Biodiversity Net Gain Assessment

Solar Farm on Land South of Berrington, Shrewsbury

Principal Author:
Sebastian Phelan BSc ACIEEM

Address:

RSK ADAS Ltd
Unit 1 Rubicon Square
4205 Park Approach
Leeds
LS15 8GB

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Commissioned For:

Econergy International Ltd

Quality Assurance

Author	Checked	Approved
Sebastian Phelan BSc (Hons) ACIEEM	Michael Berwick BSc. MLA CMLI	Sarah Thornton-Mills BSc (Hons) MSc MCIEEM

[redacted]

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Revision History

Revision	Date	Amendment
1051263 (00)	13/05/2022	First issue for client review
1051263 (01)	21/06/2022	Update to habitat areas
1051263 (02)	05/07/2022	Update to site area
1051263 (03)	13/01/2023	Update to layout plan

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1 Summary

The proposal at land south of Berrington, Shrewsbury, Shropshire, SY5 6HA, is to develop 44.09ha of land into a solar farm. A Phase 1 habitat survey of the site was carried out in March 2021 and found the site to be dominated by arable cropland bordered by native hedgerows.

This report has been prepared in accordance with the British Standard (BS) for Biodiversity – Code of practice for planning and development, BS42020:2013. The report assesses the biodiversity unit gains or losses arising from the proposed development using the Defra Biodiversity Metric 3.1.

The proposed development will result in the loss of all arable land (40.19 ha), modified grassland (3.49 ha) and bare ground (0.34 ha) within the site, which will be replaced with other neutral grassland (42.86 ha) and sealed surface trackways (1.16 ha). All existing hedgerows will be retained, protected and enhanced during development, with the exception of 0.01 km of native hedgerow with trees which will require removal to allow a new access route onto site. An additional 0.56 km of native species-rich hedgerow and 0.03 km of native species-rich hedgerow with trees will be created.

The proposed development will achieve a 132.84% net gain in habitats and a 76.47% net gain in hedgerows, and will meet all 10 design principles for Biodiversity Net Gain. The proposed development has been developed in accordance with the BS for Process for designing and implementing Biodiversity Net Gain - Specification, BS8683:2021.

A management and monitoring plan should be prepared for the site prior to the start of construction to detail how the recommended habitat protection and enhancement measures will be implemented and to detail long-term monitoring requirements to secure the targeted net gains.

2 Introduction

2.1 Background and Objectives

ADAS was commissioned by Econergy International Ltd to produce a Biodiversity Net Gain Assessment to inform a planning application for 44.09 ha of land south of Berrington, Shrewsbury, Shropshire, SY5 6HA.

A Preliminary Ecological Appraisal (PEA) was undertaken in March 2021 (ADAS, 2021) which identified baseline habitats at the site, see the Phase 1 map for further details (Appendix 1). The PEA report outlines recommendations in relation to protected species on site, which must be considered prior to and during construction. In anticipation of local planning requirements, a Biodiversity Net Gain Assessment of the proposed development has been undertaken.

Biodiversity net gain occurs in development when the project leaves the natural environment in a better state than it was prior to the project. To achieve biodiversity net gain, the developer is required to ensure that wildlife habitats are created or enhanced. It requires the development to result in a demonstrable increase in habitat value to the baseline (how the site was prior to development). Biodiversity net gain should be demonstrated quantitatively.

To demonstrate biodiversity net gain, the value of the habitats are assessed using a recognised metric tool to calculate biodiversity units. The biodiversity losses or gains resulting from the development are then calculated by subtracting the baseline (pre-development) units from the post development units. Defra's Biodiversity Metric 3.1 Calculation tool (Natural England, 2021) has been used.

The Biodiversity Net Gain Good Practice Principles for Development (CIEEM, CIRIA, IEMA 2016) are a set of ten principles which have been produced to provide a framework that helps improve the UK's biodiversity by contributing towards strategic priorities to conserve and enhance nature while progressing with sustainable development. To demonstrate that biodiversity net gain has been achieved in a qualitative manner for a development it would need to be shown that the development meets these ten principles which have been listed below.

- Apply the Mitigation Hierarchy
- Avoid losing biodiversity that cannot be offset by gains elsewhere
- Be inclusive and equitable
- Address risks
- Make a measurable Net Gain contribution
- Achieve the best outcomes for biodiversity
- Be additional
- Create a Net Gain legacy

- Optimise sustainability
- Be transparent

2.2 Purpose of Report

The purpose of this report is to calculate the predicted change in the site's biodiversity units as a result of the proposed development and ensure that the proposed development has been evolved in accordance with the BS for Process for designing and implementing Biodiversity Net Gain - Specification, BS8683:2021. This report has been prepared in accordance with the British Standard (BS) for Biodiversity – Code of practice for planning and development, BS42020:2013.

2.3 Site Description

The site was located to the south-west of Berrington, Shrewsbury (Central Grid Reference: SJ 52741 07125). The site was approximately 44.09 ha. The site was bound by narrow single-track roads along the eastern, northern and western boundary which led to arable fields in the east, livestock fields to the north and a small woodland to the south that concealed Cound Brook, which is approximately 3 m wide and relatively fast flowing. The wider area generally consisted of farmland with a settlement to the north-east (as shown in Figure 1).

Figure 1. Site location and wider landscape (site indicated by red line boundary)

Imagery taken from Microsoft Virtual Earth (Esri). May 2022

2.4 Proposed Development

The development will include the erection of an up to 30 MW Solar PV Array, comprising ground mounted solar PV panels, battery storage compound, vehicular access from existing agricultural access points, internal access tracks, landscaping and associated infrastructure including security fencing, CCTV cameras, client storage containers and grid connections infrastructure, including substations buildings and off-Site cabling. The existing boundary features, trees and ponds across the site will be retained as part of this development. See Appendix 2 for further details.

3 The Policy and Legislation Background

3.1 Shropshire Local Development Framework Adopted Core Strategy 2006-2026

The Shropshire Local Development Framework Adopted Core Strategy sets out the following policy in relation to biodiversity.

Policy CS17 – Environmental Networks

"Development will identify, protect, enhance, expand and connect Shropshire's environmental assets, to create a multifunctional network of natural and historic resources. This will be achieved by ensuring that all development:

- Protects and enhances the diversity, high quality and local character of Shropshire's natural, built and historic environment, and does not adversely affect the visual ecological, geological, heritage or recreational values and functions of these assets, their immediate surroundings or their connecting corridors;
- Contributes to local distinctiveness, having regard to the quality of Shropshire's environment, including landscape, biodiversity and heritage assets, such as the Shropshire Hills AONB, the Meres and Mosses and the World Heritage Sites at Pontcysyllte Aqueduct and Canal and Ironbridge Gorge;
- Does not have a significant adverse impact on Shropshire's environmental assets and does not create barriers or sever links between dependant sites;
- Secures financial contributions, in accordance with Policies CS8 and CS9, towards the creation of new, and improvement to existing, environmental sites and corridors, the removal of barriers between sites, and provision for long term management and maintenance. Sites and corridors are identified in the LDF evidence base and will be regularly monitored and updated.".

3.2 Shropshire Pre-Submission Draft Local Plan 2016 to 2038

The Shropshire Pre-Submission Draft Local Plan sets out the following policy in relation to biodiversity.

