Area (ha) / length (km)	% of Order Limits	Sites Where Recorded	Condition Assessment Score	Notable Habitat?	Ecological Importance	Rationale
Culvert	0.2	-	F	N/A - Poor	No	Negligible	

Table 9.4: Habitat Types within the Cable Route Corridor and their Extent and Importance

Habitat	Area (ha) / length (km)	% of Cable Route Corridor and Construction Compound Areas	Condition Assessment Score	Notable Habitat?	Ecological Importance	Rationale
Cropland	130.~~24~~	~~70.2~~69.1				
Cereal crops	73.1	~~39.4~~38.7	N/A	No	Site	As they are of negligible botanical interest, the arable fields are considered to be of Site Importance.
Cereal crops (assumed)	2.0	1.~~1~~0	N/A	No	~~Site~~	
Non-cereal crops	20.5	~~11.0~~10.9	N/A	No	~~Site~~	
Temporary grass and clover leys	13.7	7.~~4~~3	N/A	No	~~Site~~	
Winter stubble	19.0	10.~~3~~1	N/A	No	~~Site~~	
Arable field margins game bird mix	0.4	0.2	N/A	Arable field margins are a ~~HPI~~Habitat of Principal	Local	Given their status as Habitats of Principal Importance and Local BAP habitats, arable margins
Arable field margins cultivated annually	0.1	0.1	N/A		~~Local~~	

Arable field margins tussocky	1.4	0.~~8~~7	N/A	Importance and listed on the Northamptonshire BAP.	~~Local~~	are considered to be of Local Importance.
Arable field margins pollen and nectar	0.1	0.03	N/A			
Grassland	**~~41.7~~43.9**	**~~22.5~~23.2**				
Modified grassland ~~(assumed)~~	~~37.9~~28.2	~~20.4~~15.0	Good ~~(assumed)~~ – 28.8% Moderate – 15.5% Poor – 55.8%	No	Site	Not a ~~HPI~~Habitat of Principal Importance, and of limited ecological value.
Modified grassland (assumed)	0.3	0.2	Good (assumed)	No	Site	
Other neutral grassland	15.3~~.8~~	~~2.0~~8.1	Good – 1.7% Moderate – ~~77.4~~76.7% Poor – ~~22.6%~~21.4%	No	Local	Not a ~~HPI~~Habitat of Principal Importance, but of elevated ecological value.
Heathland and shrub	**~~0.6~~2.1**	**~~0.3~~1.1**				
Bramble scrub	0.~~1~~4	0.~~1~~2	N/A	No	Site	Not a ~~HPI~~Habitat of Principal Importance, and of limited ecological value given small extent.
Mixed scrub	~~0.5~~1.7	0.~~3~~9	Good – ~~49.8~~15.3% Moderate – ~~31.9~~78.6% Poor – ~~18.4~~5.7%	No	~~Site~~	

Woodland and forest	**2.0**	**1.1**				
Other woodland; broadleaved	0.7	0.4	Moderate – 68.~~2~~8% Poor – ~~31.8~~32.0%	Lowland mixed deciduous woodland is a ~~HPI~~Habitat of Principal Importance and listed on the Northamptonshire BAP, however none of the woodland on site qualified as this habitat type.	Local	Not a ~~HPI~~Habitat of Principal Importance, but of significant ecological value.
Other woodland; broadleaved (assumed)	1.~~1~~0	0.~~6~~5	Good (assumed)			
Other coniferous woodland	0.1	0.04	Poor			
Other woodland; mixed	0.1	0.1	Poor			
Lakes	**~~1.4~~5.5**	**~~0.8~~2.9**				
Ponds (priority habitat)	~~0.1~~2.8	~~0.~~1.4	Moderate – ~~32.8~~97.3% Poor – ~~67.~~2.7%	Ponds are a ~~HPI~~Habitat of Principal Importance and listed on the Northamptonshire BAP.	District	Ponds qualify as being a priority habitat if they support species of high conservation importance, including UKBAP species. All on-site ponds have therefore been assumed to constitute priority habitat given the likelihood that toads and other amphibians (including great crested newts) may be present. Ponds are therefore considered to be of District Importance.
~~Ponds (priority habitat) (assumed)~~Temporary lakes ponds and pools	~~1.3~~2.7	~~0.7~~1.5	~~Good (assumed)~~Poor			
Sparsely vegetated land	**~~6.~~0.8**	**~~3.2~~0.4**				

Other inland rock and scree (assumed)Ruderal/Ephemeral	6.0.2	3.20.1	Good (assumed) – 89.1% Moderate – 10.9%	See Rationale No	Local – DistrictSite	This habitat has been used as a proxy for an area of quarry within the Cable Route Corridor where access permission for ecological baseline survey work was not possible to obtain. It is possible that this area is of significantly higher ecological value than the Other Inland Rock and Scree assumption allows for (particularly given that recent aerial images from March 2025 suggests that some of this area may have been subject to recent habitat restoration work), but in the absence of survey information, the Other Inland Rock and Scree habitat type has been applied. Not a Habitat of Principal Importance, and of limited ecological value.
Ruderal/Ephemeral (assumed)	0.4	0.2	Poor	No	Site	
Tall forbs	0.032	0.021	Good – 81.1% Moderate – 18.9%	No	Site	Not a Habitat of Principal Importance, and of limited ecological value.

Urban	**2.73.3**	**1.58**				
Developed land; sealed surface	2.73.1	1.57	N/A	No	Negligible	- Of negligible ecological value
Artificial unvegetated; unsealed surface	0.2	0.1	N/A	No	Negligible	
Watercourse Footprint	**0.9**	**0.5**	**N/A**			**See Watercourses section below.**
Individual Trees	**4449 no.**					
Individual Trees – Very large	4no6no.	-	Good	Yes	Ancient and Veteran Trees – District Other Trees – Local	Ancient and Veteran trees are Irreplaceable habitats, and all trees are of significant ecological value.
Individual Trees - Large	2022 no.	-	Good – 9598% Poor – 52%	Yes		
Individual Trees – Medium	1516 no.	-	Good	Yes		
Individual Trees - Small	5 no.	-	Good	Yes		
Hedgerows	**31.425.8**	**-**				
Native hedgerow	10.78.3	-	Good – 55.953.5% Moderate – 34.537.7% Poor – 9.78.8%	Hedgerows are a HPIHabitat of Principal Importance and listed on the Northamptonshire BAP.	Local	Given their status as Habitats of Principal Importance and BAP habitats, all hedgerow types are considered to be of Local Importance.
Native hedgerow (assumed)	0.61	-	Good (assumed)		Local	
Native hedgerow – associated with bank or ditch	4.3.9	-	Good – 8176.5%		Local	

			Moderate – ~~11.0~~15.4% Poor – ~~7.4~~8.1%			
~~Native hedgerow – associated with bank or ditch (assumed)~~	~~0.3~~	~~-~~	~~Good (assumed)~~		~~Local~~	
Native hedgerow with trees	2.~~6~~3	-	Good – ~~48.6~~43.4% Moderate – ~~46.7~~51.4% Poor – ~~4.7~~5.2%		~~Local~~	
Native hedgerow with trees – associated with bank or ditch	~~4~~3.2	-	Good – ~~61.7~~51.2% Moderate – ~~38.3~~48.8%		~~Local~~	
~~Native hedgerow with trees – associated with bank or ditch (assumed)~~	~~0.6~~	~~-~~	~~Good (assumed) – 67.3%~~ ~~Moderate (assumed) – 32.7%~~		~~Local~~	
Species-rich native hedgerow	0.~~9~~8	-	Good – ~~80.7~~78.9% Moderate – ~~19.3~~21.1%		~~Local~~	

Species-rich native hedgerow – associated with bank or ditch	1.43	-	Good – 4745.4% Moderate – 25.826.7% Poor – 26.827.9%		~~Local~~	
Species-rich native hedgerow with trees	2.27	-	Good – 54.069.7% Moderate – 46.030.3%		~~Local~~	
Species-rich native hedgerow with trees – associated with bank or ditch	3.71	-	Good		~~Local~~	
Non-native and ornamental hedgerow	0.08	-	Poor			
Lines of trees	0.7555	-				
Line of trees	0.5848	-	Moderate – 37.224.1% Poor – 62.875.9%	Lines of trees are a separate habitat type to hedgerows, although fall under the broad umbrella of linear, wooded boundary features. Hedgerows are a ~~HPI~~Habitat of	Local	Given their equivalent standing to hedgerows, which are Habitats of Principal Importance and BAP habitats, all line of tree types are considered to be of Local Importance.
~~Line of trees (assumed)~~	~~0.1~~	~~-~~	~~Moderate (assumed)~~		~~Local~~	
Line of trees – associated with bank or ditch	0.07	-	Moderate – 51.5% Poor – 48.5%		~~Local~~	

				Principal Importance and listed on the Northamptonshire BAP. For the purposes of the assessment of 'notable' habitat, lines of trees are considered equivalent to hedgerows.		
Watercourses	5.86	-				
Ditches	3.25	-	Moderate – 13.312.2% Poor – 86.787.8%	No	Local	Although the ditch network is relatively extensive, most ditches supported low botanical diversity. The ditches on Site can be attributed a Local Importance.
~~Ditches (assumed)~~	~~0.5~~	~~-~~	~~Good (assumed)~~			
Other rivers and streams	-1.6	-	Fairly Poor – 40.3% Poor – 59.7%	Rivers are a ~~HPI~~Habitat of Principal Importance and listed on the Northamptonshire BAP.	District	These habitats are rarer in the local landscape and have elevated ecological value. This, combined with their Habitats of Principal Importance and BAP status, leads to an
Other rivers and streams (assumed)	0.04	-	Good (assumed)			
Priority Habitat	0.3	-	Fairly Poor			

Priority Habitat (assumed)	0.1	-	Good (assumed)			ascription of District importance.
Culvert	0.04	-	N/A - Poor	No	Negligible	Of negligible ecological value

Species

9.6.439.6.45 This section summarises the findings to date of the species-specific surveys relating to the Sites, as well as the desk study, for which species records within 2km were obtained from the relevant records centres. Where survey work is incomplete for discrete species groups, this has been clearly highlighted in the relevant section below, along with any relevant assumptions made in lieu of complete survey information.

9.6.449.6.46 The detailed results of the desk study, detailed survey methodologies and initial findings of the species-specific surveys, are contained within the appendices to this chapter.

Badger

9.6.459.6.47 Badgers, including their setts, are protected under The Protection of Badgers Act 1992 (Ref 9.9).

9.6.469.6.48 A total of 154 records of badgers were returned by the desk study within the Study Area, since 2000. The most recent desk study record dates from 2022. [redacted]s and badgers are widespread in the local landscape.

9.6.479.6.49 Evidence of badgers has also been gathered through an initial walkover survey of the Sites and Cable Route Corridor, and ad-hoc during targeted surveys for other species. [redacted]. Badger setts and other evidence of badgers at the other sites was less frequent and more patchily distributed.

9.6.489.6.50 [redacted] Setts were recorded predominantly within hedgerows, woodland and pockets of scrub at field margins, but also on occasion within arable fields and arable field margins. Sett types recorded within the Sites ranged from single-entrance Outlying setts to Main setts with at least 40 entrances. Main setts were recorded [redacted]. The setts recorded [redacted] comprised a single main sett, two subsidiary setts, and nine outlying setts.

9.6.499.6.51 In addition to setts, evidence of badger presence has been recorded across the local landscape in the form of paths, latrines, hairs and live individuals. [redacted]

9.6.509.6.52 Given the geographical distribution and extent of the Sites, and the presence of badger setts across several of the sites, the Order Limits as a whole is certainly used by multiple badger social groups.

~~9.6.51~~9.6.53 The Sites contain significant extents of habitat suitable for foraging by badgers, including the arable and pasture fields, field margins, patches of woodland and scrub, and hedgerows. Badgers predominantly feed on soil invertebrates, particularly earthworms, but will take a wide variety of plant and animal prey items depending on availability. Arable fields have a lower earthworm abundance than permanent grassland fields but may provide seasonal forage in the form of unharvested cereals. The grazed pasture fields, uncultivated margins, woodlands and hedgerows are likely to be more productive for badgers.

~~9.6.52~~9.6.54 Badgers are not a species of conservation concern but receive legal protection on account of historic and ongoing persecution. Given their abundance within the Sites, particularly Green Hill E, which is likely to be markedly higher than the surrounding land, they are considered to be of **Local Importance**.

Bats

~~9.6.53~~9.6.55 All bat species and their roosts are fully protected under the Habitats Regulations, and all bats are Species of Principal Importance. A summary of the static bat detector deployment locations and the data gathered to date ~~(completed survey data for all Sites, excluding data from April and May 2025 at Parcel A.2)~~ are provided in Appendix 9.6: Bat Surveys ~~[**EN010170/APP**~~(Revision A) [**EX1/GH6.3.9.6_A**].

~~9.6.54~~9.6.56 Data search records for bats within the Study Area obtained from Northamptonshire Bat Group were only provided with four-figure OS grid references, and therefore only identified a 1km square within which the record was obtained. As a result, an accurate location that these records pertained to could not be identified.

~~9.6.55~~9.6.57 Records of the following species were returned within the Study Area since 2000:

- Barbastelle *Barbastella barbastellus;*
- Brown long-eared *Plecotus auritus;*
- Common pipistrelle *Pipistrellus pipistrellus;*
- Noctule *Nyctalus ~~noctule~~noctula;*
- Soprano pipistrelle *Pipistrellus pygmaeus;*
- Whiskered bat *Myotis mystacinus;*
- Unidentified *Pipistrellus sp~~;~~.; and*
- Whiskered/Brandt's *Myotis brandtii* bats.

~~9.6.56~~9.6.58 Within the Study Area, three barbastelle records were returned, including one roost record, which related to OS Grid Reference SP8370, closest to Green Hill C. Seventeen brown long-eared records were returned, including 15 roost records. Fourteen common pipistrelle records were returned, including six roost records. Six soprano pipistrelle records were returned, including two roost records. A further 23 unidentified *Pipistrellus* sp. records were returned, including 21 roost records. One noctule and one whiskered bat record were returned, as well as a roost record of a whiskered/ Brandt's bat.

9.6.579.6.59 Records of Daubenton's *Myotis daubentonii*, Leisler's *Nyctalus leisleri*, Nathusius's pipistrelle *Pipistrellus nathusii*, Natterer's *Myotis nattereri* and unidentified *Myotis* spspp. were gathered from the surrounding land beyond the Study Area.

9.6.589.6.60 Two European Protected Species (EPS) licences relating to bats were identified during the desk study. Firstly, EPSM2013-5557, which relates to the destruction of a breeding site and resting place of common pipistrelle, soprano pipistrelle and brown long-eared bat, [redacted] Secondly, 2016-21753-EPS-MIT, relating to damage and destruction of resting place of common pipistrelle, [redacted]

Foraging/Commuting Bats

9.6.599.6.61 The Order Limits contain habitats typical of arable farmland landscapes, including arable fields with and without field margins and conservation measures (such as overwintering stubble or species-rich grassland margins); grazed pasture; ponds, ditches and rivers; small pockets of woodland connected to more substantial parcels off-site; and a network of hedgerows of varying quality. Overall, this mosaic of habitats was classified to be of 'Moderate' habitat suitability, in accordance with the Bat Conservation Trust Survey Guidelines (Ref 9.47).

9.6.609.6.62 Bat activity surveys, utilising a total of 43 static detector locations across all of the Sites, commenced in August 2023. The survey scope entails deployment of static detectors at each of the Sites in each month between April and October, inclusive, for a minimum of five consecutive nights per deployment. At the time of writing, these surveys have been completed across all Sites excluding Green Hill A.2, where final surveys will be completed in April and May 2025. A degree of assumption has therefore been used in the preparation of the assessment of impacts on foraging/commuting bats at Green Hill A.2. Further information on the assumptions used is provided in Section 9.5.

9.6.619.6.63 Given the differing numbers of static detectors deployed at each of the Sites, and the reduced survey effort to date at Green Hill A.2, bat activity was calculated as the average number of bat passes recorded per hour of night (across all detectors), to allow fair comparison of the data. Comparison between Green Hill A.2 and the remaining Sites should still be treated with caution at this stage, due to the lack of early season survey data and corresponding changes in bat activity across the season. Following the completion of the outstanding bat activity surveys at Green Hill A.2 (post DCO submission), an updated version of this ES Chapter informed by the full scope of ecological survey work will be submitted, along with any relevant updated technical appendices (where required), with all changes tracked.

9.6.629.6.64 To date, at least nine species have been recorded across the Order Limits, including barbastelle, brown long-eared, common pipistrelle, Nathusius' pipistrelle, soprano pipistrelle, *Myotis* spspp., noctule, Leisler's and serotine. It should be noted that due to the difficulty of identifying individual species within the *Myotis* genus from ultrasonic recordings alone, passes attributed to *Myotis* bats have been amalgamated. Up to five *Myotis* species may be present, based on their national distribution and habitat preferences, comprising whiskered,

Brandt's, Natterer's, Daubenton's and Bechstein's. This said, Bechstein's bat is typically almost exclusively associated with woodland, with a particular association with ancient woodland, and so is much less likely to be recorded within the Sites. Similarly to *Myotis* bats, noctule and Leisler's bats within the *Nyctalus* genus have calls which are difficult to reliably separate. Where differentiation has not been possible, the records have been identified to genus level only.

9.6.639.6.65 SopranoCommon pipistrelle accounted for the greatest proportion of activity across the Order Limits, with 46.147.2% of passes attributed to this species; CommonSoprano pipistrelle activity constituted 36.342.1%. Substantially lower activity levels were recorded for all other species, with *Myotis* spspp. and noctule accounting for 8.43.2% and 4.2.5% respectively. Barbastelle, a rarer species, accounted for 1.5% of activity. Brown long-eared bat was responsible for 2.21.1% of total activity, although this species is often more cryptic and harder to detect due to its quieter calls, and therefore may be under-represented in the dataset. Barbastelle, a rarer species, accounted for 1.4% of activity. Leisler's bat, a similar but less common species than noctule, accounted for 0.91% of activity. Both serotine and Nathusius' pipistrelle constituted less than 0.51% of total activity each; 0.4% and 0.2% respectively. Species accounting for reduced levels of activity were also more sparsely distributed across the Sites, being restricted to just a few detector locations; this represents their more limited distribution at a regional scale.

9.6.649.6.66 Barbastelle was recorded across all Sites, with generally low activity at each detector location. Average activity was highest at Green Hill G, although levels at Green Hill C, E, F and BESS were also notably higher than the other sites. Barbastelle is a rare species, for which notable levels of activity was recorded. The distribution of barbastelle passes was not uniform, with activity concentrated at a subset of sites, particularly within Green Hill G and Green Hill F, which together accounted for a substantial proportion of the total detections. The highest level of barbastelle activity occurred at SD41 (Green Hill G), where 861 passes were detected, accounting for 19.69% of all barbastelle passes across the survey. Notably, 596 of these passes (69%) were recorded in September, suggesting a strong seasonal peak in activity at this location. A similar pattern was observed at SD32 (Green Hill F), where a disproportionately high number of barbastelle recordings also occurred in September. By contrast, SD15 (Green Hill E) featured a larger number of barbastelle passes in May 2024. Other locations, such as SD35 (Green Hill F), SD40 (Green Hill G), and SD30 (Green Hill F), exhibited a more even distribution of barbastelle activity across the survey period. These variations may indicate site-specific differences in habitat suitability, roost-switching behaviour or seasonal foraging preferences. SD41 was situated within a hedgerow south of Threeshire's Wood LWS, and SD32 was positioned on the woodland edge associated with a small copse. Both habitats may offer possible roosting opportunities and more diverse foraging habitats compared to the surrounding arable landscape. Therefore, both locations may be used as seasonal commuting routes, possibly associated with nearby tree roosts or foraging grounds.

9.6.659.6.67 Brown long-eared was recorded across all Sites, with generally low levels of activity. Average activity was highest at Green Hill C and BESS, and substantially lower at other Sites.

9.6.669.6.68 Common pipistrelle was recorded across all Sites and average activity was highest at Green Hill F. Activity was also high at Green Hill A.2, BESS and G, and lowest at Green Hill C and D.

9.6.679.6.69 Nathusius' pipistrelle was recorded across all Sites except Green Hill A, with very low activity. The greatest activity levels were recorded at Green Hill BESS.

9.6.689.6.70 Soprano pipistrelle was recorded across all Sites and average activity was markedly highest at Green Hill A.2 and BESS. Activity was also high at Green Hill A.2, B and G. The lowest activity levels were recorded at Green Hill C, D and E.

9.6.699.6.71 *Myotis* spspp. were recorded at all Sites. Activity of *Myotis* sp*spp.* at Green Hill BESS was more thanalmost double the levels at Green Hill BG, where the next highest activity levels were recorded. This trend may be due to the presence of several rivers, woodland belts and the high ecological value of offsite habitats adjacent to Green Hill BESS. The lowest activity levels for *Myotis* spp. were recorded at Green Hill A.2, D and E.

9.6.709.6.72 *Nyctalus sp.* were recorded at all Sites. Recorded activity of *Nyctalus* sp. was greatest at Green Hill BESS and F, but broadly comparable with other Green Hill sites.

9.6.719.6.73 Serotine was only recorded at Green Hill A.2, B, E, BESS and F. Activity was very low, which was not unexpected given that this species has a patchy distribution in Northamptonshire.

9.6.729.6.74 In terms of overall levels of activity, to reflect ecological importance, bat passes were weighted according to species rarity; with rarer species assigned a higher value. In this way, elevated levels of activity by rarer species receive a proportionally higher score. When comparing the weighted activity levels, there were differences between the individual detectors. Taking the mean score from detectors within individual Sites allowed fairer comparison between Sites, due to the differing numbers of detectors used.

9.6.739.6.75 The data indicates that the highest relative levels of activity were recorded at Green Hill BESS (score of 16,92215,540), which is over 6040% greater than the next highest scoring Site, Green Hill F (10,564897). At Green Hill BESS, all three deployment locations ranked within the top ten highest-scoring locations across the Survey Area. This pattern was driven by consistently higher volumes of bat passes for common and soprano pipistrelles, as well as less abundant species such as brown long-eared bats, *Myotis* spspp., *Nyctalus* sp., and barbastelle bats. The higher activity levels observed at Green Hill BESS and Green Hill F may be associated with habitat suitability at these locations. Green Hill BESS is situated near ponds and lakes associated with the Upper Nene Valley Gravel Pits, which likely provide abundant foraging opportunities for a variety of bat species. Similarly, the Green Hill F sites, particularly SD34 and SD35, are located at or near Horn Wood and connecting hedgerows. The presence of nearby tree roosts

may also elevate activity levels if deployment locations were located on well-used flight-lines.

9.6.749.6.76 Green Hill Green Hill A.2 had the next highest combined activity score (9,966). Green Hill B and G were similar in their activity scores (8,654 and 8,046552 respectively), followed by Green Hill A.2 (7,158).). Notably reduced activity was recorded at Green Hill A (5,258), then Green Hill E (4,381), Green Hill C (3,848) and Green Hill D (3,087088). The sites with the lowest composite scores indicated areas of limited bat activity, which may highlight opportunities for ecological enhancement. Green Hill D constitutes the smallest and least heterogenous site, which may also account for its reduced levels of bat activity.

9.6.759.6.77 Individual static detector locations which recorded substantially higher activity scores included the following:

- The south of Green Hill F (SD34), adjacent to a large block of woodland; the proximity of the woodland, which offers elevated foraging potential to the surrounding landscape, is likely to account for the greater activity levels recorded at this location. The woodland may also support roosting bats, which would also account for higher levels of bat activity in this area of the landscape.
- The north of Green Hill BESS (SD23), close to Grendon Lakes; this is likely due to the proximity of the off-site lake, which serves as a good-quality foraging area and water resource. The level of activity recorded for both soprano pipistrelle and *Myotis* sp. (assumed in this case to predominately comprise Daubenton's bats, as this species preferentially forages over water) was substantially higher at Green Hill BESS than at any other site.
- The south of Green Hill F (SD35), along a hedgerow between two blocks of woodland; this hedgerow is likely to be of significant importance for bats commuting between the two woodland areas.
- The southeast of Green Hill BESS (SD24), adjacent to Grendon Brook; this is likely due to the proximity of the brook, which serves as a good-quality foraging area, water resource and commuting corridor.
- The northeast of Green Hill F (SD27), close to woodland; as above, the woodland likely offers enhanced foraging and roosting habitat relative to arable habitats.
- The southwest of Green Hill F (SD32), along a watercourse and close to a small patch of woodland; as above, the stream and woodland likely offers enhanced foraging habitat relative to arable habitats.

9.6.769.6.78 Based on the data gathered to date, the bat assemblage at the Sites and likely to use habitats within the Cable Route Corridor is considered to be of **~~County Importance~~**. ~~Given that only two surveys are outstanding for Green Hill A.2 and five surveys have been completed at this site (between June – October 2024), this evaluation is assumed to also be applicable to Green Hill A.2.~~**Regional importance**.

Roosting Bats

9.6.779.6.79 Ground level tree assessments (mature trees within fields, as well as field boundaries) have been completed across the Sites and Cable Route Corridor, to assess trees for their suitability to support roosting bats. A total of 382 ground level tree assessments were completed within the Sites, resulting in the recording of 155 Low, 144 Moderate, and 83 High suitability trees. It is likely that a substantial number of bat roosts are present within trees that are located within the Sites pertaining to a range of different species. Potential roost features were found principally in mature ash *Fraxinus excelsior* and oak *Quercus robur* trees, but also willow *Salix spp.*, aspen *Populus tremula*, field maple *Acer campestre*, sycamore *Acer pseudoplatanus*, horse chestnut *Aesculus hippocastanum*, and dead standing trees.

9.6.789.6.80 A further 113 ground level tree assessments were completed within the Cable Route Corridor, with an additional 77 trees being assessed within the wider Cable Route Survey Area. Of the trees within the Cable Route Corridor, the GLTA surveys recorded 70 Low, 24 Moderate, and 19 High suitability trees. The vast majority (73) of the trees within the Cable Route Corridor were ash, although other species recorded included oak, sycamore, and poplar.

9.6.799.6.81 Inspections of buildings present within the Order Limits were also completed to assess their suitability for roosting bats.

9.6.809.6.82 A total of seven buildings were identified within the Sites, and a single additional building within the Cable Route Corridor. The majority were dilapidated stone barns, with one prefabricated building. Suitability for roosting bats ranged from 'negligible' (two buildings), 'low' (four buildings), 'low to moderate' (one building), and 'high' (one building). No direct evidence of bat presence was recorded in any of the buildings surveyed.

9.6.819.6.83 Based on the presence of a relatively high number of features (predominately mature trees, but also occasional buildings) which are suitable to support roosting bats within the Order Limits, the roosting bat assemblage likely supported by the Order Limits is considered to be of **County importance**.

Otter

9.6.829.6.84 Otter is a Species of Principal Importance and protected under the Habitats Regulations.

9.6.839.6.85 Otter is a widespread species and is expected to be present within all principal river catchments in Northamptonshire.

9.6.849.6.86 A total of nine records of otter were returned by the data searches within the Study Area, since 2000. The most recent record dates from 2020. Records of otters were centred around local reservoirs and ponds, including Pitsford and Sywell Reservoirs, as well as Wilby Way Meadows and the River Nene.

9.6.859.6.87 Surveys were conducted in spring and autumn to assess the suitability of watercourses and well-connected ponds for otter, and to search for evidence of their presence. Appendix 9.7 **[EN010170/APP**Revision A **[EX1/GH6.3.9.7 A]** provides survey results of all Autumn and Spring surveys in the context of each Site.

~~9.6.86 At the time of writing, Green Hill A.2 has been subject to an autumn survey in 2024, but has not yet been subject to a spring survey, which is scheduled for April 2025. This data will be provided in an updated technical appendix following the submission of the DCO, and an updated version of this ES Chapter informed by the full scope of ecological survey work will be submitted, with all changes tracked.~~

~~9.6.87~~9.6.88 All watercourses and ponds surveyed were deemed to be suitable for otters, in terms of being potentially usable for moving through the landscape and occasional foraging. However, the vast majority of features were assigned a 'suitable but poor' category, being mostly narrow and dry or with limited water.

~~9.6.88~~9.6.89 Following a qualitative assessment using OS mapping and satellite imagery, the best-connected watercourses (in terms of connectivity to other watercourses), were considered to be the central stream at Green Hill A, the western boundary of Green Hill D, the western and eastern boundaries of Green Hill E, the northern boundaries of Green Hill BESS, and the northwestern boundary of Green Hill F. However, other factors such as the quality of both aquatic and adjoining terrestrial habitat must be considered.

~~9.6.89~~9.6.90 Considering all factors, only 14 watercourses/waterbodies were characterised as being of 'good' suitability, with another five considered to be 'optimal' suitability, being of a sufficient size and with sufficient water levels to potentially support otter throughout the year. Features of good and optimal suitability comprised: one stream at Green Hill A, one stream at Green Hill E, two streams and one ditch at Green Hill BESS (both streams being optimal); and twelve streams (three optimal) and two ditches at Green Hill F.

~~9.6.90~~9.6.91 A limited number of ditches and streams contained bankside features conducive to holt creation, with suitably large mature trees being present adjacent to suitable watercourses only occasionally. These were most prevalent at Green Hill E and F.

~~9.6.91~~9.6.92 During the surveys completed to date, several signs of otters were recorded. Otter prints and/or spraint were found along the central ditch at Green Hill C, western boundary of Green Hill D, eastern and western boundaries of Green Hill E, northwestern boundary of Green Hill BESS, and northern section of Green Hill F.

~~9.6.92~~9.6.93 Potential, but unconfirmed, otter resting sites were also [redacted]

~~9.6.93~~9.6.94 [redacted] but taking into consideration the suboptimal nature of most of the watercourses within the Sites and otter's likely presence in all river catchments in the county, otter is considered to be of **Local Importance** in the context of the Scheme. This evaluation is also considered appropriate for the Cable Route Corridor on account of the similarity of ditch and watercourse networks across the local landscape.

Water Vole

9.6.949.6.95 Water voles are protected under the Wildlife and Countryside Act 1981 (as amended) and are a Species of Principal Importance.

9.6.959.6.96 A total of 11 records of water voles were returned by the data searches since 2000. All records pertained to locations within 2km of either Green Hill C, D, or E, with the majority within 1km of Green Hill E. No records were returned within 2km of the other Sites. Records of water voles were centred around Wilby and Mears Ashby, including Swanspool Brook and Wilby Way Meadows. The most recent record dates from 2019.

9.6.969.6.97 Surveys were conducted in spring and autumn to assess suitability of watercourses and well-connected ponds for water voles, and to search for evidence of their presence. Habitat requirements for water vole focus on shelter (diggable earth banks), aquatic vegetation and reliable access to water (Ref 9.49). Appendix 9.7: Otter and Water Vole Surveys **[EN010170/APP**Revision A **[EX1/GH6.3.9.7_A] provides survey results of all Autumn and Spring surveys** in the context of each Site (excluding survey data Green Hill A.2 in Spring, as this survey is scheduled for April 2025).. A brief summary of survey results has been provided below.

9.6.979.6.98 The vast majority of surveyed features (93%) were assigned either a 'negligible' or 'suitable but poor' category, being mostly narrow and dry, heavily shaded, or with limited water or aquatic/marginal vegetation.

9.6.989.6.99 Five features were characterised as being of 'good' suitability and a further three of 'optimal' suitability, having sufficient water levels, suitable vegetation and diggable banks to support water voles throughout the year. These were limited to one stream at Green Hill A, one ditch and two streams at Green Hill BESS (both streams optimal), and four ditches at Green Hill F.

9.6.999.6.100 During the surveys, very limited signs of water voles were recorded. A dead water vole was found at a pond located outside of the Order Limits near the western boundary of Green Hill E, confirming presence of this species offsite. Feeding remains attributed to water vole were also observed along the northeastern boundary of Green Hill BESS. Possible water vole burrows and feeding remains were found along the central north-south ditch at Green Hill C and the northwestern boundary of Green Hill D. However, these were not conclusive.

9.6.1009.6.101 Possible mink prints were recorded at Green Hill E and F. Mink are voracious predators of water voles and, if present, likely pose a threat to the local water vole population.

9.6.1019.6.102 Water voles are confirmed to be present offsite near to Green Hill E. Potential evidence of their presence was also recorded at Green Hill C, D and BESS; although this was not conclusive, presence is assumed for the purposes of this assessment. Given water vole populations are in decline nationally, the populations on Site are considered to be of **District Importance**. This evaluation also applies to the Cable Route Corridor on account of the similarity of the habitats present within the Cable Route Corridor to the Sites, as well as the

interconnectivity of the local ditch and watercourse network which traverse both the Sites and the Cable Route Corridor.

Other Mammals

9.6.1029.6.103 Other mammals which are Species of Principal Importance and potentially present within the Order Limits and capable of being impacted include brown hare *Lepus europaeus*, harvest mouse *Micromys minutus*, hedgehog *Erinaceus europaeus* and polecat *Mustela putorius*.

9.6.1039.6.104 Twelve records of brown hare were returned within the Study Area, since 2000, dating most recently from 2022. [redacted]. This is a mobile species which is likely widespread in the local landscape. Brown hares are ubiquitous across the Sites, observed during various surveys in relatively high numbers within the arable fields and field edges. Not of particular conservation interest in the area, brown hare is considered to be of **Local Importance** in the context of the Scheme.

9.6.1049.6.105 A total of 97 records of hedgehogs were returned by the desk study; the most recent record dating from 2022. [redacted] and this species is widespread in the local landscape. Hedgehogs are likely to be present across the Sites, especially where there is good habitat connectivity between rough grassland margins, hedgerows and woodland/scrub edges at field boundaries. This mosaic provides suitable foraging, nesting and sheltering opportunities for this species. Given that hedgehog numbers are in decline nationally, this species is considered as being of **Local Importance**.

9.6.1059.6.106 Three records of polecat were returned within the Study Area, relating to locations in Earls Barton and Holcot, most recently in 2017. This is a small number of records, but polecats are secretive and thus they are unlikely to be encountered (and recorded) often. Following recent population recoveries, this species is expanding in range and is increasingly prevalent in lowland farmland in England. It favours farmland with mature hedgerows and extensive pockets of woodland, and requires good sources of its favoured prey, particularly rabbits, but will also take amphibians, birds and rats. Typical polecat habitat and foraging requirements are well represented across the Scheme and in the local landscape, and as such this species can be assumed to be present. Polecat is likely to be of **Local Importance** in the context of the Site.

9.6.1069.6.107 No records for harvest mice were returned within the Study Area since 2000, however, harvest mice are small and secretive, so detection is difficult. This species favours rough grassland where there is less disturbance, which, although present across the Order Limits, is generally restricted to narrow field margins, hedgerow bases and alongside ditches. Neither harvest mice nor their nests have been observed during site visits. Harvest mice may be assumed to be present in low densities within the arable fields and field margin habitats. This species is therefore considered to be of **Local Importance** in the context of the Site.

9.6.1079.6.108 Roe deer, Muntjac deer and Chinese water deer have all been observed at the Sites during survey work. No deer species receive special legal

protection or are considered priority species of conservation concern. The arable fields are of some value to deer, although typically they would be expected to keep more closely to woodland, pasture and field boundaries. Considering the highly open nature of the Sites' habitats and limited woodland and permanent pasture cover, deer are considered to be of **Site Importance**.

Reptiles

9.6.1089.6.109 All six of the UK's native reptiles are Species of Principal Importance and receive varying levels of protection under the Wildlife and Countryside Act.

9.6.1099.6.110 Post-2000, just eight reptile records were returned within the Study Area, comprising: grass snake *Natrix helvetica* (seven records) and adder *Vipera berus* (one record).

9.6.1109.6.111 One record of grass snake was returned within 2km of Green Hill B, pertaining to Pitsford Reservoir and dating from 2013.

9.6.1119.6.112 One record of grass snake was returned within 2km of Green Hill C, pertaining to Mears Ashby and dating from 2022.

9.6.1129.6.113 One record of grass snake and one record of adder were returned within 2km of Green Hill D and Green Hill E. The adder record pertains to Sywell Reservoir and was made in 2008. The grass snake record pertains to Mears Ashby, just south of the Site, and was made in 2022.

9.6.1139.6.114 Six records of grass snake were returned within 2km of Green Hill BESS, pertaining to Grendon and Castle Ashby, and dating most recently from 2008.

9.6.1149.6.115 One record of grass snake was returned within 2km of Green Hill F, pertaining to Castle Ashby and dating from 2008.

9.6.1159.6.116 No reptile records were returned within 2km of Green Hill A, A.2, or G, post-2000.

9.6.1169.6.117 The Sites generally comprise poor quality habitat for reptiles, with the arable fields being unsuitable. The principal suitable habitats are the grassland and hedgerows at field margins, as well as woodland edges. Heavily grazed grassland fields are likely to be unsuitable, whereas fields with a coarser structure may support species such as slow-worm *Anguis fragilis* or common lizard *Zootoca vivipara*. Ponds and suitably wet ditches may also support grass snake.

