



# CLEVE HILL SOLAR PARK

## **OTHER DEADLINE 2 SUBMISSIONS BIODIVERSITY METRIC CALCULATIONS**

June 2019  
Revision A

Document Reference: 10.6.5  
Submitted: Deadline 2

[www.clevehillsolar.com](http://www.clevehillsolar.com)



**CLEVE HILL**  
SOLAR PARK



ARCUS

**CLEVE HILL SOLAR PARK  
BIODIVERSITY METRIC CALCULATIONS**

**MAY 2019**



Prepared By:

**Arcus Consultancy Services**

1C Swinegate Court East  
3 Swinegate  
York  
North Yorkshire  
YO1 8AJ

**T** +44 (0)1904 715 470 | **E** [info@arcusconsulting.co.uk](mailto:info@arcusconsulting.co.uk)  
**w** [www.arcusconsulting.co.uk](http://www.arcusconsulting.co.uk)

Registered in England & Wales No. 5644976

## TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>1</b>
<b>2</b>	<b>METHODOLOGY .....</b>	<b>1</b>
	<b>2.1 Data Sources .....</b>	<b>2</b>
	<b>2.2 Assumptions and Limitations .....</b>	<b>2</b>
<b>3</b>	<b>RESULTS .....</b>	<b>3</b>
	<b>3.1 Baseline, Pre-construction Biodiversity Units .....</b>	<b>3</b>
	<b>3.2 Post Construction Biodiversity Units .....</b>	<b>4</b>
<b>4</b>	<b>CONCLUSION.....</b>	<b>7</b>
	<b>APPENDIX 1 - FIGURES.....</b>	<b>8</b>
	<b>APPENDIX 2 - DETAILED RESULTS .....</b>	<b>9</b>

## 1 INTRODUCTION

This report has been prepared on behalf of Cleve Hill Solar Park Ltd (the Applicant) in relation to an application (the Application) made to the Secretary of State (SoS) for the Department for Business, Energy & Industrial Strategy (BEIS), under section 37 of the Planning Act 2008, seeking a Development Consent Order (DCO) for the Cleve Hill Solar Park (hereafter referred to as the Development). The application was accepted on 14<sup>th</sup> December 2018.

The updated National Planning Policy Framework<sup>1</sup> (NPPF) published in February 2019 states (paragraph 170) that:

*"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 coherent ecological networks that are more resilient to current and future pressures."*

Relevant Representations received in relation to the Application requested that the Applicant demonstrate a clear "net gain" in biodiversity for the Development, in line with the Department for Environment, Food and Rural Affairs (DEFRA) 25-year plan.

This report uses the DEFRA Biodiversity Metric approach to produce a quantifiable amount of biodiversity units produced post-construction, and compare them to the baseline biodiversity unit's pre-construction to determine if the Development would result in a net gain or net loss in biodiversity. An updated version of the DEFRA Biodiversity Metric, DEFRA Biodiversity Metric 2.0, is out for consultation. Subject to consultation, the results in this report can be updated if the current metric is superseded.

## 2 METHODOLOGY

This report has been produced in accordance with the methodology set out in the following guidance documents:

- Biodiversity Offsetting Pilots Technical Paper: the metric for the biodiversity offsetting pilot in England<sup>2</sup>;
- Biodiversity Offsetting Pilots Guidance for Offset Providers<sup>3</sup>; and
- Biodiversity Offsetting Pilots Guidance for Developers<sup>4</sup>.

