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Tyrer Ecological Consultants Ltd, Roselands, Suite 1, 3 Cross Green, Formby, L37 4BH

Biodiversity Net-gain Assessment

April 2023

Larkins Farm
Gellings Lane
Knowsley
L34 9EN

National Grid Ref: SJ414962



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Prepared for	Mr. Mike Carr
Prepared by	Tyrer Ecological Consultants Ltd

BNG completed by	Mr. M. Pritchard ACIEEM
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Reviewed by	Mrs. K. Wilding CEnv MIEMA ACIEEM
Approved by	Mrs. K. Wilding CEnv MIEMA ACIEEM

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Executive Summary

As part of a proposed planning application at Larkins Farm in Knowsley, Tyrer Ecological Consultants Ltd were commissioned to carry out a Biodiversity Net-gain (BNG) assessment. This process for BNG assessment supports a Preliminary Ecological Appraisal (PEA) carried out in March 2023 which established baseline information for the site including habitat identification and condition assessment.

This BNG assessment was commissioned by Mr. Mike Carr on behalf of the landowner; proposals are for a solar farm installation on arable land. See **Figure 1.1** for Proposed Part Ground Floor Plan. See **Figure 1.2** for Location & Site Plan.

Following the completion of a biodiversity net-gain assessment, the scheme is projected to achieve over 10% net-gain in Area and Linear units, which is the minimum threshold expected to be mandated by the forthcoming Environment Bill.

Summary Figures		
Net project biodiversity units (Including all on-site & off-site habitat retention / creation)	<i>Habitat units</i>	7.68
	<i>Hedgerow units</i>	0.07
	<i>Watercourse units</i>	0.00
Total project biodiversity % change (Including all on-site & off-site habitat creation + retained habitats)	<i>Habitat units</i>	65.85%
	<i>Hedgerow units</i>	70.03%
	<i>Watercourse units</i>	0.00%

The habitat creation and enhancement proposed as necessary to deliver on the net-gain figures calculated can be delivered through a Biodiversity Management Plan (BMP) detailing landscaping, management and biodiversity provision prescriptions; this document can be secured by planning condition.

The necessary management to deliver habitat and condition targets can be carried out by a suitable contractor; this would be the responsibility of the applicant.

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Appendix II – Metric 4.0 Calculation Tool – Larkins Farm Solar _ Issue 1 (April 2023)

1.0 Introduction & Scope

- 1.1 As part of a proposed planning application at Larkins Farm in Knowsley, Tyrer Ecological Consultants Ltd were commissioned to carry out a Biodiversity Net-gain (BNG) assessment. This process for BNG assessment supports a Preliminary Ecological Appraisal (PEA) carried out in March 2023 which established baseline information for the site including habitat identification and condition assessment.
- 1.2 This BNG assessment was commissioned by Mr. Mike Carr on behalf of the landowner; proposals are for a solar farm installation on arable land. See **Figure 1.1** for Proposed Part Ground Floor Plan. See **Figure 1.2** for Location & Site Plan.



Figure 1.1 – Location Plan (MIKE CARR - MSc MRTPI)