DP13. The Natural Environment

The avoidance of harm to Shropshire's natural assets and their conservation, enhancement and restoration will be achieved by:

- Designated sites and priority species and habitats

1. Requiring a project-level Habitats Regulations Assessment (HRA) for all proposals where the Local Planning Authority identifies a likely significant effect on an internationally designated site. Permission will be refused where such an HRA indicates an adverse effect on the integrity of a

designated site which cannot be avoided or fully mitigated. Where mitigation can remove an adverse effect, including that identified by the HRA for the Plan, measures will be required in accordance with the Plan HRA and supporting documents and/or as set out in the relevant settlement strategies (policies S1 -21); and/or remedial actions identified in the management plan for the internationally designated site as appropriate; and/or policies DP15, DP16, DP20, DP23 and DP27. Policy DP14 sets out particular requirements for development in the catchment of the river Clun Special Area of Conservation (SAC).

2. Ensuring that the following types of development are determined in line with national policy:

   a. on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments); or

   b. resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees)

- Biodiversity Net Gain

3. Ensuring that all development delivers at least a 10% net gain for biodiversity in accordance with the Environment Act, any future Local Nature Recovery Strategy (LNRS) and policies DP15, DP16, DP17 and DP23.

- Natural Assets

4. Ensuring that proposals which are likely to have an adverse effect on any of the following natural assets:
   a. Locally designated biodiversity sites;
   b. Locally designated geological sites;
   c. Priority species;
   d. Priority habitats; and
   e. Geological assets;

   are accompanied by an Ecological or Geological Impact Assessment as appropriate. This should be carried out by a suitably qualified professional in accordance with industry standards and be proportionate to the scale of the impact and the importance of the asset.

5. Ensuring that proposals which are shown to have an adverse effect, directly, indirectly or cumulatively, to those natural assets listed above will only be permitted if it can be clearly demonstrated that:
   a. there is no satisfactory alternative means of avoiding the adverse effect through redesign or by re-locating on an alternative site and;
   b. the social or economic benefits of the proposal outweigh the adverse effect.

6. Ensuring that where proposals meet these tests, mitigation measures to reduce the harm will be sought in the first instance. Compensation measures for residual harm will only be accepted as a last resort. Mitigation and compensation measures must be demonstrated to be achievable and be in accordance with policies DP15, DP16, DP17, DP18, DP20, DP23 and DP24. Appropriate conditions and/or planning obligations will be used to ensure that such measures are fully implemented and monitored where required.
7. Maximising opportunities to increase the quantity, quality and connectivity of natural assets in accordance with policies DP15, DP16, DP17 and DP23 through habitat creation and management measures, provision of appropriately designed and suitably located bat and bird boxes or swift bricks and any other such measures which would support protected or priority species.

- Trees, Woodlands and Hedgerows

8. The retention of trees and a significant increase in the extent and distribution of trees, woodlands and hedgerows in Shropshire will be achieved by:
    a. Ensuring that for all proposals directly affecting existing trees or where trees are immediately adjacent to a development site, such trees are recorded in line with guidance in the relevant British Standard and that the record is submitted as part of the planning application. Opportunities to retain trees of high amenity and environmental value taking into consideration both their individual merit and their contribution as part of a group or broader landscape feature should be considered and documented as part of this;
    b. Ensuring that applicants provide details as to how retained trees, hedges and hedge banks will be protected prior to, during and after construction;
    c. Ensuring that no building, hard surfacing drainage or underground works are permitted that do not accord with the principles of the relevant British Standard and policy DP23 unless, exceptionally, the Council is satisfied that such works can be accommodated without harm to the trees concerned or there are overriding reasons for development to proceed;
    d. Encouraging new development to plant new trees, woodlands and hedgerows in line with the Shropshire Tree and Woodland Strategy, Shropshire Green Infrastructure Strategy and the provisions of the Environment Act with respect to Biodiversity Net Gain; and
    e. Ensuring that native species hedgerows are retained on development sites, unless there are overriding benefits that justify their removal. Where removal is deemed necessary, details addressing the criteria under the Hedgerow Regulations 1997 (as amended) should be submitted to demonstrate the validity for removal along with details of replacement hedgerows. Replacement hedgerows should be of an equal scale, comprise an appropriate mix of native species and where possible, should be provided on site. Where

there are gaps in the existing native species hedgerows on the site, the development should provide sufficient additional hedgerow planting with appropriate native species to restore continuity.

3.3 National Planning Policy Framework

The government policy for England on biodiversity is covered under the National Planning Policy Framework (NPPF, 2021), which includes multiple mentions of the requirement for a measurable net gain (highlighted in the following extracts below):

- Para 174d: ‘Planning policies and decisions should contribute to and enhance the natural and local environment by…minimising impacts on and providing net gains for biodiversity, including by establishing ecological networks that are more resilient to current and future pressures…’
- Para 179b: ‘To protect and enhance biodiversity and geodiversity, plans should…promote the conservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.’
- Para 180d: ‘…development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.’

3.4 The Environment Act

The Environment Act (2021) seeks to improve biodiversity through several means, including the introduction of a mandatory requirement for new developments to achieve a minimum of 10% biodiversity net gain, which will be managed as such for a minimum of 30 years after the development has been completed. Key parts of the Environment Act which relate to biodiversity net gain and its delivery are Part 6 Nature and Biodiversity and the supporting Schedule 14, particularly sections 9(3), 13(2), 14(2) and 15.

4 Methodology

4.1 Baseline Habitat Assessment

This assessment was carried out using the results of the ADAS PEA carried out in March 2021 (ADAS 2021), a site visit to condition assess the habitats on site and update the phase 1 map in January 2022. The assessment in this report is based on the landscape design drawing, shown in Appendix 2.

Many recognised habitat assessment methods are available for site surveys and the ADAS PEA has used the Joint Nature Conservation Committee (JNCC) Phase 1 habitat assessment method. In order to complete the Biodiversity Metric 3.1 - Calculation Tool, the Phase 1 habitat types have been converted to the closest associated habitats in UK Habitat (UK Habs) Classification method (UK Habs, 2020).

4.2 The Mitigation Hierarchy

The PEA considered the Mitigation Hierarchy when assessing the ecological constraints and opportunities associated with the proposed development, and this fed into the design of the scheme. The Mitigation Hierarchy requires that developers first take steps to avoid and then to minimise impacts on biodiversity. Only after these steps are taken should developers look to compensate for losses that cannot be avoided. Finally, if compensation within the development footprint is not possible or does not generate the most benefits for nature conservation, the losses should be offset elsewhere.

4.3 Biodiversity Metric Calculation

Biodiversity units were calculated for the site using the “Biodiversity Metric 3.1 - Calculation Tool” and guidance available on the Natural England website (Natural England, 2021). The Biodiversity Metric calculation tool spreadsheet is provided as an Excel file with this report.

The metric uses area (and length for linear habitat features) of habitats as a proxy measure for capturing the value and importance of biodiversity. It uses a calculation in MS Excel to allow for the ecological importance of these features: their size, ecological condition, distinctiveness and location. The metric enables assessments to be made of the baseline (pre-intervention) biodiversity value of a site in terms of ‘biodiversity units’ and the projected post-development (post-intervention) biodiversity value. The metric can also be used to measure off-site biodiversity changes for a project or development and can be applied from the level of an individual field to, for example, an entire river catchment.

The calculator uses the following variable elements to determine biodiversity units, based on the information collected in the field:

Habitat type: The original survey was based on the Phase 1 methodology (JNCC 2010) for categorising a habitat identified in the field. The Biodiversity Metric 3.1 uses the UK Habitat (UK Habs) classification system. Provided within the Biodiversity Metric 3.1 is a translation table to convert habitat types from Phase 1 terminology to UK Habs; ADAS used this conversion in undertaking this assessment.

Area (Hectares): The area of each baseline habitat type has been measured based on the digitized Phase 1 map using ArcView Geographical Information System (GIS). Measurements have been rounded up or down to the nearest two decimal places to achieve a minimal mapping unit (MMU) of 0.01 ha. Mapping habitats at different times of year may lead to variation into where one habitat starts and another begins as there is potential overlap between habitats (the ecotone). The actual field mapping was based on both field survey and aerial imagery in order to achieve the best representation of the areas covered by each habitat identified onsite. The areas for the post development site habitats were provided by the client and taken from a DWG version of the development plan in Appendix 2.

