Springwell Solar Farm

Environmental Statement

Volume 1
Chapter 7: Biodiversity

APFP Regulation 5(2)(a)

Planning Act 2008

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

EN010149/APP/6.1
November 2024
Springwell Energyfarm Ltd

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7. Biodiversity

7.1. Introduction

7.1.1. This chapter presents an assessment of likely significant effects arising from the construction, operation (including maintenance) and decommissioning of the Proposed Development upon Biodiversity. The full description of the Proposed Development is provided within **ES Volume 1, Chapter 3: Proposed Development Description [EN010149/APP/6.1]**.

7.1.2. This chapter is supported by the following figures presented in **ES Volume 2 [EN010149/APP/6.2]**:

- **Figure 7.1: Location of Local Wildlife Sites and Areas Proposed for Vegetation Removal**;
- **Figure 7.2: Bat Ground Level Tree Assessment and Areas Proposed for Vegetation Removal**;
- **Figure 7.3: Ditches Surveyed and Areas Proposed for Vegetation Removal**; and
- **Figure 7.4: Important Hedgerows Survey and Areas Proposed for Vegetation Removal**.

7.1.3. This chapter is also supported by the following appendices presented in **ES Volume 3 [EN010149/APP/6.3]**:

- **Appendix 7.1: Preliminary Ecological Appraisal**;
- **Appendix 7.2: Breeding Bird Survey**;
- **Appendix 7.3: Wintering Bird Survey**;
- **Appendix 7.4: Barn Owl Survey - Confidential**;
- **Appendix 7.5: Bat Activity Survey**;
- **Appendix 7.6: Bat Activity Survey Addendum**;
- **Appendix 7.7: Riparian Mammal and Aquatic Habitat Assessment**;
- **Appendix 7.8: Notable Arable Flora Survey**;
- **Appendix 7.9: Local Wildlife Site Verges Survey**;
- **Appendix 7.10: Badger Survey – Confidential**;
- **Appendix 7.11: Important Hedgerow Survey**;
- **Appendix 7.12: Arboricultural Impact Assessment**;
- **Appendix 7.13: Further Targeted Bat Activity Surveys**; and

- **Appendix 7.14: Biodiversity Net Gain Assessment**.

7.1.4. Full details of the study areas, survey methodologies, survey dates and guidance used for each survey are available in the appendices as detailed above. A summary of survey findings is provided in this chapter.

7.1.5. Effects on biodiversity from infrastructure projects can arise from direct and indirect impacts upon designated sites, habitats or species, and can be of a temporary or permanent nature. Indirect effects can occur through pollution of air and water and via changes in lighting, noise or hydrology, and this biodiversity chapter is therefore supported by information contained within the following chapters of **ES Volume 1 [EN010149/APP/6.1]**:

- **Chapter 6: Air Quality**;
- **Chapter 9*:* Cultural Heritage;**
- **Chapter 10: Landscape and Visual**;
- **Chapter 11: Land, Soil and Groundwater**;
- **Chapter 12: Noise and Vibration**;
- **Chapter 14: Traffic and Transport**;
- **Chapter 15: Water**; and
- **Chapter 16: Cumulative Effects**.

7.1.6. A **Habitats Regulations Assessment (HRA) No Significant Effects Screening Report (NSER) [EN010149/APP/7.17]** has been prepared in accordance with the requirements of The Conservation of Habitats and Species Regulations 2017 (Habitats Regulations) **[Ref. 7-1]** to set out whether the Proposed Development is likely to have any significant effect on European designated sites. This report is submitted in support of the Development Consent Order (DCO) Application for the Proposed Development.

7.1.7. Management Plans with detailed additional mitigation to manage any environmental effects of the Proposed Development have been prepared and submitted in support of the DCO Application to demonstrate compliance with environmental legislation. These Management Plans are (as relevant to biodiversity):

- **Outline Construction Environmental Management Plan (oCEMP) [EN010149/APP/7.7]**;
- **Outline Landscape and Ecological Management Plan (oLEMP) [EN010149/APP/7.9]**;
- **Outline Operational Environmental Management Plan (oOEMP) [EN010149/APP/7.10]**;

- **Outline Soil Management Plan (oSMP) [EN010149/APP/7.11]**; and
- **Outline Decommissioning Environmental Management Plan (oDEMP) [EN010149/APP/7.13]**.

7.2. Legislative framework, planning policy and guidance

7.2.1. This assessment has been undertaken with regard to the following legislation, planning policy and guidance.

7.2.2. It should be noted that this chapter does not assess the compliance of the Proposed Development against relevant planning policy. Such an assessment is presented in the **Planning Statement [EN010149/APP/7.2]**.

Legislation

- The Wildlife and Countryside Act 1981 (as amended) **[Ref. 7-2]**;
- The Conservation of Habitats and Species Regulations (Habitats Regulations) 2017 (for England and Wales) **[Ref. 7-1]**;
- The Environment Act 2021 **[Ref. 7-3]**;
- Countryside and Rights of Way Act 2000 **[Ref. 7-4]**;
- The Natural Environment and Rural Communities Act 2006 **[Ref. 7-5]**;
- The Hedgerows Regulations 1997 **[Ref. 7-6]**;
- The Protection of Badgers Act 1992 **[Ref. 7-7]**;
- The Wild Mammals (Protection) Act 1996 **[Ref. 7-8]**; and
- Invasive Alien Species (Enforcement and Permitting) Order 2019 **[Ref. 7-9].**

National Planning Policy

- Overarching National Policy Statement for Energy (NPS EN-1) (2023) - Section 5.4 details the planning policy for biodiversity and Environmental Impact Assessment (EIA) requirements **[Ref. 7-10]**;
- National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (2023) - Section 2.1 details the planning policy for solar photovoltaic generation in relation to biodiversity **[Ref. 7-11]**;
- National Policy Statement for Electricity Networks Infrastructure (NPS EN-5) (2023) - Section 2.5 details the planning policy for environmental and biodiversity net gain (BNG). Sections 2.9 and 2.10 discuss biodiversity conservation **[Ref. 7-12]**;
- National Planning Policy Framework (NPPF) (2023) - Section 15 specifies the requirements for conserving and enhancing the natural

environment through the planning and development process to minimise impacts on habitats and biodiversity **[Ref. 7-13]**. Consultation on the proposed reform to the NPPF ended on the 24 September 2024. The **Planning Statement [EN010149/APP/7.2]** considers both the current and consulted NPPF; and

- Planning Practice Guidance – Natural Environment - describes key issues to protect and enhance the natural environment, including local requirements and approach to planning. Relevant sections include climate change, BNG and Environmental Impact Assessment **[Ref. 7-14]**.

Local Planning Policy

- Central Lincolnshire Local Plan (2018 – 2040) adopted 13 April 2023 - specifically Policy S14: Renewable Energy; Policy S53: Design and Amenity; Policy S59: Green and Blue Infrastructure Network; Policy S60: Protecting Biodiversity and Geodiversity; Policy S61: Biodiversity Opportunity and Delivering Measurable Net Gains; and Policy S66: Trees Woodland and Hedgerows **[Ref. 7-15]**.
- Central Lincolnshire Local Plan – Delivering Biodiversity Net Gain in Central Lincolnshire, Guidance for Applicants Seeking Permission 2023 **[Ref. 7-16]**.

Guidance

- Biodiversity Opportunity Mapping for Central Lincolnshire Authorities 2019 **[Ref. 7-17]**; and
- CIEEM Guidelines for Ecological Impact Assessment in the United Kingdom (UK) and Ireland: Terrestrial, Freshwater, Coastal and Marine (2018, version 1.3 updated September 2024) **[Ref. 7-18]**.

7.3. Stakeholder engagement

7.3.1. **Table 7.1** provides a summary of the stakeholder engagement activities undertaken separately from the EIA scoping, non-statutory consultation, statutory consultation and targeted consultation process in support of the preparation of this assessment, as well as detailing the matters raised, how such matters have been addressed, and where they have been addressed in the ES.

7.3.2. **ES Volume 3, Appendix 5.3: Scoping Opinion Response Matrix [EN010149/APP/6.3]** presents the responses received via the Scoping Opinion and the Applicant's response to each matter raised.

7.3.3. **Appendix A-4**, **J-1**, **J-2** and **K-3** of the **Consultation Report [EN010149/APP/5.1]**, which is submitted in support of the DCO Application, sets out the feedback received during non-statutory, statutory

and targeted consultation and how regard has been afforded by the Applicant to each matter raised.

Table 7.1 Summary of stakeholder engagement

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
Lincolnshire Wildlife Trust	16 February 2023 and 20 June 2023	Meetings were held with Lincolnshire Wildlife Trust who had concerns about cumulative impacts particularly on ground nesting birds, from other solar development proposals in the area. Lincolnshire Wildlife Trust provided positive comments on design development and protection of habitat corridors. The possibilities for a collaborative regional approach to mitigation with other solar development proposed in Lincolnshire were discussed, along with opportunities for access improvements adjacent to Bloxham Woods, Local Wildlife Sites (LWS) and the possibility of connecting habitats across the Site.	To develop a collaborative approach, a further meeting was held on 7 March 2024 by the Applicant with several other solar developers in Lincolnshire (including representatives from Island Green Power; Low Carbon; SEUK; Ridge Clean Energy; SSE; Windel Energy; Element Green; AECOM and Logika) to discuss ecology and BNG issues to develop a joined-up approach. Ground nesting birds were the main focus of mitigation for all projects, although bats and butterflies were also key issues with one or two projects – including the Proposed Development (for bats). Most projects were creating skylark	Cumulative effects on biodiversity have been discussed in **ES Volume 1, Chapter 16: Cumulative Effects [EN010149/APP/6.1]**. BNG proposals are presented in **ES Volume 3, Appendix 7.14: Biodiversity Net Gain Assessment [EN010149/APP/6.3]**.

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
			plots and grassland as mitigation. It was agreed that the best way to deliver BNG would be by creation of natural grassland, which could be achieved as a combined group. The potential benefits of solar farms were discussed e.g. by enhancing insects and pollination, soil, water and improving public access. Next actions were to liaise with Greater Lincolnshire Nature Partnership to identify key areas for off-setting as well as liaising with Lincolnshire Wildlife Trust to update and agree objectives.	
Natural England	20 June 2023	Natural England did not have any further concerns on the scope of the surveys.	A Discretionary Advice Service account was set up with Natural England. A further Discretionary Advice Service meeting was	N/A

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
		Natural England recommended that any advice on the scope and method of surveys and licensing, if required, should be requested by the Discretionary Advice Service.	planned for 15 January 2024 once further survey work had been completed (details of meeting held on 15 January 2024 are provided below).	
North Kesteven District Council and Lincolnshire County Council	14 September 2023	Ecology surveys undertaken and biodiversity design were discussed. North Kesteven District Council Ecologist agreed with the revised assessment of receptors to be scoped in and those to be scoped out on the proviso that wintering bird surveys and notable arable flora surveys should be carried out. The number of wintering bird survey visits could be curtailed if findings justify.	Wintering bird surveys were subsequently carried out in November 2023, December 2023 and January 2024. The final survey visit in February 2024 was cancelled as it was not considered that any significant information would be gained from the February survey. This was agreed with Natural England on 15 January 2024 (as discussed below). Notable arable flora surveys were undertaken in June 2024.	**ES Volume 3, Appendix 7.3: Wintering Bird Survey [EN010149/APP/6.3]** **ES Volume 3, Appendix 7.8: Notable Arable Flora Survey [EN010149/APP/6.3]**
Natural England	15 January 2024	Discretionary Advice Service meeting to discuss ecology surveys and biodiversity design.	Measures to avoid impacts to protected species, such as avoiding badger setts and trees	**Section 7.6** of this chapter presents the embedded mitigation

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
		Natural England agreed with approach for great crested newt surveys and assumption of absence, and noted that Lincolnshire will be rolling out a great crested newt District Level Licencing scheme this year. Natural England had reviewed the wintering birds results and thought that due to distance, the Site is highly unlikely to be functionally linked to the European Designated sites at 'The Wash' Special Protection Area (SPA) designated for birds. Natural England agreed that the surveys carried out in November, December 2023 and January 2024 were sufficient and did not consider that an additional wintering bird survey in February 2024 would be necessary to inform the assessment	with potential bat roost features, have been embedded in the design of the Proposed Development. Measures to avoid impact through design should avoid the need for any protected species mitigation licences, where possible. Tree sparrow nest boxes have been proposed as additional mitigation.	measures relevant to biodiversity. **Section 7.8** of this chapter presents proposed additional mitigation measures. **ES Volume 2, Figure 7.2: Hedgerows Impacted by Access and Preliminary Bat Roost Tree Assessment [EN010149/APP/6.2]** **ES Volume 3, Appendix 7.10: Badger Survey – Confidential [EN010149/APP/6.3]**

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
		of impacts of the Proposed Development on wintering birds. The biodiversity mitigation strategy was discussed and Natural England remained positive on the design and mitigation proposals and confirmed that the mitigation measures were appropriate for the Proposed Development. Natural England recommended tree sparrow boxes due to the presence of sparrows identified during the breeding bird surveys.		
North Kesteven District Council	9 May 2024	Meeting to discuss the North Kesteven District Council statutory consultation response (which was issued on 22 February 2024). North Kesteven District Council does not agree that hedgerows and hedgerow trees can be scoped out of the assessment. North Kesteven District Council considers that all	Habitat losses are quantified within the ES.	Justifications for receptors scoped into the assessment are detailed in **Table 7.2** of this chapter. Potential effects (without additional mitigation) are discussed in **Section 7.7** of this chapter. Residual

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
		habitat losses should be quantified within the Environmental Statement (ES) even if the habitat is scoped out of the assessment. The impact assessment can be proportionate to the relevant impacts and effects.		effects (with additional mitigation) are discussed in **Section 7.9** of this chapter. Habitat losses are quantified in **ES Volume 3, Appendix 7.14: Biodiversity Net Gain Assessment [EN010149/APP/6.3]**.
		LWS – North Kesteven District Council agrees with the rationale given for the scoping out of the named LWS. It is noted that full information on the reasons for designation have been provided to inform review of potential impact on pathways. No direct impacts on the LWS were identified, provided that no highways would need widening.	LWS were previously proposed to be scoped out of the assessment (see **ES Volume 3, Appendix 5.1: Scoping Report [EN010149/APP/6.3]**). However, highway access proposals now require removal of small sections of four LWS grassland road verges. These four LWS have now been scoped into the assessment. Botanical surveys have been carried out on the grassland verge areas affected	**ES Volume 3, Appendix 7.9: Local Wildlife Site Verges Survey [EN010149/APP/6.3]**. Potential effects (without additional mitigation) are discussed in **Section 7.7** of this chapter. Residual effects (with additional mitigation) are discussed in **Section 7.9** of this chapter.

