

Tillbridge Solar

PEI Report Volume II Appendix 3-2: Outline Landscape and Ecology Management Plan
(LEMP)

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1. Introduction

1.1 Background

- 1.1.1 This Outline Landscape and Ecology Management Plan (LEMP) has been prepared on behalf of Tillbridge Solar Ltd (the Applicant) in relation to the its application for development consent for the construction, operation and decommissioning of ground mounted solar photovoltaic (PV) panel arrays to generate electricity, a Battery Energy Storage System (BESS) and infrastructure to export and import electricity to the national electricity transmission network (the Scheme). The Scheme is described in more detail in **PEI Report Volume I Chapter 3: Scheme Description**.
- 1.1.2 This Outline LEMP forms part of the Preliminary Environmental Information (PEI) Report for the Scheme, providing a framework for achieving the outline design, as presented on the Indicative Site Layout on **PEI Report Volume III Figure 3-1**, including the successful establishment and future management of biodiversity and landscaping works. It sets out high-level measures and practices that will be implemented by the Applicant to establish, monitor and manage landscape and ecological mitigation and enhancement (including biodiversity net gain (BNG)) measures embedded in the design of the Scheme. The latter will be achieved through habitat creation over and above that used for habitat mitigation.
- 1.1.3 The Outline LEMP has been prepared based upon the information available to the Applicant as of March 2023. It is a live document that will continue to be updated and refined based on ongoing discussions between the Applicant, statutory bodies and relevant stakeholders. An updated version of the Outline LEMP will be submitted with the DCO application for the Scheme. Detailed landscaping and ecological management plans will be developed post-consent and approved by the relevant local planning authority. They will be required to be substantially in accordance with this Outline LEMP.

1.2 The Scheme Boundary

- 1.2.1 The Scheme Boundary is located approximately 5km to the east of Gainsborough and approximately 13km to the north of Lincoln. The area within and surrounding the Scheme Boundary is primarily a rural setting, comprising open agricultural fields with sparse areas of woodland and villages.
- 1.2.2 There are two main areas within the Scheme Boundary:
- The 'Principal Site', which is the location where ground mounted solar PV panels, electrical sub-stations and BESS will be installed; and
 - The 'Cable Route Corridor', which will comprise the underground electrical infrastructure required to connect the Principal Site to national transmission system.

The Principal Site

- 1.2.3 The Principal Site is described below, with further details available in the following reports:

- **PEI Report Volume I Chapter 9: Ecology and Nature Conservation;**
 - **PEI Report Volume I Chapter 12: Landscape and Visual Amenity;**
 - **PEI Report Volume II Appendix 9-2: Preliminary Ecological Appraisal;** and
 - **PEI Report Volume II Appendix 9-3: Aquatic Ecology Baseline Report.**
- 1.2.4 The Principal Site is located to the south of Harpswell Lane (A631), to the west of Middle Street (B1398), largely to the north of Kexby Road, and to the east of Springthorpe. It covers an area of approximately 1,400ha and is located entirely within the administrative area of West Lindsey District Council.
- 1.2.5 The topography is largely low-lying and relatively flat, with the exception of the west-facing scarp slope of Lincoln Cliff that runs roughly north-south along the eastern edge of the Principal Site.
- 1.2.6 The Principal Site is dominated (around 90% of the total surveyed area) by arable land, with woodlands and small wooded copses comprising around 1.6% of the total area. Woodland is predominantly broadleaved and semi-natural, with some plantation and mixed woodland. A very small area (<0.1%) of scrub was recorded. No Ancient Woodland is located within the Principal Site.
- 1.2.7 The arable land is divided into largely medium-scale fields, generally bounded by hedges that total around 35 km in length. These hedges are mainly species-poor, comprising around 30 km in total. Some hedges include trees, but hedges are also absent along certain field boundaries, particularly towards the east of the Principal Site.
- 1.2.8 Areas of grassland are dominantly poor semi-improved and improved (1.9% and 1% of the total area respectively), with a single field (7 ha or 0.5%) of semi-improved neutral grassland. Poor semi-improved grassland, alongside game bird margins, were recorded along the edges of some arable fields.
- 1.2.9 Field boundaries frequently comprise ditches, with around 13.5km recorded within the survey area, many of which were dry at the time of survey. These flow into watercourses within the catchments of the River Till, Fillingham Beck and Eau de Source of North Beck. Surveys have indicated that watercourses generally exhibit low habitat diversity and water quality pressures, with sedimented and reduced flows; and biodiversity value limited by shading, high levels of eutrophication and prolonged periods of drying and modification. Surveys of the small number of ponds in the Principal Site indicate poor water quality and high levels of organic enrichment.
- 1.2.10 Built form is limited within the Principal Site, being restricted to scattered, often isolated farms with associated outbuildings and hardstanding. A network of farm tracks and occasional surfaced routes link fields, farmsteads and adopted roads. In addition to the A631, two rural, unclassified single-track roads run east-west across the Principal Site (Common Land and Kexby Road), with School Lane located to the north west corner. A single Public Right of Way (PRoW) is located within the Principal Site Boundary: a bridleway running approximately 500m, extending south from Kexby Road. Aside from the roads and this bridleway, there is no public access within the Principal Site.

- 1.2.11 There are no international, national, regional, or locally designated nature conservation sites within the Principal Site. Within a 10km radius of the Principal Site, there are a number of statutory designated nature sites, including Sites of Special Scientific Interest (SSSIs). The nearest is Lea Marsh SSSI, located to the south of Gainsborough and approximately 6km west of the Principal Site; and Cliff House SSSI, located approximately 6km to the north east on the A15.
- 1.2.12 An Area of Great Landscape Value (AGLV), referenced in Central Lincolnshire Local Plan Policy S62, runs partly within and to the east of the Principal Site, with a small area of the designation identified for ecological mitigation to the south of Harpswell. There are no other areas designated on account of landscape value within the Principal Site.
- 1.2.13 The majority of the Principal Site is located within Agricultural Land Classification (ALC) Grade 3b land, although there are some isolated areas of Grade 3a land. Surveys to determine the ALC of all land within the Principal Site are ongoing.

The Cable Route Corridor

- 1.2.14 The Principal Site will be connected to Cottam National Grid sub-station located at the decommissioned Cottam Power Station in Nottinghamshire via the Cable Route Corridor. The Cable Route Corridor is approximately 16km long (the approximate distance between the Principal Site and Cottam National Grid sub-station). It has not been subject to detailed surveys in relation to biodiversity, water quality and landscape / visual matters at the time of this report preparation. Once the design of the Cable Route Corridor has been refined and access is granted, these surveys will be undertaken and will be reported as part of the Environmental Statement.
- 1.2.15 The majority of the Cable Route Corridor is of a broadly similar character to the Principal Site, comprising mainly arable fields in low-lying or gently undulating agricultural land. The Cable Route Corridor crosses the River Trent, where it is round 80-100m wide within the Scheme Boundary; and a gentle north-south oriented ridge east of the village of Marton. The western termination, at the decommissioned coal fired power station and a small operational gas turbine facility, includes areas of restored land associated with the power station.
- 1.2.16 There are no international, national or regional nature conservation sites within the Cable Route Corridor, however, locally designated nature conservation sites are present. The nearest SSSIs are Ashton's Meadow SSSI, which is located 1.3km west of the Cable Route Corridor, and Lea Marsh SSSI, located to the south of Gainsborough approximately 5.2km northwest of the Cable Route Corridor.
- 1.2.17 Several areas of National Forest Inventory designation are present within the Cable Route Corridor or adjacent to it.
- 1.2.18 There are no areas designated on account of landscape value within the Cable Route Corridor.