9.6.1179.6.118 The desk study data shows a general lack of records for reptile species within 2km of the Sites, and the habitats within the Sites and Cable Route Corridor are generally unsuitable. For these reasons, specific reptile surveys were not considered proportionate to undertake. However, for the purposes of this assessment, it is assumed that small populations of common reptile species (comprising grass snake, common lizard and slow worm) are likely present in suitable habitats within the Sites and Cable Route Corridor.

9.6.1189.6.119 Considering the restricted extent and suitability of habitats for reptiles, and their likely presence across the Order Limits at a low or very low density, reptiles are of **Local Importance** in the context of the Scheme.

Amphibians

9.6.1199.6.120 Great crested newt *Triturus cristatus* (GCN) and common toad *Bufo bufo* are Species of Principal Importance, and palmate newt *Lissotriton helveticus* is listed on the Northamptonshire Biodiversity Action Plan (BAP).

9.6.1209.6.121 Post-2000, records were returned within the Study Area for: common frog *Rana temporaria* (11 records, most recently in 2021), common toad (12 records, most recently in 2018), smooth newt *Lissotriton vulgaris* (17 records, most recently in 2021) and GCN (43 records, most recently in 2022).

9.6.1219.6.122 Common frog and common toad records were returned within 2km of all Sites except Green Hill A, C, D and G. Smooth newt records were present within 2km of all Sites except Green Hill F and G. GCN records were returned within 2km of all Sites.

9.6.1229.6.123 A total of eight EPS mitigation licences relating to GCN have been identified within 2km of the Sites, as follows:

- EPSM2009-1485, 1.8km northeast of Green Hill A, relating to destruction of a resting place;
- 2015-18472-EPS-MIT, 1.8km southwest of Green Hill B, which was amended on three occasions, relating to damage and destruction of a resting place;
- EPSM2013-5464 and 2014-1974-EPS-MIT, 1.5km east of Green Hill C, 0.9km east of Green Hill D and 0.8km north of Green Hill E, relating to the damage and destruction of a resting place;
- 2014-1338-EPS-MIT and 2017-27647-EPS-MIT, 2km northeast of Green Hill C and D, and 1.9km north of Green Hill E, relating to the damage and destruction of a resting place;
- 2018-36758-EPS-MIT, 1.9km northwest of Green Hill BESS, relating to the damage and destruction of a resting place; and
- 2015-10360-EPS-MIT, 0.2km northeast of Green Hill F, which was amended on four occasions, relating to the damage and/or destruction of both resting and breeding places.

9.6.1239.6.124 The potential for GCN presence was inferred at Green Hill F following the sighting of historic herptile exclusion fencing around the former quarry. This was likely installed as part of a previous translocation exercise under a mitigation licence, ref. 2015-10360-EPS-MIT, as identified by the desk study. During a nocturnal wintering bird survey on 14 February 2024, at least ten GCNs were observed migrating towards breeding ponds, along the trackway separating the northeastern-most parcel from the main body of Green Hill F.

9.6.1249.6.125 The Sites all offer suboptimal habitat for amphibians in the main, with the arable fields that dominate the Sites providing limited cover and foraging opportunities. The grassland fields, hedgerows and woodland blocks offer the best habitat for amphibians during their terrestrial phases. A small number of

ponds lie either within the Sites or surrounding 250m, which could be used by breeding amphibians.

9.6.1259.6.126 District Licensing will be utilised across the Scheme, which assumes the presence of GCN within local waterbodies and stipulates mitigation and compensation measures to reduce and offset impacts on this species.

9.6.1269.6.127 Considering the relatively small number of amphibian records, and the general lack of optimal habitat for these species, amphibians are considered to be of **Local Importance**.

Breeding Birds

9.6.1279.6.128 Many breeding bird species are listed as Species of Principal Importance and appear as either green, amber or red-listed species within the RSPB/BTO Birds of Conservation Concern lists. Barn owl and nightingale are listed on the Northamptonshire BAP. All birds and their eggs are protected, while some which appear on Schedule 1 of the Wildlife and Countryside Act are protected further from disturbance while nesting.

9.6.1289.6.129 A large number of bird records were returned by the data search (32,330), pertaining to 175 different species recorded within the Study Area, since 2000. Of these, records of 80 resident, 27 summer migrant, and 19 passage species (which may therefore be present in the UK during the breeding season) were gathered. Not all of these species are likely to be found within the Sites, as many have specific habitat requirements. As such, of the species recorded by the data search, a total of 51 resident, 16 summer migrant and two passage species were considered likely or potentially present within the Sites, considering the habitats present.

9.6.1299.6.130 Notable species considered potentially present were mainly birds typical of farmland habitats such as: corn bunting *Miliaria calandra*, lapwing *Vanellus vanellus*, grey partridge *Perdix perdix*, quail *Coturnix coturnix*, reed bunting *Emberiza schoeniclus*, skylark *Alauda arvensis*, stock dove *Columba oenas,* tree sparrow *Passer montanus,* whitethroat *Sylvia communis,* yellow wagtail *Motacilla flava* and yellowhammer *Emberiza citrinella*. Additional species included cuckoo *Cuculus canorus*, dunnock *Prunella modularis*, finches, hirundines (swifts, swallows and martins), meadow pipit *Anthus pratensis*, owls, raptors, spotted flycatcher *Muscicapa striata*, starling *Sturnus vulgaris*, thrushes, turtle dove *Streptopelia turtur*, warblers and foraging gulls. Passage species including firecrest *Regulus ignicapilla* and wheatear *Oenanthe oenanthe* were considered to potentially utilise habitats within the Sites.

9.6.1309.6.131 The Sites as a whole offer suitable habitat for a variety of breeding birds, and the scale of the Sites in terms of land area mean that this habitat may form a significant proportion of the local landscape. The large open fields provide suitable nesting habitat for ground-nesting species, such as skylark, lapwing and quail, with unbroken sightlines typically required by these species for breeding. Field margins also provide nesting opportunities for further farmland species such as grey partridge and yellowhammer, as well as providing a valuable foraging resource for a range of species. Margins and standard trees are also likely to be

important in supporting prey species for raptors and owls, as well as offering suitable hunting locations for these predators. Woodland blocks within and immediately adjacent the Sites, the network of interconnecting hedgerows, and frequent standard trees, provide abundant suitable nesting habitat for a wide range of species including passerines such as tits and thrushes, woodpeckers, corvids, owls and raptors. Limited wetland features within the Sites, namely ponds and watercourses, are likely to support small numbers of waterbirds, such as ducks, egrets, and snipe. The small number of buildings associated with the Sites also provide nesting opportunities for hirundine species and barn owls.

9.6.1319.6.132 Based on analysis of data from breeding bird surveys completed across all Sites, with the exception of four remaining surveys at Green Hill A.2, a total of 97 different species have been recorded. These are chiefly a mix of widespread, generalist species of hedgerows and woodland, as well as arable specialists. In addition to these species, several birds of prey, warblers and hirundines have been recorded, alongside a small number of wildfowl and wetland birds associated with streams, ponds and offsite waterbodies. Of the 98 species recorded, 58 were notable species (species of conservation concern, those listed under specific legislation or policy, or included on the basis of professional judgment).

9.6.1329.6.133 The greatest diversity of notable species (28) recorded during all surveys was associated primarily with open habitats, and as a collective these species were recorded in higher numbers than notable birds of boundary or wetland habitats. The relative abundance (number per hectare) of birds associated primarily with open habitats was highest at Green Hill E, with Green Hill B also having relatively high abundance. Green Hill A, C, D, F and G all had similar abundance of these species per hectare, with Green Hill A.2 and BESS having significantly lower abundance.

9.6.1339.6.134 Green Hill BESS is largely unsuitable for birds of open habitats due to the presence of numerous tall structures (including pylons within fields and the adjacent existing electrical substation) and tall hedgerows; along with the smaller average field size. This results in a more enclosed landscape compared to the other Sites, with reduced suitability for bird species that have a preference for wide, open arable fields, such as skylark. Further breeding bird surveys are scheduled in March – May 2025 at Green Hill A.2, which will provide a more accurate estimate of abundance at this Site.Green Hill A.2 comprises large arable fields which are considered suitable for species that breed in open habitats. However, the habitats are fairly homogenous, which reduces the diversity of foraging resources, and the winter-sown cereal fields may have been too tall in June and July to provide optimal nesting habitat for species such as skylark.

9.6.1349.6.135 Frequently recorded species which were widespread across the Sites included: grey partridge, linnet, red kite *Milvus milvus*, rook *Corvus frugilegus*, skylark and woodpigeon *Columba palumbus*. Species confirmed as breeding or deemed probable breeders within at least one of the Sites included grey partridge, hobby *Falco subbuteo*, kestrel *Falco tinnunculus*, linnet *Carduelis cannabina*, rook, skylark, woodpigeon and yellow wagtail; with possible breeding within at least one of the Sites by barn owl, corn bunting, lapwing, meadow pipit,

quail, red kite, sparrowhawk *Accipiter nisus*, starling, swift *Apus apus* and wheatear. Barn owl were recorded as possibly breeding at all Sites, with suitable buildings and/or mature trees with cavities present. Skylark, a ground-nesting species, was recorded across all nine of the Sites.

9.6.1359.6.136 Detailed territory analysis suggests that there are 281286 skylark territories present within the Sites, although surveys at Green Hill A.2 are not yet completed, and so this number may change. The largest of the Sites, Green Hill A, E and F, appeared to support the most skylarks, with 53, 73 and 61 territories respectively. Green Hill A appears to support the densest number of territories: 0.31 territories/ ha. Green Hill BESS supports no skylark territories and therefore has the least dense population. The average territory density is 0.23 territories/ha, which aligns with the literature reference value (Ref 9.58) for skylark densities in winter cereals; the dominant habitat regime within the Sites. An estimated 10 yellow wagtail territories were also present across the sites, chiefly at Green Hill G (five), and also Green Hill E (four) and F (one). Other ground-nesting species included grey partridge, which were recorded as probable breeders at all Sites except Green Hill BESS; lapwing, possibly breeding at Green Hill B; meadow pipit, recorded as possible breeders at Green Hill A, B, D, E, F and G; and quail, possibly breeding at Green Hill A.

9.6.1369.6.137 The breeding bird assemblage associated with open arable fields at the Site is considered to be of '**County**' importance, given the diversity and abundance of notable species.

9.6.1379.6.138 Species typically associated with boundary habitats were recorded across the Sites; the abundance of these species was relatively even except at Green Hill A.2, where a lower abundance per hectare was recorded. The greatest densities of birds associated primarily with boundary habitats was at Green Hill A, D and E, with slightly lower densities recorded at Green Hill B, C, BESS, F and G. Frequently recorded species which were widespread across the Sites included: dunnock, song thrush *Turdus philomelos*, whitethroat *Sylvia communis*, wren *Troglodytes troglodytes* and yellowhammer. Species confirmed as breeding or deemed probable breeders within at least one of the Sites included bullfinch *Pyrrhula pyrrhula*, dunnock, greenfinch *Carduelis chloris*, house sparrow *Passer domesticus*, reed bunting, song thrush, stock dove, whitethroat, wren and yellowhammer; with possible breeding within at least one of the Sites by cuckoo, marsh tit *Poecile palustris*, mistle thrush *Turdus viscivorus*, tawny owl and willow warbler *Phylloscopus trochilus*. Considering also the diverse assemblage of species not of conservation concern, the breeding bird assemblage associated with boundary habitats at the Site is considered to be of '**District**' importance.

9.6.1389.6.139 Wetland species were limited both in terms of diversity and abundance; being restricted to the few on-site ponds, larger streams and ditches at the boundaries, and nearby off-site waterbodies. Species considered to be possibly or probably breeding included Cetti's warbler *Cettia cetti*, kingfisher *Alcedo atthis*, little egret *Egretta garzetta*, mallard *Anas platyrhynchos* and tufted duck *Aythya fuligula*. Breeding was confirmed for moorhen *Gallinula chloropus*. The breeding bird assemblage associated with wetland habitats at the Site is

considered to be of '**Site**' importance, given the low abundance of species associated with wetland habitats.

9.6.1399.6.140 Species listed under Schedule 1 of the Wildlife and Countryside Act receive additional protection from disturbance when nesting. Such species recorded on the Sites include: barn owl, Cetti's warbler, fieldfare, hobby, kingfisher, osprey, peregrine, quail, redwing and red kite. Consideration will need to be given to timing of works and buffer zones from any established nests during the construction phase. Please refer to Appendix 9.11: Confidential Schedule 1 Bird Information **[EN010170/APP/GH6.3.9.11-094]** for additional confidential information regarding Schedule 1 species.

Overwintering Birds

9.6.1409.6.141 Many wintering bird species are listed as Species of Principal Importance and appear as either green, amber or red-listed species within the RSPB/BTO Birds of Conservation Concern lists. Barn owl is listed on the Northamptonshire BAP. All birds and their eggs are protected.

9.6.1419.6.142 The Upper Nene Valley GP SPA/SSSI lies within 10km of Green Hill B, C, D, E, BESS, F and G. This site is designated for its overwintering wader and wildfowl populations, with especially notable wintering populations of bittern, golden plover and gadwall (SPA); and breeding grey heron (SSSI). Various waterfowl species, as well as lapwing, also form part of the assemblage and occur in notable numbers.

9.6.1429.6.143 Desk study records were gathered of 80 resident, 40 winter migrant, and 19 passage species (which may therefore be present in the UK during part or all of the wintering season). Not all of these species are likely to be found within the Sites, as many have specific habitat requirements. As such, of the species recorded by the data search, a total of 51 resident, 11 winter migrant and one passage species were considered likely or potentially present within the Sites, considering its habitats.

9.6.1439.6.144 Notable species considered potentially present were mainly farmland birds such as: corn bunting, lapwing, grey partridge, reed bunting, skylark, stock dove, tree sparrow and yellowhammer. Additional species included dunnock, finches, geese, gulls, meadow pipit, owls, raptors, starling, thrushes and waders.

9.6.1449.6.145 The Sites as a whole offer suitable habitat for a variety of wintering birds, and the scale of the Sites in terms of land area mean that this habitat may form a significant proportion of the local landscape. In winter, seeds form a more significant proportion of many birds' diets, as invertebrate availability is reduced. Therefore, the best areas of habitat for many species, such as finches, larks and buntings, are likely to be fields with overwinter stubbles, set-aside areas and field margins. The few pasture fields may be more suitable for waders and wildfowl, which probe the soil for worms and other invertebrates. No significant waterbodies were present in the Sites, and it is unlikely that any notable bird assemblages reliant on large waterbodies, such as overwintering ducks and gulls, would be present.

9.6.1459.6.146 Wintering bird surveys, including both diurnal and nocturnal surveys, recorded a total of 93 different wintering bird species. These are chiefly a mix of widespread, generalist species of hedgerows and woodland, as well as arable specialists. In addition to these species, several birds of prey have been recorded, alongside gulls, wildfowl and wetland birds. Of the 93 species recorded, 59 were notable species (species of conservation concern, those listed under specific legislation or policy, or included on the basis of professional judgment).

9.6.1469.6.147 Green Hill E and F supported the greatest diversity of species overall, and notable species. Green Hill B and D were also used by a diverse range of species. By contrast, Green Hill A.2 and G supported the least diverse assemblages.

9.6.1479.6.148 The greatest diversity of notable species (32) recorded during all surveys was associated primarily with open habitats. This included finches, gulls, birds of prey, pigeons, wildfowl and waders, as well as other farmland passerines. The wintering bird assemblage associated with open arable and grassland fields and field margins is considered to be of **County** importance, given the diversity of notable species and abundance of bird records. This includes high numbers of skylark, grey partridge, finches and buntings; besides waders such as golden plover, lapwing, snipe and woodcock.

9.6.1489.6.149 Only 12 notable species were associated chiefly with boundary habitats, although the boundary habitats supported a good diversity of other non-notable species. Most species were observed in typical numbers, although some Sites were of elevated importance to winter thrushes, bullfinch and tawny owl. The associated assemblage is considered to be of **District** importance.

9.6.1499.6.150 A total of 15 species were associated chiefly with wetland habitats, although the majority were recorded rarely and were largely confined to ponds and watercourses at the margins of the Sites. Green Hill B supported a subset of duck species not found elsewhere. No red-listed species of conservation concern associated chiefly with wetland habitats were recorded. Therefore, birds of wetland habitats are assessed as being of **Local** importance.

Invertebrates

9.6.1509.6.151 Black hairstreak *Satyrium pruni* and lime bark beetle *Ernoporus tiliae* appear on the Northamptonshire BAP.

9.6.1519.6.152 A total of 15,411 records of insects were returned from within the Study Area since 2000. These pertain to 282 different species, including beetles, true flies, hymenopterans (bugs), butterflies and moths. The vast majority of records (15,023) relate to moths, of some 228 species. No records of either of the Northamptonshire BAP species, mentioned above, were identified.

9.6.1529.6.153 A single record of white-clawed crayfish *Austropotamobius pallipes* was returned, pertaining to Earls Barton Bends and dating from 2008. None of the streams or ditches present on or directly adjacent to the Sites are considered to provide optimal habitat for this species, which prefers shallow, rocky and mineral-rich watercourses/ waterbodies. A single observation of invasive American signal crayfish *Pacifastacus leniusculus* was also made at Green Hill F

during the otter and water vole surveys. The presence of this species significantly reduces the likely presence of a healthy population of white-clawed crayfish, due to the American signal crayfish carrying crayfish plague and outcompeting the more diminutive white-clawed crayfish. Taking this into consideration, the presence of white-clawed crayfish within the Sites is considered unlikely, although cannot be ruled out.

~~9.6.153~~9.6.154 A single record of large black slug *Arion ater* was gathered, pertaining to Sywell Reservoir and Country Park, and dating from 2003.

~~9.6.154~~9.6.155 A Bug Life B-lines area was identified off-site, approximately 0.12km from Green Hill G.

~~9.6.155~~9.6.156 The principal habitats present at the Sites are arable fields bounded by hedgerows of mixed quality, with wet ditches, streams, ponds, woodland and grassland being rarer habitats. Considering their regular maintenance in the form of trimming and dredging, together with likely overspray and run-off of pesticides and other treatments, the network of boundary hedgerows, margins and drainage ditches are most likely to support only common invertebrate assemblages typical of the local arable farming landscape. For these reasons, as well as the fact that embedded mitigation measures will ensure that potential impacts on these species groups are largely avoided, it was not considered proportionate to carry out aquatic or terrestrial invertebrate surveys.

~~9.6.156~~9.6.157 The most important habitats for invertebrates within the Sites are likely to be discrete, well-structured species-rich hedgerows, as well as species-rich grassland and ponds. Ancient woodland and better-quality watercourses at the site boundaries, such as those at Green Hill BESS, are also likely to be valuable. These habitats may support individual notable species/ species of conservation concern, including those identified by the desk study. Embedded mitigation measures will ensure that likely effects on any such species are avoided.

~~9.6.157~~9.6.158 For the purposes of the assessment and on a precautionary basis, it is assumed that the Invertebrate assemblage within the Sites and Cable Route Search Area is of **Local Importance**.

Plants

~~9.6.158~~9.6.159 Black poplar *Populus nigra* and Plot's elm *Ulmus minor 'plotii'* appear on the Northamptonshire BAP.

~~*9.6.159*~~*9.6.160* Notable plant records gathered within the Study Area since 2000 included the following species: Scots pine *Pinus sylvestris*, bird's-nest orchid *Neottia nidus-avis*, bluebell *Hyacinthoides non-scripta,* box *Buxus sempervirens*, cat-mint *Nepeta cataria*, corn marigold *Glebionis segetum*, corn mint *Mentha arvensis*, corn spurrey *Spergula arvensis*, dwarf spurge *Euphorbia exigua*, field scabious *Knautia arvensis*, fringed water-lily *Nymphoides peltata*, galingale *Cyperus longus*, good-king-Henry *Blitum bonus-henricus*, green-winged orchid *Anacamptis morio*, heath spotted orchid *Dactylorhiza maculata*, hoary plantain *Plantago media*, hound's-tongue *Cynoglossum officinale*, large-leaved lime *Tilia platyphyllos*, marsh ragwort *Jacobaea aquatica*, mudwort *Limosella aquatica*, navelwort *Umbilicus rupestris*, quaking-grass *Briza media*, ragged-robin *Silene*

flos-cuculi, scarce redshank moss *Ceratodon conicus*, shrubby cinquefoil *Potentilla fruticosa*, smooth brome *Bromus racemosus*, stinking chamomile *Anthemis cotula*, tormentil *Potentilla erecta*, water-soldier *Stratiotes aloides*, wavy hair-grass *Deschampsia flexuosa*, wild strawberry *Fragaria vesca*, wood horsetail *Equisetum sylvaticum* and wood-sorrel *Oxalis acetosella.*

9.6.1609.6.161 The habitats within the Order Limits are considered typical in diversity and quality for their surroundings, with arable habitats being dominant, and grassland, woodland and aquatic habitats being rarer.

9.6.1619.6.162 All fields within the Sites where agri-environmental schemes were in place were surveyed for arable weeds (Ref 9.57). Following the survey, the importance of each fields arable weed assemblage was then assessed using the Plantlife methodology (Ref 9.58). Several arable weed species were recorded within the Sites, including: black-grass *Alopercurus myosuroides*, scarlet pimpernel *Anagallis arvensis*, smooth tare *Vicia tetrasperma*, rye brome *Bromus secalinus*, many-seeded goosefoot *Lipandra polysperma*, round-leaved fluellen *Kickxia spuria*, field pansy *Viola arvensis*, small-flowered crane's-bill *Geranium pusillum*, false cleavers *Galium spurium* and black mustard *Brassica nigra*. Indicator species are assigned a score based on their rarity, and the total score for the field serves as a measure of the importance of the assemblage of arable weeds present within a particular field. Fields AF1, AF23, AF28, EF23, EF30 and FF4 each had a score of greater than 11, with EF30 having the highest score of 18. However, the threshold score to qualify for an arable weed assemblage of County importance (greater than 20) was not met. The arable weed assemblages in all of these fields were therefore assigned Local importance. Additional notable arable weeds were recorded incidentally during other surveys, and included slender tare *Vicia parviflora*, sharp-leaved fluellen *Kickxia elatine* and dwarf spurge *Euphorbia exigua* (a notable species returned by the data searches).

9.6.1629.6.163 Several grassland fields were assessed as being 'Other Neutral Grassland'. These have a higher botanical diversity and constitute the most likely areas to support notable plant species within the Sites. Some of the species recorded by the desk study may be present in these fields.

9.6.1639.6.164 Given the presence of habitats with elevated botanical interest, the Sites and Cable Route Corridor are considered to be of **Local Importance** for notable plants.

Freshwater Fish

9.6.1649.6.165 No fish records were returned by the desk study within the Study Area since 2000, although three records of spined loach *Cobitis taenia* (a Species of Principal Importance) outside of 2km from any of the Sites were returned.

9.6.1659.6.166 Open-source fish data from the Environment Agency were also gathered from the Study Area. These data revealed records of the following species, since 2000: barbel *Barbus barbus,* bleak *Alburnus alburnus*, common bream *Abramis brama*, brown / sea trout *Salmo trutta,* bullhead *Cottus gobio*, chub *Leuciscus cephalus*, dace *Leuciscus leuciscus,* European eel *Anguilla Anguilla,* gudgeon *Gobio gobio*, minnow *Phoxinus phoxinus,* nine-spined

stickleback *Pungitius pungitius,* perch *Perca fluviatilis,* pike *Esox Lucius,* roach *Rutilus rutilus*, rudd *Scardinius erythrophthalmus,* ruffe *Gymnocephalus cernuus,* silver bream *Abramis bjoerkna*, spined loach *Cobitis taenia,* stone loach *Barbatula barbatula,* tench *Tinca tinca,* three-spined stickleback *Gasterosteus aculeatus* and several hybrids, plus unidentified fish in the families/ genera: Cobitidae, Cottidae, Cyprinidae, Gasterosteidae, Noemacheilus and Phoxinus. Additional species highlighted as being known to be present in the wider River Nene by the Environment Agency include brook lamprey *Lampetra planeri*.

9.6.1669.6.167 Watercourses present at the Sites and within the Cable Route Corridor have wider connectivity with the River Nene and its tributaries, and may also be used by migratory species, such as European eel and brown trout. However, considering the nature of the proposals, it has not been considered appropriate to conduct detailed surveys for freshwater fish.

9.6.1679.6.168 The presence of freshwater fish is assumed within principal watercourses including the River Nene, and suitably large and wet feeder streams. Consequently, these species are considered to be of **Local Importance** in the context of the dominance of arable habitats within the Order Limits.

Invasive Species

9.6.1689.6.169 Records indicate the presence of Chinese water deer *Hydropotes inermis*, Virginia-creeper *Parthenocissus quinquefolia*, Japanese knotweed *Reynoutria japonica*, orange balsam *Impatiens capensis* and Nuttall's waterweed *Elodea nuttallii* within the Study Area, since 2000.

9.6.1699.6.170 Chinese water deer and Muntjac deer *Muntiacus reevesi* have been observed during various surveys of the Sites. In addition, an American mink *Neovison vison* was observed at Green Hill E and American signal crayfish *Pacifastacus leniusculus* at Green Hill F during otter and water vole surveys.

9.6.1709.6.171 No observations of any other invasive non-native species have been made during the fieldwork carried out to date. Species particularly closely searched for were Himalayan balsam *Impatiens glandulifera*, Japanese knotweed and giant hogweed *Heracleum mantegazzianum*, although none were recorded.

9.6.1719.6.172 It is illegal to release or cause the dispersal of invasive non-native species and therefore they will be considered within the impact assessment as a non-IEF included in light of legal obligations under Schedule 9 of the Wildlife & Countryside Act (Ref 9.10).

Ecological Evaluation Summary

9.6.1729.6.173 **Table 9.5** summarises the Ecological Evaluation of each feature identified in the baseline section. All features considered IEFs will be carried through to the assessment of effects.

Table 9.5: Summary of Ecological Evaluation

Ecological Feature	Importance	IEF?
Ramsar / Special Protection Areas (SPA)		

Ecological Feature	Importance	IEF?
Upper Nene Valley Gravel Pits Ramsar/SPA	International	Yes
Sites of Special Scientific Interest (SSSI)		
Badsaddle, Withmale Park and Bush Walk Woods SSSI	National	Yes
Birch Spinney and Mawsley Marsh SSSI	National	Yes
Bozeat Meadow SSSI	National	Yes
Dungee Corner Meadow SSSI	National	Yes
Hardwick Lodge Meadow SSSI	National	Yes
Odell Great Wood SSSI	National	Yes
Pitsford Reservoir SSSI	National	Yes
Upper Nene Valley Gravel Pits SSSI	National	Yes
Wollaston Meadows SSSI	National	Yes
Yardley Chase SSSI	National	Yes
Local Nature Reserves (LNR)		
Crowfields Common LNR	National	Yes
Glamis Meadow and Wood LNR	National	Yes
Harrold Odell Country Park LNR	National	Yes
Lings Wood LNR	National	Yes
Scrub Field LNR	National	Yes
Summer Leys LNR, LWS	National	Yes
County Wildlife Sites (CWS)		
Nun Wood CWS	County	Yes
Templegrove Spinney CWS	County	Yes
The Slipe CWS	County	Yes
Local Wildlife Sites (LWS)		
Bozeat Cemetery LWS	County	Yes
Bozeat Glebe Meadow LWS	County	Yes
Bozeat Verge LWS	County	Yes
Bozeat Wood LWS	County	Yes
Broughton Green Lane LWS	County	Yes
Castle Ashby Parkland LWS	County	Yes
Castle Ashby Woodland LWS	County	Yes

Ecological Feature	Importance	IEF?
Cold Oak Copse LWS	County	Yes
Cowpasture Spinney LWS	County	Yes
Earl's Barton Carr LWS	County	Yes
Earls Barton Lock Lake LWS	County	Yes
Earls Barton Meadow LWS	County	Yes
Ecton Gravel Pits LWS	County	Yes
Engine Pond LWS	County	Yes
Grendon Lakes LWS	County	Yes
Grendon Lakes North LWS	County	Yes
Grendon Quarter Pond LWS	County	Yes
Hardwater Meadows LWS	County	Yes
Hardwick Road Verge LWS	County	Yes
Hardwick Wood LWS	County	Yes
Highcroft Farm Meadow LWS	County	Yes
Hog Hole Spinney LWS	County	Yes
Horn Wood LWS	County	Yes
Lavendon Wood LWS	County	Yes
Long Furlong and Old Pastures LWS	County	Yes
Menagerie Pond LWS	County	Yes
Old Poors Gorse LWS	County	Yes
Par Pond LWS	County	Yes
Park Farm Industrial Estate LWS	County	Yes
Scotland Pond LWS	County	Yes
Sywell Reservoir and Country Park LWS	County	Yes
The Basin LWS	County	Yes
Threeshire's Wood LWS	County	Yes
Vivians Covert LWS	County	Yes
Walgrave East Meadow LWS	County	Yes
Warren Ponds LWS	County	Yes
Wilby Meadows Stream LWS	County	Yes
Wilby Way Meadows LWS	County	Yes
Yardley Brook Field LWS	County	Yes

Ecological Feature	Importance	IEF?
Wildlife Trust Reserves (WTR)		
Pitsford Water WTR	County	Yes
Protected Wildflower Verges (PWV)		
Bozeat Verge PWV	County	Yes
Easton Maudit PWV	County	Yes
Grendon Verge PWV	County	Yes
Milton Keynes Wetland Wildlife Corridors		
River Great Ouse Milton Keynes Wetland Wildlife Corridor	County	Yes
Biological Notification Sites (BNS)		
Snip Wood BNS	County	Yes
Habitats		
Arable fields (cereal crops; non-cereal crops; temporary grass and clover leys; winter stubble)	Site	No
Arable field margins (game bird mix; pollen and nectar; tussocky; cultivated annually)	Local	Yes
Modified grassland	Site	No
Other neutral grassland	Local	Yes
Scrub (blackthorn scrub; bramble scrub; mixed scrub; willow scrub)	Site	No
Woodland (other woodland; broadleaved; and other coniferous woodland; and other woodland; mixed)	Local	Yes
~~Rural~~Individual trees - rural trees	Local	Yes
~~Ancient~~Individual trees - ancient / veteran trees	District	Yes
Ponds (priority habitat; temporary lakes and pools)	District	Yes
Ruderal/ephemeral	Site	No
Tall forbs	Site	No
Artificial unvegetated, unsealed surface	Negligible	No
Bare ground	Negligible	No
Developed land; sealed surface	Negligible	No
Hedgerows (native hedgerow; native hedgerow – associated with bank or	Local	Yes

Ecological Feature	Importance	IEF?
ditch; native hedgerow with trees; native hedgerow with trees – associated with bank or ditch; species-rich native hedgerow; species-rich native hedgerow – associated with bank or ditch; species-rich native hedgerow with trees; species-rich native hedgerow with trees – associated with bank or ditch); non-native ornamental hedgerow)		
Lines of trees (line of trees; line of trees – associated with bank or ditch; ecologically valuable line of trees)	Local	Yes
Ditches	Local	Yes
Other rivers and streams	District	Yes
Priority habitat	District	Yes
Culvert	Negligible	No
Species		
Badger	Local	Yes
Foraging and Commuting Bats	County	Yes
Roosting Bats	County	Yes
Otter	Local	Yes
Water vole	District	Yes
Brown hare	Local	Yes
Hedgehog	Local	Yes
Polecat	Local	Yes
Harvest mouse	Local	Yes
Deer	Site	No
Reptiles	Local	Yes
Amphibians	Local	Yes
Breeding birds (Open Habitats)	County	Yes
Breeding birds (Boundary Habitats)	District	Yes
Breeding birds (Wetland Habitats)	Site	No, but included in Impact Assessment as legislation protects all wild birds from harm when nesting
Overwintering birds (Open Habitats)	County	Yes

Ecological Feature	Importance	IEF?
Overwintering birds (Boundary Habitats)	District	Yes
Overwintering birds (Wetland Habitats)	Local	Yes
Invertebrates	Local	Yes
Plants (including Arable Weeds)	Local	Yes
Freshwater fish	Local	Yes
Invasive species	Negligible	No, but included in Impact Assessment given legislation regarding prevention of their spread

Future Baseline

~~9.6.173~~9.6.174 This section considers changes to the baseline conditions, described above, that might occur in the absence of the Scheme and during the time period over which the Scheme would be in place. The future baseline scenarios are set out in Chapter 2: EIA Process and Methodology **[~~EN010170/~~APP~~/GH6.2.2~~-039]**.

~~9.6.174~~9.6.175 In the absence of the Scheme, it is anticipated that the Sites would remain in arable production, with associated intensive management regimes. Such intensive systems are predicted to entail the continued requirement for additional soil inputs and conditioners, with likely negative implications for wildlife.

~~9.6.175~~9.6.176 Additionally, climate change is set to pose new challenges for both farming and wildlife, with less predictable and more extreme weather.

~~9.6.176~~9.6.177 Given these predicted future pressures, it is possible that the condition of habitats and populations of species present within the Sites could be degraded or diminished. The valuation of importance of the IEFs present within the Sites may consequently be reduced or increased, depending on the local/regional/national conservation context of the receptors in question. Should populations of a receptor decline nationally but persist within the Sites, then its valuation would increase. However, should the ranges or populations of receptors expand in response to climate change, then the importance of the receptor in the Sites may decrease.

Designated Sites

~~9.6.177~~9.6.178 The future baseline conditions for designated sites would remain broadly unchanged, as future development would be expected to adhere to relevant legislation and policy to ensure adverse impacts are avoided. Climate change may however impact the habitats and/or species for which the sites are designated.

Habitats

9.6.1789.6.179 The future baseline conditions for habitats would remain broadly unchanged, although continued use of intensive arable systems may further degrade the soil and thereby also degrade the quality of the habitats present. Climate change may also have adverse impacts on habitats, especially with less regular weather and climate patterns; extremes of temperature, drought and flooding could all degrade habitat quality in the future.

Species

9.6.1799.6.180 The future baseline conditions for certain species may change. Future development would be expected to adhere to relevant legislation and policy to ensure adverse impacts are avoided in the main, but there may be residual impacts on particular species. Climate change may also have adverse impacts on various species, especially with less regular weather and climate patterns; extremes of temperature, drought and flooding could all impact food availability and breeding success. Conversely, climate change may benefit certain species and allow the expansion of their ranges and/ or increases to their populations.

9.7 Potential Sources of Impact

9.7.1 The CIEEM guidance for impact assessment (Ref 9.34) draws a necessary distinction in Ecological Impact Assessment between 'impacts' and 'effects'. An 'impact' is an action resulting in changes to an ecological feature, whereas an 'effect' is the outcome to an ecological feature from an impact.

9.7.2 The following potential sources of ecological impacts during the construction, operation and decommissioning phases of the scheme are discussed in this section to provide context in the assessment of likely significant effects. The examples given are not exhaustive.

Construction Phase

9.7.3 Construction phase impacts may include:

- **Habitat Loss and Habitat Change**: Limited habitat loss (for example at hedgerows) may occur where access for construction and operation is required, where existing field accesses cannot be used or need to be widened. Other examples include clearance to facilitate any permanent hardstanding such as foundations or footings. Habitat change will principally be associated with the reversion of arable fields to grassland and other habitats through management, as well as habitat creation where valuable habitat creation opportunities are identified.
- **Killing and Injury**: Habitat clearance and the actions of vehicles and plant during construction has the potential to cause direct harm to species.
- **Fragmentation**: Described by CIEEM as, "*The breaking up of a habitat, ecosystem or land-use type into smaller parcels with a consequent impairment of ecological function*". Potentially in combination with habitat loss and habitat change, fragmentation can reduce the function of a habitat as well as impede the ability of a species to disperse and maintain a viable

population. Installation of fencing or culverting streams may also cause fragmentation, as well as through excessive light and noise disturbance.

- **Disturbance**: Pressures or changes in the environment acting on individuals of a species so as to alter their behaviour may arise through noise, movement and vibration during construction operations, as well as increased human presence.
- **Pollution and Habitat Degradation**: Release of chemical, sediment or dust pollution can interfere with the normal function of habitats and directly harm species, while processes such as erosion, compaction and alteration of soil/water chemical composition cause the degradation of habitat quality. The construction phase risks the release of pollutants through vehicle and plant movement/operation as well the introduction of new materials onto and into the soil. Protection of sensitive features will be important in safeguarding them throughout the life of the scheme.
- **Habitat Creation and Enhancement**: The creation of new woodland, grassland, hedgerow and wetland habitats on site will increase the quantum of these habitats available in the Sites. Additionally, the enhancement of retained habitats through development-free buffer zones and increased habitat connectivity will increase the quality and permeability of the Sites to different species. Creation/ installation of habitat features, such as artificial nesting boxes or wood piles, will also increase the availability of nesting/ roosting/ sheltering sites for different species. Beneficial effects may also be derived from the cessation of cultivation, chemical treatments and soil inputs.

