Belvoir Solar Farm – Amended Scheme

on behalf of Pegasus Planning Group Limited

Biodiversity Net Gain Report

avianecology

Report Verification and Declaration of Compliance

This report has been prepared with reference to best practice guidelines for Ecological Impact Assessment in the UK and Ireland, as defined by CIEEM (2018) and is provided in accordance with the provisions of British Standard 42020:2013 Biodiversity: Code of practice for planning and development.

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1. INTRODUCTION

1.1 Background and Scope

1.1.1 This report has been prepared by Avian Ecology Ltd. on behalf of JBM Solar Projects 10 Ltd and relates to the application for the proposed solar farm (the 'Scheme') on Fields OS 6700, 6722 and 5200 Muston Lane, Easthorpe, located southwest of the village of Muston, Leicestershire, and henceforth referred to as 'the Site', also known as Belvoir Solar Farm (Melton Borough Council planning application reference: 22/00537/FUL).

1.1.2 The appellant is proposing minor amendments to the proposed Site Layout following determination of the planning application. This document shows how the baseline ecological information for the Site is applied to the Natural England Biodiversity Metric in order to calculate the number of biodiversity unites that the Site represents at baseline, and how this is predicted to change under the Amended Scheme Site Layout and Landscape Strategy (Drawing number P19-2022_24 Rev C).

1.1.3 Detailed background information relating to the ecology baseline, relevant legislation, and proposals and planning history of the proposal is provided within the Scheme Environmental Statement (ES). Following CIEEM reporting guidelines[1] and Government Planning Practice Guidance[2] in relation to Biodiversity Net Gain, information provided elsewhere within the application documentation is not repeated in detail.

1.2 Site Overview

1.2.1 The Site is located immediately south of the A52 and southwest of the village of Muston, in Leicestershire, England, encompassing an area of approximately 99.95ha. The land is currently being used as farmland, and so is composed of open arable fields of various sizes, separated by features such as fences, hedges, and ditches.

1.3 Legislative and Planning Framework

Biodiversity Net Gain

1.3.1 Biodiversity Net Gain (BNG) is a government strategy which requires developers to include habitat creation and enhancement in plans for new building and infrastructure projects. Crucially, under BNG, developments must be designed to increase the level of biodiversity compared to what existed pre-development; in most cases by creating and enhancing natural features within the boundary of the specific development, or else by contributing to the creation and management of biodiversity areas locally or nationally. As part of an application, it must be shown how habitats can be created or enhanced so that there will be an overall unit value of ≥10% than the value calculated from the ecological baseline surveys (pre-development). BNG has become mandatory in England for new major developments from February 2024[3], however applications submitted prior to this date are exempt.

1.3.2 In order to quantify BNG, Natural England has developed a metric to calculate numerical values (units) for defined habitat features. The metric utilises a range of factors to calculate these values; the area

[1] CIEEM (2021). Biodiversity Net Gain Report and Audit Templates Chartered Institute of Ecology and Environmental Management, Winchester, UK.

[2] https://www.gov.uk/guidance/biodiversity-net-gain

[3] https://www.gov.uk/guidance/understanding-biodiversity-net-gain.

measured in hectares, the distinctiveness of the habitat (intrinsic value and rarity), the condition (quality), and strategic significance (ecological value based on location).[4]

1.3.3 In order to claim a biodiversity net gain, a new development must adhere to certain rules which relate to the use of the metric (**Table 1.3**). The trading rules in the metric set out requirements for the type of new habitat which is acceptable as compensation for the loss of another habitat. In other words, the loss of a small area of high distinctiveness habitat cannot be compensated for by creating a larger area of lower distinctiveness habitat, even if the calculation tool returns an increase of a ≥10% in biodiversity units; the trading rules would not have been met.

Table 1.3. Biodiversity metric rules[5].

Rule	Detail
Rule 1	The trading rules of this biodiversity metric must be followed.
Rule 2	Biodiversity unit outputs, for each type of unit, must not be summed, traded, or converted between types. The requirement to deliver at least a 10% net gain applies to each type of unit.
Rule 3	To accurately apply the biodiversity metric formula, you must use the statutory biodiversity metric calculation tool or small sites biodiversity metric tool (SSM) for small sites.
Rule 4	In exceptional ecological circumstances, deviation from this biodiversity metric methodology may be permitted by the relevant planning authority.

1.3.4 Planning permission for Belvoir Solar Farm was submitted before February 2024, and so delivering a 10% increase in biodiversity is not a mandatory requirement. However, the strategy is being followed here because it is an example of good practice which will have a positive impact on biodiversity.

