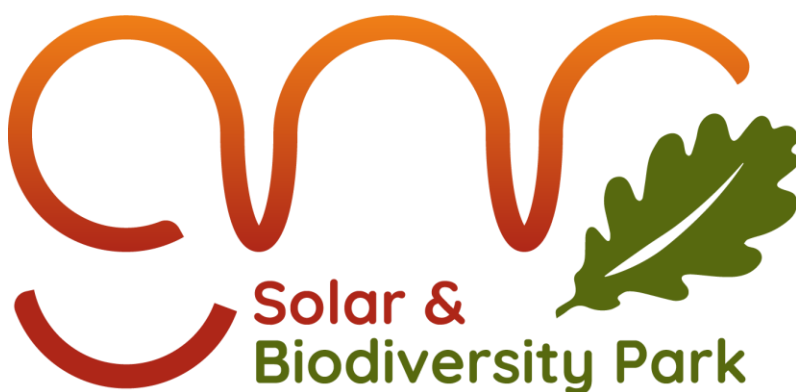




Great North Road Solar and Biodiversity Park

Environmental Statement

Volume 4 – Technical Appendices

Technical Appendix A5.1 – Outline Landscape and Ecology
Management Plan

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A5.1.1 INTRODUCTION

A5.1.1.1 SCOPE AND CONTENT

- 1 This Outline Landscape and Ecology Management Plan (oLEMP) sets out the measures that are required to deliver key elements of the mitigation hierarchy relating to the management of habitats for the Great North Road Solar and Biodiversity Park (the Development). The document has been prepared by Tir Collective with input from Envams Ltd and other specialists in the project team.
- 2 This Outline LEMP forms a Technical Appendix to the Environmental Statement (ES) for the Development. A final LEMP will be prepared pursuant to a Requirement of the DCO.
- 3 The LEMP proposals are shown on the Site Wide Landscape Masterplan and LEMP Masterplan Sheets 01–39 included in **Appendix A5.1**. These show the layout of proposed habitats and landscape features during the operation of the Development. The LEMP is the document that specifies how these features will be implemented, managed, monitored and remediated.
- 4 The Landscape Masterplan and LEMP provide details of the measures required to support the conclusions of the following chapters of the ES:
 - Chapter 7: Landscape and Visual Impact Assessment [EN010162/APP/6.2.7];
 - Chapter 8: Ecology and Biodiversity [EN010162/APP/6.2.7]; and
 - Chapter 9: Water Resources [EN010162/APP/6.2.9].

A5.1.1.2 CONSTRUCTION AND OPERATION PHASE MITIGATION

- 5 Measures to safeguard ecological features during the construction phase are set out in the Construction Ecological Management Plan (CEcMP) in TA A5.3 Outline Construction Environmental Management Plan (oCEMP) [EN010162/APP/6.4.5.3]. The operational phase will include similar safeguards, and these are set out in TA A5.5 Outline Operational Environmental Management Plan (OEMP) [EN010162/APP/6.4.5.5];
- 6 The CEMP and CEcMP include mitigation measures to protect habitats and species from harm and disturbance and these measures are not repeated in this LEMP. It is important that both the CEMP and LEMP are practical, working documents appropriate for their intended audiences and contractors, hence the distinction between the documents.
- 7 The CEMP and LEMP will be finalised pursuant to a Requirement of the DCO and at this point, when the construction programme is known, a Vegetation Clearance Phasing Plan will be produced; this will set out the location and timing of vegetation removal so that ecological effects are minimised (e.g., reducing clearances during the bird nesting season), habitat creation is optimised (e.g., tree planting in winter), and critical paths during construction are not compromised.

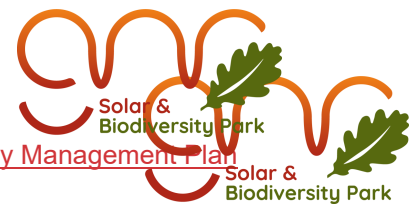
A5.1.1.3 BIODIVERSITY NET GAIN

- 8 It is anticipated that National Significant Infrastructure Projects (NSIPs) will not be subject to mandatory Biodiversity Net Gain (BNG) until May 2026. Consequently, the Development is exempt from mandatory BNG but has committed to delivering BNG.
- 9 A full BNG assessment, including all necessary supporting documents and metric, is provided in TA A8.13 Biodiversity Net Gain (BNG) Assessment [EN010162/APP/6.4.8.13] demonstrating that the Development will provide a net gain in biodiversity units of **+60.70% for habitat units, +26.46% for hedgerow units and +11.05% for watercourse units**. Habitat Management and Monitoring Plans (HMMPs)¹ are integral to the delivery of BNG and Defra has produced guidance and templates to assist with the provision of these to support Town and Country Planning Act (TCPA) 1990 applications. However, the large scale and complexity of the Development, combined with the requirements of other technical disciplines and issues not directly relating to BNG, such as species mitigation and flood alleviation, complicate the use of these templates in delivering an integrated management plan for the Development. Furthermore, it is not yet known if the prevailing BNG guidance and templates used in TCPA 1990 applications will be applicable to NSIPs.
- 10 Consequently, this Outline LEMP has been developed to meet the unique demands of the Development and to facilitate consultation. The prevailing Defra HMMP templates have not been used, but the final LEMP will include the necessary information and supporting materials to demonstrate consistency with the requirements of BNG, such as habitat condition targets and timescales, and monitoring methods.
- 11 The baseline UKHab and MoRPh habitat classification and condition assessments on which the BNG Assessment is based will be validated, and if necessary updated, following consent by undertaking additional surveys, the scope of which will be determined in consultation with Newark and Sherwood District Council.

A5.1.1.4 STRUCTURE

- 12 The LEMP provides details about the practical measures required to create or enhance habitats during the pre-construction, construction and operation phases of the Development. It also provides details of other supporting functions such as governance, monitoring and reporting, which are required for the successful implementation of the LEMP.
- 13 The following sections are included:
 - Section A5.1.2 – Roles and Responsibilities;
 - Section A5.1.3 – Environmental Design Elements;
 - Section A5.1.4 – Aims and Objectives;
 - Section A5.1.5 – Management Prescriptions;

¹ Available at: <https://www.gov.uk/guidance/creating-a-habitat-management-and-monitoring-plan-for-biodiversity-net-gain>



- Section A5.1.6 – Terrestrial Habitats;
- Section A5.1.7 – Agricultural Habitats; and
- Section A5.1.8 – Freshwater Habitats.

- 14 The LEMP does not include information about baseline conditions, underlying policy and legislation, or the conclusions of impact assessments, except where these are necessary for context. Such information is extensive and documented in ES chapters 7, 8 and 9 and their TAs and its inclusion here would distract from the practical value of the LEMP.

A5.1.2 ROLES AND RESPONSIBILITIES

- 15 The successful implementation of the LEMP will involve a wide range of individuals and organisations as below:

A5.1.2.1 OPERATOR

- 16 The Applicant will be wholly responsible for achieving the objectives of the LEMP and for its funding.

A5.1.2.2 CONTRACTORS

- 17 A variety of contractors will be appointed by the Applicant, and each will have contractual obligations to meet the responsibilities of the Applicant.

A5.1.2.3 LEMP STEERING GROUP

- 18 A LEMP Steering Group (SG) has been formed to help inform the development of the LEMP and to provide advice and oversight during its implementation. The SG has been convened during the pre-application phase and will run until the completion of decommissioning.
- 19 The SG is purely advisory and will not be responsible for the content of the LEMP or its implementation and outcomes. The terms of reference for the SG will be developed in the final LEMP in consultation with the SG. At this stage, it is envisaged that the SG will:
- Monitor compliance of the LEMP with regard to its aims, objectives and measurable outcomes;
 - Provide advice about amendments to the LEMP, for example, changes to the management of a habitat in order to achieve the objectives of the LEMP;
 - Communicate and coordinate with third parties (outside the SG); and
 - Provide advice about related matters.
- 20 The SG will include representatives from the following organisations, although not all will be required to attend all meetings:
- The Developer or Applicant;
 - Natural England;
 - Environment Agency;
 - Newark and Sherwood District Council;
 - Nottinghamshire County Council;

- Nottinghamshire Wildlife Trust;
 - Royal Society for the Protection of Birds;
 - Trent Rivers Trust; and
 - Sherwood Forest Trust.
- 21 Meetings will be held according to the following schedule, unless otherwise agreed by the SG:
- Pre-application: As required;
 - Pre-construction (post-consent): As required;
 - Construction: One per quarter;
 - Operation: Two per year in Y1 and Y2; one per year thereafter; and
 - Decommissioning: One per quarter.

A5.1.3 ENVIRONMENTAL DESIGN ELEMENTS

A5.1.3.1 LANDSCAPE

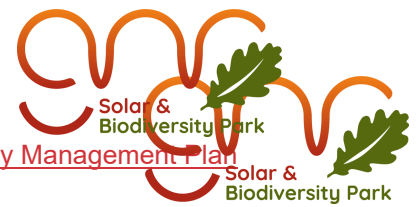
- 22 The below list defines the key landscape design concepts which have guided the preparation of the landscape proposals:
- Protection of retained habitats, where possible, which are of ecological and nature conservation interest, and the enhancement and creation of ecologically valuable habitats and features;
 - Suitable buffers around the root protection areas of each tree and hedgerow that are to be retained;
 - Strategic landscape interventions to reinforce and enhance Green Infrastructure, such as new structural landscape planting including native hedgerow, treelines/belts and woodland;
 - Retention and enhancement of the existing components of landscape character, including field pattern;
 - Creation of suitable habitats to promote the wildlife that the land within the Order Limits already supports (see section A5.1.3.2);
 - Strengthen existing landscape features such as hedgerows, to reduce visual effects and reinforce these landscape elements which make an important contribution to landscape character;
 - Creation of a community orchard to engage and promote community involvement; and
 - Provide mitigation of the visual impact of the Development when viewed by sensitive visual receptors.

