
Bicker Fen Solar Farm

on behalf of AGR Solar 2 Limited

Landscape and Ecological Management Plan



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1. INTRODUCTION

1.1 Background and Scope

- 1.1.1 This Landscape and Ecology Management Plan (LEMP) has been prepared by Avian Ecology Ltd (AEL), on behalf of AGR Solar 2 Limited to discharge planning Condition 18 (Reference: B/22/0356; Boston Borough Council) and Condition 19 (Reference: H04-0849-22; South Holland District Council), both of which relate to Proposed Development of a Photovoltaic Solar Array, Grid Connection, Access Improvements Works and Ancillary Development ('the Proposed Development') on Land at Bicker Fen, Boston and South Holland, Lincolnshire (the 'Site').
- 1.1.2 This LEMP should be read in conjunction with the Landscape masterplan, which has been included as **Appendix 1**.
- 1.1.3 The wording of both conditions are the same, with the exception of the condition numbers referenced; as such, the wording of Boston Borough Council Condition 18 has been included below, with any condition numbers referenced within the South Holland District Council Condition 19 included in parentheses.
- 1.1.4 For clarity, the wording of conditions relating to skylark mitigation (i.e. Boston Borough Council Condition 19 / South Holland District Council Condition 20) and details of landscaping (i.e. Boston Borough Council Condition 17 / South Holland District Council Condition 18) have also been included below as they are informed by this LEMP.

Landscape and Ecological Management Plan (Boston Borough Council Condition 18 / South Holland District Council Condition 19)

No above ground development shall commence until a Landscape and Ecological Management Plan (LEMP) has been submitted to and approved in writing by the Local Planning Authority. The content of the LEMP shall set out detailed scaled plans and shall include the following and be in force for no less than 30 years:

- description and evaluation of features to be managed, informed by the Ecological Assessment;*
- details associated with the Skylark Mitigation Area and Skylark Habitat Management Plan by Avian Ecology reference: AXIS-043-1379 dated 10/02/2023 as required by condition 19 (20);*
- details of the landscaping as required by condition 17 (18);*
- ecological trends and constraints on site that might influence management;*
- aims and objectives of management;*
- appropriate management, maintenance, ongoing monitoring and remediation measures and retention;*
- prescriptions for management actions, broken into monitoring time periods;*
- preparation of a work schedule, including a timetable for implementation of all the planting, works and ecological and landscape enhancement/creation measures and an annual work plan capable of being rolled forward over a five-year period;*

- a scheme for dark corridors for biodiversity protection (including bats) to work in combination with an approved lighting strategy as part of condition 16 (17);
- retention of higher quality nesting and foraging habitat and semi-improved field margins, size and details associated with their buffer zones;
- construction and ecological management plan including ecologist pre-site clearance measures, survey to identify wild bird nests (including ground nesting birds), suitable work exclusion zones around any identified nest sites, and habitat protection during construction;
- use of mammal gates to allow free movements of mammals, amphibians and reptiles;
- use of box culvert for water voles in association with the new crossing in Hammond Beck; and,
- species rich hedgerow management plan.

The approved LEMP, the future maintenance and management scheme and associated measures shall be implemented within the first planting season following installation of any of the solar panels. All trees, shrubs and hedgerows and skylark mitigation shall be maintained by the owner or owners of the land on which they are situated for the period of thirty years beginning with the date of completion of the scheme and during that period all losses shall be made good as and when necessary.

Reason: To ensure that the development is adequately landscaped, in the interests of its biodiversity, visual amenity and that of the area in which it is set. This condition is imposed in accordance with Policies 2, 3, 28 and 31 of the South East Lincolnshire Local Plan 2019.

Skylark mitigation (Boston Borough Council Condition 19 / South Holland District Council Condition 20)

The Skylark Mitigation Area and Skylark Habitat Management Plan by Avian Ecology reference: AXIS043-1379 dated 10/02/2023 shall be incorporated into an overall Landscape and Ecological Management scheme, including a future maintenance schedule, as required by condition 18 (19) as above, and shall be implemented no later than the first planting season following the first installation of any of the solar panels.

The Skylark Mitigation Area shall be maintained by the owner or owners of the land on which it is situated in line with the Landscape and Ecological Management Plan for a period of not less than 30 years and during that period all losses shall be made good as and when necessary.

Reason: To ensure that the development is adequately landscaped, in the interests of its biodiversity, visual amenity and that of the area in which it is set. This condition is imposed in accordance with Policies 2, 3, 28 and 31 of the South East Lincolnshire Local Plan, 2019.

Details of landscaping (Boston Borough Council Condition 17 / South Holland District Council Condition 18)

The scheme of landscaping and tree planting shown on drawing 2920-01-03 Rev E shall be carried out and completed in its entirety during the first planting season following the first installation of any of the solar panels. All trees, shrubs and hedgerows forming part of the overall landscaping scheme shall be maintained by the owner or owners of the land on which they are situated for the period of thirty years beginning with the date of completion of the scheme and during that period all losses shall be made good as and when necessary.

New hedgerows should be maintained at a height of approximately 3m-3.5m. Within the proposed woodland belts, larger stock (a combination of feathered and standard trees) should also be planted to provide initial screening benefit close to residential properties.

The landscaping and tree planting details shall be informed by the Landscape and Ecological Management Plan required as part of condition 18 (19) and implemented and maintained during the 30 year period.

Reason: To ensure that the development is adequately landscaped, in the interests of its visual amenity and that of the area in which it is set. This condition is imposed in accordance with Policies 2, 3, 28 and 31 of the South East Lincolnshire Local Plan 2019.

2 DESCRIPTION AND EVALUATION OF FEATURES TO BE MANAGED

- 2.1.1 The Site comprises four separate parcels of land which are currently further separated into several large arable fields of little biodiversity value. Habitats within the Site and the immediate surrounding land include open arable crop fields, with field boundaries marked by ditches, drains and occasionally hedgerows. An isolated block of broadleaved woodland is located towards the northeast of the Site, an additional isolated block of woodland is also located adjacent to the south-eastern boundary of the Site. Hammond Beck (Drain) runs between the parcels of land and lies adjacent to four Site parcel boundaries. The landscape proposals would build on these existing landscape features and would seek to enhance biodiversity, increase screening of the Proposed Development and allow continued agricultural use through grazing.
- 2.1.2 In the wider context, the Site is surrounded by further extensive areas of arable and pastoral farmland and small, scattered pockets of deciduous woodland.
- 2.1.3 In addition, opportunities have been sought for biodiversity enhancement within the Site, in order to provide an overall biodiversity net-gain; in line with National Planning Policy Framework (2023¹) and BS42020 – *A Code of Practice for Biodiversity in Planning and Development*. This includes the installation of a minimum of 15 bird nest boxes and 15 bat roost boxes.
- 2.1.4 The scheme of landscaping and tree planting shown on the General Arrangement Plans (Drawing Number: 2920-01-03 Rev E) shall be carried out; the scheme, along with further details on the Landscape Proposals, are included within the Landscape Masterplan Overview Plan and Landscape Masterplan Sheets 1 – 3 (Drawing Numbers: 2920-01-20 to 2920-01-23). The landscaping scheme will be completed, and maintenance and management schemes and associated measures implemented, during the first planting season following the first installation of any of the solar panels. The maintenance and management schemes and associated measures will continue for a minimum of 30 years following the completion of the proposed development. Biodiversity enhancement measures to be delivered as part of the development, and which are illustrated on the General Arrangement Plan (Drawing Number: 2920-01-03 Rev E) and the Landscape Masterplan Overview Plan and Landscape Masterplan Sheets 1 – 3 (Drawing Numbers: 2920-01-20 to 2920-01-23) consist of:
- Low maintenance pasture = c.79ha
 - Species rich grassland = c.11ha
 - Woodland shelterbelt = c.2.0ha
 - Native hedgerow (retained and created) = 8.5km
 - Existing ditch retained and enhanced

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https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf [Accessed 27/11/2023]

- 2.1.5 In addition, a lighting strategy will be produced and submitted to the Local Planning Authority for Approval, detailing lighting mitigation measures for light-sensitive fauna (e.g., bats and otter).
- 2.1.6 These enhancement measures with appropriate management will result in an overall benefit to wildlife within the Site creating and strengthening potentially important wildlife corridors within and around the Site and improving the functionality of habitats for birds, bats, terrestrial mammals and invertebrates locally.