Condition: The condition is a means to measure the quality of a habitat based on a series of physical characteristics and typical species of a particular habitat type. In order to aid the process, the Biodiversity Metric 3.1 Technical Supplement and Biodiversity Metric 3.1 – habitat condition assessment sheets with instructions (Natural England, 2021), provides ‘condition sheets’. Condition sheets provide a list of positive indicators for each habitat and dependent on how many positive indicators a particular habitat meets will equate to the relevant condition for that specific habitat.

Distinctiveness: This element considers the total amount of a habitat in a national context, the proportion of the habitat protected in Sites of Special Scientific Interest (SSSIs), whether the habitat is a UK Priority Habitat and how rare the habitat is in a European context. Certain Very High distinctiveness habitats are considered irreplaceable due to their age, complexity or rarity in the landscape. Replacement or enhancement of baseline habitats as a result of development must meet the trading rules as set by the metric. A development proposal which does not meet these trading rules must justify this and reach an agreement with the Local Planning Authority and relevant stakeholders.

Strategic significance: This element recognises that strategic significance gives extra value to habitats that are in optimal locations, or are of a type, that meet local objectives for biodiversity. Strategic significance relates to the spatial location of a habitat parcel and works at a landscape scale. Information to determine the significance of a habitat within a specific landscape can be found in a variety of sources that include local biodiversity plans, Local Nature Recovery Strategies, Local Ecological Networks and National Character Area objectives. The strategic significance is based on three categories which equates to a different score, which are as follows: Within area formally identified in local strategy – 1.15; Location ecologically desirable but not in local strategy – 1.1 and Area/compensation not in local strategy/no local strategy - 1.

4.4 Limitations

The site was initially assessed using Phase 1 Habitat mapping techniques with descriptions written up for each habitat recorded onsite, and for this assessment were converted to UK Habs; there is potential that habitats will not translate directly between Phase 1 and UK Habs. Where there is any ambiguity, an assumption is made based on the available information to achieve the closest match. In addition, the timing of the initial site visit (January and March) may have missed certain plants that could be either early or late flowering which may affect the condition assessment of a specific habitat type where this is represented as a positive indicator.

Measurements are based on a two-dimensional mapping system and would assume the site is completely flat and therefore certain habitats may be greater in extent if they occur on a slope.

In the field, the surveyor will have judged the approximate location and area of each of the habitat types and, where appropriate, used aerial imagery to assist with mapping of the habitats as accurately as possible.

5 Results

Full details of the existing habitats and linear features assessed in this report are provided in the ADAS 2021 PEA report.

5.1 Baseline Habitat Assessment

The baseline biodiversity units of the proposed development site have been calculated and are summarised below. The condition of each habitat has been assessed against the relevant condition assessment criteria within the Defra Metric 3.1. A full breakdown of the condition assessments is presented in Appendix 3. For strategic significance the following has be considered the most appropriate for each habitat:

- Arable, bramble scrub and bare ground: Fairly ubiquitous habitats that are widespread across central England and therefore is not associated within any specific local strategy.
- Modified grassland: Not a priority habitat as it is widespread across the south of England, but one that provides a level of connectivity and opportunities for biodiversity as part of a local habitat mosaic within a largely intensive agricultural setting and is therefore considered to be locally desirable but not considered directly related to a local strategy, as this type of habitat is fairly ubiquitous across the south of England.
- Ponds: Not a priority habitat as they do not meet the criteria defined in the JNCC description, however they do provide a unique habitat that increases the biodiversity value of the site, integrating into a local habitat mosaic within a largely intensive agricultural setting. Therefore, considered to be locally desirable but not considered directly related to a local strategy.
- Urban trees: In line with DP13 The Natural Environment (Shropshire Pre-Submission Draft Local Plan) ‘the retention of trees and a significant increase in the extent and distribution of trees, woodlands and hedgerows in Shropshire’, the scattered trees on site are considered to be of strategic significance, being in the local strategy.
- Hedgerows: In line with DP13 The Natural Environment (Shropshire Pre-Submission Draft Local Plan) ‘Ensuring that native species hedgerows are retained on development sites’, the native hedgerows on site are considered to be of strategic significance, being in the local strategy.

A summary of the habitat units and linear units for each baseline habitat is provided in Table 1 below.

Table 1: On-site Baseline Biodiversity Unit Assessment

Phase 1 Habitat	UK Habs Classification	Area (hectares)	Distinctiveness	Condition	Strategic significance	Total habitat units
Arable	Cropland – cereal crops	40.19	Low	N/A	Area/compensation not in local strategy/ no local strategy	80.38
Improved grassland	Grassland - Modified grassland	3.49	Low	Poor	Location ecologically desirable but not in local strategy	7.68
Bare ground	Urban - Vacant/ derelict/bare ground	0.34	Low	Poor	Area/compensation not in local strategy/ no local strategy	0.68
Retained						
Pond	Lakes - Ponds (Non-Priority Habitat)	0.03	Medium	Poor	Location ecologically desirable but not in local strategy	0.13
Dense scrub	Heathland and shrub - Bramble scrub	0.04	Medium	N/A	Area/compensation not in local strategy/ no local strategy	0.16
Scattered trees	Urban - Urban tree	0.08	Medium	Moderate	Within area formally identified in local strategy	0.74
Habitat total						89.77
Phase 1 Habitat	**Linear type (terrestrial)**	**Length (km)**	**Distinctiveness**	**Condition**	**Strategic significance**	**Total linear units**
Species-poor hedgerow	Native hedgerow	2.30	Low	Moderate	Within area formally identified in local strategy	10.58
Species-poor hedgerow with trees	Native hedgerow with trees	1.16	Medium	Moderate	Within area formally identified in local strategy	10.67
Species-poor hedgerow with ditch	Native hedgerow – Associated with bank or ditch	0.07	Medium	Moderate	Within area formally identified in local strategy	0.64
Linear Total						21.90

For habitat trading purposes the following is required for each baseline habitat:

- Croplands – cereal crop: Low distinctiveness habitat. Replace with same distinctiveness or better.
- Modified grassland: Low distinctiveness habitat. Replace with same distinctiveness or better.
- Bramble scrub: Medium distinctiveness habitat. Replace with 'like for like' or better.
- Ponds (Non-Priority Habitat): Medium distinctiveness habitat. Replace with 'like for like' or better.
- Vacant/derelict/bare ground: Low distinctiveness habitat. Replace with same distinctiveness or better.
- Urban Tree: Medium distinctiveness habitat. Replace with 'like for like' or better.
- Native hedgerow: Low distinctiveness habitat. Replace with same distinctiveness or better.
- Native hedgerow with trees: Medium distinctiveness habitat. Replace with 'like for like' or better.
- Native hedgerow (associated with bank or ditch): Medium distinctiveness habitat. Replace with 'like for like' or better.