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
			to inform baseline and mitigation/compensation requirements.	
		North Kesteven District Council did not agree that wintering birds can be scoped out of the operational impact assessment as appropriate evidence is not yet presented to support this position.	Wintering birds have now been scoped into the assessment and surveys were carried out between November 2023 and January 2024.	**ES Volume 3, Appendix 7.3: Wintering Bird Survey [EN010149/APP/6.3]**. Potential effects (without additional mitigation) are discussed in **Section 7.7** of this chapter. Residual effects (with additional mitigation) are discussed in **Section 7.9** of this chapter.
		North Kesteven District Council did not agree that badgers can be scoped out of the assessment as detailed information on the location of the setts has not been provided.	A confidential report providing locations of badger activity is submitted in support of the DCO Application and any impacts to badgers will be mitigated by avoidance and ensuring a sufficient offset buffer zone.	**ES Volume 3, Appendix 7.10: Badger Survey – Confidential [EN010149/APP/6.3]**. Potential effects (without additional mitigation) are discussed in **Section 7.7**

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
				of this chapter. Residual effects (with additional mitigation) are discussed in **Section 7.9** of this chapter. Mitigation measures will be secured in the **Design Commitments [EN010149/APP/7.4]** and in the **oCEMP [EN010146/APP/7.7]** and the **oLEMP [EN010146/APP/7.9]**.
		North Kesteven District Council was of the opinion that scarce arable flora is a relevant receptor that needs to be addressed through appropriately timed specialist plant surveys.	Arable flora surveys were carried in June 2024. It was identified that arable flora were of up to County importance. Arable flora have been scoped into the assessment.	**ES Volume 3, Appendix 7.8: Notable Arable Flora Survey [EN010149/APP/6.3]**. Potential effects (without additional mitigation) are discussed in **Section 7.7** of this chapter. Residual effects (with additional

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
				mitigation) are discussed in **Section 7.9** of this chapter.
		North Kesteven District Council queried the statement that no veteran trees had been identified.	An Arboricultural Impact Assessment has been undertaken to support the DCO Application. Six veteran trees were identified near Scopwick. However, only one veteran tree is within the Order Limits. This tree is over 250 metres (m) from proposed built development and therefore will not be directly affected. Measures to protect the veteran tree (and all other trees) are detailed in the relevant management plans.	**ES Volume 3, Appendix 7.12: Arboricultural Impact Assessment [EN010149/APP/6.3]** **oCEMP [EN010146/APP/7.7]** **oLEMP [EN010146/APP/7.9]** **oDEMP [EN010146/APP/7.13]**
		North Kesteven District Council noted that the habitat information within **ES Volume 3, Appendix 7.1: Preliminary Ecological Appraisal**	A full BNG metric assessment is submitted in support of the DCO Application, detailing the minimum % BNG that will be provided, and an outline Biodiversity Gain Plan and	**ES Volume 3, Appendix 7.14: Biodiversity Net Gain Assessment [EN010149/APP/6.3]**

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
		[EN010149/APP/6.3] is not sufficient to evidence a BNG assessment.	Habitat Management and Monitoring Plan (which is consistent with the proposed **oLEMP [EN010149/7.9]**) to demonstrate how this will be achieved in practice and that it can be secured.	
North Kesteven District Council and Lincolnshire County Council	23 July 2024	Discussed the findings of surveys and further scheduled surveys to be carried out in Summer 2024. Regarding the notable arable flora surveys, North Kesteven District Council suggested consideration towards survey of maize fields as they are a late sown crop and arable plants can emerge after summer rain.	The notable arable flora survey was carried out in June 2024 (when autumn germinating arable plants would be visible), which included survey of maize fields as well as survey of sugar beet and other cropland. Several notable arable plants were identified and considered of up to County importance. An additional late summer survey (to survey spring germinating plants) was not considered necessary as the biodiversity design includes proposals for both spring and autumn	**oLEMP [EN010149/7.9]**

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
			cultivation of field margins to enhance the Site for both spring and autumn germinating notable arable plants.	
		Discussed design updates with regards to proposals for removal of sections of Local Wildlife Site (LWS) calcareous grassland road verges to facilitate access and proposals for creation of compensatory field margins potentially using green hay seeding. North Kesteven District Council considered that the LWS road verges were not of high quality, therefore had considers that seeding and improved long term management could improve the quality.	Proposals to create new calcareous grassland field margins, by seeding and management, adjacent to the LWS grassland road verges is anticipated to improve the amount and quality of calcareous grassland.	**oLEMP [EN010149/APP/7.9]**
		North Kesteven District Council and Lincolnshire County Council noted that they were impressed with the consideration that had	The risk to barn owls crossing the A15 is not considered likely to be increased as proposals for new hedgerow and tree planting	**oLEMP [EN010149/APP/7.9]**

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location of where this matter is addressed in the ES
		gone into the Biodiversity design to date. North Kesteven District Council noted a potential risk to barn owls crossing the A15 due to habitat enhancement proposals on both sides of the A15.	alongside the A15 should raise the flight height of barn owls crossing the road and therefore reduce collision risk. New barn owl nest boxes would not be installed near the A15.	
		Noted potential for deer crossing the A15 and consideration for collision risk.	Road safety concerns are assessed in Chapter 14: Traffic and Transport, which concludes that overall, the effect of the Proposed Development on road safety is considered to be not significant.	**ES Volume 1, Chapter 14: Traffic and Transport [EN010149/APP/6.1].**

7.4. Approach to the assessment

Study area

7.4.1. All designated sites, sensitive habitats and species of importance that occur within the relevant ecological Zone of Influence of the Proposed Development are considered in this assessment. The extent of the Zone of Influence varies according to the ecological receptor in question and with regards to the precautionary principle. The The Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines **[Ref. 7-18]** define the Zone of Influence as: *"…the area over which biodiversity features may be affected by biophysical changes as a result of the proposed project and associated activities"*.

7.4.2. In defining study and survey areas, consideration has been afforded to the geographic location, nature and scale of the Proposed Development. The study and survey areas have been discussed and agreed with consultees (refer to **Table 7.1** above). Further justification on these extents is included in the relevant technical appendices. The study area includes the area within the Order Limits (as displayed in **ES Volume 2, Figure 1.2: Order Limits [EN010149/APP/6.2]**) and appropriate Zone of Influence, which varies per receptor as detailed in **Table 7.2** below.

Table 7.2 Biodiversity study/survey areas

Receptor	Study/survey area
Statutory designated sites	A desk study data search for statutory designated sites has been completed within the Order Limits and up to 2km from the Order Limits, extended to 10km for SPAs, Special Areas of Conservation (SACs) and Ramsar sites, as well as any sites within 30km of the Order Limits where there is a hydrological link and fish are noted; or bats or birds are noted as qualifying features.
Non-statutory designated sites	A background data search for non-statutory designated sites has been completed within the Order Limits and up to 2 kilometres (km) from the Order Limits.
Ancient woodland	A background data search for Ancient Woodland has been completed within the Order Limits.
Protected or notable species data search	A background data search for records of protected or notable species has been completed within the Order Limits and up to 2km from the Order Limits.

Receptor	Study/survey area
National Habitat Networks	A background data search for National Habitat Networks has been completed within the Order Limits.
Habitats and assessment of potential habitat for protected species	The survey area for the preliminary ecological appraisal of habitats and assessment of potential for protected species encompasses the Order Limits.
Trees	An arboricultural impact assessment survey of all trees within the Order Limits and at least 100m from the Order Limits has been undertaken.
Hedgerows	Hedgerow surveys (ecological component of the Hedgerows Regulations 1997) have been undertaken in respect of hedgerows anticipated to be affected by the Proposed Development within the Order Limits.
Notable arable flora	Notable arable plant surveys have been undertaken at targeted areas within the Order Limits.
Local Wildlife Sites	The areas where four LWS will potentially be affected by the Proposed Development have been surveyed. These LWS are all calcareous grassland road verges. The areas surveyed were up to c.200m lengths of these grassland road verges for each LWS, which were: • A15, Green Man Road to Cuckoo Lane LWS; • A15, Slate House Farm to Dunsby Pit Plantation LWS; • Temple Road Verges, Welbourn to Brauncewell; and • Navenby Heath Road Verges LWS. Sections of Gorse Hill Lane LWS and Gorse Lane LWS (c.100m lengths adjacent to the Order Limits) were also surveyed as it was not known, at the time, whether these would also be affected by works. It is now known that the latter two LWS will not be affected by the Proposed Development.
Great crested newts	All ponds within the Order Limits and within up to 500m of the Order Limits have been tested for great crested newt eDNA.

Receptor	Study/survey area
Fish and aquatic species	Six ditches within the Order Limits were anticipated to be affected by the Proposed Development. An aquatic habitat assessment walkover survey has been undertaken up to 500m upstream and downstream (where accessible) to assess impact on aquatic habitats and associated species which might be affected.
Birds	Breeding bird (including barn owl) and wintering bird surveys have covered the entire area within the Order Limits.
Bats	Bat activity surveys have been undertaken within the Order Limits by deploying static bat detectors in different locations to cover as much of the Site as possible. Targeted bat activity surveys have also been carried out of hedgerows anticipated to be affected by the Proposed Development. Preliminary bat roost assessments have been undertaken of trees and structures within the Order Limits.
Water vole and otter	Surveys for riparian mammals have been undertaken in, and adjacent to, the six ditches within the Order Limits which are anticipated to be affected by the Proposed Development - surveying up to 200m upstream and downstream, where accessible and up to 50m within adjacent suitable habitats. A distance of at least 100m upstream and downstream would account for any local water vole (*Arvicola amphibius*) populations that could commute further along the watercourse **[Ref. 7-19]**.
Badgers	Badger surveys have been undertaken within the Order Limits and within at least 50m from the Order Limits.

Scope of the assessment

7.4.3. The scope of this assessment has been established throughout the EIA process and design of the Proposed Development. Further information can be found in **ES Volume 1, Chapter 5: Approach to the EIA [EN010149/APP/6.1]**.

7.4.4. This section provides an update to the scope of the assessment from that presented in the EIA Scoping Report which is located in **ES Volume 3, Appendix 5.1: Scoping Report [EN010149/APP/6.3]** and re-

iterates/updates the evidence base for scoping matters in or out following further iterative assessment.

Receptors/matters scoped into the assessment

7.4.5. **Table 7.3** presents the receptors/matters that are scoped into the assessment reported within this ES, together with appropriate justification. All receptors scoped into the assessment have been agreed with North Kesteven District Council (Lincolnshire County Council deferred to North Kesteven District Council on such matters).

Table 7.3 Receptors/matters scoped into the assessment

Receptor/matter	Phase	Justification
Four LWS within the Order Limits: A15, Green Man Road to Cuckoo Lane LWS A15, Slate House Farm to Dunsby Pit Plantation LWS Temple Road Verges, Welbourn to Brauncewell Navenby Heath Road Verges LWS	Construction	All LWS were proposed to be scoped out of the assessment (refer to **ES Volume 3, Appendix 5.1: Scoping Report [EN010149/APP/6.3]**) as no impact was anticipated. However, the updated design information has determined that for these four LWS, sections of the grassland verges will need to be removed during construction to enable highways access. Therefore these receptors are scoped into the assessment for the construction phase.
Hedgerows and hedgerow trees	Construction and operation (including maintenance)	Hedgerows and hedgerow trees were proposed to be scoped out of the assessment (refer to **ES Volume 3, Appendix 5.1: Scoping Report [EN010149/APP/6.3]**) as the design will maintain a minimum 10m offset from the Proposed Development to all existing hedgerows, where possible. However, several sections of hedgerow will need to be removed to facilitate installation of underground cable, highways access and internal access roads. The location of proposed vegetation removal is presented in **ES Volume 2, Figure 3.11: Vegetation Removal Parameters [EN010149/APP/6.2]** and **ES Volume 2, Figure 7.4:**

Receptor/matter	Phase	Justification
		Important Hedgerow Surveys and Areas Proposed for Vegetation Removal [EN010149/APP/6.2]. Although *c.*1,249m of hedgerows are proposed to be lost during construction, these hedgerows would be re-instated, where possible, after construction or planted elsewhere within the Order Limits. The amount of new hedgerow and tree planting proposed is *c.* 15,563m which would provide a significant beneficial effect once established during the operational (including maintenance) phase. New tree and hedgerow planting is detailed in the **oLEMP [EN010149/APP/7.9]**.
Notable arable flora	Construction and decommissioning	Notable arable flora were proposed to be scoped out of the assessment (refer to **ES Volume 3, Appendix 5.1: Scoping Report [EN010149/APP/6.3]**) as they were considered unlikely to be present from Preliminary Environmental Assessment (PEA) surveys. However, following advice from North Kesteven District Council, dedicated notable arable plant surveys were carried out in June 2024 and an important assemblage of notable flora, considered of up to County importance, was identified in Springwell Central and Springwell West, although not found in Springwell East. Individual plants and habitat could be destroyed or damaged during construction or decommissioning groundworks.
Ground nesting birds	Construction, operation (including maintenance) and decommissioning	Construction works would cause disturbance and loss of breeding habitat due to the installation of the Solar photovoltaic (PV) development.

Receptor/matter	Phase	Justification
		They also may also be disturbed during decommissioning. Operational works (including maintenance) would be relatively small scale and localised which is not anticipated to cause significant visual or noise disturbance to ground nesting birds. Habitat creation and enhancement measures as part of the embedded design are anticipated to have a beneficial effect in quantity of foraging habitat and quality of nesting habitat once fully established during the operational (including maintenance) phase. Habitat creation, enhancement measures and management are detailed in the **oLEMP [EN010149/APP/7.9]**. This receptor is scoped into the assessment, as detailed within **ES Volume 3, Appendix 5.1: Scoping Report [EN010149/APP/6.3]** and confirmed within **ES Volume 3, Appendix 5.2: Scoping Opinion [EN010149/APP/6.3]**.
Barn owl	Construction and decommissioning	Barn owl was proposed to be scoped out of the assessment (refer to **ES Volume 3, Appendix 5.1: Scoping Report [EN010149/APP/6.3]**). However, following further surveys, a pair of barn owls (*Tyto alba)* were identified nesting, in a nest box inside a [redacted] at the [redacted]. Barn owl pellets were found in most [redacted] adjacent to the Order Limits indicating that they are using barns for roosting and likely using most of the area within the Order Limits for foraging. If nesting near to works, barn owls could be disturbed by construction and decommissioning works.

Receptor/matter	Phase	Justification
Wintering birds	Construction, operation (including maintenance) and decommissioning	Wintering birds were proposed to be scoped out of the assessment (refer to **ES Volume 3, Appendix 5.1: Scoping Report [EN010149/APP/6.3]**), as the area within the Order Limits was considered unlikely to be important for a significant assemblage. However, following advice from North Kesteven District Council, dedicated wintering bird surveys were carried out in the winter of 2023/2024 and although no bird species designated to the Wash SPA/Ramsar were identified, the wintering bird assemblage was found to be of up to District importance. Wintering birds are scoped into the assessment due to potential for disturbance and loss of foraging habitat during construction and decommissioning. Operational works (including maintenance) would be relatively small scale and localised which is not anticipated to cause significant visual or noise disturbance to wintering birds. Habitat creation and enhancement measures as part of the embedded design are anticipated to have a beneficial effect in quantity of foraging habitat once fully established during the operational (including maintenance) phase. Habitat creation, enhancement measures and management are detailed in the **oLEMP [EN010149/APP/7.9]**.
Bats	Construction, operation (including maintenance) and decommissioning	Bats were proposed to be scoped out of the assessment (refer to **ES Volume 3, Appendix 5.1: Scoping Report [EN010149/APP/6.3])**. However, the design has since been

Receptor/matter	Phase	Justification
		updated and several sections of hedgerows will need to be removed for access and cable installation, causing fragmentation of bat commuting and foraging habitat. Furthermore, recent research on bats and solar farms in the UK (in 2023) **[Ref 7-32]** indicates that habitat change from the installation of Solar PV modules may potentially affect bats during the operational phase. The potential effects of noise and lighting could also cause disturbance to bats during construction, operation (including maintenance) and decommissioning.

Receptors/matters scoped out of the assessment

7.4.6. **Table 7.4** presents the receptors/matters that are scoped out of the assessment that are therefore not considered as part of this ES, together with appropriate justification.