Operational Phase

9.7.4 Operational phase impacts may include:

- **Habitat Loss and Habitat Change**: Significant impacts from these are not anticipated as operation will be largely benign, unless major unexpected maintenance or repair events are required following damage to infrastructure. Routine replacement of panels and batteries at the end of their lifespan (anticipated to be once for solar panels and up to five times for batteries, respectively, during the lifetime of the Scheme) would not be expected to entail significant habitat loss or change, since the supporting infrastructure (panel frames and BESS compound) will already be in place, although previously decommissioned access points and tracks used during the construction of the Scheme may need to be re-opened to facilitate the transport of materials around the Sites where the maintenance tracks alone are not sufficient. Ongoing habitat maintenance will seek to ensure the favourable condition and enhancement of all newly created and retained habitat for the life of the Scheme. Ecological habitat and species monitoring will be key to realising this.
- **Killing and Injury**: Routine operational works are unlikely to give rise to these effects, although there is the risk of direct harm to species from the movement of vehicles around the Sites (including during the replacement of

panels and batteries during the lifetime of the Scheme), or the trapping of certain species within the fencing or fenced area.

- **Fragmentation**: The presence of a solar farm is anticipated to be habituated to by most mobile species, especially with the creation of new, and enhancement of retained, habitats. However, such impacts will vary between species groups. Typical perimeter fencing is not considered to impede the movement of most mammals, which may continue to move through, beneath or potentially over fencing, although movement of deer is likely to be impacted.
- **Disturbance**: Operational disturbance may occur through the routine movement of vehicles and personnel on site (including during the replacement and regular maintenance of panels and batteries during the lifetime of the Scheme), as well as the presence of low-level noise associated with electrical equipment. Light reflection and glare may be another factor.
- **Electro-magnetic Fields (EMFs)**: The potential for effects of anthropogenic EMFs on ecology is an emerging and a poorly researched issue. It is feasible that EMFs emanating from electrical cables could impact certain species which utilise naturally generated EMFs (for instance for navigation), although to date there is very little evidence of significant behavioural changes from EMFs generated by electric cables. The size of generated fields are highly contingent on geometry, voltage and current, and it is considered that EMFs associated with the higher voltage export cable are more likely to risk impacts than those potentially emanating from interconnecting cables across the Scheme. All electrical cables associated with the Scheme will be buried underground; buried cables typically have their electric fields fully attenuated by cable sheathing and the substrate under which they are buried. However, magnetic fields and induced electric fields are not necessarily attenuated in this way, and there lies a risk of effects on receptive wildlife species, particularly on a number of fish or invertebrate species which are known to have evolved sensitivity to electric and/or magnetic fields. In terms of terrestrial species, it is important to note that there is no evidence to suggest that typical solar array infrastructure can cause impacts and, due to the burial, sheathing and relatively low voltage of cabling within generating stations, the overall risk of EMFs resulting in significant effects on terrestrial wildlife is considered highly unlikely. There is some risk of EMFs affecting fish in the vicinity of the 400-132kV cables (i.e. where the cable is required to cross beneath main rivers).
- **Pollution and Habitat Degradation**: The risk of these impacts during operation are overall very low, especially where good maintenance practice is followed to avoid further pollution events or degradation of adjacent habitats. Pollution risks also extend to include impacts resulting from fire management, in the unlikely event this were to occur. Risks are further increased around battery energy storage infrastructure, as the water used on surrounding habitats to control fire may create a source of contaminated

fire water runoff into surrounding water bodies, without appropriate drainage and pollution control allowed for at the design stage. Potential impacts relating to contaminated water will be addressed specifically in Chapter 10: Hydrology, Flood Risk and Drainage **~~[EN010170/APP~~**Revision A **[EX1/GH6.2.10_A]**, and Chapter 22: Ground Conditions and Contamination **~~[EN010170/APP~~**Revision A **[EX/GH6.~~2~~6.22_A]**.

- **Habitat Creation and Enhancement**: Ecological benefits can be maximised through the implementation of a habitat management and monitoring scheme for the life of the development. Beneficial effects may also be derived from the cessation of cultivation, chemical treatments and soil inputs, where the Scheme remains operational across multiple decades.

Decommissioning Phase

9.7.5 Considering the anticipated 60-year lifespan of the Scheme, the accurate prediction of decommissioning effects is challenging and can only be informed by the legal, policy and conservation constraints and priorities present at the time of application.

- **Habitat Loss and Habitat Change**: It is assumed that the fields will be able to be returned to agricultural use upon decommissioning, therefore this habitat change will need to be considered, including impacts on any habitats created by the Scheme.
- **Killing and Injury**: As per the construction phase, risks of direct harm to species should be considered.
- **Habitat Fragmentation**: While the removal of development infrastructure as a reversal of the construction phase is unlikely to result in habitat fragmentation, the reversion to agriculture may impact connectivity between habitats networks and species populations, which have arisen as a result of the Scheme.
- **Disturbance**: Disturbance impacts are likely to be the same as those described within the construction phase.
- **Pollution and Habitat Degradation**: Pollution and habitat degradation risks are likely to be the same as the construction phase.

9.8 Embedded Mitigation Measures

9.8.1 The way that likely ecological effects have been or will be prevented, avoided or mitigated to reduce impacts to a minimum through design and/or management of the Scheme is outlined in this section and has been taken into account as part of the assessment of the likely significant effects.

9.8.2 The following embedded mitigation measures for the construction, operation and decommissioning phases have been incorporated into the Scheme's design.

Embedded Construction Mitigation Measures

9.8.3 The Scheme has been designed to retain the most valuable habitats and protect these with undeveloped buffer zones during construction and operation and

through the decommissioning of the Scheme. Similarly, habitats with particular importance for protected/notable species, even if the habitats are of low importance in themselves, will be retained outside the development area, where appropriate, to avoid impacts.

9.8.4 Buffers from field boundary habitats and other ecological features have been applied according to a set of ecological importance criteria. Buffers are measured from the centre line of the hedgerow, root protection area of the tree canopy (in the case of woodland or individual trees) or the banktop of the watercourse. Buffers will not contain any array structures, hard standing or electrical hardware. Protective construction-phase fencing will also observe these buffer distances and will help to ensure that areas of habitat within the buffers are not subject to damage during the construction phase. The layout of ecological buffers is provided in Appendix 9.12: Schedule of Protective Ecological Buffers **[~~EN010170/~~APP~~/GH6.3.9.12~~-095]** and will be secured through implementation of the Outline EPMS and the Outline LEMP. The measurement criteria are as follows:

- 8m minimum from ditches and any trees with 'low' suitability for roosting bats.
- 10m minimum from ditches with signs of otter or water vole, or trees with 'moderate' suitability for roosting bats.
- 15m minimum from all hedgerows, minor watercourses (small streams), 'outlying' badger setts and from any tree with 'high' suitability for roosting bats.
- 20m minimum from woodland, ponds and moderate watercourses (depending on ecological value).
- 30m minimum from ancient woodland, major watercourses (e.g. rivers) and 'main', subsidiary' or 'annexe' badger setts.
- Other, bespoke buffers around bat roosts and the nesting sites of Schedule 1 birds will be implemented on a case-by-case basis, taking into account the specific species' requirements.

9.8.5 Within the above-mentioned buffer zones, habitat management measures to provide net gains for biodiversity are set out within the OLEMP **[~~EN010170/APP~~Revision A [EX1/GH7.4_A]].**

9.8.6 Access for construction (of both the arrays and the cable route) and operational maintenance has been specifically designed to utilise existing field entrances and gaps in hedgerows and other linear habitats wherever possible. This has been completed through collaboration between several technical disciplines, and through scrutinising OS, topographical and aerial imagery. Through this exercise, the need for new gaps in hedgerows or new ditch crossings has been minimised as far as possible. Internal access/maintenance tracks have also been routed so as to avoid designated ecological buffer zones wherever possible. New permanent gaps through hedgerows into fields are understood to measure approximately 3.5-6.5m in width, in keeping with typical agricultural accesses (as

set out within Chapter 4: Scheme Description **~~[EN010170/APP~~**Revision A **[EX1/GH6.2.4_A]**) and the ecological mitigation measures determined to be necessary for the opening of gaps are set out within the Outline Ecological Protection and Mitigation Strategy (EPMS).

9.8.7 Hedgerow losses associated with the construction phase only will be reinstated.

9.8.8 An iterative process has been followed in the design of the Cable Route Corridor, whereby potential ecological constraints were identified over a wide area (the Cable Route Search Area outlined in the PEIR), which has been continually refined in order to determine the least impactful option wherever practicable. The Cable Route Corridor has been sited to avoid or minimise impacts on valuable ecological features as identified during the desk study and ecological fieldwork. In addition, horizontal directional drilling (HDD) between particularly sensitive features (such as the River Nene, woodland and Local Wildlife Sites) has been adopted. In other, less sensitive locations, the cable will cross habitats through open cut trenching. The width of the trench will be a maximum of 3.5m, while the haul road will measure 3-6.5m, making all temporary hedgerow gaps measure up to 10m wide. The anticipated habitat and hedgerow impacts within the Cable Route Corridor are temporary (for the duration of the cable route installation), and they will be reinstated as soon as possible through hedgerow and grassland replanting/translocation/re-seeding. The ecological avoidance, mitigation and compensation measures determined to be necessary for cable route installation are set out within the Outline EPMS **~~[EN010170/APP~~**Revision A **[EX1/GH7.5_A].**

9.8.9 An ~~Outline Construction Environmental Management Plan (~~OCEMP~~)~~ **~~[EN010170/APP~~** Revision A **[EX1/GH7.1_A]** has been produced to accompany the Environmental Statement (ES). The OCEMP details measures and approaches to be adopted which will limit the likelihood of effects upon retained habitats through damage, pollution and disturbance during the construction phase in order to secure the mitigation measures set out in the Environmental Statement. The OCEMP is intended to be followed by those responsible for the construction of the Scheme. The OCEMP contains (among others) the following provisions:

- Detail on the location and specification of temporary and permanent protective fencing to be installed prior to the onset of construction. The buffer zones specified in this chapter will drive these locations.
- Restrictions on the use of fuels and other contaminants in proximity to boundary features and other sensitive habitats.
- Measures to limit dust-generating activities, such as when working in dry conditions.
- Measures to limit the mobilisation of sediments and run-off, such as when working in very wet conditions or the use of silt fencing when working in ditches.

9.8.10 ~~An Outline Ecological Protection and Mitigation Strategy (OEPMS)~~An OEPMS has been produced to support the Environmental Statement and OCEMP. As for the OCEMP and OLEMP, under a requirement of the draft DCO, a detailed

version of the EPMS will need to be approved by the relevant local authority which must be substantially in accordance with the OEPMS. The OEPMS summarises the measures and approaches to be adopted which will limit the likelihood of impacts occurring upon retained habitats through 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 cable installation, energy storage and solar array construction. The Outline EPMS contains (among others) the following measures:

- An Ecological Clerk of Works (ECoW) will be designated at the onset of the construction phase, which will provide ecological supervision during the completion of any works which have the potential to impact protected and notable species, as appropriate.
- Criteria under which the 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 effects (for example, hibernation or nesting season for particular species).
- Details of task-specific Method Statements for potentially ecologically impactful works as identified in this Chapter. For example, monitoring during proposed horizontal directional drilling beneath the River Nene.
- Restrictions on the use of fuels and other contaminants in proximity to boundary features and other sensitive habitats.
- Measures to limit the dust generating activities, such as when working in dry conditions.
- Measures to limit the mobilisation of sediments and run-off, such as when working in very wet conditions or the use of silt fencing when working in ditches.
- Construction personnel will receive a Toolbox Talk detailing the presence of sensitive ecological features at or close to the Sites and will be informed that no materials should be stored in, or vehicles drive through, buffer zones.
- Temporary site lighting during construction will be required to enable safe working during construction during hours of darkness (likely over the winter months only) and will be designed as far as reasonably practicable to minimise potential for light spillage outside the Sites and Cable Corridor, particularly towards valuable ecological habitats. Standard good practice measures would be employed to minimise light spill, including glare, during

construction. A sensitive lighting strategy will specify where and how any artificial lighting will be used, which will serve to mitigate adverse impacts on ecological receptors such as bats.

Embedded Operational Mitigation Measures

9.8.11 Operation of the Solar Arrays require minimal intervention and as such levels of disturbance (light, noise and human presence) upon wildlife within the Sites will be minimal, and likely lower or equivalent to baseline levels, during the operational phase. The only exception to this will be during the replacement of panels or batteries, which is understood to be approximately once for solar panels and up to five time for batteries during the lifetime of the Scheme, respectively.

9.8.12 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 of the Scheme. The Outline LEMP contains habitat management measures to take place within the above-mentioned buffer zones which will provide net gains for biodiversity.

9.8.13 A standoff of at least 3m between the perimeter security fencing and the array structures will be implemented in order to facilitate movement for maintenance vehicles within the arrays.

9.8.14 Habitat under the arrays and within buffers, easements and other designated ecological mitigation areas have each received habitat creation and management prescriptions in order to deliver a BNG and contribute to policy-led green infrastructure and Nature Recovery Network principles. The rationale for all mitigation is set out in this Chapter and all such enhancements are further detailed within the Outline LEMP. Prescriptions include substantial new hedgerow and tree planting, reinforcement planting at existing hedgerows and field boundaries, extensive grassland habitat creation and sympathetic management both within buffers and within the arrays, as well as discrete, valuable habitat creation (e.g. ponds, scrapes and meadows) in appropriate locations. The BNG assessment can be found in Appendix 9.13: Biodiversity Net Gain Assessment **~~[EN010170/APP~~**Revision A **[EX1/GH6.3.9.13_A].**

9.8.15 The perimeter of the Solar Arrays and energy storage sites will be fenced for security purposes. Internal field boundaries will lie outside of the array fencing, so as to aid the application of differing habitat management prescriptions and the creation of different habitats/vegetation structures within the buffer areas and the array areas.

9.8.16 Where land has been excluded from development within the Sites, these areas have been examined during the design phase of the Scheme for their potential to be managed for ecological mitigation and enhancement, in order to provide BNG and contribute to policy-led green infrastructure and Nature Recovery Network principles. Where there is significant potential for this land to deliver ecological mitigation and/or Biodiversity Net Gain, this land has been retained within the Scheme and will be managed throughout the operational phase to maximise its

value as ecological mitigation or enhancement land. These measures are discussed in later sections within this document, and areas designated for ecological mitigation/enhancement are displayed in the OLEMP.

9.8.17 Habitats within the array fencing will be either managed through grazing or cutting. The proportion of grazing and cutting will be balanced so as to emphasise the ecological benefits which can arise from a sensitively-timed cutting regime. Grazing methods such as pulse-grazing, aftermath grazing and conservation grazing can also be employed. Management proposals are contained within the OLEMP.

9.8.18 As noted in Chapter 4: Scheme Description **~~[EN010170/APP~~**Revision A **[EX1/GH6.3.9.13_A]**, lighting is not required within the Solar Arrays for the operational phase. Motion sensing security lighting will be provided within substations and within the BESS site, to be used only for maintenance and security purposes. This is set out in the Outline Operational Environmental Management Plan (OOEMP) **~~[EN010170/APP~~**Revision A **[EX1/GH7.2_A].** A sensitive lighting strategy as part of the detailed OEMP will specify how this artificial lighting will be installed and used, which will serve to mitigate adverse impacts on ecological receptors which are adversely impacted by lighting, such as bats.

Embedded Decommissioning Mitigation Measures

9.8.19 During the decommissioning phase, the protective buffer zones established during construction and maintained during operation will be honoured to avoid adverse impacts on valuable habitats outside of the operational array.

9.8.20 It is considered likely that the effects and associated mitigation measures required during the decommissioning phase will be similar to those identified for the construction phase, however further mitigation measures may be required, depending on the future baseline of the Scheme at the point of decommissioning. As a result, pre-decommissioning surveys and ecological 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. This approach is set out within, and will be implemented through, the approved Outline Decommissioning Statement (ODS) **~~[EN010170/APP~~**Revision A **[EX1/GH7.3_A].**

9.9 Assessment of Likely Significant Effects

9.9.1 This section identifies and characterises potential impacts arising during the construction and operational phases on each Important Ecological Feature of the Scheme considered possible according to baseline data and Scheme design. When characterising impacts, embedded mitigation measures which form part of the Scheme's design and avoid or mitigate for potential impacts are taken into account and any significance of effect is described. Any additional mitigation required to reduce these effects is then set out. Thereafter, an assessment is made of the significance of any residual effects after all mitigation measures have

been accounted for. Ecological enhancements which will or may be adopted are also outlined.

Designated Sites

Upper Nene Valley Gravel Pits SPA, SSSI and Ramsar

Construction Phase Impacts

9.9.2 The Upper Nene Valley Gravel Pits is located outside of the Scheme's boundary, but is nearby to Green Hill BESS, and the majority of the Sites (excluding Green Hill A and A.2) lie within 10km of the SPA.

9.9.3 The proximity to Green Hill BESS potentially makes the SPA susceptible to short to medium-term degradation impacts during the construction phase, arising from discharge/deposition of sediments, dust and contaminants during construction on Green Hill BESS. Ecological buffers have been embedded into the design of the Scheme from an early stage, in order to minimise the likelihood of adverse impacts arising during the construction phase. This included the removal of the field (previously known as BESS 3) which was previously located closest to the SPA from the Scheme Boundary following consultation with Natural England, prior to submission of the DCO application. Additionally, embedded mitigation measures to minimise the likelihood and severity of pollution events, dust deposition and run-off arising during the construction and operational phases, have been incorporated into the Scheme. The OCEMP and Outline EPMS detail how vehicles, plant and materials will be transported to the construction zone, as well as other standard environmental protection measures that will apply to the construction phase, such as dust suppression, pollution control measures and protection of adjacent habitats/watercourses from surface runoff.

9.9.4 Given the above embedded mitigation measures, it is considered that significant impacts arising from discharge/deposition of sediments, dust and contaminants can be avoided/mitigated, and therefore **no significant adverse effects** on the above designated sites through this potential impact pathway are anticipated.

9.9.5 The construction of the Scheme will not result in any direct impacts on habitats within the SPA, however land within 10km of the SPA may constitute Functionally Linked Land (FLL) and provide supporting habitat for overwintering bird species for which the SPA is designated, such as golden plover and lapwing. These species tend to disperse widely from the SPA for foraging and thus are most at risk of impacts from loss of surrounding land.

9.9.6 Extensive wintering bird surveys have recorded both golden plover and lapwing using the Sites, in generally low numbers. However, two fields within the Scheme, BF3 and EF25, were used by significant numbers of golden plover (>1% of the SPA population, based on revised counts from 2021/2022) on more than one occasion (pattern use). As such, both of these fields are considered FLL. No fields were recorded as FLL for lapwing.

9.9.7 Other fields within the Scheme were either used by lower numbers of either golden plover or lapwing (below the 1% threshold) or were only used on a maximum of one occasion by numbers above the 1% threshold. As such, these

fields do not constitute FLL. This said, given that two full seasons of surveys were not completed at Green Hill F and G, a degree of precaution has been factored into the assessment regarding FLL. At Green Hill F, FF1, FF11, FF13 and FF15 are considered to have potential to be FLL, given the recorded presence either golden plover or lapwing in numbers of above 1% of the SPA population on one occasion. No fields within Green Hill G are deemed likely to constitute FLL, given a total absence of this species and the known cropping regime at this Site having remained consistent for several years. Loss of fields identified as FLL (i.e. BF3, EF25 and potentially those in F and G) could have a **significant adverse effect** on the populations of golden plover and lapwing associated with the SPA. This would be significant at an **International** level given the SPA's designation.

9.9.8 Aside from loss of foraging habitat, there is a risk of disturbance to golden plover and lapwing using fields within or adjacent to the Scheme during construction, which may cause these species to seek alternative foraging areas. Given the availability of alternative foraging areas in the local landscape, however, and the temporary nature of construction works, this is not considered likely to give rise to any significant effects.

9.9.9 Several other species which are part of the assemblage for which the SPA has been designated have also been recorded by the wintering bird surveys; relevant species include cormorant *Phalacrocorax carbo*, gadwall *Anas strepera,* grey heron *Ardea cinerea*, mallard *Anas platyrhynchos,* shoveler *Anas clypeata* and wigeon *Mareca penelope*. These species were all recorded chiefly flying over the Sites and, less frequently, foraging or sheltering within the Sites in low numbers. The pond in BF5 at Green Hill B was used by up to five gadwall on two occasions; this is below the 1% of the SPA population. There was also seasonal use of this pond by wigeon, with this species recorded on a single occasion in October 2023 and 2024; a maximum of 20 birds. Elsewhere, mallard were recorded in low numbers across the majority of Sites, with a maximum of 12 birds. Grey heron were recorded at several Sites in low numbers, chiefly at Green Hill D, E and BESS. All observations were of single birds, aside from a group of four birds on one occasion. Cormorant and shoveler were only recorded flying over the Sites, with no association with the Sites themselves. Given the limited use of the Sites by these species, it is currently considered highly unlikely that such species are dependent to any significant extent upon land within the Scheme.

9.9.10 Qualifying wintering bird species may be present within the gravel pits which form component parts of the SPA during construction, with the potential to be disturbed by construction works. This is only a tangible risk for works associated with Green Hill BESS and the nearby sections of the Cable Route Corridor; all other parts of the Scheme are far enough away from the SPA so as to avoid impacts. However, assessments of construction-related noise set out within the Noise and Vibration chapter of the ES **[~~EN010170/~~APP~~/GH6.2.14~~-051]** are not deemed to be substantially above baseline levels, and all proximate works to the SPA will be temporary in nature. As such, **no significant effects** are likely through this pathway.

Significance of Effects

9.9.11 Given that embedded mitigation measures will minimise any potential impacts from pollution on the SPA during the construction phase, it is considered that all reasonable avoidance and mitigation steps will be taken to ensure that **no significant adverse effects** will occur from potential pollution events during the construction phase. Temporary disturbance during construction to mobile species outside the SPA, and species within the SPA boundary, is considered to lead to **no significant adverse effects.** Given the identification of two fields which constitute FLL, and a further four fields deemed FLL on a precautionary basis, there is a likely **significant adverse effect** at an **International** level through loss of FLL.

Construction Phase Additional Mitigation Measures

9.9.12 Losses of FLL have been mitigated through retention of suitable fields within the Scheme, which will be managed for the duration of the Scheme as grassland for golden plover and lapwing and secured through the eventual LEMP through DCO Requirement. All fields lie within 10km of the SPA and so are within the consultation zone, and all are above 8ha in size and so suitable for these species, which have a preference for long, open sightlines.

9.9.13 Field BF1 will be retained as mitigation for BF3 (this field is of a comparable size; 14.54ha against 14.98ha), and EF25 itself will be retained and managed as grassland. Additionally, a total of ~~75.65ha~~73.79ha of precautionary mitigation land is provided against the 44.22ha of land comprising FF1, FF11, FF13 and FF15.

9.9.14 Field DF4 will be managed as spring-sown cereals. Otherwise, all fields will be managed as permanent grassland with a late season haycut, which will provide enhanced habitat for these wading bird species, to be secured in the OLEMP. Field FF7 will also have wader scrapes (shallow depressions designed to hold water), to further enhance its suitability. Considering both the extent and quality of mitigation land provided, ample mitigation is provided to offset losses FLL.

Residual Effects

9.9.15 Provision of an adequate quantum of mitigation land to offset losses of FLL will reduce adverse effects to **neutral, non-significant** levels.

Operational Phase Impacts

9.9.16 In the absence of mitigation, there is a potential risk of a battery fire at Green Hill C and BESS and subsequent discharge of chemicals into adjacent watercourses. This is most tangible for Green Hill BESS, which lies closest to the SPA of all the Sites, and adjacent to a stream which feeds into the River Nene. This could potentially degrade the water quality of the SPA and lead to significant adverse effects. However, ecological buffers have been embedded into the design of the Scheme from an early stage, in order to minimise the likelihood of adverse impacts arising during the operational phase. Additionally, embedded mitigation measures to minimise the likelihood and severity of battery fire have been incorporated into the Scheme, including the implementation of fire suppression systems, with containment measures in place to manage runoff in the event of a fire. The risk of a fire and measures to mitigate impacts in the event of a fire are

detailed in the Outline Battery Storage Safety Management Plan (OBSSMP) [~~EN010170/APP~~Revision A [**EX1/GH7.7_A]**. These are discussed in more detail in other ES chapters: Chapter 10: Hydrology, Flood Risk and Drainage **[~~EN010170/APP~~**Revision A **[EX1/GH6.2.10_A]**, and Chapter 22: Ground Conditions and Contamination **[~~EN010170/APP~~**Revision A **[EX1/GH6.2.22_A].**

9.9.17 Replacement of batteries at Green Hill BESS will occur up to five times over the lifetime of the Scheme. Given that all other infrastructure will already be in place and batteries will be changed within the compound, the risks of pollution impacts will be reduced compared to construction. Embedded mitigation will minimise these impacts. Potential battery fire impacts associated with battery replacement will be mitigated as detailed above.

9.9.18 During operation, fields designated for FLL mitigation will be managed to maintain their suitability for golden plover and lapwing, as detailed in the OLEMP.

Significance of Effects

9.9.19 Given that embedded mitigation measures will minimise the risk of any potential impacts from pollution on the SPA during the operational phase, it is considered that **no significant adverse effects** will occur.

National Statutory Designated Sites within 500m of Order Limits

9.9.20 The National Statutory Designated Sites considered in this assessment are as follows:

- Badsaddle, Withmale Park and Bush Walk Woods SSSI.
- Bozeat Meadow SSSI.
- Upper Nene Valley Gravel Pits SSSI.

9.9.21 The above designated Sites are all located within 500m of the Order, but outside of the Order Limits themselves.

Construction Phase Impacts

9.9.22 Given that the above designated sites all lie outside of the Order Limits, no direct impacts on habitats present within the above sites are anticipated during the construction phase.

9.9.23 The proximity of the above designated sites to the Scheme (within a maximum of 500m) potentially makes them susceptible to short to medium-term degradation impacts during the construction phase, arising from discharge/deposition of sediments, dust and contaminants.

9.9.24 Ecological buffers have been incorporated into the design of the Scheme from an early stage. Given that Badsaddle, Withmale Park and Bush Walk Woods SSSI lies approximately 310m from Green Hill A.2 at its closest point and approximately 1.1km from the Cable Route Corridor at its closest point, no significant impacts associated with the construction phase on this SSSI are anticipated. However, Bozeat Meadow SSSI lies within 100m of Green Hill F, and Upper Nene Valley Gravel Pits SSSI lies very close to both Green Hill BESS and the Cable Route Corridor, and therefore, in the absence of any embedded mitigation measures,

these sites would potentially be susceptible to degradation impacts during the construction phase.

9.9.25 Embedded mitigation measures to minimise the likelihood and severity of pollution events, dust deposition and run-off arising during the construction and operational phases, have been incorporated into the Scheme. An Outline CEMP and Outline EPMS have been submitted with the Environmental Statement, which detail how vehicles, plant and materials will be transported to the construction zone, as well as other standard environmental protection measures that will apply to the construction phase, such as dust suppression, pollution control measures and protection of adjacent habitats/watercourses from surface runoff. Given the above embedded mitigation measures, it is considered that significant impacts arising from discharge/deposition of sediments, dust and contaminants on the above designated sites can be avoided/mitigated, and therefore **no significant adverse effects** through this potential impact pathway are anticipated.

9.9.26 Careful design of the Site and Cable Route Corridor accesses has been carried out (Chapter 13: Transport and Access **[~~EN010170/~~APP~~/GH6.2.13~~-050]**) in order to minimise the number of new field accesses across the Scheme and as such, no new temporary or permanent accesses are required to cross the above SSSIs. Similarly, given that no new accesses are proposed in proximity to the above SSSIs, no habitat fragmentation impacts on these designated sites through the creation of new accesses in hedgerows within the Scheme boundary are anticipated.

Significance of Effects

9.9.27 Given that embedded mitigation measures will minimise any potential impacts on the above designated sites during the construction phase, it is considered that all reasonable steps will be taken to ensure that **no significant adverse effects** will occur on these sites during the construction phase. No additional mitigation measures (beyond those embedded in the design of the Scheme) are required, and **no residual effects** are anticipated.

Operational Phase Impacts

9.9.28 Operationally, impacts on these designated sites are likely to be negligible. Access onto the Sites for maintenance of hardware and habitats will be required at regular intervals, but by typically small numbers of vehicles and personnel. The only time when this will be increased is during replacement of panels and batteries, understood to be approximately every 30 years and 10 years respectively. Since the primary infrastructure (panel frames and BESS compound) would already have been built, there is a reduced risk of habitat degradation and associated dust deposition or soil runoff through equipment replacement during the operational phase. Likewise, the risk of accidental discharge of pollutants on nearby designated sites, resulting from the movement and refuelling of vehicles and plant, would be very low. Therefore, **no significant adverse effects** upon these sites are anticipated during the operational phase.

Significance of Effects

9.9.29 **No significant adverse effects** on these designated sites are anticipated during the operational phase. No additional mitigation measures (beyond those embedded in the design of the Scheme) are required, and **no residual effects** are anticipated.

Enhancement Measures

9.9.30 Habitat creation associated with a Scheme of this scale has the potential provide ecological 'stepping stones' for various species within the local, largely arable landscape and significantly contribute to and strengthen the connectivity of the above designated sites. This may be achieved through the gapping up/enhancement of existing hedgerows in the vicinity of the above designated sites, as well as tree planting and the creation of areas of species-rich grassland within and outside of the solar array areas.

National and Local Statutory Designated Sites within 500m-5km of Order Limits

9.9.31 The National Statutory Designated Sites considered in this assessment are as follows:

- Birch Spinney and Mawsley Marsh SSSI;
- Dungee Corner Meadow SSSI;
- Hardwick Lodge Meadow SSSI
- Odell Great Wood SSSI;
- Pitsford Reservoir SSSI;
- Wollaston Meadows SSSI;
- Yardley Chase SSSI;
- Crowfields Common LNR;
- Glamis Meadow and Wood LNR;
- Harrold Odell Country Park LNR;
- Lings Wood LNR;
- Scrub Field LNR; and
- Summer Leys LNR, LWS.

Construction Phase Impacts

9.9.32 The above designated sites are all located outside of the Scheme's boundary and are at least 500m (and up to 5km) from any part of the Scheme. As a result, no direct impacts to habitats within these designated sites during the construction phase are anticipated. In addition, no indirect impacts during the construction phase, such as localised habitat fragmentation, noise, or habitat degradation arising from dust and silt deposition are anticipated.

9.9.33 In the absence of mitigation, there is potential for chemical spills and surface runoff into watercourses during the construction phase, which may subsequently

degrade the habitats present within these sites, should they be hydrologically connected to the watercourses present within and adjacent to the Scheme. However, embedded mitigation measures have been incorporated into the OCEMP and OEPMS to manage any run-off and chemical spillages during the construction phase, as well as other general environmental protection measures aimed at minimising the risk of impacts to local watercourses and, by extension, hydrologically linked designated sites. Please refer to Chapter 10: Hydrology, Flood Risk and Drainage **~~[EN010170/APP~~**Revision A **[EX1/GH6.2.10_A]** and Chapter 22: Ground Conditions and Contamination **~~[EN010170/APP~~**Revision A **[EX1/GH6.2.22_A]**, for a full description of the above embedded mitigation measures.

Significance of Effects

9.9.34 Given the lack of impact pathways between the Scheme and the above designated sites following the implementation of the above embedded mitigation measures, **no significant effects** during the construction phase are anticipated. No additional construction phase mitigation measures are required, and **no residual effects** are anticipated.

Operational Phase Impacts

9.9.35 Operationally, impacts on these designated sites are likely to be negligible, owing to the nature of the Scheme and the distance between these designated sites and the Scheme (at least 500m). No further construction activity or other intrusive, extractive or potentially damaging/polluting activity is required (other than replacement of panels and batteries every 30 or 10 years respectively). In the case of replacement of panels and batteries, the risk of degradation of the sites resulting from pollution of connecting watercourses is low, and pollution control measures have been detailed in the OCEMP and OEPMS. As such, no operational phase impacts on these designated sites are anticipated.

Significance of Effects

9.9.36 Given the lack of impact pathways between the Scheme and the above designated sites, **no significant effects** are anticipated during the operational phase of the Scheme. No additional operational phase mitigation measures are required, and **no residual effects** are anticipated.

Local Non-Statutory Designated Sites within Order Limits

9.9.37 The Local Statutory and Non-Statutory Designated Sites considered in this assessment are as follows:

- Earls Barton Meadow LWS;
- Bozeat Verge Protected Wildflower Verge (PWV);
- Easton Maudit PWV; and
- Grendon Verge PWV.

9.9.38 Earls Barton Meadow LWS is the only LWS identified within the Order Limits. This LWS lies within a section of the Cable Route Corridor between Green Hill E and

Green Hill BESS. This site features a floodplain meadow adjacent to the River Nene and nearby gravel extraction areas. Earls Barton Meadow LWS is approximately 6.09ha in area, and approximately 1.215ha (approximately 20%) of this LWS (along the western boundary) lies within the Order Limits.

9.9.39 There are three PWVs within the Order Limits, although only a very small area of Bozeat Verge lies within the Order Limits (approximately 70m^2, or ~1.1% of the total area of the PWV). The remainder of this PWV extends south beyond the Order Limits, along the A509.

Construction Phase Impacts

9.9.40 Potential direct impacts upon the condition of Earls Barton Meadow LWS could arise should any part of the site be damaged/removed to facilitate the installation of cables. The process of finalising the Cable Route Corridor has aimed to avoid any direct impacts upon all of the designated sites within the wider Cable Route Search Area as far as possible, and through this process, five other LWSs previously identified within the Cable Route Search Area are no longer included within the Cable Route Corridor. However, Earls Barton Meadow LWS remains within the Cable Route Corridor owing to other technical constraints along this section of the route, and therefore, in the absence of additional mitigation, there is the potential for impacts on this LWS to occur during cable installation.

9.9.41 Although the three PWVs are located within/adjacent to the Order Limits, careful design of the Site and Cable Route Corridor accesses has been carried out in order to minimise the number of new field accesses across the Scheme and as such, no new temporary or permanent accesses are required to cross the above PWVs.

9.9.42 Access F-1 (shown on Access Locations for Sites and Cable Corridor Figure 13.13 – 13.17 **[~~EN010170/~~APP~~/GH6.4.13.13-17~~-444 – APP-448]**) is the closest site access point to Bozeat Verge and is located approximately 180m to the north of the PWV. This is an existing access point where no vegetation removal is anticipated to be required to facilitate visibility splays, and swept path analysis revealed no potential impacts on the adjacent verges. As a result, **no significant effects** on Bozeat Verge through direct damage during the construction phase are anticipated.

9.9.43 Crossing F-1 (shown on Access Locations for Sites and Cable Corridor Figure 13.13 – 13.17 **[~~EN010170/~~APP~~/GH6.4.13.13-17~~-444 – APP-448]**) is located between Easton Maudit Verge PWV and Grendon Verge PWV. This crossing point will utilise an existing access through the hedgerows on either side of Easton Way to facilitate access into the south-western parts of Green Hill F. No turning movements are anticipated onto Easton Way, and therefore **no significant effects** associated with direct damage to the above PWVs from vehicles using the crossing point are anticipated. In addition, it is proposed that traffic management measures will be used at this crossing point to remove the requirement for visibility splays, and therefore no hedgerow removal or impacts to the verges along Easton Way are anticipated.

9.9.44 Indirectly, degradation of the above LWS and PWVs through a reduction in habitat quality from pollution or other means may occur during the construction phase. Embedded mitigation measures to minimise the likelihood and impacts of pollution events (including potential battery fire), dust deposition and run-off arising during the construction and operational phases have been incorporated into the Scheme. An Outline CEMP has been submitted with the Environmental Statement, which details how vehicles, plant and materials will be transported to the construction zone, as well as other standard environmental protection measures that will apply to the construction phase, such as dust suppression, pollution control measures and protection of adjacent habitats/watercourses from surface runoff. Given the above embedded mitigation measures, it is considered that any potential degradation impacts to the above designated sites during the construction phase can be avoided, and therefore **no significant effects** associated with this impact pathway are anticipated.

Significance of Effects

9.9.45 Given that the above PWVs have been considered during the design of the accesses around Green Hill F, no direct impacts to these PWVs are anticipated during the construction phase of the Scheme, and any indirect degradation impacts can be addressed through measures in the OEPMS. As a result, **no significant effects** on the above PWVs are anticipated, and no additional mitigation measures are considered to be required.

9.9.46 In the absence of additional mitigation, direct damage to the area of Earls Barton Meadow LWS within the Cable Route Corridor would likely lead to **significant adverse effects**, which would be significant at the **Local** level.