A5.1.3.2 ECOLOGY

- 23 A review of England's wildlife sites and ecological networks² established the principles by which their resilience and coherence could be improved:
- More – increase the diversity of habitats;
 - Bigger – increase the extent of habitats;

² Available at:

https://webarchive.nationalarchives.gov.uk/ukgwa/20130402154501mp_/http://archive.defra.gov.uk/environment/biodiversity/documents/201009space-for-nature.pdf



- Better – improve the value or condition of habitats, including reducing the pressures on wildlife by improving the wider environment, such as through buffering wildlife sites; and
 - Joined-up – improve connectivity between habitats.
- 24 The review focused on a national scale network of sites, but the principles are applicable to habitat management at the landscape scale of the Development and have influenced the design of the Masterplan and the scope of the LEMP.
- 25 The Nottinghamshire Biodiversity Opportunity Mapping Project³ has also influenced the design of the Masterplan and LEMP and the forthcoming Local Nature Recovery Strategy (LNRS)⁴ will be considered in post-consent design iterations, whilst recognising that that many aspects of the Development design will be fixed by the time of its publication.
- 26 The LEMP also provides measures that will reduce risks to natural capital through nature recovery, including several of those identified in the recently published State of Natural Capital Report 2024⁵, such as the creation of species-rich farmland, woodland creation and improving water quality.
- 27 National Policy Statement for energy (EN-01)⁶ includes provisions for developments to deliver biodiversity and wider environmental gains (e.g., access to greenspace), beyond those embodied in BNG. This LEMP also addresses the obligation to produce a biodiversity management strategy for the Development.
- 28 National Policy Statement for renewable energy infrastructure (EN-3)⁷ identifies the potential of solar farms to increase the biodiversity value of a site beyond BNG, as demonstrated by the LEMP.
- 29 In 2020, the government committed to protecting 30% of the UK's land by 2030 ('30by30'). Through the LEMP and BNG, the Development will contribute to this by protecting a large area from loss or damage to important biodiversity values through long-term ownership and long-term management agreements, as well as contributing to local policies such as the emerging LNRS.
- 30 Many of the habitats and species affected by the Development have specific guidance and action plans relating to their conservation management and are considered in the management prescriptions.

³ Available at: <https://nottsbg.org.uk/wp-content/uploads/2022/04/The-NewarkSherwood-BOM-Project-Report-FINAL-April2022-.pdf>

⁴ Available at: <https://nottsnaturerecovery.co.uk/index.php>

⁵ Lusardi, J., et al. (2024). State of Natural Capital Report for England 2024: Risks to nature and why it matters. Natural England Research Report Number NERR137.

⁶ Available at: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1>

⁷ Available at: <https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3>

A5.1.3.3 WATER RESOURCES

- 31 National Policy Statement for energy (EN-01)⁶⁵ Section 5.8: Flood Risk outlines the promotion of the use of Sustainable Drainage Systems (SuDS).
- 32 Rural Sustainable Drainage Systems (RSuDS)⁸ will be implemented in Works no. 1 Solar PV to control surface water runoff. RSuDS are not a new concept, but they are not widespread in the rural environment and can present many opportunities for improving the management of water at source. They are a collection of physical structures that mimic natural processes. In rural environments, they help manage the detrimental impact of rainfall on fields where runoff is a major threat to the biodiversity and chemical status of our surface waters.
- 33 RSuDS slow down or prevent the transport of pollutants to watercourses by breaking the delivery pathway between the pollutant source and the receptor. By intercepting runoff and trapping sediment before it leaves the field they help maintain and manage the provision of good water quality by preventing the loss of soil, chemicals, nutrients, and faecal organisms. A further benefit is their ability to temporarily capture water and slow down flow. This can reduce localised flooding and provide valuable aquatic habitats in the form of micro-wetlands for farmland wildlife and will encourage the downward movement of water to recharge aquifers.
- 34 The baseline vegetation in solar PV areas is predominately arable crops and so its replacement with grassland will be beneficial in terms of vegetation cover and soil stabilisation because the land will not be tilled.
- 35 Sheep grazing is part of the grassland maintenance strategy within solar PV areas and will assist in improving biodiversity and soil activity, if grazing pressure is not too high⁹. Sheep can create micro-climates with their hooves in the soil (through compaction), spread seeds with their wool, and spread diaspores from some plants with their hooves and faeces. Therefore, there needs to be a balance between biomass management and livestock stocking rate to ensure the grass mix is maintained and soil cohesion is managed, especially following periods of heavy or prolonged rainfall.
- 36 As vegetation becomes fully established under the PV arrays there is likely to be a decrease in surface water runoff rates and a reduction in the potential for sediment and agricultural chemicals (e.g., phosphates and nitrates) to transfer into the wider hydrological catchment compared to the baseline scenario.

⁸ Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/291508/scho0612buwh-e-e.pdf

⁹ Kampherbeek *et al.* (2023). A preliminary investigation of the effect of solar panels and rotation frequency on the grazing behaviour of sheep (*Ovis aries*) grazing dormant pasture. Applied Animal Behaviour Science 258

A5.1.3.4 AGRICULTURAL LAND USE AND SOILS

- 37 Well-managed agricultural land can help to support wildlife as part of a productive landscape and farmers and farming will, therefore, have an important role in the management of the Development. A range of measures will be incorporated into the farmed landscape (in Work no. 3 Mitigation/Enhancement) in ways that are sympathetic to prevailing practices. In particular, the long-term management of retained agricultural land will be important for the conservation of ground-nesting birds.
- 38 Habitats and long-term land use have been informed by agricultural land classification (ALC) such that there will be no long-term loss of high quality agricultural land. Most of the agricultural land affected by the LEMP proposals has the potential to be readily returned to agricultural operations upon decommissioning. Longer term interventions, such as woodland and pond creation, are expected to be retained, but such interventions are consistent with current agricultural policies.
- 39 The LEMP has the potential to improve soil health across many parts of the Development. The Outline Soil Management Plan (oSMP) (TA A17.2 oSMP [EN010162/APP/6.4.17.2]) includes measures to avoid degradation of soils during construction and habitat works. Land use change, particularly from arable cropping to grassland or woodland, has a significant benefit for the levels of soil organic carbon held in the soil¹⁰. Intensive arable operations have been recorded to have reduced soil carbon levels by 40–60 %. Long-term grassland will enhance soil health and help reduce soil erosion¹¹.

A5.1.4 AIMS AND OBJECTIVES

- 40 The LEMP describes the measures required to implement, manage, monitor and remediate habitats during the lifetime of the Development. The aim of these actions is to ensure that, as far as practicable, habitats are created and enhanced in accordance with the conclusions of the ES and the aspirations of BNG. In addressing this aim, a range of overarching objectives are summarised in Table A5.1.1.

Table A5.1.1: LEMP Objectives

Objective	Rationale
Mitigate and compensate for the loss of habitats, including those on which wildlife depend.	Reduce the effects of habitat loss.
Enhance retained habitats to a better condition, extent and connectivity, including their ability to support wildlife.	Provide an overall net gain in biodiversity.

¹⁰ British Society of Soil Science (2021). Science Note: Soil Carbon. Available at: https://soils.org.uk/wp-content/uploads/2022/05/BSSS_Science-Note_Soil-Carbon_Final_May22_75YRS_DIGITAL.pdf

¹¹ Environment Agency (2023). Summary of the state of the environment: soil. Available at: <https://www.gov.uk/government/publications/state-of-the-environment/summary-state-of-the-environment-soil>

Objective	Rationale
Create new habitats in keeping with the local environment.	Provide an overall net gain in biodiversity.
Increase the resilience of habitats to the effects of climate change.	Provide long-term stability and opportunities for wildlife.
Screen elements of the Development from key receptors.	Reduce the visual impact of the Development.
Soften the 'hard edges' of the Development.	Reduce the visual impact of the Development.
Improve the amenity value of the land.	Increase opportunities for access and education.
Reduce flood risk.	Reduce the effects of flooding on local residents.
Improve water quality.	Improve the quality of water in the catchment to benefit people and the environment.

A5.1.5 MANAGEMENT PRESCRIPTIONS

A5.1.5.1 MANAGEMENT OBJECTIVES

- 41 Management objectives will involve short-term and long-term commitments to achieve and fulfil the overall design concepts.

Short term objectives (0–5 years):

- Make good areas disturbed during the construction works;
- Successfully establish planting with acceptable rates of growth to achieve the mitigation of landscape and visual effects;
- Remove species/weeds from the planting areas where they are adversely affecting the establishment of planting;
- Replace dead plants within the planting areas and hedgerows where necessary;
- Provide sufficient resources including necessary labour, materials and machinery; and
- Protect and maintain retained existing habitats of ecological value.

Long term objectives (5–40+ years):

- To carry out periodic maintenance as necessary to make sure the design objectives of the proposed habitats are met; and
 - Overall, maintain and enhance the ecological value of the Development.
- 42 With all aspects of landscape management, it is essential that the principle of an 'on-going commitment' is established and that sufficient recourses are made available to ensure continuity.

A5.1.5.2 MAINTENANCE OBJECTIVES

- 43 Maintenance objectives will include regular planting checks and maintenance to ensure that the planting is established and is consistent with the original design intentions. This will involve continuous / ongoing routine operations throughout the year, for which a detailed maintenance schedule is to be followed.

A5.1.5.3 LAND USE

- 44 The LEMP is divided into three broad categories reflecting operational land-use and likely management packages:
- **Terrestrial Habitats:** Features that will not be part of retained and operational agricultural land. The management of these features does not depend on or include typical agricultural practices and so typically includes semi-natural habitats;
 - **Agricultural Land:** Features that are outside the Development footprint and part of retained and operational agricultural land. The management of these features is wholly dependent on continuing agricultural practices, albeit modified to benefit biodiversity; and
 - **Freshwater Habitats:** Ponds, ditches and watercourses and their surrounding (riparian) habitats. These features require specialist management, including as part of flood management, and are subject to specific BNG requirements.

A5.1.5.4 MASTERPLAN

- 45 The LEMP is the document that specifies how the features shown on the Masterplan will be delivered. The Masterplan shows broad classifications which include one or more features, each of which is the subject of distinct management prescriptions in the LEMP. Table A5.1.2 summarises the habitats and areas of different land management shown on the LEMP Masterplans in **Appendix A5.1**.