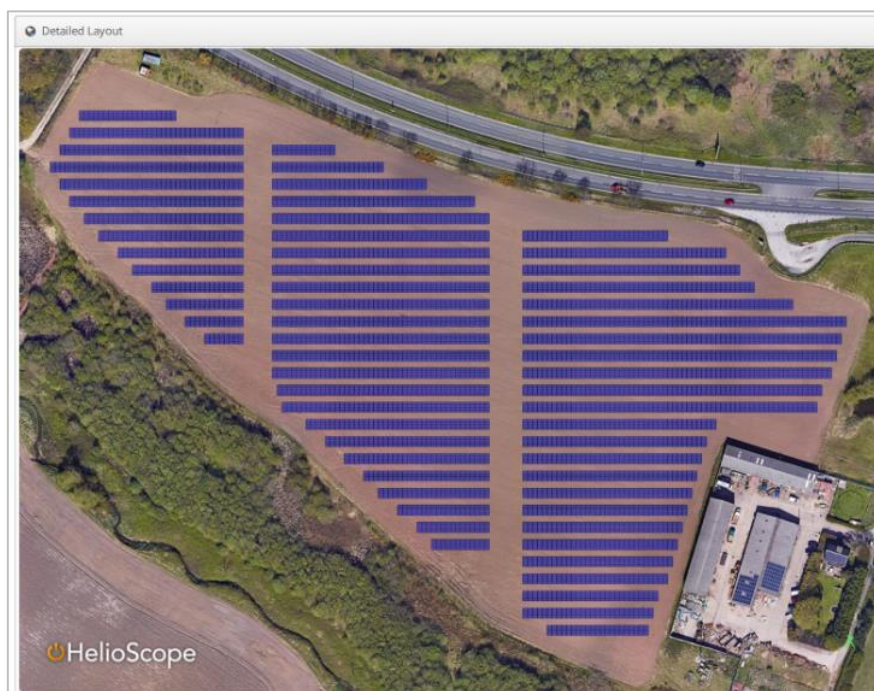


Figure 1.2 – Detailed Layout (extracted from HelioScope report)

- 1.3 This BNG assessment relies on the information gathered during the Preliminary Ecological Appraisal (PEA) (see **Appendix I**), as well as wider third-party information associated with the scheme (see **section 2.7** of this report).
- 1.4 As part of the Local Planning Authorities (LPA) planning policies and obligations to the Planning Framework, ecological surveys are generally required prior to planning permission being granted, particularly where protected/priority habitats or species are, or may be present, that could be affected by the proposals for which the application seeks consent.
- 1.5 This report uses the latest Biodiversity Metric 4.0 (JP039) and its associated guidance¹ including the latest versions of:
- *Biodiversity Metric 4.0 Technical Annex 1 – Condition Assessment and Methodology XLSX.*,
 - *Biodiversity Metric 4.0 Technical Annex 2 – Technical Information PDF.*
- 1.6 This BNG report has the following objectives:
- Present baseline ecological information on site/off site (as necessary) within a suitable report using UK Habitat Classification – Habitat Definitions Version 1.1 (2020) habitats,
 - Present measures likely to be required in line with the mitigation hierarchy (i.e. impact avoidance > minimisation > mitigation > compensation),
 - Aim to achieve no ‘net loss’ of habitat biodiversity units,
 - Outline how Biodiversity Net-gain can be achieved, where feasible,
 - Set out any requirements for post-development monitoring, management, or other commitments, and how they can be secured, where required.

¹ [The Biodiversity Metric 4.0 - JP039 \(naturalengland.org.uk\)](https://naturalengland.org.uk)

2.0 Biodiversity Metric 4.0

- 2.1 Application of BNG assessment follows the industry standard principles and rules as well as the mitigation hierarchy and '*Biodiversity Net Gain: Good practice principles for development*' (CIEEM et. al., 2019)² (see **Table 2.1**). CIRIA, CIEEM and IEMA developed the first UK principles on good practice to achieve Biodiversity Net Gain; these principles 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, they also provide a way for industry professionals to show that projects followed good practice.

Table 2.1 - The Mitigation Hierarchy & BNG Good Practice Principles

Avoid	Minimise	Remediate/Mitigate	Compensate
Where possible avoid any damage/impacts	Where possible damage/impacts should be minimised.	Where possible damage/impact/losses should be restored.	Damage/impact/losses should be compensated for as a last resort.
The 10 Biodiversity Net Gain: Good Practice Principles Principle 1. Apply the Mitigation Hierarchy Principle 2. Avoid losing biodiversity that cannot be offset by gains elsewhere Principle 3. Be inclusive and equitable Principle 4. Address risks Principle 5. Make a measurable Net Gain contribution Principle 6. Achieve the best outcomes for biodiversity Principle 7. Be additional Principle 8. Create a Net Gain legacy Principle 9. Optimise sustainability Principle 10. Be transparent			