Table 7.4 Receptors/matters scoped out of the assessment

Receptor/matter	Phase	Justification
Statutory designated nature conservation sites	Construction, operation (including maintenance) and decommissioning	Given the distance of the Proposed Development to statutory sites, the nature of the Proposed Development and lack of any direct hydrological connection or other obvious impact pathway, no significant effects are expected to arise from the Proposed Development. Details of this assessment are presented in the **HRA No Significant Effects Screening Report [EN010149/APP/7.17]**.
Four LWS within the Order Limits: A15, Green Man Road to Cuckoo Lane LWS	Operation (including maintenance) and decommissioning	These four LWS have been scoped in for the construction phase (as sections would be removed – refer to **Table 7.3** above). However, there are not anticipated to be any significant effects during operation as it is a passive

Receptor/matter	Phase	Justification
A15, Slate House Farm to Dunsby Pit Plantation LWS Temple Road Verges, Welbourn to Brauncewell Navenby Heath Road Verges LWS		development and the LWS are outside of the Solar PV development area. Protection of LWS against pollution during operation and decommissioning is secured in the **oOEMP [EN010149/APP/7.10]** and **oDEMP [EN010149/APP/7.13]**. All four LWS are designated for calcareous grassland. Creation of new calcareous grassland is proposed to compensate for LWS lost and to increase the amount of calcareous grassland habitat overall, once established during the operational (including maintenance) phase. Details of habitat creation and management are presented in the **oLEMP [EN010149/APP/7.9]**.
Four non-statutory LWS which lie adjacent to the Order Limits: Blankney Brick Pit LWS Gorse Hill Lane LWS Gorse Land LWS Bloxholm Wood LWS	Construction, operation (including maintenance) and decommissioning	These LWS are adjacent to the Order Limits; however, a minimum offset distance of 20m from LWS to any built development has been incorporated into the design and secured in the **Design Commitments [EN010149/APP/7.4]**. However, there are not anticipated to be any significant effects during the operational phase (including maintenance) as it is a passive development and the LWS are outside of the solar PV development area. Protection of LWS against pollution during decommissioning is secured in the **oDEMP [EN010149/APP/7.13].** None of these LWS are therefore anticipated to be affected by construction/decommissioning works, or by the operational Proposed Development.
One ancient woodland (Long Wood) and 17	Construction, operation (including maintenance) and decommissioning	There are 17 other LWS and one area of ancient woodland that are not adjacent to the Order Limits but are within 2km of the Order Limits. Given

Receptor/matter	Phase	Justification
No. LWS within 2km: Blankney Dyke 2 LWS Long Wood LWS Blankney LWS Blankney Dyke 1 LWS Longwood Quarry, Blankney LWS St John the Baptist Churchyard LWS Temple Bruer LWS Brauncewell Quarry LWS Scopwick Heath Old Quarry LWS Green Man Lane 3 LWS Wellingore Heath Road Verges 2 LWS Navenby, Green Man Road Verges LWS High Dyke Long Lane to Navenby Verges LWS Boothby Graffoe Road Verges LWS Green Man Lane 2 LWS		the distance of these sites from the Proposed Development and a lack of relevant links or impact pathways, they would not be affected during either construction, operation (including maintenance) or decommissioning.

Receptor/matter	Phase	Justification
Wellingore Heath Road Verges 1 LWS Gorse Lane 2 LWS		
Hedgerows and hedgerow trees	Decommissioning	Hedgerows and hedgerow trees are not anticipated to be affected by decommissioning works. Protection of hedgerows and hedgerow trees during decommissioning, such as protection of root zones and pollution control, is secured by the **oDEMP [EN010149/APP/7.13]**.
Woodlands within or adjacent to the Order Limits	Construction, operation (including maintenance) and decommissioning	Perimeter fencing surrounding the Solar PV development will be offset at least 15m from existing woodlands, as detailed in the **Design Commitments [EN010149/APP/7.4]**. Maintaining a 15m buffer would protect tree root zones, as per Government standing advice **[Ref. 7-20]**. The **oCEMP [EN010149/APP/7.7]** and **oDEMP [EN010149/APP/7.13]** secure measures, such as good practice for air pollution and protection of root zones, to protect woodland.
Ponds	Construction, operation (including maintenance) and decommissioning	There are four ponds present within the Order Limits, two ponds within 50m of the Order Limits and a further eight ponds within 250m – 500m from the Order Limits. No ponds will be lost as a result of the Proposed Development. The **oCEMP [EN010149/APP/7.7]**, and **oDEMP [EN010149/APP/7.13]** will secure measures for good practice pollution control and a minimum works buffer of at least 6m to protect ponds.
Semi-improved grassland	Construction, operation (including	There are several field margins and a few small areas of semi-improved grassland within the Order Limits,

Receptor/matter	Phase	Justification
	maintenance) and decommissioning	although none were identified as species-rich or of particular ecological importance (presented in **Figure 2** of **ES Volume 3, Appendix 7.1: Preliminary Ecological Appraisal [EN010149/APP/6.3]**). Mitigation measures, such as good practice for pollution control, to protect the grassland are documented within and secured by the **oCEMP [EN010149/APP/7.7]** and **oDEMP [EN010149/APP/7.13]**. Enhancement measures and appropriate management of grassland and field margins are detailed in the **oLEMP [EN010149/APP/7.9].**
Notable arable flora	Operation (including maintenance)	The conservation status of notable arable flora is not anticipated to be affected by the operation (including maintenance) of the Proposed Development. Field margins will be protected by buffer zones and a reduction in use of herbicides and management of field margins specifically to improve notable arable flora is anticipated to have a beneficial effect long term. Management to improve habitat for arable flora during the operational (including maintenance) phase is detailed in the **oLEMP [EN010149/APP/7.9].**
Invasive species	Construction, operation (including maintenance) and decommissioning	No invasive species were identified during PEA survey and have not been identified during subsequent surveys. However, there is always a risk that invasive species could be introduced via construction traffic or new planting. Biosecurity measures will be undertaken as appropriate, such as checking new planting stock (e.g. potted plants or tree root balls) are free from invasive seedlings before bringing onto site and ensuring vehicles, clothing and

Receptor/matter	Phase	Justification
		equipment are clean and free from contaminated soil/seeds where appropriate. This is documented and secured by the **oCEMP [EN010149/APP/7.7]**, **oLEMP [EN010149/APP/7.9]** and the **oDEMP [EN010149/APP/7.13]** to avoid accidental introduction or spread of any invasive species. If any invasive species are found then specific control measures would need to be carried out depending on invasive species.
Invertebrates	Construction, operation (including maintenance) and decommissioning	Invertebrates have been scoped out of the assessment due to a lack of desk study records of Schedule 5 species (protected under the Wildlife and Countryside Act 1981 (as amended) **[Ref. 7-2]**) and a lack of high-quality habitat within the Order Limits that could support an important invertebrate assemblage. The majority of habitat, either within or adjacent to the Order Limits, that may support notable invertebrates (e.g. ponds, woodland, scrub and arable margins) will be retained and avoided during construction of the Proposed Development. Other habitat within the Order Limits (mostly intensively managed arable land) was not considered suitable for an important assemblage of invertebrates. This is detailed in **ES Volume 3, Appendix 7.1: Preliminary Ecological Appraisal [EN010149/APP/6.3]**.
Hazel dormouse	Construction, operation (including maintenance) and decommissioning	Hazel dormouse (*Muscardinus avellanarius*) have been scoped out of the assessment as the desk study did not identify any records of this species occurring within 2km of the Order Limits and there are very few records of their presence in Lincolnshire. Most

Receptor/matter	Phase	Justification
		hedgerows within the Site were not species-rich and woodlands were not considered suitable to support foraging dormice. Dormice are therefore presumed to be likely absent within the Order Limits and across most of the district. Further details are presented in **ES Volume 3, Appendix 7.1: Preliminary Ecological Appraisal [EN010149/APP/6.3]**.
Fish and riparian mammals (including water voles/otter)	Construction, operation (including maintenance) and decommissioning	No ponds or watercourses will be lost to the Proposed Development. There will be a minimum 6m offset buffer from the perimeter fencing surrounding the Solar PV development to watercourses and ditches (where crossing is not required), as detailed in the **Design Commitments [EN010149/APP/7.4]**. The 6m buffer is considered sufficient to protect riparian vegetation, bank structure and riparian mammal burrows. Exceptions to the 6m buffer are six sections of ditches which will need culverting for internal access road bridges or are in close proximity to proposed works; locations are presented in **ES Volume 3, Appendix 7.7: Riparian Mammal and Aquatic Habitat Assessment [EN010149/APP/6.3]**. Surveys of the six ditches (anticipated to be affected by works) found that they are unlikely to hold water for most of the year and are therefore unlikely to be important for, or used by, riparian mammals or aquatic species. Mitigation measures to protect watercourses (e.g. from pollution) are documented within and secured by the **oCEMP [EN010149/APP/7.7]**, and **oDEMP [EN010149/APP/7.13]**.

Receptor/matter	Phase	Justification
		Aquatic species and riparian mammals, if present within the Order Limits, are therefore considered unlikely to be affected during construction, operation (including maintenance) or decommissioning.
Reptiles	Construction, operation (including maintenance) and decommissioning	The areas of semi-improved grassland, which were identified as being potentially suitable for reptiles (from original PEA surveys of the wider area), have been excluded from the Proposed Development (and are no longer within the Order Limits). Any reptiles present within the Order Limits would be protected from harm during construction and decommissioning by precautionary methods of works, such as a 'two stage' vegetation cut i.e. first cutting to 15cm high to allow any reptiles present to disperse out of the area, followed by a cut to ground level, as detailed in and secured by the **oCEMP [EN010149/APP/7.7]** and **oDEMP [EN010149/APP/7.13]**. They are also not anticipated to be affected during operation l due to the passive nature of operational maintenance works and maintenance of minimum 10m buffer zones from the perimeter fencing surrounding the Solar PV development (as detailed in the **Design Commitments [EN010149/APP/7.4]**). Creation of wildflower grassland and improvement of field margins, which would benefit reptiles, are documented within and secured by the **oLEMP [EN010149/APP/7.9]**.
Great crested newt	Construction, operation (including maintenance) and decommissioning	Great crested newt are considered likely absent from the Order Limits. All suitable ponds within 500m of the Order Limits tested negative for great crested

Receptor/matter	Phase	Justification
		newt eDNA (although two ponds were 'indeterminate', they were also considered likely negative due to their close proximity to other ponds which tested negative). Details of the surveys are provided in **ES Volume 1, Appendix 7.1: Preliminary Ecological Appraisal [EN010149/APP/6.3]**.
Barn owl	Operation (including maintenance)	Barn owl are not anticipated to be disturbed by operational works (including maintenance) as it is a passive development requiring minimal maintenance works. Habitat creation and improvement measures, as detailed in the **oLEMP [EN010149/APP/7.9]**, would benefit small mammals which are prey for barn owls. The embedded design will retain and improve key areas, which will provide connecting foraging habitat for barn owls across the Order Limits, as presented in **ES Volume 2, Figures 3.3A – 3.3F: Green Infrastructure Parameters [EN010149/APP/6.2]**. Informal evidence suggests that the collision risk presented by Solar PV modules to birds is low **[Ref. 7-26]**. Habitat improvement measures proposed either side of the A15 could potentially increase the frequency of barn owls crossing the A15 (flying low when hunting) and therefore increase the risk of road collision. However, hedgerow and tree planting proposed alongside the A15 would raise the flight height of barn owls when crossing the road which is anticipated to mitigate this risk. In addition, further enhancement through provision of nesting/roosting opportunities in the form of barn owl nest boxes on trees within hedges/trees/woodland will be provided

Receptor/matter	Phase	Justification
		in areas away from the A15 aiming to attract barn owls away from the vicinity of the A15 whilst hedgerows establish. This is detailed and secured in the **oLEMP [EN010149/APP/7.9]**.
Marsh harrier	Construction, operation (including maintenance) and decommissioning	No marsh harrier (*Circus aeruginosus*) were found to be nesting within the Order Limits, although they were seen occasionally foraging across the Order Limits. There is not anticipated to be a loss of foraging habitat as a result of the Proposed Development, as marsh harriers mostly hunt along field margins which will be protected by 10m buffers, as secured in the **Design Commitments [EN010149/APP/7.4].** Field margins will also be enhanced, as documented within and secured by the **oLEMP [EN010149/APP/7.9]**.
Other non-ground nesting birds	Construction, operation (including maintenance) and decommissioning	Hedgerows will be enhanced and 10m buffers from built development will sufficiently safeguard non-ground nesting birds during construction, operation (including maintenance) and decommissioning, as detailed in the **Design Commitments [EN010149/APP/7.4]** and protection of hedgerows, such as best practice pollution control measures, will be secured through the **oCEMP [EN010149/APP/7.7]** and **oDEMP [EN010149/APP/7.13]**. The 10m buffer protection of hedgerows and hedgerow trees would be maintained throughout operation and no significant disturbance effects are anticipated. Measures to improve hedgerows and field margins for non-ground nesting birds are documented within and secured by the **oLEMP [EN010149/APP/7.9]**.

Receptor/matter	Phase	Justification
Badger	Construction, operation (including maintenance) and decommissioning	All known badger (*Meles meles)* setts will be retained with an appropriate buffer (i.e. 30m buffer from main badger setts) to avoid disturbance or damage to setts. Field margins will remain as open corridors for animals to disperse and mammal gates will be installed within fences to allow badgers access into fields for foraging, as secured in the **Design Commitments [EN010149/APP/7.4]**. As badgers are highly mobile, further surveys would be carried out prior to construction and decommissioning as required. Mitigation measures to ensure safeguarding badgers and their setts, such as ensuring any open excavations are covered overnight or ramps installed should animals fall in, are documented within and secured by the **oCEMP [EN010149/APP/7.7]** and **oDEMP [EN010149/APP/7.13]**.
Brown hare, hedgehogs (and other mammals such as deer)	Construction, operation (including maintenance) and decommissioning	Field margins will remain as open corridors for animals to disperse across the Site and small gaps at the base of fences will allow brown hares (*Lepus europaeus*) and hedgehogs (*Erinaceus europaeus)* access into Fields for foraging. This is secured in the **Design Commitments [EN010149/APP/7.4]**.

Establishing baseline conditions

Data sources to inform the EIA baseline characterisation

7.4.7. The following desk study data sources have been used to understand the existing biodiversity baseline conditions (the 'study area' for data collection is detailed in **paragraph 7.4.1** above):

- A data records search was requested from Greater Lincolnshire Nature Partnership, which included a search for nationally designated sites (both statutory and non-statutory) and protected species records;

- A bird 'Data Report' from the British Trust for Ornithology (with records from 2019 to May 2023);
- Online data resources that were reviewed included:
    - Multi-Agency Geographic Information Centre **[Ref. 7-21]** for the location (and details) of international and national statutory designated sites, ancient woodland and notable habitats; and
    - Joint Nature Conservation Committee website **[Ref. 7-22]** for details of SACs and SPAs, including site information and designation details.

Site visits/surveys

7.4.8. The following site visits/surveys have been undertaken to understand the existing biodiversity baseline conditions (full details on the 'survey areas' for data collection is in **paragraph 7.4.2** above):

- A PEA survey was carried out in April and May 2022, with additional PEA surveys in January 2023 and July 2023 to encompass extension of the survey scope area. The area has since been reduced so the PEA surveys covered the whole area within the Order Limits plus a wider area. Full details of the PEA survey and species-specific survey methodology can be found in **ES Volume 3, Appendix 7.1: Preliminary Ecological Appraisal [EN010149/APP/6.3]**. The PEA surveys were undertaken to determine the broad habitat types and to identify the potential for protected and notable species;
- Badger surveys and preliminary bat roost assessments of trees and structures (barns) were also undertaken during the PEA walkover surveys detailed above. The surveys covered the same area as the PEA surveys above, i.e. the whole area within the Order Limits plus a wider area (at least 50m from the Order Limits); and
- Habitat Suitability Index survey and eDNA survey of 13 suitable ponds within the survey area (the area within the Order Limits and up to 500m beyond) for great crested newts in May 2022 and April 2023. All ponds tested negative for great crested newt eDNA. Although two ponds returned results of 'indeterminate', they were also considered likely negative due to their close proximity to other ponds which tested negative. It was considered that great crested newts are likely absent and therefore no further surveys of ponds was considered necessary. Details are set out in **ES Volume 3, Appendix 7.1: Preliminary Ecological Appraisal [EN010149/APP/6.3]**.