5.2 Consideration of the Mitigation Hierarchy

Table 2: Mitigation Hierarchy

Hierarchy Step	Site Considerations
Avoid	The development is avoiding all impacts on any statutory designated sites, ancient woodland or other irreplaceable habitat. The pre-development use of the site was arable cropland, which has a low habitat distinctiveness and is widespread both locally and nationally. The hedgerows and mature trees of local value are being retained and protected during development.
Minimise	The developer is minimising impacts on biodiversity by selecting a development site that is limited to poor condition, low distinctiveness habitats (cropland/modified grassland). No medium or high distinctiveness habitats will be lost due to the development. As recommended in the PEA, measures to avoid harm to nesting birds, reptiles and other fauna during site clearance will be outlined in an appropriate Management Plan for the site prior to start of construction.
Compensate / Offset	Detailed habitat compensation measures have been identified through the use of the Biodiversity Metric 3.1, see following section. Post-construction, 44.02ha of cropland/modified grassland/bare ground of low distinctiveness will be lost and replaced with ecological habitats of equal or greater distinctiveness. The planting proposals will comprise native species (to provide pollen/nectar/fruit/seed etc) to ensure that connectivity and foraging opportunities are not lost, but increased for invertebrates, badger, bats and birds. Artificial hibernacula will be installed in the retained boundary landscaping, such as log piles, to increase opportunity for invertebrates, reptiles, amphibians and other mammals such as hedgehogs.

5.3 Biodiversity Metric Calculation

The proposed new area habitats are based on the development plan in Appendix 2 and summarised in the following sections. In terms of habitat type, approximately 44.02 ha of cropland/modified grassland/bare ground will be lost and replaced with other neutral grassland and developed land. The other neutral grassland habitat will be in the form of species-rich grasslands, this habitat has been divided in the calculator due to proposed differing conditions and different seed mix used. The areas of species-rich meadow outside of the fence line (approximately 9.91 ha) will be managed in a more typical method used for meadow maintenance and will comprise a different seed mix to suit this method, which results in a higher overall condition. A portion of this area (3.16 ha) is to be designated as Skylark Protection Zone including suitable nesting habitat. The meadow grassland within the fence line will be managed predominantly by grazing due to the constraints of cut and collect and hay cuts under and around the proposed solar arrays. A seed mix is proposed to provide a species-rich grassland that will be suitable for management via grazing.

The hedgerows and mature trees on site and around the perimeter of the site will be retained/enhanced and protected during the construction phase. Only approximately 10 m of native hedgerow with trees will require removal for a new access route.

Table 3: On-site Habitat Creation and Enhancement Biodiversity Unit Assessment

UK Habs Classification	Area (hectares)	Distinctiveness	Condition	Strategic significance	Habitat units delivered
Creation					
Grassland – other neutral grassland	32.95	Medium	Poor	Location ecologically desirable but not in local strategy	135.01
Grassland – other neutral grassland	9.91	Medium	Moderate	Location ecologically desirable but not in local strategy	72.98
Urban - Developed land; sealed surface	1.16	Very Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	0.00
Total	44.02	-	-	-	207.99

Linear type (terrestrial)	Length (km)	Distinctiveness	Condition	Strategic significance	Habitat units delivered
Creation					
Native species rich hedgerow	0.03	Medium	Good	Within area formally identified in local strategy	0.27
Native species rich hedgerow with trees	0.03	High	Good	Within area formally identified in local strategy	0.30
Native species rich hedgerow	0.53	Medium	Good	Within area formally identified in local strategy	4.77
Subtotal	0.59	-	-	-	5.34
Enhancement					
Native hedgerow with trees	0.39	Low	Good	Within area formally identified in local strategy	4.31
Native hedgerow	1.91	Low	Good	Within area formally identified in local strategy	12.88
Native hedgerow with trees	1.15	Medium	Good	Within area formally identified in local strategy	15.17
Native hedgerow – Associated with bank or ditch	0.07	Medium	Good	Within area formally identified in local strategy	0.94
Subtotal	3.52	-	-	-	33.29
Total	4.11	-	-	-	38.64 (rounded in matrix)

5.3.1 Summary of Habitat Changes

The total baseline biodiversity habitat units of the proposed development site are 89.77. All of the pond, scrub and urban tree habitat will be retained and protected during development. Post-construction, 209.02 units of equal or better distinctiveness habitat will be created to compensate for the loss of cropland/modified grassland.

Under the proposed scheme design, post-development on-site habitats and their associated target conditions will achieve a net increase of 119.25 habitat units, which represents a 132.84% net gain.

The total baseline linear habitat units of the site are 21.90 hedgerow units. All hedgerows on site will be retained and protected during the construction phase of the development, apart from 0.01 km of native hedgerow with trees which will be removed to allow the creation of a new access route.

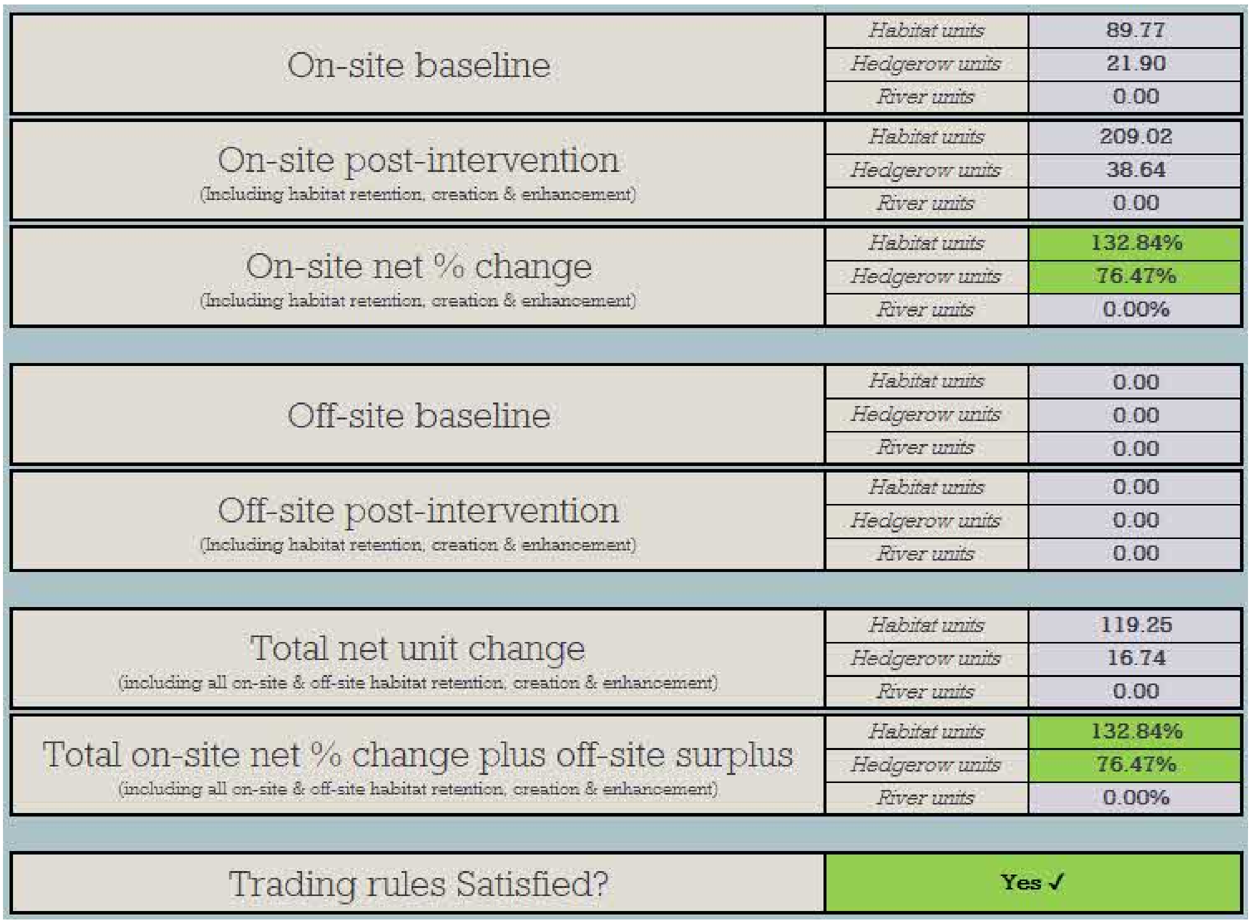
Post-construction all existing hedgerows will be managed and enhanced, resulting in an increase of hedgerow units to 33.29.