3 PROTECTION OF NOTABLE SPECIES

- 3.1.1 This section identifies the mitigation measures required to ensure the protection of protected or notable species on Site and to ensure legislative compliance. These measures, along with the Reasonable Avoidance Measures included in **Appendix 2**, make up the construction and ecological management plan.

3.2 Designated Sites and Habitats

- 3.2.1 No statutory or non-statutory designated sites will be directly affected by the Proposed Development.
- 3.2.2 Standard good practice construction measures to ensure runoff control and pollution prevention will be implemented during construction and operation; these measures will safeguard boundary and off-site habitats and the species they support.
- 3.2.3 Perimeter security fencing will be erected first to prevent the encroachment of construction works beyond the Site boundary.
- 3.2.4 The Proposed Development has been designed to avoid impact to woodland, hedgerows and trees. Woodland, hedgerow and trees will be protected in-line with BS 5837:2012 Trees in relation to design, demolition and construction. These will be retained and protected during construction, through the implementation of buffer zones surrounding these features; 6m minimum buffers will be implemented surrounding existing trees, woodland, and hedgerows. Retained boundary habitats should be protected throughout works through the use of Heras fencing or similar.
- 3.2.5 During construction, poor semi-improved grassland field margins will be retained and protected as far as reasonably practicable. Post-construction, the areas of poor semi-improved grassland will be enhanced to areas of either low-intensity sheep grazing mix or species-rich grassland.
- 3.2.6 There will be clear delineation of working areas and access routes for vehicles entering the Site and instructions on these will be given to all site construction staff, delivery drivers and subcontractors.

3.3 Dark Corridors for Biodiversity Protection

- 3.3.1 Works will be undertaken during daylight hours as far as possible in order to protect foraging / commuting bats. As outlined within the Design and Access Statement², working hours are restricted to 07:30 – 18:00 (beginning 08:30 at weekends). Therefore, other than mid-winter when day length is short, works are not expected to occur in the hours of darkness.
- 3.3.2 Once constructed, the solar farm will not be routinely lit. Any lighting associated with the substations, transformer and inverter cabinets will be task specific, positioned to provide focussed illumination and will only be used on occasion, for example, if an engineer needs to carry out emergency visits to the Site at times when natural light levels are low.
- 3.3.3 The use of artificial lighting should be avoided wherever possible. If required, lighting will be managed so that light spillage into key habitat features, such as woodland, hedgerows and ditches/drains does

² Axis (2022). Bicker Fen Solar: Design and Access Statement.

not occur. Examples of measures which can be implemented within the lighting strategy to minimise impacts include:

- Only the minimum light levels needed for safety shall be installed adjacent to woodland, hedgerows and ditches/drains and shall be directed away from the dark corridors using luminaire accessories such as baffles, hoods, cowls, louvres and shields where necessary;
- Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt to minimise light spill;
- Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered;
- Light sources that emit minimal ultra-violet light and white and blue wavelengths of the light spectrum shall be avoided;
- Light sources should feature peak wavelengths higher than 550nm, should lack UV elements and a warm white light source (2700Kelvin or lower) should be adopted to reduce impacts upon bats;
- LED luminaires should be used where possible;
- Reflective surfaces under lights shall be avoided;
- Column heights should be carefully considered to minimise light spill and glare visibility. This should be balanced with the potential for increased numbers of columns; and,
- Where appropriate, external security lighting should be set on motionsensors and set to as short a possible a timer as the risk assessment will allow.

3.3.4 Further information is provided in *Guidance Note 08/23: Bats and artificial lighting at night*, Bat Conservation Trust and Institute for Lighting Professionals³.

3.3.5 'Dark' corridors (i.e. <0.5 lux) will be maintained along key habitat features through the implementation of 10m buffer zones surrounding woodland, hedgerows and ditches/drains within and bordering the Site where light spillage will be managed so it does not routinely intrude into the 'dark' corridors, as demonstrated in **Figure 1**. The only exception to the rule of 'dark corridors' will be the main Site entrance(s). In emergency situations, such as for emergency maintenance or breaches of the security fence, some light spill may temporarily occur within localised sections of the dark corridor, however such occasions are considered to be rare and unlikely to affect the movement of bats and other nocturnal fauna within the landscape.

3.3.6 The lighting strategy, as required by conditions of both the Boston Borough Council and South Holland District Council Application Decision Notices (Conditions 16 and 17, respectively), will incorporate the 'dark' corridors.

³ Bat Conservation Trust and Institution of Lighting Professionals. (2023). *Guidance Note 08/23: Bats and artificial lighting at night*. <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/> [Accessed on 28/11/2023].

3.4 Maintaining Connectivity

- 3.4.1 The perimeter fence will incorporate suitably sized (approximately 20cm x 25cm) gaps or gates at its base at suitable locations around the Site to allow the free movement of wildlife, including badger, otter, small mammals, amphibians and reptiles thereby maintaining and strengthening habitat connectivity and dispersal opportunities across and through the solar farm.

3.5 Birds

- 3.5.1 The Proposed Development has been designed to avoid impact to hedgerows and trees, which are the higher quality nesting and foraging habitat currently present on Site. These will be retained and protected during construction, as detailed above.
- 3.5.2 Site clearance works should be undertaken outside of the breeding bird season in so far as reasonably practical. The breeding bird season is generally acknowledged to be 1st March to 31st August inclusive. Where this cannot be avoided, a suitably experienced ecologist will be appointed to undertake a pre-site clearance survey to identify the presence of any wild bird nests being built or in use (including those of ground nesting birds e.g. skylark). This would also include a search for potential Wildlife and Countryside Act 1981 (as amended) Schedule 1 species potentially present in and surrounding the site, using methodology designed to avoid disturbance related offences occurring.
- 3.5.3 Only once the appointed ecologist is satisfied that an offence under Part 1 of the Wildlife and Countryside Act 1981 (as amended) will not occur, may works proceed.
- 3.5.4 Species listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) are afforded additional protection to prevent disturbance during breeding.
- 3.5.5 If a nesting species is identified, a species-specific work exclusion zone will be established around the nest site and a Breeding Bird Protection Plan will be required, in line with best practice guidance and in consultation with the advising ecologist.
- 3.5.6 During operation, disturbance will be minimal and limited to intermittent maintenance activities. However, it is recommended that the cleaning of panels is undertaken outside of the breeding bird season in so far as reasonably practical to minimise disturbance to nesting birds.

Skylark Mitigation Area

- 3.5.7 A Skylark Habitat Management Plan (Avian Ecology, 2023⁴) sets out habitat enhancement measures and ongoing management practices in line with guidance produced by BRE guidance *Biodiversity Guidance for Solar Developments* (BRE, 2014⁵) that will enhance and safeguard an area of land currently under agricultural use for the benefit of skylarks.
- 3.5.8 The creation of additional grassland will be undertaken within the Skylark Management Area ('SMA'), as shown on **Figure 2**. The SMA occupies approximately 8.3ha, currently managed as arable farmland. The primary aim of the SMA is to provide meadow grassland for nesting and foraging skylarks;

⁴ Avian Ecology (2023). *Skylark Habitat Management Plan*. Avian Ecology, Cheshire.

⁵ BRE (2014). *Biodiversity Guidance for Solar Developments*. Eds G E Parker and L Greene.

however, this will benefit a broad range of farmland bird species, as well as invertebrates and mammals.

- 3.5.9 For the benefit of skylarks and other species, the entire SMA will be converted to grassland through seeding with appropriate seed mix Emorsgate EM 2- Standard General Purpose Meadow Mixture/ Naturescape N1 General Purpose Meadow Mixture or similar. The SMA will be implemented no later than the first planting season following the first installation of any of the solar panels.
- 3.5.10 The SMA will be sown and managed in accordance with good practice and in line with the supplier's guidance. Suggested management prescriptions are included in **Section 6.4**.

3.6 Bats

- 3.6.1 Retained hedgerow and woodland habitats should be protected throughout works through the use of Heras fencing or similar. Protection of mature trees around the Site, field boundary features and adjacent woodland will safeguard potential roost sites and maintain foraging and commuting opportunities.
- 3.6.2 Although no trees are currently proposed to be affected, should this change, Preliminary Roost Assessment (PRA) of any trees to be impacted will be undertaken in advance of any removal. If suitable features are recorded, further surveys may be required. If bats are confirmed to be roosting within any tree to be impacted by proposed works, the data gathered would be used to inform potential design amendments to avoid or reduce impacts or, failing that, support a licence application to Natural England to destroy/disturb the bat roost.
- 3.6.3 The implementation of 'dark' corridors along key habitat features will safeguard foraging and commuting bats.