- 2.2 The Biodiversity Metric 4.0 Calculation Tool was completed by Mr. M. Pritchard ACIEEM, a competent individual and Senior Ecologist at Tyrer Ecological Consultants Ltd, who has attended formal training in applying the Metric ("Calculating and Using Biodiversity Units (BU) with Metric 2.0" - 25th November 2019 (Dr. Julia Baker CEnv MCIEEM & Dr. Nick White of Natural England) with continued progressive development and training since that time through the various subsequent releases of the metric versions 3.0, 3.1. Mr. Pritchard has six years of experience and is multiple protected species licenced, for bats, great crested newts, sand lizard and natterjack toad, having been involved in a wide variety of design and mitigation schemes including complex projects involving BNG and Nutrient Neutrality assessments.
- 2.3 See **Table 2.2** for relevant surveyor credentials.
- 2.4 Assessment of baseline / post-development Area / Linear/Hedge / River units have been carried out and assessed separately in accordance with the guidance, principles and rules. Any revisions required following the issue of this report will use Metric 4.0 in accordance with the rules of use.
- 2.5 Measurement of habitats was carried out using a combination of desktop software – GIS (Q), Google Earth and MAGiC maps 2023, whilst physical habitat measurements were also taken in the field during ground truthing, where necessary.

² [Biodiversity-Net-Gain-Principles.pdf \(cieem.net\)](https://www.cieem.net/Biodiversity-Net-Gain-Principles.pdf)

Table 2.2 – BNG Assessor credentials

Name	Description of most relevant credentials
Mr. M. Pritchard ACIEEM (Senior Ecologist)	• Six years professional Ecological consultant experience & extensive training in cross habitat/species ecology; • Relevant Degree: FdSc (Countryside, Conservation & Recreational Management); • Licenced in Bats: (2020-5039-CLS-CLS) (Class 1) and accredited agent on the (Class 2) Natural England bat licence of Mrs. K. Wilding (CLS-14227); • Licenced for Great Crested Newt: CL08 (Great Crested Newt Survey Level 1) - 2018-34062-CLS-CLS (England); • Licensed for Sand Lizard & Natterjack Toad (2022-62891-SCI-SCI); • FISC Level - 3 (2019) (Botanical); • Formally trained in UK Habs / BNG condition assessment (Certificate). • Trained in use of the MoRPH River assessment;

- 2.6 Strategic significance has been justified from a study of the local council planning portal.
- 2.7 Key third-party data sources and/or information used to help inform this BNG assessment included:
- 02 - LARKINS FARM SITE LOCATION PLAN (Mike Carr – MSc MRTPI)
 - LARKINS FARM HELIOSCOPE SIMULATON (Mike Carr – MSc MRTPI)
 - LARKINS FARM SITE PLAN WITH GRID CONNECTON PONT (Mike Carr – MSc MRTPI)
 - LARKINS FARM SOLAR PANEL ASPECT DESIGN (SSCS-003) (HyperionZero).
- 2.8 Results, conclusions and recommendations of the report are based on several factors i.e.
- Skills and experience of the surveyor(s),
 - Knowledge of flora and fauna relevant to the site location and geographical range,
 - Nature of the immediate and surrounding habitat in relation to shelter, foraging and commuting opportunities.
- 2.9 The results, conclusions and recommendations of this report have been assessed by Mrs. K. Wilding, Director of Tyrer Ecological Consultants Ltd, and her assessment concurs with the findings and recommendations of the BNG assessor Mr. Pritchard.