2. Purpose of this Document

- 2.1.1 The purpose of this Outline LEMP is to set out the measures proposed to:
- Mitigate the effects of the Scheme on landscape and biodiversity features, including through maintenance and monitoring;
 - Enhance the biodiversity, landscape and green infrastructure value of the Scheme Boundary, including with reference to BNG; and
 - Secure compliance with relevant national and local planning policies.
- 2.1.2 The Scheme has been designed, as far as is practicable and based on initial available survey data, to avoid or reduce effects on landscape/visual amenity and biodiversity features. This has been through siting of Scheme components such as solar panels, substations and access routes in locations away from sensitive ecological features; and where impacts on visual amenity (such as views from residential receptors) and valued landscape elements will be minimised. Indicative areas of planting have also been included, in order to reduce visual effects and mitigate impacts on landscape and ecological features; with further areas to provide ecological and landscape/green infrastructure enhancement.
- 2.1.3 The design also includes measures to avoid impacts on protected species to ensure compliance with legislation (see **PEI Report Volume I Chapter 9: Ecology and Nature Conservation** and **PEI Report Volume I Chapter 12: Landscape and Visual Amenity**).
- 2.1.4 This document outlines the landscape and biodiversity impact avoidance measures that will be implemented prior to, and during, construction, operation and decommissioning of the Scheme, as well as the habitat restoration, enhancement, management and monitoring measures to be implemented once the Scheme is operational. Implementation of these measures is proposed to be secured by a Requirement of the draft DCO requiring detailed LEMP(s) to be produced substantially in accordance with the Outline LEMP that will be submitted with the application. These detailed LEMPs will also be required to be submitted to and approved by the relevant authority(ies).
- 2.1.5 In order to avoid potential conflicts in approach to impact avoidance and enhancement, this document identifies the measures required for both landscape and biodiversity together, in order to provide a cohesive strategy.
- 2.1.6 This Outline LEMP is structured as follows:
- Section 3 sets out the Scheme objectives and strategy in relation to landscape and biodiversity;
 - Section 4 summarises relevant legislation and planning policy;
 - Section 5 describes the existing landscape and biodiversity features and the constraints within the Scheme;
 - Section 6 outlines the likely impacts and requirements for impact avoidance; how the design has been developed to avoid or reduce impacts; and how impacts will be avoided during construction, operation and decommissioning of the Scheme;

- Section 7 outlines the proposed green infrastructure associated with the Scheme;
- Section 8 provides a summary of how the landscape and biodiversity elements will be implemented, established and maintained; and
- Section 9 describes the roles and responsibilities of all parties involved in the delivery of the mitigation, enhancement and management proposals.

3. Landscape and Ecology Strategy

- 3.1.1 The integration of landscape and ecology design principles into the design of the Scheme has been a key consideration from the outset. An interdisciplinary approach, from the initial process of identifying the preferred location of the Scheme and component elements, has resulted in the production of the PEI Report Indicative Site Layout Plan (**PEI Report Volume III Figure 3-1**). This preliminary, high-level design forms the basis of the assessment at the PEI stage, as a worst-case scenario. This preliminary layout is a result of an iterative design process informed by initial site surveys, baseline data and published, landscape and biodiversity guidance and policy requirements.
- 3.1.2 The Scheme offers the opportunity to increase and enhance green infrastructure across the Scheme Boundary. Green infrastructure includes the network of natural spaces and corridors, including woodlands, hedges, fields, trees, ponds and watercourses; as well as footpaths, bridleways and areas open for informal recreation. The enhancement and creation of positive green infrastructure will help integrate the Scheme with the wider landscape, as well as aligning with local and national planning policies and aspirations.
- 3.1.3 This Outline LEMP sets out how this will be carried out, and also how embedded design mitigation will help to minimise the effects of the Scheme on the environment, including landscape character, visual amenity and biodiversity assets.
- 3.1.4 The overarching objectives of the Outline LEMP are to:
- Facilitate the conservation and protection of valued landscape and ecological features alongside improvement of the physical, natural and historic environment across the Site, ensuring that the Scheme is appropriately sited, softened and integrated. The green infrastructure framework should be seen as part of the essential infrastructure of the Scheme;
 - Protect ecological value through the retention of valued habitats and features such as existing hedgerows and trees; and to enhance these through restoration and creation of more diverse habitats that will offer greater botanical and faunal interest; and to safeguard the habitats with potential for protected species;
 - Ensure the design and maintenance of landscape and biodiversity components preserves and enhances the character of the landscape and local distinctiveness, including in line with published landscape character assessments;
 - Create new structural planting which links with existing habitats and to take account of species that are locally appropriate and existing vegetation patterns;
 - Create woodland or tree planting to help reduce visual impacts for receptors such as residents and recreational users, but also taking account of existing landscape qualities and protected species that require open land for breeding and long-range views;

- Use native indigenous species of local provenance wherever appropriate;
- Provide, where identified, a variety of foraging, nesting and roosting opportunities for protected and notable species, including bats, badgers, invertebrates, amphibians, reptiles and birds;
- Create floristically rich habitats, to support a greater assemblage of species and give rise to enhanced foraging opportunities;
- Improve water quality and aquatic habitats, through improvements to watercourses and ponds and reduced run-off and in conjunction with the drainage strategy;
- Provide a framework for monitoring and reviewing the landscape measures implementation and establishment; and
- Ensure the mitigation proposed as part of the Scheme remains effective at reducing identified environmental effects.

4. Legislative and Policy Framework

4.1 Introduction

- 4.1.1 The legislation and policies relevant to matters considered within the Outline LEMP are summarised below. For more details, refer to **PEI Report Volume II Appendix 9-1: Ecology and Nature Conservation Legislation and Policy** and **PEI Report Volume II Appendix 12-1: LVIA Legislation and Policy**.

4.2 Legislation

- Wildlife and Countryside Act (WCA) 1981 (as amended) (Ref-1);
- Countryside and Rights of Way (CRoW) Act 2000 (Ref-2);
- Natural Environment and Rural Communities (NERC) Act 2006 (Ref-3);
- The Conservation of Habitats & Species Regulations 2017 (as amended) (the Habitats Regulations) (Ref-4) and The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (Ref-5);
- The Environment Act 2021 (Ref-6);
- The Protection of Badgers Act 1992 (Ref-7);
- The Hedgerow Regulations 1997 (Ref-8);
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Ref-9); and
- Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref-10).
- The Town and Country Planning (Tree Preservation) (England) Regulations 2012 (Ref-11).

4.3 Planning Policy

- Overarching National Policy Statement for Energy (EN-1) (2011) (Ref-12);
- Draft Overarching National Policy Statement for Energy (EN-1) (2023) (Ref-13);
- Draft National Policy Statement for Renewable Energy (EN-3) (2023) (Ref-14);
- National Policy Statement for Electricity Networks Infrastructure (EN-5) (2011) (Ref-15);
- Draft National Policy Statement for Electricity Networks Infrastructure (EN-5) (2023) (Ref-16);
- National Planning Policy Framework (NPPF), adopted 2019 (Ref-17);
- National Planning Practice Guidance (NPPG) (Ref-18);
- Central Lincolnshire Local Plan (2023) (Ref-19), specifically Draft Policy S62 Area of Outstanding Natural Beauty and Areas of Great Landscape Value;

- Bassetlaw District Council Core Strategy and Development Management Policies Development Plan Document, adopted 22 December 2011, specifically Policy DM9: Green Infrastructure, Biodiversity and Geodiversity, Landscape; Open Space and Sports Facilities (Ref-20); and
- Emerging Bassetlaw Submission Local Plan (2022) (Ref-21), specifically draft Policy ST35 Design Quality, Draft Policy ST37 Landscape Character, Draft Policy ST369 Green and Blue Infrastructure, Draft Policy ST40 Biodiversity and Geodiversity; and Draft Policy ST41 Trees Woodlands and Hedgerows.

4.3.1 A number of made and draft Neighbourhood Plans include policies relating to views, design principles, green infrastructure, landscape character and open space. Those of relevance are:

- Glentworth Neighbourhood Plan (Ref-22);
- Corringham Neighbourhood Plan (Ref-23);
- Draft Hemswell and Harpswell Neighbourhood Plan (Ref-24);
- Sturton by Stow and Stow Neighbourhood Plan (Ref-25); and
- Treswell and Cottam Neighbourhood Plan (Ref-26).

4.4 Other Biodiversity Guidance

4.4.1 Other guidance documents relevant to the assessment of the impacts of the Scheme on biodiversity include:

- Biodiversity 2020: A strategy for England's Wildlife and Ecosystem Services with regards to marine habitats, ecosystems, and fisheries (Ref-27);
- 25-year Environment Plan (Ref-28);
- UK Post 2010 Biodiversity Framework (Ref-29);
- Biodiversity Guidance for Solar Developments (Ref-30);
- Mitigating biodiversity impacts associated with solar and wind energy development: Guidelines for project developers (Ref-31);
- Natural England and Department for Environment, Food and Rural Affairs (DEFRA) Standing Advice (protected species) (Ref-32);
- Lincolnshire Biodiversity Action Plan (3rd edition) (Ref-33);
- Green Infrastructure Study for Central Lincolnshire (2011) (Ref-34) which identifies strategic green corridors (including along the Trent valley) and strategic green access links (along the Trent and Lincoln Cliff) alongside green infrastructure zones, for which key green infrastructure assets and opportunities are identified;
- Biodiversity Opportunity Mapping for Central Lincolnshire (Ref-35) was undertaken by the Greater Lincolnshire Nature Partnership and is displayed on the Central Lincolnshire Local Plan map. It identifies areas with opportunities for creation and management, including on a field-by-field basis; and

- Nottinghamshire Biodiversity Action Plan (Ref-36).

4.5 Landscape Character Documents

4.5.1 The Scheme is covered by published landscape character assessments (LCA) and related studies at national, regional and county levels. Local planning authorities use published landscape character assessments as part of their planning policy evidence base. These published assessments often provide specific guidance or recommendations on managing landscape change. A summary is provided below. Further details are provided in **PEI Report Volume II Appendix 12-3: LVIA Landscape Baseline**.