3.7 Water Vole and Otter

- 3.7.1 A new crossing over the Hammond beck will be required to permit access to the Site. This crossing will be a 1.8m by 3m box culvert with a length no longer than 7m.
- 3.7.2 The Water Vole Mitigation Handbook⁶ includes a number of observations around the types and lengths of culverts that are known to allow continued movement of water vole through an area. This includes oversized box culverts with greater than 1m of headroom above normal water levels and less than 35m in length, as well as circular culverts of 1200mm diameter, up to 10m in length, with greater than 300mm headroom above normal water levels.
- 3.7.3 It is considered that the proposed box culvert will be within these parameters, and will also include a mammal ledge, and therefore will be sufficient to permit movement of water vole should the species colonise in the future, and will ensure habitat connectivity is maintained along the Hammond Beck.
- 3.7.4 A pre-construction water vole and otter survey will be undertaken prior to any work required in or within 5m of a ditch/drain.

⁶ Dean, M., Strachan, R., Gow, D. & Andrews, R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds Fiona Mathews and Paul Chanin. The Mammal Society, London.

- 3.7.5 If the survey finds water vole / otter to be present and significant disturbance is considered likely during the proposed works, one or both of the following options will be incorporated:
- The development design will be amended to avoid works which may impact upon water vole / otter and their habitat (e.g. alteration of the configuration of access tracks and/or crossings); and/or,
 - Works will be undertaken under a licence if disturbance cannot be avoided. Licenced works are restricted to certain times of the year e.g., works under a class licence must be undertaken in spring or autumn and for a site (which must be obtained from Natural England) including trapping, between 1st March and 15th April.

3.8 Badger

- 3.8.1 A pre-construction badger survey will be undertaken immediately prior to works commencing to check for active or any newly constructed setts (between the initial baseline survey and the construction start date) within at least 30m of construction areas.
- 3.8.2 If baseline conditions have altered and significant disturbance to badgers or their setts is considered likely during the proposed works, one or both of the following options will be incorporated:
- The development design will be amended to avoid works which may impact upon badgers and their setts (e.g. alteration of the configuration of panels and/or fencing); and/or,
 - A disturbance licence will be obtained from Natural England before construction commences.

3.9 Pre-construction Surveys

- 3.9.1 Due to the mobility of species, pre-construction surveys should be undertaken immediately prior to construction (i.e., within the preceding seven days). The pre-construction survey will also include a general walkover of the construction zone to determine Site conditions have not changed.
- 3.9.2 All works associated with pre-construction surveys will be undertaken under the guidance of the consulting ecologist and will ensure legislative compliance.
- 3.9.3 The required pre-construction surveys and the circumstances in which they are required are outlined in **Table 3.1**.

Table 3.1: Requirements for Pre-construction Surveys

Pre-construction survey required	Works required for	Timings
Nesting Birds	Vegetation clearance works	Only required for works in breeding bird season (March to August inclusive)
Bats - Preliminary Roost Assessment	Tree removal or limb removal	Any time of year
Water Vole	Works within 5m of ditch/drain, including Hammond Beck	Any time of year
Otter	Works within 5m of ditch/drain, including Hammond Beck	Any time of year
Badger	Site clearance works/excavations	Any time of year

3.10 Reasonable Avoidance Measures

- 3.10.1 A precautionary approach will be adopted for works within the Site, due to the potential presence of water vole, otter, amphibians, reptiles, badger and other small mammals such as brown hare and hedgehog. A Reasonable Avoidance Measures (RAMs) Method Statement will be adopted to guide works, which is provided in **Appendix 2**. Where required, the RAMS includes a pre-commencement check by a suitably experienced, and where necessary licensed, ecologist or Ecological Clerk of Works (ECoW) before work starts. A suitably qualified and experienced ECoW will be appointed to provide ecological and environmental advice during construction.

4 ECOLOGICAL TRENDS AND CONSTRAINTS

- 4.1.1 There are several ecological factors and trends that may impact the establishment of newly-created habitats within the Site. These include:

Drought

- 4.1.2 During prolonged periods of dry weather, the growth of vegetation within the Site may be impacted through stunted growth. This may be addressed through a reduction in cutting of grasslands to allow species within the establishing meadow to retain as much water as possible throughout the growing season.
- 4.1.3 During extreme heatwaves and extended prolonged periods of dry weather, it may be beneficial to irrigate areas of grassland and establishing hedgerows/trees. Grasslands are prone to experiencing periods of drought however and the long-term seed banks will ensure that grassland meadows will almost always recover.

Waterlogging

- 4.1.4 Extended periods of heavy rain may see the water table rise and areas of standing water could appear within the Site.
- 4.1.5 Any management works that are required to be carried out within the Site e.g. grass cutting or hedgerow and tree maintenance should avoid these periods of heavy rain to reduce any potential negative impacts that mechanical vehicles or equipment could cause establishing habitats. Additionally, any replacement planting of diseased or dying stock should also not be carried out during periods of heavy rain.

Soil nutrients

- 4.1.6 The arable land may be too nutrient rich for wildflower to be sown straight away. Nutrient stripping should be undertaken across the Site prior to grassland creation. This will be achieved by growing a cereal crop in the absence of adding any fertiliser onto the land. Depending on soil characteristics, nutrient stripping is not always successful and more intensive techniques may be required, such as turf stripping or deep soil inversion. Soil nutrient testing will be undertaken prior to grassland creation to ensure that nutrient levels are low enough for the creation of grassland.
- 4.1.7 The types of tests that should be applied include: extractable phosphorous (using the Olsen method), potassium and magnesium quoted in milligrams/litre – this is the amount of each nutrient available for plants to use; total nitrogen (using the Dumas method); and, pH (in water).
- 4.1.8 Ideally, the soil post nutrient stripping has a level of available phosphorous that is less than 25 mg kg⁻¹, and ideally around 10 mg kg⁻¹ to maximise floristic diversity⁷.

⁷ https://cdn.forestresearch.gov.uk/2022/02/bpg_17.pdf [Accessed 27/11/2023]

5 AIMS AND OBJECTIVES OF MANAGEMENT

5.1 Management Aims

5.1.1 The LEMP has the following aims:

- Protect and retain important habitats and wildlife corridors (e.g., hedgerows and woodland) within and surrounding the Site;
- Avoid and minimise disturbance to such habitats during the construction phase of the development;
- Improve habitat connectivity with the wider landscape by providing enhanced 'wildlife corridors; and,
- Enhance the botanical and structural diversity of habitats within the Site to deliver biodiversity benefits to a range of species.

5.2 Management Objectives

5.2.1 The aims of the LEMP will be achieved through delivery of the following management objectives:

- Landscape planting to include grassland, hedgerow and woodland to improve connectivity and provide habitat for a range of fauna;
- Establish a management regime to maximise the biodiversity value of newly created habitats;
- Establish a framework for ongoing monitoring of created habitats; and,
- Provide details of management and monitoring responsibilities.

6 MANAGEMENT OPTIONS AND PRESCRIPTIONS

6.1 Overview

- 6.1.1 The Site Owner (SPV) will be responsible for the implementation of measures within this LEMP, including ongoing habitat management for a minimum of 30 years following the completion of the proposed development. In the event of a transfer of ownership this responsibility will transfer to any subsequent owner of the Site.

6.2 Hedgerow Planting & Management

- 6.2.1 Hedgerow planting is proposed along the site boundaries along with gapping up of existing hedgerows to provide screening of the development, habitat connectivity and wildlife corridors. Hedgerows will meet the definition of species rich, including on average a minimum of five native species per 30m section. Species composition and sizes are listed on the detailed Landscape Masterplan drawings (2920-01-21 to 23).

New Hedgerows Planting

Ground Preparation

- 6.2.2 Where necessary, existing weeds will be manually removed or treated with a suitable herbicide as specified within the herbicide handbook (English Nature, 2003⁸). No use of chemicals within 10m from the top of ditches will be undertaken.
- 6.2.3 All extraneous matter such as plastic, wood, metal and stones greater than 50mm in any direction that are brought to the surface shall be removed and disposed of at a registered waste disposal facility.