Construction Phase Additional Mitigation Measures

9.9.47 The Cable Route Corridor is approximately 340m-410m wide at the point that it overlaps with Earls Barton Meadow LWS, within which a trench (maximum 3.5m width) will be sited. Following the installation of the cables, the cable will be buried and the land affected will be reinstated. Cable trenching routes within this section of the cable route which entirely avoid Earls Barton Meadow LWS, and instead are sited through the adjacent fields, will be pursued in the first instance. If it is not practicable for the route to avoid the LWS in its entirety, then this section of the route will utilise Horizontal Directional Drilling (HDD), entailing the trench-less installation of cables using an automated drilling machine, to install the cables underneath the LWS. Measures will be put in place to minimise sediment release or disturbance through the appropriate siting of entry and exit pits and depth settings, thereby avoiding any direct damage to the LWS and its constituent habitats.

Residual Effects

9.9.48 Given that the cable route will either entirely avoid Earls Barton Meadow LWS or will utilise specialist construction methodologies to otherwise avoid impacts to the LWS, it is considered that any potential impacts to this LWS during the construction phase can be avoided, and therefore **no residual effects** are anticipated.

Operational Phase Impacts

9.9.49 Once the cable route is installed, it is understood that the cables will remain undisturbed for the life of the Scheme. Therefore, no significant impacts upon Earls Barton Meadow LWS are anticipated during the operational phase.

9.9.50 Similarly, following the establishment of the accesses and crossing points described above during the construction phase, no significant impacts to the Protected Wildflower Verges are likely to occur during the operational phase of the Scheme.

Significance of Effects

9.9.51 **No significant effects** on the above LWS and PWVs have been identified during the operational phase of the Scheme. No additional mitigation measures are required, and **no residual effects** are anticipated.

Local Non-Statutory Designated Sites within 500m of Order Limits

9.9.52 The Local Statutory and Non-Statutory Designated Sites considered in this assessment are as follows:

- Nun Wood CWS;
- Bozeat Cemetery LWS;
- Bozeat Verge LWS;
- Bozeat Wood LWS;
- Broughton Green Lane LWS;
- Cold Oak Copse LWS;
- Earl's Barton Carr LWS;
- Earl's Barton Lock Lake LWS;
- Ecton Gravel Pits LWS;
- Grendon Lakes LWS;
- Grendon Lakes North LWS;
- Grendon Quarter Pond LWS;
- Hardwick Wood LWS;
- Highcroft Farm Meadow LWS;
- Horn Wood LWS;
- Long Furlong and Old Pastures LWS;
- Sywell Reservoir and Country Park LWS;
- Threeshires Wood LWS;
- Walgrave East Meadow LWS; and
- Wilby Meadows Stream LWS.

9.9.53 The above designated sites are all located outside of the Order Limits themselves, but within 500m of the Order Limits.

Construction Phase Impacts

9.9.54 Given that these designated sites all lie outside of the Order Limits, no direct impacts on habitats present within the designated sites (such as habitat loss or direct damage) are anticipated during the construction phase.

9.9.55 The proximity of the above designated sites to the Scheme (within a maximum of 500m) potentially makes them susceptible to short to medium-term degradation impacts during the construction phase, arising from discharge/deposition of sediments, dust and contaminants.

9.9.56 Embedded mitigation measures to minimise the likelihood and impacts of pollution events, dust deposition and run-off arising during the construction and operational phases have been incorporated into the Scheme and secured via the OCEMP and OEPMS. Ecological buffers have been incorporated into the design of the Scheme from an early stage. These include buffers from any parcels of woodland, including those designated as County Wildlife Sites and Local Wildlife Sites. Given that Nun Wood CWS, Horn Wood LWS and Threeshire's Wood LWS are all located immediately adjacent to the Order Limits boundary and are designated for their ancient woodland habitats, these have all been buffered by a minimum of 30m from any development in order to minimise the likelihood of adverse impacts during the construction phase of the Scheme.

9.9.57 The OCEMP and OEPMS detail how vehicles, plant and materials will be transported to the construction zone, as well as other standard environmental protection measures that will apply to the construction phase, such as dust suppression, pollution control measures and protection of adjacent habitats/watercourses from surface runoff. Given the above embedded mitigation measures, it is considered that significant impacts arising from discharge/deposition of sediments, dust and contaminants can be avoided/mitigated, and therefore **no significant adverse effects** on the above designated sites through this potential impact pathway are anticipated.

9.9.58 The above designated sites may also be susceptible to habitat fragmentation impacts through the creation of new accesses in hedgerows within the Scheme Boundary, which contribute to habitat connectivity between these designated sites and the local landscape.

9.9.59 The design of the Scheme has carefully considered the locations of existing road accesses and field entrances and utilised these wherever possible to avoid unnecessary hedgerow removal during the construction phase. Where it has not been possible to utilise existing access and new accesses are proposed, the smallest practical access gap permissible will be used. These are anticipated to measure no more than a typical agricultural access at 3-6.5m, and therefore these new accesses are highly unlikely to significantly impact the connectivity of the local hedgerow network or result in habitat fragmentation impacts which significantly affect the status of the above designated sites.

Significance of Effects

9.9.60 Given that careful design and embedded mitigation measures will aim to minimise any potential impacts on the above designated sites during the construction phase, it is currently considered that all reasonable steps will be taken to ensure that **no significant adverse effects** will occur on these sites during the construction phase. No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Operational Phase Impacts

9.9.61 Operationally, impacts on these designated sites are likely to be negligible, owing to the nature of the Scheme whereby no further construction activity or other intrusive, extractive or potentially damaging/polluting activity is required. The only exception to this is during replacement of panels and batteries, understood to be approximately once for solar panels and up to five times for batteries, respectively, over the lifetime of the Scheme. Since the primary infrastructure (panel frames and BESS compound) would already have been built, there is a reduced risk of habitat degradation and associated dust deposition or soil runoff through equipment replacement during the operational phase. Likewise, the risk of accidental discharge of pollutants on the designated sites, resulting from the movement and refuelling of vehicles and plant, would be very low, and pollution control measures are detailed in the OCEMP and OEPMS.

9.9.62 In the absence of mitigation, there is a potential risk of a battery fire at Green Hill BESS and subsequent discharge of chemicals into the adjacent stream, which feeds into the River Nene. This could potentially degrade the water quality of the Grendon Lakes LWS. Ecological buffers have been embedded into the design of the Scheme from an early stage, in order to minimise the likelihood of adverse impacts arising during the operational phase. Additionally, embedded mitigation measures to minimise the likelihood and severity of battery fire have been incorporated into the Scheme, including the implementation of fire suppression systems, with containment measures in place to manage runoff in the event of a fire. The risk of a fire and measures to mitigate impacts in the event of a fire are detailed within the Outline Battery Storage Safety Management Plan (OBSSMP) **[~~EN010170/APP~~EX1/GH7.7_A]**.

Significance of Effects

9.9.63 **No significant adverse effects** upon these sites are anticipated during the operational phase. No additional mitigation measures (beyond those embedded in the design of the Scheme) are required, and **no residual effects** are anticipated.

Enhancement Measures

9.9.64 Habitat creation associated with a Scheme of this scale has the potential to provide ecological 'stepping stones' for various species within the local, largely arable landscape and significantly contribute to and strengthen the connectivity of the above designated sites. This may be achieved through the gapping up/enhancement of existing hedgerows in the vicinity of the above designated sites, as well as tree planting and the creation of areas of species-rich grassland within and outside of the solar array areas.

Local Non-Statutory Designated Sites within 500m-2km of Order Limits

9.9.65 The Local Statutory and Non-Statutory Designated Sites considered in this assessment are as follows:

- Templegrove Spinney CWS;
- The Slipe CWS;
- Bozeat Glebe Meadow LWS;
- Castle Ashby Parkland LWS;
- Castle Ashby Woodland LWS;
- Cowpasture Spinney LWS;
- Engine Pond LWS;
- Hardwater Meadows LWS;
- Hardwick Road Verge LWS;
- Hog Hole Spinney LWS;
- Lavendon Wood LWS;
- Menagerie Pond LWS
- Old Poors Gorse LWS;
- Par Pond LWS;
- Park Farm Industrial Estate LWS;
- Scotland Pond LWS;
- The Basin LWS;
- Vivians Covert LWS;
- Warren Ponds LWS;
- Wilby Way Meadows LWS;
- Yardley Brook Field LWS;
- Snip Wood BNS;
- River Great Ouse Milton Keynes Wetland Wildlife Corridor; and
- Pitsford Water WTR.

Construction Phase Impacts

9.9.66 The above designated sites are all located outside of the Order Limits and are at least 500m (and up to 2km) from any part of the Scheme. As a result, no direct impacts to habitats within these designated sites during the construction phase are anticipated. In addition, given the distance from the Order Limits, no indirect impacts during the construction phase, such as localised habitat fragmentation, noise, or habitat degradation arising from dust and silt deposition are anticipated.

9.9.67 There is potential for chemical spills and surface runoff into watercourses during the construction phase, which may subsequently degrade the habitats present within these sites, should they be hydrologically connected to the watercourses present within and adjacent to the Scheme. However, embedded mitigation measures have been incorporated into the OCEMP and OEPMS to manage run-off and chemical spillages during the construction phase, as well as other general environmental protection measures aimed at minimising the risk of impacts to local watercourses and, by extension, hydrologically linked designated sites. Please refer to Chapter 10: Hydrology, Flood Risk and Drainage **[~~EN010170/APP~~EX1/GH6.2.10_A]** for a full description of the above embedded mitigation measures.

Significance of Effects

9.9.68 Given the embedded mitigation measures within the OCEMP and OEPMS aimed at minimising the likelihood and severity of chemical spills and surface runoff into watercourses during construction, as well as the lack of other impact pathways between the Scheme and the above designated sites, **no significant effects** during the construction phase are anticipated. No additional construction phase mitigation measures are required, and **no residual effects** are anticipated.

Operational Phase Impacts

9.9.69 Operationally, impacts on these designated sites are likely to be negligible, given the distance between these designated sites and the Scheme (at least 500m), as well as the low levels of activity associated with the operational phase of a solar farm. Even in the case of the replacement of panels and batteries, this would not be expected to give rise to any impacts due to the distance between the Scheme and the above designated sites. As such, no operational phase impacts on these designated sites are anticipated.

Significance of Effects

9.9.70 Given the lack of impact pathways between the Scheme and the above designated sites, **no significant effects** are anticipated on the above designated sites during the operational phase of the Scheme. No additional operational phase mitigation measures are required, and **no residual effects** are anticipated.

Habitats

Arable Field Margins and Other Neutral Grassland

9.9.71 An assessment of impacts on arable weeds (which may be associated with arable field margins) is provided separately in Section 9.9: Plants (including Arable Weeds).

Construction Phase Impacts

9.9.72 Without careful scheme design, the most diverse fragments and patches of Other Neutral Grassland within the Scheme's boundary would either be lost or would succeed to scrub over time. However, the retention of the most valuable areas of Other Neutral Grassland has been embedded into the design of the Scheme from an early stage, and as a result, it is currently anticipated that only 6.2 ha of the

total 24.7 ha of Other Neutral Grassland will be lost as a result of the Scheme, with the remaining 18.4 ha either being retained or enhanced through sensitive management regimes and other interventions, if required. In addition, a further 281.6 ha of Other Neutral Grassland is anticipated to be created through the Scheme through the seeding and sensitive management of new areas of grassland.

9.9.73 It is anticipated that all Other Neutral Grassland will be located outside of the array fencing, and will principally be located within buffer zones adjacent to hedgerows, and within entire fields that have been designated for wildflower meadow creation as an ecological mitigation measure. Assuming the establishment of the targeted habitats and successful implementation of the management prescriptions in the OLEMP, it is anticipated that the Scheme would result in a net gain in the extent of Other Neutral Grassland within the Order Limits.

9.9.74 The implementation of extensive buffer zones which almost universally measure wider than current arable field margins will result in a significant net gain in the coverage of marginal grassland habitats. Ecological buffers being applied to the design of the Scheme are listed in paragraph 9.8.4. Although arable field margins will not be buffered specifically, these habitats generally fall within the buffer zones of other habitats (such as 15m buffers from hedgerows), and therefore these habitats will generally be outside of the working area and will be protected through the construction phase.

9.9.75 Existing arable field margins may significantly change in character following the cessation of arable farming within the wider field, as well as through a change in management regime associated with the land use changing from arable to permanent grassland. For the purposes of the Biodiversity Net Gain Assessment, arable field margins have generally been considered to be 'lost' through the proposed development, given that the relevant habitat definition is likely to change from arable field margin categories to permanent grassland categories, such as Modified Grassland or Other Neutral Grassland. However, there is considered to be a wide overlap between these habitat categories, and the 'loss' of arable field margins is not considered to constitute a significant adverse effect, given that these areas will generally be retained as grassland and enhanced through the Scheme.

Significance of Effects

9.9.76 Given that the Scheme has been designed to ensure that no net loss of grassland habitats occurs across the entirety of the Scheme (in accordance with the Statutory Biodiversity Net Gain Metric), it is anticipated that the Scheme will result in **no significant adverse effects** on the extent or quality of grassland habitats over the lifetime of the Scheme. No additional mitigation measures are considered necessary, and no residual effects are anticipated.

Operational Phase Impacts

9.9.77 Operationally, access onto the Sites for maintenance of hardware and habitats will be required at regular intervals, but by typically small numbers of vehicles and

personnel. The only time when this will be increased is during replacement of panels and batteries, understood to be once for solar panels and up to five times for batteries, respectively, during the lifetime of the Scheme. . Embedded mitigation measures will ensure that the degradation of grassland habitats over the operational phase is avoided, including sensitive timing of works, correct use of tyres for vehicles and careful storage of materials. This will be detailed in the eventual LEMP. Given these embedded measures, it is considered that any significant effects likely to occur through this impact pathway can be avoided, and no additional operational phase mitigation measures in relation to grassland habitats are required.

9.9.78 While arable field margins and other grassland habitats within the retained buffer zones would benefit from cessation of agricultural inputs and sprays, they would be at risk of long-term degradation through eventual succession to scrub without periodic management. Embedded mitigation measures include an Outline Landscape Environmental Management Plan which has been submitted alongside the Environmental Statement, which specifies how retained and newly created grassland habitats will be managed for the lifetime of the Scheme.

9.9.79 The extent of grassland present within the Scheme boundary will significantly increase, following the reversion of arable land within panelled areas to grassland habitats. The LEMP implemented during the operational phase will aim to maximise the value of these grasslands for biodiversity through favourable cutting/grazing regimes, and therefore the Scheme is anticipated to support grassland habitats which are both greater in extent and higher in overall value for biodiversity during the operational phase than at baseline.

9.9.80 Prescriptions for the creation and management of all grassland within the Scheme (under panels and in buffer/ecological mitigation zones) are set out in the OLEMP, and would be finalised within the eventual detailed LEMP. The general objective would be to generate a simple mosaic of grassland habitats through the adoption of a number of different habitat management types revolving around the timing and frequency of cutting. Grassland management objectives range from creating tussocky grassland margins, to damp grassland, flowering meadow and grassland with scattered scrub. Further detail and refinement of the LEMP would be undertaken post-consent in consultation with key stakeholders including conservation organisations, site management companies and consultees, to ensure both the optimum biodiversity value and practicability/delivery of the prescriptions.

Significance of Effects

9.9.81 Taking into account the measures set out in the OLEMP, **no significant adverse effects** on grassland extent or quality are anticipated during the operational phase.

9.9.82 The reversion of the arable fields which dominate the Sites to permanent grassland (for the lifetime of the Scheme) is considered likely to result in a **significant beneficial effect** in the extent and quality of grassland habitats within the Scheme boundary, which would likely be significant at a **District** level.

Woodland

Construction Phase Impacts

9.9.83 A very small quantum of woodland loss (0.006ha) is necessary to facilitate access at Green Hill BESS. Otherwise, direct loss of woodland will be avoided, as all access, hardware and cabling installation will avoid the woodland habitats which occur within and adjacent to the Sites. Minor woodland loss will result in a **non-significant adverse effect** only.

9.9.84 Protective, development-free buffers of 30m from parcels of ancient woodland and 20m from all other woodland have been designed into the scheme and will be demarcated by protective fencing prior to commencement of construction as part of the OEPMS, so that accidental physical damage (such as direct contact with vehicles or root compaction) can be avoided. The buffer distances would be observed thereafter for the lifetime of the scheme.

9.9.85 The only works within the woodland buffer zones relate to the enhancement of a single, existing agricultural access track, running along the eastern edge of Horn Wood; this is a block of ancient woodland in the southern portion of Green Hill F. These works are necessary to make the track fit for purpose as an operational maintenance track. Such works would be within the woodland buffer zone, although accidental physical damage to the woodland would be avoided via installation of protective fencing, as per the OEPMS. Any widening of the existing track, if required, would be on the eastern side of the track furthest from the woodland, thereby not increasing encroachment.

9.9.86 Woodland in close proximity to the array sites, haul routes and cable installation works, would remain sensitive to degradation through accidental pollution events and dust deposition. Construction activities could also lead to a small amount of noise and possibly light disturbance to species within adjacent woodland. However, this effect would be temporary and would likely only affect the margins of the woodland.

9.9.87 It should be noted that a certain amount of noise disturbance, dust deposition and run off would also be expected as a result of routine agricultural activities, and as such these impacts are likely to be similar to the current baseline conditions.

9.9.88 Measures within the OCEMP and OEPMS, covering the protection of woodland at boundaries, working in extremely dry or wet weather, storage and use of fuels and chemicals, and the movement of vehicles and plant, will be secured as part of the DCO, and will reduce the likelihood of these impacts occurring.

Significance of Effects

9.9.89 When considering the embedded mitigation measures implemented in the OCEMP and OEPMS, it is considered unlikely that any significant impacts to other woodland habitats would arise during the construction phase. **No significant effects** are therefore anticipated. No additional mitigation measures are considered necessary, and **no residual effects** are anticipated.

Operational Phase Impacts

9.9.90 The Scheme has been designed to account for shading effects of woodland when considering the placement of panels. As such, no conflict between the efficiency of energy generation and shading from woodland during operation is anticipated.

9.9.91 Due to the largely passive nature of the operational Scheme, impacts on woodland during operation are not anticipated. A finalised LEMP will be implemented to delineate each retained and protected habitat and set out the different management practices to be carried out within them. Woodland management is not anticipated to be necessary, although periodic pruning or trimming back of self-seeded boundary vegetation may be required in order to keep the arrays and maintenance tracks clear of tall, woody vegetation.

9.9.92 Operationally, access onto the Sites for maintenance of hardware and habitats will be required at regular intervals, but by typically small numbers of vehicles and personnel. The only time when this will be increased is during replacement of panels and batteries, understood to be approximately once for solar panels and up to five times for batteries, respectively, during the lifetime of the Scheme. However, movement of vehicles close to the woodland edges is not anticipated; this will be imposed by sufficient protected buffer zones and the restriction of vehicles to demarcated tracks wherever possible.

9.9.93 Woodland/tree planting has been incorporated into the Scheme, which will result in the creation of approximately 14.4ha of new native broadleaved woodland within the Order Limits, as well as significant levels of individual tree planting elsewhere within the Scheme. Once established, this level of woodland planting will result in a significant beneficial effect on the extent of woodland within the Order Limits, which would by extension contribute to the connectivity of woodland stands and proliferation of Green Infrastructure across the local landscape. Locations for planting have been directed by the need for landscaping and visual impact mitigation, but have also been influenced by the objectives within the LNRS for Northamptonshire and where gains from connecting habitat parcels are clearest.

9.9.94 Woodland habitats are likely currently subject to spray drift from the use of pesticides and herbicides as part of intensive arable farming practices. The cessation of these processes is likely to be of benefit to the woodland habitat edges during the life span of the Scheme, encouraging the proliferation of woodland ground flora.

Significance of Effects

9.9.95 Given that embedded mitigation measures will be incorporated into the Scheme to avoid impacts on woodland during the operational phase, **no significant effects** arising during the operational phase are anticipated, and no additional mitigation measures are considered necessary.

9.9.96 The proposed woodland and tree planting, in combination with the cessation of intensive arable farming practices adjacent to the woodland identified within the Sites would likely constitute a **significant long-term beneficial effect** at the **Local** level.

Rural Trees, and Ancient/Veteran Trees

9.9.97 Please refer to Chapter 19: Arboriculture **[~~EN010170/~~APP~~/GH6.2.19~~-056]** for the full assessment details on trees (including ancient and veteran trees).

9.9.98 Details of potential impacts on roosting bats and nesting birds in trees are provided in 'Roosting Bats' and 'Breeding Birds – Other Species' respectively below.

9.9.99 A full BNG assessment has been conducted and submitted with the ES (provided in Appendix 9.13: Biodiversity Net Gain Assessment ~~[EN010170/APP~~Revision A [EX1/GH6.3.9.13_A]), taking account of all habitat trading rules and the latest Statutory Biodiversity Metric requirements. As ancient and veteran trees are considered irreplaceable habitats, the retention of these trees has been designed into the Scheme, and these features will be protected throughout the lifetime of the Scheme through the implementation of protective fencing during the construction phase and the retention of buffers during the operational phase. It is also currently proposed that all individual in-field mature trees will be retained. Any losses of individual trees within boundary habitats will be fully compensated for through the enhancement of existing habitats and the creation of new habitats, including native hedgerow and tree planting and woodland creation.

~~**Ponds**~~

Ponds (Including Temporary Lakes, Ponds and Pools)

Construction Phase Impacts

9.9.100 No ponds or temporary pools are anticipated to be directly impacted through habitat loss or fragmentation as a result of the Scheme. Ponds are generally situated close to the field boundaries and can be sufficiently excluded and buffered from development, with the vast majority, if not all, intervening connected habitat retained. A 20m development free buffer from all ponds will also be observed.

9.9.101 There is a risk of degradation of the retained pond habitats through dust deposition, accidental pollution events and run off doing construction activities. This could damage the habitat within and surrounding the ponds as well as affecting the species which inhabit them. The adoption and implementation of the OCEMP and OEPMS and its measures to avoid and minimise the risk of impacts from damage, run-off and pollution will be crucial to avoiding impacts on ponds.

Significance of Effects

9.9.102 When considering the above embedded mitigation measures that will be adopted through the OCEMP and OEPMS, it is considered that impacts to ponds during the construction phase could likely be avoided. As a result, **no significant effects** are anticipated. No additional mitigation measures for ponds during the construction phase are required, and **no residual effects** are anticipated.

Operational Phase Impacts

9.9.103 There is a risk that ponds may become damaged should sheep be utilized for grazing during the operational phase, as a grassland management measure.

Sheep may poach pond habitats causing damage to the marginal vegetation and increased suspended sediment content of the water. The detailed LEMP will contain grassland, buffer and pond-edge habitat management measures with the aim of maximising the biodiversity value of the retained ponds, including minimising the risk of poaching by livestock.

9.9.104 The risk of ongoing pollution or damage from routine maintenance or equipment replacement operations is minimal given the general restriction of vehicle movements to made-up tracks and the imposition of development free buffer zones between hardware and pond habitats.

Significance of Effects

9.9.105 Given the embedded mitigation measures incorporated into the LEMP which will be submitted with the Environmental Statement, it is considered that any potential impact pathways to ponds arising during the operational phase can be avoided/fully mitigated. As a result, **no significant effects** are anticipated to arise during the operational phase. No additional mitigation measures are required, and **no significant adverse effects** are anticipated.

Enhancement Measures

9.9.106 Opportunities to create new areas of standing water within the Scheme have been explored, with six indicative locations for pond creation being outlined on the Landscape and Ecology Mitigation Plans **[~~EN010170/APP~~EX1/GH6.4.4.10-20_A]**. The indicative locations have been based on topographical information, and are generally based in close proximity to watercourses or in other habitats which are known to be damp/wet, such as the damp grassland present in parts of Green Hill F. Any ponds created would be constructed in accordance with the prescriptions detailed in the OLEMP, and thereafter would be managed for the benefit of wildlife for the duration of the Scheme. Indicative pond locations have been outlined at Green Hill E, F and BESS, and will be located outside of the development area and within other habitats of value for wildlife, such as permanent grassland. Following the consent of the DCO application, advice from a hydrologist will be sought to ascertain the most suitable locations for new ponds across the Scheme, which may also be informed by soil percolation tests and other means. The creation of new ponds would likely result in a **significant beneficial effect** on the extent of standing water habitat within the Scheme, which would likely be significant at a **Site to Local** level, depending on how many of the indicative pond locations are likely to be successful and whether the ponds successfully establish.

9.9.107 The Scheme will be registered under the District Licensing scheme for great crested newts, in order to mitigate potential impacts such as terrestrial habitat loss and degradation during the construction phase. Offsite mitigation delivered through the District Licensing scheme will comprise the creation of new ponds in strategic locations within the local landscape. When considering the ponds created under the District Licensing Scheme, as well as the fact that no existing ponds within the Scheme are proposed to be lost, the Scheme is anticipated to result in a **significant beneficial residual effect** in the extent of ponds in the local landscape, which would be significant at a **Local to District** level depending

on the outcome of habitat management and monitoring and the adoption of ecological enhancements for the benefit of local pond network.

9.9.108 As with ditches and other watercourses, the cessation of agricultural practices is likely to lead to an improvement in the water quality within retained ponds.

Inland Rock and Scree

Construction Phase Impacts

9.9.109 The baseline habitat 'Sparsely vegetated land - Other inland rock and scree' has been used as a proxy for an area of quarry within the Cable Route Corridor where access permission for ecological baseline survey work was not possible to obtain. In the absence of survey information, the Other Inland Rock and Scree habitat type has been applied. However, it is possible that this area is of significantly higher ecological value (particularly given that recent aerial images from March 2025 suggests that some of this area may have been subject to recent habitat restoration work). Damage or degradation of this habitat is possible during the excavation of the trench for the Cable Route Corridor and associated haul route.

Significance of Effects

9.9.110 Damage to this habitat would be non significant if the assumed habitat type is correct. However, should the habitat be of elevated importance, then damage could constitute a **significant adverse effect at a Site – District level,** depending on the habitat type present.

Construction Phase Additional Mitigation Measures

9.9.111 A survey of this habitat will be carried out prior to construction commencing in this section of the Cable Route Corridor. If the habitat is found to be of elevated importance above the assumed habitat type, then HDD, rather than open cut trenching, may need to be utilised to avoid impacts to this habitat.

9.9.1 IF HDD is not a viable option, then a specific habitat remediation plan will be developed, and the habitat will need to be restored to its prior condition after completion of works, in alignment with the developed and approved remediation plan.

Residual Effects

9.9.2 With the adoption of HDD or the implementation of a habitat remediation plan, adverse effects would be reduced to **neutral and non-significant levels**.

Operational Phase Impacts

9.9.3 No adverse effects would arise during operation.

Significance of Effects

9.9.4 **Neutral and not significant.**

Hedgerows and Lines of Trees

Construction Phase Impacts

9.9.59.9.109 Within the Sites, protective, development-free buffers of 15m from all hedgerows, and between 8-15m for individual/lines of trees (or larger if root protection zones dictate) have been designed into the Scheme, to be installed during the construction phase and observed for the life of the Scheme thereafter. The implementation of these buffers will help to avoid any accidental damage or degradation during the construction phase.

9.9.69.9.110 Measures covering the protection of hedgerows, woodland and trees at boundaries, working in extremely dry or wet weather, storage and use of fuels and chemicals and the movement of vehicles and plant, will be incorporated into the detailed OEPMS and specifically tailored to avoid impacts upon hedgerows and trees.

9.9.79.9.111 The potential for loss of hedgerows and trees within the Sites is very limited as existing hedgerow gaps have been utilised for access points wherever possible during both construction and operation. A small number of new gaps need to be created to facilitate access to particular fields/parts of the Sites, totalling approximately 350m in length, although in the context of the hedgerow network across the Sites (which is 95.3km), this loss will be proportionately very small (far less than 1%), and new planting will be implemented to ensure that any losses are compensated for.

9.9.89.9.112 The potential for loss of hedgerows and trees associated with construction within the Cable Route Corridor is greater, although again existing hedgerow gaps have been utilised for access points wherever possible. Hedgerow losses are calculated to be approximately 877m in length, although in the context of the hedgerow network within the Order Limits of the Cable Route (which is 32.15km), this loss will be proportionately very small (far less than 1%), and replacement planting will be implemented to ensure that any losses are compensated for.

Significance of Effects

9.9.99.9.113 Losses of hedgerows and/or lines of trees during the construction phase are anticipated to be minimal and replacement planting will be implemented to ensure that any losses are fully compensated for. In addition, measures detailed in the OEPMS will aim to minimise any damage or degradation to hedgerows during the construction phase. As a result, **no significant effects** in the extent or quality of hedgerows are anticipated during the construction phase. No additional mitigation measures are required, and **no residual effects** are anticipated.

Operational Phase Impacts

9.9.109.9.114 As with woodlands, the largely passive nature of the operational Scheme means impacts on hedgerows and trees are not anticipated, particularly when considering all ecological buffers which will be implemented and observed for the lifetime of the Scheme. As a result, **no significant adverse effects** on hedgerows and trees are anticipated during the operational phase, and no additional mitigation measures are required.

9.9.119.9.115 Following their establishment, it is anticipated that the Scheme will result in the creation of approximately 15.9km of new hedgerow, and approximately 7.9km of lines of trees. Details of hedgerow losses and gains are provided within Appendix 9.13: Biodiversity Net Gain Assessment [EN010170/APPRevision A [**EX1/GH6.3.9.13_A**].

9.9.129.9.116 Management measures will be contained within the LEMP which will have the aim of maximising 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, as well as the trimming back of self-seeded boundary vegetation, in order to keep the arrays and maintenance tracks clear of tall, woody vegetation. Additionally, the OLEMP specifies the maintenance of hedgerows at a minimum height of 4m, as this has been demonstrated to be important for promoting the biodiversity value of hedgerows.

9.9.139.9.117 Enhancement through the planting of new trees and hedgerows at boundaries is proposed and will focus on the gapping up of currently defunct hedgerows, creation of new hedgerows at boundaries where none exist; and planting around Public Rights of Way and where landscape and visual impact mitigation is required. Such new hedgerows will be native, locally-appropriate and species-rich. Further details of newly planted hedgerows, as well as the management of existing hedgerows, are provided within the OLEMP.

9.9.149.9.118 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

9.9.159.9.119 Following the establishment of newly planted hedgerows and the implementation of the management prescriptions specified in the OLEMP over the course of the operational phase, it is anticipated that the Scheme will result in a **significant beneficial effect** to the quality and extent of hedgerows and trees within the Sites, which would be significant at a **Local** level. No additional mitigation measures are deemed to be required.

Ditches and Watercourses

Construction Phase Impacts

9.9.169.9.120 The Scheme will avoid and minimise direct impacts upon ditches by utilising existing crossings for access wherever possible as a result of an iterative refinement process. New culverting is only proposed at one location within Green Hill F, which will measure approximately 3-6.5m wide. When compared to a ditch network which measures approximately 21.8km, proportionately very little of the overall ditch and watercourse network will be impacted by the construction of new accesses, and therefore no significant effects on the extent and quality of the local ditch network within the Sites through the creation of new culverts is anticipated.

9.9.179.9.121 Similarly, for the cable installation works, new crossings and incursions into ditches and watercourses have been minimised wherever possible in siting the Cable Route Corridor. An indicative route to be taken within the Cable Route Corridor has been proposed, although it is acknowledged that this is subject to some future potential refinement as all constraints regarding ground conditions, vehicular access and construction practicalities cannot be fixed at this stage. Nevertheless, multiple crossings of ditches and watercourses will be required, and these are provided in a schedule of cable route crossings within the Works Plans. In the absence of additional mitigation, there is the potential for these crossings to cause **significant adverse effects** at the **Local** level, through damage to multiple ditches and watercourses across the Cable Route Corridor.

9.9.189.9.122 The relatively short width (up to 6.5m) of any crossings required is not anticipated to result in any significant fragmentation effects on the local ditch/watercourse network.

9.9.199.9.123 Without the implementation of protective buffer zones, there is a risk that existing ditches may be damaged or degraded through direct construction damage or indirect impacts such as the release of sediments or dust which could flow into connected watercourses off site. Accidental pollution events are considered unlikely, but if they were to occur they would potentially have a detrimental effect on the quality of habitats on site and downstream beyond the Order Limits in the short to medium term depending on severity.

9.9.209.9.124 It should also be noted that a certain amount of dust deposition and run off would be anticipated as a result of routine annual agricultural activities and as such effects are likely to be similar to the current baseline conditions. Nevertheless, given the large extent of this habitat present across the Order Limits, impacts from dust deposition and/or run off are considered to have the potential to result in detrimental effects.

9.9.219.9.125 The Scheme has, however, been designed to implement buffer zones free of development at least 8m from every ditch, however where ditches are associated with hedgerows, this buffer has been extended to a minimum of 15m. Larger watercourses have been buffered by between 15-30m. In addition, protective measures designed to avoid or significantly reduce the severity and likelihood of these impacts occurring have been incorporated into the OEPMS, including fencing and steps to minimise the risk of accidental pollution or sediment mobilisation. As a result, **no significant adverse effects** associated with the degradation of ditches and watercourses through sedimentation and/or pollution events during the construction phase are anticipated.

Significance of Effects

9.9.229.9.126 In the absence of additional mitigation, the creation of new crossings across existing ditches within the Cable Route Corridor would have the potential to result in a **significant adverse effect** at the **Local** level, through damage to the watercourses during construction of the crossings.

Construction Phase Additional Mitigation Measures

9.9.239.9.127 Whereas ditch crossings within the array Sites will result in a permanent culverted section, the trenching for the cable installation will be very short term and any ditches/watercourses affected will be returned to a functional condition once the cabling has been installed. Consequently, such impacts are considered to be temporary and reversible. The River Nene crossing will employ HDD to avoid construction-related impacts on this watercourse, as set out within the OEPMS, to be secured by DCO Requirement.

9.9.249.9.128 As part of the OEPMS, an Ecological Clerk of Works will oversee any necessary ditch trenching work associated with both the array construction and cable installation. The ECoW will ensure that all mitigation measures are followed, that all necessary measures to avoid impacts on nesting birds and other wildlife are carried out and that all ditch habitat restoration (such as profiling, turf-laying and over-sowing or planting) is also carried out. The ECoW will also be tasked with monitoring the success of all replacement planting and organising remedial action, where necessary.

Residual Effects

9.9.259.9.129 With the provisions of the OEPMS and OCEMP in place during the construction phase, potential significant impacts upon watercourses and ditches can be mitigated, and any impacted watercourses will be reinstated following the completion of the cable installation. As a result, **no residual effects** are anticipated.

Operational Phase Impacts

9.9.269.9.130 Water quality can be expected to significantly increase post-development due to the anticipated reversion of largely arable land to permanent grassland within the solar arrays (likely resulting in reduced sediment run-off when compared with arable systems) and the cessation of application of fertilisers and pesticides.

9.9.279.9.131 The sympathetic management of field margin habitats which is detailed in the OLEMP can be expected to benefit the biodiversity value of the ditch network through the proliferation of marginal wetland species following a reduction in management (cutting) frequency and agricultural inputs.

9.9.289.9.132 The risk of ongoing pollution or damage from routine maintenance operations is anticipated to be minimal given the general restriction of vehicle movements to made-up tracks and the imposition of development free buffer zones between hardware and ditch habitats.

9.9.299.9.133 In the absence of mitigation, there is a potential risk of a battery fire at Green Hill BESS and subsequent discharge of chemicals used to control the fire into the adjacent stream, which feeds into the River Nene. This could potentially degrade the water quality of the connecting ditches and watercourses. Ecological buffers have been embedded into the design of the Scheme from an early stage, in order to minimise the likelihood of adverse impacts arising during the operational phase. Additionally, embedded mitigation measures to minimise the likelihood and severity of battery fire have been incorporated into the Scheme, including the implementation of fire suppression systems, with containment

measures in place to manage runoff in the event of a fire. The risk of a fire and measures to mitigate impacts in the event of a fire are detailed within the OBSSMP **[EN010170/APP**V **[EX1/GH7.7_A]**. These are discussed in more detail in Chapter 10: Hydrology, Flood Risk and Drainage **[EN010170/APP**Revision A **[EX1/GH6.2.10_A]**, Chapter 22: Ground Conditions and Contamination **[EN010170/APP**Revision A **[EX1/GH6.2.22_A]**, and Chapter 23: Major Accidents and Disasters [**EN010170/APP/GH6.2.23-060**].

Significance of Effects

9.9.309.9.134 Given the general lack of impact pathways to ditches and watercourses during the operational phase, as well as the embedded mitigation measures to address the risk of a BESS fire, **no significant adverse effects** are anticipated to arise during the operational phase, and no additional mitigation measures are considered to be required. Following the cessation of agricultural practices and the successful implementation of sensitive management measures secured through the LEMP, it is anticipated that the Scheme would likely result in a **significant beneficial residual effect** on the quality of the local ditch and watercourse network, which would be significant at a **Local** to **District** level.

