

Client Name: Enso Energy
On Behalf of: Elstree Green Ltd
Site Name: Hilfield Solar Farm and Battery Storage
Project Ref: EnsoE-517-1603
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Hilfield Solar Farm and Battery Storage Biodiversity Metric 3.0 Report

Introduction

Report Purpose

This report outlines the results of a biodiversity metric calculation in support of the proposed solar farm and battery storage facility ('the Scheme') on land at north-east and west of Elstree Aerodrome, Hertfordshire, (application reference: 21/0050/FULEI) henceforth referred to as 'the Site'.

A biodiversity metric calculation was undertaken for the Scheme in March 2020 utilising the Defra 2.0 Metric¹, however since that time the metric has undergone significant changes and with an updated version 3.0 published in July 2021. This calculation supersedes that undertaken in 2020.

Site overview

The Site comprises arable land used for production of cereal crops and oilseed rape (at the time of survey), as well as areas of grazed species-poor neutral grassland, small woodland parcels and scrub. Fields are bounded by hedgerows. Five ponds are present within the Site, with a number of ditches and streams also present. The wider area comprises a similarly agricultural landscape.

Methodology

A biodiversity net gain assessment was undertaken using the Natural England Biodiversity Metric 3.0² ('the Metric'). The Metric provides a way of measuring and accounting for changes in the biodiversity value of a Site by using habitats as a proxy for biodiversity.

The Metric takes into account a range of factors when calculating the value of a habitat (measured as biodiversity units), including the habitats area (measured in hectares), it's distinctiveness (it's intrinsic value and rarity), condition (the quality of the habitat being assessed), and strategic significance (how ecologically valuable the location is).

For created habitats, additional risk multipliers are assigned to account for the difficulty of creating a particular habitat type, it's time to achieve the target condition, and where habitat creation is off site, spatial risk. The calculations used with the Metric are shown in **Appendix 1**.

¹ Avian Ecology (2020) *Langford Solar Farm. Technical Note 2: Ecology – Updated Response to Council Comments*.

² <http://publications.naturalengland.org.uk/publication/6049804846366720> [accessed 14/02/2022]

Baseline and post-works data presented within the Ecological Appraisal (BSG Ecology, 2020)³, Biodiversity Net Gain Report (BSG Ecology, 2020)⁴ and Ecological Management Plan (LDA Design, 2021)⁵ was utilised for the assessment. Data contained within these reports was assessed against the appropriate condition sheet as provided within the Metric Technical Supplement⁶. Any changes to habitat type, condition or strategic significance made as a result of the updated Metric are outlined within the Assumptions and Limitations section of this document. The Metric 3.0 has removed the ecological connectivity element of the assessment that was required under the Biodiversity Metric 2.0 originally undertaken for the Scheme.

The distinctiveness of a habitat is pre-set within the Metric and cannot be changed. Habitat condition was calculated using the appropriate condition sheets provided within the Metric Technical Supplement⁷. The strategic significance was determined from a review of local policy documents, and using professional judgement where it was considered the habitat provided additional ecological functions (e.g., acting as a stepping stone between other blocks of similar habitat).

Local policy documents assessed include the Hertfordshire Biodiversity Action Plan⁸ (BAP) and Northern Thames Basin National Character Area (NCA) objectives⁹

Where an area or habitat is specifically covered by a local planning policy or management plan, the strategic significance has been categorised as high. If a habitat has functional value but is not formally recognised in local policy, the strategic significance has been categorised as medium. Where the habitat does not fall under any local policies and has limited functional value, the strategic significance has been categorised as low.

Hedgerows are accounted for separately in the Metric, as these are linear habitats and therefore are measured in kilometres. Units are not interchangeable between area-based habitats and linear habitats such as hedgerows.

Assumptions and Limitations

This report has been prepared based on information provided within the Ecological Appraisal³ and Biodiversity Net Gain Report⁴ with no additional site survey undertaken. It is considered the information provided within these reports provides adequate information to undertake a robust assessment.

It is acknowledged that the areas of habitat loss and creation do not match, resulting in an error message being displayed. This is unchanged from the original Metric 2.0 calculation. It is considered that the discrepancy of 0.19ha is negligible in the context of the total Site area of 127.99a. The discrepancy represents less than 0.15% of the total site area, and is not considered to have a significant impact on the overall results of the calculation.

³ BSG Ecology (2020) *Hilfield Solar Farm and Battery Storage Ecological Appraisal*. Document Reference R013.

⁴ BSG Ecology (2020) *Hilfield Solar Farm and Battery Storage Biodiversity Net Gain Assessment*. Document Reference R013.