Planting

- 6.2.4 Hedge planting will be undertaken in a double staggered row approximately 30cm apart at 5 plants per linear metre.
- 6.2.5 As shown on the Landscape Proposals native hedge species should consist of the following species:
- Field Maple (10%)
 - Hazel (15%)
 - Hawthorn (30%)
 - Blackthorn (30%)
 - Dog Rose (5%)
 - Elder (10%)

⁸ English Nature (2003). *The Herbicide Handbook*: Guidance on the use of herbicides on nature conservation sites. (https://www.whatdotheyknow.com/request/574168/response/1408137/attach/4/The%20Herbicide%20Handbook%202003%20PT1.pdf?cookie_passthrough=1)

- 6.2.6 Tree and shrub planting shall be carried out October - February, when weather and ground conditions are suitable. The exact timing of the proposed hedgerow planting will be dependent on the ground conditions, but planting should ideally take place between the months of December and February inclusive, this will allow the plants more time to establish a network of feeder roots before the onset of spring. Planting should avoid freezing and waterlogged conditions.
- 6.2.7 Hedges plants will be planted in a pre-prepared trench, deep and wide enough to fit the roots once spread out, with the transplant being planted so that the root collar is exactly level with the ground surface. Trenches will be backfilled with site-won topsoil and the soil will be well firmed round the roots in line with the guidelines as set out in BS 4428 (1989). Topsoil will be stored in accordance with British Standards or other guidance current at the time of planting. If used, imported topsoil will conform to requirements of British Standards or other guidance current at the time of planting.
- 6.2.8 If ground conditions are dry during the time of planting (considered unlikely during the planting season of September-March) then all individual plants should be well watered following planting.
- 6.2.9 Hedge plants will be protected against browsing by the use of gro-cones and fencing.

Management

- 6.2.10 During the first five years after planting, all dead, dying or diseased stock will be replaced with stock of similar size and species by the appointed contractor at their own cost. Any losses will be replaced so that a minimum 85% stocking overall is achieved with no badly understocked gaps of more than 4 adjacent losses. If the failure of the plant is due to disease and the disease is considered likely to re-occur, then an alternative native species of local provenance may be used as a replacement. The exact timing of the planting of replacement hedgerow plants is dependent on the ground conditions; however, planting should ideally take place within the next suitable planting season. This will allow the plants more time to establish a network of feeder roots before the onset of spring.
- 6.2.11 The planting areas will be kept clear of grasses and weeds during the first two years of planting (or until established), using approved hand-weeding or, if necessary, herbicide treatment (applications in April, June and August). The herbicide handbook (English Nature, 2003) provides guidance on appropriate herbicide use in relation to nature conservation works. Where used, herbicides will be sprayed in appropriate weather conditions, to avoid affecting adjacent grassland areas.
- 6.2.12 During the first five years after planting, hedgerows will be trimmed outside each growing season; hedgerows will be cut back by half the growth of that year with pruning aiming to encourage the development of healthy well-shaped specimens.
- 6.2.13 Five years after planting, hedgerows will be cut on a 2-3 year rotation, as necessary, to protect the perimeter fencing from encroachment. Ideally, no more than 1/3 of the hedgerows will be cut in any one year for the benefit of wildlife and to allow plants to flower and set seed/fruit.
- 6.2.14 Hedgerow cutting will be ideally undertaken in late January/February. No cutting or trimming is to be undertaken during the breeding bird season (1st March to 31st August inclusive).
- 6.2.15 Before the end of the establishment period, planting guards or gro-cones (where used) will be removed, and all hedgerows will be maintained at a height of approximately 3-3.5m or higher as appropriate for the operation of the Site.

6.3 Tree Planting & Management

- 6.3.1 Native woodland planting is proposed along the western and northern boundaries of the site to provide screening for properties and the enhance existing habitats. Species composition and sizes are listed on the detailed Landscape Masterplan drawings (2920-01-21 to 23). Within the proposed woodland belts, larger stock (a combination of feathered and standard trees) will also be planted to provide initial screening benefit close to residential properties.

Ground Preparation

- 6.3.2 If the formation level is compacted it will be ripped through before topsoiling.
- 6.3.3 Where necessary, existing weeds will be manually removed or will be treated with a suitable herbicide as specified within the herbicide handbook (English Nature, 2003). No use of chemicals within 10m from the top of ditches will be undertaken.
- 6.3.4 All extraneous matter such as plastic, wood, metal and stones greater than 50mm in any direction that are brought to the surface shall be removed and disposed of at a registered waste disposal facility.

Planting

- 6.3.5 Tree and shrub planting shall be carried out October - February, when weather and ground conditions are suitable. The exact timing of the proposed planting will be dependent on the ground conditions, but planting should ideally take place between the months of December and February inclusive, this will allow the plants more time to establish a network of feeder roots before the onset of spring. Planting should avoid freezing and water-logged conditions.
- 6.3.6 As detailed in the Landscape Proposals, the following tree and shrub species are proposed:
- Field Maple (15%)
 - Silver Birch (20%)
 - Hornbeam (15%)
 - Hazel (10%)
 - Crab apple (10%)
 - Blackthorn (10%)
 - Common Oak (10%)
 - Dogwood (10%)
- 6.3.7 Trees and shrubs will be planted at 3m centres in groups of 3-16 of each species with groups randomly mixed, in L- or T-shaped notches of a suitable size to fit plant roots once spread out.
- 6.3.8 Composted bark mulch will be spread to a depth of 50mm in a 1m diameter circle around all individual trees, ensuring that desirable groundcover plants (where present) are not buried. A general-purpose slow-release fertiliser applied, as required, until the trees are established.

- 6.3.9 All trees will be protected against browsing by the use of rabbit spirals, gro-cones and fencing. If the bushiness of the tree prevents the use of rabbit spirals or gro-cones, then an alternative design of guard shall be used in agreement with the project landscape architect.
- 6.3.10 All trees/shrubs shall be watered in at the end of each day of planting.

Management

- 6.3.11 During the first five years after planting, all dead, dying or diseased stock will be replaced with stock of similar size and species by the appointed contractor at their own cost. If the failure of the plant is due to disease and the disease is considered likely to re-occur, then an alternative native species of local provenance may be used as a replacement. The exact timing of the planting of new tree species is dependent on the ground conditions; however, planting should ideally take place between the months of November and February inclusive, this will allow the plants more time to establish a network of feeder roots before the onset of spring.
- 6.3.12 The planting areas will be kept clear of grasses and weeds during the first two years of planting (or until established), using approved hand-weeding or, if necessary, herbicide treatment (applications in April, June and August). The herbicide handbook (English Nature, 2003) provides guidance on appropriate herbicide use in relation to nature conservation works. Where used, herbicides will be sprayed in appropriate weather conditions, to avoid affecting adjacent grassland areas.
- 6.3.13 Trees within the hedgerows will be allowed to establish with no cutting required. Any cutting will be limited to pruning to ensure trees remain safe and/ do not pose any potential danger to nearby infrastructure.
- 6.3.14 Any trimming to be carried out of standard trees within the hedgerows will ideally be undertaken in late January/February. No cutting or trimming is to be undertaken during the breeding bird season (1st March to 31st August inclusive).
- 6.3.15 After the 5-year establishment period, or when plants grow trunks of 2-3 inch in diameter, planting guards, rabbit spirals or gro-cones (where used) will be removed.
- 6.3.16 Remove dead, diseased, damaged or dying branches only where they pose a risk to health and safety or damage to structures. Deadwood is an important habitat for wildlife within a woodland and not be unnecessarily removed. Large woody material (girth over 10cm) should be collected to create log piles within the planted areas, stacked safely to ensure they do not pose any harm to Site users.

6.4 Grassland Creation & Management

Grassland Creation

- 6.4.1 Most of the Site will be sown with a low intensity sheep grazing mix specifically designed for solar farms. The seed mix would comprise long lasting and slow growing cultivars of the species listed on the detailed Landscape Masterplan drawings (2920-01-21 to 23).
- 6.4.2 Species rich grassland would be sown in all areas outside the perimeter fence and along hedge margins to enhance the overall biodiversity value of the Site. The seed mix would comprise a mixture of fine-leaved grasses and wildflowers that are relatively slow to establish, but after the first establishment year provide a show of flowers which will provide interest for insects, birds and mammals. The species

composition for the species rich grass mix is listed on the detailed Landscape Masterplan drawings (2920-01-21 to 23).