Table A5.1.2: LEMP Habitats

LEMP Feature	Extent
Terrestrial Habitats (Table A5.1.3)	
Existing woodland and trees	116.92 ha
Proposed woodland	31.09 ha
Existing hedgerow	-
Proposed hedgerow	39.44 km
Proposed hedge and tree belt	11.01 km
Proposed line of trees	4.68 km
Proposed tree belt	2.72 ha

LEMP Feature	Extent
Proposed grassland (PV areas) – species diverse	999.12 ha
Proposed community orchard	2.37 ha
Proposed wood pasture	8.51 ha
Proposed ecotone	23.13 ha
Proposed diverse grassland	404.33 ha
Proposed diverse grassland – Maplebeck	54.18 ha
Wildlife boxes and artificial refugia	
Agriculture (Table A5.1.4)	
Arable	143.86 ha
Freshwater (Table A5.1.5)	
Proposed riparian corridor (with scattered trees)	69.85 ha
Pond restoration and creation	2 new ponds 4 four existing ponds enhanced
Proposed scrape	16 no.
In-channel Enhancements	

A5.1.5.5 PROGRAMME

- 46 It is anticipated that implementation will start before the commencement of construction (i.e., before the main civils) and last for the full operational life of the Development, excluding the decommissioning phase for which a separate plan will be developed.
- 47 Construction will last for up to 24 months and will be phased such that works will take place in different parts of the Order Limits at different times. Consequently, the implementation of habitat management will also follow a phased approach but with the aim that all features will be implemented by the end of the first year of operation. Pre-construction implementation is required for some features so that they are established and can fulfil functions during construction, such as providing alternative nesting habitat for birds.
- 48 Each management plan sets out timescales for key management activities.
 - Pre-construction covers the period from consent up to three months before the commencement of enabling works;
 - Construction covers the full duration of construction, from enabling works until the start of the first complete calendar year that the Development is fully operational; and

- The operational phase is described by the year ('Y') in which an activity will take place. Year 1 (Y1) relates to the first full calendar year following the commencement of full operation.

A5.1.5.6 MONITORING

- 49 Monitoring is essential to the success of the LEMP. The timing, frequency and methods of monitoring will be designed to provide the necessary information to monitor compliance with objectives and influence management.
- 50 Monitoring reports will be provided to the Local Planning Authority (LPA). Any lessons learnt from this monitoring can then be reflected in a review of the management plan (to be agreed with the LPA), which should normally be made every five years.
- 51 Adaptive management, whereby the results of regular monitoring or prevailing guidance influence management actions, is recognised as an effective method to achieve better outcomes. Therefore, the management and remediation prescriptions in the LEMP may be subject to change over the lifetime of the Development to ensure that, as far as possible, the habitat types achieve the same or better condition than proposed.

A5.1.6 TERRESTRIAL HABITATS

- 52 Terrestrial habitats include those that are not part of, or will be removed from, agricultural production. A range of terrestrial habitats are proposed, each with widely differing establishment and management requirements. The extent of these habitats are shown on the LEMP Masterplans included within **Appendix A5.1** and as shown in Table A5.1.3.
 1. Existing woodland and trees
 2. Proposed woodland
 3. Existing hedgerows
 4. Proposed hedgerows
 5. Proposed hedge and tree belt
 6. Proposed line of trees
 7. Proposed tree belt
 8. Proposed grassland (PV areas) – species diverse
 9. Proposed community orchard
 10. Proposed wood pasture
 11. Proposed ecotone
 12. Proposed diverse grassland
 13. Proposed diverse grassland - Maplebeck
 14. Proposed wildlife boxes and artificial refugia
- 53 Table A5.1.3. defines the Aims and Objectives for each terrestrial habitat. Prescriptions for the implementation, management, monitoring and remediation are also provided.

Table A5.1.3: Terrestrial Habitat Proposals and Timing

1. Existing woodland and trees		
Aim: To promote mature trees, including dead-wood habitat. Broadleaved woodland is a priority habitat. Objectives: There are several existing woodlands or plantations within the local area. Existing woodland and trees are to be retained, where possible, throughout the Order Limits to minimise adverse impacts on landscape character and green infrastructure. Existing woodland and trees contribute to the local landscape pattern and structure whilst contributing to local landscape and ecological value. Management interventions will address historic loss of Common Elm and Ash resulting in wooded areas without canopies cover.		
Phase	Action	Timing
Implementation	All retained trees will be protected during construction following BS5837:2012 “Trees in Relation to Design, Demolition and Construction – Recommendations”, as set out in TA A8.12 Arboricultural Impact Assessment [EN010162/APP/6.4.8.12] and the Outline CEMP.	Protected throughout the construction and operation.
Management	Ongoing management of trees will aim to promote mature trees, including dead-wood habitat. Tree management will be avoided unless there are overriding safety concerns. Where tree works are necessary, an assessment of the tree’s features to support protected species will be carried out by a suitably qualified ecologist in advance. Where tree features capable of supporting protected species are to be removed, further surveys and subsequent mitigation will be necessary beforehand. These surveys and mitigation measures will follow recommended standard published guidelines. Woodland will be subject to a buffer of either 15m or the RPAs where nearby and potential harmful work is required. The OEMP will provide safeguards for retained woodland and trees. Dead wood habitat will be maintained in situ where possible. In the event that it cannot, the wood will be placed in a specific habitat pile(s) and left to degrade naturally close to the site of felling.	As required (based on monitoring). Avoid bird nesting season (March–August), unless ECoW can advise otherwise.

	Ongoing management of woodland and trees will aim to promote mature trees and botanical diversity.	
Monitoring	BNG condition assessment. Visual inspection.	Annual visits in Y1, 2, 3, 5, 15, 30.
Remediation	As for Management.	As required to Y40
2. Proposed woodland		
Aim: To provide a net gain in woodland by creating new woodlands and increasing the connectivity between existing ones. Broadleaved woodland is a priority habitat. Objectives: Proposed woodland will enhance existing green infrastructure and connectivity, provide benefits to the local landscape character and biodiversity, and contribute to visual screening of the Development. The planting of new woodland would increase species diversity, providing more resilience and succession to existing areas of woodland and trees, whilst new management regimes can be implemented.		
Phase	Action	Timing
Implementation	Broadleaved tree species will be planted and will include a mixture of native species to meet different objectives. Nursery stock from local provenance, from Sherwood Forest Trust will be preferred. Historically, woodlands on clayey soils will have had a canopy comprising Common and Wych Elm and Ash, but now these species are absent or declining due to disease. Variation in woodlands can be achieved by varying establishment (direct seeding/tree planting/natural colonisation) and design of planted areas¹² and future management regimes. The mix of species proposed in each location would be selected from the following species list: Pendunculate Oak <i>Quercus robur</i> main canopy species	Optimal: October to March during Construction.

¹² Blakesley D, Buckley, GP & Fitzgerald, JD. (2013). Realising the wildlife potential of new native woodland. East Malling Research, East Malling.

	• Small-leaved Lime <i>Tilia cordata</i> was previously frequent (Howitt & Howitt's A Flora Of Nottinghamshire 1963) • Hornbeam <i>Carpinus betulus</i> - A substitute for Ash as a canopy species • Silver Birch <i>Betula pendula</i> • Field Maple <i>Acer campestre</i> • Wych Elm <i>Ulmus glabra</i> • Common Hawthorn <i>Crataegus monogyna</i> • Midland Hawthorn <i>Crataegus laevigata</i> • Blackthorn <i>Prunus spinosa</i> • Hazel <i>Corylus avellana</i> • Holly <i>Ilex aquifolium</i> • Crab Apple <i>Malus sylvestris</i> • Wild Privet <i>Ligustrum vulgare</i> An alternative food plant for some insects, especially moths, that have Ash as a food plant. Wet Woodland species: • Crack Willow <i>Salix x fragilis</i> • White Willow <i>Salix alba</i> • Alder <i>Alnus glutinosa</i> • Aspen <i>Populus tremuloides</i> • Goat Willow <i>Salix caprea</i> • Grey Willow <i>Salix cinerea</i> subsp. <i>oleifolia</i> • Downy Birch <i>Betula pubescens</i> • Guelder rose <i>Viburnum opulus</i>	
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	There is a collection of willow species and varieties at Nottinghamshire Wildlife Trust's Farndon Willow Holt reserve which may be suitable as source material. Ground flora will be left to colonise naturally or will be planted/sown. The approach and specification will depend on the location (e.g. proximity to existing woodland; ground conditions).	
Planting	New woodland will be a planted with a mix of sizes from 60-90 cm Transplants, 125-150 cm Whips and 200-250 cm Feathered trees. Bare root transplants will be notch planted and feathered trees would be pit planted. The following measures will be carried out to prepare planting areas: • Where compaction has occurred, the soil will be ripped to a depth of 500 mm and stones of greater than 75 mm will be removed; • Native species will be planted between mid-October and April at a depth of at least 500 mm into friable rootable soil; and • Individual plants will be at 2 m centres in single species blocks of three to ten plants. Larger specimen trees will be planted in locations as shown on the drawings. For the planting of Feathered trees measuring 1.75–2.25 m tall, trees are to be planted in tree pits measuring 500 mm x 500 mm wide and 500 mm deep. Tree stakes and ties will be fixed and provided with an overall length 1500 mm and 750 mm height above ground. The planting is to be protected from rabbits with bio-degradable rabbit guards installed around the individual plants. Deer fencing may be installed around blocks of woodland.	Optimal: October to March during Construction.
Management	For newly planted areas, management of ground vegetation should be kept to a minimum and only where vigorous growth of coarse grasses threatens to smother the transplants in the first three to four years following planting. Where necessary, ground vegetation should be restricted, either through the	As required (based on monitoring).

	cutting of annuals in late summer, the use of mulch mats, or the spot application of glyphosate to undesirable perennials. Favoured trees should normally have full rounded crowns and any competitors should be thinned out before the favoured trees become over topped. Thinning will help trees grow faster once they have clear space around the canopy into which they can grow and will also allow for more light to filter through the trees. Thinning should be avoided during the bird nesting season, which is usually between March and August. No fertilisers will be used as this will promote the proliferation of competitive species at the expenses of botanical diversity.	Avoid bird nesting season (March–August), unless ECoW can advise otherwise.
Monitoring	BNG condition assessment. Visual inspection.	Two visits in first year after planting or Y1 (whichever comes first). Annual visits in Y2, 3, 5, 15, 30.
Remediation	Specimens that are dying, damaged or diseased within the first five years following planting will be replaced to the same specification. Beyond this time the planting will be allowed to naturalise with any gaps filled in to maintain character.	To Y5