National Character Areas (NCA)

- 4.5.2 NCA 45: North Lincolnshire Edge with Coversands (2014) (Ref-37) covers the eastern edge of the Principal Site, along Lincoln Cliff. Published 'Statements of Environmental Opportunity' (SEO) include references to establishing networks of linking habitats to strengthen biodiversity and landscape character; expanding semi-natural habitats; and retaining the inspirational long views. Landscape opportunities include protection of the scarp slope from inappropriate development and retaining long, panoramic views; and increasing woodland cover on the slope.
- 4.5.3 NCA 48: Trent and Belvoir Vale (2013) (Ref-38) encompasses the majority of the Principal Site and all of Cable Route Corridor. SEO include references to enhancing the woodland and hedgerow network to benefit landscape character and habitat connectivity. Landscape-scale projects such as those delivered by the Trent Vale Landscape Partnership are noted under 'drivers for change'. 'Landscape opportunities' also note the management of hedgerows, including to strengthen historic fields patterns; and the conservation of other high-quality habits, including management of species-rich grassy roadside verges

East Midlands Landscape Character Assessment

- 4.5.4 Regional Landscape Character Type (RLCT 3a) Floodplain Valleys, which covers the area of the Cable Route Corridor around the River Trent, notes 'key aims' that include protection of existing river valley features; restoration of river valley meadows; and provision of a diverse range of habitats.
- 4.5.5 RLCTS 4a Unwooded Vales covers the majority of the Principal Site and the Cable Route Corridor. Key aims include restoration and creation of new hedgerows; creation of permanent pasture alongside watercourses; and increasing the occurrence of semi-natural habitats. Extensive woodland planting is not generally considered to be appropriate, but limited tree planting could help create a mixed pattern of land-use, increase the occurrence of semi-natural habitats and maintain the perception of a well-treed landscape.
- 4.5.6 RLCTS 6a Limestone Scarps and Dipslopes encompasses the north-south escarpment of Lincoln Cliff, parallel to Middle Street. Key aims include the protection of key views and vistas; siting infrastructure away from visually prominent locations; protection of existing landscape features, such as restoration of hedgerows, stone walls, grassland and areas of pasture; and planting woodland to enhance the scarp slope.

West Lindsey Landscape Character Assessment

- 4.5.7 Landscape Character Type (LCT) 2 Trent Valley covers the area around Marton and the eastern side of the River Trent. Published 'Principles for Landscape Management' include the retention of hedgerows and hedgerow trees.
- 4.5.8 LCT 3 The Till Vale encompasses much of the Principal Site and the Cable Route Corridor. Stated Principles for Landscape Management include the retention of buffer zones and new planting along rivers and streams; management of existing small farm woodlands, shelterbelts and trees along rural roads; and creation of buffer zones around woodland blocks.
- 4.5.9 LCT 4 The Cliff covers the easternmost edge of the Principal Site. Stated Principles for Landscape Management include management of trees and hedges to the margins and entrances to villages; scope for new hedgerow planting on the western edges of villages to reinforce the contrast in character between the Cliff landscape and that of open arable farmland to the west (framing rather than obscuring views to village churches and other buildings, or landscape features with historic interest); and reversion of arable land to grazing pasture. The section 'Principles for Accommodating Development' notes that new development and tree planting should be carefully sited and designed to avoid compromising the views associated with the design historic parkland landscapes that are characteristic of many villages in the LCT.

Bassetlaw Landscape Character Assessment

- 4.5.10 Trent Washlands (TW) Policy Zone (PZ) 21 Cottam, Rampton and Church Laneham Village Farmlands covers the area to the west of Cottam Power Station, including part of the Cable Route Corridor. A policy of 'Conserve and Reinforce' is stated, with Landscape Actions that generally relate to the conservation and restoration of traditional hedge and field patterns, and conservation of mature hedge lines along tracks.
- 4.5.11 TW PZ 22: Cottam River Meadowlands covers the area to the north of Cottam, including part of the Cable Route Corridor. A policy of 'Conserve and Reinforce' is stated, with Landscape Actions including the conservation and reinforcement of traditional historic patterns of hedges, fields, grazing pasture and mature trees along the Trent.
- 4.5.12 TW PZ 48: Littleborough Village Meadowlands is a narrow area along the western side of the River Trent, including part of the Cable Route Corridor. A policy of 'Conserve' is stated, with Landscape Actions including the enhancement and restoration of ecological (including waterside) diversity, pastoral character, and meadowland hedgerows.

Neighbourhood Plan Supporting Documents

- 4.5.13 Character assessments, profiles and design guides are provided as part of the evidence base for Neighbourhood Plans. A summary of key points relevant to the Outline LEMP are described below:

Corringham Character Assessment

- Long distance views towards Lincoln Cliff, the rural setting from the eastern edge of the village and Corringham windmill, the mill being a “key local landmark”; and
- Rural roads, with verges, ditches and hedgerows, being a “strong, singular character” and of value to pedestrians, in the absence of the Parish’s dedicated PRow network.

Neighbourhood Character Profile for Glentworth:

- Recreational walking, horse riding and cycling routes, including Middle Street, Kexby Road and Northlands Road, which are noted as ‘Green Infrastructure, alongside areas of woodland and road verges;
- ‘Gateways’ into the village, including the junction of Middle Street and Hanover Hill, and associated woodland; and
- Views considered to be of importance, including southwest from Middle Street to Glentworth Hall with a “*superb view of this historic house in its parkland setting with distant views across the Trent in the background*”.

Hemswell and Harpswell Character Assessment and accompanying character profile:

- ‘Key Views, including west across open countryside from Common Lane in Harpswell and the “*distinct feature*” of Harpswell Wood; east from the same location where the rising wooded Cliff is described as one of the “*defining characteristics*” of the Parish; and from Middle Street, where expansive views across the Till Vale also include St. Chad’s Church in Harpswell.
- The history and location of the now demolished post medieval Harpswell Hall and Gardens, a Scheduled Monument and non-designated heritage asset, including views out towards the surrounding countryside from the former moat, access land south of Hall Farm and associated permissive paths.

Sturton by Stow and Stow Neighbourhood Profile (2019):

- Views to the west from Normanby, towards the Trent Valley, north from Coates across the Till valley; and those that include Stow Minster;
- Hedges to the north of East Farm at Normanby, which are noted as species-rich; and
- Road verges with wildflowers and the recreational value of local roads.

Treswell with Cottam Character Assessment (2018).

- ‘Important views’ across the open space at the eastern entrance to the village, and towards the Grade II listed Church of Holy Trinity, from Overcoat Lane;
- Overcoat Lane and Wells Lane described as “*pedestrian links*”; and
- The open space in the centre of the village (Cottam Playing Field), designated as an open space through Local and Neighbourhood Plan policy, and noted as a “*particularly picturesque green backed by mature trees...one of the defining characteristics of this end of the village*” which “*...contributes greatly to the character and quality of this gateway...as do the mature deciduous trees that overlook it*”.

4.6 Biodiversity Net Gain

- 4.6.1 It is government policy in NPS EN1 that development proposals provide many opportunities for building-in beneficial biodiversity as part of good design. Such opportunities in and around developments should be maximised where appropriate and, as stated in the NPPF (2021) (Ref-17) planning decisions should minimise impacts on and provide net gain for biodiversity.
- 4.6.2 In addition, the Environment Act 2021 (Ref-6) (once the relevant provisions are in operation) includes a mandate for at least 10% BNG for projects, including for Nationally Significant Infrastructure Projects (NSIPs). The aims and objectives of this Outline LEMP will be in accordance with these BNG requirements.

5. Landscape and Biodiversity Constraints

5.1 Existing Landscape Constraints and Features

5.1.1 The following section provides a summary of the key constraints and sensitive features related to landscape and visual amenity within the Scheme Boundary.

Policy and guidance

- Local Plan policy considerations relating to the Area of Great Landscape Value that runs along Lincoln Cliff, including emerging draft policy that references the ‘setting’ of this designation.
- General Local Plan policy-based design principles, including the protection of local views, woodland, hedgerows and open spaces.
- Local Plan policy reference and aspirations for Green Infrastructure, including evidence base documents and strategies outlined in the Central Lincolnshire Green Infrastructure Study and Biodiversity Opportunity Mapping; Trent Valley Partnership; Bassetlaw’s Nature Recovery Network; and the draft Nottinghamshire Biodiversity Opportunity Model for Bassetlaw and the Idle Valley.
- Neighbourhood Plan policies and supporting evidence base documents relating to design principles; protection of important landscape features and views; green infrastructure; and aspirations for new accessible green space and recreational routes.
- Strategies, guidance and recommendations provided in published Landscape Character Assessments, which may be referenced in Local Plan policy, including the Bassetlaw and West Lindsey Landscape Character Assessments.
- Guidance or key features identified in conservation area appraisals.