[4] DEFRA. 2023. Calculate biodiversity value using the biodiversity metric. Available online: https://www.gov.uk/guidance/biodiversity-metric-calculate-the-biodiversity-net-gain-of-a-project-or-development.

[5] The Statutory Biodiversity Metric: user guide. https://assets.publishing.service.gov.uk/media/65c60e0514b83c000ca715f3/The_Statutory_Biodiversity_Metric_-_User_Guide_.pdf.

2 METHODOLOGY

2.1 Desk Study

2.1.1 A desktop study was undertaken to identify any known existing habitats or species of ecological importance in proximity to the Site. The information from this desk study was used to inform the ES but was also used when determining the strategic importance of the habitats within the Site for the BNG calculations.

2.1.2 Information on statutory designated sites and international protected sites was obtained through a review of the Natural England Designated Sites View, JNCC, and Multi Agency Geographic Information for the Countryside (MAGIC) websites. A 5km search radius was used for statutory designated sites, extending to 10km for international protected sites. Records for non-statutory designated sites and priority habitats were obtained from Leicestershire and Rutland Environmental Records Centre (LRERC) and Lincolnshire Environmental Records Centre (LERC), using a 2km search radius.

2.1.3 Further guidance to inform strategic significance was obtained from Leicestershire County Council website[6].

2.2 Extended Habitat Survey

2.2.1 An extended Phase 1 habitat survey of the Site was undertaken on 12th and 13th May 2020, following standard JNCC Phase 1 Habitat Methodology[7], with reference to the CIEEM Technical Guidance Series Guidelines for Preliminary Ecological Appraisal[8].

2.2.2 Full details of the extended Phase 1 habitat survey are presented in *Appendix 5.2 Habitats and Species Baseline* of the ES (Core Document 1.33.11).

2.3 BNG Assessment

2.3.1 The BNG assessment was undertaken using the Statutory Biodiversity Metric Calculation Tool[9], by J. Stevens *BSc (Hons)*, a suitably qualified and experienced ecologist with experience utilising the calculation tool.

2.3.2 In order for the survey data to be entered into the calculation tool they had to be converted from Phase 1 classifications to the equivalent UKHab habitat types. This was done using the Phase 1 Translation Tool tab within the Metric Spreadsheet, using professional judgement and with reference UKHab resources[10]. Each habitat feature was then assigned a condition score by using the field notes and photographs from the extended Phase 1 habitat survey to inform the BNG condition assessment methodology[11]. Habitat areas and lengths were calculated using GIS software.

2.3.3 The strategic significance of each habitat feature was determined using information obtained during the desk study, 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).

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[6] https://www.leicestershire.gov.uk/environment-and-planning/planning/biodiversity/biodiversity-strategy.

[7] https://data.jncc.gov.uk/data/9578d07b-e018-4c66-9c1b-47110f14df2a/Handbook-Phase1-HabitatSurvey-Revised-2016.pdf.

[8] CIEEM. 2017. Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

[9] Statutory biodiversity metric calculation tool. https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides.

[10] UK habitat classification. https://ukhab.org/.

[11] Statutory biodiversity metric condition assessments. https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides

Where a habitat had functional value but was not formally recognised in local policy, the strategic significance was categorised as 'medium'. Where the habitat did not fall under any local policies, and was judged to have limited functional value, the strategic significance was been categorised as 'low'.

2.3.4 The distinctiveness of each habitat feature was determined by the Metric, based on the habitat type, and could not be changed.

2.3.5 The habitat features to be added to the Site, based on the Amended Scheme Site Layout and Landscape Strategy (P19-2022_24 Rev C), were entered into the calculation tool separately. These were directly assigned a UKHab category, and assigned a target condition based on the likely achievable condition of the proposed habitat type, taking into account local conditions (e.g. soil nutrient levels) and proposed management. For these features, the number of biodiversity units they represented was moderated by additional risk multipliers relating to the difficulty of creating a particular habitat type, time required to achieve the target condition.

2.4 Limitations

2.4.1 The habitat survey was undertaken using the Phase 1 methodology, which was the industry standard at the time. The post-hoc conversion to the UKHab classification and estimations of the condition of the habitat features, reflects that the planning and application process for the Site occurred during the time when the Metric and associated UKHab methodology were still in development.

2.4.2 It is acknowledged that the baseline habitat information is now four years old, however the surveys were of an acceptable age at the time of submission, and therefore it is considered that this data best represents the Scheme baseline at the time of submission. As the primary objective of this exercise is to demonstrate biodiversity net gain as measured by the latest metric version, the age of data is not considered to be a significant limitation to the assessment. Further, given the primarily agricultural landscape, defined by anthropogenic use and frequent disturbance, it is considered unlikely the baseline conditions would have changed significantly in the intervening period.