3. Existing hedgerows		
Aim: To provide a net gain in this habitat by enhancing the condition of existing hedgerows. Hedgerows are a priority habitat. Objectives: There is an extensive hedgerow network in the Trent Valley, which can be species-rich where they are old parish boundaries, but most hedges are dominated by Common Hawthorn. Across the Development, a lot of hedgerows are species-poor, heavily managed resulting in gappy, low and narrow hedges. Except for localised losses, existing hedgerows are to be retained and protected to preserve the existing linear field boundaries that contribute to landscape character. Where hedgerows are gappy/defunct, they will be in-filled using additional native species to improve species diversity and biodiversity value. Where existing hedgerows are required to provide visual screening, additional native species would be planted to infill gaps and along sections of lower density in order to increase screening. Native species are to be locally sourced.		
Phase	Action	Timing
Implementation	Retained hedgerows will be protected during construction operations following the BS5837:2012 “Trees in Relation to Design, Demolition and Construction – Recommendations” as set out in TA A8.12 Arboricultural Impact Assessment [EN010162/APP/6.4.8.12] and the Outline CEMP. Wherever possible, hedgerows will be retained and the existing gaps within the hedgerows will be used to facilitate works. The hedgerows will be subject to a buffer of either 5 m or the RPAs of hedgerow-trees where nearby potential harmful work is required. Gappy hedgerows will be infilled using species that are typical of the local area This will be undertaken outside the breeding bird season to avoid disturbance (March to August), unless surveyed to confirming no presence of nesting birds. Methods and specification to follow 4. <i>Proposed Hedgerows</i>, below).	Protected throughout the construction operations.
Management	Ongoing management of the hedgerows will aim to promote structural and botanical diversity. Different hedgerow-types will be managed according to their characteristics. In general, hedgerows will be mechanically maintained once every three years	Hedgerows to be cut between October and February to avoid disturbance to nesting birds.

	to allow habitats to establish whilst enabling the hedge to retain its shape and form whilst naturalising. They will be maintained at a width of 2-3 m and a minimum height of 3 m. A variable cutting schedule on a three-year rotation will provide greater structural diversity and naturalness and a more regular supply of fruit. Trimming in winter will also avoid disturbing nesting birds. Dead wood habitat will be maintained in situ where possible. In the event that it cannot, the wood will be placed in a specific habitat pile(s) and left to degrade naturally.	
Monitoring	BNG condition assessment. Visual inspection.	Annual visits Y1–5 and every five years thereafter.
Remediation	Hedgerow plants that are dying, damaged or diseased will be replaced on a like-for-like basis as per Implementation.	To Y5
4. Proposed hedgerows		
Aim: To provide a net gain in this habitat by creating new hedgerows. Objectives: Lengths of native hedgerow are proposed along boundary features and elsewhere throughout the Development, refer to the LEMP Masterplan Drawings. Proposed hedgerows will enhance existing green infrastructure and connectivity, provide benefits to the local landscape character and biodiversity, and contribute to visual screening of the Development.		
Phase	Action	Timing
Implementation	The following species are recommended: • Common Hawthorn <i>Crataegus monogyna</i> • Blackthorn <i>Prunus spinosa</i> (may be limited due to its tendency to 'sucker' and invade neighbouring areas) • Field Maple <i>Acer campestre</i> • Crab Apple <i>Malus sylvestris</i>	Optimal: October to March during Construction.

	• Guelder Rose <i>Viburnum opulus</i> • Hazel <i>Corylus avellana</i> • Holly <i>Ilex aquifolium</i> • Wild Privet <i>Ligustrum vulgare</i> • Buckthorn <i>Rhamnus cathartica</i> • Dog Rose <i>Rosa canina</i> • Field Rose <i>Rosa arvensis</i> • Pedunculate Oak <i>Quercus robur</i> • Spindle <i>Euonymus europaeus</i>	
Planting	New native hedgerows are to be planted using bareroot transplants at 40-60 cm high or 60-80 cm high, trench planted as a double staggered row, with 300 mm between the rows and 300 mm between the plants. The same species should be planted in random blocks of minimum 5no. and maximum 8no. plants. Native species are to be locally sourced, and the below species are recommended, which have been agreed with the Sherwood Forest Trust The following measures will be carried out to prepare planting areas: • Where compaction has occurred, the soil will be ripped to a depth of 500 mm and stones of greater than 75 mm will be removed; • Native species will be planted between mid-October and April at a depth of at least 500 mm into friable rootable soil. For the planting of Feathered trees measuring 1.75–2.25 m tall, trees are to be planted in tree pits measuring 500 mm x 500 mm wide and 500 mm deep. Tree stakes and ties will be fixed and provided with an overall length 1500 mm and 750 mm height above ground. The hedgerow planting is to be protected from rabbits with bio-degradable rabbit guards installed around the individual plants.	Optimal: October to March during Construction.

Management	Ongoing management of the hedgerows will aim to promote structural and botanical diversity. <u>Y1–5</u> New hedgerows will be mechanically cut once a year allowing the height of the hedge to increase to a minimum height of 3 m during this time. <u>Y6 onwards</u> The hedgerows will be managed to promote structural diversity and the fruiting of flowers and berries. Hedgerows will be trimmed on a two to three year rotation¹³ in January – February using a flail trimmer, to allow berries to fruit and provide foraging opportunities to wildlife. They will be maintained at a width of 2 m and a minimum height of 3 m. Not all the hedgerows on site will be trimmed in the same year so as to retain structural diversity and foraging opportunities. Trimming in winter will also avoid disturbing nesting birds, reptiles and dormice which potentially use the site. Dead wood habitat will be maintained in situ where possible. In the event that it cannot, the wood will be placed in a specific habitat pile(s) and left to degrade naturally. Tree management will generally be avoided unless there are overriding safety concerns, although a 2-3 m clear stem will be maintained for hedgerow trees to ensure they are distinguishable. Where tree works are necessary, an assessment of the tree's features to support protected species will be carried out by a suitably qualified ecologist in advance.	Annually Y1–5; every two or three years thereafter, following a variable cutting schedule. Hedgerows to be cut between October and February to avoid disturbance to nesting birds.
Monitoring	BNG condition assessment. Visual inspection.	Annual visits Y1–5 and every five years thereafter.
Remediation	Hedgerow plants that are dying, damaged or diseased will be replaced on a like-for-like basis as per Implementation.	To Y5

¹³ This trimming frequency will help to maintain the health, thickness, and species diversity of the hedgerows. Hedgerows left unmanaged for long periods become tall and 'leggy,' often resulting in gaps at the bases.

5. Proposed hedge and tree belts		
Aim: To provide a net gain in this habitat by creating new hedgerows (including hedgerow trees) and tree belts. Objectives: Lengths of native hedgerow are proposed with trees and tree belts, primarily along the northern boundaries of array fields, refer to the LEMP Masterplan Drawings. Proposed hedgerows with trees will enhance existing green infrastructure and connectivity, provide benefits to the local landscape character and biodiversity, and contribute to visual screening of the Development.		
Phase	Action	Timing
Implementation	The following species are recommended: • Common hawthorn <i>Crataegus monogyna</i> – as predominant species • Blackthorn <i>Prunus spinosa</i> – to be limited • Field Maple <i>Acer campestre</i> – allowing some to become hedgerow trees • Crab Apple <i>Malus sylvestris</i> • Hazel <i>Corylus avellana</i> • Holly <i>Ilex aquifolium</i> • Wild Privet <i>Ligustrum vulgare</i> • Buckthorn <i>Rhamnus cathartica</i> • Guelder Rose <i>Viburnum opulus</i> • Spindle <i>Euonymus europaeus</i> • Dog Rose <i>Rosa canina</i> • Field Rose <i>Rosa arvensis</i> • Pedunculate Oak <i>Quercus robur</i> – included as hedgerow trees	Optimal: October to March during Construction.
Planting	New native hedgerows and trees are to be planted using bareroot transplants at 40-60 cm high or 60-80 cm high, trench planted as a double staggered row, with 300 mm between the rows and 300 mm between the plants. The same	Optimal: October to March during Construction.

	species should be planted in random blocks of minimum 5no. and maximum 8no. plants. Native species are to be locally sourced, and the below species are recommended, which have been agreed with the Sherwood Forest Trust. Trees are to be randomly spaced, to avoid an avenue of trees. Where more visual screening is required for visual receptors, trees are to be randomly planted with denser spacing or in small groups of 3no. trees. Larger trees species should be provided with sufficient spacing to allow for future canopy spread. The following measures will be carried out to prepare planting areas: • Where compaction has occurred, the soil will be ripped to a depth of 500 mm and stones of greater than 75 mm will be removed; • Native species will be planted between mid-October and April at a depth of at least 500 mm into friable rootable soil; For the planting of Feathered trees measuring between 1.75 m – 2.25 m tall, trees are to be planted in tree pits measuring 500 mm x 500 mm wide and 500 mm deep. Tree stakes and ties will be fixed and provided with an overall length 1500 mm and 750 mm height above ground. The hedgerow planting is to be protected from rabbits with bio-degradable rabbit guards installed around the individual plants.	
Management	Ongoing management of the hedgerows will aim to promote structural and botanical diversity. <u>Y1–5</u> New hedgerows will be mechanically cut once a year allowing the height of the hedge to increase to a minimum height of 3 m during this time. At this stage the feathered trees, identified by the tree stakes will not be cut back. <u>Y6 onwards</u> The hedgerows will be managed to promote structural diversity and the fruiting of flowers and berries. Hedgerows will be trimmed on a two to three	Annually Y1–5; every two or three years thereafter, following a variable cutting schedule. Hedgerows to be cut between October and February to avoid disturbance to nesting birds.

	year rotation¹⁴ in January – February using a flail trimmer, to allow berries to fruit and provide foraging opportunities to wildlife. They will be maintained at a width of 2 m and a minimum height of 3 m. Not all the hedgerows within the Development will be trimmed in the same year so as to retain structural diversity and foraging opportunities. Trimming in winter will also avoid disturbing nesting birds, reptiles and dormice which potentially use the site. Dead wood habitat will be maintained in situ where possible. In the event that it cannot, the wood will be placed in a specific habitat pile(s) and left to degrade naturally. Tree management will generally be avoided unless there are overriding safety concerns, although a 2-3 m clear stem will be maintained for hedgerow trees to ensure they are distinguishable. Where tree works are necessary, an assessment of the tree's features to support protected species will be carried out by a suitably qualified ecologist in advance.	
Monitoring	BNG condition assessment. Visual inspection.	Annual visits Y1–5 and every five years thereafter.
Remediation	Hedgerow plants and trees that are dying, damaged or diseased will be replaced on a like-for-like basis as per Implementation.	To Y5

¹⁴ This trimming frequency will help to maintain the health, thickness, and species diversity of the hedgerows. Hedgerows left unmanaged for long periods become tall and 'leggy,' often resulting in gaps at the bases.