It is anticipated that 0.56 km of native species-rich hedgerow and 0.03 km of native species-rich hedgerow with trees will be created, equal to 5.34 units which brings the overall post-development hedgerow units to 38.64 (with rounding as calculated by the Metric 3.1).

Under the current scheme design, post-development hedgerow habitats and their associated target conditions will achieve a net increase of 16.74 hedgerow units, which represents a 76.47% net gain.

These results identify that based on the current scheme there is a significant gain of biodiversity associated with the development. A screenshot of the headline results within the biodiversity metric is shown in the Table 4.

Table 4: Summary of Biodiversity Metric 3.1 Results



On-site baseline	*Habitat units*	89.77
	Hedgerow units	21.90
	River units	0.00
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	209.02
	Hedgerow units	38.64
	River units	0.00
On-site net % change (Including habitat retention, creation & enhancement)	*Habitat units*	132.84%
	Hedgerow units	76.47%
	River units	0.00%
Off-site baseline	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	119.25
	Hedgerow units	16.74
	River units	0.00
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	132.84%
	Hedgerow units	76.47%
	River units	0.00%
Trading rules Satisfied?	**Yes ✓**	

6 Consideration of Biodiversity Net Gain Principles

This report has assessed the proposed development against The Biodiversity Net Gain Good Practice Principles for Development (CIEEM, CIRIA, IEMA 2016) set of ten principles. It is important to demonstrate that biodiversity net gain has been achieved. The proposed development is expected to be able to meet these 10 principles, which are assessed in Table 5.

Table 5: Assessment against Biodiversity Net Gain Good Practice Principles

Biodiversity Net Gain Good Practice Principle	How the principle has been met
Apply the Mitigation Hierarchy	This has been carefully considered for this site. See section 4.2 for detailed discussion.
Avoid losing biodiversity that cannot be offset by gains elsewhere	The project will not result in losses to any statutory designated sites, ancient woodland or other irreplaceable habitat. See section 5.1 for baseline habitat details.
Be inclusive and equitable	The site is currently dominated by arable land, a common and widespread habitat in the area, which is of low ecological value. Proposals are to retain important biodiversity features, including waterbodies, scattered trees and hedgerows, whist replacing low distinctiveness habitats with medium distinctiveness habitats, drastically increasing the sites biodiversity value.
Address risks	Proposed habitat creation and enhancement have been selected that will be practical to achieve on site. See section 7 for habitat management recommendations. Details such as installation of stockproof fencing reduce the risk of certain habitats being adversely impacted by grazing. A management plan should be produced at the detailed design stage to ensure targets for the site are realised.
Make a measurable Net Gain contribution	The Defra metric has been used to track the changes from baseline to demonstrate a measurable net gain. See section 5.3 for a detailed summary of the biodiversity metric calculation.
Achieve the best outcomes for biodiversity	Although changes in broad habitat type are discouraged, the dominant baseline habitat on site (arable cropland) has been replaced with grassland. This is in consideration of the impracticality of incorporating new arable land into a solar farm. Arable cropland is widespread in the local area, whereas the new grasslands on site will be of benefit to numerous local species. Habitats have been selected which can be achieved and maintained for the life of the development. While more species diverse grasslands are available, these were not considered compatible with the use and accessibility of the site. See section 5.3 for a detailed summary of the habitats proposed.

Biodiversity Net Gain Good Practice Principle	How the principle has been met
Be additional	The site is not under any existing obligations to create or manage habitat, therefore the proposals for habitat creation and enhancement provided are additional to what would be expected to happen without the development. It is also expected that in line with recommendations in the PEA, the planting plan is to consist of native species to ensure that connectivity and foraging opportunities are not lost, but increased for invertebrates, badger, bats and birds. Including beehive installations and Along with artificial hibernacula creation, such as log piles, to increase opportunity for invertebrates, reptiles, amphibians and other mammals. The management of these features should be detailed within any future management and monitoring plans for the site.
Create a Net Gain legacy	A suitable management plan should be produced at the detailed design stage to provide a long-term (minimum 30-year) plan for management of the habitats on site.
Optimise sustainability	By achieving net gain through recommendations suitable to the site and practical in the long term, ecological enhancements on site are contributing to the overall sustainability of the development.
Be transparent	The LPA will be provided with the PEA report, BNG Assessment report, the Defra calculation sheet and supporting drawings used in the calculations. All biodiversity metric choices have been fully explained and justified. The proposed development has been developed in accordance with the BS for Process for designing and implementing Biodiversity Net Gain - Specification, BS8683:2021.

7 Habitat Management Objectives

The following management objectives give details on how post-construction habitats can achieve the target conditions that the assessment has been based on.

7.1 Grasslands

Two distinct areas of species-rich wildflower grassland are included in the proposed development design. Within these areas the existing low distinctiveness cropland/modified grassland will be replaced with medium distinctiveness species-rich neutral grassland. The designated areas will be prepared and sown with a species-diverse native wildflower mix. For the large area within the fence line (approximately 32.95 ha), management of this meadow will include grazing, with a seed mix to include a sward that benefits from this type of management. This is due to the constraints associated with undertaking a ‘hay cut’ around solar panels and the amount of shade they cast. Therefore, grazing is implemented as a viable maintenance technique to manage this area of meadow. The assessment has taken this into consideration and reduced the overall condition of this meadow to ‘poor’, as it is expected that Assessment Criteria 1 (wildflower, sedges and indicator species presence), 2 (sward height variability) and 3 (bare ground between 1-5%) of the relevant Biodiversity Metric 3.1 habitat condition sheet will not be met in this area.

The area of species-rich meadow outside of the fence line (approximately 9.91 ha) will be managed in a more typical method used for meadow maintenance and will comprise a different seed mix to suit this method. As such the wildflower species will be allowed to grow and set seed, meaning Assessment Criteria 1 and 2 will likely be achieved, which results in a higher overall condition of ‘moderate’. As 3.16 ha will be created for Skylark nesting purposes, the area should not be cut or grazed between early April and the end of May to ensure any Skylark nests are successful. Subsequent cuts must be at least seven weeks apart to enable success for later nests.

7.2 Retained Hedgerows

The retained hedgerows on site will need to be managed to improve their condition from the current Moderate to Good within two - four years. The hedgerow condition criteria in need of improvement to achieve the target condition are: C1 - Undisturbed ground and perennial vegetation; C2 - Undesirable perennial vegetation. With a rotational cutting regime, management of weedy species and the proposed species rich grassland seeding, it will be possible to pass these criteria. A 0.39 km section of native hedgerow on the northern boundary of the eastern field will also be planted with native trees to create a native hedgerow with trees. This will be managed to improve its condition from the current Moderate to Good within ten years, as above it will be possible to pass the criteria it is currently failing on, however now failing E1 – Tree Age.

7.3 Native Species-Rich Hedgerows

The new species-rich hedgerows (one with trees) will be created along the northern boundary of both fields, as well as small sections in old field entrances. These will need to be managed to achieve a Good condition score, within twelve years (twenty for hedgerow with trees). The new hedgerows are likely to pass all Assessment Criteria, with the exception of E1 – Tree Age for hedgerows with trees.

7.4 Recommended Monitoring and Management

An appropriate Biodiversity Net Gain Management and Monitoring Plan will need to be prepared for the site to ensure that the goals for habitat enhancement and creation are achieved.