2.4.3 It should be noted that the Metric uses habitats as a proxy for biodiversity and calculates only the relative biodiversity value of a site, and therefore cannot quantify impacts absolutely. The Metric accounts only for direct impacts to habitats, and as such cannot fully quantify all negative or positive impacts resulting from a development.

3 BIODIVERSITY NET GAIN ASSESSMENT

3.1 Overview

3.1.1 Complete descriptions of the baseline habitats are presented in *Appendix 5.2 Habitats and Species Baseline* of the ES (Core document 1.33.11).

3.1.2 **Table 3.1.1** provides a translation of the baseline Phase 1 habitat types and post-development habitats as shown on the Amended Scheme Site Layout and Landscape Strategy (P19-2022_24 RevC) to the UKH habitat type as used in the metric, as well as a brief description of each habitat type and justification for their condition score.

Table 3.1.1. Translation of Baseline and Landscape Habitat Types to UKHabitat Survey

Phase 1 / Landscape Habitat type	UKH Metric Habitat Type	Condition Score	Description	Justification for Condition Score
Baseline				
Arable fields	Cereal crops	N/A	Arable fields	Condition score not applicable, always allocated a score of 1 (poor)
Broadleaf woodland	Other woodland; broadleaved	Moderate	Broadleaved copse dominated by hawthorn, hazel and ash.	Woodland scores 26 points in condition criteria, failing mainly on criteria relating to age classes, ground flora and dead wood.
Ponds	Ponds (Non-Priority Habitat)	Moderate	Ponds, three of which were dry at time of survey,	All ponds fail criteria A. Dry ponds also fail criteria H.
Tall ruderal	Other neutral grassland	Moderate	Tall herb vegetation including great willowherb, red clover, forget-me-not, cow parsley, common hogweed, bramble, common nettle and blue tansy	Fails A by virtue of being clearly planted and dominated by blue tansy.
Intact Hedgerow, species poor **AND** Defunct hedgerow, species poor	Native hedgerow **AND** Native hedgerow (associated with bank or ditch)	Good	Species poor native hedgerows around the site. Some associated with ditches.	Variously fail B2 and , C2

Phase 1 / Landscape Habitat type	UKH Metric Habitat Type	Condition Score	Description	Justification for Condition Score
Newly planted hedgerows, species poor	Native Hedgerow	Moderate	Newly planted hedgerow	Fails A1, C1 and C2.
Tree line	Line of trees	Moderate	Line of trees	Fails criteria D
Post-development				
Grazing seed mix (panel compounds) **AND** Tussocky grass mix	Other neutral grassland	Moderate	Low intensity grazing mix such as Emorsgate EG26 Special Old Fashioned Grazing Mixture. Assumed to have greater than 9 species per m2.	Lightly grazed pasture. Assumed Emorsgate EG27 mix. Assumed may fail criteria A and E.
Meadow seed mix (field margins) **AND** Grassland adjacent Muston Meadows SSSI and NNR	Other neutral grassland	Moderate	Species rich wildflower grassland manged as such, planted with Emorsgate EM2 Standard General Purpose Meadow Mix or similar. Areas adjacent Muston Meadows SSSI and NNR may be planted with bespoke mix or sown sparsely and allowed to self-seed . Assumed to have greater than 9 species per m2.	Assumed to pass all criteria except criteria E with appropriate management
Native tree buffer planting	Other woodland; broadleaved	Moderate	Newly planted native species tree buffer approximately 10m wide.	Woodland screen planting. Assumed may score below 3 points on criteria relating to age classes, veteran trees, deadwood and ground flora.
Pond/ wet scrape	Ponds (Non-Priority Habitat)	Moderate	Newly created ponds/. Wet scrapes.	New scrapes/ ponds. May fail on vegetation cover.
Access road	Artificial, unvegetated, unsealed surface	N/A	N/A	Condition score not applicable, always allocated a score of 0

Phase 1 / Landscape Habitat type	UKH Metric Habitat Type	Condition Score	Description	Justification for Condition Score
Substation	Developed land; sealed surface	N/A	N/A	Condition score not applicable, always allocated a score of 0
Proposed new hedgerow planting	Native species rich hedgerow	Good	Newly created hedgerows planted with native species	Assumed to pass all criteria except C2 with appropriate management

3.2 Calculations

3.2.1 The full calculations for this BNG assessment are shown in *Belvoir – Biodiversity Net Gain Metric* submitted alongside this document.