3.0 Limitations

- 3.1 Area, linear and river habitat measurements were carried out using a combination of desktop software – GIS (Q), Google Earth Pro and MAGiC 2023 map software, whilst physical measurements were also taken in the field during ground truthing, where necessary. Whilst habitat measurements have been carried out carefully, room for human error should allow a discrepancy of no greater than 5m² for area measurements, and 5m length for linear measurements.
- 3.2 The survey and habitat condition assessments were conducted in March which is a sub-optimal window for condition assessment of most UK Habitats; the guidance is caveated to state that a precautionary approach be adopted if condition assessing outside of the optimal window of April to October inclusive - where habitats cannot be conclusively assessed then 'Good' would be conditioned for the respective habitat parcel. Habitat condition assessment is not considered a significant issue following the PEA.
- 3.3 Having considered and acknowledged the limitations, constraints were not considered to have adversely influenced the results, conclusions, and recommendations applied, and the information in this report has been presented in all good practice to the satisfaction of the author, reviewer and approver in accordance with the referenced guidelines.

4.0 Metric 3.1 results

Overview

- 4.1 Refer to **Appendix I** for all baseline habitat descriptions.
- 4.2 See **Tables 4.1 – Table 4.4** for baseline information as extracted from **Appendix II** 'Metric 4.0 Calculation Tool – Larkins Farm Solar _ Issue 1 (April 2023)' as part of this section of the report.

Area units

- 4.3 **Table 4.1** presents the Area habitat units calculated. Where boxes are left blank the value is nil.

Table 4.1 – Baseline UK Habitat types within the survey area - Area

On-Site Habitat Type	Area (ha)	Area retained	Area enhanced	User comments
Ref 1 – Cereal crops	4.67			Arable land – lost to development
Ref 2 – Modified grassland	0.19		0.19	North grassland strip extending west x east
Ref 3 – Tall forbs	0.02		0.02	Tall forbs along south-east boundary / farm builds
Total Area habitats (Ha)	4.88		Habitat units	11.66

Area - Condition assessment

- 4.4 Ref 1 - Cereal crops – Condition assessment N/A.
- 4.5 Ref 2 – Modified grassland achieved 'Moderate' condition (see **Table 4.2**).
- 4.6 Ref 3 – Tall forbs achieved 'Poor' condition (see **Table 4.3**).

Table 4.2 – Grassland Low (distinctiveness) condition sheet for Area Ref 2

Modified grassland - Condition Assessment Criteria		Criterion passed (Y/N)
A	There are 6-8 vascular plant species per m² present, including at least 2 forbs (this may include those listed in Footnote 1). Note - this criterion is essential for achieving Moderate or Good condition. Where the vascular plant species present are characteristic of medium, high or very high distinctiveness grassland, or there are 9 or more of these characteristic species per m² (excluding those listed in Footnote 1), please review the full UKHab description to assess whether the grassland should instead be classified as a higher distinctiveness grassland. Where a grassland is classed as medium, high, or very high distinctiveness, please use the relevant condition sheet.	Yes
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for vertebrates and invertebrates to live and breed.	No
C	Some scattered scrub (including bramble <i>Rubus fruticosus</i> agg.) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of scrub with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.	No
D	Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities.	Yes
E	Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens) ² .	Yes
F	Cover of bracken <i>Pteridium aquilinum</i> is less than 20%.	Yes
G	There is an absence of invasive non-native plant species ³ (as listed on Schedule 9 of WCA ⁴).	Yes
Essential criterion achieved (Yes or No) - Yes		
Number of criteria passed - Five		
Evidence – PEA report and site photography – see Appendix I		

Table 4.3 – Urban habitat condition sheet for Area Ref 3

Sparsely vegetated land – Tall forbs - Condition Assessment Criteria		Criterion passed (Y/N)
A	Vegetation structure is varied, providing opportunities for vertebrates and invertebrates to live, eat and breed. A single structural habitat component or vegetation type does not account for more than 80% of the total habitat area.	No
B	The habitat parcel contains different plant species that are beneficial for wildlife, for example flowering species providing nectar sources for a range of invertebrates at different times of year.	No
C	Invasive non-native plant species (listed on Schedule 9 of WCA ¹) and others which are to the detriment of native wildlife (using professional judgement) ² cover less than 5% of the total vegetated area ³ . Note - to achieve Good condition, this criterion must be satisfied by a complete absence of invasive non-native species (rather than <5% cover).	Yes
Essential criterion achieved (Yes or No) – N/A		
Number of criteria passed - One		
Evidence – PEA report and site photography – see Appendix I		

Linear units

4.7 **Table 4.4** presents the Linear habitat units calculated.