Enhancement Measures

9.9.319.9.135 The opportunity for practicable ditch and watercourse management, including vegetation clearance (for choked ditches) or planting of locally appropriate wetland marginal species will be explored through consultation with local conservation stakeholders and consultees.

Species

Badgers

Construction Phase Impacts

9.9.329.9.136 Badgers may be adversely impacted by the proposed development through loss of habitat in which to build setts, accidental direct harm during construction, disturbance by vehicles and personnel or the compaction of soil around setts.

9.9.339.9.137 Development free buffer zones of 15m and 30m around all known setts within the Sites according to their status have been designed into the Scheme and will be implemented for the lifetime of the Scheme. Therefore, no losses of badger setts which have been identified through pre-application surveys are currently anticipated within the Sites during the construction phase. However, as badgers can dig new setts in very short spaces of time, any new setts excavated within the construction areas (outside of the pre-designed buffer zones) may need to be excluded prior to construction commencing in that area to avoid offences associated with the Protection of Badgers Act 1992. In addition, setts within the Cable Route Corridor will be avoided as far as possible through micro-siting of the cable trench to avoid impacts, however where this is not feasible and setts are likely to be impacted through cable route installation, these setts may also need to be excluded prior to construction commencing. Given that the scope of exclusion works of setts within the Cable Route Corridor, as well as any

potentially newly excavated setts, cannot be identified, the significance of this potential impact cannot be fully known, although given that existing setts will be retained and protected wherever possible, the loss of a small proportion of setts is likely to only constitute a **potential significant adverse effect** at the **Site** level, in a worst-case scenario.

~~9.9.34~~9.9.138 Even with the implementation of a 15m buffer around all outlying badger setts, there remains the potential for construction-related works within 15-30m of these setts to result in damage to the underground sett structure, depending on the direction of the tunnels and the type of work and machinery that is required. In the absence of additional mitigation, there is the potential for **significant adverse effects** to occur at the **Site** level.

~~9.9.35~~9.9.139 Perimeter security fencing is not considered to be a barrier to badger movement given their propensity for digging (the security fencing is not proposed to be buried). Badger gates are not considered necessary within security or protective fencing as there is no evidence of their usage from information gathered from extensive monitoring of active solar sites (Ref 9.62). Badgers are known to preferentially dig under fencing or move through gaps in the fencing material as opposed to actively seeking features such as gates. Natural undulations in the ground should be used to ensure sufficient space beneath fencing to facilitate badger access is available. Where no such undulations occur, it is considered most effective to raise the height of fencing panels to leave a narrow gap (no greater than 100mm) which badgers (among other animals) will exploit to gain access. These embedded measures will be considered and implemented during the construction of the Scheme, and therefore **no significant effects** arising from habitat fragmentation during the construction phase are anticipated.

~~9.9.36~~9.9.140 There will be a temporary reduction in the extent of foraging habitat available to badgers due to the loss of the arable habitats, 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. It is considered that the Sites would become suitable again for badgers immediately once works in a particular area are completed. As a result, **no significant effects** arising from the loss of habitat or displacement/disturbance during the construction phase are anticipated.

~~9.9.37~~9.9.141 During the construction phase, if deep trenches are left open overnight or high voltage machinery is present, there may be potential for incidental injury or mortality to badgers exploring the site during the night. Should this result in the death of individual badgers, this would constitute a **significant adverse effect** at the **Site** level and may also constitute an offence under the Wildlife and Countryside Act 1981 .

Significance of Effects

~~9.9.38~~9.9.142 In a worst-case scenario that assumes that badgers within the Sites will create new setts between the completion of the pre-application badger

surveys and the commencement of the construction phase, and that these setts would principally be outside of the embedded buffer zones and retained vegetation and would therefore require exclusion prior to construction commencing, this would likely give rise to a **significant adverse effect** at the **Site** level.

9.9.399.9.143 In the absence of additional mitigation, the potential for incidental injury or mortality to badgers exploring construction areas would likely constitute a **significant adverse effect** at the **Site** level.

9.9.409.9.144 In the absence of additional mitigation, construction work outside of the 15m buffer implemented around Outlying badger setts but within 30m may result in damage to the underground sett structure, which would constitute a **significant adverse effect** at the **Site** level, and may also constitute an offence under the Protection of Badgers Act 1992.

9.9.419.9.145 **No other significant effects** on badgers have been identified during the construction phase of the Scheme.

Construction Phase Additional Mitigation Measures

9.9.429.9.146 Prior to construction commencing across the Scheme, an update badger survey would be completed, in order to identify any newly constructed setts within the working area. Should any setts be identified at this stage, a mitigation strategy would be devised, following the mitigation hierarchy. Should impacts to these setts during the construction phase be unavoidable through careful planning of the works, then these setts would likely either be temporarily excluded (for the period of construction within that particular working area) before being re-opened once construction had been completed, or otherwise permanently excluded and destroyed, under a mitigation licence from Natural England. Any mitigation licence would ensure that compensation measures (such as the creation of artificial setts) required would be implemented prior to the exclusion of the sett/s.

9.9.439.9.147 Following the completion of the update badger survey, any works which would need to be completed within 30m of any existing badger sett would be identified (including existing Outlying setts which have had 15m buffers applied to them at the design stage of the Scheme). Depending on the particular context (such as the construction methodology required, the sett/tunnel structure and direction, and the topography), the work within 30m may be subject to additional restrictions/mitigation measures, to ensure that the sett (comprising both the entrances and the subterranean tunnel structure) is not damaged or otherwise impacted whilst the works are being completed. Further measures which may be implemented include detailed monitoring of the sett using wildlife cameras and other equipment to confirm the species present and ascertain if the sett is active, as well as the use of hand tools or light vehicles only to complete the works within this area. If the above mitigation measures are either not appropriate or are not considered likely to fully mitigate the risk of damaging the sett/s in question, then a mitigation licence will be secured to exclude the sett prior to the works taking place.

9.9.449.9.148 In order to further minimise the risk of impacts to badgers and their setts during the construction phase, all contractors will be informed about the presence of setts via a toolbox talk delivered by an ecologist prior to construction works commencing within a particular working area. No machinery will be driven within the designated ecological buffers, or materials stored in them.

9.9.459.9.149 The OEPMS will detail measures to be taken to reduce the probability of incidental mortality of badgers, particularly in situations where open excavations are made and in respect of site speed limits.

Residual Effects

9.9.469.9.150 Following the implementation of the above buffer zones and mitigation measures during the construction phase, it is considered that any potential adverse effects on badgers and their setts arising during the construction phase could be avoided, or otherwise fully mitigated and compensated for (through measures secured as part of any mitigation licence from Natural England). As a result, no further mitigation measures are deemed to be required, and **no residual effects** are anticipated.

Operational Phase Impacts

9.9.479.9.151 During the operational phase, badgers are likely to benefit from an improved abundance of favoured food items 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 9.59).

9.9.489.9.152 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 habitat cover due to new hedgerow and tree planting and grassland habitat creation.

9.9.499.9.153 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 (understood to be every 30 and 10 years respectively for the duration of the operational phase of the Scheme. Routine maintenance will also not typically be conducted during the hours of darkness.

9.9.509.9.154 It is considered highly unlikely that any new badger setts would be excavated within the main body of the arrays, such that there would be potential conflict with ongoing operation activities. However, this possibility cannot be ruled out.

Significance of Effects

9.9.519.9.155 Although considered unlikely, the damage of disturbance of active badger setts during the operational phase would constitute a **significant adverse effect** at the **Site** level.

9.9.529.9.156 Following the implementation of the buffer zones and the deliverance of the soft landscaping measures described in the OLEMP, it is anticipated that the Scheme would result in a **significant beneficial effect** on the availability of

suitable foraging and sett-building habitat for badgers, which would be significant at the **Site** level.

9.9.539.9.157 Given the general lack of other potential impact pathways to badgers during the operational phase, **no other significant effects** are anticipated to arise.

Operational Phase Additional Mitigation Measures

9.9.549.9.158 Should new setts be excavated in areas where they come into conflict with ongoing management activities, then these setts would likely be excluded under a mitigation licence from Natural England. The mitigation licence would secure any compensation measures (such as the creation of artificial setts) required, which would be implemented prior to the exclusion of the sett/s.

Residual Effects

9.9.559.9.159 Following the implementation of the above mitigation measures, it is considered that any potential adverse effects on badgers and their setts arising during the operational phase could be fully mitigated/compensated.

9.9.569.9.160 The residual effect on badgers during the operational phase is therefore anticipated to be a **significant beneficial effect** on the availability of suitable foraging and sett-building habitat for badgers, which would be significant at the **Site** level.

Bats – Foraging/Commuting Bats

Construction Phase Impacts

9.9.579.9.161 The Outline EPMS sets out the protocols to be followed during the cable installation works, including during the clearance of hedgerow, ditch and other field boundary habitat to open trenches. This will comprise the presence of an Ecological Clerk of Works (ECoW), as well as the translocation or replanting of all temporarily removed hedgerow habitat, and re-seeding of other habitat, its aftercare and monitoring.

9.9.589.9.162 The hedgerows, woodland edges, grassland fields, and the ditches and watercourses were considered to be the habitats of highest value for foraging and commuting bats within the Order Limits. While the existing field accesses will be utilised in the vast majority of cases, losses of short (3-6.5m) sections of hedgerow within the Sites will be unavoidable. As discussed under 9.9.111 above, these hedgerow losses constitute a very small proportion of the overall hedgerow network present at each Site, and are considered highly unlikely to significantly fragment any foraging or commuting routes used by bats. The species recorded within the Sites to date are considered able to overcome hedgerow gaps of 3-6.5m (as per existing hedgerow gaps at baseline) when dispersing. It is considered that the design of the Scheme and the low level of hedgerow losses anticipated would be unlikely to have an impact upon the favourable conservation status of the bat assemblage present within the Sites, and therefore **no significant effects** arising from hedgerow loss during the construction phase are anticipated.

9.9.599.9.163 The cable installation works are likely to comprise the temporary loss of several short widths of hedgerows and ditches in order to open up a trench. While these habitats will be reinstated either through hedgerow translocation or planting, there may be a failure of planting or a temporary degradation in the overall habitat quality within the Cable Route Corridor. No woodland will be damaged or lost within the Cable Route Corridor, however, and micrositing of the cable route within the cable Route Corridor will avoid impacts on the majority of mature or semi-mature standard trees.

9.9.609.9.164 The removal of the arable crops and uncultivated field margins will result in a temporary reduction in available foraging habitat, albeit habitat of low suitability, until new habitats establish. This is likely to reduce the availability of invertebrate prey for foraging bats in the short-term. Temporary habitat loss impacts are considered to be **non-significant**.

9.9.619.9.165 Artificial lighting at night can dissuade bat activity, impact the behaviour of invertebrate prey, and potentially fragment commuting routes for particularly light-averse species. No artificial lighting is considered likely to be required during construction outside of the winter months, however, during winter, artificial lighting may be required within the construction zone due to the short day lengths. Embedded mitigation measures include buffer zones from the most valuable foraging and commuting habitats, such as hedgerows, woodland and watercourses. Additionally, a sensitive lighting strategy will be implemented, as detailed in the OEPMS, whereby all artificial lighting is installed to minimise limit light spill on any habitats outside of the immediate working area. As such, the likelihood of light spill onto key foraging and commuting habitats is very low. Furthermore, as bats are in hibernation during the winter months, and only active occasionally for short periods, they are unlikely to be significantly affected by the use of artificial lighting during the winter months. Therefore, should artificial lighting in winter be required, **no significant impacts** are anticipated.

Significance of Effects

9.9.629.9.166 In the absence of additional mitigation, the loss of short sections of hedgerows along the Cable Route Corridor would have the potential to result in a **significant adverse effect** on foraging/commuting bats through the degradation of the local hedgerow network. This effect would likely be significant at a **Local** level.

9.9.639.9.167 All other impact pathways have been considered, with mitigation measures embedded into the Scheme design to ensure that these impacts can be avoided, and/or effects can be reduced to **neutral, non-significant levels.**

Construction Phase Additional Mitigation Measures

9.9.649.9.168 In addition to the embedded mitigation within the OEPMS, approximately 23.8km of new hedgerow planting has been incorporated into the Scheme within the Sites in order to compensate for any losses anticipated across the Scheme. The Biodiversity Net Gain Assessment concluded that there would be a +18.55% net gain in Hedgerow Units across the Scheme.

Residual Effects

9.9.659.9.169 Although hedgerow losses across the Cable Route Corridor may result in a significant adverse effect in the short term, following the replanting of any temporarily removed hedgerows and the establishment of the compensatory planting, it is anticipated that the Scheme would deliver a **significant beneficial residual effect** on foraging/commuting bats, in terms of the abundance and quality of habitats suitable to support foraging bats within the Order Limits. This residual effect would likely be significant at the **Local** level.

Operational Phase Impacts

9.9.669.9.170 The effects of the installation of solar panels on bat activity and the activity of their prey is largely unknown. There is research to suggest a potential displacement effect of arrays on foraging and commuting bats (Ref 9.61), with reduced activity levels observed by some species among arrays compared to control sites. However, numerous issues have been identified with this study, including a lack of baseline (pre-development) data on both habitat type and bat activity, as well as a short window of sampling. Furthermore, the microphone height for the detectors was set at 1.27m (around the mid-height of panels), which may have precluded detection in the solar arrays and account for the observed apparent reduction in activity levels. More research is needed in this area, however, it is probable that any impacts on bats will be largely neutral; particularly when considering the likely higher value of the habitats present within the operational site (predominately comprising permanent grassland) over the baseline of largely arable land, together with the large development-free buffer zones which are comparatively wider than other similar schemes, and the retention of the most valuable habitats. As a result, **no significant adverse effects** associated with the constructed Scheme for foraging/commuting bats are currently anticipated.

9.9.679.9.171 External lighting is only to be installed at substations and battery storage facilities (and not within the arrays themselves) and will only be used when necessary. Additionally, a sensitive lighting strategy will be implemented whereby all artificial lighting is designed and installed to limit light spill onto known or potential bat roosting habitat. These artificial lighting measures will be detailed and secured through the OEPMS as per paragraph 9.9.161. Any adverse impacts associated with artificial lighting during the operational phase are therefore anticipated to be infrequent, short-term and **non-significant**.

9.9.689.9.172 The planting of trees and new hedgerows, as well as the enhancement of those habitats being retained (predominately through more favourable management), would likely increase the permeability of the landscape and overall habitat diversity and quality for bats. These measures would also increase foraging resource availability and may also provide additional roosting opportunities in the long term. The habitat creation and enhancement measures anticipated to arise through the Scheme would likely provide a **long-term, significant beneficial effect** on bats at the **Local** level.

9.9.699.9.173 Beneficial effects are also likely to arise from the increased capacity of the newly-sown and managed grasslands under and around the panels to support flying invertebrates compared to arable land; thereby improving access to

foraging resources for bats. This will constitute a **long-term, significant beneficial effect** at the **Local** level.

Significance of Effects

9.9.709.9.174 With the successful implementation of the habitat creation and enhancement measures which will be detailed in the LEMP, as well as the successful management of the habitats within the Sites for the benefit of biodiversity, it is considered that residual effects on foraging/commuting bats during the operational phase would be in the worst case **neutral and not significant**. The potential exists for habitat value and connectivity and the diversity and abundance of night flying invertebrates, to increase in the long term as a result of the Scheme. These factors have the potential to confer a **significant beneficial effect** on the bat population at a **Local** level, provided that management objectives are successfully realised.

Enhancement Measures

9.9.719.9.175 The opportunity to create new waterbodies and wetland features, which would further increase the abundance and diversity of invertebrate foraging resources for bats, has also been explored, and six indicative locations for newly created ponds have been incorporated into the Scheme design. The quantity and locations of these ponds are subject to change and will be confirmed through hydrological advice and potentially also soil percolation tests, to ensure that any created ponds are likely to establish successfully.

Bats – Roosting Bats

Construction Phase Impacts

9.9.729.9.176 Many trees with suitability for roosting bats were recorded within the Order Limits, predominately within hedgerows, tree belts and woodland edges. Similarly, any buildings which lie within the Order Limits have been assessed for their suitability to support roosting bats. Any loss of buildings or 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 will be retained wherever possible. Such trees act as islands or stepping-stones for wildlife, and these have been buffered from development according to their ecological value, arboricultural value, and their suitability for roosting bats (between 8m and 15m, or the extent of the Root Protection Zone, whichever is larger). All buildings within the Order Limits will be retained and protected from damage during construction through the implementation of protective barrier fencing, as detailed in the OEPMS.

9.9.739.9.177 It is understood that some loss of trees within the Sites and Cable Route Corridor may be necessary for access/ installation of the cable route, and should the loss of any trees be unavoidable, then additional mitigation measures will be required to ensure that potential impacts upon roosting bats are fully considered and mitigated/compensated for as appropriate.

9.9.749.9.178 Artificial lighting at night can impact the activity of roosting bats, including through delaying emergence times or even preventing bats from leaving a roost. This may result in reduced foraging times and thereby reduced health of the bats, or even death from 'entombing' the bats inside their roost. No artificial lighting is considered likely to be required during construction outside of the winter months, however, during winter, artificial lighting may be required within the construction zone due to the short day lengths. Bats are in hibernation during the winter months, and only active occasionally for short periods; but could be significantly affected if lighting prevents their emergence from a roost at key periods when they need to forage to maintain their body condition. Embedded mitigation measures include buffer zones around trees identified as being suitable for roosting bats, which are proportionately sized to the suitability of the tree. These buffers will reduce the likelihood of any light spill impacting any roosts present within trees. Further limitations on the use of lighting during the construction phase to minimise potential impacts on roosting bats are provided in the OEPMS.

9.9.759.9.179 There is also the potential for roosting bats utilising existing buildings within the Sites to become isolated should any linear habitat features (such as hedgerows) which provide connectivity between building roosts and the local landscape, be lost or degraded. However, given that the Scheme has been designed to utilise existing accesses and hedgerow gaps wherever possible, it is considered that the level of hedgerow loss across the Scheme (as discussed in 9.9.111 above) is highly unlikely to result in any significant impacts associated with habitat fragmentation/degradation for roosting bats.

Significance of Effects

9.9.769.9.180 Given the above embedded mitigation measures, the majority of impacts upon roosting bats can be avoided. However, there remains a risk of direct harm or disturbance during removal of any suitable trees. These could result in **significant adverse effects** at a **Local level**.

Construction Phase Additional Mitigation Measures

9.9.779.9.181 Any trees for which removal is unavoidable will be re-investigated closely, either through a climbing inspection and the use of video endoscopes (where possible), or through the completion of emergence surveys, to determine the presence or likely absence of roosts. The loss of any roost will need to be covered under a licence from Natural England, but all alternatives will be explored beforehand.

Residual Effects

9.9.789.9.182 With the above additional mitigation measures, there will be **no adverse residual effects** on roosting bats during the construction phase.

Roosting Bats – Operational Phase Impacts

9.9.799.9.183 No external artificial lighting is due to be used within the operational Scheme, other than light sources installed at substations and battery storage facilities (and not within the arrays themselves). These will only be used when necessary, such as for maintenance, rather than year-round. Luminaires installed

will be downward facing so as to avoid light spill onto surrounding trees or buildings with known or potential roosts. Therefore, **no significant impacts** are anticipated from the use of operational lighting.

Significance of Effects

9.9.809.9.184 Given the lack of impact pathways on roosting bats during the operational phase, **no significant effects** are anticipated. No additional mitigation measures are required, and **no residual effects** are anticipated.

Ecological Enhancement

9.9.819.9.185 The inclusion of new tree mounted bat roosting features is proposed. These features will be specified in the OEPMS and will provide a greater number of potential roosting features in the landscape and may constitute a long-term beneficial effect, should they be utilised by roosting bats.

Otters and Water Voles

Construction Phase Impacts

9.9.829.9.186 The design of the Scheme is such that buffer zones will be installed prior to the onset of the construction phase, limiting movements of construction vehicles, plant, personnel and material within at least 8m (and up to 30m) of every ditch and watercourse, based on their size/status. Any ditches associated with a hedgerow will be buffered by a minimum of 15m. These embedded mitigation measures will ensure that damage to ditches and watercourses which may support otter and water vole, as well as disturbance related impacts and the potential for direct harm to individuals, are avoided as far as possible. These measures are detailed in, and secured by, the OEPMS.

9.9.839.9.187 Otters and water voles may be impacted through direct harm (to individual animals or their burrows) or disturbance during any construction activity directly affecting ditches, watercourses and associated adjacent scrub, hedgerows or woodland habitat. This includes the creation of new accesses and internal access tracks, where these do not use existing culverts/ditch crossing points. The Scheme has been designed to utilise existing access points and culverts to cross between fields as much as possible, however new culverts will be required where existing accesses and tracks are not suitable for vehicle movements during the construction phase. It is anticipated that the Scheme will result in the construction of one new culvert within the Sites, at Green Hill F.

9.9.849.9.188 Similarly, otters and water voles may be impacted through direct harm or disturbance during cable installation, especially where open-cut trenching is used at watercourse crossing points. Barriers to movement in the form of severed or blocked/culverted watercourses and linear natural features arising through the creation of new accesses or cable installation may cause population fragmentation. Construction activities and the use of vehicles and construction equipment in the vicinity of watercourses may also cause disturbance to otters and water voles within shelter, as well as accidental damage to their habitat or burrows.

9.9.859.9.189 Riparian habitat quality is at risk of degradation through pollution resulting from run-off, sediment/dust deposition and contamination during the construction phase, although it should be noted that these features are likely subject to a baseline level of run-off and sediment deposition arising from the existing arable systems. The above ecological buffers have also been designed into the Scheme to help reduce the risk and severity of pollution incidents, run-off and sediment deposition and any subsequent degradation impacts on ditches and watercourses. In addition, further protective measures are incorporated into the OEPMS, including the use of fencing and steps to minimise the risk of accidental pollution or sediment mobilisation.

9.9.869.9.190 Perimeter security fencing is not considered to be a barrier to the movement of otters or water voles, given their relatively small size, and the fact that the security fencing is not proposed to be buried. Mammal gates are not considered necessary within security or protective fencing as there is no evidence of their usage from information gathered from extensive monitoring of active solar sites (Ref 9.62). It is anticipated that otters and water voles dispersing between the solar arrays and the surrounding habitats will move through gaps in the fencing material as opposed to actively seeking features such as gates, or will exploit gaps under fencing created by other mammals, such as badgers. Natural undulations in the ground should be used to ensure sufficient space beneath fencing to facilitate mammal access are available. Where no such undulations occur, it is considered most effective to raise the height of fencing panels to leave a narrow gap (no greater than 100mm) which otters and water voles (among other animals) will exploit to gain access. These embedded measures are secured via the OEPMS, and implemented during the construction of the Scheme, and therefore **no significant effects** arising from habitat fragmentation during the construction phase are anticipated.

Significance of Effects

9.9.879.9.191 Taking into account the OEPMS measures, the majority of impacts upon otters and water voles can be avoided. However, there remains a risk of direct harm or disturbance during works affecting watercourses and adjoining habitat. These could result in **significant adverse effects** at a **Local level**.

Construction Phase Additional Mitigation Measures

9.9.889.9.192 Where ditches and watercourses require unavoidable crossing or reinforcement of existing crossings, these locations will be subject to inspection prior to commencement of development activities in order to detect any holts, resting sites or burrows. Where otter holts are identified, these will be monitored prior to construction works commencing. If the holt is active and construction works are liable to cause disturbance, mitigation measures (potentially including a licence from Natural England, if required) will be implemented to either avoid impacts, or to permit temporary disturbance of the holt. Similarly, where water vole burrows are identified, mitigation measures (potentially including a licence from Natural England, if required) will be implemented to either avoid impacts, or to permit disturbance or damage. These measures are detailed in, and secured by, the OEPMS.

Residual Effects

~~9.9.89~~9.9.193 With the implementation of pre-works inspections and subsequent mitigation, adverse effects can be avoided and reduced to **neutral, non-significant effects**.

Operational Phase Impacts

~~9.9.90~~9.9.194 Operational impacts are expected to be minimal as vehicle movements will be infrequent and limited, taking place outside of the installed buffer zones, or only at designated access points which cross watercourses. This will significantly limit the risk of disturbance, pollution and damage impacts.

~~9.9.91~~9.9.195 In the absence of mitigation, there is a potential risk of a battery fire at Green Hill BESS and subsequent discharge of chemicals used to control the fire into the adjacent stream, which feeds into the River Nene. This could potentially kill or injure water voles. Ecological buffers have been embedded into the design of the Scheme from an early stage, in order to minimise the likelihood of adverse impacts arising during the operational phase. Additionally, embedded mitigation measures to minimise the likelihood and severity of battery fire have been incorporated into the Scheme, including the implementation of fire suppression systems, with containment measures in place to manage runoff in the event of a fire. The risk of a fire and measures to mitigate impacts in the event of a fire are detailed within the OBSSMP **~~[EN010170/APP~~**Revision A **[EX1/GH7.7_A]**.

~~9.9.92~~9.9.196 The OLEMP will secure the favourable management of the site's buffer zones for the duration of the Scheme, thereby maintaining and potentially enhancing the habitat quality of ditches within and adjacent to the Scheme boundary. A beneficial effect may be possible through the favourable management of ditches and watercourses, to make previously sub-optimal ditches more favourable for otter and water vole. Cessation of arable activities will also reduce runoff and would be expected to improve watercourse quality.

Significance of Effects

~~9.9.93~~9.9.197 As a result of embedded mitigation measures, **no significant effects** on otter and water vole arising from routine management during the operational phase are anticipated.

Enhancement Measures

~~9.9.94~~9.9.198 The opportunity to further enhance existing watercourses where otters and/or water voles have been recorded, or those connected to such features which have the potential to support these species, will be explored with advice from local conservation organisations. This may include improving the water retention of such features, as well as targeted Invasive Non-Native Species (INNS) programmes for American mink.

Other Mammals – Brown Hare

Construction Phase Impacts

~~9.9.95~~9.9.199 Brown hares do not utilise burrows and instead raise their young leverets in forms (shallow indentations in the middle of fields). Although the

leverets are precocial from birth, there is still a small risk of injury or mortality from construction activities. Hares breed between January and August and during these periods, the potential for impacts upon hares may be slightly greater than at other times of year.

9.9.969.9.200 Embedded mitigation measures in the OCEMP and OEPMS detail how a 10mph speed limit will be applied across the construction sites, as well as how the existing arable habitats will be cleared or left fallow prior to construction. They also detail that, as part of their induction, construction staff will be informed of the potential presence of protected species including hare as well as the need to temporarily cease works and implement an exclusion zone in the unlikely event that dependent leverets are discovered within a working area.

9.9.979.9.201 Hares are highly mobile and the temporary loss of habitats within the array sites during construction is anticipated to be similar in effect (i.e. causing disturbance or temporary displacement to hares) to the regular agricultural activities or harvesting, sowing, harrowing and rolling that take place across much of the Scheme at present. It is considered that the Sites would become suitable again for hares immediately once works in a particular area are completed. As a result, **no significant effects** arising from the loss of habitat or displacement/disturbance during the construction phase are anticipated.

9.9.989.9.202 Security or protective fencing is not considered to impede the movement of hares within or into the Sites. As such, **no significant adverse effects** associated with habitat fragmentation or population isolation as a result of the installation of security fencing are anticipated.

Significance of Effects

9.9.999.9.203 Assuming the successful implementation of the above embedded mitigation measures, as well as the fact that the anticipated levels of disturbance/habitat clearance during the construction phase are likely similar to that of baseline levels during routine agricultural activity, **no significant effects** on brown hare during the construction phase are anticipated.

Operational Phase Impacts

9.9.1009.9.204 Operationally, the cessation of intensive arable farming and expected reversion of land to sheep grazed or cut permanent grassland is likely to benefit hares, particularly through the cessation of regular disturbance from ploughing and harvesting. The solar panels also appear to be attractive sheltering features for brown hares avoiding predators and inclement weather. Monitoring carried out over large numbers of active solar arrays indicates that hares appear to benefit from the access to grazing and foraging beneath panels, being found in relatively high densities within solar arrays at sites where hares were recorded pre-construction. This may be due to either improved abundance or quality of foraging resources, or improved predator avoidance within an array. As a result, a **significant beneficial effect** in the availability of foraging habitat is anticipated.

Significance of Effects

9.9.1019.9.205 Assuming the successful implementation of the habitat creation and management measures detailed in the OLEMP, effects on brown hares during

the operational phase are anticipated to be, in the worst case, neutral, and may be **beneficial** in the long term at the **Site** level as targeted habitats establish.

Other Mammals – Harvest Mouse, Hedgehog and Polecat

Construction Phase Impacts

9.9.1029.9.206 These species are all potentially present at the Site, likely in low to moderate densities given the suboptimal to moderate habitat suitability for them (predominantly managed hedgerows and field margins).

9.9.1039.9.207 Impacts upon these species during the construction phase may arise from direct harm and mortality through movement of vehicles and clearance of habitat associated with the creation of new access gaps in hedgerows, where necessary, and the trenching of cables at or close to field boundaries. The OEPMS details precautionary methods of working during any necessary clearance of boundary habitats associated with creating new access gaps, as well as trenching of cables. Measures incorporated into the OEPMS include sensitive seasonal timing of works, the presence of an Ecological Clerk of Works and phased habitat removal, in order to safeguard a wide variety of species which may be present within the existing habitats. All cable trenching works will be followed by the reinstatement of any lost boundary habitats. When considering the mitigation measures embedded within the OEPMS, it is considered that the risk of direct harm and mortality of hedgehog and polecat can be minimised as far as is reasonably practicable. As a result, **no significant effects** associated with this impact pathway are anticipated.

9.9.1049.9.208 Disturbance during the construction period may also cause some temporary displacement of these species. The temporary loss of habitats within the array sites during construction is anticipated to be similar in effect (i.e. causing disturbance or temporary displacement to individual animals) to the regular agricultural activities or harvesting, sowing, harrowing and rolling that take place across much of the land within the Order Limits at present. It is considered that the Sites would become suitable again for hedgehog and polecat immediately once works in a particular area are completed. As a result, **no significant effects** arising from the loss of habitat or displacement/disturbance during the construction phase are anticipated.

Significance of Effects

9.9.1059.9.209 **No significant effects** on harvest mouse, hedgehog or polecat are anticipated during the construction phase. As a result, no additional mitigation measures are deemed to be required, and **no residual effects** are anticipated.

Operational Phase Impacts

9.9.1069.9.210 Adverse impacts on harvest mouse, polecat and hedgehog during the operational phase are likely to be minimal, considering the adoption of ecological buffer zones and the restriction of development and vehicle movement to outside of these zones, save for periodic habitat management operations.

9.9.1079.9.211 The OLEMP includes a significant proportion of grassland habitat creation and management, both within buffer zones and within array fencelines.

Furthermore, significant lengths of new hedgerow and tree planting is proposed. Buffer zones will be also wider than existing uncultivated field margins throughout the Scheme. These measures will increase the abundance of field margin habitat suitable for these species. Connectivity and dispersal corridors for these species would likely increase, along with a reduction in disturbance and degradation of habitats from routine agricultural practices. Overall, the cessation of intensive agricultural land use and reversion of the land to low-input grasslands would likely result in a **significant beneficial effect** at the **Local** level for harvest mouse, hedgehog and polecat.

9.9.1089.9.212 Perimeter security or protective fencing is not considered to impede the movement of harvest mouse, hedgehog or polecat within or into the Sites. As a result, no additional mitigation measures, beyond those described in paragraph 9.9.139, are deemed to be required. Therefore, assuming the successful implementation of the embedded mitigation measures detailed in paragraph 9.9.139, **no significant effects** arising from the presence of perimeter security fencing throughout the operational phase are anticipated.

Significance of Effects

9.9.1099.9.213 Taking into account the cessation of impacts arising from the current land use within the Scheme's boundary (predominately intensive arable farming), as well as the embedded mitigation and enhancement measures detailed in the OEPMS and OLEMP, overall a **residual beneficial effect** would be expected on harvest mouse, polecat and hedgehog, which would be significant at the **Local** level.

Enhancement Measures

9.9.1109.9.214 The creation of enhancement features such as habitat piles created from logs and brash will provide an increased number of shelter resources for hedgehog.

Amphibians (including Great Crested Newt)

Construction Phase Impacts

9.9.1119.9.215 Almost universally, the Scheme will be sited on land of low habitat quality for amphibians, with suitable areas being restricted to narrow uncultivated field margins, hedgerows and sporadic pockets of woodland edge.

9.9.1129.9.216 All ponds within the Scheme are proposed to be retained and protected through the construction and operational phases through the implementation of buffers within the Scheme design, within which no construction work or storage of materials will take place.

9.9.1139.9.217 Potential impacts upon amphibians during the construction phase may include terrestrial habitat degradation and terrestrial habitat loss, although these impacts are likely to be avoided in the main through the retention and incorporation of generous ecological buffer zones around the most suitable terrestrial habitats for amphibians during construction and operation of the Scheme, generally measuring wider than existing field margins.

9.9.1149.9.218 Impacts may be felt where clearance of hedgerows or other field boundary habitats is required for access or cable trenching, although this is limited given that existing field accesses have been utilised wherever possible. As discussed under 9.9.111 and 1529.9.112 above, these hedgerow losses constitute a very small proportion of the overall hedgerow network, and as such there will be no significant loss of habitat for amphibians in the context of the Scheme. Where new hedgerow breaches for site access are required, the lengths involved (typically 3-6.5m) are considered highly unlikely to significantly fragment habitats for amphibians. As a result, **no significant adverse effects** on the extent of terrestrial habitats are anticipated as a result of the Scheme.

9.9.1159.9.219 Groundworks associated with the construction phase may result in the accidental direct harm to individual amphibians, should they be present within working areas. In the absence of additional mitigation measures, the accidental killing/injury of amphibians (including great crested newts) during the construction phase would likely result in a **significant adverse effect** at the **Local** level, although clearly the magnitude of this impact would depend on the extent to which amphibians were killed/injured during construction. Similarly, given that great crested newt surveys have not been completed across the Scheme (given that it is intended to register the Scheme under District Licensing), the potential populations of great crested newts present within the Scheme are currently unknown. It is therefore possible that this effect could be felt at a more significant geographical scale.

Significance of Effects

9.9.1169.9.220 In the absence of additional mitigation, the accidental killing/injury of amphibians (predominately great crested newts) may result in **significant adverse effects** at the **Local** level.

Construction Phase Additional Mitigation Measures

9.9.1179.9.221 In order to minimise the risk of accidental killing/injury of amphibians during the construction phase, the Outline EPMS submitted with the ES sets out the supervision and protective measures required during works affecting potentially suitable habitat for amphibians at field boundaries, for example where new hedgerow gaps for access or cabling are required. These include sympathetic, staged habitat clearance and timing and the supervision of an ecologist where necessary. Measures to ameliorate the risk of accidental killing/injury of great crested newts within specific high-risk zones within the Scheme will also be incorporated into the Best Practice Principles associated with the District Licence, when this is approved. Measures implemented in each case will be proportionate to the suitability of the habitats within the working area, as well as the District Licensing Impact Risk Zone that each working area falls within.

Residual Effects

9.9.1189.9.222 When considering the above additional mitigation measures, it is considered that any potentially significant adverse effects can be reduced to **neutral, non-significant levels**. As a result, no residual effects on amphibians (including great crested newts) during the construction phase are anticipated.

9.9.1199.9.223 It is currently anticipated that the Scheme will be registered under the District Licensing scheme for great crested newts, in order to mitigate potential impacts such as habitat loss and degradation during the construction phase. Offsite mitigation delivered through this scheme will comprise the creation of new ponds in strategic locations within the local landscape. When considering the ponds created under the District Licensing Scheme, as well as the fact that no existing ponds within the Scheme are proposed to be lost, the Scheme is anticipated to result in a **significant beneficial effect** in the extent of ponds in the local landscape, and by extension, the extent of suitable breeding habitat for great crested newts and other amphibians, which would be significant at a **Local-District** level.

Operational Phase Impacts

9.9.1209.9.224 Assuming the implementation of the ecological buffer zones and the restriction of development and vehicle movement to outside of these (save for habitat management operations), adverse impacts on amphibians during the operational phase of the Scheme are likely to be minimal and **non-significant**.

9.9.1219.9.225 In the absence of mitigation, there is a potential risk of a battery fire at Green Hill BESS and subsequent discharge of chemicals used to control the fire into the adjacent stream, which feeds into the River Nene. This could potentially kill or injure amphibians in the affected watercourses. Ecological buffers have been embedded into the design of the Scheme from an early stage, in order to minimise the likelihood of adverse impacts arising during the operational phase. Additionally, embedded mitigation measures to minimise the likelihood and severity of battery fire have been incorporated into the Scheme, including the implementation of fire suppression systems, with containment measures in place to manage runoff in the event of a fire. The risk of a fire and measures to mitigate impacts in the event of a fire are detailed within the Outline OBSSMP **[EN010170/APP**Revision A **[EX1/GH7.7_A]** These are discussed in more detail in Chapter 10: Hydrology, Flood Risk and Drainage **[EN010170/APP** Revision A **[EX1/GH6.2.10_A]**, Chapter 22: Ground Conditions and Contamination **[EN010170/APP**Revision A **[EX1/GH6.2.22_A]**, and Chapter 23: Major Accidents and Disasters **[EN010170/APP/GH6.2.23-060]**.