This plan should detail:

- Measures to protect biodiversity features on site that are to be retained;
- where, when and how the proposed on-site biodiversity compensation/enhancement will be undertaken, monitored in the long term (up to 30 years) and modified, when needed, to achieve the stated objectives for the site;
- persons responsible for implementing and funding the works; and
- any requirements for ongoing updates to the Local Planning Authority that demonstrate the management of the site, how management is meeting the objectives or where appropriate changes in management have been advised.

8 Conclusion

The development will include the erection of an up to 30 MW Solar PV Array, comprising ground mounted solar PV panels, battery storage compound, vehicular access from existing agricultural access points, internal access tracks, landscaping and associated infrastructure including security fencing, CCTV cameras, client storage containers and grid connections infrastructure, including substations buildings and off-Site cabling. The existing boundary features, trees and ponds across the site will be retained as part of this development. Post-construction, 44.02 ha of cropland/modified grassland/bare ground will be lost and replaced with 42.86 ha of other neutral grassland and 1.16 ha of developed land. In addition to the habitat areas, it is expected that 0.01 km of native hedgerow with trees will be removed for a site access track.

The remaining 3.53 km of native hedgerows (with trees/ditch) present around both fields on the site will be protected during development and enhanced. The proposed development design also includes plans for creation of 0.56 km of species-rich native hedgerows and a 0.03 km species-rich native hedgerow with trees.

The current development design is expected to result in a net habitat unit change of 119.25 habitat units, which represents a 132.84% net gain and a net linear unit change of 16.74 hedgerow units, which represents a 76.47% net gain.

The unit calculation scores for post-development are based on expected conditions of the proposed habitats; a management and monitoring plan will need to be produced and followed to ensure the required conditions are attained and the unit gains are achieved.

9 References

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NPPF (2021) National Planning Policy Framework: Biodiversity and Geological Conservation. Department for Communities and Local Government, Norwich.

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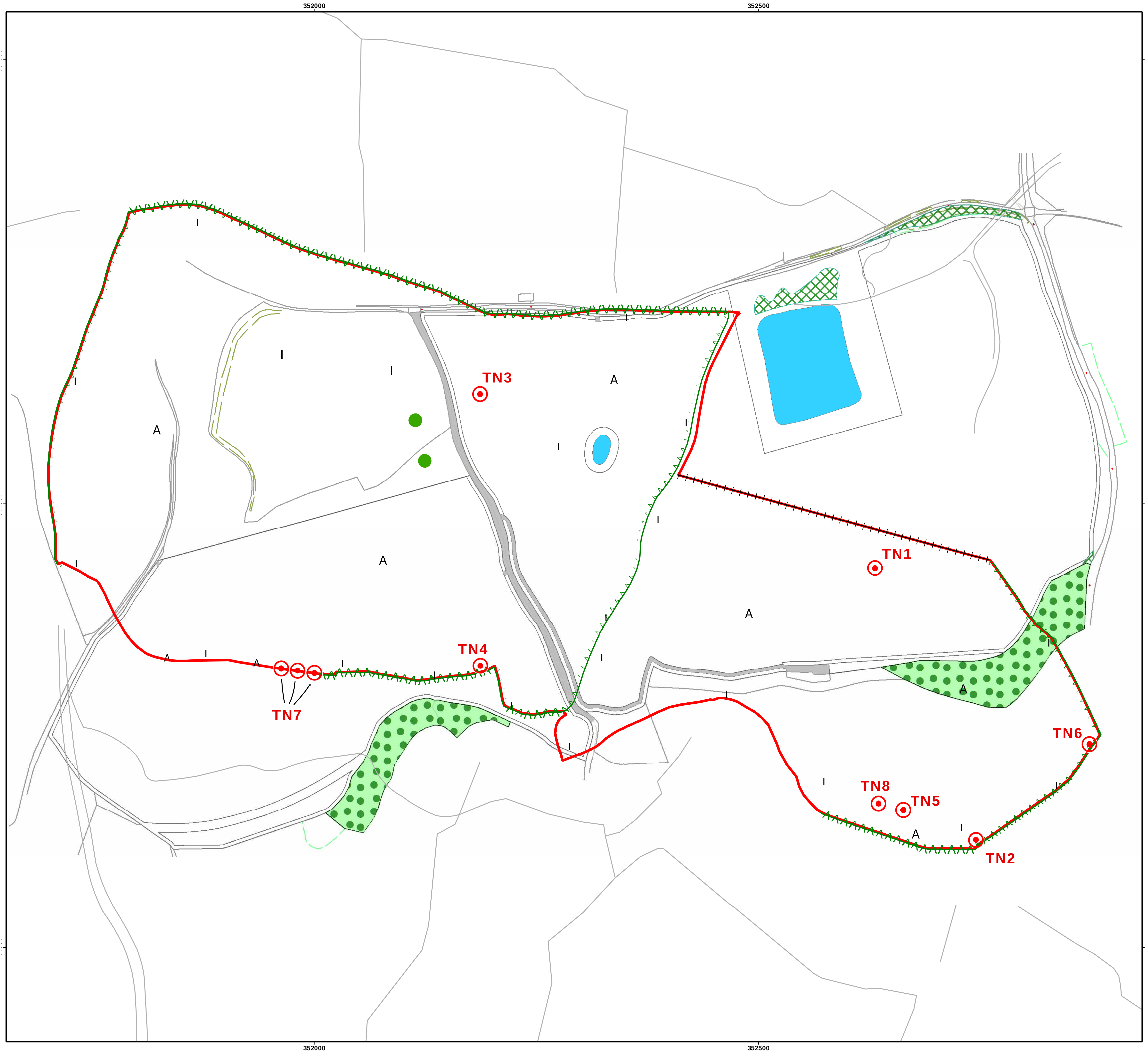
The British Standard Institute (2021) BSI Standards Publication, BS 8683:2021 Process for designing and implementing Biodiversity Net Gain — Specification.

UK HABS (2020) The UK Habitat Classification: Habitat Definitions. Version 1.1.

Appendix 1: Phase 1 Habitat Survey Plan

See following page.



Econergy International Ltd

Solar PV Development,
Berrington Farm, Shropshire

Phase 1 Habitat Survey

🟥	Site boundary
🟩	Mixed semi-natural woodland
▨	Dense scrub
I	Improved grassland
A	Arable
🟦	Standing open water
⬜	Bare ground
VVVVV	Hedgerow
+++++	Fence
●	Scattered trees
⊙	Target notes