Site constraints and sensitive elements

- Expansive, panoramic views from Lincoln Cliff that are frequently noted in published landscape character assessments, Neighbourhood Plans and protected through the AGLV Local Plan designation; and views towards the Cliff as a prominent topographic feature from the wider Site area.
- Open, rural views that characterise the intensive farmland of the Till Vale, including from the edges of more enclosed villages and where these expansive views may be appreciated by residents and recreational users.
- Intact hedgerows, particularly those that are denser and taller, including along east-west routes that formerly linked villages with enclosed land, such as Common Lane.
- Small blocks of woodland that punctuate the intensive farmland, provide landmarks and offer isolated areas of greater landscape value, sometimes connected by shelter belts.

- The River Trent, as a key landscape feature that has informed historic development of the area, offers visual and recreational value; and provides an important green/blue infrastructure and biodiversity corridor.
- Isolated ponds and ditches, although both are considered to be of limited landscape and biodiversity value.
- PRoW, largely located within the Cable Corridor Route, providing opportunities to experience the wider landscape, particularly along the Trent Valley.
- Quiet, rural lanes that offer recreational value, particularly where ProW are limited.
- Extended views of the Principal Site from the A631 along the northern boundary, although receptors along this route are generally considered to be of lower sensitivity.
- Views to and from heritage assets, alongside interrelationships between heritage assets and the landscape. This includes Fillingham Castle and Registered Park and Garden, located on Lincoln Cliff; Harpswell Hall Scheduled Monument, with a former moat and prospect mound that afford views into the open landscape of the Principal Site; and the Grade II* Glentworth Hall.

5.2 Existing Biodiversity Constraints and Features

5.2.1 Ecological surveys are currently ongoing to characterise the ecological baseline of the Scheme. As such, these are not fully defined at present and therefore, the Outline LEMP submitted with the DCO application will have been updated to include further information and detail associated with ecological mitigation and enhancement. Full details of the current available ecological information is in **PEI Report Volume I Chapter 9: Ecology and Nature Conservation**.

Habitats

5.2.2 The following notable habitats (refer to Table 5-1) are across the Scheme Boundary (both the Principal Site and Cable Route Corridor):

Table 5-1: Notable Habitats within Scheme Boundary

Habitat Type	Status
Broadleaved woodland – semi-natural	Local Biodiversity Action Plan (LBAP) Habitat; Lowland Mixed Deciduous Woodland and Wet Woodland – Habitat of Principal Importance (HaPI)
Neutral grassland - semi-improved	Lowland meadows, upland hay meadows Coastal and Floodplain Grazing Marsh is a HaPI. Lowland meadows is an LBAP habitat in Lincolnshire

Habitat Type	Status
	Lowland neutral grassland is an LBAP habitat in Nottinghamshire
Standing Water	Ponds of certain criteria are a HaPI.
Running Water	Rivers are a HaPI
Hedgerows without trees (intact and defunct)	HaPI. LBAP habitat in Lincolnshire and Nottinghamshire
Hedgerows with trees (intact and defunct)	HaPI. LBAP habitat in Lincolnshire and Nottinghamshire

Species

- 5.2.3 At the time of writing, the = protected and notable species shown in Table 5-2 below have been identified through desk study records or ecological survey work done prior to January 2023. Full details are available in **PEI Report Volume I Chapter 9: Ecology and Nature Conservation**.

Table 5-2: Notable Habitats within the Scheme Boundary

Ecological Feature	Detail
Badger (<i>Meles meles</i>)	Presence of this species within the Principal Site.
Brown Hare (<i>Lepus europaeus</i>)	Presence of this species confirmed within the Principal Site and assumed throughout the Scheme Boundary.
Hedgehog (<i>Erinaceus europaeus</i>)	Assumed presence within Scheme Boundary.
European Eel (<i>Anguilla Anguilla</i>)	Possible presence within Scheme Boundary and in connected water bodies.
Spined Loach (<i>Cobitis taenia</i>)	Assumed presence within Scheme Boundary.
Fish species known to be present in the River Trent (migratory species Atlantic Salmon <i>Salmo salar</i> , Brown (or Sea Trout) <i>Salmo trutta</i> and a species of lamprey)	Present within Cable Route Corridor Boundary in the River Trent and tributaries.
Invasive non-native species (the non-native but non-invasive freshwater amphipod shrimp <i>Crangonyx psuedogracilis/floridanu</i> and the non-native but non-invasive New	Possible presence within Scheme Boundary.

Ecological Feature

Detail

Zealand mud snail *Potamopyrgus antipodarum* have been recorded)

- 5.2.4 The desk study identified recent records for a number of other protected and notable species within 2km of the Scheme Boundary. However, at the time of writing, surveys have not yet been undertaken to confirm their presence within the Scheme Boundary. Further details are available in **PEI Report Volume I Chapter 9: Ecology and Nature Conservation**.

6. Potential Impacts and Avoidance Through Design

6.1 Landscape and Visual

6.1.1 Key landscape and visual effects of the Scheme, prior to the incorporation of mitigation, will include:

- Loss of the dominant agricultural qualities of the Principal Site, such that the overall landscape character will be dominated by solar infrastructure.
- Impacts on views both within and around the Principal Site, predominantly through the introduction of solar infrastructure as an incongruous and prominent element.
- Loss of characteristic panoramic, open rural views where these become enclosed through the aim of mitigating views of solar infrastructure; such views may be valued by residents and recreational users of rural routes, and/or noted in Neighbourhood Plans.
- Localised temporary and permanent loss of hedgerows, including to create access tracks for construction and maintenance of the solar PV infrastructure, and during construction along the Cable Route Corridor.
- Localised temporary loss of more species-rich grassland, such as along the River Trent, although the extent of these effects will require confirmation through ecological surveys.
- Impacts, including a reduction in tranquillity and an increase in traffic movement in and around the Scheme Boundary, during the construction phase.

6.2 Biodiversity

6.2.1 The Scheme will result in the temporary and permanent loss of the following habitats:

- Localised temporary and permanent loss of hedgerows, including to create access tracks for construction and maintenance of the solar PV infrastructure, and during construction along the Cable Route Corridor.
- Localised temporary loss of more species-rich grassland, such as along the River Trent, although these will require confirmation through ecological surveys.

6.2.2 There will be potential adverse impacts on a number of protected or notable species during construction of the Scheme. These include negative impacts to:

- Birds – negative impacts to nesting bird species, due to temporary and permanent loss of habitat and noise and visual disturbance during construction. As well as negative impacts to population of wintering birds due to loss of habitat and noise and visual disturbance from construction;

- Bats – due to temporary disturbance of habitats of value to foraging and commuting bats;
- Badger - due to temporary and permanent loss of foraging habitat; and
- Other Mammals (Brown Hare and Hedgehog) - due to temporary and permanent loss of foraging habitat

6.2.3 Further ecological survey work being undertaken in 2023 may identify other ecological receptors that maybe impacted by construction and operation of the Scheme.

6.3 Design Development and Impact Avoidance

6.3.1 The design of the Scheme has considered biodiversity, landscape and visual constraints from the outset. These are summarised below, along with the impacts avoidance measures that will be implemented, as relevant and appropriate, prior to and during construction of the Scheme, to avoid as far as practicable the effects identified in Section 6.2 above.

Design Development

6.3.2 The following considerations and principles have informed the site selection and design process for the Scheme. Where these include elements of the design incorporated into the Indicative Site Layout Plan (**PEI Report Volume III Figure 3-1**) this represents embedded mitigation:

- Removing any solar infrastructure from the AGLV designation along the prominent scarp slope of Lincoln Cliff.
- Withdrawing the southern Scheme Boundary (in combination with landowner negotiations) away from the areas around Ingham and Fillingham, which include sensitive features such as PRow, Fillingham Lake and closer-range views from Fillingham Castle.
- Avoiding areas of open or slightly undulating topography along the base of Lincoln Cliff, including west of Glentworth and Harpswell.
- Identifying relevant Neighbourhood Plan 'key views' to highlight potential areas for mitigation, such as west of Harpswell.
- Providing buffers around residential properties, with woodland mitigation where appropriate, but also cognisant of residents' appreciation of open views.
- Creating larger buffers to the east of Springthorpe, following site surveys that identified more open views from certain properties, and the presence of a temporary voluntary permissive bridleway and recently adopted byway that provide recreational amenity in an area where PRow are limited.
- Creating a buffer between the Scheme and the proposed Cottam Solar Farm to the south, using these fields for ecological mitigation only.
- Incorporating buffers to all sensitive ecological, and landscape features such as trees, hedgerows, watercourses and ponds.
- Ensuring that existing woodland, treelines and the majority of hedgerows are retained and will be protected during construction of the Scheme.