⁵ LDA Design and BSG Ecology (2021) *Hilfield Solar Farm and Battery Storage Landscape and Ecological Management Plan*. Document Reference R009.

⁶ <http://publications.naturalengland.org.uk/publication/6049804846366720> [accessed 14/02/2022]

⁷ <http://publications.naturalengland.org.uk/publication/6049804846366720> [accessed 14/02/2022]

⁸ http://www.hef.org.uk/nature/biodiversity_vision/contents.htm [accessed 14/02/2022]

⁹ <http://publications.naturalengland.org.uk/publication/4721112340496384?category=587130> [accessed 14/02/2022]

The following changes have been made to the data input to the Metric as a result of updated guidance and supporting documents released with the Metric 3.0:

- Figures have been rounded to two decimal places;
- Ditches have been removed the assessment as they now form part of the rivers metric which requires separate and detailed assessment. All ditches within the site will be retained;
- Tall ruderal habitats are now described as other neutral grassland (changed from sparsely vegetated land; ruderal/ ephemeral);
- Changes have been made to habitat condition when assessed against the updated criteria as shown in **Table 1**; and,
- The following changes have been made to strategic significance:
 - Woodland habitats (including wood pasture and parkland) have been assigned high strategic significance due to inclusion in the local BAP and NCA objectives;
 - Neutral grassland has been assigned high strategic significance due to inclusion within the local BAP;
 - Orchards have been assigned high strategic significance due to inclusion in the local BAP;
 - Hedgerows have been assigned high strategic significance due to inclusion in the local BAP and NCA objectives; and,
 - Ponds have been assigned high strategic significance due to inclusion within the local BAP.

Results

Full results of the biodiversity net gain assessment can be seen in the Biodiversity Metric 3.0 spreadsheet for the Scheme, available as a separate document. A translation of the habitat types recorded in the Extended Phase 1 habitat survey and those used in the landscape design to the UKHab¹⁰ categories used in the metric are provided below in **Table 1**.

Table 1: Translation of baseline and landscape habitat types to UKHab as used in the Metric

Notes: Habitats and/or conditions in **bold** have changed since the original assessment

Baseline/ Landscape Habitat Type	UKHab Translation	Condition Score	Description	Justification for Condition
Baseline				
Poor semi-improved grassland	Modified grassland	Moderate	Species poor grassland used for grazing.	Fails criteria 1 and 2.
Arable	Cereal crop	N/A	Regularly ploughed arable fields.	N/A – automatically assigned a score of 1.
Dense scrub	Mixed scrub	Poor	Stands of scrub including blackthorn <i>Prunus spinosa</i> , hawthorn <i>Crataegus monogyna</i> and	Fails criteria 1, 4 and 5.

¹⁰ www.ukhab.org [accessed 14/02/2022]

Baseline/ Landscape Habitat Type	UKHab Translation	Condition Score	Description	Justification for Condition
			bramble <i>Rubus fruticosus</i> agg.	
Broadleaved semi-natural woodland	Lowland mixed deciduous woodland	Moderate	Areas with tree cover in southern tip of western parcel.	Scores poorly on criteria relating to age structure, deadwood and veteran trees.
Bare ground	Artificial unvegetated, unsealed surface	N/A	Areas of compacted hardcore track.	N/A – no assessment required.
Tall ruderal	Other neutral grassland	Poor	Area dominated by nettle and thistle.	Fails criteria 1, 2, 3 and 5.
Ponds	Ponds (Priority Habitat)	Poor	Ponds present assessed as Priority Habitat either due to presence of great crested newt <i>Triturus cristatus</i> or assumed to be so on a precautionary basis.	Fail criteria 1, 2, 3 and 9.
Native species rich hedgerow with trees	Native species rich hedge with trees	Moderate	Hedgerow with 5 or more species and mature trees present.	Fail criteria B1 and B2.
Native hedgerow with trees	Native hedge with trees	Moderate	Hedgerow with fewer than 5 species and mature trees present.	Fail criteria B1 and B2.
Native species rich hedgerow	Native species rich hedgerow	Good	Hedgerow with 5 or more species.	All criteria met.
		Poor	Hedgerow with 5 or more species.	Fail criteria A1, A2, B1 and B2.
Native hedgerow	Native hedgerow	Moderate	Hedgerow with fewer than 5 species.	Fails criteria B1 and B2.
		Poor	Hedgerow with fewer than 5 species.	Fails criteria A1, A2, B1 and B2.
Landscaping				
Neutral grassland (within security fencing)	Modified Grassland	Moderate	Area of grassland under the solar arrays. Seeded with appropriate mix and	May fail criteria 4 and 5.