7.4.9. Further species or habitat specific surveys were carried out between 2022 and 2024, which comprised:

- Badger surveys were carried out during the PEA surveys in 2022 and 2023 (as detailed above) and badger activity was also updated from

further surveys, including hedgerow surveys in August 2023 and May 2024 and Ecological Clerk of Works checks of areas under ground investigations in 2023 and archaeological excavation works in 2024. Full details of the badger survey methodology can be found in **ES Volume 3, Appendix 7.10: Badger Survey - Confidential [EN010149/APP/6.3]**;

- Breeding bird surveys comprised five separate visits between March and July 2023. The survey covered the area within the Order Limits and wider area. Full details of the bird survey methodology can be found in **ES Volume 3, Appendix 7.2: Breeding Bird Survey [EN010149/APP/6.3]**;
- Nesting barn owl surveys in June 2024. The survey covered the area within, and at least 200m outside, the Order Limits. Full details of the survey methodology can be found in **ES Volume 3, Appendix 7.4: Barn Owl Survey - Confidential [EN010149/APP/6.3]**;
- Wintering bird surveys comprised three monthly visits in November 2023, December 2024 and January 2024. From analysis of the results, it was considered that a fourth survey visit in February 2024 would be unlikely to provide any further information and was therefore considered unnecessary. Full details of the survey methodology can be found in **ES Volume 3, Appendix 7.3: Wintering Bird Survey [EN010149/APP/6.3]**;
- Bat activity surveys carried out in August 2022, October 2022, April 2023, July 2023 and September 2023. Static detectors were deployed in a variety of locations across the Order Limits (in spring, summer and autumn). Full details of the bat survey methodology can be found in **ES Volume 3, Appendix 7.5: Bat Activity Survey [EN010149/APP/6.3]** and **ES Volume 3, Appendix 7.6: Bat Activity Survey Addendum [EN010149/APP/6.3]**;
- Further bat activity surveys were also carried out of targeted hedgerows, which are proposed to be removed to facilitate highways access. Static detectors were deployed in these hedgerows and connecting woodland in June, July and August 2024. Preliminary roost assessments of trees within woodland connected to the hedgerows were also carried out. Full details of the bat survey methodology can be found in **ES Volume 3, Appendix 7.13: Further Targeted Bat Activity Surveys [EN010149/APP/6.3]**;
- Riparian mammal (water vole, otter) surveys of six ditches anticipated to be affected by internal road or cable works and aquatic habitat assessment walkover surveys of connecting ditches were carried out in June 2024. The ditches were dry and not considered suitable for water vole or aquatic species so further surveys were not required. Full details of the survey methodology can be found in **ES Volume 3,**

Appendix 7.7: Riparian Mammal and Aquatic Habitat Assessment [EN010149/APP/6.3];

- Hedgerow surveys (including assessment of ecological criteria of the Hedgerows Regulations 1997 **[Ref. 7-9]**) were undertaken of hedgerows which would potentially affected by the Proposed Development (for internal access roads, highways access and potentially for cable installation). Surveys were carried out of over 100 hedgerows in July/August 2023 and May 2024 to determine ecological importance of hedgerows in the vicinity of proposed works and to inform the design to avoid important hedgerows where possible. After updates to design, in order to reduce the number of hedgerows affected, further surveys of 10 hedgerows not previously surveyed were carried out in August 2024 and then a further four hedgerows were surveyed in October 2024. Full details of the hedgerow survey methodology can be found in **ES Volume 3, Appendix 7.11: Important Hedgerow Survey [EN010149/APP/6.3]**;
- An arboricultural survey of trees within the Order Limits (and wider area) was carried out in 2023. Details are set out in **ES Volume 3, Appendix 7.12: Arboricultural Impact Assessment [EN010149/APP/6.3]**.
- Notable arable flora surveys in targeted sample cropped areas within the Order Limits were carried out in June 2024. Full details of the survey methodology can be found in **ES Volume 3, Appendix 7.8: Notable Arable Flora Survey [EN010149/APP/6.3]**; and
- Botanical survey of four LWS grassland road verges, which are proposed to be removed for highways access, were carried out in June 2024. These are: A15, Green Man Road to Cuckoo Lane LWS; A15, Slate House Farm to Dunsby Pit Plantation LWS; Temple Road Verges, Welbourn to Brauncewell; and Navenby Heath Road Verges LWS. Sections of Gorse Hill Lane LWS and Gorse Lane LWS (c.100m lengths adjacent to the Order Limits) were also surveyed as it was not known, at the time, whether these would also be affected by works. Full details of the survey methodology can be found in **ES Volume 3, Appendix 7.9: Local Wildlife Site Verges Survey [EN010149/APP/6.3]**.

7.4.10. Formal surveys for brown hare (*Lepus europaeus*) and hedgehog (*Erinaceus europaeus*) were not undertaken. However, observations of brown hare were noted during other ecological surveys.

Approach to design flexibility

7.4.11. The Project Parameters, as outlined in **ES Volume 1, Chapter 3: Proposed Development Description [EN010149/APP/6.1]**, **ES Volume 3, Appendix 3.1: Project Parameters [EN010149/APP/6.3]** and the parameter plans presented in **ES Volume 2, Figures 3.1 – 3.4**

[EN010149/APP/6.2], set out the reasonable 'worst-case' parameters for the Proposed Development.

7.4.12. **ES Volume 1, Chapter 5: Approach to the EIA [EN010149/APP/6.1]** sets out those elements of the Proposed Development for which optionality is present within the design. The reasonable 'worst-case' scenario that has been assessed in this biodiversity chapter for each element of the Proposed Development where optionality is present within the design is outlined within **Table 7.5**.

Table 7.5 Reasonable worst-case scenario assessed for biodiversity

Project element	Reasonable worst case scenario that has been assessed
Battery Energy Storage System (BESS) Springwell Substation and Main Collector Compound	This assessment has considered the maximum parameters for the location of the BESS and Springwell Substation and Main Collector Compound as outlined in **ES Volume 2, Figure 3.1: Zonal Masterplan [EN010149/APP/6.2]** to ensure a worst-case has been assessed.
Balance of Solar System (BoSS) – Inverters	The inverters which form part of the BoSS would comprise either string inverters which are placed underneath the Solar PV modules or central inverters which are sited at regular intervals amongst the Solar PV modules. A hybrid option of both options is embedded into the design and considered for the assessment. The detailed list of each field and inverter type is detailed in **ES Volume 3, Appendix 3.1: Project Parameters [EN010149/APP/6.3]** and secured in the **draft DCO [EN010149/APP/3.1]**.
Construction Compounds	This assessment has considered the maximum parameters for the location of the construction compounds as identified in **ES Volume 2, Figure 3.10: Location of Primary and Secondary Construction Compounds [EN010149/APP/6.2]**.
Satellite Collector Compounds	This assessment has considered the maximum parameters for the location of the Satellite Collector Compounds as outlined in **ES Volume 2, Figure 3.1: Zonal Masterplan [EN010149/APP/6.2]**, to ensure a worst-case has been assessed.
Cable routes	This assessment has considered the indicative cable route as presented in **ES Volume 2, Figure 3.9: Indicative Cable Crossings [EN010149/APP/6.2]** and reasonable worst-case of associated vegetation removal as outlined in **ES**

Project element	Reasonable worst case scenario that has been assessed
	Volume 2, Figure 3.11: Vegetation Removal Parameters [EN010149/APP/6.2].

Assessment assumptions

7.4.13. The assessment of the impact of the Proposed Development on biodiversity has been based on the assumptions sets out in **ES Volume 1, Chapter 3: Proposed Development Description [EN010149/APP/6.1]** and presented in full in **ES Volume 3, Appendix 3.1: Project Parameters [EN010149/APP/6.3]**, and the **Works Plans [EN010149/APP/2.3]**; and is based on embedded mitigation and additional mitigation as described in **Sections 7.6** below and **Sections 7.8** below of this chapter respectively.

7.4.14. Baseline conditions have been established from habitat and species surveys between 2022 and 2024 and other sources including referenced published data, records and web-based information obtained at the time of writing.

7.4.15. Specific assumptions and limitations relevant to each survey, including how any limitations have been overcome, are included within the relevant technical reports presented in **ES Volume 3, Appendices 7.2 - 7.13 [EN010149/APP/6.3]**. There are no known survey-specific constraints that represent a significant limitation or data gap and the baseline that has been established is suitably robust. Consequently the assessment presented in this chapter is also considered adequately robust.

Assessment methodology and criteria

7.4.16. This assessment has been undertaken in accordance with CIEEM Guidelines **[Ref. 7-18]**, as summarised below and as in accordance with **ES Volume 3, Appendix 5.1: Scoping Report [EN010149/APP/6.3].**

7.4.17. This preliminary assessment has comprised the following steps:

- Identify relevant ecological features (e.g. designated sites, habitats, species or ecosystems) that may be impacted;
- Determine the ecological importance of receptors using geographic frames of reference; and
- Provide a scientifically rigorous and transparent assessment of the likely ecological impacts and resultant effects. Impacts and effects may be positive or negative.

7.4.18. Criteria that have been taken into account when determining significance comprise:

- Duration (short-term, medium-term or long-term);
- Permanence (permanent or temporary) and changes in significance (increase or decrease); and
- Reversibility - e.g. is the change reversible or irreversible.

7.4.19. The geographic frames of reference used for this assessment to help determine the ecological importance of receptors in accordance with the CIEEM Guidelines **[Ref. 7-18]** are as follows:

- International (i.e. Ramsar Sites, SACs and SPAs) (normally within the geographic area of Europe);
- UK or national;
- Regional;
- County;
- District; and
- Local (within approximately 5km of the Site boundary).

7.4.20. The ecological importance of species populations is based on their size, recognised status (such as through published lists of species of conservation concern and designation of Biodiversity Action Plan status) and legal protection.

7.4.21. When assigning ecological importance to species populations, the following has been considered: legal protection, distribution, rarity, population trends and population size. The assessment of ecological importance relies on the professional opinion and judgment of experienced ecologists, informed by relevant population information and scientific research.

7.4.22. When assigning ecological importance to plant communities, these have been assessed in terms of their intrinsic value, habitat for supporting protected species and for supporting plants species of nature conservation concern.

7.4.23. CIEEM Guidelines **[Ref. 7-18]** requires a clear statement as to whether or not an effect is significant and at what geographical scale, for example ‘significant at the national level’.

Biodiversity Net Gain

7.4.24. The Environment Act 2021 mandatory requirement for 10% BNG **[Ref. 7-3]** does not yet apply to NSIPs like the Proposed Development until November 2025 **[Ref. 7-23]**. Although, not yet mandatory, the Applicant is still committing to achieving this as a minimum level of BNG which will be secured in the **oLEMP [EN010149/APP/7.9]**.

7.4.25. The BNG assessment is presented in **ES Volume 3, Appendix 7.14: Biodiversity Net Gain Assessment [EN010149/APP/6.3]**.

7.5. Environmental baseline

Existing baseline

7.5.1. The findings from baseline ecology surveys are detailed in **ES Volume 3, Appendices 7.1-7.13 [EN010149/APP/6.3]**. The following section presents a summary of the baseline conditions for the receptors scoped into the assessment, as detailed within **Table 7.3** above. These are:

- Four LWS affected by works;
- Hedgerows and hedgerow trees affected by works;
- Notable arable flora;
- Ground nesting birds;
- Barn owl;
- Wintering birds; and
- Bats.

Four LWS affected by works

7.5.2. Four LWS within the Order Limits will be affected by the Proposed Development as sections of these grassland road verges will need to be removed for highways access. These are:

- Green Man Road to Cuckoo Lane LWS;
- A15, Slate House Farm to Dunsby Pit Plantation LWS;
- Temple Road Verges, Welbourn to Brauncewell; and
- Navenby Heath Road Verges LWS.

7.5.3. All of the above LWS are grassland verges on the side of roads or farm tracks. Their location is presented in **ES Volume 2, Figure 7.1: Local Wildlife Sites and Areas Proposed for Vegetation Removal [EN010149/APP/6.2]**. The areas which would potentially be affected by the Proposed Development (areas lost to facilitate highways access or close to proposed works) were surveyed in June 2024.

7.5.4. All citations for the four LWS state that they are designated for and qualify as calcareous grassland with the required number of qualifying species present. The citations of these LWS are provided in **ES Volume 3, Appendix 7.1: Preliminary Ecological Appraisal [EN010149/APP/6.3]**.

7.5.5. The threshold number of qualifying species required for LWS status as calcareous grassland was met or exceeded at the sections surveyed at Navenby Heath LWS, A15 Green Man Road to Cuckoo Lane LWS, A15 Slate House Farm to Dunsby Pit Plantation LWS and Temple Road (western section only) LWS. The threshold was not met at the eastern section of Temple Road LWS. The results provide baseline information of the sections which will potentially be affected by works.

7.5.6. LWS are of **County** importance. The eastern section of Temple Road did not meet the guidelines for LWS status, which was considered likely to be due to lack of management as grassland was becoming rank, dominated by coarse grasses. However, the rest of the LWS was not surveyed and is assumed to be of **County** importance.

7.5.7. Further details on the surveys are provided in **ES Volume 3, Appendix 7.9: Local Wildlife Site Verges Survey [EN010149/APP/6.3]**.

Hedgerows and hedgerow trees

7.5.8. The baseline conditions of hedgerows across the Order Limits are detailed in **ES Volume 3, Appendix 7.1: Preliminary Ecological Appraisal [EN010149/APP/6.3]**.

7.5.9. This section details the baseline conditions of only those hedgerows which have been scoped into the assessment as affected by works - as they would need to have sections removed for highways access, internal roads and cable installation. Surveys of hedgerows which would potentially be affected by the Proposed Development were carried out in July/August 2023 and May 2024. After design updates, to reduce the number of hedgerows affected, a further 10 hedgerows were surveyed in August 2024 and then a further 4 hedgerows were surveyed in October 2024 to ensure all hedgerows which are proposed to be affected were surveyed. The majority of hedgerows surveyed were not species-rich (i.e. had less than five woody species per 30m). A total of 17 hedgerows, out of over 100 hedgerows surveyed, within the Order Limits were deemed likely to be important under the wildlife and landscape criteria of the Hedgerows Regulations 1997 **[Ref. 7-6]**. These all had at least six or more species per 30m together with other features indicative of ecological importance such as hedgerow trees, or associated bank or ditch.

7.5.10. Approximately 48 hedgerow sections are proposed to be affected by works. Ten of these hedgerows were deemed as ecologically important and a further two are historically important – being part of pre-parliamentary enclosure field systems. Details are provided in **ES Volume 3, Appendix 7.11: Important Hedgerow Survey [EN010149/APP/6.3]; ES Volume 3, Appendix 9.1: Archaeological Desk Based Assessment and Stage 1 Setting Assessment [EN010149/APP/6.3];** and locations also presented in **ES Volume 2, Figure 7.4: Important Hedgerow**

Survey and Areas Proposed for Vegetation Removal [EN010149/APP/6.2].

7.5.11. Most hedgerows were intact or relatively 'stock-proof'; however, there were also several gappy or defunct hedgerows. The woody species component was predominantly hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*). Also frequently found were field maple (*Acer campestre*), wych elm (*Ulmus glabra*), elder (*Sambucus nigra*), dog rose (*Rosa canina)* and ash *(Fraxinus excelsior).* Occasional species included dogwood *(Cornus sanguinea*), wild cherry (*Prunus avium*), wild privet (*Ligustrum vulgare*) and hazel (*Corylus avellana*). Spindle (*Euonymus europaeus*) and wayfaring tree (*Viburnum lantana*) were also found, but rarely.

7.5.12. Where present, hedgerow trees were mostly ash and common oak (*Quercus robur*). Beech (*Fagus sylvaticus*), sycamore (*Acer psueudoplatanus*) and poplar sp. (*Populus* sp.) were occasional. Other hedgerow trees less often found included sweet chestnut (*Castanea sativa*) and lime spp. (*Tilia* spp.).

7.5.13. Further details regarding hedgerow trees are provided in **ES Volume 3, Appendix 7.12: Arboricultural Impact Assessment [EN010149/APP/6.3]**.

7.5.14. Hedgerows are a priority habitat and are considered of **Local** importance.

Notable arable flora

7.5.15. Surveys of notable arable flora were carried out at sample locations within the Order Limits in June 2024.

7.5.16. Eight fields of sugar beet and maize were targeted for survey, which were within the current years rotation and relatively spread across the Order Limits. Several other field parcels were also surveyed, including a broad bean field, strips of seed and flower forage and a barley field.

7.5.17. Springwell East, which is of heavy clay loam soil type, had very few arable plant species. However, the fields surveyed in Springwell Central and Springwell West were of a lighter, more friable calcareous soil type which had substantially more arable wildflower species. Springwell East is not considered of importance for arable flora. However, Springwell West and Springwell Central are considered of **County** importance for arable flora.