The following Application documents submitted as part of the application have been used to inform this report:

- Cleve Hill Solar Park Environmental Statement (ES): Chapter 8 - Ecology ([APP-038](#)) and associated figures ([APP-055](#));
- Cleve Hill Solar Park Environmental Statement: Technical Appendix A5.2 Outline Landscape and Biodiversity Management Plan (LBMP) ([APP-203](#));

---

<sup>1</sup>Ministry of Housing, Communities and Local Government (February 2019). National Planning Policy Framework. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/779764/NPPF\\_Feb\\_2019\\_web.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/779764/NPPF_Feb_2019_web.pdf) [accessed 26/03/2019]

<sup>2</sup> Department for Environment Food and Rural Affairs (DEFRA) (March 2012). Biodiversity Offsetting Pilots, Technical Paper: the metric for the biodiversity offsetting pilot in England. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/69531/pb13745-bio-technical-paper.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69531/pb13745-bio-technical-paper.pdf) [accessed 26/03/2019]

<sup>3</sup> Department for Environment Food and Rural Affairs (DEFRA) (March 2012). Biodiversity Offsetting Pilots, Guidance for offset providers. Available at [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/69530/pb13742-bio-guide-offset-providers.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69530/pb13742-bio-guide-offset-providers.pdf) [accessed 26/03/2019]

<sup>4</sup>Department for Environment Food and Rural Affairs (DEFRA) (March 2012). Biodiversity Offsetting Pilots, Guidance for developers. Available at [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/69528/pb13743-bio-guide-developers.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69528/pb13743-bio-guide-developers.pdf) [accessed 26/03/2019]

- Cleve Hill Solar Park Environmental Statement: Technical Appendix A8.1a Extended Phase 1 Habitat Survey ([APP-212](#)); and
- Cleve Hill Solar Park Environmental Statement: Technical Appendix A8.1b Updated Extended Phase 1 Habitat Survey ([APP-213](#)).

## 2.1 Data Sources

The area subject to this Biodiversity Metric assessment is based upon the same Ecology Core Study Area used in the ES, as shown in Appendix 1 - Figure 1 of this report.

The Extended Phase 1 Habitat surveys undertaken in 2015 and 2018 have been used to determine the size and condition of each baseline habitat type. This was determined by a MCIEEM Ecologist.

The distinctiveness of each of the existing and new habitat types was taken from Appendix 1 of the Biodiversity Offsetting Pilots Guidance for Offset Providers<sup>5</sup>.

The delivery risk multiplier for the new habitats to be created post-construction and the baseline habitats predicted to improve in condition post-construction have been taken from Appendix 2 of the Biodiversity Offsetting Pilots Guidance for Offset Providers.

The time risk multipliers for the new habitats to be created post-construction and the baseline habitats predicted to improve in condition post-construction have been based on professional judgement and a conservative approach.

The spatial risk multipliers are not relevant as all offsetting of biodiversity losses will take place within the Development site boundary.

## 2.2 Assumptions and Limitations

The lists of habitats provided in both Appendix 1 and 2 of the Biodiversity Offsetting Pilots Guidance for Offset Providers are not all directly comparable with the habitats within the Development site both pre- and post- construction. As a result, professional judgement has been used to best match pre and post-construction habitat types to the appropriate distinctiveness band and delivery risk multiplier categories.

The total post-construction area of habitats in Table 3.2 is 401 hectares (ha), 9 hectares greater than the total pre-construction area of habitats in Table 3.1 (392 ha). The total area within the Ecology Core Study Area (Figure 1) is 406 ha. These differences are due to limitations in the accuracy of site survey and desk-based mapping accuracy across a large area, and the difference in calculation of areas and linear features. Given the small difference between pre- and post-construction (2.3%) total areas, this is unlikely to make a significant difference to the biodiversity metric calculations.

---

<sup>5</sup> <https://www.cbd.int/financial/offsets/unitedkingdom-distinctiveness.pdf>

### 3 RESULTS

Detailed results can be found in Appendix 2 of this report.

#### 3.1 Baseline, Pre-construction Biodiversity Units

A summary of the results of the DEFRA Biodiversity Metric for existing baseline, pre-construction habitats is shown in Table 3.1.