Ground Preparation

- 6.4.3 Where necessary, existing weeds will be manually removed or will be treated with a suitable herbicide as specified within the herbicide handbook (English Nature, 2003). No use of chemicals will be undertaken within 10m from the top of ditches.
- 6.4.4 All extraneous matter such as plastic, wood, metal and stones greater than 50mm in any direction that are brought to the surface shall be removed and disposed of at a registered waste disposal facility.
- 6.4.5 Prior to seeding the ground shall be cultivated to a fine tilth and made level

Seeding

- 6.4.6 The grassland mixtures used are subject to final soil tests and may be amended if necessary.
- 6.4.7 The grass seed mixes shall be sown in accordance with good practice and in line with the supplier's guidance.
- 6.4.8 Grass seeding shall be carried out March - June or September - October, when weather and ground conditions are suitable for germination. Seeding will, however, ideally take place in September to allow establishment prior to winter and reduce seed loss to birds.

Low-intensity sheep grazing mix

- 6.4.9 As detailed in the Landscape Proposals, the following seed mix is proposed for the low-intensity sheep grazing mix:
 - Meadow fescue (15%)
 - Perennial ryegrass (16%)
 - Smooth stalked meadow grass (20%)
 - Timothy (19%)
 - Creeping red fescue (15%)
 - Hard Fescue (10%)
 - White Clover (3%)
 - Wild White Clover (2%)

The sowing would be at a rate of 25kg per hectare in 2 passes perpendicular to each other. Once seeded the areas would be rolled to aid germination.

Species-rich grassland

- 6.4.10 As detailed in the Landscape Proposals, the following seed mix is proposed for the species-rich grassland:

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Wildflowers

- Common yarrow (1%)
- Betony (0.5%)
- Common knapweed (2.5%)
- Wild carrot (2.5%)
- Hedge bedstraw (2%)
- Ladie's bedstraw (1%)
- Ox-eye daisy (3%)
- Musk mallow (6.8%)
- Ribwort plantain (0.1%)
- Salad burnet (0.1%)
- Meadow buttercup (0.1%)
- Yellow rattle (0.1%)
- White campion (0.3%)

Grasses

- Common bent (8%)
- Crested dog's-tail (28%)
- Smaller cat's-tail (4%)
- Red fescue (24%)
- Smooth stalked meadow grass (16%)

6.4.11 The sowing would be at a rate of 25kg per hectare in 2 passes perpendicular to each other. The soil will be rolled prior to and after sowing to aid germination.

Skylark Mitigation Area

6.4.12 For the benefit of skylarks and other species, the entire SMA will be converted to grassland through seeding with appropriate seed mix *Emorsgate EM 2- Standard General Purpose Meadow Mixture/ Naturescape N1 General Purpose Meadow Mixture* or similar.

6.4.13 The sowing would be in accordance with good practice and in line with the supplier's guidance.

Grassland Management

- 6.4.14 The grassland vegetation within the species-rich grassland and SMA will be managed to provide a varied habitat structure providing nesting and foraging opportunities for birds, nectar and pollen for invertebrates and shelter and foraging opportunities for amphibians, reptiles and small mammals.

Initial Management (1st year)

- 6.4.15 Grassland management will be carried out in accordance with the seed supplier's technical advice during the establishment phase.
- 6.4.16 There will often be a vigorous initial growth and a flush of annual weeds during the first season. This will be managed by topping and mowing throughout the first year at regular intervals. Within the low-intensity sheep grazing mix areas, once the seed has germinated the areas would be mechanically cut at 4 weeks and then every two weeks until the grass sward is established and ready for grazing. Within the species-rich grassland and SMA, once the seed has germinated the areas will be mechanically cut regularly to control weeds. All cutting will be subject to checks for the presence of ground nesting birds in advance to avoid harm to birds or damage to nests.
- 6.4.17 Problem perennial weeds will be controlled by hand pulling or if necessary careful targeted application of a non-residual herbicide by way of spot spraying with a knapsack (low pressure to avoid spray drift), or weed wiping (no herbicide application within the vicinity of ditches or watercourses). Herbicide application may be used in April, June and August.
- 6.4.18 Alternatively, annual weeds can be managed by topping and mowing prior to setting seed which will encourage lateral development of the grasses. Any topping undertaken between April and July should be no lower than 200mm to retain habitat for ground nesting birds (e.g., skylark).
- 6.4.19 Any cut material will be either removed from the Site or heaped in small piles in designated areas within the Site in order to prevent nutrient build-up within the soil.
- 6.4.20 Specific attention should be paid to the potential presence of the following injurious (harmful) weeds: common ragwort, spear thistle, creeping thistle, curled dock and broad-leaved dock; which are all listed within the Weeds Act 1959. These species should be removed from the grassland areas prior to enhancement works commencing⁹.
- 6.4.21 In the unlikely event that the grassland / meadow planting fails and the area of bare ground is greater than 20%, these areas will be re-seeded, following the above methods. An ecologist and/ or landscape architect will be consulted to identify possible causes of failure and suggest remedial action prior to re-seeding.

Long-term Management

- 6.4.22 Following establishment of a suitable sward, the grassland habitats will be managed through either grazing and/or mechanical cuts to develop nectar and pollen rich meadow grassland with a varied structure. Both management approaches are detailed below for ease of reference.

⁹https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69296/pb7190-harmful-weed-control.pdf [Accessed 28/11/2023]

- 6.4.23 Any management within the species-rich grassland and SMA (including grazing) will be undertaken outside of the skylark breeding window (March to August inclusive), where possible.
- 6.4.24 Every 10 years the low-intensity sheep grazing mix areas would be over sown to boost the sward vigour for continued grazing.

Option A: Cutting Regime

- 6.4.25 Following establishment, one or possibly two cuts will be taken per year comprising an early cut in February (if necessary) to manage regrowth, and a second later in the season between August and September (each cut reducing sward height to approximately 150mm). No cutting will take place throughout the summer to allow the seeds of the later flowering species to fall prior to the cut.
- 6.4.26 Within the SMA, an annual early cut will be undertaken in February, prior to the skylark breeding season, to ensure a low sward height more suitable for skylark nesting.
- 6.4.27 Cutting should adopt a systematic method (i.e., working outwards towards the boundary features); this will allow fauna such as invertebrates, amphibians, birds and small mammals to temporarily and safely vacate the area.
- 6.4.28 The management will take a flexible approach and the exact dates will be dependent upon weather conditions. A phased (rotational) cutting regime is recommended (i.e., ideally the entire area should not be cut at the same time) in order to allow for more structured grassland.
- 6.4.29 Cuttings will remain on-Site for three to five days following the cut to allow seeds to disperse, and then be removed or heaped in designated areas within the Site in order to remove nutrients and promote the development of a more species-rich sward. Cuttings can be placed on habitat piles located on the periphery of the Site.

Option B: Grazing Regime

- 6.4.30 Once established, the grassland can be managed by sheep grazing as an alternative to mechanical cutting. Grazing should follow a low-intensity grazing regime to maintain grass cover. Within the species-rich grassland and SMA, grazing will be undertaken outside the bird breeding season only, in order to encourage skylark nesting attempts; ideally, these areas will be grazed through autumn/winter, and then allowed to naturally grow from March onwards. The sward height within the SMA should be short at the beginning of the nesting bird season (generally March).
- 6.4.31 Moderate trampling will expose ground for colonisation by annuals the next spring; however, heavy trampling can lead to ground poaching and infestations by weed species that will be detrimental to the Site. The shepherd will be responsible for the management of livestock and the stocking density.
- 6.4.32 Ideally, it is best to aim for a stocking rate sufficient to maintain a varied structure, rather than the maximum that the grassland can support. Grazing density (**Table 6.1**) is based on medium sized sheep (i.e., 60kg). It is important to monitor the Site to ensure the grassland is not under or over grazed and stock density and duration altered accordingly. The stocking density should be reduced in wet periods or in conditions when poaching would lead to a break-up of the sward and colonisation by aggressive weed species.

Table 6.1: A guide to stocking levels for lowland grassland (number of sheep per hectare). Adapted from the Lowland Grassland Management Handbook produced by Natural England

Number of grazing weeks per year	Neutral Grassland (sheep per ha)
16	12.5
20	10
24	8

6.4.33 The following indicators will be used to review and amend stocking densities:

- An increase in the amount of uneaten grass, the accumulation of litter, an increase in vigorous rank and unpalatable grasses, and a reduction in low growing herbs indicates stocking density is too low (increase density).
- A reduction in density of plants, excessive poaching, weed invasion and the development of bare patches indicates stocking density is too high (reduce density).