7.5.18. Of the species recorded, four are listed as Near Threatened or Vulnerable on the Botanical Society of Britan and Irelands Vascular Plant Red List for England of Threatened Species **[Ref. 7-39]**:

- Stinking Chamomile (*Anthemis cotula*) – Vulnerable;

- Hound's-tongue (*Cynoglossum officinale*) – Near Threatened;
- Night-flowering Catchfly (*Silene noctiflora*) – Vulnerable; and
- Wild Pansy (*Viola tricolor*) – Near Threatened (although widespread in Lincolnshire).

7.5.19. Details of the notable arable flora survey and methods are presented in **ES Volume 3, Appendix 7.8: Notable Arable Flora Survey [EN010149/APP/6.3]**.

Ground nesting birds

7.5.20. From the breeding bird surveys undertaken between March and July 2023, the area within the Order Limits is considered of at least **County** importance for the farmland bird assemblage present as it supports a range of ground nesting species including skylark (*Alauda arvensis*), corn bunting (*Emberiza calandra*), quail (*Coturnix coturnix*) and grey partridge (*Perdix perdix*); all of which have undergone significant declines in recent decades.

7.5.21. A single curlew (*Numenius arquata*) was seen on three occasions flying over the Site to and from a likely nesting location within RAF Digby. Curlew were not found to be breeding within the Order Limits, although they may occasionally use grassland or stubble within the area for foraging.

7.5.22. Further details of the breeding bird surveys and results are detailed in **ES Volume 3, Appendix 7.2: Breeding Bird Survey [EN010149/APP/6.3]**.

Barn owl

7.5.23. Barn owl (*Tyto alba*) were observed during the breeding bird surveys and considered likely to be nesting near the Order Limits (as detailed in **ES Volume 3, Appendix 7.2: Breeding Bird Survey [EN0101149/APP/6.3]**).

7.5.24. A barn owl survey was subsequently carried out in June 2024. No breeding barn owl were identified within 200m of the Order Limits, although barn owl pellets were found in [redacted] adjacent to the Order Limits, [redacted] across the Site for [redacted]. Full results are detailed in **ES Volume 3, Appendix 7.4: Barn Owl Survey - Confidential [EN010149/APP/6.3]**.

Wintering birds

7.5.25. Wintering bird surveys were undertaken in November 2023, December 2023 and February 2024.

7.5.26. A total of 67 bird species were identified to be wintering within the Site, of which 40 species are specially protected or notable. Populations of

individual species, grey partridge and stock dove (*Columba oenas*) were considered of **County** importance, with corn bunting considered of **District** importance. The remaining species were assessed as having been present in numbers of no more than **Local** importance. Based on the diversity of species recorded, the wintering birds found within the Order Limits are considered of **District** importance.

7.5.27. No qualifying species of the Wash SPA were recorded using the Site during the survey, with a single flyover Pink-footed goose (*Anser brachyrhynchus*) flock being the only qualifying species observed. As a result, in conjunction with the large distance between the Site and the SPA (c.35km), it was not considered likely that the area within the Order Limits and surrounding area is functionally linked to the Wash SPA. Further details are provided in the **HRA No Significant Effects Screening Report [EN010149/APP/7.17]** which is submitted in support of the DCO Application.

7.5.28. Further details regarding the wintering bird survey are provided in **ES Volume 3, Appendix 7.3: Wintering Bird Survey [EN010149/APP/6.3]**.

Bats

7.5.29. Bat activity surveys, using static bat detector deployments in a variety of locations across the Site, were undertaken in 2022 and 2023. Survey aims were to sample bat activity over as much of the Site as possible. Once proposed design details were available, further bat activity surveys were targeted on those hedgerows which were likely to be impacted. Connecting woodlands were also surveyed to assess importance for bats and any potential roosting sites. These further targeted bat surveys were undertaken between June and August 2024.

7.5.30. The bat activity surveys recorded a high diversity of species across the across the Proposed Development area with at least 10 of the 12 species considered to be present within Lincolnshire having been positively identified. The majority of activity was from common pipistrelle *(Pipistrellus pipistrellus)* and soprano pipistrelle *(Pipistrellus pygmaeus).* Barbastelle (*Barbastella barbastellus*) was the third most frequently recorded species. Other species included *Myotis* spp, Leisler's (*Nyctalus leisleri*), noctule (*Nyctalus noctule*), brown-long-eared (*Plecotus auritus*) and Nathusius' pipistrelle (*Pipistrellus nathusii*).

7.5.31. The *Myotis* genus were not counted separately during data analysis due to the similarity and overlapping parameters of their calls. However, the data analysis software is designed to work at a species level, and the following species were assumed to be present; Daubenton's (*Myotis daubentoniid)*, Natterer's (*M. nattereri)* and whiskered/Brandt's (*M. mystacinus / m. brandtii)*.

7.5.32. In line with the Bat Mitigation Guidelines (2023) **[Ref. 7- 24]**, the assemblage of species within this geographic region of the UK could be considered of **National** importance. The Site could be of **Regional** importance for barbastelle and of **Local** importance for the remaining species identified.

7.5.33. Significantly more calls were recorded in August 2022 (during the bat breeding season); therefore, bats could be using mature trees or buildings within the Order Limits for breeding or at least breeding nearby and using the area within the Order Limits during the breeding season for foraging and commuting.

7.5.34. Several hedgerow trees across the Site had features suitable for roosting bats. Barns adjacent to the Order Limits could also be used for roosting. Trees and barns with bat roosting potential are presented in **ES Volume 3, Appendix 7.1: Preliminary Ecological Appraisal [EN010149/APP/6.3]**.

7.5.35. Detailed results of the bat surveys are provided in **ES Volume 3, Appendix 7.5: Bat Activity Survey**; **Appendix 7.6: Bat Activity Survey Addendum** and **Appendix 7.13: Further Targeted Bat Surveys [EN010149/APP/6.3]**.

Future baseline in the absence of the Proposed Development

7.5.36. This section considers those changes to the baseline conditions described above that might occur during the time period over which the Proposed Development will be in place. It considers changes that might occur naturally in the absence of the Proposed Development being constructed.

7.5.37. The habitat within the Order Limits is largely arable farmland, cropped on rotation, with some improved grassland and grass leys, bordered by hedgerows, arable field margins and wet and dry ditches. In the short to medium term, in the absence of the Proposed Development, these habitats would likely continue to be intensively managed as farmland which would provide potential habitat for species such as ground-nesting breeding birds. The distribution of some species may change in response to cropping patterns, whilst the assemblages would likely remain the same.

7.5.38. In the longer term (equivalent to the 40 year per phase) in the absence of the Proposed Development, broad habitat types would likely continue under agricultural management. The majority of existing habitats are likely to continue being present, although some changes in habitat extent, composition and structure would occur as a result of ecological succession, such as the establishment of tree and shrub seedlings. These resultant gradual changes in habitat composition are unlikely to materially alter the ecological baseline and therefore the habitats and species present are very unlikely to undergo significant change.

7.5.39. Long-term climatic predictions suggest that warmer, wetter, winters and drier summers will become more frequent, with more extreme weather events likely. This may affect the type of crops grown and when combined with climate change may lead to an increase in the population and distribution of some species identified, but conversely a decrease in other species. However, no significant changes to the baseline are envisaged in the short-term.

7.5.40. Any changes to the baseline between now and the future scenario have been taken into account in the assessment and when determining mitigation measures.

7.5.41. Irrespective of whether the Proposed Development was to proceed or not, the current trend is for a decline in species diversity and abundance, caused by national trends and in response to intensive agricultural practices and climate change.

7.6. Mitigation embedded into the design

7.6.1. This assessment has been based on the principle that measures have been 'embedded' into the design of the Proposed Development to remove potential significant effects as far as practicable, for example by the considered placement of infrastructure. **ES Volume 1**, **Chapter 3: Proposed Development Description [EN010149/APP/6.1]** and **ES Volume 3**, **Appendix 3.1: Project Parameters [EN010149/APP/6.3]** and the **Design Commitments [EN010149/APP/7.4]** identify measures that has been embedded into the design of the Proposed Development. The embedded mitigation aims are to successfully integrate the Proposed Development within the context of the existing landscape and prevent or reduce any adverse effects on ecological features.

7.6.2. Embedded mitigation measures relevant to the biodiversity assessment are detailed in **Table 7.6** below. These measures are secured within the **Design Commitments [EN010149/APP/7.4]**.

Table 7.6 Embedded mitigation relevant to biodiversity

Embedded mitigation measure relevant to biodiversity	Function	Securing mechanism
Perimeter fencing surrounding the Solar PV development will be offset at least 6m either side from all existing	Maintaining 6m buffer strips from ditches will retain vegetation connectivity, help to stabilise ditch banks and help provide protection from pollution such as run–off. It will also maintain the	**Design Commitments [EN010149/APP/7.4]**

Embedded mitigation measure relevant to biodiversity	Function	Securing mechanism
ditches where crossing is not required.	vegetated watercourse corridor habitat for riparian mammals and nesting birds.	
All woodland will be retained. Perimeter fencing surrounding the Solar PV development will be offset at least 15m from existing woodlands.	15m is considered sufficient to protect tree root protection area of woodlands. Standing advice recommends a buffer zone of at least 15m from the boundary of ancient woodland to avoid root damage **[Ref. 7-20]**.	**Design Commitments [EN010149/APP/7.4]**
Perimeter fencing surrounding the Solar PV development will be offset at least 10m either side from all existing hedgerows.	A 10m buffer is considered sufficient to avoid the root protection area of hedgerows and hedgerow trees. This buffer also provides a 10m wide wildlife corridor across the Order Limits, providing vegetated cover for foraging and dispersal. The wide buffers from linear field boundaries will maintain bat flight lines across the landscape. Nesting birds using the hedgerows or bats roosting in hedgerow trees would have a 10m buffer from any works disturbance.	**Design Commitments [EN010149/APP/7.4]**
Perimeter fencing surrounding the Solar PV development will be offset 30m from main badger setts	Large main badger setts can extend up to 30m underground. A 30m buffer from works would avoid damage to the setts and reduce disturbance.	**Design Commitments [EN010149/APP/7.4]**
Perimeter fencing will permit the passage of wildlife, either through a clearance at ground	Mammal gates and clearance gaps under fences will allow animals, such as badgers and brown hare, to fully access areas under	**Design Commitments [EN010149/APP/7.4]**

Embedded mitigation measure relevant to biodiversity	Function	Securing mechanism
level or via mammal gates. Perimeter fencing surrounding the Solar PV development will not be constructed through existing hedgerows or across ditches where practicable.	Solar PV modules for foraging and to allow dispersal across the area. The 10m wide buffer zone between fences and hedgerows/field margins will also allow animals such as deer to disperse across the area.	
Built development above ground will be offset at least 20m from Local Wildlife Sites except for highways improvement works.	To minimise any impacts to Local Wildlife Sites	**Design Commitments [EN010149/APP/7.4]**
A 4m high acoustic barrier will surround the BESS compound and 6m high absorbent acoustic barrier will be positioned to the west, north and east faces of the Springwell Substation transformers. These will be grey or green in colour.	This would help attenuate high frequency noise which could impact foraging bats.	**Design Commitments [EN010149/APP/7.4]**
There will be no permanent (continuous) lighting for security purposes except for at emergency exits. CCTV system will include passive infra-red detectors around the Solar PV development to reduce the use of lighting.	During operation (including maintenance) and construction, the lighting design would limit impact on sensitive receptors. The use of lighting only when necessary and directing lighting downward, away from boundaries and vegetation, would reduce impact to bats and other nocturnal species such as badgers, foxes and otter.	**Design Commitments [EN010149/APP/7.4]** and **oCEMP [EN010149/APP/7.7]**

Embedded mitigation measure relevant to biodiversity	Function	Securing mechanism
Lighting sensors will be implemented around the Springwell Substation and BESS compound.		
Creation of approximately 100 hectares (ha) of grassland consisting of calcareous grassland (Springwell Central and Springwell West) and neutral grassland (Springwell East). This will be managed by a late summer hay cut and removal of arisings and/or late summer/autumn grazing.	To provide open nesting habitat for ground nesting birds to compensate for habitat lost due to placement of Solar PV modules and improve habitat and carrying capacity for ground nesting birds. The species-rich grassland created will also likely boost invertebrate diversity, providing new foraging and commuting habitat for bats, birds and brown hare across the landscape. Strategic planting locations and grouping fields together will facilitate management and provide habitat connectivity across the landscape. Wildflower areas would be created adjacent to existing LWS extending the area of habitat and provide legacy meadow creation. Wildflower sowing on lower grade agricultural land would improve successful establishment by reducing domination from competitive species. Arable to grassland reversion would reduce soil erosion, protect watercourses from	**oLEMP [EN010149/APP/7.9]**

Embedded mitigation measure relevant to biodiversity	Function	Securing mechanism
	sedimentation run-off and cause reduction in use of herbicides and pesticides.	
Create new calcareous grassland adjacent to existing LWS verges	To provide compensation and improvement for loss of sections of the LWS verges due to proposals for highways access and internal roads. The new grassland areas would be created adjacent to the LWS but set back from the road within the buffer between the field edge and the security fence by scraping back to limestone and using 'green hay' as a local seed source and allowing vegetation to recolonise.	**oLEMP [EN010149/APP/7.9]**
Provision of a winter seed source for birds along a proportion of the field margins (between security fence and field boundary) in Springwell Central (triangle of land between the A15 and the B1191)	To compensate for loss of foraging habitat (open, arable habitat lost due to placement of Solar PV modules) and to improve foraging for wintering birds – as this is where the majority of farmland birds have been recorded from surveys and also supported scare arable flora. Details of survey findings are presented in **ES Volume 3, Appendix 7.2: Breeding Bird Survey [EN010149/APP/6.3]** and **ES Volume 3, Appendix 7.8: Notable Arable Flora Survey [EN010149/APP/6.3** respectively.	**oLEMP [EN010149/APP/7.9]**

Embedded mitigation measure relevant to biodiversity	Function	Securing mechanism
In Springwell Central (triangle of land between the A15 and the B1191), each year a third of the field margins (the space between the security fencing and the field boundary) will be sown with winter bird seed whilst 1/3 will be cultivated and left bare in the autumn and 1/3 will be cultivated and left bare in the spring. This process will be repeated on rotation so each year there will be provision of winter seed source and exposure of bare ground in both the spring and autumn.	To improve habitat for scarce arable flora. The triangle of land between the A15 and the B1191 was shown to support a number of scarce arable plant species, some require spring cultivation and others autumn cultivation, the cultivation being exposure of bare ground. It is likely that the cultivation and sowing of winter bird seed may also benefit scarce arable flora as no herbicide will be used.	**oLEMP [EN010149/APP/7.9]**
Creation of tussocky grassland across field margins (excluding the margins identified above for winter bird seed and arable flora)	Creation of tussocky grassland which can be left unmanaged for 3-5 years. This will provide habitat for invertebrates, reptiles, amphibians, small mammals and birds (such as grey partridge and foraging habitat for barn owl).	**oLEMP [EN010149/APP/7.9]**
Creation of neutral grassland with wildflowers along field margins	Creation of neutral grassland field margins with wildflowers would increase floristic diversity and consequently increase invertebrate diversity and abundance. An increase in invertebrate diversity and abundance will provision a foraging source for birds and bats.	**oLEMP [EN010149/APP/7.9]**

Embedded mitigation measure relevant to biodiversity	Function	Securing mechanism
Creation of legume-rich grassland under and between Solar PV modules.	Creation of legume (clovers, vetches etc) rich grassland will increase floristic diversity and consequently increase invertebrate diversity and abundance. An increase in invertebrate diversity and abundance will provision a foraging source for birds and bats.	**oLEMP [EN010149/APP/7.9]**
Strategic areas for new tree and hedgerow planting. Improvement of existing hedgerows by bolstering with a diversity of appropriate native species and 'gapping-up' where required.	Strategic planting to compensate for hedgerows lost, improve retained hedgerows and to improve foraging, nesting/roosting habitat for birds and bats.	**oLEMP [EN010149/APP/7.9]**

7.7. Assessment of likely effects (without additional mitigation)

Construction

Four LWS affected by works

7.7.1. Sections of four LWS grassland road verges would need to be removed during the construction phase for highways access, either to create passing bays or to create highways access for internal access roads with visibility splays. The sections proposed to be removed are listed below and presented in **ES Volume 2, Figure 7.1: Location of Local Wildlife Sites and Areas Proposed for Vegetation Removal [EN010149/APP/6.2]**:

- Navenby Heath Road Verges LWS: total of c.78m length of grassland verge proposed to be removed for cable, internal access track and highways access (25m to be removed on south side and 53m to be removed on north side of the road);
- A15 Green Man Road to Cuckoo Lane LWS: total of c.334m length of grassland verge proposed to be removed from western side of the A15 to create a visibility splay for highways access to Gorse Hill Lane;

- A15 Slate House Farm to Dunsby Pit Plantation LWS: total of c.34m length proposed to be removed to improve visibility for highways access at the A15/B1191 junction; and
- Temple Road Verges, Welbourn to Brauncewell LWS: total of c.93m in length of grassland verge (in sections of 43m + 25m + 25m) proposed to be removed for passing bays on both sides of the road and highways access.