Table 4.4 – Baseline UK Habitat types within the survey area – Area

On-site Linear Type	Length (km)	Length retained	Length enhanced	User comments	
Ref 1 – Native hedgerow	0.042		0.042	Hedgerow along western boundary	
Total Linear habitats (km)			Hedgerow units		0.10
<u>Comments</u>					

Linear - Condition assessment

- 4.8 Ref 1 – Native hedgerow – Condition assessment – Poor. A series of ten attributes, representing key physical characteristics are used for this assessment. This assessment is based on the Hedgerow Survey Handbook³ and Favourable Conservation Status document⁴. Each attribute is assigned to one of five functional groups (A – E) and the condition of a hedgerow is assessed according to the number of attributes from these functional groups which pass or fail the 'favourable condition' criteria.
- 4.9 Using the above condition assessment it fails both A1 and A2, passes both B1 and B2, fails C1 and C2, passes D1 and fails D2. Not eligible for E1 or E2.

Habitat loss, creation and enhancement

Summary

- 4.10 The proposed new solar farm footprint and associated grassland compound will remove the existing arable land use and, it is assumed, will be replaced with a basic grassland seed mix, initially interpreted as 'modified grassland' using UK Habitats Classification, in presumed 'moderate' condition, though there is potential to manage grassland areas around and between the panels as species rich wildflower grassland 'other neutral grassland' of higher distinctiveness and/or improve the proposed condition to 'good'. Following the Building Research Establishment (BRE) guidance, the new solar panels and associated infrastructure amount to 5% of the newly created grassland habitat in place of the former arable land. This has been interpreted in the metric calculation as creation of 'urban hardstanding/sealed surface' of nil biodiversity value and n/a condition assessment.
- 4.11 The existing grassland and tall forb vegetated margins to the north and south-east boundaries can be enhanced to species rich grassland using an appropriate seed mix and future habitat management to target condition.
- 4.12 The existing hedgerow to the west boundary can be sufficiently underplanted with associating trees, under scrub and ground flora suitable for 'hedgerow mix' with suitable future habitat management to target condition.
- 4.13 Lastly, the proposals can deliver species specific enhancement such as bat and bird boxes, invertebrate hotels, refuge piles and more.
- 4.14 Details of the above can be provided in a Biodiversity Management Plan (BMP).

Headline results

- 4.15 If the above strategy is enacted a 65.85% net gain will be achievable in Area units and a 70.03% net gain will be achievable in Linear units. See **Table 4.5**.

³ [layout \(hedgeline.org.uk\)](https://hedgeline.org.uk/)

⁴ [Definition of Favourable Conservation Status for Hedgerows - RP2943 \(naturalengland.org.uk\)](https://naturalengland.org.uk/)

Table 4.5 - Metric 4.0 Headline results as projected

Summary Figures		
Net project biodiversity units (Including all on-site & off-site habitat retention / creation)	<i>Habitat units</i>	7.68
	<i>Hedgerow units</i>	0.07
	<i>Watercourse units</i>	0.00
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	<i>Watercourse units</i>	0.00%

5.0 Conclusions & Recommendations

- 5.1 Following the completion of a biodiversity net-gain assessment, the scheme is projected to achieve over 10% net-gain in Area and Linear units, which is the minimum threshold expected to be mandated by the forthcoming Environment Bill.
- 5.2 The habitat creation and enhancement proposed can be delivered through a Biodiversity Management Plan (BMP) detailing landscaping, management and biodiversity provision prescriptions; this document can be secured by planning condition.
- 5.3 The necessary management to deliver habitat and condition targets can be carried out by a suitable contractor; this would be the responsibility of the applicant.

Appendix I – Larkins Farm - Preliminary Ecological Appraisal (April 2023)

Appendix II – Metric 4.0 Calculation Tool – Larkins Farm Solar _ Issue 1 (April 2023)