Baseline/ Landscape Habitat Type	UKHab Translation	Condition Score	Description	Justification for Condition
			subject to low intensity grazing.	
Tussocky grassland with wildflowers	Other neutral grassland	Moderate	Grassland around field margins seeded with appropriate mix.	May fail criteria 1.
Hilfield Brook green wedge (tussocky grassland with wildflowers)	Other neutral grassland	Moderate	Created from existing arable land and seeded with appropriate mix.	May fail criteria 1.
Parkland	Wood-pasture and parkland	Poor	Parkland created from existing arable land and seeded with appropriate mix.	May fail criteria 1,2 and 3.
New structure planting and boundary hedgerow enhancement	Mixed scrub	Moderate	Scrub planted for screening purposes.	May fail criteria 5.
Solar farm infrastructure	Developed land; sealed surface	N/A	Areas of hardstanding, building and access tracks.	N/A – no assessment required.
Orchard	Traditional orchard	Moderate	Planted orchard with fruit and nut trees.	Assumed to fail criteria 1.
Low intervention and skylark habitat enhancement area	Other neutral grassland	Moderate	Modified grassland to be enhanced and seeded with suitable mix.	May fail criteria 1.
Tussocky grassland with wildflowers (within the Aldenham Brook Green Corridor and linkages)	Other neutral grassland	Moderate	Modified grassland to be enhanced and seeded with suitable mix.	May fail criteria 1.
Ponds	Ponds (priority Habitat)	Good	Existing ponds to be enhanced to good condition.	Assumed to pass all criteria.

Baseline/ Landscape Habitat Type	UKHab Translation	Condition Score	Description	Justification for Condition
Native species rich hedgerow	Native species rich hedgerow	Moderate	Hedgerow with 5 or more species.	Although likely to meet all criteria, assumed moderate condition on a precautionary basis.

Area habitats

Area habitats within the Site total 127.99ha and comprise 105.75ha of arable land, 12.42ha of modified grassland, 8.55 ha of mixed scrub, 0.75ha of woodland, 0.21 ha of hardstanding, 0.21 ha of neutral grassland and 0.1ha of pond. Baseline habitats within the Site total 307.39 biodiversity units.

Habitats that are to be retained throughout works comprise 4.78ha of modified grassland, 0.04ha of pond, as well as all scrub and woodland habitat. Retained habits total 63.95 units.

In addition, 7.49ha of modified grassland and the remaining 0.06ha of pond will be enhanced. These habitats total 30.37 units.

These habitats will be enhanced to neutral grassland and ponds of a greater condition. These enhanced habitats generate 59.41 units.

The remaining area is assumed to be lost for the purposes of development. Habitat creation in this area will comprise 75.07ha of modified grassland, 22.42ha of neutral grassland, 3.13ha of mixed scrub, 2.90ha of parkland, 1.90ha of sealed surface and 0.71ha of orchard. Created habitats generate a total of 460.63 units.

Post-works habitats total 583.99 biodiversity units, an increase by +276.60 biodiversity units, or +89.99%.

Linear habitats

Linear habitats within the Site total 12.75km, of which 6.05km are native hedgerow, 3.43km are native hedge with trees, 2.62km are native species rich hedge with trees and 0.65km are native species rich hedgerow. Baseline hedgerow units total 98.33 linear biodiversity units.

All hedges will be retained and protected throughout works. In addition, 3.19km of new species rich hedgerow will be created, generating 24.56 linear biodiversity units.

Post-works linear habits total 122.88 biodiversity units, an increase of +24.56 linear units, or +24.98%.

Discussion

Currently there is no statutory requirement for the use of the DEFRA Biodiversity Metric 3.0 (or similar metric)¹¹ to provide quantifiable evidence of biodiversity net gain, however the Hertsmere Core

¹¹ The Environment Act 2021 is now law and the majority of developments in England and will be required to provide a minimum of 10% biodiversity net-gain from an estimated date of late 2023, following the

Strategy policy SP1 states all development should ‘conserve and enhance biodiversity’¹². As part of progressing the planning application and reflecting National Planning Policy, the Site Promoters seek to enshrine biodiversity net gain within the final Site proposals.

The biodiversity net gain assessment has been undertaken in line with current best practice guidance and adheres to the ten good practice principles for development¹³.

The Scheme results in measurable net gains of +89.99% for area derived units and +24.98% for linear derived units, as outlined in **Table 2**.

The post-works habitats satisfy trading principles, by which lost habitats must be replaced on a like-for-like, or like-for-better basis.

Table 2: Summary of Biodiversity Net Gain Results.

Unit type	Baseline units	Post-works units	Unit change (% change)
Area	307.39	583.99	+276.60 (+89.99%)
Linear	98.33	122.88	+24.56 (+24.98%)

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introduction of secondary legislation. Before this date, there will not be a requirement of a quantifiable net-gain for a development.