Hedgerows and hedgerow trees

7.7.2. Hedgerows would need to have sections removed for installation of cables, internal roads and highways access including passing bays and visibility splays. A total of c.1,249m of hedgerow is proposed to be removed during construction. The locations of the sections of hedgerows affected are shown in **ES Volume 2, Figure 7.4: Important Hedgerows and Areas Proposed for Vegetation Removal [EN010149/APP/6.2]**.

Notable arable flora

7.7.3. During construction, notable arable flora and their habitat could be destroyed or damaged due to ground disturbance, for example during installation of Solar PV modules.

Ground nesting birds

7.7.4. The Proposed Development would result in loss of large open arable fields used for nesting and foraging by ground nesting birds and disturbance during the construction phase. The Solar PV Development covers an area of c. 594ha, much of which is used by ground nesting birds depending on cropping regime.

Barn owl

7.7.5. If nesting near to the Site, barn owls could be disturbed by construction works.

Wintering birds

7.7.6. The construction of the Proposed Development would result in loss of foraging habitat for wintering birds and disturbance.

Bats

7.7.7. Construction activities could potentially disturb roosting, commuting and foraging bats, particularly higher frequency noise **[Ref. 7-27]**. However, noise and vibration from construction activity is not considered likely to significantly disturb bats due to its temporary nature in any one location, siting distance of compounds, and a minimum of 10m buffer zones from

any woodlands, hedgerows or trees; and because higher frequency noise quickly attenuates over distance. Bats could also be disturbed by lighting during construction.

7.7.8. Gaps of 10m or more in linear features such as hedgerows could affect some species of bats' foraging and commuting behaviour **[Ref. 7-25]**. Although the vast majority of hedgerows and field boundaries would be protected by a 10m buffer from works (as secured in the **Design Commitment [EN010149/APP/7.4]**), an estimated 48 sections of hedgerow would be affected by proposed cable installation, internal access and highways access. All of the sections affected would require removal of at least 10m lengths of hedgerow (areas of vegetation removal proposed are presented in **ES Volume 2, Figure 7.4: Important Hedgerow Survey and Areas Proposed for Vegetation Removal [EN010149/APP/6.2]**). Whilst some of these hedgerows already have gaps of more than 10m and/or are poorly connected to other hedgerows in the landscape, most are intact and well-connected and are therefore likely to be important for bats.

7.7.9. Approximately six ditches would be crossed by cable or internal trackways (c.7m width). As these ditch crossings are less than 10m wide, fragmentation of this linear habitat is not likely to impact foraging or commuting behaviour of bats.

7.7.10. There would be a potential loss of roosting habitat if any trees suitable to support roosting bats require removal during construction to accommodate the infrastructure. However, trees which have been identified with bat roost potential from preliminary bat surveys have been avoided in the design, as presented in **ES Volume 2, Figure 7.2: Bat Ground Level Tree Assessment and Areas Proposed for Vegetation Removal [EN010149/APP/6.2]**.

Operation (including maintenance)

Hedgerows and hedgerow trees

7.7.11. Where possible, hedgerows would be re-instated by replanting as soon as practicable after construction. However, those sections which would need to be removed for internal tracks or highways access for operation (including maintenance) would need to be re-created elsewhere within the Order Limits. This would ensure there would be no net loss.

7.7.12. New hedgerow planting is proposed in strategic locations across the Site. This is estimated as c.15,563m of new hedgerow and 16ha of new tree shelterbelts.

Ground nesting and wintering birds

7.7.13. Operational works would be relatively small scale and localised which is not anticipated to cause significant visual or noise disturbance to ground nesting and wintering birds.

7.7.14. Breeding bird survey data, detailed in **ES Volume 3, Appendix 7.2: Breeding Bird Survey [EN010149/APP/6.3]**, was used to estimate the number of skylark *(Alauda arvensis)* territories that would require compensation due to the placement of Solar PV modules. Skylarks were the most abundant ground nesting bird species found within the Order Limits and was therefore used as a proxy for all ground nesting species. These data were used to estimate the area and quality of habitat required to mitigate for effects on ground nesting birds in key, open and connected areas which will be retained and improved as part of the embedded design. This will also benefit wintering birds.

7.7.15. The embedded mitigation to compensate for habitat loss will be the creation of c.100ha of calcareous and neutral grassland managed for the benefit of ground nesting and wintering birds, which will be in key open and connected areas. The area of land set aside for embedded mitigation is smaller than the area which would be developed. However, the proposed area and retained areas for habitat creation and improvement have been estimated as sufficient to support the number of territories that would be lost, by increasing the carrying capacity and quality of nesting and foraging habitat for ground nesting birds.

7.7.16. As well as embedded mitigation to compensate for habitat loss, there will also be improvement measures to increase both invertebrate and seed biomass for foraging ground and other bird species. These will include:

- Three options applied to margins within each field within the Order Limits:
  - Sowing and creation of tussocky grass field margins;
  - Sowing of wild bird food (seeds etc during winter months);
  - Sowing and creation of neutral grassland field margins with wildflowers.
- Option applied to the land underneath the Solar PV modules:
  - Creation of legume rich grassland.
- New hedgerow and tree planting.

Bats

7.7.17. Reason & Wray **[Ref. 7-24]** notes "*Large solar farms are an example where effects such as prey concentration may interact with other factors such as landscape configuration (lack of linear features) to influence the*

composition of species in an area. This is a complex area which requires more research, but needs to be taken into account in impact assessment."

7.7.18. There is limited research and no common consensus on the impacts of solar farms on bats; however, studies in other countries and a more recent UK study by Tinsley *et al.* in 2023 **[Ref. 7-32]** suggests that there are several potential impacts following the installation of the Solar PV modules. This study found that overall, solar developments had an adverse effect on the abundance of some bat species, although the effects differed between bat species and also differed between hedgerow boundaries and open field, and there was no difference in bat species richness (i.e. the number of species) between solar and control sites. Whilst there have been some criticisms of the study including how sites were matched for pairing and how 'mature' the solar farms were, the findings did suggest there could be an adverse impact of solar farms on bats activity within those farms.

7.7.19. A study by Szabadi et al. (2023) **[Ref. 7-34]** in Hungary surveyed the activity of bats at solar farms and in the neighbouring habitats (forests, grasslands, arable fields, settlements and watersides) to evaluate the effects of solar farms on the occurrence and activity of bats and on the composition of bat communities. They found that bat species detected at solar farms also frequently occur in arable land and settlements, such as noctule and Pipistrellus species. This suggests that certain bat species which are adapted to anthropogenic environments (such as the arable land within the Order Limits) will exploit solar farms.

7.7.20. Solar panels can horizontally polarize light and reflect sound in a similar way to water. This may lead to bats mistaking panels for waterbodies when echolocating, encouraging them to attempt to drink from the panel surfaces, which can cause collisions and potential injuries **[Ref. 7-31].** However, studies have also found that bats tend to land on the panels to drink rather than colliding (i.e. non-fatal interaction) and that they also show signs of learnt behaviour by eventually avoiding the panels following several unsuccessful drinking attempts **[Ref. 7-31; Ref. 7-33]**.

7.7.21. Collision between bats and Solar PV modules could be a potential adverse effect if tall or vertical panels interrupt flight paths **[Ref. 7-30]**. However, the Solar PV modules are proposed to be up to 3.5m high and tilted, which would provide an effective preventative measure **[Ref. 7-30; Ref. 7-31]** as most bats fly higher than 3.5m.

7.7.22. Research on the impacts of noise on bats, and the extent to which bats could be disturbed whilst roosting, foraging or commuting is in its infancy **[Ref. 7-26]**, although some data is now available for construction activities **[Ref. 7-24]**. Bats could be disturbed during the operational (including maintenance) phase from high frequency 'electrical' noise, potentially emitted from the BESS and from electricity inverters. Noise associated

with the Proposed Development is assessed in **ES Volume 1, Chapter 12: Noise and Vibration [EN010149/APP/6.1]**. However, the higher frequencies of noise attenuate more quickly with distance and are also blocked more easily as they do not diffract or bend over any barriers, unlike low frequency noise.

7.7.23. There is currently no known data on noise level attenuation specifically relating to the distance of BESS and inverters from receptors. However, the BESS is proposed to be located at least 300m from woodland at Gorse Hill Covert and at least 40m away from the nearest western hedgerow boundary. Most of the noise from the BESS is low frequency noise from the cooling systems which are outside of the units. The higher frequency noise associated with the electricity sounds are generated by the BESS units internally. A 4m high acoustic barrier will be installed around the BESS which would reduce noise further, notably those sounds at higher frequency which are more likely to be within the bats' audible range. High frequency noise levels emitted from the BESS are therefore considered unlikely to be significant at or adjacent to the hedgerow and woodland boundaries in the vicinity.

7.7.24. Bat activity survey data detailed within **ES Volume 3, Appendices 7.5, 7.6 and 7.13 [EN010149/APP/6.3]** indicate that there is unlikely to be any significant bat roosts within [redacted] or hedgerows in the vicinity of the BESS. The hedgerows and woodland in the vicinity of the BESS are therefore likely to be used by foraging and commuting bats rather than by roosting bats.

7.7.25. Inverters are located at different locations across the Order Limits. Many are in-field and those that are near field boundaries would lie outside of the minimum 10m buffer zone from boundaries. The inverters are relatively small structures and therefore noise would be emitted from small, localised points, which would be attenuated over a much shorter distance compared to noise emitted from the BESS (a much larger area). Although several hedgerow trees support potential roost features for bats, none of these trees identified with potential for communal bat roosts are located within 40m of the proposed locations of inverters. Details of the ground level tree assessment for bats is presented in **ES Volume 3, Appendix 7.1: Preliminary Ecological Appraisal [EN010149/APP/6.3]**.

7.7.26. Although the specific levels of high-frequency noise on field boundary receptors is not known, it is anticipated that bats would not be significantly affected due to attenuation over the distances between inverters and field boundaries, which is where most bats will be foraging and commuting. In the event that a particular boundary feature becomes less attractive to bats, the extensive network of hedgerows would provide alternative commuting routes for bats.

7.7.27. Operational maintenance works would be relatively small scale and localised and are not anticipated to cause significant disturbance. Works would be carried out in daylight hours, except in an emergency. The lighting design would limit impact on bats and other sensitive receptors by directing lighting downward and away from the Order Limit boundaries and existing vegetation. During operation (including maintenance), no part of the Proposed Development would be continuously lit, except for emergency exits; manually operated and motion detection lighting would be used for operational and security purposes. Passive infra-red detectors would be implemented around Solar PV modules, and lighting sensors implemented around the Springwell substation and BESS compound. Therefore, lighting would not impact retained habitats such as woodland and hedgerows or any bats using such habitats.

7.7.28. Solar sites with adequate mitigation could improve habitat for bats. Froidevaux *et al.* (2019) found that improvements to hedgerows and field margins had a positive effect on bat abundance and species diversity **[Ref. 7-29]**. The Proposed Development has embedded mitigation designed to support bats including buffer zones and improvement measures to ensure boundary habitat is maintained and improved in area and diversity. New tree and hedgerow planting, wildflower grassland creation, field margin improvements and legume-rich grassland treatments underneath Solar PV modules would deliver an overall BNG during the operational (including maintenance) phase, once these habitats are fully established. As well as reduced herbicide and pesticide use, these changes are anticipated to be beneficial for foraging and commuting bats.

7.7.29. In summary, although there is limited evidence on which to base an informed assessment (e.g. whether short-term or long-term effects), it is noted using the precautionary principle (as per CIEEM Guidelines **[Ref. 7-18]**) that changes to the habitat due to the placing of Solar PV modules could potentially adversely affect some bat species using both hedgerows and open fields across the Order Limits.

Decommissioning

7.7.30. The Proposed Development is assumed to be operational for a period of 40 years per phase. Decommissioning would involve the removal of all Solar PV infrastructure, including the Ground Mounted Solar PV Generating Stations, Satellite Collector Compounds, Springwell Substation, BESS and ancillary infrastructure, including any on-site compounds.

7.7.31. Temporary decommissioning compounds would be created to house necessary plant and equipment and provide areas for parking for site staff. These would be removed upon completion of the decommissioning phase.

7.7.32. It is assumed that all concrete, hardstanding areas, foundations for the infrastructure and any internal tracks would be removed to a depth of up to 1m. It is assumed that all the below-ground cables will be left in situ.

7.7.33. Decommissioning would include removing any permissive paths and the land will be returned to the landowner. Landscape structural planting, including tree planting, hedgerows, scrub, etc., created to deliver biodiversity mitigation and enhancement associated with the Proposed Development would be left *in situ* when the Site is handed back to landowners, except for the planting within Tb2, which will be removed to facilitate the releveling and removal of the earth bund to allow the field to be returned to agricultural use. Otherwise, it is assumed that the landowner would return the land to agricultural use when it is handed back.

7.7.34. The effects of the decommissioning phase on notable arable flora, ground nesting birds, barn owl, wintering birds and bats are anticipated to be similar to, or of a lesser magnitude than, the potential effects generated during the construction phase (refer to the 'construction' section above). However, there can be a high degree of uncertainty regarding likely effects during decommissioning, as engineering approaches and technologies will evolve over the operational life of the Proposed Development, and assumptions have therefore been made where appropriate.

7.8. Additional mitigation

7.8.1. This section details the proposed additional mitigation measures for the receptors scoped into the assessment. Additional mitigation for other habitats and species, to avoid, prevent, reduce or offset environmental effects during the construction, operation (including maintenance) and decommissioning phases of the Proposed Development, are detailed in the **oCEMP [EN010149/APP/7.7]**, **oLEMP [EN010149/APP/7.9], oOEMP [EN010149/APP/7.10]** and **oDEMP [EN010149/APP/7.13]** respectively.

Construction

Four LWS affected by works, hedgerows, hedgerow trees and notable arable flora

7.8.2. The **oCEMP [EN010149/APP/7.7]** set out the control measures that will be implemented during construction to protect LWS, hedgerows, hedgerow trees, notable arable flora and other important habitats from potential construction related effects, including dust deposition, air pollution, pollution incidents and water quality, would be provided through the adoption of construction industry good practice and environmental protection legislation during construction.

Ground nesting and wintering birds

7.8.3. The **oCEMP [EN010149/APP/7.7]** will detail control measures for vegetation clearance, which would avoid the main nesting bird period (March to August inclusive) where possible. Any vegetation clearance or ground clearance proposed within the nesting bird period would be checked for the presence of any nests by a suitably experienced ecologist within 48 hours prior to vegetation removal or ground clearance. If active nests are found, appropriate buffer zones will be put in place and the area monitored until the young birds have fledged. Cleared ground would be maintained in a disturbed state in the run up to construction commencing to minimise the risk of ground nesting birds attempting to nest.