Drawn by Paul Taylor 27/04/2021, Verified by Rachel Richards 27/04/2021

Scale 1:4,250 at A3 size

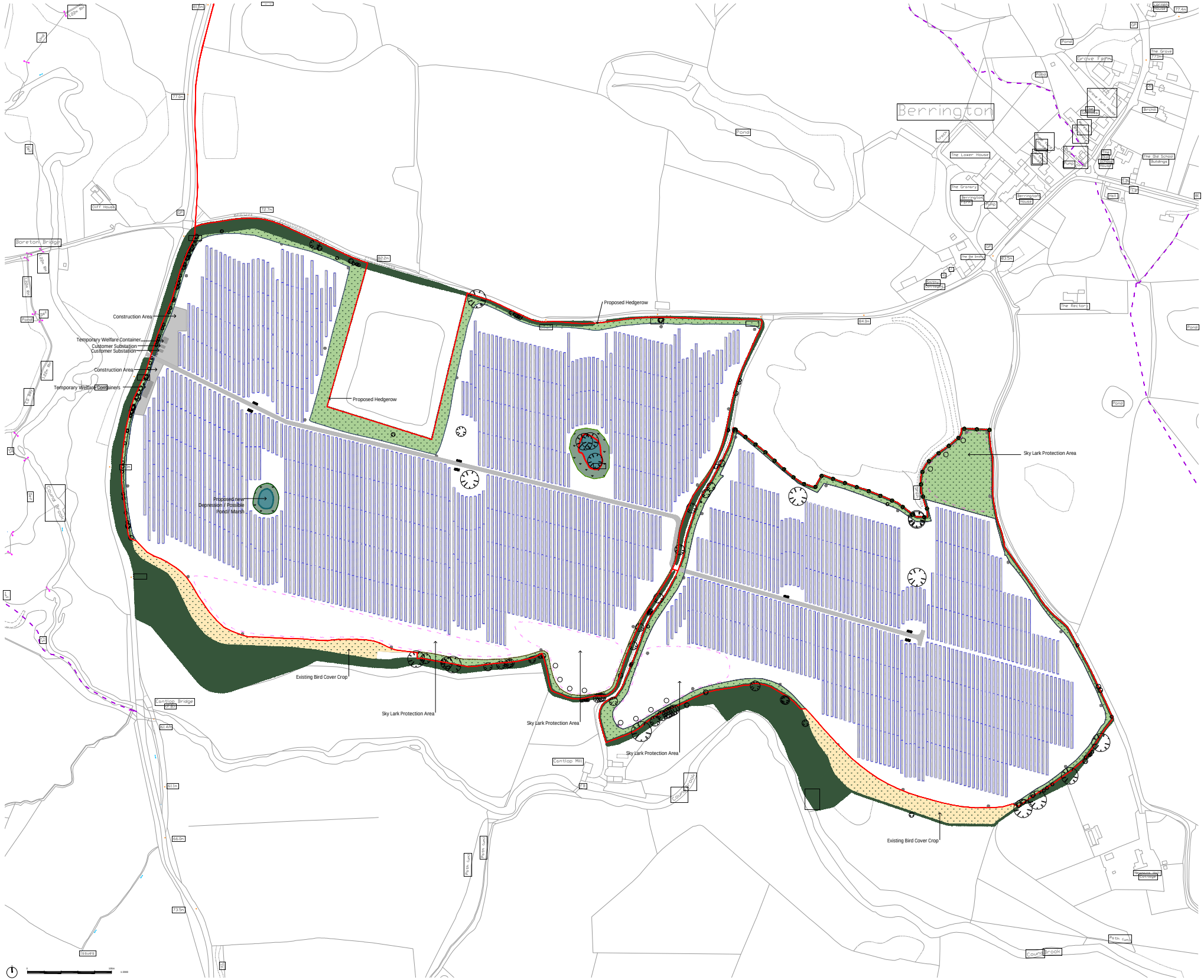
Additional features digitised from Microsoft Virtual Earth
(Bing) via ArcGIS software, April 2021

ADAS, Titan 1 Offices, Coxwell Avenue,
Stafford Road, Wolverhampton, WV10 9RT
Tel +44(0)1902 271300, Fax +44(0)1902 785574

1051263

Appendix 2: Proposed Development

See following page.



LEGEND

- 🟥 Planning boundary
- Existing trees from Topographical Mapping (Showing canopy extents)
- Existing hedgerow and area of trees/vegetation (Showing canopy extents)
- ● Proposed Tree Planting
- 🟩 Proposed Hedgerow Planting
- Grazing Meadow Mix - 'Grazing Meadow Seed Mix'
- Species Rich Grassland - 'General Purposed Meadow Xix'
- Existing Bird Cover Crop
- Species Rich Grassland - 'Wetland mixture'
- Pond
- Public Right of Way

Solar Panels
For details of solar equipment and layout, please see Engineers Specification

- CCTV
- ▬ Inverter Station
- Built Structure
- Maintenance Track
- Deer Fence
- ○ Beehive opportunity points

NOTES:

Full Line of cable route not shown.

No dimensions are to be scaled from this drawing.

Existing vegetation to be enhanced and strengthened. Exact locations/specifications of planting will be agreed via planning condition.

For detailed tree information please see arboricultural survey.

For planning purposes not construction.

Based on Green Eco drawing 'Site Plan' drawing number 'PL.001' dated 15/06/2022. See original for details.

Issue Number.	Issue Details.	Date.
07	Correction to Red Line Boundary	09/01/2023
06	Amendment to key	09/01/2023
05	Addition of Skylark Areas and Beehives	06/01/2023
04	Amendments to Solar Panels	21/12/2022
03	Amendments to Red Line Boundary	25/07/2022
02	Minor text revisions	15/07/2022
01		14/07/2022

Client:
Ecoenergy International LTD
Project:
Berrington Solar Farm
Drawing Title:
Site Layout Plan
Drawing No: 1051487-ADAS-XX-XX-DR-PL-8000

Scale: 1:2000 at A1

Drawn by: A.F. Date: 14/07/22

Checked by: D.H Date: 14/07/22

ADAS, 11d Park House, Milton Park,
Milton, Abingdon, Oxford, OX14 4RS

Tel: 01235 355630

Appendix 3: Condition Assessment Tables

Cropland – cereal crops: No assessment required – condition fixed at ‘Poor’

Heathland and Shrub – Bramble scrub: No assessment required – condition fixed at ‘Poor’

Grassland – Modified grassland:

Condition Assessment Criteria		Score
1	There must be 6-8 species per m^2. Note - if a grassland has 9 or more species per m^2 it should be classified as a moderate distinctiveness grassland habitat type. NB - this criterion is non-negotiable for achieving good condition.	Fail
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	Fail
3	Some scattered scrub (including bramble) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of shrubs with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.	Pass
4	Physical damage evident in less than 5% of total grassland area, such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities.	Fail
5	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	Fail
6	Cover of bracken less than 20%.	Pass
7	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and undesirable species[1] make up less than 5% of ground cover.	Pass

Condition Assessment Result	Condition Assessment Score
Passes 6 or 7 of 7 criteria including non-negotiable criterion 7	Good (3)
Passes 4 or 5 of 7 criteria; OR Passes 6 of 7 criteria excluding non-	Moderate (2)
Passes 0, 1, 2 or 3 of 7 criteria	Poor (1)

Lakes – Ponds (Non-priority habitats):

CORE CRITERIA - applicable to all ponds (woodland[1] and non-woodland):		Score
1	The pond is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution. Turbidity is acceptable if the pond is grazed by livestock.	Fail
2	There is semi-natural habitat (i.e. moderate distinctiveness or above) for at least 10 m from the pond edge.	Fail
3	Less than 10% of the pond is covered with duckweed or filamentous algae.	Pass
4	The pond is not artificially connected to other waterbodies, either via streams, ditches or artificial pipework.	Pass
5	Pond water levels should be able to fluctuate naturally throughout the year. No obvious dams, pumps or pipework.	Pass
6	There is an absence of non-native plant and animal species[2].	Pass
7	The pond is not artificially stocked with fish. If the pond naturally contains fish, it is a native fish assemblage at low densities.	Pass
ADDITIONAL CRITERIA - only applicable to non-woodland ponds:		
8	In non-woodland ponds, plants, be they emergent, submerged or floating (excluding duckweeds)[3], should cover at least 50% of the pond area that is less than 3 m deep.	Fail
9	The surface of non-woodland ponds is no more than 50% shaded by woody bankside species.	Fail

Condition Assessment Result	Condition Assessment Score
If 8 criteria assessed (woodland ponds):	
Passes 7 of 7 criteria	Good (3)
Passes 5 or 6 of 7 criteria	Moderate (2)
Passes 0, 1, 2, 3 or 4 of 7 criteria	Poor (1)
If 10 criteria assessed (non-woodland ponds):	
Passes 9 of 9 criteria	Good (3)
Passes 6, 7 or 8 of 9	Moderate (2)
Passes 0, 1, 2, 3, 4 or 5 of 9 criteria	Poor (1)

Urban – Vacant/derelict land/bare ground:

Condition Assessment Criteria		Score
CORE CRITERIA - applicable to all urban habitat types:		
1	Vegetation structure is varied, providing opportunities for insects, birds and bats to live and breed. A single ecotone (i.e. scrub, grassland, herbs) should not account for more than 80% of the total habitat area.	Fail
2	There is a diverse range of flowering plant species, providing nectar sources for insects. These species may be either native, or non-native but beneficial to wildlife.	Fail
3	Invasive non-native species (Schedule 9 of WCA) cover less than 5% of total vegetated area. NB - To achieve GOOD condition, criterion 3 must be satisfied by a complete absence of invasive non-native species (rather than <5% cover).	Pass
Condition Assessme	Condition Assessment Score	
If 3 criteria assessed:		
• Passes 3 of 3 core criteria; AND • Meets the requirements for good condition within criteria 2 and 3	Good (3)	
• Passes 2 of 3 core criteria; OR • Passes 3 of 3 core criteria but does not meet the requirements for good condition within criteria 2 and 3	Moderate (2)	
• Passes 0 or 1 of 3 core criteria	Poor (1)	

Urban – Urban trees:

Condition Assessment Criteria		Score
1	More than 70% of trees are native species.	Pass
2	Tree canopy is predominantly continuous with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide.	Fail
3	More than 50% of trees are mature[2] or veteran[3].	Pass
4	There is little or no evidence of an adverse impact on tree health by anthropogenic activities such as vandalism or herbicide use. There is no current regular pruning regime so the trees retain >75% of expected canopy for their age range and height.	Pass
5	Management regime has encouraged micro habitat sites for birds, mammals and insects e.g. presence of deadwood, cavities or loose bark etc.	Pass
6	Trees are immediately adjacent to other vegetation, and tree canopies are oversailing vegetation beneath.	Fail
FC	Condition Assessment Score	
Passes 5 or 6 of 6 criteria	Good (3)	
Passes 3 or 4 of 6 criteria	Moderate (2)	
Passes 0, 1 or 2 of 6 criteria	Poor (1)	

Native Hedgerow/with bank or ditch:

Core groups - applicable to all hedgerow types				Score
A1.	Height	>1.5 m average along length	The average height of woody growth estimated from base of stem to the top of shoots, excluding any bank beneath the hedgerow, any gaps or isolated trees. Newly laid or coppiced hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice). A newly planted hedgerow does not pass this criterion (unless it is > 1.5 m height).	Pass
A2.	Width	>1.5 m average along length	The average width of woody growth estimated at the widest point of the canopy, excluding gaps and isolated trees. Outgrowths (e.g. blackthorn suckers) are only included in the width estimate when they >0.5 m in height. Laid, coppiced, cut and newly planted hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice[4]).	Pass
B1.	Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	This is the vertical gappiness of the woody component of the hedgerow, and its distance from the ground to the lowest leafy growth. Certain exceptions to this criterion are acceptable (see page 65 of the Hedgerow Survey Handbook).	Pass
B2.	Gap - hedge canopy continuity	Gaps make up <10% of total length and No canopy gaps >5 m	This is the horizontal gappiness of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy (no matter how small). Access points and gates contribute to the overall gappiness, but are not subject to the >5 m criterion (as this is the typical size of a gate).	Pass
C1.	Undisturbed ground and perennial vegetation	>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length: measured from outer edge of hedgerow, and is present on one side of the hedge (at least)	This is the horizontal gappiness of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy (no matter how small). Access points and gates contribute to the overall gappiness, but are not subject to the >5 m criterion (as this is the typical size of a gate).	Fail
C2.	Undesirable perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	The indicator species used are nettles (Urtica spp.), cleavers (Galium aparine) and docks (Rumex spp.). Their presence, either singly or together, should not exceed the 20% cover threshold.	Fail
D1.	Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species	Neophytes are plants that have naturalised in the UK since AD 1500. For information on neophytes see the JNCC website and for information on invasive non-native species see the GB Non-Native Secretariat website.	Pass
D2.	Current damage	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	This criterion addresses damaging activities that may have led to or lead to deterioration in other attributes. This could include evidence of pollution, piles of manure or rubble, or inappropriate management practices (e.g. excessive hedge cutting).	Pass

Condition categories for hedgerows without trees		
Category	Maximum number of attributes that can fail to meet 'favourable condition' criteria in Table TS1-2	Weighting (score)
Good	No more than 2 failures in total; AND No more than 1 in any functional group.	3
Moderate	No more than 4 failures in total; AND Does not fail both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & C2 = Moderate condition).	2
Poor	Fails a total of more than 4 attributes; OR Fails both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).	1

Native hedgerow with trees:

Core groups - applicable to all hedgerow types				Score
A1.	Height	>1.5 m average along length	The average height of woody growth estimated from base of stem to the top of shoots, excluding any bank beneath the hedgerow, any gaps or isolated trees. Newly laid or coppiced hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice). A newly planted hedgerow does not pass this criterion (unless it is > 1.5 m height).	Pass
A2.	Width	>1.5 m average along length	The average width of woody growth estimated at the widest point of the canopy, excluding gaps and isolated trees. Outgrowths (e.g. blackthorn suckers) are only included in the width estimate when they >0.5 m in height. Laid, coppiced, cut and newly planted hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice[4]).	Pass
B1.	Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	This is the vertical gappiness of the woody component of the hedgerow, and its distance from the ground to the lowest leafy growth. Certain exceptions to this criterion are acceptable (see page 65 of the Hedgerow Survey Handbook).	Pass
B2.	Gap - hedge canopy continuity	Gaps make up <10% of total length and No canopy gaps >5 m	This is the horizontal gappiness of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy (no matter how small). Access points and gates contribute to the overall gappiness, but are not subject to the >5 m criterion (as this is the typical size of a gate).	Pass
C1.	Undisturbed ground and perennial vegetation	>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length: measured from outer edge of hedgerow, and is present on one side of the hedge (at least)	This is the horizontal gappiness of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy (no matter how small). Access points and gates contribute to the overall gappiness, but are not subject to the >5 m criterion (as this is the typical size of a gate).	Fail
C2.	Undesirable perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	The indicator species used are nettles (Urtica spp.), cleavers (Galium aparine) and docks (Rumex spp.). Their presence, either singly or together, should not exceed the 20% cover threshold.	Fail
D1.	Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species	Neophytes are plants that have naturalised in the UK since AD 1500. For information on neophytes see the JNCC website and for information on invasive non-native species see the GB Non-Native Secretariat website.	Pass
D2.	Current damage	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	This criterion addresses damaging activities that may have led to or lead to deterioration in other attributes. This could include evidence of pollution, piles of manure or rubble, or inappropriate management practices (e.g. excessive hedge cutting).	Pass
E1.	Tree age	At least one mature tree per 30m stretch of hedgerow. A mature tree is one that is at least 2/3 expected fully mature height for the species.	This criterion addresses if there are sufficient mature trees (within the scope of planning timescales) which are of higher value to biodiversity.	Fail
E2.	Tree health	At least 95% of hedgerow trees are in a healthy condition (excluding veteran features valuable for wildlife). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	This criterion identifies if the trees are subject to damage which compromises the survival and health of the individual specimens.	Pass

Condition categories for hedgerows without trees		
Category	Maximum number of attributes that can fail to meet 'favourable condition' criteria in Table TS1-2	Weighting (score)
Good	No more than 2 failures in total; AND No more than 1 failure in any functional group.	3
Moderate	No more than 5 failures in total; AND Does not fail both attributes in more than one functional group (e.g. fails attributes A1, A2, B1, C2 & E1 = Moderate condition).	2
Poor	Fails a total of more than 5 attributes; OR Fails both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).	1