6.4.34 The growth of the five injurious (harmful) weeds listed within the Weeds Act 1959 should be managed on Site in order to enhance the species richness of created grassland habitats. The management of such species should follow that listed within published guidance documents¹⁰.

6.5 Wildlife Enhancement

6.5.1 Hedgerow and woodland planting as well as species-rich wildflower meadow creation will benefit a range of species including birds, bats, amphibians, reptiles, small mammals such as hedgehog, brown hare, and invertebrate species.

6.5.2 Vegetation cuttings will be retained in the Site and piled at selected locations along field margins to provide additional undisturbed refuge opportunities for wildlife including invertebrates, small mammals, reptiles and amphibians where present.

Bird Nest Boxes

6.5.3 Additional bird nesting provision will be made through the inclusion of 15 bird boxes erected on semi-mature/mature trees located along the field boundaries within and bordering the Site. Precise locations will be agreed upon with the project ecologist and will be subject to confirmation during the installation depending on tree condition at that time.

6.5.4 Bird boxes should ideally be installed in the first autumn (September to November) following the cessation of construction works, by the appointed contractor under advice of the suitably competent ecologist.

6.5.5 Boxes should be erected at an appropriate height of between 1 to 5 metres. Boxes should be angled so that they face away from the prevailing wind or in a semi sheltered environment. Positioning within

¹⁰https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69296/pb7190-harmful-weed-control.pdf [Accessed 28/11/2023]

or close to hedgerows will increase chances of occupation. Bird boxes will be suitable for a variety of farmland bird species.

Bat Roost Boxes

- 6.5.6 Additional bat roost provision will be made through the inclusion of a minimum of 15 bat roost boxes on suitable trees along the field boundaries within and bordering the Site.
- 6.5.7 Boxes will be erected in suitable habitats, at an appropriate height (ideally above 4m in height) and with clear flight paths to utilise the Site boundary features. Where possible, boxes should be placed in groupings of two or three boxes at slightly different angles to provide differing microclimatic conditions. Precise locations will be agreed upon with the project ecologist and will be subject to confirmation during the installation depending on tree condition at that time.

7 WORK SCHEDULE

7.1.1 The following management programme shows possible months in which activities will commence within the first planting period after construction in **Tables 7.1 - 7.3**:

Table 7.1: Initial Habitat Enhancement Year 1

Management Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Hedgerow and tree planting (avoid periods of extended frost or persistent heavy rain)	✓	✓								✓	✓	✓
Sowing of grassland seed mix			✓	✓				✓	✓*			
Mowing of establishing grassland				✓	✓	✓	✓	✓	✓			
Installation of bird and bat boxes	✓	✓							✓	✓	✓	✓

* Preferred month for grassland seeding.

Table 7.2: Habitat Management Year 2

Management Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Initial management of grassland (targeted herbicide treatment of perennial weeds and/or cutting/topping where necessary)				✓		✓		✓				
Targeted herbicide treatment or hand-weeding of perennial weeds surrounding hedgerow and tree planting				✓		✓		✓				
Trimming of new hedgerows to encourage bushy side growth	✓	✓							✓	✓	✓	✓
Failed tree / hedgerow stock replacement	✓	✓										✓*
Cut existing hedgerows on a 2-3-year rotation (no more than 1/3 cut in any one year)	✓	✓							✓	✓	✓	✓
Grassland cutting		✓**						✓	✓			
Grassland grazing - species-rich grassland and skylark mitigation area	✓	✓							✓	✓	✓	✓
Grassland grazing - low-intensity sheep grazing areas	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Inspect bird and bat boxes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

*Preferred month

** Required within Skylark Mitigation Area. Optional within species-rich grassland and low-intensity sheep grazing areas.

Table 7.3: Ongoing Annual Management (Years 3-30+)

Management Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Herbicide treatment or hand-weeding of hedgerow/tree planting bed (establishment period up to first three years). Removal of plastic guards before Year 5.				✓		✓		✓				
Established hedgerows cut on a 2 or 3 year cycle (no more than 1/3 cut in any one year)	✓	✓							✓	✓	✓	✓
Pruning any trees where necessary for health and safety of health of plants	✓	✓										
Removal of tree guards	✓	✓							✓	✓	✓	✓
Grassland cutting		✓*						✓	✓			
Grassland grazing - species-rich grassland and skylark mitigation area	✓	✓							✓	✓	✓	✓
Grassland grazing - low-intensity sheep grazing areas	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Inspect bird and bat boxes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

* Required within Skylark Mitigation Area. Optional within species-rich grassland and low-intensity sheep grazing areas.

8 MANAGEMENT RESPONSIBILITIES

- 8.1.1 The implementation of the LEMP will be the responsibility of the Developer (AGR Solar 2 Limited) of the Site, working in conjunction with the Site owners (“Owners”) and/or appointed management organisation.
- 8.1.2 All works associated with the implementation of the LEMP will be undertaken by experienced contractors and / or under the watch of a suitably qualified (and where required, licenced) ecologist.
- 8.1.3 The Owners shall be responsible for the cost of implementing the LEMP including the cost of carrying out any management, monitoring, or other such activities.
- 8.1.4 Monitoring and reporting will be undertaken by experienced landscape contractors or suitably qualified ecologist as required, the costs associated with monitoring, reporting and any rectification works will be borne by the Owners. The process of monitoring and review contained within the LEMP will allow a responsive and flexible approach to maintenance to achieve the stated objectives.

9 MONITORING

- 9.1.1 The development of the biodiversity interest of the Site will be monitored over time by a suitably experienced ecologist. A walkover survey will be undertaken on years 1,3, 5 and 10, 20 and 30. This will involve an inspection of the hedgerows, trees and grassland to ensure that they are being managed in a manner suitable for the enhancement of wildlife interest. The SMA will be inspected during the bird-breeding season (April to August) to ensure that they are being managed in a manner suitable for the enhancement of wildlife interest, in particular skylarks. In addition, this survey will also visually inspect and wildlife boxes for signs of damage/ wear and tear, and also seek to identify any external signs indicating occupation.
- 9.1.2 The results of these monitoring surveys will be used to inform future changes in management to ensure aims are achieved. The management plan will be amended, if necessary, based on the monitoring recommendations (including amending the cutting/grazing regime of grassland areas if necessary).
- 9.1.3 Following the outcomes of each monitoring survey it will be the duty of “the Owner” of the Site to amend the LEMP to inform future changes in management including amending the cutting regime, if needed.
- 9.1.4 Monitoring will include a habitat condition assessment based on the Biodiversity Metric 3.1 condition criteria¹¹. Conditions have been estimated to achieve good or moderate condition, dependent on the habitat type and as outlined within the Biodiversity Metric 3.1 spreadsheet for the Proposed Development. Monitoring procedures are outlined in **Table 9.1**.
- 9.1.5 Following completion of each monitoring visit (i.e., in years 1,3, 5 and 10, 20 and 30), summary reports compiled by an independent ecologist will be made available to the ‘Owner’ which will include full details of habitat management measures implemented and monitoring findings. Following the inclusion of any remedial measures proposed this should be made available to the LPA.

¹¹ <https://publications.naturalengland.org.uk/publication/5850908674228224> [Accessed 28/11/2023].

Table 9.1: Monitoring procedures and key indicators

Biodiversity feature	Monitoring procedure	Key indicators
Broadleaved woodland	Walkover of the woodland	Browse damage, weeds, dead or damaged plants. Note areas requiring replacement planting and (after year five) removal of spiral guards. Moderate condition.
Low-intensity sheep grazed pasture (modified grassland)	Walkover of the grassland	Assess the species uptake based on the sown species mix species list. Check for areas of bare ground and levels of pernicious weeds. Good condition.
Species-rich grassland (other neutral grassland) and SMA	Walkover of the grassland	Assess the species uptake based on the sown species mix species list. Check for areas of bare ground and levels of pernicious weeds. Moderate condition.
Native species rich hedgerow	Walk full length of planted hedgerows	Browse damage, weeds, gaps, dead or damaged hedgerow plants. Note areas requiring replacement planting and (before end of Year 5) removal of spiral guards. Good condition.
Wildlife boxes (bird and bat)	Visual inspection (external only)	Check for visible signs of external damage or excessive wear and tear and replace if necessary. Check for external signs of occupation (e.g., splashing, staining, droppings).