7.8.4. The **oCEMP [EN010149/APP/7.7]** details pollution and noise control measures to mitigate habitat degradation and protect areas retained for farmland and wintering birds. These retained and protected areas would provide undisturbed areas for nesting and foraging.

7.8.5. Habitat creation and improvement measures for ground nesting and wintering birds are documented within and secured by the **oLEMP [EN010149/APP/7.9]**.

Barn owl

7.8.6. Construction activities have the potential to disturb breeding barn owls, if breeding within c.200m of the Order Limits. Barn owls are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) **[Ref. 7- 2]** and are protected against disturbance when they are nesting and/or have dependent young. Surveys for barn owl would be undertaken in advance of construction works commencing, as secured through the **oCEMP [EN010149/APP/7.7]**. Suitable measures, including appropriate buffers from nests during the breeding season, would be delivered to ensure disturbance is avoided in line with the relevant legislation.

7.8.7. Provision of barn owl nest boxes installed in suitable locations (i.e. not near the A15) on trees within hedges, trees or woodland, would provide nesting/roosting opportunities. A variety of other bird nest boxes, including tree sparrow nest boxes, would also be installed to provide improved nesting opportunities for other non-ground nesting birds. Habitat creation and improvement measures for birds, including barn owls, is documented and secured through the **oLEMP [EN010149/APP/7.9]**.

Bats

7.8.8. The **oCEMP [EN010149/APP/7.7]** details control measures to mitigate potential construction-related effects including potential disturbance from light, noise and vibration.

7.8.9. Where construction lighting is required, it will conform to best practice guidelines with respect to minimising light spill into adjacent habitats to prevent disturbance to bats. Throughout construction, the use of motion detection or manually operated lighting would be used to avoid constant lighting and the inward/downward direction of light would avoid light spill on to adjacent hedgerows, woodlands, field margins and wet ditches, which are likely to be used by bats and other nocturnal animals. Security lighting would use infra-red which should not affect bats.

7.8.10. For 'key' hedgerows that are connected to other hedgerows, watercourses or woodland, do not already have gaps of more than 10m wide, and/or where sections of 10m or more in length are proposed to be removed, mitigation would be required in the bat activity season (April to October) to maintain linear connectivity for foraging/commuting bats. This would involve the temporary installation of structures in hedgerow gaps mimicking the hedgerow which bats could use for echolocation when commuting e.g. a double row of 'heras' type fencing with camouflage type netting on top or filled with brash; or shrubs/trees in movable planters every 5m. This mitigation would be installed immediately after hedge removal (if in the bat activity season April to October) and left in place until works are completed. If the mitigation needs to be removed for works such as construction traffic access, the mitigation would be re-instated at the end of each day and retained until any new or replacement hedgerow is sufficiently established as an effective flightline. These mitigation measures are secured in the **oCEMP [EN010149/APP/7.7]**.

7.8.11. Preliminary bat roost assessment surveys of trees were carried out during the PEA surveys (as detailed in **ES Volume 3, Appendix 7.1: Preliminary Ecological Appraisal [EN010149/APP/6.3]** and presented in **ES Volume 2, Figure 7.2: Bat Ground Level Tree Assessment and Areas Proposed for Vegetation Removal [EN010149/APP/6.2**]). No trees that were identified with bat roost potential are anticipated to be directly affected by works, due to avoidance in embedded design. Trees that have been identified with bat roost potential will be protected by a buffer of 10m for hedgerow trees and 15m for woodland, as secured through the **Design Commitment [EN010149/APP/7.4]**. However, if it is found that any trees with bat roost potential would experience direct impacts, they would be surveyed to determine presence/or likely absence of a roost. Any loss of a confirmed bat roost would be mitigated and compensated under a European Protected Species licence from Natural England.

7.8.12. A variety of bat boxes would be installed in suitable locations within hedges, on trees or in woodland to improve roosting opportunities. Hedgerow and tree planting measures required to mitigate impacts to bats and provision of bat boxes to improve roosting opportunities are documented within and secured by the **oLEMP [EN010149/APP/7.9]**.

Operation (including maintenance)

Hedgerows and hedgerow trees

7.8.13. Appropriate management of created and improved hedgerows and hedgerow trees would be required for a period of at least 30 years as a BNG requirement to ensure successful establishment and condition. This is detailed in the **oLEMP [EN010149/APP/7.9]**.

Ground nesting and wintering birds

7.8.14. The appropriate habitat management regimes to achieve quality nesting habitat and an increase in bird foraging habitat are documented within and secured by the **oLEMP [EN010149/APP/7.9]**. Once habitats are established during the operational (including maintenance) phase, it is predicted that the Proposed Development will be able to deliver a net gain in habitats required to support a diverse breeding farmland bird assemblage of ground nesting, non-ground nesting birds and wintering birds similar to that currently present.

Bats

7.8.15. Bats are not anticipated to be disturbed the during the operational (including maintenance) phase as it is a passive development. As discussed in **Section 7.7** no part of the Site would be continuously lit, except for emergency exits, and the lighting would be designed to mitigate impact to bats and other nocturnal species.

Decommissioning

7.8.16. Measures to mitigate and manage decommissioning related effects on notable arable flora, ground nesting birds, barn owl, wintering birds, bats and their habitats are detailed and secured in the **oDEMP [EN010149/APP/7.13]**. This includes measures to prevent air, water, light and noise pollution and avoid disturbance.

7.8.17. During decommissioning, prior to the removal of above ground infrastructure, cleared ground and grassland would be maintained in a disturbed state to minimise the risk of ground nesting birds attempting to nest. Update surveys where required (for example for barn owl and badgers), would be undertaken in sufficient time in advance of works to ensure that appropriately timed mitigation can be carried out.

7.9. Assessment of residual effects (with additional mitigation)

Construction

Four LWS affected by works

7.9.1. As detailed in **Section 7.7**, sections of four LWS grassland road verges would need to be removed during the construction phase for highways access, either to create passing bays or to create highways access for internal access roads with visibility splays.

7.9.2. The total length of the four LWS grassland verges proposed to be removed is c. 539m, which is less than c.5% of the total length of the LWS affected and is therefore a relatively small proportion of the LWS affected. These grassland road verges are already fragmented intermittently by existing road junctions and as they are important for their grassland habitat type there is not anticipated to be an effect on the structure/function or conservation status of the LWS due to fragmentation at this scale.

7.9.3. New calcareous grassland field margins are proposed to be created to compensate for any LWS calcareous grassland lost (by scraping soil back to bare limestone substrate and using green hay harvested from LWS grassland verges as seed). However, this calcareous grassland habitat creation will take time to develop and is not anticipated to be beneficial during the construction phase.

7.9.4. LWS are of **County** importance. There is anticipated to be a temporary, medium-term adverse effect from a small amount of habitat loss during the construction phase until the new calcareous grassland field margins, as compensation, become fully established. This is considered to be an adverse effect at the **Local** level and **not significant**.

Hedgerows and hedgerow trees

7.9.5. As detailed in **Section 7.7**, an estimated 48 sections of hedgerow would be affected by cable and internal access track crossings or highways access, including visibility splays and passing bays. Ten of these hedgerows were deemed likely to be ecologically important and a further two are historically important (as detailed in **paragraph 7.5.10**).

7.9.6. The total loss of hedgerow across the Order Limits is estimated as c.1,249m.

7.9.7. After cable installation and access track completion, the hedgerows would be re-instated by planting appropriate like-for-like species, as soon as possible after works. For internal tracks and highways access works, new hedgerows would be planted along new highway boundaries and visibility

splays as soon as possible after works. There would therefore be no long-term net hedgerow loss. However, this compensatory habitat will take time to develop (*c.* 10 years for new hedgerows to fully mature) and is not anticipated to be beneficial during the construction phase.

7.9.8. Hedgerows are of **Local** importance. There is anticipated to be a temporary, medium-term adverse effect on hedgerows due to habitat loss during the construction phase. This is considered to be an adverse effect at the **Local** level and **not significant**, as the loss would be temporary.

Notable arable flora

7.9.9. During ground works, there would be a relatively short period of time when notable arable flora could potentially be impacted or would not be able to establish due to ground disturbance, such as during installation of Solar PV modules. However, as noted in **ES Volume 3, Appendix 7.8: Notable Arable Plant Survey [EN010149/APP/6.3]**, when surveyed in June 2024, the vast majority of notable arable flora were found around the edges of fields in the untreated c.1m wide strip adjacent to the field margins.

7.9.10. Therefore due to the 10m buffer proposed between the Proposed Development and field margins, the majority of notable arable flora are unlikely to be affected. Notable arable flora are mostly annuals and require a degree of ground disturbance (usually provided by cultivation) to prevent being outcompeted by dominant plant species. These species are therefore adapted to quickly regenerate from the seed bank, once ground disturbance works have been completed and the topsoil is re-instated appropriately, as detailed in the **oCEMP [EN010149/APP/7.7]** and **oSMP [EN010149/APP/7.11].**

7.9.11. Notable arable flora within Springwell West and Springwell Central are considered of up to **County** importance. Taking into account the embedded design and additional mitigation measures to minimise the impact of construction activities, there is not anticipated to be **no significant effect** on the conservation status of notable arable flora during construction.

Ground nesting birds

7.9.12. The Proposed Development would result in loss of large open arable fields used for nesting and foraging by ground nesting birds and disturbance during the construction phase.

7.9.13. Key, open and connected areas would be retained and improved for ground nesting birds to compensate for nesting and foraging habitat lost during construction. Measures to manage and improve mitigation areas retained for ground nesting birds are documented within the **oLEMP [EN010149/APP/7.9]**. Although this habitat creation would take time to

establish, it is anticipated that ground nesting birds would utilise the improved habitat relatively quickly.

7.9.14. Although there would be some temporary loss of foraging and nesting habitat and disturbance during construction works, the significant areas of large open fields and boundary features which would be retained will help mitigate in the short-term for the loss of other areas and whilst mitigation areas develop. The surrounding farmland outside of the Order Limits would also continue to support a similar breeding bird assemblage. Taking into account additional mitigation to minimise the adverse effects of construction activities, it is considered that the existing ground nesting bird assemblage would be maintained.

7.9.15. Ground nesting birds are considered of **County** importance. The adverse effect of habitat loss and disturbance during construction is considered to be temporary and short-term at the **Local** level and **not significant**.

Barn owl

7.9.16. Construction activities have the potential to disturb breeding barn owl, if breeding within c.200m of the Order Limits. Barn owl is a sensitive breeding species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) **[Ref. 7-2]**.

7.9.17. Surveys for barn owl would be undertaken in advance of construction works commencing, where required, and suitable measures, including appropriate buffers from nests during the breeding season, would be delivered to ensure disturbance is avoided in line with the relevant legislation.

7.9.18. Barn owl foraging habitat would not be affected as field margins, watercourses and woodlands would be retained and protected with suitable buffers, pollution control measures and any lighting mitigated.

7.9.19. Barn owl are considered of **Local** importance. With embedded mitigation and suitable additional mitigation measures as secured through the **oCEMP [EN010149/APP/7.7]** and **oLEMP [EN010149/APP/7.9]**, any adverse effects on barn owl during construction are anticipated to be **not significant**.

Wintering birds

7.9.20. The Proposed Development would result in disturbance and loss of habitat for wintering birds during the construction phase due to the placement of Solar PV modules.

7.9.21. The same key areas to be retained for ground nesting birds would also provide wintering bird habitat. These areas would be improved to compensate for habitat lost. Measures to implement and manage

mitigation areas retained for wintering birds are documented within and secured by the **oLEMP [EN010149/APP/7.9]**.

7.9.22. Although there would be some temporary loss of foraging habitat and disturbance during construction works, the significant areas of large open fields and boundary features which would be retained and protected during construction, will help mitigate in the short-term for the loss of other areas and whilst mitigation areas develop. The surrounding farmland outside of the Order Limits would also support a similar wintering bird assemblage. Taking into account additional mitigation to minimise the adverse effects of construction activities, it is considered that the existing wintering bird assemblage would be maintained.

7.9.23. Wintering birds are considered of **District** importance. The adverse effect of habitat loss and disturbance during construction is anticipated to be temporary and short term at the **Local** level and **not significant**.

Bats

7.9.24. As detailed in **Section 7.7** above, no trees that were identified with bat roost potential are anticipated to be directly affected by works, due to avoidance in embedded design. Trees that have been identified with bat roost potential will be protected by a buffer of 10m for hedgerow trees and 15m for woodland. However, as discussed in **Section 7.8** above, if it is found that any trees with bat roost potential would be affected, they would be surveyed to determine presence/or likely absence of a roost. There would be no significant effect on the conservation status of bats as any loss of bat roosts would be mitigated and compensated under a European Protected Species licence from Natural England. Embedded and additional mitigation measures would avoid or mitigate disturbance to bats from lighting and noise during construction.

7.9.25. Fragmentation of bat habitat resulting from removal of sections of hedgerow 10m wide or more could affect foraging and commuting behaviour of some bat species **[Ref. 7-25]**. This could result in bats being isolated from a roost or important foraging grounds, or from seasonal resources such as swarming and hibernation sites. Alternative commuting routes may cover greater distances, requiring the bats to expend more energy and potentially reduce their fitness. Increased energetic costs could affect district or regional populations of several species if routes to swarming and wintering sites are fragmented at the landscape level **[Ref. 7-24]**. Some bat species have been found to be highly faithful to their respective core foraging areas and will use the same routes from their roosts each night to access them **[Ref. 7-28]**. For example, barbastelle have been found to leave their roosts early where they have tall double, overhanging hedgerows next to their roost which they can use as cover. This enables them to reach their core sustenance zone as early as

possible giving them time to access sufficient food resource before dawn **[Ref. 7-28]**.

7.9.26. The sections of hedgerow to be removed for highways access, internal access tracks and cable installation would all create gaps of at least 10m during the construction phase. Proposals to construct c.6m wide culverts across six ditches for internal access roads are not anticipated to affect bats.

7.9.27. Further targeted bat surveys of hedgerows which are proposed to be removed for highways access and internal access roads were carried out between June and August 2024. The bat species assemblage identified using the hedgerows was similar in terms of species and relative abundance when compared with previous surveys of the wider area within the Order Limits. Nearly 3% of bat activity was from barbastelle. Barbastelle are generally associated with woodlands and therefore are most likely to be using hedgerows and other field boundaries across the Order Limits for commuting to access woodlands adjacent to the Order Limits or further afield where they can forage and roost. Barbastelle are less affected by gaps of 10m in hedgerows and can commute freely across large open areas **[Ref. 7-32]**. However, other bat species which tend to be low flying like *Myotis* spp. or brown long-eared bats (which were c.4% and c.1% respectively of bat activity identified) are likely to be affected by gaps of 10m or more created in the hedgerows. The relatively low number of bat passes which were recorded around expected emergence times did not indicate that there were likely to be any significant communal bat roosts for any bat species near to where hedgerow removal works are proposed. Further details are presented in **ES Volume 3, Appendix 7.13: Targeted Bat Activity Surveys [EN010149/APP/6.3]**.

7.9.28. Re-instatement planting with appropriate hedgerow species would be carried out as soon as possible after construction works in the correct planting season. It is anticipated that bats would be able to use the re-instated hedgerows once sufficient vegetation has established, which is considered likely to be before hedgerows are fully mature. Internal access roads once constructed would be only 6m wide. Therefore after gaps in hedgerows have been re-instated and new planting has established there should be no long-term adverse effect on bats from hedgerow fragmentation.

7.9.29. To avoid adverse impact to foraging and commuting bats during the construction phase, the **oCEMP [EN010149/APP/7.7]** details mitigation required in the bat activity season (April to October) to maintain hedgerow connectivity. As discussed in **Section 7.8** above, this involves the temporary placing of structures in gaps of key hedgerows.

7.9.30. The assemblage of bats within the Order Limits is considered as verging on **National** importance **[Ref. 7-24]** because of its species richness, although the likely low numbers of some bat species would suggest **Regional** importance is more accurate. Given the relatively high barbastelle activity, the fact that this species was recorded across the Order Limits and the significant peak in August around the maternity season, the Site is considered of **Regional** importance for barbastelle. However, for the remaining species of bats identified, the Site is only considered of **Local** importance. Further details are discussed in **ES Volume 3, Appendix 7.5: Bat Activity Survey [EN010149/APP/6.3]**.