6. Proposed line of trees		
Aim: To provide a net gain in trees by planting/creating new areas.		
Implementation	Native trees, ideally of local provenance and in keeping with the local character, will be planted. Non-native species may be considered where these provide functional benefits (such as quick-growing visual screening). Trees will be staked and protected from herbivore damage. Mulching around the bases will prevent weed growth. The following species are recommended: • Pendunculate Oak <i>Quercus robur</i> • Hornbeam <i>Carpinus betulus</i> • Field Maple <i>Acer campestre</i> The planting and maintenance method for 'line of trees' will also be used for the 'scattered trees' shown on the LEMP Masterplans within <u>12: Proposed diverse grassland</u>.	Optimal: October to March during Construction.
Planting	For the planting of Feathered trees measuring between 1.75 m – 2.25 m tall, trees are to be planted in tree pits measuring 500 mm x 500 mm wide and 500 mm deep. Tree stakes and ties will be fixed and provided with an overall length 1500 mm and 750 mm height above ground. Where compaction has occurred, the soil will be ripped to a depth of 500 mm and stones of greater than 75 mm will be removed; Tree planting is to be protected from rabbits with bio-degradable rabbit guards.	Optimal: October to March during Construction.
Management	Spot treatment of vigorous/encroaching weeds with herbicides will be considered. Watering in dry periods during the establishment period may be necessary. Tree stakes will be removed (Y5).	Y1–5 Between October and February

Monitoring	BNG condition assessment. Visual inspection.	Two visits in first year after planting or Y1 (whichever comes first). Annual visits in Y2–5 and every five years thereafter.
7. Proposed tree belt		
Aim: To provide visual screening for substation and BESS areas. Objectives: Proposed tree belts will enhance existing green infrastructure and connectivity, provide benefits to the local landscape character and biodiversity, and contribute to visual screening of the Development.		
Phase	Action	Timing
Implementation	Broadleaved tree species will be planted and will include a mixture of native species to meet different objectives. Nursery stock from local provenance will be preferred. The mix of species proposed in each location would be selected from the following species list: • Pendunculate Oak <i>Quercus robur</i> main canopy species • Silver Birch <i>Betula pendula</i> • Field Maple <i>Acer campestre</i> • Common Hawthorn <i>Crataegus monogyna</i> • Midland Hawthorn <i>Crataegus laevigata</i> • Blackthorn <i>Prunus spinosa</i> • Hazel <i>Corylus avellana</i> • Holly <i>Ilex aquifolium</i> The proposed tree belt planting will be a minimum width of 5 m and a minimum offset of 4 m from security fence. Where existing hedgerows/scrub	Optimal: October to March during Construction.

	extends into the area identified for the tree belt, these will be retained and supplemented with feathered tree planting.	
Planting	New tree belts will be a planted with a mix of sizes from 60-90 cm Transplants, 125-150 cm Whips and 200-250 cm Feathered trees. Bare root transplants will be notch planted and feathered trees would be pit planted. The following measures will be carried out to prepare planting areas: • Where compaction has occurred, the soil will be ripped to a depth of 500 mm and stones of greater than 75 mm will be removed; • Native species will be planted between mid-October and April at a depth of at least 500 mm into friable rootable soil; and • Individual plants will be at 2 m centres in single species blocks of three to ten plants. Larger specimen trees will be planted in locations as shown on the drawings. For the planting of Feathered trees measuring 1.75–2.25 m tall, trees are to be planted in tree pits measuring 500 mm x 500 mm wide and 500 mm deep. Tree stakes and ties will be fixed and provided with an overall length 1500 mm and 750 mm height above ground. The planting is to be protected from rabbits with bio-degradable rabbit guards installed around the individual plants. Deer fencing may be installed around blocks of planting.	Optimal: October to March during Construction.
Management	For newly planted areas, management of ground vegetation should be kept to a minimum and only where vigorous growth of coarse grasses threatens to smother the transplants in the first three to four years following planting. Where necessary, ground vegetation should be restricted, either through the cutting of annuals in late summer, the use of mulch mats, or the spot application of glyphosate to undesirable perennials. Favoured trees should normally have full rounded crowns and any competitors should be thinned out before the favoured trees become over topped. Thinning will help trees grow faster once they have clear space	As required (based on monitoring). Avoid bird nesting season (March–August).

	around the canopy into which they can grow and will also allow for more light to filter through the trees. Thinning should be avoided during the bird nesting season, which is usually between March and August. No fertilisers will be used as this will promote the proliferation of competitive species at the expenses of botanical diversity.	
Monitoring	BNG condition assessment. Visual inspection.	Two visits in first year after planting or Y1 (whichever comes first). Annual visits in Y2, 3, 5, 15, 30.
Remediation	Specimens that are dying, damaged or diseased within the first five years following planting will be replaced to the same specification. Beyond this time the planting will be allowed to naturalise with any gaps filled in to maintain character.	To Y5
8. Proposed grassland (PV areas) – species diverse		
Aim: To provide a net gain in this habitat by converting arable land to grassland. The Order Limits contain arable and pasture farmland, which are generally botanically poor and provide little ecological interest. There are considerable opportunities to enhance species diversity and ecological interest by establishing meadows and species-rich grassland in their place. Ongoing management of the grassland will aim to maintain and promote the establishment of wildflowers associated with less intensively managed neutral grassland habitats and the wildlife these support.		
Phase	Action	Timing
Implementation	Species diverse grassland (6–8 species m ⁻²) to be created in the Works no. 1 Solar PV areas currently in arable production. The seed mix and its method of implementation will be selected based on ground conditions, supply chain and soil characteristics (including soil testing of chemical, physical, and biological properties, if necessary), which varies across the Development.	Cover/stabilising crop Pre-construction and Construction (optional). Sowing typically in late autumn/early winter.

	The following measures will be carried out to prepare and sow/establish the grass and wildflower seed: - Where competitive perennials such as couch grass are present, glyphosate will be applied as a spot application to reduce the proliferation of these species; - A fine seed-bed with a good tilth will be created through repeated harrowing and rolling; Cotswold Grass Seeds: Solar Park Long Term Grazing Mixture or another neutral lowland grassland A suitable seed mixture with a range of <u>native</u> grasses (<u>minimum 4 species</u>) and forbs (<u>minimum 2 species</u>) will be sown in spring/autumn by tractor-mounted seed broadcasters at <u>an appropriate</u> rate of 3-5g/m; Following sowing, the soil may be rolled to ensure good contact between the soil and the seed and to help promote rapid germination.	
Management	Management in the first growing season will be necessary to control competitive/undesirable species. Annual species will be cut to approximately 8 cm, eight weeks after sowing and perennial species will be treated by spot spraying or weed-wiping with glyphosate. Any scrub or trees invading the grassland or encroaching towards the solar farm perimeter fence will be removed by pulling-up or cutting at the base so as to leave the soil and surrounding flora undisturbed. This will be undertaken annually. No fertilisers will be used as this will promote the proliferation of competitive species at the expense of botanical diversity. Inside the perimeter fence, the grassland will either be mechanically cut or grazed by sheep at a low density (c. 2–3 sheep/ha) to manage the flush of annuals, but grazing will not commence until a sward is established. Grazing will take place year-round on a rotational basis between solar PV compartments. This avoids overgrazing and allows flowering plants to be	Y1 onwards.

	present throughout the plant growth season, whilst ensuring that shading of solar panels from plant growth is avoided. Full details of the grazing regime will depend on the phasing of construction, the final Development design, and greater understanding of conditions and management practicalities across the areas to be grazed, and will therefore be determined post-consent. The timing and length of the cut will ensure that impacts to ground nesting birds and other wildlife from these management activities are avoided.	
Monitoring	BNG condition assessment.	Two visits per year in Y1 and Y2. Annual visits Y3–5 and every five years thereafter.
Remediation	Construction activities have the potential to disturb the seed bed/grassland and so where establishment has been disturbed and/or is not occurring, additional seeding may be required, and management may be changed accordingly. Scrub encroachment will be controlled.	As informed by monitoring.
9. Proposed community orchard		
Aim: To create a publicly accessible, traditional fruit orchard. Traditional orchards are a priority habitat supporting valuable wildlife. The local community will have free access to the orchard and will be invited to participate (at no cost to them) in its management. The details of community involvement will be determined in consultation with Bathley Parish Council following consent.		
Phase	Action	Timing
Implementation	A mixture of fruiting trees and shrubs will be planted. The trees will include heritage varieties of local character. A potential option would be to source Bramley Apple grafts from the original tree in Southwell, at the discretion of Nottingham Trent University.	Construction.

	Soil testing may be undertaken to inform management. Bare root trees (MM106 or M26) will be preferred to help quickly establish the orchard. The trees are to be planted in straight rows, in a square pattern where the distance between rows is the same as the distance between each tree, to form a square. The distance between each tree should be a minimum of 6 m to allow access for machinery and to ensure each tree receives equal amounts of light. Other pollinator-friendly plants and fruiting shrubs (e.g. gooseberry, redcurrant) will be planted. To ensure pollination of each tree by insects using pollen from another variety, at least two or three different, but comparable varieties need to be planted.	
Planting	For the planting of Feathered trees measuring between 1.75 m – 2.25 m tall, trees are to be planted in tree pits measuring 500 mm x 500 mm wide and 500 mm deep. Tree stakes and ties will be fixed and provided with an overall length 1500 mm and 750 mm height above ground. For the planting of Standard trees measuring between 1.75 m – 3.5 m tall, trees are to be planted in tree pits measuring 750 mm x 750 mm wide and 750 mm deep. Tree stakes and ties will be fixed and provided with an overall length 1500 mm and 750 mm height above ground Where compaction has occurred, the soil will be ripped to a depth of 500 mm and stones of greater than 75 mm will be removed; Guards around each tree should be provided to avoid damage from machinery and herbivores. The guards should not be fastened to the tree or rub against, constrict or damage it in any way. They should be durable and of the correct height and width to prevent damage.	Trees are to be planted in late autumn/ early winter (November-December) while the soil still has some warmth.
Management	Watering during drought periods. A 1000 mm diameter of bark mulch should be maintained for the first 3 years whilst each tree is establishing. Tree stakes, ties, and guards should be checked regularly to avoid any damage to trees.	Throughout and as required.