Cropland

3.2.2 At baseline, the majority of the Site was composed of arable fields. The metric assigns this habitat type low distinctiveness and low strategic significance, here representing a total of 195.20 habitat units. Condition assessments are not applicable to this habitat type, automatically being assigned a score of poor. See **Table 3.2.1**.

3.2.3 Under the Amended Scheme Site Layout and Landscape Strategy (P19-2022_24 Rev C) this habitat will be lost, to be replaced with grassland of higher biodiversity value. See **Table 3.2.3**.

Table 3.2.1. Cropland recorded on the Site during the habitat baseline survey.

Feature	Area (ha)	Distinctiveness	Condition	Strategic Significance	Biodiversity Units	Units Retained
Cereal crops	97.6	Low	N/A	Low	195.20	0

Grassland

3.2.4 The habitat survey recorded narrow strips of semi-improved grassland growing around the margins of the arable fields, which were judged to be of moderate condition. These will be lost along with the arable fields. See **Table 3.2.2**.

3.2.5 The Amended Scheme Site Layout and Landscape Strategy (P19-2022_24 Rev C) proposes a site wide re-seeding of the fields, thereby increasing the habitat distinctiveness of these areas. See **Table 3.2.3**. A number of grassland habitat types will be created:

- The main body of the Site under and around the solar panels will be sown with a standard grazing mix, of low distinctiveness but planned to attain good condition.
- A meadow seed and tussocky grassland seed mix will be sown in wide strips surrounding the hedgerows and ponds/scrapes, to create areas which will develop into areas of species-rich neutral grassland.
- The area of the Site adjacent to Muston Meadows SSSI will be sown sparingly to allow for natural regeneration from seeds dispersing from the SSSI.
- A community orchard area.

Table 3.2.2. Grassland recorded on the Site during the habitat baseline survey.

Feature	Area (ha)	Distinctiveness	Condition	Strategic Significance	Biodiversity Units	Units Retained
Other neutral grassland	0.45	Medium	Moderate	Medium	3.96	0

Table 3.2.3. New grassland habitats that will be created as part of the development plan.

Feature	Area (ha)	Distinctiveness	Condition	Strategic Significance	Biodiversity Units
Modified grassland	57.14	Low	Good	Medium	293.88
Other neutral grassland	10.72	Medium	Moderate	Medium	78.94
Other neutral grassland	24.74	Medium	Poor	Medium	101.37
Other neutral grassland	2.28	Medium	Moderate	Medium	16.79
Traditional orchards	0.21	High	Moderate	Low	1.24

Hedgerows

3.2.6 At baseline, the field boundaries were lined with species-poor hedgerows dominated by hawthorn, some of which also had an associated ditch running alongside. There was also a short line of trees. See **Table 3.2.4**.

3.2.7 The majority of these linear features will be retained under the Amended Scheme Site Layout and Landscape Strategy (P19-2022_24 Rev C), except a loss of 150m of native hedgerow to accommodate works access. As part of the development, it is also planned to lay two additional 3.21 km of native hedgerow, which will be species-rich thereby increasing the distinctiveness of the feature. See **Table 3.2.5**.

Table 3.2.4. Linear habitats (hedgerows, trees, ditches) recorded on the Site during the habitat baseline survey.

Feature	Length (km)	Distinctiveness	Condition	Strategic Significance	Biodiversity Units	Units Retained
Native hedgerow – associated with bank or ditch	3.02	Medium	Good	Low	36.24	34.44
Native hedgerow	0.4	Low	Moderate	Low	1.60	1.60
Native hedgerow	5.77	Low	Good	Low	34.62	34.62
Line of trees	0.03	Low	Moderate	Low	0.12	0.12

Table 3.2.5. New hedgerows that will be created as part of the development plan.

Feature	Length (km)	Distinctiveness	Condition	Strategic Significance	Biodiversity Units
Species-rich native hedgerow	1.18	Medium	Good	Low	9.23
Species-rich native hedgerow	2.03	Medium	Good	Low	15.89

Woodland

3.2.8 There are two small areas of semi-natural broadleaved woodland in corners along the field boundaries, which will be retained and protected under the Amended Scheme Site Layout and Landscape Strategy (P19-2022_24 Rev C). See **Table 3.2.6**.

3.2.9 In addition, it is planned to plant native broadleaved trees along the boundary between the solar farm and the SSSI to act as a screen.

Table 3.2.6. Woodland recorded on the Site during the habitat baseline survey.

Feature	Area (ha)	Distinctiveness	Condition	Strategic Significance	Biodiversity Units	Units Retained
Other woodland; broadleaved	0.29	Medium	Moderate	Low	2.32	2.32

Table 3.2.7. New tree to be planted as part of the Amended Scheme Site Layout and Landscape Strategy (P19-2022_24 Rev C).