- Retaining and managing existing valued grassland habitats.
- Provision of woodland or shelter belt planting along the south side of Kexby Road, within areas identified for ecological mitigation but reducing cumulative views of the Cottam solar farm.
- Provision of woodland screening along the western side of Middle Street, to screen views of the Scheme at the closest point to Lincoln Cliff.
- Ecological mitigation and enhancement within the area of the Principal Site that extends up the Lincoln Edge scarp slope, with scope for species-rich meadows suitable for soils that may differ slightly from those within the wider Till Vale.
- Using higher flood-risk areas for ecological mitigation, with scope for wetland habitats and enhancement.
- Reinstatement and/or improvement of field boundaries, particularly in the more open parts of the Principal Site such as west of Harpswell, to limit visibility of the Scheme and increase landscape condition and habitat connectivity; although this needs to be balanced with retention of open views and habitats for ground-nesting birds.
- Use of smaller and/or peripheral fields for mitigation, such as along the south side of the A631.
- Identifying areas for enhanced screening to the west of Harpswell, to mitigate impacts on views from the Scheduled Monument moated site and historic gardens, where there are several permissive paths and areas of accessible open space.
- Use of existing farm tracks and field openings as the preferred routes for construction access, minimising loss of hedgerows.
- Highlighting risks for construction access through Glentworth where sharp bends may require vegetation removal (identified as being of value in the Neighbourhood Plan), or where residents have expressed concerns about loss of tranquillity along quiet rural lanes.
- Proposed siting of substations and other infrastructure in locations where existing screening will limit visibility, or lower sensitivity sites such the existing slurry lagoon at Hemswell Grange.
- Scope to use the existing barn south of Harpswell Grange as storage, with additional laydown or external storage located immediately to the east, where the barn will limit views from Middle Street.
- Avoidance of sensitive features along the Cable Route Corridor, including older, dense hedgerows along the River Till north of Normanby by Stow; the recreational open space at Cottam; and riparian vegetation and woodland along the River Trent.
- Wider use of new green infrastructure elements and corridor throughout the Scheme Boundary, to increase habitat connectivity; enhance landscape and ecological condition; and improve visual amenity within sometimes degraded agricultural landscapes. This includes provision of semi-improved and species-rich grassland beneath the solar panel areas

and within the wider Principal Site, to increase biodiversity across the Principal Site relative the current monocultures, including biomass crops.

Impact avoidance

- 6.3.3 Standard environmental best practice and mitigation will be implemented to ensure construction and operation of the Scheme complies with legislation relating to protected species. It will also aim to ensure the Scheme does not compromise the local conservation status of ecological receptors present within or in the vicinity of the Scheme Boundary. Where protected species licences are required, these would be obtained from Natural England sufficiently in advance of the works to meet with the optimum time for mitigation and to minimise any changes to the construction programme.
- 6.3.4 The implementation of these measures has been taken into account when assessing the likely impacts and effects of the Scheme on landscape/visual and biodiversity features in **PEI Report Volume I Chapter 9: Ecology and Nature Conservation** and **PEI Report Volume I Chapter 12: Landscape and Visual Impact Assessment**.
- 6.3.5 During construction, the following provisions in respect of construction methodology, as set out in the Framework Construction Environmental Management Plan (CEMP) (**PEI Report Volume II Appendix 3-1**) will be followed and adherence to which will be a Requirement of the DCO:
- Designing the Scheme to comply with industry good practice and environmental protection legislation during both construction and operation e.g. prevention of surface and ground water pollution, fugitive dust management, noise prevention or amelioration;
 - Crossings of watercourses, such as the River Trent, to be undertaken using boring, micro-tunnelling or moling methods, with appropriate setbacks from the top of the banks (depending on habitats and other individual ecological constraints);
 - The perimeter security fence around the Scheme to be implemented early in the construction phase to secure the site to prevent construction activity in proximity to retained vegetation, in particular designated sites within and adjacent the Scheme Boundary and where required specific tree protection measures will be implemented, including solid hoarding fencing and construction exclusion zones;
 - Utilising motion detection security lighting throughout the Scheme Boundary to avoid permanent lighting and developing a sensitive lighting scheme ensuring inward distribution of light and avoiding light spill on to existing boundary features during the construction phase;
 - The ecological measures within the Framework CEMP(s) to be implemented by the selected construction contractor and overseen by an Ecological Clerk of Works (ECoW), where required.
 - A Biosecurity Management Plan to be developed which sets out procedures to ensure any imported building/landscaping materials are free from invasive non-native species (e.g. Schedule 9 species). In the event that any future infestations of invasive non-native species are identified during the development process, exclusion zones will be

established around them and the ecology team contacted for advice as required.

- No works to be undertaken within 10m of watercourses which will mitigate for potential hazards such as chemical and soils spills into watercourses.
- Not undertaking in-channel works where invasive non-native species have been identified, to avoid the spread of invasive non-native species.
- Preparing mitigation strategies for protected species and, where required, applying for species licences from Natural England for translocation of animals away from construction areas sufficiently in advance of the works to meet with the optimum time for mitigation and to minimise any changes to the construction programme.
- Establishing reasonable avoidance measures along the Cable Route Corridor, including buffers of 30m around any identified Badger setts or trees with bat roost potential.
- Restoring post-construction any habitat removed from within the Cable Route Corridor.

6.4 Updated Surveys

- 6.4.1 An ecologist will complete a Scheme walkover in advance of construction to reconfirm the ecological baseline conditions and to identify any new ecological risks. The walkover will be completed sufficiently far in advance of the construction to allow for the completion of any additional, seasonally constrained surveys (e.g. surveys in support of any identified requirements for protected species licences) that may be required. These surveys will be undertaken in advance of the detailed LEMP, which will be developed to reflect and incorporate the findings of these surveys.
- 6.4.2 Immediately prior to site clearance and start of construction of the Scheme, further site walkover surveys will be undertaken by an ecologist and landscape architect or arboriculturalist to confirm whether the risks associated with the Scheme remain as previously assessed and to confirm the correct impact avoidance measures are being implemented (e.g. tree protection fencing, protected species stand-offs and other protection measures) to manage those risks.
- 6.4.3 The scope of the required walkovers will be defined on a case-by-case basis, based on the specific risks associated with each relevant part of the Scheme and informed by the preceding ecological walkover described above.
- 6.4.4 Should any new constraints be identified as a result of the updated surveys, these would be captured in the final version of the LEMP. Any additional impact avoidance or mitigation requirements would be identified in consultation with the Applicant and/or the relevant statutory consultees. Implementation of these measures is expected to be secured by a Requirement of the DCO.
- 6.4.5 Any additional surveys would be instructed as necessary by the ecologist or landscape architect, based on professional judgement and the findings of the updated walkover surveys, or identified as appropriate by the Applicant or their contractor(s). These may be required, for example, based on the construction

programme, working requirements or following identification of specific issues and constraints not covered by previous advice.

6.5 Protected Species Licences

6.5.1 All necessary protected species licences would be applied for and obtained prior to undertaking any works that might result in offences under the relevant legislation.

6.6 Ecological Clerk of Works

6.6.1 The scope of the Ecological Clerk of Works (ECoW) will be advised by the ecologist and landscape architect based on relevant environmental commitments, the findings of the updated surveys, protected species licensing requirements, and with reference to the relevant project programmes.

6.6.2 Relevant site staff will receive toolbox talks as necessary from the ECoW on the relevant ecological risks present, legal requirements, and the working requirements necessary to comply with legislation, and the final approved landscaping and biodiversity management and enhancement measures. Toolbox talks would be repeated as necessary over the duration of the works to ensure ongoing compliance with all relevant legislation and measures set out in the detailed LEMP.

6.7 Tree and Hedgerow Works

6.7.1 The location of the Scheme would largely avoid the need for the removal of mature trees across the Scheme Boundary. Some removal and pruning of mature trees may be required to facilitate vehicle access during construction, and for cable-related works.

6.7.2 Where works in close proximity to retained trees cannot be practicably avoided, these works would be undertaken in accordance with current best practice at the time of the works. In February 2023 current best practice is defined in:

- British Standard (BS) 5837: 2012 Trees in relation to design, demolition and construction – Recommendations; and
- National Joint Utilities Group (NJUG) Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.

6.7.3 All necessary protective fencing would be installed prior to the commencement of any site clearance or construction works. This would be set out in Arboricultural Method Statements prepared pre-construction, pursuant to the DCO.

6.7.4 The layout of the Scheme has been designed to minimise the loss of, and avoid significant impacts on, existing landscape features. Some hedgerows will be crossed by the Scheme and may need to be wholly or partially removed to facilitate construction works.

6.8 Precautionary Working Methods

6.8.1 The following precautionary working methods will be employed to minimise potential adverse effects on protected/notable species prior to and during

construction. Precautionary working method statements will be produced as necessary to specify working requirements and other necessary impact avoidance measures. These measures will be controlled and implemented through the Framework CEMP that would be developed by the contractor. This is expected to be secured by a Requirement of the DCO.