	It will be necessary to undertake formative pruning; this should be done with respect to the overall form and shape of the tree. The aim is to create a strong basic branch structure to ensure a healthy tree is developed that will crop well in the future, and to support the weight of the fruit and ensure it gets as much sun as possible to help the fruit ripen. Different varieties have different growth habits, which should be allowed for when developing their shape. At least 20 cm of trunk should be left between each branch. On Standard trees, the height of the first branch should be developed 1.5-2 m above ground. Approximately three to six evenly spaced secondary leaders that have formed wide angles with the trunk (which will ensure a stronger growing joint) should be pruned back by half (two thirds for weak shoots), to an outward facing bud. These will form the first tier of branches. The remaining secondary leaders can be removed. The eventual aim is to have 4-8 evenly spaced main branches radiating from the trunk. These will form the framework from which the fruit-producing side branches and spurs will develop. During the first few years, the pruning will be relatively severe in relation to the amount of wood present on the tree. The leader of each branch should be reduced each year between a third and a half of the season's growth. To stimulate new vegetative shoot growth, thin shoots should be pruned to short spurs of one or two buds only. After approximately ten years of formative pruning, and as the tree matures, the aim of pruning is to generate a large, high quality fruit crop. A balanced pruning regime should aim to remove badly placed, weak, overcrowded, crossing and inward-facing shoots and branches. It should be noted that different species and even varieties of the same species of fruit tree have different forms and growth habits, which should be taken into account. Pruning should be undertaken during winter (November to March).	
Monitoring	Visual inspection.	Annual visits to Y5 and every five years thereafter.

Remediation	Dead, dying or diseased specimens will be replaced to the same specification. Scrub and invasive weeds will be controlled.	As required (based on monitoring)
10. Proposed wood pasture		
Aim: To provide a net gain in trees by planting/creating new areas. Create a mosaic of habitats, blending open grassland with scattered trees / parkland.		
Implementation	Native trees, typically Pendunculate Oak <i>Quercus robur</i> ideally of local provenance and in keeping with the local character, will be planted within newly created grassland (as per specification for Proposed Diverse Grassland).	Optimal: October to March during Construction.
Planting	For the planting of Feathered trees measuring between 1.75 m – 2.25 m tall, trees are to be planted in tree pits measuring 500 mm x 500 mm wide and 500 mm deep. Tree stakes and ties will be fixed and provided with an overall length 1500 mm and 750 mm height above ground. Where compaction has occurred, the soil will be ripped to a depth of 500 mm and stones of greater than 75 mm will be removed; Tree planting is to be protected from rabbits with bio-degradable rabbit guards and post and wire fencing enclosure with top rail to protect trees from livestock damage.	Optimal: October to March during Construction.
Management	Spot treatment of vigorous/encroaching weeds with herbicides will be considered. Watering in dry periods during the establishment period may be necessary. Grassland will be managed through low intensity grazing or mowing to manage the flush of annuals. Stakes and tree guards will be removed (Y5). No fertilisers will be used as this will promote the proliferation of competitive species at the expense of botanical diversity.	Y1–5 Between October and February

	A long grass habitat zone will be maintained through low intensity grazing or mechanical cutting to 150 mm on a 2 to 3 year rotational basis, to prevent scrub encroachment.	
Monitoring	BNG condition assessment. Visual inspection.	Two visits in first year after planting or Y1 (whichever comes first). Annual visits in Y2–5 and every five years thereafter.
Remediation	Specimens that are dying, damaged or diseased within the first five years following planting will be replaced to the same specification.	To Y5
11. Proposed ecotone		
Aim: To provide a net gain in this habitat by converting arable land to grassland or managing existing grassland to create a transition habitat adjacent to woodland. Ongoing management of the grassland will aim to maintain and promote the establishment of a woodland edge with scrub transitioning to long grass.		
Phase	Action	Timing
Implementation	Where established on arable land, or land disturbed during construction, the ecotone will be seeded to achieve grassland cover using a seed mix to be selected based on ground conditions, supply chain and soil characteristics (including soil testing of chemical, physical, and biological properties, if necessary), which varies across the site. The following measures will be carried out to prepare and sow/establish the grass and wildflower seed: Where competitive perennials such as couch grass are present, glyphosate will be applied as a spot application to reduce the proliferation of these species;	Cover/stabilising crop Pre-construction and Construction. Sowing typically in late autumn/early winter.

	• A fine seed-bed with a good tilth will be created through repeated harrowing and rolling; • Emorsgate's 'Tussock Grass Mixture EG10' or another similar grassland mixture will be sown in spring/autumn by tractor-mounted seed broadcasters at a rate of 5g/m; • The species mix will be as recommended by the RSPB (2014), or similar and approved, which enhances the floral species diversity in fields previously occupied by arable habitat. • Following sowing, the soil may be rolled to ensure good contact between the soil and the seed and to help promote rapid germination. The specification will be targeted to match the characteristics of the adjacent woodland habitats. New scrub areas will be planted with a mix of sizes from 60-90 cm Transplants, 125-150 cm Whips. Bare root transplants will be notch planted. The following measures will be carried out to prepare planting areas: • Where compaction has occurred, the soil will be ripped to a depth of 500 mm and stones of greater than 75 mm will be removed; • Native species will be planted between mid-October and April at a depth of at least 500 mm into friable rootable soil; and • Individual plants will be at 2 m centres in single species blocks of three to ten plants. The planting is to be protected from rabbits with bio-degradable rabbit guards installed around the individual plants. Broadleaved tree and shrub species will be planted along the edge of the ecotone to create a transition habitat. Nursery stock from local provenance will be preferred. The mix of species proposed in each location would be selected from the following species list:	
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	• Pendunculate Oak <i>Quercus robur</i> main canopy species • Field Maple <i>Acer campestre</i> • Common Hawthorn <i>Crataegus monogyna</i> • Midland Hawthorn <i>Crataegus laevigata</i> • Hazel <i>Corylus avellana</i> • Holly <i>Ilex aquifolium</i>	
Management	Management in the first growing season will be necessary to control competitive/undesirable species. Annual species will be cut to approximately 8 cm, eight weeks after sowing and perennial species will be treated by spot spraying or weed-wiping with glyphosate. No fertilisers will be used as this will promote the proliferation of competitive species at the expense of botanical diversity. The woodland edge will be allowed to develop to scrub through natural regeneration. A long grass zone will be maintained through mechanical cutting to 150 mm on a 2 to 3 year rotational basis, to prevent scrub encroachment. Where the ecotone extends to recreational routes, grass cutting on an annual basis may be necessary from the end of September onwards. Scrub and trees are to be kept clear from grassland buffers of at least 6 m away from PRoWs and permissive routes. Any scrub or trees encroaching towards the solar perimeter fence will be removed by pulling-up or cutting at the base so as to leave the soil and surrounding flora undisturbed. This will be undertaken annually. The timing and length of the cut will ensure that impacts to ground nesting birds and other wildlife from these management activities are avoided. For newly planted areas, management of ground vegetation should be kept to a minimum and only where vigorous growth of coarse grasses threatens to smother the transplants in the first three to four years following planting.	Y1 onwards.

	Where necessary, ground vegetation should be restricted, either through the cutting of annuals in late summer, the use of mulch mats, or the spot application of glyphosate to undesirable perennials. No fertilisers will be used as this will promote the proliferation of competitive species at the expenses of botanical diversity.	
Monitoring	BNG condition assessment.	Two visits per year in Y1 and Y2. Annual visits Y3–5 and every five years thereafter.
Remediation	Construction activities have the potential to disturb the seed bed/grassland and so where establishment has been disturbed and/or is not occurring, additional seeding may be required, and management may be changed accordingly. Scrub encroachment will be controlled.	As informed by monitoring.
12. Proposed diverse grassland		
Aim: To provide a net gain in this habitat by converting arable land to grassland. Other types of grassland may be proposed.		
Phase	Action	Timing
Implementation	Modified grassland (moderate condition) to be created outside solar PV areas. Seed mix (comprising >8 species m ⁻² and >20% cover of forbs). The seed mix and its method of implementation will be selected based on ground conditions, supply chain and soil characteristics (including soil testing of chemical, physical, and biological properties, if necessary), which varies across the Development. The following measures will be carried out to prepare and sow/establish the grass and wildflower seed: Where competitive perennials such as couch grass are present, glyphosate will be applied as a spot application to reduce the proliferation of these species;	Cover/stabilising crop before and during construction (optional). Sowing typically in late autumn/early winter.

	- A fine seed-bed with a good tilth will be created through repeated harrowing and rolling; <u>A seed mixture with a range of native grasses (minimum 6 species) and forbs (minimum 2 species) will be sown in spring/autumn by tractor-mounted seed broadcasters at an appropriate rate.</u> Candidate seed mixes include British Seed Houses RE9 Farmland Mixture (MG6 Grassland), <u>Emorsgate Seeds</u> and <u>Naturescape N1 General Purpose Meadow Mix</u>, <u>and N2 Tall Herb Meadow Mixture</u> or another neutral lowland hay meadow grassland mixture with a range of grasses and forbs will be sown in spring/autumn by tractor-mounted seed broadcasters at a rate of 5g/m². - The seed can be applied by machine. Once sown, the seed should be lightly pressed into the seedbed by rolling to ensure good contact between the soil and the seed and to help promote germination.	
Management	A mechanical cut of grassland will be completed twice, which will be in line with a hay meadow management regime. The sward will be cut to 100 mm in late summer (late-July) and again in September, with arisings collected and removed as hay or silage. These arisings may be used to seed other areas through hay strewing. Where competitive perennials such as couch grass, docks or thistles (or other injurious weeds) are present and pose a threat to the establishment of the habitat, a suitable herbicide to reduce spread of these species may be used in limited quantities, such as through spot application. It is likely that such treatment will be both occasional and limited in extent. The management will help to reduce the fertility of the soil and encouraging greater floristic diversity. In later years, when soil fertility has decreased, a single cut may be adequate. Conservation grazing (as specified for the grassland in PV areas) may be considered as an alternative.	Y1 onwards.