9.9.1229.9.226 There will be a net increase in the extent and quality of both terrestrial and aquatic habitats for amphibians within the Order Limits as a result of the Scheme. This will provide enhanced amphibian habitat for the lifetime of the Scheme, as a minimum.

9.9.1239.9.227 Habitat management operations will be timed appropriately to minimise the risk of harming amphibians, with all details provided in the OLEMP. Habitat management within and close to the 20m buffer zone surrounding all ponds within the Scheme will be tailored to maximise the value of this area of terrestrial habitat for amphibians, particularly through the encouragement of tussocky grassland and scattered scrub.

Significance of Effects

9.9.1249.9.228 When considering the above embedded mitigation measures, **no significant adverse impacts** on amphibians are anticipated to arise during the operational phase. The retention and favourable management of the ponds and surrounding terrestrial vegetation, the reversion of arable land within the Scheme to permanent grassland, as well as the creation of ponds within the local landscape through the District Licensing scheme, are likely to result in a **long-term beneficial effect** for amphibians, which would be significant at the **Local – District** level.

Enhancement Measures

9.9.1259.9.229 Opportunities to create new areas of standing water within the Scheme have been explored, with six indicative locations for pond creation being outlined on the landscaping plans. The indicative locations have been based on topographical information, and are generally based in close proximity to watercourses or in other habitats which are known to be damp/wet, such as the damp grassland present in parts of Green Hill F. Any ponds created would be constructed in accordance with the prescriptions detailed in the OLEMP, and thereafter would be managed for the benefit of wildlife (including amphibians) for the duration of the Scheme. Indicative pond locations have been outlined at Green Hill E, F and BESS, and will be located outside of the development area and within other habitats of value for wildlife, such as permanent grassland. Following the consent of the DCO application, advice from a hydrologist will be sought to ascertain the most suitable locations for new ponds across the Scheme, which may also be informed by soil percolation tests and other means. The creation of new ponds would likely result in a **significant beneficial effect** on the extent of standing water habitat for amphibians within the Scheme, which would likely be significant at a **Site to Local** level, depending on how many of the indicative pond locations are likely to be successful and whether the ponds successfully establish.

9.9.1269.9.230 Specific habitat features such as log piles and hibernacula, as well as habitat management prescriptions, have been incorporated into the OLEMP in locations within the Sites considered to be of greatest value to amphibians.

Reptiles

Construction Phase Impacts

9.9.1279.9.231 Almost universally, the Scheme will be sited on land of low habitat quality for reptiles; suitable habitat being restricted to narrow uncultivated arable field margins, occasional fields of tussocky grassland, hedgerow bases and small areas of woodland edge.

9.9.1289.9.232 Potential impacts upon reptiles during the construction phase may include habitat degradation and loss, although these impacts will be avoided in the main through the retention and incorporation of generous ecological buffer zones around the most suitable habitats for reptiles during construction and operation of the Scheme.

9.9.1299.9.233 Impacts may be felt where clearance of hedgerows or other field boundary habitats is required for access or cable trenching, although this is

limited given that existing field accesses have been utilised wherever possible. As discussed under 9.9.111 and 1529.9.112 above, these hedgerow losses constitute a very small proportion of the overall hedgerow network, and as such there will be no significant loss of habitat for reptiles in the context of the Scheme. Where new hedgerow breaches for site access are required, the lengths involved (typically 3-6.5m) are considered highly unlikely to significantly fragment habitats for reptiles. Furthermore, the retention of the most suitable fields of tussocky grassland (or otherwise the removal of the most suitable areas from the Order Limits of the Scheme) has been incorporated into the design of the Scheme from an early stage. As a result, **no significant adverse effects** on the extent of terrestrial reptile habitats are anticipated as a result of the Scheme.

9.9.13099.9.234 Groundworks associated with the construction phase may result in accidental direct harm (killing or injury) to individual reptiles, should they be present within working areas.

Significance of Effects

9.9.13199.9.235 In the absence of additional mitigation measures, the accidental killing/injury of reptiles during the construction phase would likely result in a **significant adverse impact** at the **Site** level, given that the majority of habitats likely to be affected during construction are sub-optimal for reptiles.

Construction Phase Additional Mitigation Measures

9.9.13299.9.236 In order to minimise the risk of accidental killing/injury of reptiles during the construction phase, the OEPMS submitted with the ES sets out the supervision and protective measures required during works affecting potentially suitable habitat for reptiles, for example where new hedgerow gaps for access or cabling are required. These will include sympathetic, staged habitat clearance and timing and the supervision of an ecologist where necessary, and measures implemented in each case will be proportionate to the suitability of the habitats within the working area.

Residual Effects

9.9.13399.9.237 When considering the above additional mitigation measures, it is considered that the potential adverse effects on reptiles identified during the construction phase can be reduced to **neutral, non-significant levels**.

Operational Phase Impacts

9.9.13499.9.238 Adverse impacts on reptiles during the operation of the Scheme are likely to be minimal, considering the adoption of ecological buffer zones and the restriction of development and vehicle movement to outside of these, save for habitat management operations.

9.9.13599.9.239 Habitat management operations will be timed appropriately to minimise the risk of harming reptiles, with all details provided in the OLEMP.

Significance of Effects

9.9.13699.9.240 When considering the above embedded mitigation measures, **no significant adverse effects** on reptiles are anticipated to arise during the

operational phase. The retention and favourable management of areas of tussocky grassland and suitable arable field margins, as well as the reversion of arable land within the Scheme to permanent grassland, is likely to result in a **long-term beneficial effect** for reptiles, which would be significant at the **Local** level.

Enhancement Measures

9.9.1379.9.241 Specific habitat features such as log piles and hibernacula, as well as habitat management prescriptions, have been incorporated into the OLEMP in locations within the Sites considered to be of greatest value to reptiles.

Breeding Birds of Open Habitats

Construction Phase Impacts

9.9.1389.9.242 Installation of arrays will displace ground-nesting bird species which preferentially nest in open habitats with long sightlines. Displacement will commence at the outset of construction and the magnitude of the impact will increase as more of the Scheme is built, with the full displacement impact realised at the end of the construction phase. Of the notable species recorded, the species most likely to be impacted are skylark, yellow wagtail and lapwing. Detailed territory analysis indicates that 281286 skylark territories are present within the Sites, 10 yellow wagtail territories, and no lapwing territories~~; although surveys at Green Hill A.2 are not yet completed, and so this number may change.~~. These species are considered likely to be displaced to a significant degree owing to the imposition of tall structures and other hardware into the arable fields. Yellow wagtail may stand to be displaced the least as they are believed to be able to nest in taller habitats and with shorter sightlines. Displacement may lead to population fragmentation and increased intra-specific pressures on surrounding arable and grassland habitat which may be at, or approaching, carrying capacity. In the absence of additional mitigation, the above species would be permanently (for the lifetime of the Scheme) displaced, which would likely constitute a **significant adverse effect at a County level**.

9.9.1399.9.243 Corn bunting, grey partridge and quail are additional ground-nesting species which were recorded within the Sites. These species are more likely to be found nesting towards the edges of fields, and within hedgerows and ditch banks, although not exclusively. It is considered that the nest habitat requirements of these species are less particular than those above as they are able to exploit scrub, woodland-edge and field boundary habitats and therefore are likely to persist, at least to a moderate degree, within the developed Scheme. The establishment of wide margins from boundaries as part of the proposals, managed chiefly as tussocky grassland, will also serve to improve potential nesting and foraging habitats at the edge of the arrays. Impacts of solar development on these species are largely unknown, therefore a precautionary approach should be taken, and a moderate level of displacement is assumed in the absence of additional mitigation. This would likely constitute a **significant adverse effect** at the **Local** level.

9.9.1409.9.244 A temporary loss of available foraging habitat will occur during construction for breeding birds of open habits, although this impact will not be felt across the entire Scheme in synchrony, due to the progressive nature of construction. This would likely constitute a temporary **significant adverse effect** at the **Site** level.

9.9.1419.9.245 There is the potential for accidental mortality to these birds during site clearance or preparation procedures at the onset of construction, for both the array and cable routes. Quail also receive protection from disturbance when nesting owing to their Schedule 1 status under the Wildlife & Countryside Act, and works may disturb this species if conducted during the nesting season. The OEPMS details nest avoidance precautions to be taken during the construction phase at both the Sites and within the Cable Corridor. These will comprise measures such as seasonally timed working, the presence of an Ecological Clerk of Works and the setting up of exclusion zones around nesting sites. The temporary nature of the cable installation means disturbance would be very time-limited for any particular location. Similarly, the very limited land-take of the cable installation means that the likelihood of encountering nests is low. When considering the above embedded mitigation measures, it is considered that the likelihood of individual mortality occurring during the construction phase is very low, and therefore this effect could likely be reduced to **neutral and non-significant** levels.

9.9.1429.9.246 Please refer to Appendix 9.11: Confidential Schedule 1 Bird Information **[EN010170/APP/GH6.3.9.11-094]** for additional confidential information regarding Schedule 1 species, which may be disturbed by the proposals. Disturbance has the potential to cause **significant adverse effects** at a **County level**.

Significance of Effects

9.9.1439.9.247 Displacement of a subset of ground-nesting bird species for the lifetime of the Scheme, including skylark and yellow wagtail, would likely constitute a **significant adverse effect** at a **County level**. Displacement of additional species such as corn bunting, grey partridge and quail would be less severe and constitute a **significant adverse effect** at the **Local** level. Temporary loss of foraging habitat during construction would constitute a temporary **significant adverse effect** at the **Site** level. Risks of killing and injury would be reduced by embedded mitigation measures to **neutral and non-significant** levels. Disturbance of Schedule 1 species has the potential to cause **significant adverse effects** at a **County level**.

Construction Phase Additional Mitigation Measures

9.9.1449.9.248 To mitigate for the displacement effects on skylark, yellow wagtail and lapwing from the Sites, a number of fields have been removed from hosting infrastructure for the Scheme and will be managed sensitively as set out in Section 4.9 of the OLEMP to provide improved nesting habitat for these species. These species have overlapping nesting requirements, and so skylarks have been used as an umbrella species for the assessment.

9.9.1459.9.249 Of the 281286 skylark territories recorded at baseline, 47 are retained in undeveloped fields. These fields will either be managed as permanent grassland with a late season hay-cut, to avoid disturbance to birds during the breeding season; as rotational spring-sown cereal crops; or as set-aside. Grassland managed in this way would be expected to support slightly greater densities of skylark territories (0.27 territories/ha) as opposed to winter cereals (0.23 territories/ha), which is the predominant habitat type within the Sites at baseline. Spring-sown cereals, as opposed to winter-sown, reach a lower grower height during the breeding season, and so the sward height remains suitable for skylark breeding for longer, allowing greater breeding success. Territory densities in spring-sown cereals are 0.46 territories/ha according to published literature. Set-aside would comprise land which is ploughed every two to five years, with the resulting habitat comprising patchily vegetated ground, short grasses and arable weeds. This habitat has been found to support significantly higher densities of skylarks (0.56 territories /ha). Thus, the carrying capacity of these fields will be enhanced, so as to 'absorb' a significant proportion of displaced territories from the Site. A total of 2427.5 territories are calculated to be mitigated in this way. Table 9.6: provides the areas of each habitat type provided and the uplift in carrying capacity relative to the winter cereals baseline.

9.9.1469.9.250 In conjunction with the provision of compensatory habitat manged for ground-nesting birds, the large-scale reversion of the current arable land within the solar array fields to permanent grassland will result in increased foraging productivity within the Sites. This is expected to permit a proportion of displaced territories which were present at the edges of fields at baseline to be able to persist, where suitable nesting habitat lies adjacent. A total of 5456 territories are calculated to be mitigated in this way.

Table 9.6: Skylark Mitigation Calculations

Proposed Habitat Type	Area Provided (ha)	Carrying Capacity (territories/ha)	Uplift in Carrying Capacity Relative to baseline (territories/ha)	No. Territories Mitigated (Area x Uplift)
Grassland	88.5	0.27	+0.04	3.5
Spring-sown Cereal	20.0	0.46	+0.23	4.6
Set-aside	58.7	0.56	+0.33	19.4

9.9.1479.9.251 Taken together, 125130.5 territories will be retained or mitigated, which constitutes 44.545.6% of the baseline.

9.9.1489.9.252 Such areas of compensatory habitat will also be usable by species such as yellow wagtail, corn bunting, grey partridge and quail. All mitigation sites will be managed under the terms of prescriptions contained within the OLEMP.

9.9.1499.9.253 For corn bunting, grey partridge and quail, it is predicted that nesting will continue to occur within the Site. Additionally, provision of compensatory habitat manged for ground-nesting birds, in conjunction with the increased foraging productivity within the Site, should reduce residual effects on these species substantially.

9.9.1509.9.254 Please refer to Appendix 9.11: Confidential Schedule 1 Bird Information **[EN010170/APP/GH6.3.9.11-094]** for additional confidential information regarding mitigation for Schedule 1 species. Measures described will reduce adverse impacts to **neutral and non-significant** levels.

Residual Effects

9.9.1519.9.255 Displacement of ground-nesting bird species for the lifetime of the Scheme, including skylark and yellow wagtail, will be ameliorated by provision of alternative enhanced nesting and foraging habitat. The residual displacement of approximately 55.554.4% of the baseline population would nonetheless constitute a **significant adverse effect** at a **District level**. Displacment of additional species such as corn bunting, grey partridge and quail would be much less severe and would constitute a **significant adverse effect** at a **Site level**. Temporary foraging habitat losses would constitute a **significant adverse effect** at a **Site level**.

Operational Phase Impacts

9.9.1529.9.256 During the operational phase of the Scheme, further impacts on these bird species are likely to be limited as displacement will have occurred at the construction phase. However, it is important to note that while nesting by skylark and yellow wagtail stands to decline significantly within the Sites, the reversion of arable land to diverse, low-input grassland within the solar array fields, which is managed relatively infrequently, is likely to increase the abundance of invertebrate prey items for skylark and yellow wagtail markedly. A mosaic of grassland management is specified in the OLEMP and will be employed for maximum benefit to biodiversity. Skylark and yellow wagtail regularly forage tens or hundreds of metres away from nesting sites and both have been recorded foraging on active solar arrays. Therefore, displacement effects are expected to be counteracted to an extent by the increased foraging potential of the operational array Sites.

9.9.1539.9.257 Corn bunting, grey partridge and quail are likely to benefit from the creation of wider field margins through the imposition of undeveloped buffer zones which will be significantly wider than at present. These buffer zones will be subject to various management regimes to provide a range of food resources and shelter areas. This will substantially increase both the suitability and abundance of habitat for foraging and nesting by these birds.

9.9.1549.9.258 Grassland cuts will be timed sensitively to ensure that forage is available to ground-nesting birds across the breeding season. Similarly, management of offsetting fields for nesting birds, whether grassland or set-aside, will be managed to avoid impacts to nesting birds during the breeding season. This is detailed in the OLEMP.

Significance of Effects

9.9.1559.9.259 For all species, enhanced foraging opportunities are expected to provide a **significant beneficial effect** at least at the **Site** level. Over time, once new habitats have established, the magnitude of beneficial effects associated with increased foraging opportunities will be increased and may rise to a **Local** or **District** level.

Enhancement Measures

9.9.1569.9.260 The addition of bespoke features which provide nesting opportunities for various bird species, including barn owl (a Northamptonshire BAP species), kestrel and starling, has been included in the OLEMP. Locations will make use of trees, on-Site structures and adjacent buildings.

9.9.1579.9.261 Management of Field FF7 as permanent grassland with wetland scrapes, though targeted at wintering plovers, may also improve the field's capacity to support breeding waders such as lapwing and snipe.

Breeding Birds of Boundary Habitats

Construction Phase Impacts

9.9.1589.9.262 All birds, their nests, eggs and young, are protected from damage/ killing/ injury. Numerous species were recorded by the surveys which nest within the boundary habitats in and around the Sites and as such are capable of being harmed by accidental damage or degradation of nesting habitat, or by certain habitat clearance activities, either to facilitate access onto the array Sites or cabling works. Key species of conservation concern which may be impacted include: bullfinch, dunnock, greenfinch, linnet, reed bunting, song thrush, whitethroat, woodpigeon, wren and yellowhammer.

9.9.1599.9.263 Accidental damage to nesting habitat, or degradation through pollution events, would be avoided through the adoption of protective buffer zones from the outset of construction. This will also limit the degree of disturbance from construction activities. Where habitat clearance works are required, the OEPMS details measures to be taken to ensure that nesting birds are not harmed. This will involve sensitive timing of habitat removal works, or else briefing talks to all construction staff and pre-commencement nesting bird inspections by an Ecological Clerk of Works, with protection of identified, active nests. As a result, **no significant effects** associated with killing or injury of nesting birds are anticipated.

9.9.1609.9.264 Additional species are protected from disturbance when nesting under Schedule 1 of the Wildlife & Countryside Act. Such species recorded by the surveys which may nest in hedgerows, woodland and buildings in and around the Site include: barn owl, Cetti's warbler, hobby, osprey, peregrine and red kite. The OEPMS details additional measures to be taken to ensure that Schedule 1 bird species are not disturbed while nesting. This will involve sensitive timing of works in proximity to known or likely nesting sites (including minor hedgerow removal for access or cabling), pre-commencement and regular monitoring by an Ecological Clerk of Works, briefing talks to all construction staff, and the

enhanced buffering from development of certain buildings or trees confirmed or likely to contain nesting sites. Any construction-phase impacts would be expected to be temporary and felt at a site level. Likewise, any effects would be **temporary and non-significant**.

9.9.1619.9.265 Minor losses of hedgerow habitat at the array sites and within the Cable Route Corridor will reduce the extent of nesting, sheltering and foraging habitats in the short-term. However, losses across the Scheme are not considered to cause a cumulative impact on the breeding birds which use them, as individual losses are limited to 3-6.5m lengths and, as discussed under 9.9.111 and 9.9.112 above, these hedgerow losses constitute a very small proportion of the overall hedgerow network. As a result, **no significant effects** associated with the loss of hedgerow habitat are anticipated.

Significance of Effects

9.9.1629.9.266 Effects are deemed to be **neutral and not significant**.

Operational Phase Impacts

9.9.1639.9.267 Owing to the use of development free buffer zones from the onset of construction, it is considered unlikely that the habitats within which these birds nest will be degraded through the presence of the adjacent arrays. Similarly, the temporary nature of the cabling work means that once cabling is complete, no impacts are anticipated.

9.9.1649.9.268 Habitat management works and maintenance activities will be timed sensitively, as detailed in the OLEMP, to avoid impacts on nesting birds and to ensure foraging resources are available across the breeding season.

9.9.1659.9.269 The OLEMP details various habitat creation and management prescriptions to be applied as a mosaic within the buffer zones and panelled areas. The reversion of the arable land to a patchwork of grassland types, and the widening of uncultivated margins, will increase the availability of seed and invertebrate food for a wide variety of bird species.

9.9.1669.9.270 The OLEMP also contains details of the extensive additional planting of new hedgerows, trees and other woody vegetation across the Site boundaries as part of Biodiversity Net Gain proposals, which will increase nesting and foraging opportunities for numerous bird species.

9.9.1679.9.271 With the creation of a wide range of habitats which will offer nesting and foraging opportunities across the Sites, a net gain in nesting and foraging habitat will be achieved. Across the Sites, this is expected to lead to a residual **significant beneficial effect** at a **Local** level.

Significance of Effects

9.9.1689.9.272 Habitat creation will result in residual **significant beneficial effect** to breeding birds of boundary habitats at a **Local** level.

Enhancement Measures

9.9.1699.9.273 The addition of bespoke features which provide nesting opportunities for various bird species, including tawny owl and marsh tit, has been included in

the OLEMP. Locations will make use of trees, on-Site structures and adjacent buildings.

Breeding Birds of Wetland Habitats

Construction Phase Impacts

9.9.1709.9.274 All birds, their nests, eggs and young, are protected from damage/ killing/ injury. A limited number of species were recorded by the surveys which nest within the wetland habitats in and around the Sites and as such are capable of being harmed by certain habitat clearance activities, either to facilitate access onto the array Sites or cabling works. Key species of conservation concern which may be impacted include: Cetti's warbler, grey wagtail, kingfisher, mallard and moorhen. Cetti's warbler and kingfisher are also protected from disturbance when nesting under Schedule 1 of the Wildlife & Countryside Act.

9.9.1719.9.275 Accidental damage to nesting habitat, or degradation through pollution events, would be avoided through the adoption of protective buffer zones from the onset of construction. This will also limit the degree of disturbance from construction activities. The OEPMS details measures to be taken to ensure that Schedule 1 bird species are not disturbed while nesting and that any other bird nests are not harmed. This will involve sensitive timing of works in proximity to known or likely nesting sites (including minor hedgerow removal for access or cabling), pre-commencement and regular monitoring by an Ecological Clerk of Works, briefing talks to all construction staff and the enhanced buffering from development of certain buildings or trees confirmed or likely to contain nesting sites. Given these measures, the risk of impacts to breeding birds, other than ground-nesting species, is very low. Any construction-phase impacts would be expected to be temporary and felt at a site level. Likewise, any effects would be **temporary and non-significant**.

Significance of Effects

9.9.1729.9.276 Effects on wetland birds will be **neutral and not significant**.

Operational Phase Impacts

9.9.1739.9.277 Owing to the use of development free buffer zones from the onset of construction, it is considered unlikely that the habitats within which these birds nest will be degraded through the presence of the adjacent arrays. Similarly, the temporary nature of the cabling work means that once cable installation is completed, no impacts are anticipated.

9.9.1749.9.278 Habitat management works and maintenance activities will be timed sensitively, as detailed in the OLEMP, to avoid impacts on nesting birds.

Significance of Effects

9.9.1759.9.279 Effects on wetland birds will be **neutral and not significant**.

Enhancement Measures

9.9.1769.9.280 The OLEMP details the creation of a small number of ponds. This will increase the availability of nesting and foraging habitat for wetland species.

Overwintering Birds of Open Habitats

Construction Phase Impacts

9.9.1779.9.281 It should be highlighted that impacts on overwintering birds associated with the Upper Nene Valley Gravel Pits SPA, including golden plover and lapwing, are discussed in 9.9.5 above and not detailed here, to avoid repetition.

9.9.1789.9.282 The potential for, and severity of, impacts on overwintering birds depends on the timing of construction activities. It is assumed that, with a c.24 month build programme, working over the winter months will be unavoidable. Consequently, there remains the risk that flocks of overwintering birds will be displaced from areas of the Site or Cable Corridor which they might ordinarily use, at least periodically, for foraging and shelter. However, associated impacts will not be felt across the whole Scheme for the whole build programme, as arrays in some fields will be fully built out before progressing to other fields.

9.9.1799.9.283 The onset of construction or cable installation activities within a given field, or the movement of vehicles or personnel into retained, undeveloped fields, risks the disturbance and flushing of birds at a time of year where they are most susceptible to energetic stress. Notable flocks of several species were observed across the Sites, including geese, gulls, finches, skylark, starling, thrushes, waders and woodpigeon. These flocks already tolerate a degree of disturbance from current farming activities and pedestrian activity through public footpaths. Any additional impacts from disturbance posed by construction would be expected to result in **significant adverse effects** at the **Site** level only.

9.9.1809.9.284 There will be a temporary loss of foraging habitat in open fields for overwintering birds within the local landscape whilst construction is ongoing, although a proportion of fields have been retained undeveloped within the Scheme, which will remain usable by wintering birds throughout construction. This includes a number of fields where notable flocks of wintering birds were observed during the surveys. The majority of fields will be developed, however, temporary loss of foraging habitat in these fields will not be felt across the whole Scheme for the whole build programme, as arrays in some fields will be fully built out before progressing to other fields. As such, these fields may be usable by overwintering birds for some or all of the winter periods during the construction phase (subject to commencement timings). Moreover, there is a considerable extent of similar open habitat in the vicinity, and the habitats on Site were generally not seen to be of elevated importance compared to their surroundings. As such, alternative foraging opportunities exist for birds in the local landscape and any temporary loss of foraging areas is considered to result in a in **significant adverse effects** at the **Site** level only.

Significance of Effects

9.9.1819.9.285 Both temporary disturbance, and temporary loss of foraging habitat, may lead to **significant adverse effects** at the **Site** level only.

Additional Construction Phase Mitigation Measures

9.9.1829.9.286 The OEPMS details how work during the winter months will seek to minimise potential impacts on flocks of overwintering birds. This will involve the construction (including cabling) site management following a regime where undeveloped fields are not entered by plant or personnel unless it can be confirmed that they do not contain flocks of waders or wildfowl such as geese or plovers, so as to avoid unnecessary energy expenditure at a sensitive time of year. As such, any impacts from disturbance will be avoided and such effects are deemed **neutral and non-significant**.

Residual Effects

9.9.1839.9.287 Temporary loss of foraging habitat may lead to **significant adverse effects** at the **Site** level.

Operational Phase Impacts

9.9.1849.9.288 It should be highlighted that impacts on overwintering birds associated with the Upper Nene Valley Gravel Pits SPA, including golden plover and lapwing, are discussed in 9.9.18 above and not repeated here, to avoid repetition.

9.9.1859.9.289 For certain species, such as geese and waders, the presence and operation of the arrays will result in their permanent displacement from these fields (for the lifetime of the Scheme), as they require open fields to be vigilant of predators and to have space to take off. Field EF34, the only field to support a large, mixed flock of geese, has been retained outside the development area. Likewise, a portion of the fields supporting elevated numbers of waders (including golden plover, lapwing and snipe) have been retained. Like-for like mitigation has also been provided for fields with importance to golden plover and lapwing deemed Functionally Linked Land; 9.9.13 refers. Therefore, this displacement effect is minimal, and this impact is likely to result in a **significant adverse effect** at the **Site** level only.

9.9.1869.9.290 Most overwintering birds, such as finches, partridges, meadow pipit, skylark and thrushes, would be expected to continue to forage within the operational Site. Disturbance to these species during the winter months would also be minimal, as grassland management activities are not needed outside the growing season. Substantial new habitat creation, including diverse grassland and buffer zones, will improve foraging resources relative to baseline levels for these species. Alongside this, sensitive management measures enshrined in the OLEMP will seek to ensure the provision of foraging resources throughout the winter months. With these measures, a **significant beneficial effect** would be expected at a **Local** level on the majority of overwintering birds.

Significance of Effects

9.9.1879.9.291 Permanent displacement of a subset of species, chiefly waders, will result in a **significant adverse effect** at the **Site** level only. For the majority of species, a **significant beneficial effect** would be expected at a **Local** level.

Operational Phase Additional Mitigation Measures

9.9.1889.9.292 As set out in Table 9.6, there will be an allocation of land within the Order Limits to mitigate impacts on ground-nesting breeding birds. Given the

similar requirements for breeding skylark and those overwintering species which are most likely to be permanently displaced from parts of the Sites (large fields with open sightlines and either grassland, set-aside or cereal crops), these fields will be available for use by said species during the winter for the lifetime of the Scheme. With the provision of this mitigation land for breeding birds within the Order Limits (which will be available for use by overwintering birds for the lifetime of the Scheme), any potential adverse effects associated with displacement of overwintering birds are likely to be reduced to **neutral and non-significant** levels.

Residual Effects

9.9.1899.9.293 For the majority of species, a **significant beneficial effect** would be expected at a **Local** level. **Neutral and non-significant** effects would be felt for other species.

Overwintering Birds of Boundary Habitats

Construction Phase Impacts

9.9.1909.9.294 The onset of construction or cable installation activities within a given field, or the movement of vehicles or personnel into retained, undeveloped fields, risks the disturbance and flushing of birds at a time of year where they are most susceptible to energetic stress. Disturbance may therefore pose a risk of stress to wintering birds, which could reduce their chances of survival over winter. The only boundary species in notable flocks were winter thrushes. These flocks roam widely in the landscape and already tolerate a degree of disturbance from current farming activities and pedestrian activity through public footpaths. Additionally, buffer zones will be implemented to protect all boundary habitats and provide an offset from construction activities. Disturbance-induces stress posed by construction would be expected to be **neutral** and **non-significant**.

9.9.1919.9.295 Minor losses of boundary habitat (chiefly hedgerows) will occur during construction, either to facilitate access or for installation of cabling in the Cable Route Corridor. This will reduce the extent of available foraging and sheltering habitat in the short-term. However, losses across the Scheme are not considered to cause a cumulative impact on overwintering birds as individual losses are limited to 3-6.5m lengths and, as discussed under 9.9.111 and 1529.9.112 above, these hedgerow losses constitute a very small proportion of the overall hedgerow network. As a result, **no significant effects** associated with the loss of hedgerow habitat are anticipated.

9.9.1929.9.296 Whilst construction is ongoing, disturbance may result in an effective 'loss' of available suitable habitat and temporary displacement of overwintering birds within the local landscape. The majority of fields will be developed, however, temporary loss of foraging habitat in these fields will not be felt across the whole Scheme for the whole build programme, as arrays in some fields will be fully built out before progressing to other fields. As such, these fields may be usable by overwintering birds for some or all of the winter periods during the construction phase (subject to commencement timings). Additionally, a proportion of fields have been retained undeveloped within the Scheme, where the boundary

habitats will remain usable by wintering birds throughout construction. This includes a number of fields where notable flocks of wintering birds were observed during the surveys. Moreover, there is a considerable extent of similar open habitat in the vicinity, and the habitats on Site were generally not seen to be of elevated importance compared to their surroundings. As such, alternative foraging opportunities exist for birds in the local landscape and any temporary loss of foraging areas is considered to result in **significant adverse effects** at the **Site** level only.

Significance of Effects

~~9.9.193~~9.9.297 Temporary loss of foraging habitat, or effective loss through displacement, may lead to **significant adverse effects** at the **Site** level only.

Construction Phase Additional Mitigation Measures

~~9.9.194~~9.9.298 The OEPMS details how work during the winter months will seek to minimise potential impacts on flocks of overwintering birds. This will involve the construction (including cabling) site management following a regime where undeveloped fields are not entered by plant or personnel unless it can be confirmed that they do not contain flocks of waders or wildfowl such as geese or plovers, so as to avoid unnecessary energy expenditure at a sensitive time of year. As such, any impacts from disturbance will be avoided and such effects are deemed **neutral and non-significant**.

Residual Effects

~~9.9.195~~9.9.299 Effective loss of available foraging habitat through displacement may lead to **significant adverse effects** at the **Site** level only.

Operational Phase Impacts

~~9.9.196~~9.9.300 All species of boundary habitats would be expected to continue to forage within the operational Site. Disturbance to these species during the winter months would also be minimal. Hedgerow/ woodland management activities, enshrined in the OLEMP, will be timed sensitively to ensure the provision of foraging resources throughout the winter months. This includes the cutting of hedgerows late in the winter period, and on a rotation basis, to ensure seeds, nuts and berries remain available throughout the winter. Substantial new habitat creation, including extensive hedgerow planting, in combination with diverse grassland and buffer zones, will improve foraging resources relative to baseline levels for these species. With these measures, a **significant beneficial effect** would be expected at a **Local** level on overwintering birds of boundary habitats.

Significance of Effects

~~9.9.197~~9.9.301 For all boundary species, a **significant beneficial effect** would be expected at a **Local** level.

Overwintering Birds of Wetland Habitats

Construction Phase Impacts

~~9.9.198~~9.9.302 All wetland habitats will be retained, and safeguarded with buffer zones, detailed in the OEPMS.

9.9.1999.9.303 The onset of construction or cable installation activities within a given field, or the movement of vehicles or personnel into retained, undeveloped fields, risks the disturbance and flushing of birds at a time of year where they are most susceptible to energetic stress. However, wetland birds were generally few in number, and confined to ponds or boundary watercourses where they are sheltered and less susceptible to disturbance, relative to birds of open or boundary habitats. Additionally, buffer zones will be implemented to protect all wetland habitats and provide an offset from construction activities. Disturbance posed by construction would be expected to be **neutral and non-significant**.

Significance of Effects

9.9.2009.9.304 Temporary disturbance is considered to be **neutral and non-significant**.

Operational Phase Impacts

9.9.2019.9.305 All overwintering birds of wetland habitats recorded at baseline would be expected to continue to forage within the operational Site. Disturbance to these species during the winter months would also be minimal, with infrequent management of ponds and ditches needed over winter, as detailed in the OLEMP.

9.9.2029.9.306 Improved buffer zones, both in terms of extent and quality, will improve marginal foraging habitats and reduce risk of disturbance, relative to baseline levels. With these measures, a **significant beneficial effect** would be expected at a **Site** level for these species.

Significance of Effects

9.9.2039.9.307 Improved buffer zones around wetland habitats would be expected to lead to a **significant beneficial effect** at a **Site** level.

Enhancement Measures

9.9.2049.9.308 The OLEMP details the creation of a small number of ponds. This will increase the availability of foraging habitat for wetland species over winter. Similarly, wetland scrapes in field FF7 may enhance this field for additional wading bird species beyond golden plover and lapwing (the target species for this measure).

Invertebrates

Construction Phase Impacts

9.9.2059.9.309 With regard to terrestrial invertebrates, the hedgerows, mature trees, woodland edges, other neutral grassland fields and uncultivated field margins within the Order Limits were of relatively higher value for invertebrates than the cultivated arable land which dominates the majority of the Order Limits. However, the presence of a notable assemblage of invertebrates is considered unlikely as these habitats are either limited in extent or likely subject to degradation from agricultural activities, such as dust deposition/ runoff and spray drift from herbicide and pesticide applications.

9.9.2069.9.310 The nature of the proposals is such that edge habitats including hedgerows and woodland edges, will be retained by and large in their entirety, with array development activities taking place within the fields themselves. Furthermore, diverse grassland fields will mostly remain undeveloped (with approximately 75% of existing Other Neutral Grassland being either retained or enhanced through the Scheme), whilst suitable buffers have been implemented around in-field trees and ponds to ensure that these features are retained and protected from damage during construction. As a result, **no significant adverse effects** on terrestrial invertebrates associated with habitat loss are anticipated during the construction phase of the Scheme.

9.9.2079.9.311 Cable route installation will impact a small number of hedgerow sections (where a hedgerow intersects the cable route) and field boundary habitats temporarily, before being reinstated. Additionally, a small extent of hedgerow will be permanently removed for access. This is set out in 9.9.111 and 1529.9.112 above. Where non-arable vegetation is removed from within the Sites or Cable Route Corridor, there is a minor risk for adverse impacts on the assemblage of invertebrate species associated with these plants, although the suitability of habitat for invertebrates within the Order Limits is generally low or of little conservation significance, and therefore any impacts are highly unlikely to be significant. As a result, **no significant adverse effects** on terrestrial invertebrates during the construction phase are anticipated.

9.9.2089.9.312 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. Impacts could be felt in the long term if aquatic habitats are seriously affected. However, the imposition of fenced buffer habitats during construction (and beyond) will minimise the potential likelihood and severity of these impacts occurring. The OEPMS sets out additional measures to minimise the risk of pollution, run-off and dust deposition impacts on the Sites' boundary habitats during construction. Given the above embedded mitigation measures, it is considered that any significant habitat degradation during the construction phase can be avoided.

9.9.2099.9.313 For aquatic invertebrates (including white clawed crayfish, if present), the ditches, watercourses and ponds offer breeding, sheltering and foraging opportunities. The stream running approximately north-south along the eastern edge of Green Hill BESS is likely to have elevated quality for aquatic invertebrates relative to the other streams, ponds and ditches within the Sites, although the presence of a particularly notable assemblage is considered unlikely.

9.9.2109.9.314 Depending on the construction methodology associated with the installation of cables at watercourse crossing points, there is potential for adverse impacts on aquatic invertebrates to arise during the construction phase. The use of more invasive methods, such as open-cut trenching, may result in temporary damage to banks of watercourses, the deposition of silts, and a reduction in the suitability of the watercourse for aquatic invertebrates.

Significance of Effects

9.9.2119.9.315 Although all efforts will be made to avoid adverse effects on aquatic invertebrates during construction, there remains the potential for impacts on aquatic invertebrates during works which affect watercourses, such as open-cut trenching during cable installation. Given that these impacts will be temporary and that watercourses will be reinstated following any required trenching work, this impact pathway is only considered likely to result in a significant, **short-term adverse effect** on aquatic invertebrates at the **Site** level. Should they be present, the killing/injury of white-clawed crayfish or the damage, destruction or obstruction of places they use for shelter may constitute an offence under the Wildlife and Countryside Act 1981.