Nesting Birds

- 6.8.2 Where practicable, vegetation clearance works will be undertaken outside the bird nesting season, which is typically between March and August inclusive. Where vegetation clearance works are required during the bird nesting season (i.e. between the months of March and August inclusive), these works can only proceed following the completion of a nesting bird check which will be undertaken by an experienced ornithologist. Vegetation clearance will not be undertaken where any active bird nest is identified, and all nests will be protected from harm until the nesting attempt is complete. This will require a buffer of vegetation to be left around the nest, the size of which will depend upon the species involved. Vegetation clearance can only proceed once the nesting attempt has been deemed, by a suitably qualified ornithologist, to have finished. Cleared ground would be maintained in a disturbed state in the run-up to construction, to minimise the risk of ground nesting birds attempting to nest on cleared ground.

Reptiles

- 6.8.3 Precautionary working methods to avoid accidental killing or injury of reptiles will be implemented during construction of the Scheme. Precautionary methods will include initial clearance of any vegetation that is potentially suitable as reptile habitat down to a height of approximately 30cm, followed by dismantling of any suitable features, such as log piles and tree stumps, under ecological supervision. Vegetation will be cleared to ground level once no risk of reptile presence remains. Vegetation within working areas will be kept short during construction to discourage reptiles from entering the Scheme Boundary.

Amphibians

- 6.8.4 Precautionary methods of working (PMW) for amphibians, including Great Crested Newts, are similar to the ones outlined for reptiles above.
- 6.8.5 Where the presence of amphibians is anticipated due to potentially suitable habitat, consideration would be given to proceed with any minor vegetation clearance works and minor construction activities using PMW where appropriate.
- 6.8.6 In general, PMW would consist of encouraging any amphibians to move away from the construction footprint into adjacent areas, and discouraging / displacing any residual amphibians from the nearby area, using habitat manipulation. Habitat manipulation methodologies will vary between areas and seasons but will in general consist of a phased approach. To mitigate against harm to any residual amphibians that may be present, the following precautionary methods of working are deemed appropriate for the works within the areas of suitable great crested newt or other amphibian habitat:

- The on-site vegetation is cut short during winter (when amphibians are hibernating) if possible. If not possible (i.e. works during active season), the vegetation will be cut in a phased approach, firstly cutting to 30cm, then a cut to 15cm, then to ground level.
- The vegetation should then be kept short to displace any present amphibians, which may be present, away from the works when they emerge in the early spring and discourage amphibians from moving into the Scheme Boundary from the surrounding habitat.
- Vegetation (including topsoil) should be carefully removed using an excavator with a toothed bucket. These works should be supervised by an ecologist if this is deemed appropriate to do so.
- Any habitat features which may conceal sheltering amphibians (log piles, rubble mound bunds, any other debris etc.) will be dismantled by hand under supervision of the ecologist.
- Dismantling of any rubble piles should be conducted during the amphibian active season (i.e. April to October) during warm weather conditions (i.e. above 5 degrees Celsius) to avoid killing or injuring potential hibernating amphibians.

6.8.7 In the unlikely event that any Great Crested Newts are discovered, works must cease immediately and an ecologist must be consulted to determine how to proceed. If other amphibians are discovered during vegetation clearance it is proposed that these are translocated to suitable habitat nearby in suitable weather conditions.

Animal Welfare Requirements

6.8.8 Construction excavations have the potential to trap wildlife, such as badger, and result in offences under animal welfare legislation. This will be avoided through implementation of precautionary mitigation. All excavations deeper than 1m would be covered or fenced overnight, or where this is not practicable, a means of escape would be fitted (e.g. battered soil slope or scaffold plank), to provide an escape route should any animals stray into the construction site and fall into an excavation.

Invasive Species Management Plan

6.8.9 An Invasive Species Management Plan (ISMP) will be prepared as an integral section of the LEMP based on the findings of the ecological surveys. The ISMP will identify requirements for invasive plant management to achieve legislative compliance over the construction phase. There may be ongoing requirements to control invasive plant species during establishment of new habitats and soft landscape, or otherwise to address wider requirements for legislative compliance.

6.8.10 If necessary, the ISMP will be updated to allow it to be rolled forward into the operational phase of the Scheme.

Lighting

6.8.11 Construction temporary lighting would be arranged so that glare is minimised outside the Scheme Boundary as far as reasonably practicable, via the use of

best practice measures. Permanent lighting will be activated by motion detection avoiding operational light spill on areas outside the Scheme Boundary.

7. Proposed Green Infrastructure

7.1 Introduction

7.1.1 The Scheme has been designed to integrate with the local green infrastructure network, improving ecological and recreational connectivity across the Scheme Boundary. Mitigation and enhancement, as outlined above, will be subject to further design development, refined through further site surveys, stakeholder and consultee feedback, and technical requirements of the design.

7.1.2 A summary of the key principles and elements of the proposed green infrastructure is provided below. These will be incorporated into the revised Scheme design and the Outline LEMP document, with detailed landscape and ecological management plans to be developed post-consent and approved by the relevant local planning authority. They will be required to be substantially in accordance with this Outline LEMP.

Woodland, Trees and Hedgerows

- Management of existing woodland and trees to ensure longevity, increased species diversity, enhanced habitat value and greater resilience to climate change.
- Management of existing hedgerows to ensure that biodiversity is the key benefit, whilst also increasing the level of screening from visual receptors. This will include gapping-up with a wider range of appropriate native species; and altering cutting regimes to benefit cover, shelter, food sources and breeding birds.
- Planting of new woodland and shelter belts, in some cases as mitigation to help screen sensitive receptors and soften views, but also to provide increased structure, ecological connectivity and interest within the landscape. Species will be appropriate to the particular requirements of the geographical area, but also take account of climate change and potential pest and pathogen threats. Where possible, woodland will include varied heights, spacing and species mix to maximise habitat diversity, with elements such as glades, rides and scalloped edges.
- Creation of scrub and associated mosaic habitats, some of which may be allowed to develop through natural regeneration. Such habitats offer valuable breeding bird habitats and can make substantial contributions to BNG.
- Scope for small orchards or the inclusion of edible fruit trees, including cultivars local to Lincolnshire or Nottinghamshire, particularly along public routes for 'foraging'. These will also provide pollination and food value.
- New, individual roadside or hedgerow trees, including where these will replace prominent, mature ash specimens that are likely to succumb to dieback in the near future.

Grasslands

- New grassland seeding under the solar panel areas, providing an extensive habitat. These would likely be classed as 'modified' or 'semi-improved' grassland, reflecting the required management and level of shading provided by the panels. Such grassland is not regarded as a priority habitat, but includes wildflowers such as red clover, knapweed and birdsfoot trefoil, and would offer a greater species diversity than existing improved grassland or arable crops.
- New grassland outside panel areas and along 'rides, hedge margins or under power lines will likely be classed as 'neutral grassland', with moderate species diversity. This is traditionally created through the use of proprietary seed mixes, with around 20% / 80% native wildflower / grass content, and up to around twenty species of the former.
- Larger areas of ecological mitigation outside panel/infrastructure areas will be seeded with species-rich neutral grassland mixes. It is anticipated that mixes similar to that described above, alongside supplementary yellow rattle to reduce grass competitiveness.
- In all cases, local and genetically appropriate seed sources will be used where possible, with scope to engage with stakeholders to harvest 'green hay' from suitable donor sites, such as local SSSI or LWS (e.g. road verges) under Wildlife Trust control.
- Along crop margins, linear 5m strips of cover crop will be sown annually or biannually with a pollen/nectar rich seed mix, such as those recommended through Countryside Stewardship schemes.
- Areas of open, low-cut grassland with limited cover will be required for ground nesting birds. A balance will therefore be required between the provision of long grass, hedgerows and woodland; and more expansive grassland.

Aquatic and riparian habitats

- Enhancements to existing watercourses, ponds and water bodies, including reduction of shading by scrub to increase light levels and plant growth.
- Prevention or removal of existing sources of pollution such as agricultural run-off and silt inputs, to improve water quality.
- Planting of appropriate marginal and aquatic plant species and implementation of management regimes that prioritise biodiversity and promote a wider range of habitats.
- Creation of new waterbodies and ponds, including as part of a wider drainage strategy and where these may be required as sources of water for fire emergencies.

Other habitat provisions

- Installation of a range of artificial bird and bat boxes in existing woodland and trees, to increase the availability of nesting and roosting features and enhance their value as habitat for these species.

- Habitat piles and hibernacula will be in suitable areas using natural materials generated during clearance of the site, such as logs, turf, and grass strimmings. These would provide refuge and hibernation opportunities for amphibians and reptiles, as well as dead wood habitat for invertebrates, which would in turn benefit fauna such as bats and birds.

Recreational Routes

- Provision of permissive paths, subject to feedback from consultation and landowner negotiations. These may provide amenity value for walkers, cyclists and horse riders in an area where such routes are relatively limited. There may be opportunities to create circular walks from settlements or link villages such as Harpswell and Glentworth.
- Creation of new areas for open public access. These would need to balance increased amenity value with the protection of habitats and species from disturbance.