	Outside the perimeter fence, mechanical cutting would be the preferred management regime where the sward is cut to 100 mm once per year to prevent scrub encroachment toward the solar perimeter fence or PRow. This would create tussocky grassland habitat to provide varied grassland habitats to prevent scrub encroachment. Alternatively, low intensity grazing may be used if it can achieve the same aims.	
Monitoring	BNG condition assessment.	Two visits per year in Y1 and Y2. Annual visits Y3–5 and every five years thereafter.
Remediation	Where establishment is not occurring, management may be changed accordingly (e.g. oversowing). Scrub encroachment will be controlled.	As required (based on monitoring)

13. Proposed diverse grassland - Maplebeck		
Aim: To improve the condition of this grassland by changing its management regime.		
Phase	Action	Timing
Implementation	The aim with this area is improve management, which may involve overseeding with a suitable seed mix or management of the existing grassland. Where overseeding is proposed a seed mix (comprising >8 species m ⁻² and >20% cover of forbs) would be selected based on ground conditions.	Cover/stabilising crop before and during construction. Sowing typically in late autumn/early winter.
Management	A mechanical cut of grassland will be completed twice, which will be in line with a hay meadow management regime. The sward will be cut to 100 mm in late summer (late-July) and again in September, with arisings collected and removed as hay or silage. These arisings may be used to seed other areas through hay strewing. The management will help to reduce the fertility of the soil and encouraging greater floristic diversity. In later years, when soil fertility has decreased, a single cut may be adequate. Conservation grazing may be considered as an alternative. Low-intensity sheep grazing/ cutting would be introduced at least eight weeks after sowing to encourage tillering and maintain the grassland. Where practicable, grazing will be rotated around the various field units, so that grazing/ cutting is periodic and some grassland on site is always in flower (between June and September). Any scrub or trees invading the grassland or encroaching towards the solar panels will be removed by pulling-up or cutting at the base so as to leave the soil and surrounding flora undisturbed. This will be undertaken annually. All tree and shrub removal should be undertaken outside of the bird nesting season (March-September). If unavoidable, a thorough check of the site for nesting birds should be undertaken prior to any works affecting vegetation. Any active nests found must be retained in situ with a suitable vegetative buffer,	Y1 onwards.

	until the ecologist confirms that the nest(s) are no longer active. Only then can vegetation clearance within this area resume. No fertilisers will be used as this will promote the proliferation of competitive species at the expense of botanical diversity.	
Monitoring	BNG condition assessment.	Two visits per year in Y1 and Y2. Annual visits Y3–5 and every five years thereafter.
Remediation	Where establishment is not occurring, management may be changed accordingly. Scrub encroachment will be controlled.	As required (based on monitoring)

14. Proposed wildlife boxes and artificial refugia

Aim: To increase sheltering and breeding habitats for a range of animals.

Phase	Action	Timing
Implementation	<u>Indicative specifications and numbers are provided and will be confirmed, including locations, following consent.</u> <u>Bat boxes:</u> Long-life (Woodcrete or similar) bat boxes will be installed at appropriate locations including both trees and buildings. The proposed specifications include: • 30no. Schwegler Bat Box 2f (or similar universal type); • 10no. Bat Colony Box 3FS (or similar); and • 6no. Schwegler 3FF bat box (or similar). <u>Bird Boxes:</u> Bird boxes will be installed at appropriate locations, predominantly on retained trees. The boxes will include a variety of types and will be suitable for a range of birds, including owls. Long-life (Woodcrete or similar) is preferred. The proposed specifications include:	Pre-construction and Construction.

	• 30no tree sparrow nest box; • 8no. kestrel nest box; and • 4no. barn owl nest box. <u>Reptile Refugia:</u> Habitat piles and hibernacula will be created from natural materials generated during construction, such as logs and branches. These will be located in grassland, scrub and ecotones free from operational disturbance. <u>Otter holt:</u> An artificial holt will be created in an undisturbed riparian area, free from flooding and close to a good food supply, as far away from roads as possible. The location will be determined on the basis of pre-commencement otter survey results. The holt will either be a structure of pipes that will create tunnels for the otter, or a living holt, which may involve the planting of fast growing trees such as willow, where the holt can be created in the root system. It may also be as simple as a log pile with ample entrance points leading the otter to a cavity.	
Management	Repair and replacement as required to maintain the same specification. Periodic cleaning.	As required
Monitoring	Visual inspection of condition and occupancy. Natural England licence holder may be required to check bat and bird boxes.	Annually to Y5 then every five years thereafter.
Remediation	Repair and replacement as required to maintain the same specification.	As required (based on monitoring)

A5.1.7 AGRICULTURAL LAND

- 54 Many of the agricultural land management prescriptions are based on the grants available from the current Countryside Stewardship scheme and provide evidence-based, practical solutions to enhance wildlife in farmland; these grant-based interventions are familiar to farmers and compatible with agricultural land-use. The extent of these habitats are shown on the LEMP Masterplans included within **Appendix A5.1** and as shown in Table A5.1.4.
- 15. Agricultural: Arable
 - 16. Agricultural: Skylark plots
 - 17. Agricultural: Lapwing plots
 - 18. Agricultural: Wild bird seed crop
 - 19. Agricultural: Headlands
 - 20. Agricultural: Beetle banks
 - 21. Agricultural: Supplementary feeding for farmland birds
- 55 Table A5.1.4. defines the Aims for each area. Prescriptions for the implementation, management, monitoring and remediation are also provided.

Table A5.1.4 Agricultural Land Management Prescriptions and Timing

15. Agricultural: Arable		
Aim: To provide improved breeding and overwintering habitat for a range of birds and to enhance soil condition. Objectives: Some areas of existing arable land within the Development that are excluded from solar panel installation will be retained though ploughing and sowing of crop species. Arable field margins within these areas will also be enhanced and managed for arable weed species. The retention of arable land will provide continued habitat for breeding skylark and other ground nesting bird species.		
Phase	Action	Timing
Implementation	Crop rotation will include spring-sown cereals and fallow on a 2–3 year rotation and including post-harvest overwinter stubble. Following harvest, crops will be left fallow, to provide enhanced overwinter stubble¹⁵ and sparse, ruderal vegetation in the growing season. The stubble will not be topped or grazed, and no pre-harvest desiccants, post-harvest herbicides, fertilisers, or manures will be applied. Overwintering stubble will be improved by broadcasting beneficial seed and nectar-producing plants, e.g., mustard and fodder radish across 10% of the stubble area.	Pre-construction and Construction. Seed broadcasting will take place after harvest.
Management	Crop type and rotation will be managed based on prevailing conditions to ensure that they are based on the most effective and efficient schedule. When next to winter bird food plots, stubble areas will be used as areas for supplementary feeding. Areas of enhanced overwintering stubble will have herbicides applied to control problem (e.g., injurious) weeds if necessary.	Construction and Operation. Herbicide application after 15th May.
Monitoring	Visual inspection. Breeding and wintering bird surveys.	Annually to Y5 then every five years thereafter.

¹⁵ Available at: <https://www.gov.uk/countryside-stewardship-grants/enhanced-overwinter-stubble-ab6> [accessed on: 22/11/2024]

Remediation	Where crop rotation and overwintering stubble habitats are not sustaining yield or attracting biodiversity in the expected numbers their locations and suitability will be assessed, and new approaches will be considered.	As required (based on monitoring)
16. Agricultural: Skylark plots		
Aim: To provide improved foraging habitat for Skylarks. Management will follow Countryside Stewardship AB4 ¹⁶		
Phase	Action	Timing
Implementation	Skylark plots to be created within <u>15. Agricultural: Arable</u> either by: • Turning off the drill to leave an unsown plot; or • Sowing the crop as normal and spraying with herbicide to create the plot. There will be a minimum of two plots per ha and with each plot approximately 4 x 4 m. Plots will be retained until crop is harvested. Plots must be at least 50 m from boundaries and margins, typically in fields >5 ha.	Annually during Pre-construction, Construction and Operation.
Management	After drilling, plots will be managed with the same treatment as the remainder of the field. Plots will not be kept weed-free but spot-treating with herbicide may be implemented. Mechanical weeding of crops containing skylark plots will be avoided to prevent associated destruction of nests.	As required each year.
Monitoring	Visual inspection of plots. Breeding bird survey, with focus on ground-nesting birds and quantifying habitat use and behaviour.	Annually to Y5 then every five years thereafter.
Remediation	The size, location and density of plots will be adjusted to meet the aims.	As required (based on monitoring)

¹⁶ Available at: <https://www.gov.uk/countryside-stewardship-grants/skylark-plots-ab4> [accessed on: 22/11/2024]

17. Agricultural: Lapwing plots		
Aim: To provide improved nesting habitat for Lapwing. Management will follow Countryside Stewardship AB5 ¹⁷		
Phase	Action	Timing
Implementation	Lapwing plots will be created within <u>15. Agricultural: Arable</u>. Uncropped fallow plots of 1–5 ha will be established within crops, with a minimum of 30% bare ground created/maintained for nesting birds. Plots will be established via cultivation or spraying. No plots will be within 100 m of woodland, in-field and hedgerow trees, buildings, overhead power lines, main roads and public rights of way. Areas which are waterlogged or contain black-grass, wild oats or sterile brome will not be used.	Annually during Pre-construction, Construction and Operation. Plots will be created by 20th March. Plots will be retained until the crop is harvested after 31st July.
Management	If natural regrowth threatens the 30% bare ground cover, and no nesting birds are present, bare ground will be restored. This approach may be used in rotation with overwinter stubble. Machinery on the fields (e.g. undertaking spraying) can travel over plots if they keep to tramlines and sprayers are switched off. Plots and tramlines will be checked for nest signs in advance of such operations.	Bare-ground restored before 30th April.
Monitoring	Visual inspection of plots. Breeding bird survey, possibly with bespoke methods.	Annually to Y5 then every five years thereafter.
Remediation	The size, location and density of plots will be adjusted to meet aims.	As required (based on monitoring)

¹⁷ Available at: <https://www.gov.uk/countryside-stewardship-grants/nesting-plots-for-lapwing-and-stone-curlew-ab5> [accessed on: 22/11/2024]

18. Agricultural: Wild bird seed crop		
Aim: To provide overwintering food for birds and small mammals, thereby improving overwinter survival. Management will follow Countryside Stewardship OP2 ¹⁸		
Phase	Action	Timing
Implementation	Wild bird seed crop (with at least six seed-bearing species) will be established in blocks or strips of at least 6 m wide and between 0.4 ha and 5 ha as part of <u>15. Agricultural: Arable</u> . The seed mix has been shown to support eight times the density of seed eating birds compared to stubbles.	Annually during Pre-construction, Construction and Operation.
Management	The habitat will be left undisturbed as much as possible except for re-sowing. Location can be varied according to prevailing land use.	Removal of the plant cover and cultivation will not take place before 15 th March.
Monitoring	Visual inspection of habitats. Wintering bird survey, possibly with bespoke methods.	Annually to Y5 then every five years thereafter.
Remediation	Where establishment is not occurring as required, corrective action will be taken to alter the seed mix and/or management methods. The size and location of the crop may be varied.	As required (based on monitoring)