7.9.31. Despite the importance of the assemblage outlined above, taking into account the embedded design and additional mitigation measures to mitigate disturbance and mitigate the effects of hedgerow loss/fragmentation as discussed above, adverse effects on bats during construction are anticipated to be at the **Local** level and **not significant**.

Operation (including maintenance)

Hedgerows and hedgerow trees

7.9.32. The planting of new hedgerows, hedgerow trees and ‘gapping-up’ of currently poor condition hedgerows has been embedded within the design of the Proposed Development. Native hedgerow would be planted to compensate for any quantities lost with like-for-like or otherwise appropriate species. New planting would also increase the amount of hedgerow and trees and improve the existing hedgerow within the Order Limits. The total amount of new hedgerow planting proposed within the Order Limits is c.15,563m, which is more than 12 times the amount of 1,249m hedgerow proposed to be removed. In addition, 16ha of new tree belts are proposed. The hedgerows would be retained and managed throughout operation, as documented and secured through the **oLEMP [EN010149/APP/7.9]**.

7.9.33. Hedgerows are of **Local** importance. A beneficial long-term effect on the amount of hedgerow is anticipated once fully established during the operational (including maintenance) phase. This beneficial effect is considered to be at the **Local** level and **significant**.

Ground nesting birds

7.9.34. Operational works would be relatively small scale and localised which is not anticipated to cause significant visual or noise disturbance to ground nesting birds.

7.9.35. As detailed in **Section 7.7** above, habitat creation and habitat management regimes are anticipated to enhance the quality of nesting habitat and increase bird foraging habitat. These measures are

documented within and secured by the **oLEMP [EN010149/APP/7.9]**. Once habitats are established during the operational (including maintenance) phase, it is predicted that the Proposed Development will be able to deliver a net gain in habitats required to support a diverse breeding farmland bird assemblage of ground nesting and non-ground nesting birds similar to that currently present.

7.9.36. Ground nesting birds are considered of **County** importance. With embedded design and additional mitigation measures, there is anticipated to be a long-term beneficial effect in quantity of foraging habitat and quality of nesting habitat once fully established during the operational (including maintenance) phase. This beneficial effect is considered to be at the **Local** level and **significant**.

Wintering birds

7.9.37. Habitat creation and improvement for ground nesting birds, as detailed above, would similarly be beneficial for wintering birds. The retention of significant areas of large open fields and creation of open wildflower grassland are anticipated to mitigate for wintering bird habitat lost, and improvement of field margins and grassland treatments under Solar PV modules would improve foraging habitat. In addition, further improvement through tree and hedgerow planting and the provision of nesting/roosting opportunities in the form of a variety of bird boxes (including tree sparrow boxes) within hedges, trees or woodland will be provided while these habitats develop.

7.9.38. Once habitats are fully established during the operational (including maintenance) phase, it is predicted that the Proposed Development will be able to deliver a net gain in habitats required to support a diverse wintering assemblage similar to that currently present, but at an increased population size and the overall impact will be beneficial.

7.9.39. Wintering birds are considered of **District** importance. With embedded design and additional mitigation measures, there is anticipated to be a long-term beneficial effect in quantity and quality of foraging and roosting habitat once fully established during the operational (including maintenance) phase. The beneficial effect is considered to be at the **Local** level and **significant**.

Bats

7.9.40. As discussed in **Section 7.7** above, although there is limited evidence on which to base an informed assessment (e.g. whether short-term or long-term effects), it is noted using the precautionary principle (as per CIEEM Guidelines **[Ref. 7-18]**) that changes to the habitat due to the placing of Solar PV modules could potentially adversely affect some bat species

using both hedgerows and open fields across the Order Limits during the operational (including maintenance) phase.

7.9.41. Bats within the Order Limits are verging on **National** importance. However, taking into account the embedded design, secured through the **Design Commitment [EN010149/APP/7.4]**, and additional mitigation measures secured in the **oCEMP [EN010149/APP/7.7]** and **oLEMP [EN010149/APP/7.9]**; and once created and improved habitats have fully established, the potential adverse effect on bats is considered to be at the **Local** level and **not significant**.

Decommissioning

7.9.42. The residual effects of the decommissioning phase on notable arable flora, ground nesting birds, barn owl, wintering birds and bats are anticipated to be similar to, or of a lesser magnitude than, the residual effects generated during the construction phase (refer to the 'construction' section above). However, there can be a high degree of uncertainty regarding residual effects during decommissioning, as engineering approaches and technologies will evolve over the operational life of the Proposed Development, and assumptions have therefore been made where appropriate.

7.9.43. The Proposed Development would be reinstated in accordance with the **oDEMP [EN010149/APP/7.13]** and the subsequent detailed DEMP, as secured by a requirement to the DCO.

7.10. Opportunities for enhancement

7.10.1. Opportunities for environmental enhancement in relation to biodiversity are detailed in the **Design Approach Document [EN010149/APP/7.3]** and have not been considered within this assessment.

7.10.2. The BNG assessment is presented in **ES Volume 3, Appendix 7.14: Biodiversity Net Gain Assessment [EN010149/APP/6.3]**.

7.11. Monitoring requirements

7.11.1. The effect of bats' use of solar farms is uncertain due to lack of research. Therefore, monitoring of bat activity would be undertaken during the operational (including maintenance) phase to understand the effectiveness of the embedded mitigation and the effect of Solar PV Modules on bats. This is documented and secured in the **oLEMP [EN010149/APP7.9]**.

7.11.2. This monitoring would involve bat activity surveys, following the same method as the surveys already undertaken to inform this assessment (i.e. static bat detectors deployed in similar locations in spring, summer and autumn to enable comparison to the baseline data). These surveys would

be carried out following completion of construction in years 1, 3, 5 and 10. The need for any further monitoring would then be reviewed.

7.11.3. The results of each bat monitoring survey visit would be compiled into a monitoring report. The monitoring data would be compared with the baseline bat activity data and any differences in bat activity across the whole Site would be assessed. The report would detail any actions or adaptive management practices required where appropriate, which would be actioned before the next monitoring survey visit where possible.

7.11.4. For BNG, monitoring is required for habitats created or enhanced for a period of at least 30 years **[Ref 7-23]**. Monitoring of habitats and species to assess and inform management are detailed in the **oLEMP [EN010149/APP/7.9]**.

7.11.5. Best practice monitoring requirements to avoid harm to habitats and species, such as nesting bird checks, badger checks and pollution prevention control measures, are also documented and secured within the **oCEMP [EN010149/APP/7.7]**, **oLEMP [EN010149/APP/7.9]** and **oDEMP [EN010149/APP/7.13]**.

7.12. Difficulties and uncertainties

7.12.1. This assessment is based on the baseline information of which there are no known difficulties or uncertainties of significance that are considered would affect the validity of the baseline study/survey findings. Specific assumptions and limitations relevant to each survey, including how any difficulties and/or uncertainties have been overcome, are included within the relevant technical reports presented in **ES Volume 3, Appendices 7.1 - 7.13 [EN010149/APP6.3]**.

7.12.2. The baseline surveys could be valid for up to three years if there have been no significant changes to habitats within the Order Limits, although this would depend on species. An ecologist would need to review, undertake a site visit and potentially update desk study information in order to review the validity of the reports **[Ref. 7-35]**.

7.13. Summary

7.13.1. A summary of this assessment is presented in **Table 7.7**. The sensitivity of each receptor is identified alongside any relevant embedded mitigation and the potential effects that could arise on those receptors. Any proposed additional mitigation measures are stated, and the magnitude of impact and residual effects then assessed. Finally, any monitoring requirements are stated where applicable.

Table 7.7 Assessment summary

Receptor	Importance of the receptor	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Residual effect (with additional mitigation)	Monitoring requirement
Key: + = positive, - = negative, D = direct, I = indirect, ST = short-term, MT = medium-term, LT = long-term, P = permanent, T = temporary						
Four LWS affected by works: Navenby Heath Road Verges LWS; A15 Green Man Road to Cuckoo Lane LWS; A15 Slate House to Dunsby Pit Plantation LWS; and Temple Road LWS	County	Creation of calcareous grassland field margins to compensate for sections of LWS grassland road verges lost.	Adverse effect of habitat loss during construction phase.	**oCEMP [EN010149/APP/7.7]** **oLEMP [EN010149/APP/7.9]**	**Local level** **(-) (D) (MT) (T)** **Not significant**	N/A

Receptor	Importance of the receptor	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Residual effect (with additional mitigation)	Monitoring requirement
Four LWS affected by works: Navenby Heath Road Verges LWS; A15 Green Man Road to Cuckoo Lane LWS; A15 Slate House to Dunsby Pit Plantation LWS; and Temple Road LWS	County	Creation of wildflower grassland, hedgerow and tree planting adjacent to LWS to improve biodiversity of edge habitat and connectivity.	Beneficial effect once new habitats are fully established (during operational (including maintenance) phase) by creation of biodiverse connecting buffer zones around LWS.	**oCEMP [EN010149/APP/7.7]** **oLEMP [EN010149/APP/7.9]**	**Local level** **(+) (I) (LT)** **Not significant**	N/A
	County	20m offset buffer zones (except for four LWS where sections need to be removed for highways access below).	Potential adverse effect of habitat degradation during construction.	**oCEMP [EN010149/APP/7.7]**	**No effect** on structure/function or conservation status **Not significant**	N/A

Receptor	Importance of the receptor	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Residual effect (with additional mitigation)	Monitoring requirement
Hedgerows and hedgerow trees	Local	Most hedgerows would be protected by 10m buffer, except for c. 48 sections totalling c.1,249m in length which need to be removed for internal access and cables.	Adverse effect of hedgerow loss during construction for internal roads, highways access and cables.	**oCEMP [EN010149/APP/7.7]** **oLEMP [EN010149/APP/7.9]**	**Local level** **(-) (D) (MT) (T)** **Not significant**	N/A
	Local	Re-instatement hedgerow planting to compensate for hedgerows lost plus additional hedgerow planting totalling 15,563m of hedgerow plus	Beneficial net gain in quantity and condition of hedgerows, across the Order Limits, once new hedgerow and tree planting is fully established (during the	**oCEMP [EN010149/APP/7.7]** **oLEMP [EN010149/APP/7.9]**	**Local level** **(+) (D) (LT)** **Significant**	N/A

Receptor	Importance of the receptor	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Residual effect (with additional mitigation)	Monitoring requirement
		16ha of new tree belts to provide an overall net gain in quantity and condition of hedgerows.	operational (including maintenance phase).			
Notable arable flora	County	10m buffer from field boundaries	Killing of individual plants and damage to habitat during construction.	**oCEMP [EN010149/APP/7.7]**	**No Significant effect**	N/A
Notable arable flora	County	Targeted areas retained and managed for arable wildflowers. Herbicides not used except for spot treatment of injurious weeds.	Beneficial effect of habitat improvement in areas which are managed for notable arable flora and also from reduced use of herbicides throughout the operational	**oCEMP [EN010149/APP/7.7]** **oLEMP [EN010149/APP/7.9]**	**Local level (+) (D) (LT) (T) Significant**	N/A

Receptor	Importance of the receptor	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Residual effect (with additional mitigation)	Monitoring requirement
			(including maintenance) phase.			
Ground nesting birds	County	Strategic areas are to be retained and improved for ground nesting birds.	Habitat loss and disturbance during construction phase (until created and improved habitats have established).	**oCEMP [EN010149/APP/7.7]** **oLEMP [EN010149/APP/7.9]**	**Local level** **(-) (D) (ST) (T)** **Not significant**	N/A
	County	Habitat creation and improvement to compensate for habitat loss during construction and additional improvement	Beneficial effect, once habitats have fully established during the operational (including maintenance) phase, due to	**oCEMP [EN010149/APP/7.7]** **oLEMP [EN010149/APP/7.9]**	**Local level** **(+) (D) (I) (LT)** **Significant**	N/A

Receptor	Importance of the receptor	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Residual effect (with additional mitigation)	Monitoring requirement
		measures to increase the amount of foraging habitat for birds.	provision of compensatory nesting habitat and an overall BNG in foraging habitat.			
Wintering birds	District	Strategic areas are to be retained and improved for wintering birds (as well as for ground nesting birds).	Adverse effect of habitat loss and disturbance during construction (until new and improved habitats have established).	**oCEMP [EN010149/APP/7.7]** **oLEMP [EN010149/APP/7.9]**	**Local level** **(-) (D) (ST) (T)** **Not Significant**	N/A
	District	Habitat creation and improvement to increase foraging and roosting habitat. Also provision of	Beneficial effect, once habitats have fully established during the operational (including	**oCEMP [EN010149/APP/7.7]** **oLEMP [EN010149/APP/7.9]**	**Local level** **(+) (D) (I) (LT)** **Significant**	N/A

Receptor	Importance of the receptor	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Residual effect (with additional mitigation)	Monitoring requirement
		a variety of bird nest boxes.	maintenance) phase, due to overall BNG in wintering bird foraging and roosting habitat.			
Barn owl	Local	Strategic areas are to be retained and improved for barn owls.	Adverse effect of disturbance during construction.	**oCEMP [EN010149/APP/7.7]** **oLEMP [EN010149/APP/7.9]** Including provision of barn owl nest boxes.	**No effect** on structure/function or conservation status **Not significant**	N/A
	Local	Strategic areas are to be retained and improved for barn owls.	Beneficial effect once new and improved habitats have established during the operational (including	**oCEMP [EN010149/APP/7.7]** **oLEMP [EN010149/APP/7.9]** Including provision of barn owl nest boxes.	**Local level** **(+) (D) (I) (LT)** **Not significant**	N/A

Receptor	Importance of the receptor	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Residual effect (with additional mitigation)	Monitoring requirement
			maintenance) phase.			
Bats	National	Extensive areas are to be retained and improved plus reduced use of herbicides and pesticides and strategic new hedgerow and tree planting.	Habitat change from installation of Solar PV modules could potentially adversely affect some species of bat. Although there is also anticipated to be a beneficial effect due to overall BNG in connected, foraging and roosting habitat, once habitats have fully established.	**oCEMP [EN010149/APP/7.7]** **oLEMP [EN010149/APP/7.9]** Bat boxes installed on trees in key locations to improve roosting opportunities.	**Local level** **(-)** **Not significant**	Bat activity surveys (carried out in spring, summer and autumn) would be repeated in years 1, 3, 5 and 10. The need for any further monitoring would then be reviewed.

Receptor	Importance of the receptor	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Residual effect (with additional mitigation)	Monitoring requirement
	National	Trees with potential bat roost features have been avoided by design. 10m buffer from hedgerows; 6m buffer from watercourses and 20m buffer from woodland. The BESS is at least 40m from nearest hedgerow and will have a 4m high acoustic barrier. Inverters are at least 10m from field boundaries. Lighting	Adverse effect of disturbance from lighting, noise, vibration during construction and operation (including maintenance).	**oCEMP [EN010149/APP/7.7]**; **oLEMP [EN010149/APP/7.9];** details mitigation strategy to avoid disturbance.	**No Significant effect** on structure/function or conservation status	N/A

Receptor	Importance of the receptor	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Residual effect (with additional mitigation)	Monitoring requirement
		designed to mitigate impact to bats.				
Bats	National	Hedgerows would be protected by minimum 10m buffer, except for sections which need to be removed for access roads and cables. Hedgerow re-instatement and new planting would compensate for hedgerow lost. Internal access tracks would only be 6m wide	Adverse effect on commuting and foraging behaviour due to fragmentation of hedgerows during construction until hedgerows are re-instated.	**oCEMP [EN010149/APP/7.7]**: Provision of temporary 'in-fill' of hedgerow gaps during construction. Bat boxes installed on trees in key locations to improve roosting opportunities as detailed in **oLEMP [EN010149/APP/7.9].**	**Local level** **(-) (D) (ST) (T)** **Not Significant**	N/A

Receptor	Importance of the receptor	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Residual effect (with additional mitigation)	Monitoring requirement
		so there would be no long-term fragmentation effect on bats.				

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