7.1.3 Further surveys will also include soil analysis, particularly the ratios of Potassium and Phosphorus. Soil chemistry will inform the methodology of arable reversion to grassland, including the requirement for soil stripping.

8. Management, Maintenance and Monitoring of Landscape and Biodiversity

8.1 Introduction

- 8.1.1 This section provides high-level summary of how existing and proposed habitats will be protected or implemented during construction, maintained during the first five years following implementation, and managed in the long term up until and including decommissioning of the Scheme.
- 8.1.2 As the design progresses, further details will be provided, particularly in relation to plant species selection, specification of seed mixes, management prescriptions and timescales; and site-specific mitigation and enhancement elements.
- 8.1.3 Implementation and monitoring works will be supervised by Ecological and Landscape Clerk of Works as outlined in Section 9.

8.2 Implementation

Existing retained trees and shrubs

- 8.2.1 During construction the retained hedgerows, woodland and trees will be protected. Measures to be employed will include the use of clearly defined stand-offs, managing the structure and integrity of the retained vegetation, and undertaking any pruning outside of the bird breeding season.
- 8.2.2 Retained trees will be periodically inspected by an arboriculturist during construction. Where construction works are adjacent to retained trees, works will be undertaken under a watching brief to record root loss and to recommend further arboricultural works where required.

Native planting

- 8.2.3 Opportunities for advance planting will be explored with landowners, ensuring that this is targeted to mitigate effects on the most sensitive receptors at the earliest opportunity, such as during the construction period.
- 8.2.4 Advanced growing of stock by commercial nurseries may be beneficial for large areas of planting, to limit risks of poor quality and lack of stock availability. Stock of UK origin and local provenance will be preferred, although there may need to consider climate change adaptation through a more southerly provenance; and genetic variation as resilience to biosecurity threats.
- 8.2.5 Planting, other than advance planting, will take place in the first available planting season following consent being granted, ideally during November and December for bare root stock, to reduce losses incurred during recent dry springs.

- 8.2.6 Plants will be inspected at the nursery and on delivery, prior to planting. Plants will be protected from strimming damage and animals through guards, preferably biodegradable; although consideration will be given to avoiding excessive use of guards. Trees will be staked in line with industry standard specifications.

Grassland

- 8.2.7 Where practicable, seed will be obtained from a local source for the purpose of maintaining continuity with local species-rich grasslands.
- 8.2.8 Receiving soils will be prepared to reduce nutrients where possible. This could include incorporating a substrate to reduce nutrient levels or removing topsoil to expose the sub-soil. Herbicide use can be beneficial but the risks of using across a large area will need to be considered.
- 8.2.9 Once the nutrient level is reduced, all clods will be broken up and alien material (such as plastics and metals) above 50mm in size will be removed. The top 50mm of the soil will then be raked to prepare a fine tilth for the seedbed. The raking will occur immediately before sowing.
- 8.2.10 Seeding will be completed in either autumn or spring and only once the receiving soils have been tilled and adequately prepared.

Aquatic habitats and waterbodies

- 8.2.11 Existing ponds and waterbodies in poor condition will be improved and restored where appropriate, with the aim of maximising their wildlife value. This will include de-silting to ensure that they remain at least partly wet during normal conditions, allowing amphibians and invertebrates to complete their life cycles.
- 8.2.12 Where existing water features are over-shaded by mature trees, these trees will be prioritised for re-pollarding, to increase light and decrease leaf fall onto the ponds. Scrub clearance and de-silting around ponds and water bodies will be phased over five years, to prevent the site-wide loss of existing shaded pond habitats and to provide ponds in various stages of natural succession to provide a wider range of niches for wildlife.

8.3 Establishment Management and Maintenance

- 8.3.1 Detailed plans for the establishment and management of landscape and ecological elements will be agreed and implemented for the five-year post-planting period, and the long-term maintenance period during the operation of the Scheme. Key principles and prescriptions are outlined below.

Native planting: establishment

- Weed-free strips to hedgerows and circles to trees will be maintained through chemical and mechanical controls.
- A watering regime will be agreed through the contract process and implemented during times of drought.
- Litter, rubbish and debris will be removed from planting areas throughout the year.

- Guards, supports and plants will be checked on a regular basis. Failed or defective plants will be recorded each autumn and replaced annually with the same species and size at the next available season.
- Monitoring will be undertaken at agreed intervals to record plant growth and condition.
- Hedges will be trimmed in November or December during the fifth maintenance year, to promote bushy growth.

Native planting: long-term management

- Individual trees will be managed according to best arboricultural practice in accordance with BS 8545:2014 Trees: from nursery to independence in the landscape; and BS 3998 Tree Work – Recommendations.
- All trees, woodland planting plots and scrub will undergo an annual condition assessment and an appropriate programme of works developed to address changes in condition and site requirements.
- From year 5 onwards, guards, ties and stakes will be removed from plants. Between years 7 and 10, planted areas will be reviewed and thinned out as necessary to remove any poor or weak specimens, which will facilitate other specimens to flourish and provide space for trees and shrubs to further establish.
- The understorey of woodland plots will be coppiced in stages to minimise disturbance to wildlife, as required, as part of good woodland management.
- Arisings from thinning or other woodland or scrub management functions will be retained on site in the form of dedicated brash and wood piles or wind-rows, for the benefit for fungi, lichen, and invertebrates. Where necessary, arisings will be chipped and spread to a depth no greater than 75mm in woodland areas.
- Overgrowing or overhanging branches and dead, over-mature or dying trees will be subject to removal where they are considered dangerous on health and safety grounds, and in accordance with any protected species constraints.
- Hedgerows will be managed on a three-year rotation with only one side of the hedgerow cut in any one year to help develop the hedgerow structure. Cutting will be carried out at the end of the winter in February, thereby retaining berries through the winter months for wildlife and avoiding the bird breeding season.
- If hedgerows are managed by traditional techniques such as laying, this will be carried out on a rotational basis to retain the structural integrity of hedgerows and maintain connections with other habitats.
- Monitoring of hedgerows will be undertaken to detect any significant changes in plant health and condition. Checks will be made every three years, using fixed-point photography.

Grassland: establishment

8.3.2 A detailed plan for the establishment and management of species-rich grassland and conservation margins will be developed for the five-year establishment maintenance period. The aim will be to encourage development of a diverse sward of grasses and herbs. This may require the use of mowing and / or grazing regimes. Establishment maintenance will be based on the following principles and outline prescriptions:

- Immediately after sowing, the ground will be left undisturbed and un-watered to allow the grassland to establish naturally. Visual inspections will be made during the growing season.
- Once established, grazing (where feasible) will be undertaken on a rotational or zoned approach, with potential for mob grazing (short duration, high density) within compartments.
- Where grazing is not possible, mowing will be the alternative option. This will depend on the type of grassland and intending outcomes but is likely to include a single cut and collect during mid-August to late September. If grasses dominate, then an early mow to mimic the 'spring bite' graze in March or very early April will be followed by the second September cut. The majority of grassland away from the access routes will be around 30 to 45cm high at the highest point, during summer.
- Arisings will be raked into piles and left in situ for seven days before collection and removal to an off-site green waste composting facility.
- Control of undesirable species (e.g. arable weeds) and injurious weeds will be undertaken to prevent colonisation and domination of the grassland through the use of additional cuts during the growing season or if essential, a selective herbicide.
- Access to the periphery of the PV panels and any other infrastructure (where required) will be mown to maintain service access.
- Botanical surveys will be carried out in late spring to confirm that the establishment species-rich grassland and conservation margins have been successful in achieving their intended aims and objectives.
- Spot checks will be undertaken at locations within each grassland area by a suitably qualified ecologist during years 1, 3 and 5, the purpose being to record plant species, their distribution, and the overall condition of the grassland. Other relevant indicators relating to the sward that may require remedial action during the contract period or in the future will also be recorded.

Grassland: long-term management

8.3.3 The long-term management of species-rich grassland will be undertaken to maintain a relatively stable grassland community in the long-term, and to avoid areas naturally progressing into tall, dense, grass-dominated spaces. In contrast, for cover crop margins, long term management relies on disturbance and re-seeding.

8.3.4 Measures for species-rich grassland and conservation margins will focus on a regime of:

- Grazing or mowing, as described above, with arising from the latter removed off-site.
- Control of undesirable species (e.g. arable weeds) and injurious weeds to prevent colonisation and domination of the grassland using a selective herbicide.
- Meadow margins adjacent to woodland and hedgerows may be left for a year or more between cuts to provide dense ground level cover for fauna, including amphibians, small mammals, and invertebrates.
- For conservation / cover margins, if ground nesting birds are absent, plots may be scarified or 50% cut between mid-June and mid-July. Arisings will be raked into piles and left in situ for seven days before collection and removal to an off-site green waste composting facility. Plots will be re-sown every 2 to 3 years.
- The results of annual monitoring surveys will be used to adjust the management regime to maximise biodiversity. It is anticipated that detailed monitoring will be required at years 10, 15, 20, 25 and 30.