**Table 3.1: Baseline Biodiversity Units**

Habitat Type	Distinctiveness	Existing Condition	Size (ha)	Length (m)	Biodiversity Units
<b>Arable</b>	Low	Poor	349.96	-	699.92
<b>Semi-improved neutral grassland</b>	Medium	Moderate	22.28	-	178.24
<b>Aquatic Habitat</b>	High	Moderate	-	24,868.68	298,424.16
<b>Improved grassland</b>	Low	Moderate	4.32	-	17.28
<b>Swamp</b>	High	Moderate	2.9	-	34.8
<b>Tall herb/fern</b>	Medium	Moderate	1.47	-	11.76
<b>Buildings</b>	Low	Moderate	10.79	-	43.16
<b>Standing Water</b>	Medium	Moderate	0.19	-	1.52
<b>Marsh/marshy grassland</b>	High	Moderate	0.14	-	1.68
<b>Scrub</b>	Medium	Moderate	0.13	-	1.04
<b>Defunct Hedge</b>	Low	Poor	-	100	200
<b>Scattered Trees</b>	Low	Moderate	0.02	-	0.08
<b>Total</b>					<b>299,613</b>

The existing habitats onsite vary in their distinctiveness category with most habitats assigned a low distinctiveness. The exceptions to this include marsh/marshy grassland, the swamp, and the aquatic habitat which are all assigned a high distinctiveness, and the standing water, tall herb/fern and semi-improved neutral grassland, which are all assigned a medium distinctiveness.

The total biodiversity units onsite at the baseline, pre-construction have been calculated to be **299,613**.

### 3.2 Post Construction Biodiversity Units

A summary of the results of the DEFRA Biodiversity Metric for the post-construction habitats is shown in Table 3.2.

**Table 3.2: Post-Construction Biodiversity Units**

Habitat Type	Distinctiveness	Target Condition	Size (ha)	Length (m)	Change in size (ha)/length (m) from baseline	Delivery Risk Multiplier	Time Risk Multiplier	Biodiversity Units	Change in Biodiversity Units
<b>Arable</b>	Low	N/a	0		-349.96	N/a	N/a	0	-699.92
<b>Semi-improved neutral grassland</b>	Medium	Good	21.3		-0.98	Low	5	213	+ 34.76
<b>Aquatic Habitat</b>	High	Moderate		24,868.68	No change	N/a	N/a	298,424.16	0
<b>Improved Grassland</b>	Low	Moderate	4.32		No change	N/a	N/a	17.28	0
<b>Swamp</b>	High	Moderate	2.9		No change	N/a	N/a	34.8	0
<b>Tall herb/fern</b>	Medium	Good	1.47		No change	Low	5	14.7	+ 2.94
<b>Buildings</b>	Low	Moderate	20.79		+ 10	N/a	5	83.16	+ 40
<b>Standing Water</b>	Medium	Moderate	0.19		No change	N/a	N/a	1.52	0
<b>Marsh/Marshy Grassland</b>	High	Good	0.14		No change	Low	10	1.8	+0.12
<b>Scrub</b>	Medium	Good	0.13		No change	Low	5	1.3	+0.26
<b>Defunct Hedge</b>	Medium	Poor		100	No change	N/a	N/a	200	0



Habitat Type	Distinctiveness	Target Condition	Size (ha)	Length (m)	Change in size (ha)/length (m) from baseline	Delivery Risk Multiplier	Time Risk Multiplier	Biodiversity Units	Change in Biodiversity Units
<b>Scattered Trees</b>	Low	Good	0.02		No change	Low	5	0.1	+ 0.02
<b>Arable Reversion Habitat Management Area (AR HMA)*</b>	N/a	N/a	55.5		+55.5	N/a	N/a	N/a	N/a
<b>Native Shelterbelt</b>	High	Good	1.2383		+1.2383	Medium	10 years	10.61	+10.61
<b>Woodland Mix</b>	Medium	Good	0.72		+0.72	Medium	15 years	3.39	+3.39
<b>Buffer Planting</b>	Medium	Good	1.168		+1.168	Medium	10 years	6.67	+6.67
<b>Native Scrub Planting</b>	Medium	Good	4.2		+4.2	Medium	10 years	24	+24
<b>Hedge Planting</b>	High	Good		3,628.9	+3,628.9	Low	10 years	46,657.29	+46,657.29
<b>Lowland Meadow</b>	High	Good	32.4		+32.4	Medium	10 years	277.71	+277.71
<b>New Grassland (under panels)</b>	High	Moderate	180		+180	Low	5 years	1800	+ 1,800
<b>New Grassland (extra ditch buffer)</b>	High	Good	26.73		+26.73	Low	5 years	400.95	+ 400.95