Construction Phase Additional Mitigation Measures

9.9.2129.9.316 Although the presence of white clawed crayfish in any of the working areas is considered to be highly unlikely (based on the lack of local records of this species and the sub-optimal suitability of the watercourses present within the Order Limits), should the presence of this species be confirmed, avoidance/mitigation measures will be implemented for any works affecting that particular watercourse. These measures may include the careful siting of the cable route within the Cable Route Corridor to avoid areas of suitable habitat, the use of HDD to avoid impacts on the watercourse itself or obtaining a mitigation licence to mitigate for unavoidable impacts.

9.9.2139.9.317 Where a notable assemblage of aquatic invertebrates or presence of particularly notable species are deemed to be present or potentially present within Cable Corridor working areas/watercourse crossing points (such as at the River Nene crossing point), HDD is proposed as the cable installation method. The OEPMS and OCEMP will provide precautionary working methods surrounding the installation of the cables and the minimisation of risks associated with HDD. This would include visual monitoring for discharge of sediments, monitoring for vibrations, suitable depth settings and precautionary siting of entry and exit pits.

Residual Effects

9.9.2149.9.318 Mitigation measures have been proposed to minimise the likelihood and severity of potential impacts on aquatic invertebrates during the construction phase, particularly during cable route installation at watercourse crossing points. Following the implementation of these measures, it is anticipated that any effects arising could be reduced **to neutral, non-significant levels**. As a result, **no residual effects** are anticipated.

Operational Phase Impacts

9.9.2159.9.319 The cessation of intensive arable farming practices (particularly insecticide spraying) and reversion of the land to permanent grassland (for at least the duration of the Scheme) can be expected to result in increased diversity and abundance of both terrestrial and aquatic invertebrates at the operational Site. This includes a number of pollinating of butterfly and bee species which have been shown to have increased diversity and abundance in solar arrays compared to control plots. For aquatic species, the reduced input of dust, soil and

chemicals into boundary ditches and streams is likely to improve these habitat's quality and thereby also increase the abundance and/or diversity of the invertebrate assemblage present.

~~9.9.216~~9.9.320 Moreover, the creation of diverse habitats within buffer zones and sensitive management of both retained and new habitats, as detailed in the OLEMP, will result in a greater extent of higher-value habitat for terrestrial invertebrates.

~~9.9.217~~9.9.321 In the absence of mitigation, there is a potential risk of a battery fire at Green Hill BESS and subsequent discharge of chemicals used to control the fire into the adjacent stream, which feeds into the River Nene. This could potentially lead to the killing of aquatic invertebrates, which could have a short-medium-term significant adverse effect. Ecological buffers have been embedded into the design of the Scheme from an early stage, in order to minimise the likelihood of adverse impacts arising during the operational phase. Additionally, embedded mitigation measures to minimise the likelihood and severity of battery fire have been incorporated into the Scheme, including the implementation of fire suppression systems, with containment measures in place to manage runoff in the event of a fire. The risk of a fire and measures to mitigate impacts in the event of a fire are detailed within the OBSSMP. These are discussed in more detail in Chapter 10: Hydrology, Flood Risk and Drainage **[~~EN010170/APP~~EX1/GH6.2.10_A]**, Chapter 22: Ground Conditions and Contamination **[~~EN010170/~~APP~~/GH6.2.22~~-059]**, and Chapter 23: Major Accidents and Disasters **[~~EN010170/~~APP~~/GH6.2.23~~-060]**.

~~9.9.218~~9.9.322 Studies suggest that some aquatic invertebrates such as mayflies, dragonflies and caddisflies which normally lay their eggs on or close to the surface of waterbodies have been found to also lay their eggs on the surface of solar panels (Ref 9.63). This is assumed to be due to the attraction of these polarotactic species to surfaces that reflect horizontally polarized light (a trait shared by waterbodies and some solar panels). Aquatic invertebrate eggs mistakenly laid on solar panels results in egg desiccation and subsequently, reproductive failure.

~~9.9.219~~9.9.323 The vast majority of the habitats within the Order Limits are arable (with cropland comprising 87.8% of the total area of the Sites), with very few wetland habitats or waterbodies, such as ponds (22 present within the Sites, totalling approximately 0.3ha), present within the Order Limits. As a result, the land within the Order Limits is considered unlikely to support significant populations of aquatic invertebrates such as dragonflies and caddisflies, which may be affected through this impact pathway. Furthermore, significant buffers between all waterbodies and the proposed solar panel arrays have been implemented across the Scheme, comprising a minimum non-developable area of 20m from any ponds, and a minimum of between 8-30m from ditches, streams and rivers. These offsets are anticipated to significantly reduce the potential for this impact pathway to result in significant effects on the aquatic invertebrates adverse effects. In addition, as no solar panels are proposed at Green Hill BESS, invertebrates associated with the stream running along the eastern edge of Green Hill BESS (which was considered to be one of the more valuable habitats for

aquatic invertebrates within the Order Limits) will not be affected through this potential impact pathway.

Significance of Effects

9.9.2209.9.324 Given the general lack of suitable habitat present for polarotactic aquatic invertebrates within the Order Limits, in addition to the implementation of the above buffers which have been designed into the Scheme, **no significant adverse effects** on aquatic invertebrates through polarised light are anticipated.

9.9.2219.9.325 When considering the other embedded mitigation measures above, **no significant adverse impacts** on invertebrates are anticipated to arise during the operational phase.

9.9.2229.9.326 Given the large extent of habitat that will likely increase in quality, the operational impacts of the development will have beneficial effects on a wide range of invertebrates. This is expected to result in a **significant beneficial effect at a Local level**.

Enhancement Measures

9.9.2239.9.327 Alongside the general betterment of habitat quality and diversity for invertebrates, resulting from the sowing of diverse grass seed mixes and planting of new trees and shrubs, bespoke measures will be implemented to target local conservation priority species, including black hairstreak and lime bark beetle.

9.9.2249.9.328 With regard to black hairstreak, blackthorn will be planted within newly created hedgerows and areas of scrub, in order to provide breeding habitat for this species. These measures are outlined in the OLEMP and will be developed in the finalisation of the LEMP.

9.9.2259.9.329 For lime bark beetle, this species is found in lowland mixed deciduous woodland and is believed to be specialised for feeding on dead wood from small-leaved lime *Tilia cordata* trees. Small-leaved lime will be included in the mix for tree planting, which in time will lead to dead-wood foraging opportunities.

9.9.2269.9.330 Other features such as dead-wood piles and beetle banks will be installed to provide additional shelter, foraging and breeding opportunities for a range of invertebrates. In addition, new pond creation will enhance the Sites' capacity to support aquatic invertebrates.

Plants (including Arable Weeds)

Construction Phase Impacts

9.9.2279.9.331 Surveys have revealed the presence of several notable plants within the Sites; chiefly arable weeds. The arable weed assemblages recorded within the Scheme were of no higher than Local importance. In the absence of mitigation, these species would likely be permanently (for the duration of the Scheme) lost from the Sites through the construction of the arrays and seeding of grassland in place of arable habitats, although some species would likely persist. This would likely constitute a **significant adverse effect** at the **Local** level.

9.9.2289.9.332 Where other individual notable plant species may be present, such as in hedgerows, woodland and grassland, these habitats will be retained and protected with undeveloped buffer zones. Any minor losses of hedgerow for access will constitute a tiny portion of the hedgerow network and the likelihood of impacts to notable plant species is very low and **not significant**.

9.9.2299.9.333 The habitats within the Cable Route Corridor are very similar to those within the Sites, and are characteristic of the local (predominately arable) landscape. There is therefore the potential for some notable plant species to be present within the Cable Route Corridor, such as in arable field margins or species-rich grasslands. The siting of the Cable Route Corridor has taken into account the presence of any habitats which are likely to contain notable plant species or communities (particularly designated sites such as Local Wildlife Sites), and avoided these wherever possible. Where these habitats have been identified and remain within the Cable Route Corridor, all efforts will be taken to avoid/minimise impacts on these habitats/communities, through measures such as the relocation of the cable route, or the construction methodology used in a particular area. For example, although Earls Barton Meadow LWS is located partially within the Cable Route Corridor, this LWS will either be avoided entirely (through siting the cable trenches in adjacent fields), or otherwise avoided through installing the cables underneath the LWS, using HDD methods over open cut trenching. Impacts to habitats within the Cable Route Corridor during the construction phase will also be temporary, and working areas will be fully reinstated upon completion of the works. With the above embedded mitigation measures, it is considered that effects potentially arising from this impact pathway can be reduced to **neutral, non-significant levels**.

Significance of Effects

9.9.2309.9.334 In the absence of additional mitigation, the Scheme would likely result in a **significant adverse effect** on arable weeds, through the loss of habitat suitable for arable weeds to persist. This effect would likely be significant at the **Local** level.

Construction Phase Additional Mitigation Measures

9.9.2319.9.335 Mitigation measures designed into the Scheme and set out in section 4.9 of the OLEMP include the provision of entire fields designated as set-aside (totalling approximately 58.7 ha), which will be cultivated regularly (every 2-5 years) and managed as set-aside for the duration of the Scheme. Although this mitigation measure has been designed predominately to provide suitable habitat for ground-nesting birds (particularly skylark) for the lifetime of the Scheme, this measure will also provide large areas of suitable habitat for arable weeds to persist within the Order Limits. As a result, it is considered that sufficient mitigation measures can be delivered to reduce impacts on habitat loss for arable weeds to **neutral, non-significant levels**.

Residual Effects

9.9.2329.9.336 As the above mitigation measures can reduce any anticipated impacts on arable weeds during the construction phase to neutral, non-significant levels, **no residual effects** are anticipated.

Operational Phase Impacts

9.9.2339.9.337 The routine operation of the Scheme will not entail any significant harmful activities to notable plants. Management activities, such as grass and hedgerow cutting, will be timed sensitively to ensure that plants can flower and set seed, as specified in the OLEMP.

9.9.2349.9.338 The seed mixes for the various grassland areas, including the main array areas, margins and grassland areas, are likely to contain several of the notable species identified by the desk study, such as field scabious and ragged robin. Additionally, the cessation of intensive arable farming practices (particularly herbicide spraying) and reversion of the land to permanent grassland (for at least the duration of the Scheme) can be expected to result in an increase in the overall diversity of plant species within the Order Limits, and may facilitate the establishment of a number of notable species.

Significance of Effects

9.9.2359.9.339 **No significant adverse effects** on plants are anticipated during operation of the Scheme. It is possible that with the establishment of new habitats, the incidence of notable plant species across the Sites will increase. This may lead to a **significant residual beneficial effect** at the **Local level**.

Enhancement Measures

9.9.2369.9.340 The creation of new habitats will include local priority species, such as black poplar within hedgerows, tree lines, shelter belts, as appropriate.

Fish

Construction Phase Impacts

9.9.2379.9.341 Several ditches and streams lie at the boundaries of the Sites and within the Cable Route Corridor. Additionally, the Sites and Cable Route Corridor lie within the catchment for two major rivers; principally the River Nene and also the Upper and Bedford Ouse (Green Hill G only) and contain drains or streams which flow downstream into these catchment zones.

9.9.2389.9.342 Within the array Sites, potential impacts on fish species are considered only possible from pollution events during construction, although it is considered that these would have to be of a high severity or long duration to result in significant impacts upon fish. This is considered to be unlikely to occur due to the wide buffer zones designed around all ditches and watercourses, although more possible where ditch/boundary feature crossings are proposed. Due also to the imposition of construction buffer zones of at least 8m from minor ditches, and up to a minimum of 30m from main rivers, the likelihood of impacts on freshwater fish from vibration, noise or light spill within the Sites is considered to be negligible.

9.9.2399.9.343 In addition to the various boundary buffer zones, the OEPMS and OCEMP contain a raft of measures to be followed during construction which will limit the potential for pollution events and the release of sediments and run-off into watercourses. This will include ecological supervision and inspection prior to and during works affecting watercourses, such as installation of ditch crossings for access, and precautions concerning vehicle/plant refuelling, sediment trapping and storage of materials.

9.9.2409.9.344 The cable installation process which will be required to cross underneath the River Nene will utilise HDD methods. While this is far preferable to any cable installation which might involve any direct harm to the riverbeds themselves, a small risk remains of vibrations leading to noise, sediment mobilisation, or the emission of pollutants. Such impacts are likely to be felt in the short to medium term, depending on severity. The OEPMS and OCEMP will provide precautionary working methods surrounding the installation of the cables and the minimisation of risks associated with HDD. This would include visual monitoring for discharge of sediments, monitoring for vibrations, suitable depth settings and precautionary siting of entry and exit pits.

9.9.2419.9.345 Similarly, lighting impacts will be limited by the adoption of HDD in relation to the River Nene crossing point, as HDD entry and exit pits will be located a substantial distance from the watercourses in order to obtain the necessary drilling angles. Furthermore, it is unlikely that drilling work will be carried out in the hours of darkness, except for a short potential period in late afternoons during the winter.

9.9.2429.9.346 Open-cut trenching may be utilised for more minor watercourse crossings associated with the cable route. In the absence of additional mitigation, this may result in temporary impacts on freshwater fish present within the channel, through accidental killing/injury of fish present within the working area, as well as damage and degradation to the watercourse as a result of the trenching works.

Significance of Effects

9.9.2439.9.347 Through the habitat protection measures in the OEPMS, the consideration of different cable installation methodologies at watercourse crossing points and appropriate habitat investigation and reinstatement measures, all efforts will be made to avoid adverse effects on fish during construction. However, there remains the potential for **temporary adverse effects** on fish at cable route watercourse crossing points where open-cut trenching is used, which would likely be significant at the **Site** level.

Construction Phase Additional Mitigation Measures

9.9.2449.9.348 Where open-cut trenching is used at cable route watercourse crossing points, works will avoid key spawning seasons for fish (including salmonids) as well as migration periods for European eel (avoiding works between October – Maymid-June inclusive), where this is possible.

9.9.2459.9.349 Additional measures may include the capture and translocation of fish from the working area to suitable habitats upstream or downstream, prior to the

dewatering of the channel, as well as the supervision of the work by a suitably qualified Ecological Clerk of Works (ECoW). Post-construction monitoring will also be conducted to ensure that the affected habitats are suitably reinstated and that any remedial measures required are identified, as detailed in the OEPMS.

Residual Effects

9.9.2469.9.350 With these measures, it is considered that any temporary adverse effects can be mitigated and reduced to neutral, non-significant levels. As a result, **no residual effects** on fish during the construction phase are anticipated.

Operational Phase Impacts

9.9.2479.9.351 As the nature of the proposals are relatively passive during the operational phase, with movement of vehicles and personnel close to ditches and watercourses being restricted, the opportunity for impacts from pollution or run-off is highly limited. Indeed, levels of run-off would be expected to decrease compared to the current arable regime. Similarly, the cessation of pesticide and fertiliser use across the Order Limits would be expected to lead to an increase in water quality in watercourses within/adjacent to the Scheme. The overall reduction in sediment and chemical run-off across the Scheme is likely to lead to a **significant beneficial effect** at the **Local level**.

9.9.2489.9.352 In the absence of mitigation, there is a potential risk of a battery fire at Green Hill BESS and subsequent discharge of chemicals used to control the fire into the adjacent stream, which feeds into the River Nene. This could potentially kill or injure fish associated with the affected watercourses or those downstream. Ecological buffers have been embedded into the design of the Scheme from an early stage, in order to minimise the likelihood of adverse impacts arising during the operational phase. Additionally, embedded mitigation measures to minimise the likelihood and severity of battery fire have been incorporated into the Scheme, including the implementation of fire suppression systems, with containment measures in place to manage runoff in the event of a fire. The risk of a fire and measures to mitigate impacts in the event of a fire are detailed within the OBSSMP. These are discussed in more detail in Chapter 10: Hydrology, Flood Risk and Drainage **[EN010170/APPEX1/GH6.2.10_A]**, Chapter 22: Ground Conditions and Contamination [**EN010170/APP/GH6.2.22-059]**, and Chapter 23: Major Accidents and Disasters **[EN010170/APP/GH6.2.23-060]**.

9.9.2499.9.353 The potential for effects of anthropogenic electromagnetic fields (EMFs) on ecology is an emerging and poorly researched issue. It is feasible that EMFs emanating from electrical cables could impact fish species which utilise naturally generated EMFs for navigation, although to date there is very little evidence of significant behavioural changes from EMFs generated by electric cables. The size of generated fields is highly contingent on geometry, voltage and current, and it is considered that EMFs associated with the higher voltage export cable are more likely to risk impacts than those potentially emanating from interconnecting cables across the Scheme. All electrical cables associated within the Scheme are expected to be buried underground; buried cables typically have their electric fields fully attenuated by cable sheathing and the substrate under which they are buried. Due to the attenuation of electrical fields by cable casing

and soil, it is unlikely that fish species will be able to sense any electrical fields generated by the cables.

9.9.2509.9.354 However, magnetic fields and induced electric fields are not attenuated in this way, and there remains a risk of effects on fish species which are known to have evolved sensitivity to electric and/or magnetic fields, such as salmonids, European eel and brook lamprey, which have been identified as present in the River Nene by the desk study. Such effects would only be likely to be felt in the vicinity of the 400-132kV cables (i.e. where the cable is required to cross beneath watercourses within the Cable Route Corridor). This excludes tributaries of the River Great Ouse, which lie southeast of the Cable Route Corridor, and therefore only the River Nene and its tributaries are of relevance here. Considering the nature of the proposals and limited sources of potential impacts on fish, it has not been considered appropriate to conduct detailed surveys for freshwater fish. Instead, a precautionary assessment of impacts has been undertaken, considering the EMF-receptive species recorded by the desk study and their ecology.

9.9.2519.9.355 For brook lamprey, they are not known to have magnetosensing capabilities (Ref 9.64) and so any magnetic fields which may extend into the water column would also have no effect other than in the induction of smaller electric fields (Ref 9.65). European eel, sea trout and Atlantic salmon are all believed to make use of natural magnetic fields for navigation (Ref 9.66). However, it is considered most likely that these species' (or their relatives) magnetic navigational 'map' is set when in their embryonic or juvenile stages (Ref 9.65, Ref 9.67, Ref 9.68).

9.9.2529.9.356 For juvenile European eels, it is believed that magnetic imprinting is linked to the natural fields experienced when in tidal estuaries as 'glass eels' before entering freshwater as 'elvers' (Ref 9.70). As glass eels are unlikely to be found in the Nene, it is considered unlikely, therefore, that any possible magnetic field detectable above the proposed cable crossing will have a significant effect on any of these species' migratory movements. This is especially the case when the length of riverbed affected by the cable crossing as a proportion of the wider river is considered.

9.9.2539.9.357 In the case of sea trout, known spawning and nursery locations are typically found on the shallow, non-tidal tributaries of the Nene in its upper catchment, such as the Castor Back Channel and Willow Brook, significantly distant (over 20km north) from the proposed crossing. It is possible that juvenile trout are present within the Cable Route Corridor, although the Data gathered from the Environment Agency in the desk study also excluded any records of juvenile sea trout. There remains a **low risk of adverse effects on sea trout, which may be significant at the Local level**.

Significance of Effects

9.9.2549.9.358 The overall reduction in sediment and chemical run-off across the Scheme is likely to lead to a **significant beneficial effect** at the **Local level.**

9.9.2559.9.359 **No significant effects** would be expected associated with pollution during operation.

9.9.2569.9.360 The likely significance of effects arising from EMFs on fish as a result of the Scheme are difficult to quantify. However, on a precautionary basis, impacts on sea trout from EMF could lead to a **significant adverse impact at the Local level**.

Operation Phase Additional Mitigation Measures

9.9.2579.9.361 Where cables cross the River Nene, they will be buried to a minimum depth of 5m, to maximise attenuation of electromagnetic fields and minimise the risk of any adverse impacts. This depth is far greater than typical installation depths and will significantly reduce the EMF, particularly magnetic (B-field), exposures. In this way, the low risk of impacts on sea trout will be avoided and effects reduced to **neutral and non-significant** levels.

Residual Effects

9.9.2589.9.362 Residual effects on fish species from EMF would be expected to be **neutral and not significant**.

9.9.2599.9.363 The overall reduction in sediment and chemical run-off across the Scheme is likely to lead to a **significant beneficial effect** at the **Local level.**

Invasive and Non-Native Species

Construction Phase Impacts

9.9.2609.9.364 Although no invasive non-native plant species have been observed to date, if present they are considered most likely to occur at field boundaries and in habitats associated with watercourses. Such species may be caused to spread through works associated with ditches and crossings thereof, or during any necessary works to clear habitats prior to construction commencing.

9.9.2619.9.365 The OEPMS describes precautionary measures to be taken to avoid the accidental spread of these species. This includes a briefing for all construction staff on the issue to ensure vigilance for these species, as well as inspections of proposed working locations at watercourses and ditches by an ecologist prior to commencement.

9.9.2629.9.366 Both mink and American signal crayfish have been observed within the Sites. Neither mink nor American signal crayfish are likely to be impacted during construction; this would only occur in the event of crossing of watercourses disturbing these species. Given the limited extent and temporary nature of works associated with watercourse crossings, these species would not be spread as a direct result of these works (which would otherwise result in an offence).

9.9.2639.9.367 Muntjac and Chinese water deer have also been recorded within the Sites. These species are likely to roam widely in the local landscape and, though they will be displaced from the Sites temporarily during construction, they are already established within the county and would not be likely to spread beyond their current range as a result of the Scheme.

Significance of Effects

9.9.2649.9.368 It is considered that the continued and specific monitoring for invasive non-native species as set out in the OEPMS will reduce potential residual effects on this issue to neutral levels, especially considering their absence in the baseline information to date. **No significant adverse effects** relating to invasive/ non-native species are therefore anticipated during the construction phase.

Operational Phase Impacts

9.9.2659.9.369 Impacts to mink, American signal crayfish, Muntjac and Chinese water deer will remain the same as baseline; these species would be expected to use the operational Site.

9.9.2669.9.370 Should any invasive/non-native plant species be present, **no significant operational phase effects** are considered likely, due to the buffering of peripheral habitats included within the Scheme and lack of habitat disturbance following the establishment of the habitats targeted in the OLEMP.

Significance of Effects

9.9.2679.9.371 **No significant effects** relating to invasive species arising during the operational phase of the Scheme have been identified. No additional mitigation measures are deemed to be required, and no residual effects are anticipated.

9.10 Decommissioning Phase

9.10.1 The assessment of decommissioning effects takes into account the measures set out in the ODS ~~[EN010170/APP~~Revision A [**EX1/GH7.3_A]** 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 for each receptor. Comparable levels of disturbance from movement of vehicles and personnel would also be expected.

9.10.2 The restoration of the land back to open arable farmland would likely be beneficial for some species of farmland bird which require open sightlines, as well as for plant species associated with arable margins, but much of the biodiversity value which it is anticipated will develop in the preceding (approximately) 60 years of the operation of the Scheme would be lost, along with habitat for a variety of other species. In order to revert back to arable food production, it may be necessary to enhance the nutrient content of the soil if it has been depleted (through sensitive management measures to maximise the value of the established grasslands for biodiversity), which would likely be achieved through treatment with fertilisers, although it is believed that this is highly unlikely and an increase in soil health is likely to arise during the operational phase, through an increase in soil organic carbon, better soil structure, increased infiltration and enhanced soil microbial populations (further discussed in Chapter 20: Agricultural Circumstances [~~EN010170/~~**APP**~~/GH6.2.20~~**-057**]). An increase in the use of pesticides and herbicides would also be expected. The decision on the farming type to be used will be made by the landowner prior to decommissioning.

9.10.3 Depending on the ecological value of the habitats that develop over the lifespan of the scheme, it is realistic that certain areas of the Sites may be retained due to their value for wildlife on decommissioning. Additionally, application of the ecological mitigation hierarchy principles may be necessary.

9.10.4 No more than twelve months prior to decommissioning commencing, the site will be visited by an appropriately qualified ecologist to identify any ecological constraints arising from decommissioning activities. Further surveys, mitigation and/or compensatory measures may then be required in line with prevailing guidance. As a minimum, an extended UKHab Walkover Survey (or equivalent) is considered likely to be required to identify the potential presence of protected species and important habitats.

9.10.5 Based upon current (2025) legislative protection, protected species which could be directly impacted by decommissioning activities would include badgers, water vole, otter, great crested newt, reptiles and breeding birds. Further surveys to identify the use of the site by these receptors would therefore also be expected as a minimum.

9.10.6 Any mitigation measures undertaken at the point of decommissioning aimed at maintaining ecological value of the Sites should take account of changes in ecological objectives that have occurred over the operational phase. In particular, changes in ecological conditions both within the Order Limits and on a national scale as a result of climate change (and other factors) may result in new ecological objectives that cannot at the current time be reasonably foreseen.

9.11 Cumulative Effects

9.11.1 A list of cumulative projects can be found in Appendix 25.1 **[~~EN010170/~~APP~~/GH6.3.25.1~~-188]** of the ES. A summary of Cumulative effects will be listed within Chapter 25: Cumulative Effects and Effects Interaction **[~~EN010170/~~APP~~/GH6.2.25~~-062]** of this ES.

Cumulative effects

9.11.2 Cumulative effects may arise as a result of residual effects associated with the Scheme combining with residual effects associated with other projects. Relevant projects considered in the assessment lie within 10km of the Sites, to encapsulate the Zone of Influence for ecological receptors. The list of projects has been narrowed down to focus on those projects which are most likely to give rise to cumulative effects. A long-list was generated, which was then refined following consultation with the relevant local planning authorities. This long-list was further refined to a short-list, through discussion with all relevant LPAs, which forms the basis of this assessment.

Relevant Projects

9.11.3 The projects below are listed in order of proximity to the Scheme.

1. NW/23/00360/FUL - Grendon Lakes Main Road Grendon Northampton NN7 1JW

9.11.4 This pending application is for a BESS facility, with associated infrastructure including access, drainage and landscaping. It lies adjacent to Green Hill BESS. There is potential for an overlap in construction periods with the Scheme.

2. DA/2020/0001 - Land To East Of Kettering Road Overstone Northamptonshire

9.11.5 This development pertains to an urban extension of up to 1,600 homes, with associated facilities as per Overstone Leys. It is located approximately 1km southeast of Green Hill B. Construction commenced in 2021 and is expected to end in 2034.

3. WP/15/00727/OUT - Land Rear 260 Northampton Road And Near Wordsworth Road Park Farm Way Wellingborough Northamptonshire

9.11.6 This project is located approximately 1.2km northeast of Green Hill E and comprises an Outline planning application for residential development of up to 600 dwellings, public open space (POS), access landscaping, sustainable urban drainage systems, footpaths/cycleways, and associated infrastructure. It was consented in 2019.

4. NW/24/00138/OUT (Associated with WP/2012/0525/XEIA) - Glenvale Park Phase 2 Development Site, Niort Way Wellingborough

9.11.7 This project is located approximately 1.7km northeast of Green Hill D and comprises an Outline application for a mixed-use development of up to 1,000 homes, business facilities, recreation areas, landscaping, infrastructure and supporting works. If permitted, construction would commence in 2025 and run across an expected six-year period.

5. NW/22/00904/FUL (Associated with WP/2012/0525/XEIA) - Land North Of Niort Way And West Of Bunnet Road Niort Way Wellingborough

9.11.8 This consented project is located approximately 2.5km northeast of Green Hill D and comprises residential development of up to 250 homes, POS, landscaping, infrastructure and supporting works. An overlap in construction periods with the Scheme is expected.

6. DA/2013/0850; 2023/6201/COND; 2023/6198/COND; 2023/6203/COND; 2023/6206/COND; 2023/6214/COND; 2023/5526/COND; 2023/6209/COND; 2024/1271/COND - Overstone Leys Overstone Lane Overstone Northamptonshire

9.11.9 This is an approved application for a large residential development of up to 2,000 homes, along with a new section of dual carriageway, various community facilities, POS, allotments, play areas, landscape planting, access and drainage. It is located approximately 4.5km east of Green Hill C. Construction commenced in 2014/15 and is expected to end in 2029.

7. NW/24/00418/FUL - Land Route Of Isham Bypass Wellingborough Road Isham

9.11.10 This project lies approximately 5km northeast of Green Hill D and entails the development of up to 3.5km of the A509 Isham Bypass link road. Overbridges, non-motorised user bridges and mammal underpass are all proposed, alongside improvement works to connecting roads, footpaths and lighting; landscaping and drainage. If consented, construction completion is anticipated in Autumn 2027.

8. KET/2018/0965 - Kettering South (land at) (Off A509 north of Isham), Kettering

9.11.11 This is an approved industrial development with ancillary offices and associated access, internal roads, parking, landscaping and drainage. The project is located approximately 5km east of Green Hill A.2. There is expected overlap in construction dates, with anticipated completion in 2031.

9. Wellingborough East SUE (Stanton Cross) - PBW Policy Site 1; WP/2004/0600; WP/15/00481/OUT; WP/15/00605/VAR - Land Between Finedon Road & The Railway, Neilson's Sidings & Land north of Finedon Road (Bovis) Finedon Road Wellingborough Northamptonshire

9.11.12 This is a mixed-use development with residential, commercial and social units, new access, a country park and other works. It lies approximately 6km east of Green Hill E. This project is currently under construction and housing is expected to be delivered by 2031.

10. NK/2024/0613 - Kettering Energy Park, Burton Wold Wind Farm (land adjacent to), Thrapston Road (land West of), Burton Latimer

9.11.13 This entails an EIA Scoping Opinion for development of energy infrastructure, structures to accommodate advanced agricultural systems and new employment floorspace and associated works, located approximately 8km east of Green Hill A. This application is in an early stage, but there is potential for overlap in construction dates if consented.

11. NK/2024/0018 - Nunnery Farm, Harrington Road, Rothwell, NN14 6AW

9.11.14 This entails an EIA Scoping Opinion for a large-scale industrial development, alongside woodland planting, green infrastructure, and landscaping; access; supporting infrastructure and utilities; and demolition of existing buildings. The site is located approximately 8km east of Green Hill A. This application is in an early stage, but there is potential for overlap in construction dates if consented, with expected completion in 2030.

12. KET/2007/0694; KET/2013/0314; KET/2013/0232; KET/2015/0967; KET/2019/0628; KET/2020/0306 - East Kettering Sustainable Urban Extension (SUE) (also called Hanwood Park)

9.11.15 This is an approved application for 5,500 dwellings and related development, located approximately 8km east of Green Hill A.2. There is overlap in construction dates, with anticipated completion in 2031.

13. KET/2011/0235; NK/2021/0356; KET/2017/0169 - North Desborough (land at), Desborough, NN14 2SR

9.11.16 This is an approved residential development of up to 700 dwellings including provision of a local centre primary school green infrastructure and creation of accesses. Currently under construction, this is located approximately 9km north of Green Hill A.

14. 2025/0069/EIA - Land north of The Green, south of Brackmills Country Park and south west of Great Houghton

9.11.17 This is an Outline application for a mixed-use development comprising up to 650 residential units; other commercial and community units, demolition/ refurbishment of existing buildings, and supporting infrastructure and open space. This development is located approximately 9km to the southwest of Green Hill B. Pending approval, construction is due to start in 2027; with completion by 2034.

15. NK/2022/0613 - Harborough Road (land at), Millbuck Industrial Estate (land adj), Desborough, NN14 2SR

9.11.18 This is an approved industrial development with ancillary offices and associated landscaping, car parking, servicing and access arrangements. The project is located approximately 10km north of Green Hill A. There is potential for overlap in construction dates.

16. 2023/5978/EIA - Land South and East of Grange Park, Northampton Northamptonshire NN7 2EE

9.11.19 Located approximately 10km west of the Cable Route Search Area, this is an Outline application for up to 850 dwellings, a new local centre, primary school, open space (including an extension to the adjacent country park), community allotments, landscape buffers, enhanced off-site pedestrian and cycle links, and associated off-site highways works. The application is pending approval, with anticipated construction completion in 2030.

17. WNS/2022/2402/EIA; 2024/1072/COND; 2024/1073/COND; 2024/1074/COND; 2024/1401/COND; 2024/2027/NMA; 2024/2616/COND - Land South Of East Lodge Farm Quinton Road Courteenhall

9.11.20 Located approximately 10km west of the Cable Route Search Area, this is an approved application for the construction and operation of an Anaerobic Digestion facility; with associated infrastructure and landscape planting. There is potential for overlap in construction dates.

18. 20/01453/OUT - Rushden East Urban Extension Liberty Way Rushden Northamptonshire

9.11.21 This development pertains to an urban extension of up to 2,200 homes, industrial and commercial units, community facilities, access, POS, a cemetery, allotments, drainage and other works. It is located approximately 10km northeast of Green Hill F. If approved, construction is to commence in 2025; the final phase is due to commence in 2034.

Potential Effects

Upper Nene Valley Gravel Pits SPA, SSSI and Ramsar

9.11.22 The Scheme poses potential risks of pollution events through the proximity of the BESS facility at Green Hill BESS to the SPA. While all adverse effects are considered to be nullified by embedded mitigation measures to control pollution risk during construction and operation, there remains a greater risk of pollution events in combination with the Grendon Lakes BESS facility (Project 1), both during construction and operation. The potential severity of pollution events is low during construction but high in the event of a battery fire, although the likelihood of such an event is low. Moreover, the likelihood of such events occurring in tandem across both the Scheme and Project 1 is very low. Similar embedded mitigation measures for these projects will minimise the likelihood and the severity of any such events, and therefore no significant cumulative effects between the Scheme and Project 1 associated with pollution events are anticipated to arise.

9.11.23 The Scheme will result in the net loss of available open field habitat for mobile wading birds (golden plover and lapwing) associated with the SPA. However, all Functionally Linked Land (FLL), determined through survey to be of importance to these species, has been mitigated by the Scheme. Other projects within the 10km SPA consultation zone (all listed projects, excluding Projects 11 and 15) may reduce the availability of open field habitats, but all projects will be held to the same standards of mitigating losses of FLL, should any FLL be identified within the project boundaries. As such, no net loss in FLL is anticipated to occur on any of the above projects, and no cumulative adverse effects associated with loss of FLL are anticipated.

9.11.24 There is a risk of disturbance to golden plover and lapwing using fields within or adjacent to the Scheme during construction, which may cause these species to seek alternative foraging areas. In isolation, this is not considered likely to give rise to significant effects given the availability of alternative foraging areas in the local landscape. However, disturbance impacts may be compounded by concurrent construction of other projects within 10km of the SPA. This is considered most likely for Projects 1-7 and 9. Other projects lie more distant from the SPA and from the Scheme. Even given potential compounding of disturbance, the quantum of available foraging habitat and the mobile nature of these species, combined with the temporary nature of construction works, is considered unlikely to lead to any changes in the residual effects reported in Section 9.9.

Other Statutory Designated Sites

9.11.25 All other statutory designated sites either lie distant enough from the Scheme that all impacts can be avoided, or else embedded mitigation measures (undeveloped buffer zones or precautionary measures detailed in the OEPMS) mitigate all potential adverse impacts arising during construction. As such, no residual effects are anticipated. Operationally, no adverse effects are predicted. No other projects have been identified in the vicinity of the identified statutory designated sites which would give rise to cumulative effects. Thus, no cumulative effects are predicted.

Non-statutory Designated Sites

9.11.26 Earls Barton Meadow LWS lies within the Cable Route Corridor, and Bozeat Verge PWV, Easton Maudit PWV and Grendon Verge PWV also lie within the Order Limits. Impacts on Earls Barton meadow LWS will be avoided or mitigated during the laying of the cable. No direct impacts to the PWVs are anticipated, and indirect impacts can be mitigated through embedded mitigation measures detailed in the OEPMS. Operationally, no impacts on these sites are anticipated. These sites all lie distantly from other projects, and thus there is no potential for cumulative effects.

9.11.27 All other non-statutory designated sites either lie distant enough from the Scheme that all impacts can be avoided, or else embedded mitigation measures (undeveloped buffer zones or precautionary measures detailed in the OEPMS) mitigate all significant adverse effects during construction.

9.11.28 Numerous sites within 500m of the Scheme have connectivity with the wider landscape via the local hedgerow network. Though no significant adverse effects are predicted associated with fragmentation of connecting hedgerows by the Scheme, there will be a non-significant loss of hedgerow. None of these sites also lie within 500m of any other projects, thus no cumulative effects through fragmentation of connecting hedgerows are predicted.

9.11.29 Operationally, the only site susceptible to potential impacts is Grendon Lakes LWS, which lies close to Green Hill BESS. As for the Upper Nene Valley Gravel Pits SPA, there is a risk of pollution from a battery fire. The risk of cumulative effects is only likely with Project 1, as per Section 9.11.22 above, with embedded mitigation measures minimising the likelihood and the severity of pollution events.

Arable Field Margins and Other Neutral Grassland

9.11.30 A significant beneficial effect is predicted at a Local to District level from the greatly increased extent and quality of grassland habitats provided by the Scheme, in combination with cessation of agriculture and thereby reduced degradation of grassland habitats. Given this, no cumulative adverse effects are possible as a result of other projects.

9.11.31 A net increase in the provision of grassland habitats within the other projects, which are built on land which was largely formerly arable, is expected. This is associated with provision of Public Open Space and, most notably, via an extension to the Country Park for Project 16. However, cumulatively, this is unlikely to raise the significance of the residual beneficial effect to a County level. As such, the residual effects remain unchanged by the cumulative assessment.