¹² Hertsmere Borough Council (2013) *Hertsmere Local Plan Core Strategy*

<https://www.hertsmere.gov.uk/Documents/09-Planning--Building-Control/Planning-Policy/Local-Development-Framework/Core-Strategy-DPD-2013.pdf> [accessed 14/02/2022]

¹³ <https://cieem.net/wp-content/uploads/2019/02/Biodiversity-Net-Gain-Principles.pdf> [accessed 14/02/2022]

Appendix 1: Biodiversity Net Gain Calculation

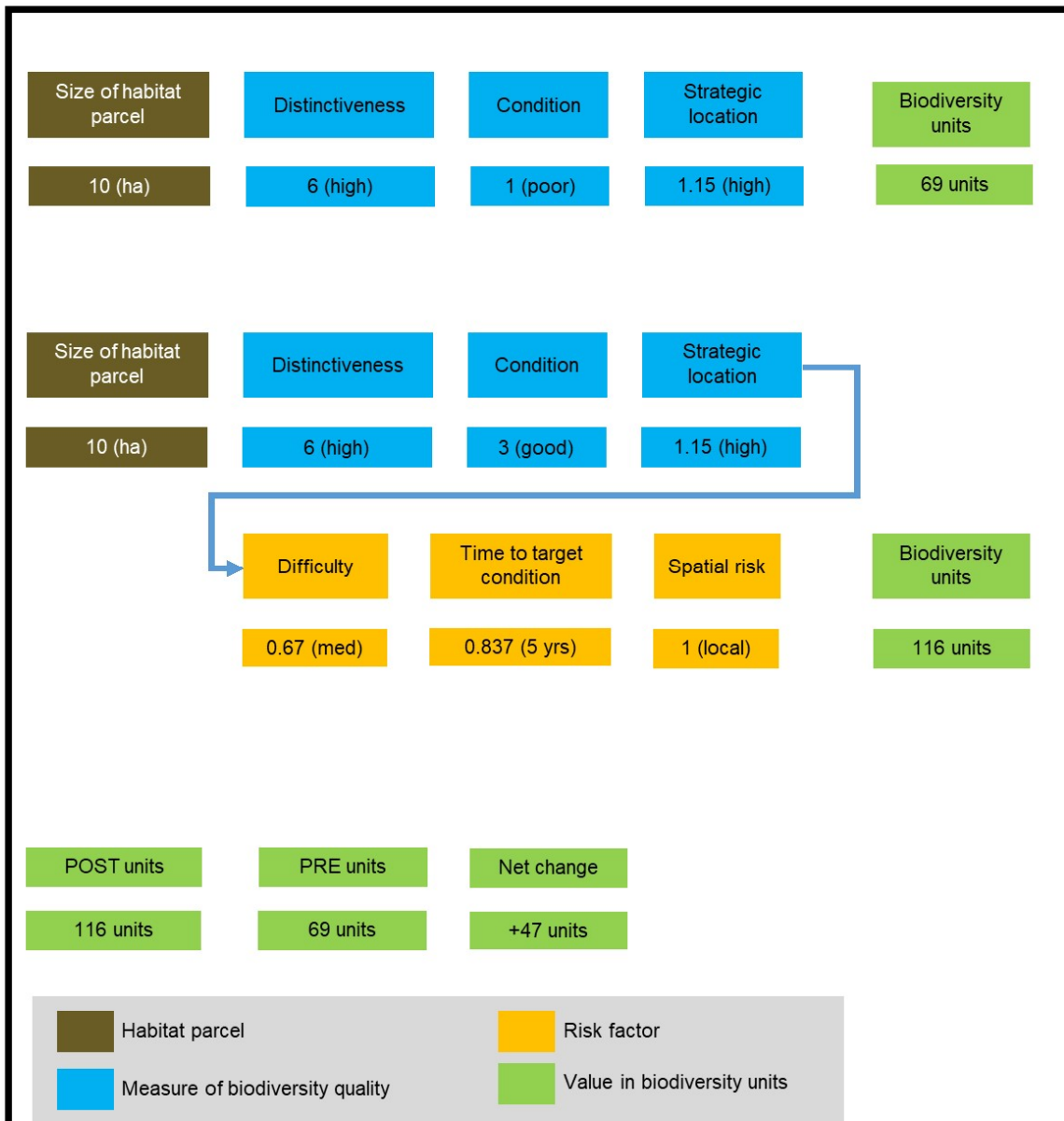


Image taken from Biodiversity Metric 3.0 User Guide (Panks *et al*, 2021).