Habitat Type	Distinctiveness	Target Condition	Size (ha)	Length (m)	Change in size (ha)/length (m) from baseline	Delivery Risk Multiplier	Time Risk Multiplier	Biodiversity Units	Change in Biodiversity Units
<b>New Grassland (between panels)</b>	High	Good	48.12		+48.12	Low	5 years	721.8	+ 721.8
	<b>Total</b>							348,894	+ 49,280

\*The AR HMA has been excluded from the biodiversity metric calculations. This area falls under mitigation requirements as a result of the Habitat Regulations. The AR HMA is proposed within the fields in the northeast of Figure 1. Please refer to the Application Figures for more detail on this.

All the new habitats added, with the exception of the grassland under the panels, are expected to be maintained in good condition, with the majority within the high distinctiveness category. The grassland under the panels is expected to be of moderate condition, as it will receive less sunlight.

Most of the existing terrestrial habitats will be improved in condition from moderate to good based on actions addressed within the Outline LBMP. The exceptions to this include the defunct hedge, improved grassland and all aquatic based habitats, including the standing water and swamp. No active management of the defunct hedge or improved grassland has been outlined within the Application. No direct management of aquatic habitats has been outlined within the Application, therefore no improvements in the conditions of these has been predicted in Table 3.2. Whilst it is assumed that improvements in the condition of these aquatic habitats will occur, it will be indirectly, as a result of management of the terrestrial habitats.

Through the management of the grassland, and the cessation of ploughing and agri-inputs, the habitat structure of grassland is anticipated to become more diverse with more botanical species, there will be a reduction in stress on pollinators and invertebrates, and there will be an improvement in root structure and healthier stem and leaf growth on trees.

Delivery risk and time risk multipliers have been selected based on conservative assumptions of the expected timescales for habitat to establish or baseline habitats to reach their target condition. For example, woodland mix should take approximately 10 years to establish into a good condition, however a more conservative approach of 15 years has been implemented into the matrix. Grassland should take approximately 3 years to establish into a good condition, however a more conservative approach of 5 years has been implemented into the matrix.

The total biodiversity units calculated post-construction total 349,894. This is a net gain of 49,280 units compared to the baseline.

#### 4 CONCLUSION

A **net gain** in biodiversity is predicted as a result of the Development using the DEFRA Biodiversity Metric methodology. The total net gain in biodiversity units from pre- to post-construction of the Development is 49,280, a 15% increase.

Whilst there will be a loss of all biodiversity units associated with the arable habitat and some loss of semi-improved neutral grassland, the post-construction habitats that will be created in its place will be of a good condition and have a high distinctiveness value. Additionally, there will be an improvement in the condition of most of the existing terrestrial habitats onsite as a result of management practices set out within the Outline LBMP. This will result in an overall net gain for biodiversity.

**APPENDIX 1 - FIGURES**

 Ecology Core Study Area



Reproduced from Ordnance Survey digital map data © Crown copyright 2019. All rights reserved. License number 100048606



Produced By: KE	Ref: 2238-REP-336
Checked By: MB	Date: 26/03/2019

**Ecology Core Study Area**  
Figure 1

**Cleve Hill Solar Park  
Biodiversity Metric Calculations**

## **APPENDIX 2 - DETAILED RESULTS**

Baseline Conditions					
Habitat Type	Existing Condition	Distinctiveness	Size (ha)	Length (m)	Biodiversity Units (Condition x Distinctiveness x Size or length)
Arable	1	2	349.96		699.92
Semi-improved neutral grassland	2	4	22.28		178.24
Aquatic habitat	2	6		24868.68	298424.16
Improved grassland/amenity grassland	2	2	4.32		17.28
Swamp	2	6	2.9		34.8
Tall herb/fern	2	4	1.47		11.76
Buildings, including existing cleve hill substation	2	2	10.79		43.16
Standing Water	2	4	0.19		1.52
Marsh/Marshy grassland	2	6	0.14		1.68
Scrub - Dense/continuous	2	4	0.13		1.04
Defunct hedge - species poor	1	2		100	200
Coniferous parkland/scattered trees	2	2	0.02		0.08
				<b>Total</b>	299613.64