Feature	Area (ha)	Distinctiveness	Condition	Strategic Significance	Biodiversity Units
Other woodland; broadleaved	0.2	Medium	Moderate	Low	0.94

Ponds

3.2.10 One small pond was found to be wet during the survey, judged to be of moderate condition but not constituting priority habitat, which will also be retained under the Amended Scheme Site Layout and Landscape Strategy (P19-2022_24 Rev C). See **Table 3.2.8**.

3.2.11 The Amended Scheme Site Layout and Landscape Strategy (P19-2022_24 Rev C) proposes the creation of new ponds or wet scrapes which will serve to provide additional habitat for amphibians. See **Table 3.2.9**.

Table 3.2.8. Water filled ponds recorded on the Site during the habitat baseline survey.

Feature	Area (ha)	Distinctiveness	Condition	Strategic Significance	Biodiversity Units	Units Retained
Ponds (non-priority habitat)	0.01	Medium	Moderate	Low	0.08	0.08

Table 3.1.9. New ponds / scrapes to be created as part of the Amended Scheme Site Layout and Landscape Strategy (P19-2022_24 Rev C).

Feature	Area (ha)	Distinctiveness	Condition	Strategic Significance	Biodiversity Units
Ponds (non-priority habitat)	0.06	Medium	Moderate	Medium	0.47

Other Habitats

3.2.12 Areas of tall ruderals have grown up in some of the ditches along the field boundaries. These will be lost in the process of development. See **Table 3.2.10**.

3.2.13 The remaining area within the Site is composed of existing artificial infrastructure such as roads and so do not contribute any biodiversity units. As part the proposed development, an additional 3 ha of artificial infrastructure will be added to the Site. See **Table 3.2.11**.

Table 3.2.10. Remaining landscape features recorded on the Site.

Feature	Area (ha)	Distinctiveness	Condition	Strategic Significance	Biodiversity Units	Units Retained
Ruderal / ephemeral	0.3	Low	Moderate	Low	1.20	0
Developed land; sealed surface	1.3	V. Low	N/A	Low	0	N/A

Table 3.2.11. Infrastructure to be built as part of the development.

Feature	Area (ha)	Distinctiveness	Condition	Strategic Significance	Biodiversity Units
Developed land; sealed surface	3.0	V. Low	N/A	Low	0

3.3 Summary

3.3.1 Under the planned development, the value of units provided by linear features (hedgerows) on the Site will increase from 72.58 to 95.90 (**Table 3.2.1**), an increase of 32.13% on the baseline. The value of units provided by areas features (woodland, grassland, standing water) will increase from 202.76 to 496.03 (**Table 3.3.2**), an increase of 144.64% on the baseline.

Table 3.3.1. Summary of habitat linear units. The unit value on the Site pre-development (baseline) and the unit value post-intervention (net).

Habitat Type	Baseline Units	Units Lost	Units Gained	Net Units
Hedgerows	72.46	1.80	25.12	95.78
Line of trees	0.12	0	0	0.12
	72.58			**95.90**

Table 3.3.2. Summary of habitat area units. The unit value on the Site pre-development (baseline) and the unit value post-intervention (net).

Habitat Type	Baseline Units	Units Lost	Units Gained	Net Units
Cropland	195.20	195.20	0	0
Grassland – neutral	3.96	3.96	197.10	197.10
Grassland - modified	0	0	293.88	293.88
Traditional orchards	0	0	1.24	1.24
Woodland	2.32	0	0.94	3.26
Ponds	0.08	0	0.47	0.55
Ruderal / ephemeral	1.20	1.20	0	0
	202.76			**496.03**

4 CONCLUSION

4.1.1 The Amended Scheme Site Layout and Landscape Strategy (P19-2022_24 Rev C) would provide an onsite net change of 144.64% habitat units and 32.13% hedgerow units, compared to the baseline. This means that the required ≥10% increase in biodiversity units has been met for all types of unit on the Site, habitat and hedgerow in this case, and therefore satisfies Rule 2 of the biodiversity metric rules.

4.1.2 The trading rules (Rule 1) set out in the metric have also been satisfied; losses of low distinctiveness habitats will be replaced with habitat of the same distinctives or higher, and losses of habitats and hedgerow with medium distinctiveness will be replaced with habitat of the same distinctiveness and habitat type.

4.1.3 As such, the Amended Scheme Site Layout and Landscape Strategy (P19-2022_24 Rev C) exceeds the requirement for a ≥10% biodiversity net gain.