¹⁸ Available at: <https://www.gov.uk/countryside-stewardship-grants/wild-bird-seed-mixture-op2> [accessed on: 22/11/2024]

19. Agricultural: Headlands		
Aim: Create headland strips to support scarce arable plants, insects and birds throughout the year. Management will follow Countryside Stewardship AB10 ¹⁹ .		
Phase	Action	Timing
Implementation	Headland strips or plots of c. 6 m wide will be implemented to establish a range of arable and other broad-leaved plants to create a year-round habitat as part of <u>15. Agricultural: Arable</u>	Pre-construction and Construction
Management	No fertilisers, manures, or limes will be applied. Insecticides will not be applied until after mid-March until the crop is harvested. The headland will remain unharvested during the summer, autumn, and winter months. Location can be varied according to prevailing land use.	Construction and Operation. Harvest plots during the spring.
Monitoring	Visual inspection of habitats. Breeding and wintering bird surveys, possibly with bespoke methods.	Annually to Y5 then every five years thereafter.
Remediation	Where establishment is not occurring as required, corrective action will be taken to alter the seed mix and/or management methods. The size and location of the headlands may be varied.	As required (based on monitoring)

¹⁹ Available at: <https://www.gov.uk/countryside-stewardship-grants/unharvested-cereal-headland-ab10> [accessed on: 22/11/2024]

20. Agricultural: Beetle banks		
Aim: Beetle banks will be created to provide nesting and foraging habitats for pollinators, small mammals, farmland birds, and beneficial insects which feed on crop pests. Management will follow Countryside Stewardship AB9 ²⁰ .		
Phase	Action	Timing
Implementation	A raised bank measuring between 3–5 m wide and at least 0.4 m high will be created from soil as part of <u>15. Agricultural: Arable</u> A mixture of fine-leaved grasses such as red fescue together with some tussock-forming varieties like tall fescue, timothy and cocksfoot will be sown to form a dense grass cover. No fertilisers, manure, lime, or pesticides will be used on the area surrounding the beetle bank. Herbicides may be used to weed-wipe or spot-treat for the control of injurious weeds, invasive non-natives, nettles or bracken.	Pre-construction and Construction.
Management	The grass will be cut several times during the first summer to help it establish, but cutting when the bank is wet will be avoided to stop the soil compacting. The established bank will be cut to prevent encroachment by undesirable species (e.g. scrub).	Construction and Operation. Cutting after the 1 st August in Y2 onwards.
Monitoring	Visual inspection of habitats. Breeding bird survey, possibly with bespoke methods.	Annually to Y5 then every five years thereafter.
Remediation	Where establishment is not occurring as required corrective action will be taken to alter the seed mix and/or management methodologies to ensure the new approach will establish the desired habitat.	As required (based on monitoring)

²⁰ Available at: <https://www.gov.uk/countryside-stewardship-grants/beetle-banks-ab3> [accessed on: 22/11/2024]

21. Agricultural: Supplementary feeding for farmland birds		
Aim: To provide overwintering food for farmland birds thereby improving overwinter survival. Management will follow Countryside Stewardship OP3 ²¹		
Phase	Action	Timing
Implementation	25 kg of both cereals and other small seeds scattered once a week for 20 weeks at feeding stations. Each feeding station will therefore be supplying a total of 500 kg. A total of 4 tonnes across eight locations. This can be implemented in conjunction with overwinter stubbles.	Pre-construction and Construction. 1 st December to 30 th April.
Management	Location can be varied according to prevailing land use. Seed mix can be altered according to supply chain and prevailing conditions but must meet minimum specification.	Construction and Operation. Cutting after the 1 st August in Y2 onwards.
Monitoring	Visual inspection of habitats. Breeding bird survey, possibly with bespoke methods.	Annually to Y5 then every five years thereafter.
Remediation	Seed mix and locations will be varied to achieve better outcomes.	As required (based on monitoring)

²¹ Available at: <https://www.gov.uk/countryside-stewardship-grants/supplementary-feeding-for-farmland-birds-op3> [accessed on 26/11/2024]

A5.1.8 FRESHWATER HABITATS

- 56 Interventions in the freshwater environment have involved the collaboration between various specialists to ensure that they balance a range of requirements. For example, riparian corridors are designed to improve biodiversity but in doing so may affect flood risk. The extent of these habitats are shown on the LEMP Masterplans included within **Appendix A5.1** and as shown in Table A5.1.5.
- 22. Proposed riparian corridor
 - 23. Pond restoration and creation
 - 24. Wildlife scrapes
 - 25. In-channel enhancements
- 57 Table A5.1.4. defines the Aims for each area. Prescriptions for the implementation, management, monitoring and remediation are also provided.

Table A5.1.5: Freshwater Habitat Interventions and Timing

22. Proposed riparian corridor		
Aim: To create areas around watercourses that extend the riparian environment and provide landscape connectivity. Objective: Small watercourses meander through the Order Limits. Alongside the watercourses there are a variety of habitats which can be managed more favourably. Existing trees and hedgerows would be retained, and there are opportunities to plant scattered trees, enhance grasslands, and create scrapes which are areas of shallow water that slowly dry over the spring and summer months. The scrapes would attract birds and invertebrates and provide other conditions for plants to seed.		
Phase	Action	Timing
Implementation	Riparian corridors are predominately diverse grassland (see above) within which additional interventions, addressed below, are provided. Planting of trees in this area will follow the approach set out at item 6. <u>Proposed Line of Trees</u> but using native species suitable for wetter soils. Trees will be locally sourced, and the below species are recommended, which have been agreed with the Sherwood Forest Trust. There is also the potential to use cuttings, if available, from a collection of willow species and varieties at Nottinghamshire Wildlife Trust's Farndon Willow Holt reserve. • Crack Willow <i>Salix x fragilis</i> • White Willow <i>Salix alba</i> • Alder <i>Alnus glutinosa</i> • Aspen <i>Populus tremuloides</i> • Goat Willow <i>Salix caprea</i> • Grey Willow <i>Salix cinerea subsp. oleifolia</i> • Downy Birch <i>Betula pubescens</i> • Guelder rose <i>Viburnum opulus</i>	Sowing typically in late autumn/early winter.
Management	Tree management will be avoided unless there are overriding safety concerns. Where tree works are necessary, an assessment of the tree's features to	Y1 onwards.

	support protected species will be carried out by a suitably qualified ecologist in advance. Where removal of tree features capable of supporting protected species are necessary, then further surveys following recommended standard published guidelines and where necessary mitigation will be carried out prior to works commencing. Management for grassland and marsh areas will remain unchanged to maintain the habitat type and condition. Low-intensity sheep grazing is likely to continue once the construction phase is complete. No fertilisers will be used as this will promote the proliferation of competitive species (i.e. agricultural grasses etc) at the expense of botanical diversity. Additional management of the Riparian Corridor will be informed by the Nottinghamshire Wildlife Trust's Water Vole Recovery Programme, details of which will be finalised following consent.	
Monitoring	BNG condition assessment.	Two visits per year in Y1 and Y2. Annual visits Y3–5 and every five years thereafter.
Remediation	Where establishment is not occurring, management may be changed accordingly. Scrub encroachment will be controlled.	As required (based on monitoring)

23. Pond restoration and creation		
Aim: To create new ponds and restore degraded ponds. Management will follow Countryside Stewardship guidance WN5 ²² . The location of ponds will be determined by the results of pre-commencement great crested newt surveys.		
Phase	Action	Timing
Implementation	Two new ponds will be created and four existing ponds enhanced in strategic locations across the Development. Their locations and specification will be confirmed based on the results of pre-commencement great crested newt surveys. Ponds will not be connected to other water bodies to reduce risk of pollution. Ponds will be of various sizes (at least 7 x 7 m) and generally feature an irregular shape and have a variety of depths, from gently sloping shallow margins to deeper areas of 1.0–1.5 m. For ponds undergoing restoration, an assessment of their existing biological interest and historical features will be completed. Features of historical interest will be protected. All retained ditches and standing water will be protected with a 10 m buffer. Any fencing put in place will be at least 1 m away from ponds.	Pre-Construction and Construction
Management	Ponds will be managed to ensure scrub and weeds do not take over banks. Woody cover will be removed from at least three-quarters of the margin, with a focus on the southern perimeter to reduce shading. Any fallen trees or trees in the water will be removed. Cut vegetation will be removed from the pond edges. <u>Grazing damage to new and retained ponds will be controlled by fencing.</u> Water pollution will be managed ensuring any sources are removed.	Construction and Operation.

²² Available at: <https://www.gov.uk/countryside-stewardship-grants/pond-management-first-100-sq-m-wn5> [accessed on: 22/11/2024]

	For any ponds with protected species, such as Great Crested Newts, a licence will be sought before works is carried out.	
Monitoring	BNG condition assessment. Visual inspection. Water level and water quality monitoring.	Annually to Y5 then every five years thereafter.
Remediation	Remediation will focus on the maintenance of adequate water levels and water quality.	As required (based on monitoring)
24. Wildlife scrapes		
Aim: To create scrapes to support waders and wildfowl. Management will follow Countryside Stewardship guidance WN2 ²³ .		
Implementation	The proposed scrapes are to be located in larger open, low-lying fields, a cluster of relatively small scrapes is more desirable than fewer larger ones. The size and shape of the scrapes will reflect the landscape character and mimic the naturally occurring depressions along watercourse corridors. The depth of the scrapes will vary to create some niches with an average depth of 250 mm and a maximum depth of 500 mm, but the creation of islands must be avoided. The edges of the scrapes will very gently slope from the existing ground level towards the centre. Any excavated soil must not be used to create bunds or spread in low-lying areas.	Pre-Construction and Construction. July to November.
Management	Management will focus on maintaining water levels and preventing vegetation succession/encroachment.	Construction and Operation.
Monitoring	Visual inspection of habitats. Bird survey, possibly with bespoke methods.	Annually to Y5 then every five years thereafter. March/April.
Remediation	Remediation will focus on the maintenance of adequate water levels and open water.	As required (based on monitoring)

²³ Available at: <https://www.gov.uk/countryside-stewardship-grants/creation-of-scrapes-and-gutters-wn2> [accessed on: 22/11/2024]