Woodland

9.11.32 No loss of woodland will occur as part of the Scheme, and all potential impacts from construction, such as pollution, will be avoided through embedded mitigation measures. As such, the residual effects during construction remain unchanged by the cumulative assessment. Operationally, no adverse impacts are likely to occur. New woodland and tree planting is however, proposed by the Scheme, and cessation of agriculture may improve the condition of existing woodland areas, leading to a significant beneficial effect at a Local level.

9.11.33 Provision of additional woodland and tree planting is proposed by other projects; most notably via an extension to the Country Park for Project 16. However, this provision is unlikely to raise the significance of the residual beneficial effect to a District level. As such, the residual effects remain unchanged by the cumulative assessment.

Rural Trees

9.11.34 There is the potential for loss of individual trees during the construction phase of the Scheme. However, significant new tree planting is provided to mitigate any losses. Chapter 19: Arboriculture **[~~EN010170/~~APP~~/GH6.2.19~~-056]**. provides this assessment. Landscaping associated with other projects will entail new tree planting, which, in combination with the substantial planting associated with the Scheme, may elevate the significance of beneficial effects. Chapter 19: Arboriculture **[~~EN010170/~~APP~~/GH6.2.19~~-056]** provides this cumulative assessment.

Ponds

9.11.35 No ponds will be lost as a result of the Scheme, and potential impacts from construction, such as pollution, will be avoided through embedded mitigation measures. Operationally, no adverse effects are likely to be felt with the adoption of measures detailed in the LEMP. New pond creation is proposed by the Scheme as an enhancement measure, and cessation of agriculture may improve existing ponds' condition. Additionally, the adoption of District Licensing for great crested newts will result in substantial new pond creation, which may be significantly beneficial at a Local to District level. Adoption of District Licensing for other projects would likewise increase the scope of pond creation, but this is considered unlikely to raise the significance of the residual beneficial effect to a County level. As such, the residual effects remain unchanged by the cumulative assessment.

Hedgerows

9.11.36 Potential adverse impacts on hedgerows during construction, such as pollution, will be avoided through embedded mitigation measures. Some hedgerow loss will occur during construction, although a significant net gain in extent of hedgerow will be achieved by the Scheme. In combination with cessation of agriculture, this is likely to lead to beneficial effects at the Local level. Hedgerow creation is less prevalent among the other projects identified, which are largely residential and industrial developments. Though a net gain would be expected in line with BNG regulations, such gains are not considered to elevate the significance of beneficial effects in combination with the Scheme. As such, the residual effects remain unchanged by the cumulative assessment.

Watercourses

9.11.37 Potential adverse effects on watercourses during construction will be reduced to non-significant levels. Operationally, adverse impacts will be avoided by embedded mitigation.

9.11.38 As discussed in 9.11.22 above, there remains a greater risk of pollution events on watercourses adjacent to Green Hill BESS in combination with the Grendon Lakes BESS facility (Project 1), both during construction and operation. However,

similar embedded mitigation measures for this project will minimise the likelihood and the severity of any such events, and therefore no significant cumulative effects between the Scheme and Project 1 associated with pollution events are anticipated to arise.

9.11.39 Cessation of agriculture and sympathetic watercourse management within the Scheme is likely to lead to beneficial effects at the Local to District level. Whilst similar effects are anticipated from other projects, such gains are not considered to elevate the significance of beneficial effects in combination with the Scheme to a County level and so residual effects remain unchanged.

Badgers

9.11.40 The Scheme will result in a significant beneficial effect at a Site level for badgers, driven by enhanced habitats for set building and foraging. Given this, other projects will not result in any cumulative adverse effects. In terms of potential cumulative beneficial effects, other projects are largely residential and industrial, which may offer less favourable badger habitat. As such, no changes to residual effects on badgers are anticipated via the cumulative assessment.

Bats

9.11.41 A significant beneficial effect at a Local level is expected from new habitat creation within the Scheme. The extension of the country park for Project 16 is likely to enhance local foraging habitat quality, but open space provided for other projects, being largely residential and industrial, are unlikely to provide a quantum of habitat which will elevate the significance of this effect.

9.11.42 A significant beneficial effect at a Local level is expected from provision of new roosting boxes. Other residential projects in particular will provide bat roosting boxes within units, resulting in a substantial increase in roosting opportunities, although in urban habitats this is likely to benefit a reduced diversity of species. Nonetheless, cumulatively, this may result in an elevated beneficial effect, significant at a District level.

Otters and Water Voles

9.11.43 No significant effects are anticipated on either otter or water vole during construction or operation, with adverse impacts being limited to harm and disturbance during construction. Mitigation measures for other projects would be expected to mitigate any adverse impacts on otter and water vole, and due to the distance between these projects and the Scheme, there is unlikely to be additive effects associated with disturbance during the construction phase.

Brown Hare

9.11.44 Brown hare is a mobile species, and no significant adverse effects are anticipated during construction. Concurrent construction associated with other projects is unlikely to exacerbate any effects through temporary displacement of hares, since all projects are distant from the Scheme and alternative suitable habitats exists in the areas surrounding the Sites.

9.11.45 Brown hare are expected to persist within the Sites during operation, and a beneficial effect at a Site level is predicted. Other projects, being largely

residential and industrial, are unlikely to provide enhanced habitat which will elevate the significance of this effect.

Harvest Mouse, Hedgehog and Polecat

9.11.46 No significant adverse effects are expected during construction on these species, with adoption of embedded mitigation measures. Due to the distance from other projects, no cumulative effects are likely.

9.11.47 Operationally, a residual beneficial effect at a Local level is predicted through creation of suitable habitat and sensitive management. Other projects, being largely residential and industrial, are unlikely to provide enhanced habitat which will elevate the significance of this effect.

Amphibians

9.11.48 With the adoption of District Licensing, adverse effects will be avoided during construction and operationally no adverse effects are likely to be felt with the adoption of measures detailed in the OLEMP~~-~~ Revision A **[EX1/GH7.4_A].** New pond creation is proposed by the Scheme as an enhancement measure, and cessation of agriculture may improve existing ponds' condition. Additionally, the adoption of District Licensing for great crested newts will result in substantial new pond creation, which may be significantly beneficial at a Local to District level. Adoption of District Licensing for other projects would likewise increase the scope of pond creation, but this is considered unlikely to raise the significance of the residual beneficial effect to a County level. As such, the residual effects remain unchanged by the cumulative assessment.

Reptiles

9.11.49 No significant adverse effects are expected during construction on reptiles, with adoption of embedded mitigation measures. Due to the distance from other projects, no cumulative effects are likely.

9.11.50 Operationally, a residual beneficial effect at a Local level is predicted through creation of suitable habitat and sensitive management. Other projects, being largely residential and industrial, are unlikely to provide enhanced habitat which will elevate the significance of this effect.

Breeding Birds

9.11.51 For birds of open habitats, the Scheme will result in a significant adverse effect at a District level through displacement of a large proportion of skylark territories. Other projects have provided some mitigation for skylarks, but the adoption of a robust metric to quantify the level of mitigation has not been evident, and residual adverse effects are expected for the majority of projects. As such, cumulatively, these projects are likely to compound the adverse effects on ground-nesting species within the local landscape; chiefly skylark. Such effects may be significant at a County level.

9.11.52 Displacment of other ground-nesting species such as grey partridge will result in a residual significant adverse effect at a Site level in isolation. This effect may be compounded by losses associated with other projects to a significant adverse effect at a Local level.

9.11.53 Effects on other breeding birds of boundary habitats are significantly beneficial at a Local level; principally as a result of enhanced habitat creation. Provision of nesting boxes also serves to increase opportunities for a subset of species of conservation concern. Other projects, being largely residential and industrial, are unlikely to provide enhanced habitat which will elevate the significance of this effect. Provision of nesting boxes as part of these projects is likely to benefit a reduced subset of suburban species only.

9.11.54 Effects on breeding wetland habitats are neutral and not significant. This is unchanged by other projects.

Overwintering Birds

9.11.55 For overwintering birds of open and boundary habitats, temporary loss of foraging habitat, or effective loss through disturbance, may lead to significant adverse effects at the Site level during construction. There is potential for this effect to be exacerbated by concurrent construction activities associated with other projects, especially where such projects are proximate to the Scheme. Projects 2 and 6 are considered to be close enough to the Scheme to cumulatively reduce the available foraging habitat for overwintering birds in the vicinity of Green Hill B, in particular. Construction is expected to end in 2034 and 2029 respectively for these projects. This may therefore increase the significance of this construction phase effect to a Local-level adverse effect. Other projects are far enough from the Scheme not to cause any likely increase in adverse effects.

9.11.56 Operationally, overwintering birds of all habitat types are anticipated to benefit, with significant beneficial effects at a local to site level due to enhanced habitat provision. Other projects, being largely residential and industrial, are unlikely to provide enhanced habitat which will elevate the significance of this effect.

Invertebrates

9.11.57 During construction, residual effects on invertebrates are neutral and non-significant. This is not considered likely to change as a result of other projects.

9.11.58 During operation, a residual beneficial effect at a Local level is predicted through creation of diverse habitat and sensitive management. Other projects, being largely residential and industrial, are unlikely to provide enhanced habitat which will elevate the significance of this effect.

Plants

9.11.59 Loss of arable weeds through reversion of arable land to permanent grassland is expected to occur as a result of the Scheme, although set-aside mitigation for ground-nesting birds is judged to provide a sufficient quantum of habitat to mitigate all adverse effects. Given the largely arable baseline habitats associated with other projects, which are mainly residential and industrial developments, there is likely to be a loss in arable weeds. However, on account of mitigation reducing effects to neutral, non-significant levels within the Scheme, other projects will not lead to any cumulative effects.

9.11.60 Operationally, a residual beneficial effect at a Local level is predicted through creation of diverse habitat and sensitive management; leading to the likely

proliferation of at least a small number of notable plant species. Other projects, being largely residential and industrial, are unlikely to provide enhanced habitat which will elevate the significance of this effect, although inclusion of black poplar in tree mixes may increase the prevalence of this local Biodiversity Action Plan species in the local landscape.

Fish

9.11.61 No significant adverse effects are expected during construction on fish, with adoption of embedded mitigation measures. Due to the distance from other projects, no cumulative effects are likely.

9.11.62 Operationally, a residual beneficial effect at a Local level is predicted through cessation of agriculture. Other projects, being constructed on largely arable land, would be expected to have similar effects, although this is not considered likely to elevate the significance of this effect on fish.

9.11.63 As discussed above with regard to watercourses, there remains a greater risk of pollution events on watercourses adjacent to Green Hill BESS in combination with the Grendon Lakes BESS facility (Project 1), both during construction and operation. However, similar embedded mitigation measures for this project will minimise the likelihood and the severity of any such events, and therefore no significant cumulative effects between the Scheme and Project 1 associated with pollution events are anticipated to arise.

Invasive Species

9.11.64 No significant adverse effects are expected during construction relating to invasive species. Potential displacement of muntjac and Chinese water deer is expected to be limited, and the only other project in close proximity to the Scheme are Projects 2 and 6. Since both deer species are already established within the county, they would not be likely to spread beyond their current range as a result of the Scheme in combination with other projects.

9.11.65 No significant adverse effects are expected during operation relating to invasive species, with the presence of these species expected to remain the same as baseline levels. Thus, no cumulative effects are likely.

In-combination effects

9.11.66 This section considers potential cumulative effects on ecological receptors arising from the combination of multiple impacts as a result of the Scheme. In-combination effects are identified where multiple residual significant effects (adverse or beneficial) occur (either within a single phase or across phases) and may interact spatially or temporally to result in a greater overall impact. Only those receptors assessed as experiencing more than one significant residual effect (positive or negative) over one or more phases, or single impacts that affect multiple receptors, have been included. Likelihood and overall significance are clearly stated for each identified in-combination effect.

Breeding Birds of Open Habitats

9.11.67 Breeding birds of open habitats (e.g. skylark and yellow wagtail) are predicted to experience an adverse residual effect at the District level due to their permanent displacement from suitable nesting habitats within the Order Limits. This displacement will commence at the outset of construction and the magnitude of the effect will increase as more of the Scheme is built, with the full displacement effect realised at the end of the construction phase. There will also be a temporary loss of foraging habitat for birds of open habitats during construction, which may result in an adverse residual effect at the Site level. During the operational phase, the Scheme is expected to provide enhanced foraging habitat and deliver a residual beneficial effect through large-scale grassland reversion, set-aside provision, and ongoing management of these habitats under the OLEMP. In combination, there is the potential for a short-term gap in the availability of suitable foraging habitat within the Order Limits, particularly if new grassland habitats are not fully established during the construction phase. While this gap increases the overall ecological pressure on these species in the short term, the **in-combination effect is not considered significant overall**, given that construction work will not be underway across the entire Scheme simultaneously (and so areas of suitable habitat for ground nesting birds will likely be available within the Order Limits throughout the construction phase), and provided that habitat phasing and enhancements are delivered as planned.

Loss and Fragmentation of Hedgerows

9.11.68 The Scheme will result in short-term fragmentation of hedgerows across the Cable Route Corridor, as well as permanent loss of small sections of hedgerow across the Sites, to facilitate access points, visibility splays and internal access tracks. When considered in isolation for each receptor, as well as the embedded and additional mitigation measures identified in Section 9.9, the effects of hedgerow loss and degradation are considered to be neutral and non-significant. However, the incremental loss and degradation of hedgerows and other boundary features across both the solar Sites and Cable Route Corridor – though minor at each individual location – would have the potential to result in a significant effect on the local hedgerow network when considered in-combination. This could affect several receptors which are reliant on strong habitat connectivity to commute and forage across the local landscape, including bats, reptiles, amphibians and small mammals, as well as other receptors such as birds associated with boundary habitats.

9.11.69 However, any hedgerow losses will likely be temporally staggered as the construction of the Sites and cable route progresses, and so this impact is unlikely to be felt across the entire Order Limits simultaneously. Furthermore, the BNG assessment as a method allows hedgerow impacts to be considered cumulatively across the Scheme, and a 18.55% net gain in hedgerow units across the entirety of the Order Limits is anticipated, through a combination of reinstatement of affected hedgerows along the Cable Route Corridor following the completion of the cable route installation works, as well as the enhancement of existing hedgerows and creation of new hedgerows within the Sites. As a result, **no significant adverse in-combination effects** associated with hedgerow loss/fragmentation are anticipated.

Beneficial In-Combination Effects

9.11.70 The majority of in-combination effects likely to arise from the Scheme are considered to be beneficial. Key measures which are likely to result in beneficial in-combination effects on a number of ecological receptors include the following:

- The cessation of intensive arable land-use and herbicide/fertiliser inputs associated with an arable system;
- The reversion of arable land to permanent, species-rich grassland;
- The retention, creation and enhancement of other ecologically valuable habitats across large parts of the Order Limits; and
- Sensitive ongoing management of these habitats throughout the operational phase, as prescribed and secured by the OLEMP- Revision A **[EX1/GH7.4_A]**.

9.11.71 The combination of enhanced linear habitat connectivity (through large-scale hedgerow creation and enhancement) and increased invertebrate abundance and diversity within the Order Limits (resulting from an increased coverage of ecologically valuable habitats, such as tussocky grassland, ponds, woodland and scrub, as well as the cessation of widespread herbicide and pesticide use), is expected to result in a significant beneficial in-combination effect on the value of the local landscape for foraging and commuting bats, as well as a range of other ecological receptors, such as birds, amphibians, reptiles, and small mammals.

9.11.72 The implementation of protective measures during the construction phase for amphibians (including great crested newts), such as development-free buffers around ponds and other suitable habitats for these species, in combination with the creation of new aquatic habitat (in the form of ponds) and improved terrestrial habitats (through the creation and ongoing sensitive management of large areas of tussocky grassland and other suitable habitats within the Order Limits) is likely to support the expansion of existing populations of amphibians within the Order Limits, during the operational phase.

9.11.73 While construction-phase risks to watercourses have been carefully mitigated, the long-term reduction in nutrient and sediment runoff (associated with the cessation of arable land use across most of the Order Limits) in combination with the creation and management of wide, protective and ecologically valuable riparian zones, is anticipated to improve water quality and the value of the local watercourse network for a range of species, including freshwater fish, invertebrates, otters, and water voles.

9.11.74 These beneficial in-combination effects are likely to be significant at a higher geographic scale than the individual measures when considered in isolation, particularly when considering the scale of the project and long operational phase (60 years), within which the beneficial effects associated with the OLEMP measures are likely to be felt.

9.12 Summary

9.12.1 **Table 9.7** and **Table 9.8** below set out a summary of the Ecological and Biodiversity environmental effects.

Table 9.7: Summary of Residual Effects for Ecology and Biodiversity (Construction Phase)

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
Designated Sites					
Upper Nene Valley Gravel Pits SPA, SSSI and Ramsar	Loss of Functionally Linked Land (FLL); potential pollution (dust, runoff, sediments) and disturbance to SPA species.	Ecological buffers; removal of closest field to SPA from Order Limits; OCEMP and OEPMS with environmental protection measures.	FLL loss – Adverse – International Pollution/disturbance – Neutral Neutral, not significant	Retention and management of FLL and FLL mitigation fields; managed via OLEMP.	Neutral, not significant
National Statutory Designated Sites within 500m of Order Limits	Risk of degradation from pollution (dust, sediments, runoff)	Ecological buffers; OCEMP and OEPMS with environmental protection measures; no new accesses through SSSIs.	Neutral, not significant	Not required.	Neutral, not significant
National and Local Statutory Designated Sites within 500m–5km of Order Limits	Risk of degradation from pollution (dust, sediments, runoff)	OCEMP and OEPMS with environmental protection measures	Neutral, not significant	Not required.	Neutral, not significant

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
Local Non-Statutory Designated Sites within Order Limits	Potential for direct damage to Earls Barton Meadow LWS through cable route installation; degradation risk to PWVs.	Access design avoids direct damage to PWVs; OCEMP/OEPMS measures to manage risks.	Earls Barton Meadow – Adverse – Local PWVs – Neutral	Avoidance of Earls Barton Meadow LWS or use of HDD during cable installation to prevent damage.	Neutral, not significant
Local Non-Statutory Designated Sites within 500m of Order Limits	Potential degradation and limited habitat fragmentation.	30m buffers for ancient woodland; OCEMP and OEPMS environmental protection measures; utilising existing accesses wherever possible; minimising widths of new accesses.	Neutral, not significant	Not required.	Neutral, not significant
Local Non-Statutory Designated Sites within 500m–2km of Order Limits	Risk of degradation from pollution (dust, sediments, runoff)	OCEMP and OEPMS with environmental protection measures.	Neutral, not significant	Not required.	Neutral, not significant
Habitats					
Arable Field Margins and Other Neutral Grassland	Potential loss and succession of Other Neutral Grassland; changes to	Retention and enhancement of existing grasslands wherever possible;	Neutral, not significant	Not required.	Neutral, not significant

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
	arable field margins due to cessation of farming.	seeding and creation of new grassland; implementation of buffer zones and sensitive management regime in OLEMP .			
Woodland	Risk of degradation from dust, noise, pollution, and root compaction	30m buffers for ancient woodland and 20m for others; protective fencing; OCEMP and OEPMS with environmental protection measures	Neutral, not significant	Not required.	Neutral, not significant
Rural Trees, and Ancient/Veteran Trees	Potential degradation or loss of individual trees; ancient/veteran trees considered irreplaceable.	Retention of all ancient/veteran and in-field mature trees; protective fencing and buffers.	Neutral, not significant	Compensatory planting for any unavoidable losses.	Neutral, not significant
PondsPonds (Including Temporary Lakes, Ponds and Pools)	Risk of degradation from dust, pollution, and sedimentation	20m buffers; OCEMP and OEPMS measures to minimise likelihood and severity of run-off and pollution.	Neutral, not significant	Not required.	Neutral, not significant

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
Inland Rock and Scree	Damage or degradation during construction of the cable route.	None.	Potentially Adverse – Site – District level	Pre-construction survey to determine habitat type. HDD to avoid impacts, or a specific habitat remediation plan developed and effected.	Neutral, not significant
Hedgerows and Lines of Trees	Minimal hedgerow loss for access; potential degradation from construction activities.	15m buffer zones; use of existing gaps for accesses wherever possible; OEPMS protection measures; replacement and additional hedgerow planting across Scheme.	Neutral, not significant	Not required.	Neutral, not significant
Ditches and Watercourses	Temporary impacts from trenching and culvert crossings; risk of sedimentation and pollution.	Buffers (8m–30m); OCEMP and OEPMS pollution and sediment control measures	Potentially Adverse – Local	HDD crossing for River Nene; ECoW supervision; habitat reinstatement and monitoring.	Neutral, not significant
Species					
Badgers	Risk of sett damage/destruction, incidental injury,	Buffers around existing setts;	Potentially Adverse – Site level	Update pre-construction badger survey; mitigation licences to be acquired	Neutral, not significant

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
	disturbance, and temporary foraging habitat loss.	OCEMP and OEPMS measures		for sett exclusion if needed; toolbox talks; ECoW supervision where required.	
Bats – Foraging/Commuting Bats	Temporary habitat and hedgerow loss; lighting impacts; fragmentation of commuting routes.	Sensitive lighting strategy; ecological buffer zones; use of existing gaps for accesses wherever possible; OCEMP and OEPMS protocols.	Adverse – Local (short term)	Hedgerow replanting/translocation; ECoW supervision during works where required; additional hedgerow creation for net gain.	Beneficial – Local
Bats – Roosting Bats	Potential loss or disturbance of trees/buildings suitable for roosting bats; artificial lighting impacts; connectivity loss.	Retention and protective buffers around trees and buildings; sensitive lighting strategy; OCEMP and OEPMS.	Potentially Adverse – Local level	Further inspections/surveys of trees suitable for roosting bats which require removal; mitigation licence with secured mitigation measures where required.	Neutral, not significant
Otters and Water Voles	Risk of direct harm or disturbance during ditch/watercourse works, cable installation, and culvert construction; habitat degradation from run-off/pollution.	Ecological buffers around watercourses (8–30m); use of existing tracks/culverts wherever possible; pollution controls and	Potentially Adverse – Local	Pre-construction inspections of affected watercourses; mitigation licensing if required for affected holts or burrows; species-specific monitoring.	Neutral, not significant

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
		other protection measures via OEPMS.			
Other Mammals – Brown Hare	Risk of injury to leverets during works; temporary displacement/disturbance from habitat clearance.	OCEMP/OEPMS with environmental protection measures	Neutral, not significant	Not required.	Neutral, not significant
Other Mammals – Harvest Mouse, Hedgehog and Polecat	Risk of injury/mortality from vehicle movement and habitat clearance; temporary displacement.	Phased clearance; seasonal timing of habitat clearance; ECoW supervision; OEPMS environmental protection measures; retained habitats with protective buffers	Neutral, not significant	Not required.	Neutral, not significant
Amphibians (including Great Crested Newt)	Accidental killing/injury during groundworks; minor terrestrial habitat loss at hedgerow gaps.	Buffer zones around ponds; retention of terrestrial habitats; OEPMS supervision protocols.	Potentially Adverse – Local	Staged clearance with ECoW; District Licensing scheme measures; offsite pond creation.	Beneficial – Local to District
Reptiles	Minor habitat loss and degradation from trenching and clearance; risk of	Retention of tussocky grassland; ecological buffers	Potentially Adverse – Site level	ECoW supervision; proportionate staged clearance	Neutral, not significant

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
	injury/killing during groundworks.				
Breeding Birds of Open Habitats	Displacement of ground-nesting birds (e.g. skylark, yellow wagtail); accidental mortality; reduced nesting opportunities; temporary reduction in available foraging habitat; disturbance whilst nesting.	Ecological buffer zones; ECoW supervision; exclusion zones around nesting sites; temporary nature of cable installation work.	Skylark/yellow wagtail, and Schedule 1 bird species (see Appendix 9.11: Confidential Schedule 1 Bird Information) - Adverse – County Other Species - Adverse – Local	Provision of compensatory nesting habitat (permanent grassland, spring-sown cereal, set-aside); enhancement of foraging opportunities; targeted management under OLEMP. Confidential Schedule 1 mitigation protocols (Appendix 9.11: Confidential Schedule 1 Bird Information); sensitive timing of activities.	Skylark/yellow wagtail - Adverse – District Other Species - Adverse – Site Schedule 1 species – Neutral, not significant
Breeding Birds of Boundary Habitats	Disturbance from clearance and access works; minor habitat loss; possible disturbance of Schedule 1 species.	Ecological buffer zones; seasonal timing of works; ECoW monitoring; construction staff briefings.	Neutral, not significant	Not required.	Neutral, not significant

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
Breeding Birds of Wetland Habitats	Potential disturbance or habitat degradation near wetland areas; risks to Schedule 1 species.	Ecological buffer zones; seasonal timing of works; ECoW supervision and species-specific protocols.	Neutral, not significant	Not required.	Neutral, not significant
Overwintering Birds of Open Habitats	Disturbance and displacement during construction; temporary loss of foraging habitat	Construction phasing; retention of undeveloped fields with known wintering bird use; ecological buffers; OCEMP and OEPMS with environmental protection measures.	Adverse – Site	Winter works to follow OEPMS measures; no entry to undeveloped fields containing waders/wildfowl unless confirmed empty; ECoW supervision	Adverse – Site (due to temporary loss of foraging habitat during construction phase)
Overwintering Birds of Boundary Habitats	Temporary disturbance or displacement during construction; minor losses of hedgerows and other boundary habitats	Ecological buffer zones; phasing of construction; retention of several undeveloped fields; OCEMP and OEPMS with environmental and habitat protection measures.	Adverse – Site	OEPMS with winter working methods, including no entry to undeveloped fields containing waders/wildfowl unless confirmed empty; ECoW supervision	Adverse – Site (due to temporary loss of foraging habitat during construction phase)
Overwintering Birds of Wetland Habitats	Temporary disturbance during construction	Retention of all wetland habitats;	Neutral, not significant	Not required.	Neutral, not significant

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
	activities near wetland features.	implementation of ecological buffer zones; OEPMS detailing avoidance measures.			
Invertebrates	Minor habitat loss and disturbance; cable installation at watercourses may impact aquatic invertebrates.	Buffer zones; OEPMS pollution/dust controls; reinstatement of vegetation post-cabling.	Aquatic invertebrates - Adverse – Site	Avoidance measures, HDD methods for cable route installation, ECoW supervision, precautionary working.	Neutral, not significant
Plants (including Arable Weeds)	Loss of arable weed habitat; loss of other notable species through habitat clearance	Ecological buffers and avoidance of sensitive habitats	Arable Weeds - Adverse – Local Other species – Neutral, not significant	Provision of set-aside fields managed to support arable weeds	Neutral, not significant
Fish	Potential pollution from run-off or sediment release during construction; disturbance during HDD or trenching at watercourse crossings; potential habitat degradation.	Ecological buffer zones around watercourses (8-30m); HDD to be used at major crossings (e.g. River Nene); OCEMP and OEPMS	Pollution, disturbance and degradation impacts - Neutral, not significant Open-cut trenching at cable route	Sensitive timing of open-cut trenching works at watercourse crossing points, as well as fish capture/translocation, ECoW supervision, and post-construction monitoring	Neutral, not significant

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
	Accidental killing/injury of fish, and damage/degradation of watercourse at cable route watercourse crossing points where open-cut trenching is proposed.	environmental protection measures; ECoW supervision.	watercourse crossing points - Temporary Adverse - Site		
Invasive and Non-Native Species	Accidental spread of invasive non-native plant species (if present); incidental disturbance of American mink or signal crayfish at watercourses.	OEPMS with precautionary measures to avoid accidental spread of these species; pre-commencement ECoW inspections/toolbox talks	Neutral, not significant	Not required	Neutral, not significant

Table 9.8: Summary of Residual Effects for Ecology and Biodiversity (Operational Phase)

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
Designated Sites					
Upper Nene Valley Gravel Pits SPA, SSSI and Ramsar	Potential pollution from battery fire or replacement at Green Hill BESS; ongoing targeted management of FLL mitigation land for SPA species.	Embedded ecological buffers; OBSSMP; management of FLL via OLEMP.	Neutral, not significant	Not required	Neutral, not significant
National Statutory Designated Sites within 500m of Order Limits	Potential disturbance, dust deposition or pollution during routine maintenance or equipment replacement.	Low-intensity maintenance access; embedded pollution control measures.	Neutral, not significant	Not required	Neutral, not significant
National and Local Statutory Designated Sites within 500m–5km of Order Limits	Potential pollution during maintenance activities and equipment replacement.	Distance of >500m from Order Limits; low-risk operations; embedded pollution control measures in OCEMP and OEPMS.	Neutral, not significant	Not required	Neutral, not significant
Local Non-Statutory Designated Sites within Order Limits	Negligible	Cables remain undisturbed; no intrusive work required post-construction; accesses and crossings	Neutral, not significant	Not required	Neutral, not significant

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
		established during construction.			
Local Non-Statutory Designated Sites within 500m of Order Limits	Potential impacts from vehicle movements, equipment replacement and battery fire risk (particularly for Grendon Lakes LWS).	Pollution control measures in OCEMP and OEPMS; established ecological buffers; Outline Battery Storage Safety Management Plan (OBSSMP).	Neutral, not significant	Not required	Neutral, not significant
Local Non-Statutory Designated Sites within 500m–2km of Order Limits	Potential pollution during maintenance activities and equipment replacement.	Distance of >500m from Order Limits; low-risk operations; embedded pollution control measures in OCEMP and OEPMS.	Neutral, not significant	Not required	Neutral, not significant
Habitats					
Arable Field Margins and Other Neutral Grassland	Degradation risk from lack of management; damage risk during maintenance.	OLEMP to ensure ongoing favourable management; through sensitive cutting/grazing regimes; access restrictions; large scale grassland creation/enhancement	Beneficial – District	Not required	Beneficial – District

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
Woodland	No significant impact expected; risk of edge degradation without management.	Ecological buffers; restricted access, tree and woodland planting/management through OLEMP	Beneficial – Local	Not required	Beneficial – Local
Rural Trees, and Ancient/Veteran Trees	No direct operational impact anticipated; protected and retained with buffers.	Protection through buffers; periodic management as needed.	Neutral, not significant	Not required	Neutral, not significant
PondsPonds (Including Temporary Lakes, Ponds and Pools)	Risk of poaching by livestock (if used); minimal pollution risk from routine maintenance/equipment replacement.	OLEMP measures to manage livestock access; new pond creation in suitable areas.	Beneficial – Local to District	Not required	Beneficial – Local to District
Inland Rock and Scree	None.	N/A	Neutral, not significant	Not required	Neutral, not significant
Hedgerows and Lines of Trees	No significant impact; improved condition through cessation of agriculture.	Sensitive management of hedgerows through OLEMP measures; new planting of hedgerows and trees.	Beneficial – Local	Not required	Beneficial – Local
Ditches and Watercourses	Water quality improvements due to land use change; minor risk from BESS fire.	Ecological buffers, restricted access, OBSSMP for BESS fire mitigation; favourable	Beneficial – Local to District	Not required	Beneficial – Local to District

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
		management through OLEMP measures.			
Species					
Badgers	Potential conflict with newly excavated setts; enhanced foraging and sett building opportunities due to grassland and other newly created habitats.	Ecological buffers; minimal night-time disturbance; habitat creation; ongoing management of habitats through OLEMP measures.	Potential conflict with new setts – Adverse - Site Enhanced foraging and sett building opportunities - Beneficial – Site	Sett exclusion under licence if conflict arises	Beneficial – Site level
Bats – Foraging/Commuting Bats	Possible displacement from arrays; increased foraging via habitat and lighting management.	No internal lighting; sensitive lighting strategy implemented at substations and BESS; habitat creation and enhancement through OLEMP.	Beneficial – Local	Not required	Beneficial – Local
Bats – Roosting Bats	No significant operational impacts; potential increase in roosting opportunities through installation of tree mounted roosting features	No artificial lighting near roosts; protected habitat zones.	Neutral, not significant	Not required	Neutral, not significant

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
Otters and Water Voles	Low disturbance risk; potential habitat degradation in the event of BESS fire; habitat enhancement possible.	Buffers; OBSSMP for BESS fire risk; LEMP-led habitat management.	Neutral, not significant	Not required	Neutral, not significant
Other Mammals – Brown Hare	Increased shelter and foraging habitat due to increased grassland habitat; reduced disturbance.	Cessation/reduction in arable farming; habitat management under LEMP.	Beneficial – Site	Not required	Beneficial – Site
Other Mammals – Harvest Mouse, Hedgehog and Polecat	Improved field margins, reduced disturbance, greater connectivity due to cessation of agriculture.	Buffer zones; hedgerow/tree planting; log/brash piles; favourable habitat management through OLEMP.	Beneficial – Local	Not required	Beneficial – Local
Amphibians (including Great Crested Newt)	Increased terrestrial and aquatic habitat from pond creation and grassland reversion; potential habitat degradation in the event of BESS fire	LEMP-led habitat management; OBSSMP for BESS fire risk; District Licensing pond enhancements.	Beneficial – Local to District	Not required	Beneficial – Local to District
Reptiles	Minimal disturbance; long-term enhancement of habitat through grassland	Ecological buffers; habitat management	Beneficial – Local	Not required	Beneficial – Local

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
	reversion and LEMP-led management.	timing; log piles and hibernacula in LEMP.			
Breeding Birds of Open Habitats	Enhanced foraging due to grassland reversion and other habitat creation measures.	Favourable habitat creation/enhancement and ongoing management through OLEMP	Beneficial – Site to Local/District	Not required	Beneficial – Site to Local/District
Breeding Birds of Boundary Habitats	No significant disturbance; enhanced nesting and foraging through hedgerow/tree planting and ongoing management.	OLEMP prescriptions; timed management; hedgerow creation and enhancement.	Beneficial – Local	Not required	Beneficial – Local
Breeding Birds of Wetland Habitats	Minimal disturbance; minor wetland habitat enhancements via pond creation.	OLEMP measures including pond creation; sensitive management of suitable habitats.	Neutral, not significant	Not required	Neutral, not significant
Overwintering Birds of Open Habitats	Permanent displacement of some species (e.g. waders, geese) from developed fields; increase in foraging habitat quality.	Retention of key foraging fields (e.g. EF34); creation of diverse grassland and implementation of ecological buffer zones; favourable management of foraging habitat via OLEMP.	Displacement – Adverse – Site Foraging habitat quality – Beneficial – Local	Provision of mitigation land with suitable habitat available for overwintering birds	Displacement – Neutral, not significant Foraging habitat quality – Beneficial – Local

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
Overwintering Birds of Boundary Habitats	Potential increases to foraging opportunities through habitat creation and sensitive management	Timing of hedgerow/woodland management (OLEMP); late/rotational cutting; extensive new hedgerow and buffer habitat creation.	Beneficial – Local	Not required	Beneficial – Local
Overwintering Birds of Wetland Habitats	Minimal risk of disturbance during winter operations.	Retention and management of wetland habitats; enhanced buffer zones; infrequent pond/ditch management; habitat creation (OLEMP).	Beneficial – Site	Not required	Beneficial – Site
Invertebrates	Increase in terrestrial and aquatic invertebrate diversity due to cessation of arable farming; minor risk to aquatic species from potential battery fire discharge and disruptions to polarotactic species through egg-laying on panels.	Extensive habitat creation and management (LEMP); 20–30m buffers from waterbodies; no panels at Green Hill BESS; lack of suitable habitat for polarotactic species; OBSSMP for battery fire risk.	Polarotactic invertebrates – Neutral, not significant Overall – Beneficial - Local	Not required	Beneficial – Local
Plants (including Arable Weeds)	Potential for increased diversity and establishment	Sensitive timing of vegetation management	Beneficial – Local	Not required	Beneficial – Local

Receptor	Summary of Potential Impacts	Embedded Mitigation	Significance of Effect (with embedded mitigation)	Additional Mitigation Measures	Residual Effect (with additional mitigation)
	of notable plant species through cessation of herbicide use and reversion to permanent grassland.	(LEMP); diverse seed mixes including notable species; cessation of arable farming practices.			
Fish	Potential pollution from battery fire (Green Hill BESS); risk of impacts from EMFs and noise/vibration at River Nene crossing; improvements to water quality due to cessation of arable farming.	Ecological buffers; OBSSMP to address fire risk; all cables buried; water quality improvements via land use change.	Water quality - Beneficial – Local EMFs - Adverse – Local	Cables buried to 5m beneath River Nene to avoid EMF and noise/vibration impacts	Water quality - Beneficial – Local EMFs – Neutral, not significant
Invasive and Non-Native Species	No change in impacts to mink, signal crayfish, Muntjac or Chinese water deer; limited risk of spread of invasive plants due to lack of disturbance and habitat buffering.	Embedded habitat buffers; absence of significant disturbance during operation; LEMP-informed habitat management.	Neutral, not significant	Not required	Neutral, not significant

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