Post Construction										
Habitat Type	Target Condition	Distinctiveness	Size (ha)	Length (m)	Change in size (ha)/ length (m) from baseline	Initial Biodiversity Units before risk multipliers added (Target Condition x Distinctiveness x Area or Size)	Delivery Risk Multiplier	Time Risk Multiplier	Final Biodiversity Units (Initial biodiversity units before risk multipliers added / Delivery risk multiplier / Time Risk Multiplier)	Biodiversity Units Change (change from baseline)
Arable	N/a	2	0		-349.96	0	N/a	N/a	0	-699.92
Semi-improved neutral grassland	3	4	21.3		-0.98	255.6	255.6	213	213	+ 34.76
Aquatic habitat	2	6		24868.68	No change	298424.16	N/a	N/a	298424.16	0
Improved grassland	2	2	4.32		No change	17.28	N/a	N/a	17.28	0
Swamp	2	6	2.9		No change	34.8	N/a	N/a	34.8	0
Tall herb/fern	3	4	1.47		No change	17.64	17.64	14.7	14.7	+ 2.94
Buildings	2	2	20.79	0	+ 10	83.16	N/a	N/a	83.16	+ 40
Standing Water	2	4	0.19		No change	1.52	N/a	N/a	1.52	0
Marsh/Marshy grassland	3	6	0.14		No change	2.52	2.52	1.8	1.8	+ 0.12
Scrub - Dense/continuous	3	4	0.13		No change	1.56	1.56	1.3	1.3	+ 0.26
Defunct hedge - species poor	1	2		100	No change	200	N/a	N/a	200	0
Coniferous parkland/scattered trees	3	2	0.02		No change	0.12	0.12	0.1	0.1	+ 0.02
AR HMA	N/a	N/a	55.5		+ 55.5	N/a	N/a	N/a	N/a	N/a
Native Shelterbelt	3	6	1.238		+1.2383	22.2894	14.8596	10.614	10.61	+ 10.61
Woodland Mix	3	4	0.72		+ 0.72	8.64	5.76	3.39	3.39	+ 3.39
Buffer Planting	3	4	1.168		+1.168	14.016	9.344	6.67	6.67	+ 6.67
Native Scrub Planting	3	4	4.2		+4.2	50.4	33.6	24	24	+ 24
Hedge Planting	3	6		3628.9	+3628.9	65320.2	65320.2	46657.29	46657.29	+ 46657.29
Lowland Meadow	3	6	32.4		+32.4	583.2	388.8	277.71	277.71	+ 277.71
New Grassland (Under Panels - outside of assessment)	2	6	180		+180	2160	2160	1800	1800	+ 1800
New Grass Out Development Parcel (extra ditch buffer grassland)	3	6	26.73		+26.73	481.14	481.14	400.95	400.95	+ 400.95
New Grass In Development Parcel (between panels)	3	6	48.12		+48.12	866.16	866.16	721.8	721.8	+ 721.8
<b>Total</b>									348894.25	49280.61





**CLEVE HILL**  
SOLAR PARK



**Write to us at:**  
Freepost: Cleve Hill Solar



**Email us at:**  
[info@clevehillsolar.com](mailto:info@clevehillsolar.com)



**Call our Freephone information line:**  
0800 328 2850



**Visit our website at:**  
[www.clevehillsolar.com](http://www.clevehillsolar.com)



**Tweet us at:**  
[@clevehillsolar](https://twitter.com/clevehillsolar)