Natural Regeneration Areas

- 8.3.5 Any areas subject to natural regeneration will not be subject to routine management, other than the creation of dead-wood piles. An annual inspection and survey may be carried out to record growth and development of the area. If required, litter, rubbish and debris will also be removed and mowing, and cutting will be used to manage scrub at the edge of the buffer.

Aquatic habitats and waterbodies

- 8.3.6 The growth of planted, seeded and naturally colonising aquatic plants and any adjacent grassland planting will need to be controlled and managed to maintain the habitat diversity during the establishment period. A detailed plan for the establishment and management of any planting, as well as any vegetation clearance and trees works (such as pollarding) will be developed for the five-year establishment maintenance period. This will be determined through monitoring of the ponds through annual site inspections to identify requirements for any remedial action.
- 8.3.7 The long-term management of naturally colonising aquatic plants and any adjacent grassland planting will be undertaken to manage the ponds at various stages of succession to maintain a relatively stable and diverse wetland community in the long-term, and to avoid areas becoming dominated by one to two species.
- 8.3.8 The management prescriptions outlined below are considered appropriate and effective for the Scheme, but will be adapted as required following findings of annual site inspections and condition monitoring reports:
- Remove all litter, rubbish and foreign debris and remove from site.
 - Carry out rotational management of the marginal plants with the selective removal of the most dominant marginal planting to ensure the intended species diversity is retained. Works to be carried out in October.

- Scrub clearance and tree works to reduce shading should be carried out on an annual basis, in line with the recommendations provided for native planting outlined above.
- Prohibit excessive and extensive spread of plants once planting is established. Remove spreading plants as required in October.
- Monitor silt depth and if required remove silt material if it is considered to be detrimental to the function of the pond. All material should be left at the edge of the channel over night before being removed off site or to an agreed area offsite so any aquatic fauna can migrate back to the feature. This should be carried out annually in November to December.
- Bank erosion should be monitored and any erosion should be reported, and mitigation should be provided.

Other habitat provisions

Bird / Barn Owl Boxes

- 8.3.9 All wild birds, their active nests and eggs are protected under the Wildlife and Countryside Act 1981, as amended. This makes it an offence to deliberately or recklessly kill or injure any wild bird or damage or destroy any active nest or eggs of a wild bird.
- 8.3.10 Annual cleaning of bird boxes cannot be undertaken between the months of March and August inclusive, when birds may be using the boxes. Therefore, bird boxes will be cleaned between October and February to prevent the build-up of nest parasites in the boxes whilst avoiding the risk of disturbing birds using the boxes as a roost site during the cold winter months.
- 8.3.11 Barn owl boxes will be inspected annually between November and December by a suitably licensed ecologist. Where barn owls are absent any nesting material of other species (such as accumulations of sticks) will be removed where required, after ensuring the nest is empty.

Bat Boxes

- 8.3.12 Bat boxes will be inspected by an appropriately licensed bat surveyor for evidence of uptake as per the post-construction monitoring programme (see timing in Section 4), and any evidence of roosting bats will be recorded to assist with ongoing management of the woodland on site.
- 8.3.13 Where monitoring is not undertaken as outlined above, the condition of all wildlife boxes installed will be monitored annually during the operation of the Scheme and replacements will be made as necessary. Inspections can be timed to coincide with the required inspections of new tree and shrub plantings.
- 8.3.14 Bat boxes are, in most circumstances, unlikely to be used by hibernating bats during winter months (between November and February inclusive). Therefore, any maintenance that is required on bat boxes should be undertaken during these months, when any bird nests will be removed, after ensuring they are not in use. All bats and their roosts are protected under the Wildlife and Countryside Act 1981, as amended. Therefore, it is an offence to possess, control, transport, sell or exchange any live or dead bat. Therefore, if bats are inadvertently discovered during maintenance, the person undertaking the maintenance should leave the box undisturbed.

8.4 Post Construction Monitoring

- 8.4.1 Monitoring will be required to determine that the functions documented within this Outline LEMP and then formalised in the final LEMP are being achieved and whether any remedial management action may be required. The baseline, against which the effects arising from the actions derived from the monitoring can be compared, will comprise the pre-construction survey data. This data, collected in 2022, will require updating prior to construction, as by operation (from 2026) this data will be over three years old and therefore out-of-date (Ref-39). Updates would include a similar set of surveys undertaken at the baseline where relevant ecological receptors have been identified, including surveys of breeding and non-breeding birds, bat activity and badgers.
- 8.4.2 A post-construction monitoring programme will be formalised and agreed as part of the DCO application and included within the detailed LEMP. Walkover surveys of the Scheme Boundary will be undertaken between April and June in years 2, 4, 6, 10 and then every 5 years post-construction until the decommissioning stage. The surveys will involve an inspection of the woodland, hedgerows, grassland, and wetland habitats to ensure that they are being managed accordingly.
- 8.4.3 Post-construction monitoring for flora, birds (breeding and non-breeding), riparian mammals, badgers, bats (bat box roosting and activity survey), great crested newt and reptiles (presence/absence) will be undertaken in the respective seasons, in years 1, 3, 5 and 10 post-construction. This is likely to involve similar or scaled-down methods to the baseline surveys to enable cross-comparison with baseline data, to assess any changes in biodiversity as a result of the Scheme. This may include use of bat static detectors, breeding bird survey, targeted reptile surveys in enhanced habitats and great crested newt presence/absence survey of restored ponds.
- 8.4.4 An annual maintenance check of wildlife boxes (bats, birds and barn owl) would be made each winter to ensure that all boxes are still in position and secure. Some refitting of boxes, repairs and replacements are likely to be required over the life of the Scheme.
- 8.4.5 Results from the post-construction monitoring will feed into the management plan and, if required, management methods may be amended accordingly based on this monitoring.

9. Roles and Responsibilities

9.1 The Applicant and/or the Appointed Contractor(s)

9.1.1 The Applicant and their appointed contractor(s), and their appointed Ecologist (the ECoW) and Landscape Architect (LCoW), would be responsible for:

- Correct instruction of all parties contributing to delivery of the final approved LEMP (including but not restricted to the Applicant's staff and their appointed ecologists, landscape architects, landscape contractors, construction contractors and management organisations) based upon the principles stated within the Outline LEMP;
- Keeping the appointed ecologist/landscape architect/arboriculturalist informed of work activities that require support and supervision, so that it is clear when attendance is required;
- Enacting/enforcing recommendations made by the ecologist/landscape architect/arboriculturalist, or otherwise agreeing an appropriate alternative course of action, if it is subsequently determined that previous advice is not practicable or is out of date; and
- Keeping a record of measures taken to deliver the requirements of the final LEMP, to provide an auditable record of compliance.

9.2 The Appointed Ecologist (ECoW)

9.2.1 The ECoW will be responsible for:

- Advising the Applicant and the appointed contractor(s) on ecological matters and requirements for compliance with relevant legislation and protected species licences, providing support as instructed, and monitoring compliance with the final approved LEMP;
- Reviewing the LEMP at appropriate intervals and revising management requirements as necessary for the following five year period and subsequently for the duration of the Plan;
- Where a European Protected Species Mitigation Licence (EPSML) has been granted it is the responsibility of the 'Named Ecologist' and licence holder or otherwise appointed ecologists to ensure the compliance of the licence and working activities associated with the agreed licence; and
- Providing the Applicant and the appointed contractor(s) with survey reports and other written evidence required in accordance with the agreed scope of work and contractual obligations.

9.3 The Appointed Landscape Architect (LCoW)/ Arboriculturalist

9.4 The appointed LCoW/arboriculturalist will be responsible for:

- Providing specialist site supervision in the form of walkover assessments relating to relevant landscape areas. This would be to assess landscape components and their condition and identify the need for landscape

enhancement as instructed and in accordance with the agreed scope of work and contractual obligations, once the Scheme is operational;

- Monitoring and assessing the landscape related elements of the approved LEMP for their effectiveness on an annual basis for the first ten years following commencement of operation of the Scheme, and then for the following five year period and subsequently for the duration of the Plan;
- Ensuring that the landscape related elements of the approved LEMP are reviewed at the end of the five-year initial monitoring and assessment stage and amended accordingly for the following five year period and subsequently for the duration of the Plan. The LEMP shall be amended accordingly to suit any changing landscape conditions and ultimately inform the maintenance operations throughout the operational life of the Scheme; and
- Ensuring that any reviews associated with landscape related elements of the approved LEMP clearly identify any changes to site conditions and circumstances, whether the aims and objectives of the approved Plan are being met, and where identified changes are needed to existing management practices and timeframes.

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