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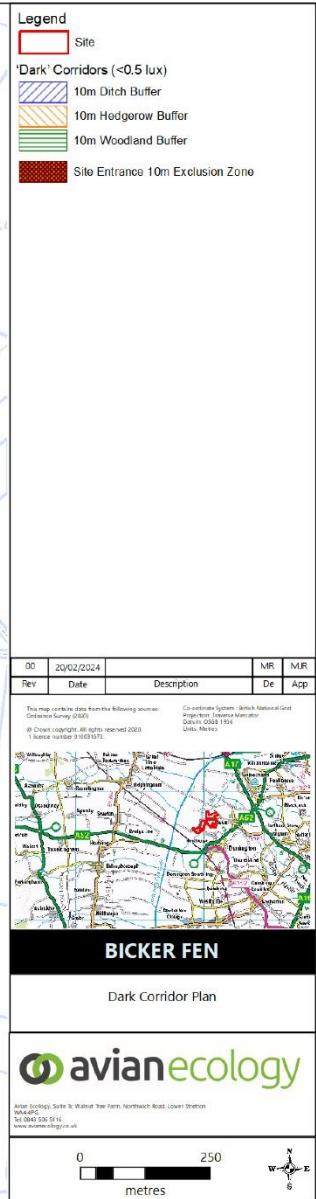
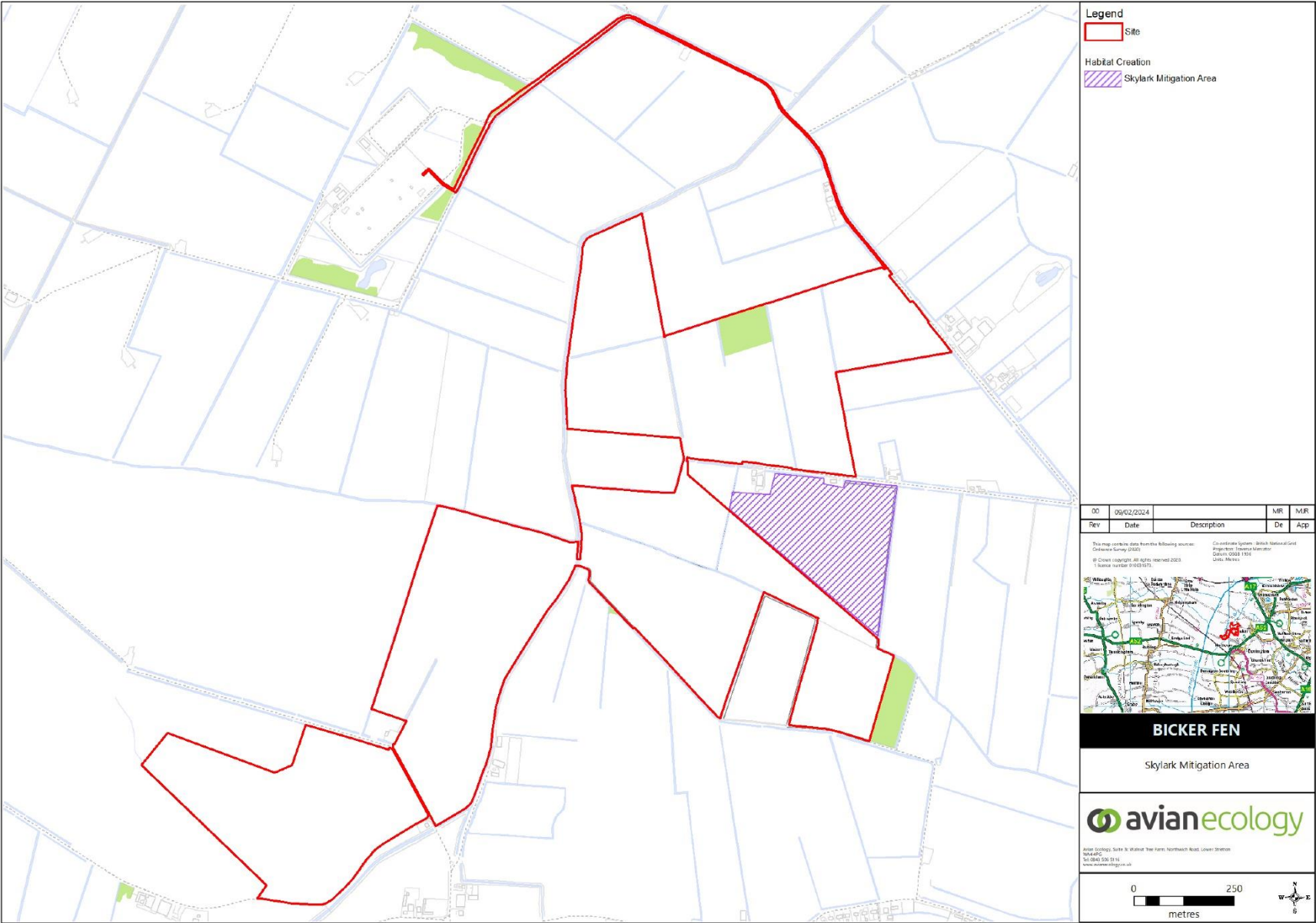


Figure 2: Skylark Management Area



Appendix 1: Landscape Masterplan

NOTES

LANDSCAPE PROPOSALS

The existing landscape character of the Site and its immediate surroundings is defined by the large arable fields bounded by field drains, isolated blocks of woodland and limited hedgerows/trees. The landscape proposals would build on these existing landscape features and would seek to enhance biodiversity, increase screening of the Proposed Development and allow continued agricultural use through grazing.

PROGRAM

Grass seeding shall be carried out March - June or September - October, when weather and ground conditions are suitable for germination.

Tree and shrub planting shall be carried out October - February, when weather and ground conditions are suitable.

GRASSLAND

Most of the Site will be sown with a low intensity sheep grazing mix specifically designed for solar farms. The seed mix would be the same as that successfully used and grazed for several years at AGR's existing solar farms. The seed mix would comprise long lasting and slow growing cultivars of the species listed on the detailed Landscape Masterplan drawings (2920-01-21 to 23).

The sowing of grass seed mix would be at a rate of 25kg per hectare in 2 passes perpendicular to each other. Prior to seeding the soil would be cultivated to a fine tilth and made level, stones and other materials larger than 50mm in any direction that are brought to the surface shall be removed. Once seeded the areas would be rolled to aid germination. Once the seed has germinated the areas would be mechanically cut at 4 weeks and then every two weeks until the grass sward is established and ready for grazing. Every 10 years the areas would be over sown to boost the sward vigour for continued grazing.

SPECIES RICH GRASSLAND

All other areas that would not be grazed would be seeded with species rich grassland and wildflowers to enhance the overall biodiversity value of the Site.

Species rich grassland would be sown in all areas outside the perimeter fence and along hedge margins as indicated on Planning Drawing 2920-01-03. The seed mix would comprise a mixture of fine-leaved grasses and wildflowers that are relatively slow to establish, but after the first establishment year provide a show of flowers which will provide interest for insects, birds and mammals. The species composition for the species rich grass mix is listed on the detailed Landscape Masterplan drawings (2920-01-21 to 23).

The sowing species rich grass would be at a rate of 25kg per hectare in 2 passes perpendicular to each other. Prior to seeding the soil will be cultivated to a fine seed bed and rolled before and after sowing to aid germination. Stones and other materials larger than 50mm in any direction that are brought to the surface will be removed. Once the seed has germinated the areas will be mechanically cut regularly to control weeds. Once established the areas will be cut once or twice a year after flowering.

HEDGEROWS

Hedgerow planting is proposed along the site boundaries along with gapping up of existing hedgerows to provide screening of the development, habitat connectivity and wildlife corridors.

Hedge planting will be undertaken in a double staggered row approximately 30cm apart at 5 plants per linear metre. Species composition and sizes are listed on the detailed Landscape Masterplan drawings (2920-01-21 to 23). Hedges plants will be planted in a pre-prepared trench, deep and wide enough to fit the roots once spread out. Trenches will be backfilled with site-won topsoil. The line of the hedge will be kept clear of grass and weed competition during the aftercare period by hand pulling or chemical means until established.

Hedge plants will be protected against browsing by the use of gro-cones and fencing.

Any losses of hedge plants will be replaced during the following planting season.

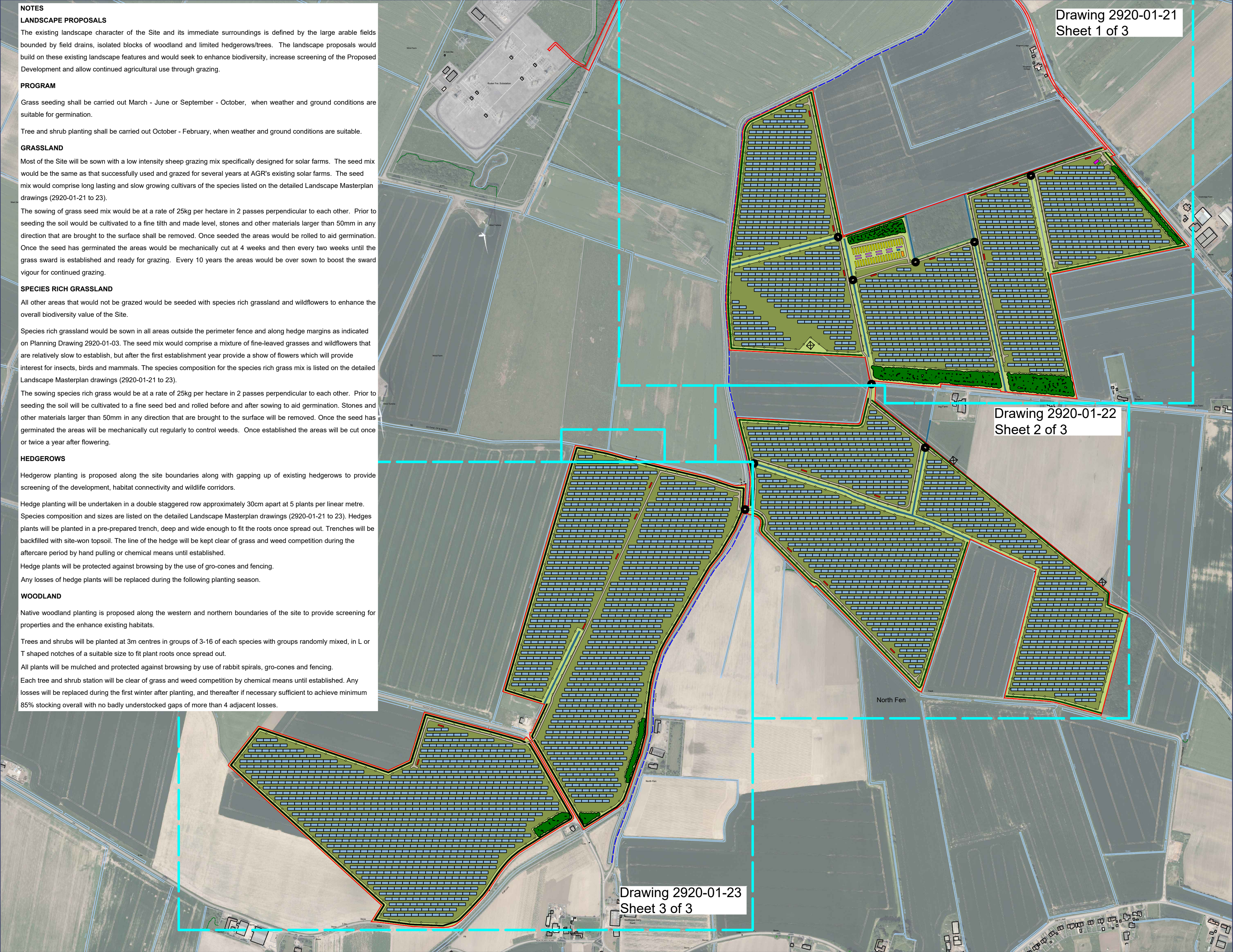
WOODLAND

Native woodland planting is proposed along the western and northern boundaries of the site to provide screening for properties and the enhance existing habitats.

Trees and shrubs will be planted at 3m centres in groups of 3-16 of each species with groups randomly mixed, in L or T shaped notches of a suitable size to fit plant roots once spread out.

All plants will be mulched and protected against browsing by use of rabbit spirals, gro-cones and fencing.

Each tree and shrub station will be clear of grass and weed competition by chemical means until established. Any losses will be replaced during the first winter after planting, and thereafter if necessary sufficient to achieve minimum 85% stocking overall with no badly understocked gaps of more than 4 adjacent losses.



- Application Boundary
- Photovoltaic Panels
- Deer / Stock Fence 2.1m
- Acoustic Fence 5m
- Solar Inverter / Transformer Station
- Solar Storage Building
- Solar Control Building
- Solar Switchgears Building
- Battery Storage Container
- Inverter / Transformer Station
- Control Building
- Switchgears Building
- Access Track
- Low Maintenance Pasture
- Species Rich Grassland
- Hedgerow
- Woodland Shelterbelt
- Existing ditch retained and enhanced
- Existing public right of way
- Existing pylon
- Proposed ditch crossing

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Project

Bicker Fen Solar Farm

Drawing Title

Landscape Masterplan Overview Plan

Scale

1:5000 @A2

Status

Discharge of Condition

Date

Dec 2023

Drawn

NG

Checked

PR

Dwg no

2920-01-20

Rev



Inset Scale 1:20,000

Low Maintenance Pasture Seed Mix		
Species		% Mix
Meadow Fescue		15
Perennial Ryegrass		16
Smooth Stalked Meadow Grass		20
Timothy		19
Creeping Red Fescue		15
Hard Fescue		10
White Clover		3
Wild White Clover		2

Species Rich Seed Mix		
Species		% Mix
Wildflowers		
Achillea millefolium		1
Betony		0.5
Common Knapweed		2.5
Wild Carrot		2.5
Hedge Bedstraw		2
Ladies Bedstraw		1
Ox-Eye Daisy		3
Musk Mallow		6.8
Ribwort Plantain		0.1
Salad Burnet		0.1
Meadow Buttercup		0.1
Yellow Rattle		0.1
White Campion		0.3
Grasses		
Common Bent		8
Crested Dogtail		28
Smaller Catstail		4
Red Fescue		24
Smooth Stalked Meadow Grass		16

Native Hedgrow Mix - 5/1m, double staggered row										
Species	Common Name	Size	% Mix	H1 - 1185m	H2 - 127m	H3 - 131m	H4 - 153m	H5 - 532m	H6 - 221m	
Acer campestre	Field Maple	1+1, 60-80cm	10	595	65	70	80	270	115	
Corylus avellana	Hazel	1+2, 60-80cm	15	890	100	100	115	400	170	
Crataegus monogyna	Hawthorn	1+1, 60-80cm	30	1780	195	200	230	800	335	
Prunus spinosa	Blackthorn	1+1, 60-80cm	30	1780	195	200	230	800	335	
Rosa canina	Dog Rose	1+1, 60-80cm	5	300	35	35	40	135	60	
Sambucus nigra	Elder	1+1, 60-80cm	10	595	65	70	80	270	115	

Native Woodland Mix - 3m centres							
Species	Common Name	Size	% Mix	NW1 - 3450m²	NW2 - 3055m²	NW3 - 5641m²	NW4 - 8895m²
Acer campestre	Field Maple	1+1, 60-80cm	15	60	55	95	150
Betula pendula	Silver Birch	1+1, 60-80cm	20	80	70	125	200
Carpinus betulus	Hornbeam	1+1, 60-80cm	15	60	55	95	150
Cornus sanguinea	Dogwood	1+2, 60-80cm	10	40	35	65	100
Corylus avellana	Hazel	1+2, 60-80cm	10	40	35	65	100
Malus sylvestris	Crab apple	1+1, 60-80cm	10	40	35	65	100
Prunus spinosa	Blackthorn	1+1, 60-80cm	10	40	35	65	100
Quercus robur	Common Oak	1+2, 60-80cm	10	40	35	65	100



- Application Boundary
- Photovoltaic Panels
- Deer / Stock Fence 2.1m
- Acoustic Fence 5m
- Solar Inverter / Transformer Station
- Solar Storage Building
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Bicker Fen Solar Farm

Drawing Title

Landscape Masterplan
Sheet 1 of 3

Scale

1:2500 @A2 Discharge of Condition

Date

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Drawn

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revision: desc:

date:

