

**BIODIVERSITY NET GAIN REPORT**  
**NUNEHAM SOLAR, NUNEHAM COURTENAY, OXFORDSHIRE**

carried out by



commissioned by

**PEGASUS PLANNING GROUP**

on behalf of

**RENEWABLE ENERGY SYSTEMS**

**MARCH 2024**



# BIODIVERSITY NET GAIN REPORT

## NUNEHAM SOLAR, NUNEHAM COURTENAY, OXFORDSHIRE

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Project title:	Nuneham Solar, Nuneham Courtenay, Oxfordshire		
Document title:	Biodiversity Net Gain Report	Project number:	7886
Client:	Pegasus Group/RES	Author:	Peter Timms
Version	V1.0	Issued on:	27.03.2024
	V2.0 Revised following client feedback		02.04.2024
Quality Assurance	Checked by:	Mike Hockey	Approved by: Mike Hockey

The information, data and advice which has been prepared and provided is true and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions. This report and its contents remain the property of Clarkson and Woods Ltd. until payment has been made in full.



# 1 INTRODUCTION

## 1.1 Overview

- 1.1.1 Clarkson and Woods Ltd. was commissioned by Pegasus Planning Group on behalf of Renewable Energy Systems to carry out a Biodiversity Net Gain (BNG) Assessment of land proposed to accommodate a solar array at Nuneham Solar, near Nuneham Courtenay, South Oxfordshire. This land is hereafter referred to as 'the Site'.
- 1.1.2 Clarkson & Woods have completed a suite of detailed survey work on Site for a range of ecological features. The results of these surveys and an assessment of ecological impacts resulting from the proposed development are provided in the following documents:
- Environmental Statement Chapter 7 – Ecology
  - Appendix 7.1 – Ecological Baseline Report
- 1.1.3 This report must be read in conjunction with the Landscape Masterplan prepared by Pegasus Group (DRWG No: P21-2947\_EN\_100 Rev C, March 2014) which has been used as the basis for this assessment.

## 1.2 Site Description and Development Proposals

- 1.2.1 A complete Site description with figures is provided in Appendix 7.1: Ecological Baseline Report<sup>1</sup>.
- 1.2.2 The Site was located approximately 0.5km south of the city of Oxford and directly east of the River Thames. The Site consisted largely of arable farmland, with a number of the fields bounded by a network of hedgerows and ditches. Habitats within the Site at the time of the survey also included discrete areas of Other Neutral Grassland and planted broadleaved woodland.
- 1.2.3 The Proposed Development application comprises of the construction, operation, maintenance and decommissioning of ground mounted PV Modules and a new substation. PV Modules will be mounted on a metal mounting system up to a maximum height of 3.5m. Cables linking the rows of panels are buried in the ground within trenches. Further cables are used to link areas of panels to transformer and switchgear substations which are constructed on concrete pads, which are then linked. Internal access tracks are required, which involve the laying of permeable aggregate. A new main site access is to be created via an existing farm gateway from the A4074 at the east of the Site.
- 1.2.4 Full details of the proposals are provided in the Environmental Statement.

## 1.3 Assessment Scope

- 1.3.1 This report provides a quantitative baseline of the biodiversity value of the Site at baseline and post-development. The avoidance, mitigation, compensation, and enhancement measures that have been embedded into the scheme design have been used as the basis for demonstrating how the development will achieve BNG.
- 1.3.2 Habitat features are used as a proxy measure for quantifying the value and importance of biodiversity on Site. This enables assessments to be made on the present and future biodiversity value of the Site through the calculation of biodiversity gains and losses. The process itself follows the mitigation hierarchy, which prioritises impact avoidance and minimisation, with compensation only as a last resort. It should be noted that the mitigation hierarchy has been followed throughout project design.
- 1.3.3 This document aims to:
- Establish the total number of Habitat Units (HU), Hedgerow Units (HeU), and Watercourse Units (WU) present on the Site at baseline (baseline units);
  - Establish the total number of HU, HeU and WU which will be lost, created, retained or enhanced during the delivery of ecological measures during construction or once the Site becomes operational; and
  - Determine whether the proposals will result in net loss, no net loss or net gain for biodiversity and to what extent.

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<sup>1</sup> Appendix 7.1: Ecological Baseline Report – Nuneham Solar, Nuneham Courtenay, South Oxfordshire, (Clarkson and Woods, March 2024)



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## **1.4 Relevant Policy & Legislation**

- 1.4.1 This BNG Assessment has been prepared with reference to the following relevant planning policies:
- 1.4.2 The National Planning Policy Framework (NPPF) was published in March 2012 and revised in 2023. It outlines how development plans should identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks as well as promote the conservation restoration and enhancement of Priority habitats (i.e. HPs), ecological networks and the protection and recovery of Priority species (i.e. SPs). Opportunities for securing the net gain for biodiversity should be sought.
- 1.4.3 In England, BNG became mandatory from 12<sup>th</sup> February 2024 under Schedule 7A of the Town and Country Planning Act 1990 (as inserted by Schedule 14 of the Environment Act 2021). Developers must deliver a BNG of 10%. This means a development will result in more or better quality natural habitat than there was before development.



## 2 METHODS

### 2.1 Approach to BNG

- 2.1.1 This report follows the guidance as set out within *Biodiversity Net Gain Report & Audit Templates (Version 1)*. CIEEM. July 2021. It is also in line with the British Standard 8683:2021 (Process for Designing and Implementing Biodiversity Net Gain).
- 2.1.2 The stages of design of the Site and application of the mitigation hierarchy have followed *Biodiversity Net Gain: Good Practice Principles for Development (CIEEM, CIRA, IEMA 2016)*.
- 2.1.3 The Natural England Statutory Biodiversity Metric referred to hereafter as 'the Metric', has been used to complete the calculation and assessment which accompanies this document, with mapping carried out on QGIS v3.28. The Statutory Biodiversity Metric Draft User Guide (Natural England, 2023) has been used to guide the use of the Metric.
- 2.1.4 Condition sheets included within *The Statutory Biodiversity Metric: Technical Annex 1 - Condition Assessment Sheets and Methodology (Natural England, 2023)* have been used to assess habitats within this report and adapted versions are provided in Annexes C and D of this report.
- 2.1.5 For greater clarity, detailed justifications for the choice of habitat types, distinctiveness and condition have been provided within this BNG report rather than added to the 'Comments' column of the Metric.

#### Strategic Significance

- 2.1.6 For the purposes of the BNG Assessment, all hedgerows and ditches (both baseline and post-development) have been assigned as 'Location ecologically desirable, but not in local strategy' under the 'Strategic significance' column in the metric. The hedgerow network connects into the local landscape, including other hedgerows and relatively large areas of woodland. Similarly, the ditch network has connectivity to other watercourses off-site, included locally-designated nature conservation sites which support wetland and aquatic habitats.
- 2.1.7 All other habitat types are assigned as 'Area/compensation not in local strategy/no local strategy' under the Strategic Significance.

### 2.2 Evidence of Technical Competence and Experience

- 2.2.1 All ecologists employed by Clarkson and Woods are members or pending members of the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow the Institute's Code of Professional Conduct when undertaking ecological work. The BNG assessment has been prepared by a CIEEM member with sufficient training, qualifications and experience.

### 2.3 Limitations

- 2.3.1 It is anticipated that a non-significant margin of error in the mapping may occur throughout the process from collecting data in the field to mapping on GIS software.



### 3 BASELINE HABITATS, HEDGEROWS AND WATERCOURSES

#### 3.1 Baseline Habitats

3.1.1 The baseline habitat types recorded within the Site are described in full in Appendix 7.1 of the Environmental Statement accompanying the planning application. A Baseline Habitat Map is provided in Annex A and the associated condition assessments (where required) are provided in Annexes C1 to C3. A summary of the baseline habitats, conditions and anticipated losses as part of the proposed development are provided in Table 1.

**Table 1: Baseline Habitats**

UK Hab Category	Parcel Ref (Annex A refers)	Condition	Surface Area (ha)	Habitat Units (HU)	Area lost to development or land use change (ha/m)
<b>Habitats</b>					
Arable – Cereal Crops	F1, F5 & F9	Condition Assessment N/A	8.299	16.60	8.01
Arable – Non Cereal Crop	F2, F3, F4, F6, F7, F8 and F11	Condition Assessment N/A	48.026	96.05	47.78
Modified grassland	F10	Moderate	0.623	0.54	0
Other neutral grassland	Eastern boundary of F4, F6 and F8	Moderate	0.54	4.93	0
Other woodland; broadleaved	W1	Poor	0.4	1.68	0
<b>Habitats Total</b>			5.829 ha		3.656 ha

#### 3.2 Baseline Hedgerows

3.2.1 The baseline hedgerow types recorded within the Site are described in full in Appendix 7.1 of the Environmental Statement accompanying the planning application. Hedgerows are mapped and labelled on the plan in Annex A, and the associated condition assessments (where required) are provided in Annexes C4 to C5. A summary of the baseline hedgerows, conditions and anticipated losses as part of the proposed development are provided in Table 2.

**Table 2: Baseline Habitats**

UK Hab Category	Parcel Ref (Annex A)	Condition	Length (m)	Hedgerow Units (HeU)	Length lost to development or land use change (m)
<b>Hedgerows</b>					
Native hedgerow	B4, B7, B8, B13	Good	404m	2.67	3m
	B1, B2, B3, B12	Moderate	1303m	5.73	0
Native hedgerow – associated with bank or ditch	B7, B10	Good	451m	5.95	5m
	B16	Moderate	300m	2.64	0
Native hedgerow with trees	B15	Good	404m	4.30	5m



Species-rich native hedgerow	B8, B9	Good	635m	8.38	7m
	B14	Moderate	672m	5.91	0
Species-rich native hedgerow with trees	B5	Moderate	294m	3.88	8m
Line of Trees	B17	Moderate	206m	0.91	0
<b>Hedgerows Total</b>			4594m	40.38	28m

### 3.3 Baseline Watercourses

- 3.3.1 The baseline ditches recorded within the Site are described in full in Appendix 7.1 of the Environmental Statement accompanying the planning application. Ditches are mapped and labelled on the plan in Annex A, and the associated condition assessments (where required) are provided in Annex C6
- 3.3.2 A summary of the baseline ditches, conditions, and anticipated losses as part of the proposed development are provided in Table 3.

#### **Watercourse and Riparian Encroachment**

- 3.3.3 No watercourse encroachment was noted within any of the on-site ditches.
- 3.3.4 Major riparian zone encroachment was recorded for all of the on-site ditches. On both sides of all ditches, more than 25% of the riparian zone (i.e. land within 5m of the ditch banks) was laid to permanent agriculture, meaning that the Riparian Encroachment assessment with the Metric as assigned as 'Major/Major' for all ditches.

**Table 3: Baseline Watercourses**

UK Hab Category	Condition	Watercourse Encroachment	Riparian Encroachment	Length (m)	Watercourse Units (WU)	Length lost to development or land use change (m)
<b>Watercourses</b>						
Ditches (All ditches)	Poor	No encroachment	Major/Major	2,364	7.80	0
<b>Watercourses Total</b>				2,364	7.80	0



## 4 POST-DEVELOPMENT HABITATS, HEDGEROWS AND WATERCOURSES

4.1.1 The proposed habitat types within the Site and their associated targeted condition assessments (where relevant) are outlined in Tables 4, 5 6 and 7 below and detailed within Annexes D1 to D3. A Post-development Habitats Plan prepared using QGIS and translating proposed habitats to the UK Habitat Classification (to allow comparison with the habitat baseline), is provided in Annex B of this report. This is based on the proposed design and landscape plans (see section 1.1).

### Assumptions

4.1.2 It has been necessary to make assumptions about the condition and distinctiveness of created habitats to complete the Metric. Habitat creation and enhancement in the Metric is based on a realistic and achievable scenario. Target conditions and associated condition assessment are provided in Annexes D1 to D3.

## 4.2 Post-development Habitats

4.2.1 A Landscape and Environmental Management Plan (LEMP) will be prepared for the operational site to prescribe how retained and newly created habitats will be managed to maximise their biodiversity value and ensure the target conditions of all newly created habitats as set out in Annex D are realised. The LEMP will also set out a post-construction monitoring scheme to assess the long-term efficacy of new habitat creation and enhancement measures and identify remedial measures and any necessary change in management approaches. Preparation of the LEMP can be secured by a planning condition.

### **Retained Habitats**

4.2.2 The woodland (W1) and other neutral grassland strip and along the eastern Site boundary will be retained as part of the proposals and protected with fencing. Existing grassland arable habitats within Fields F10 and F11 will also be retained. All other arable habitats will be lost as part of the development.

### **Newly Created Habitats**

4.2.3 As part of the proposals, all of the existing arable land present within the Site boundary (aside from Field F11) would be reverted to grassland, with the exception of new access tracks, a substation, auxiliary buildings and infrastructure.

4.2.4 Clarkson & Woods Ltd. has undertaken monitoring of over 100 solar sites, assessing grassland condition and providing management recommendations to enhance habitat condition. During this work, the difference in habitat condition between shaded grassland (under arrays) and unshaded (open) parts of the Site has been evident.

### Modified Grasslands

4.2.5 Within the Site perimeter fencing, a grazing mix will be provided. This would be expected to represent the UKHab habitat type 'Modified Grassland'. A diverse range of species is included in the seed mix; however directly underneath the panels the impact of shading would preclude the majority of these from establishing successfully. Areas under the panels would also be expected to be of fairly uniform height and structure, and a high proportion (>10%) of bare ground would also likely result. This would result in the failure of associated condition criteria (Annex D1 refers). Over time, it is possible that additional criteria may be met, but on a precautionary basis the habitat directly underneath panels expected to be created has been assigned 'poor' condition.

4.2.6 Grassland habitat between panels and around the edge of panels is expected to achieve 'good' condition, with a moderately diverse sward in terms of species and structure expected to develop, which is largely free of bare ground.

4.2.7 With the site perimeter fencing approximately 50% of the land will be directly underneath panels. As such across the total extent of Modified Grassland created, 50% of the area has been assigned as 'poor' condition and 50% 'good' condition.

### Other Neutral Grassland

4.2.8 Existing arable land outside of the perimeter fencing will be sown with a more diverse grassland mix and managed infrequently, which would be expected to result in a species-rich and structurally diverse sward





representative of the UKHab habitat type 'Other Neutral Grassland'. This expected to achieve the criteria for 'moderate' condition (Annex D2 refers).

Developed Land; Sealed Surface

4.2.9 All new buildings and access tracks will represent 'developed land; sealed surface' which has no biodiversity value and does not require a condition assessment.

**Table 4: Post-development Habitats - Newly Created**

Description in detailed landscape plans	BNG/UKHab Category	Surface Area (ha)	Condition Notes	Habitat Units (HU)
Grazing / wild flower grassland – Emorsgate EG 27 Special Old Fashioned Grazing Mix or similar approved (within the security fence)	Modified Grassland	48.226	50% Poor and 50% Good	159.28
Tussock / wild flower grassland – Emorsgate EM2 Standard General Purpose Mix or similar approved (outside the security fence)	Other Neutral Grassland	5.5838	Moderate	37.38
N/A – all other access tracks and buildings	Developed Land; Sealed Surface	1.994	N/A	0.00
<b>Total</b>		55.80	N/A	

**4.3 Post-development Hedgerows**

4.3.1 The LEMP prepared for the scheme will set out the management measures required for successful planting of all new hedgerows, as well as ongoing management for new and existing hedgerows, in order to maximise value for biodiversity and ensure the target condition for hedgerows (set out in Annex D3) are realised.

**Retained Hedgerows**

4.3.2 All existing hedgerows will be retained as part of the proposals, with the exception of relatively small (8m or less) sections requiring removal for new access.

**New Hedgerows**

4.3.3 As part of the proposals, new native, species-rich hedgerow planting will be planted where there is currently no hedgerow. This would represent the UKHab type 'species-rich native hedgerow'. Approximately 765m of the proposed hedgerows would include additional native standard trees spaced 20m apart or less, which would meet the definition of 'species-rich native hedgerow with trees'. All new hedgerow planting is expected to achieve 'good' condition, as set out in Annex D3.

4.3.4 Table 5 below summarises the newly created hedgerows proposed as part of the landscaping plans for the scheme.

**Table 5: Post-development Hedgerows - Newly Created**

Description in detailed landscape plans	BNG/UKHab Category	Length (m)	Condition Notes	Hedgerow Units (HeU)
Native hedgerow planting	Species-rich native hedgerow	1,948	Good	16.77
Proposed native mixed hedgerows and	Species-rich native hedgerow with trees	765	Good	7.43



occasional native hedgerows trees			
<b>Total (excluding individual trees)</b>	<b>2,713</b>	<b>N/A</b>	<b>24.20</b>

### Enhanced hedgerows

- 4.3.5 As part of the proposals, the hedgerows present at B2 and B3 will be enhanced through increasing their condition score from 'Moderate' to 'Good', as outlined in Table 6 below. The post-development condition assessment for both hedgerows is provided in Annex D3
- 4.3.6 B2 will be enhanced through the cessation of intensive arable farming practices and reversion of the land to low-intensity managed grassland. As a result, B2 will have undisturbed ground with perennial vegetation for at least 1m wide and along >90% of the hedgerow, meaning that it would pass condition criterion C1 where it currently fails, and as a result would meet the category for 'Good' condition.
- 4.3.7 The proposed in-filling of gaps along the hedgerow at B3 would result in passing the condition criterion B2 where it currently fails, which would result in this hedgerow meeting the category for 'Good' condition.

**Table 6: Post-development Hedgerows- Enhanced**

UK Hab Category	Hedgerow Ref (Annex A refers)	Change in Condition	Length (m)	Baseline Hedgerow Units (HeU)	Hedgerow Units (HeU) Delivered
<b>Hedgerows</b>					
Native hedgerow	B2 & B3	Moderate to Good	488m	2.15	3.15
<b>Hedgerows Total</b>			488m	2.15	3.15

### 4.4 Post-development Watercourses

- 4.4.1 The ditches are expected to be retained in full. No new watercourses are proposed as part of the development.

#### Watercourse and Riparian Encroachment

- 4.4.2 No watercourse encroachment will be present on completion of the development – access will utilise existing ditch crossings.
- 4.4.3 Due to the cessation of intensive arable management within the fields at the site, and provision of buffer zones from all ditches which will be reverted to infrequently managed grassland, the land within the riparian zone of the ditches will not represent permanent agriculture. As such, ditches which have both banks within the Site (namely D1, D2 and D15) will have no encroachment in the riparian zone on either bank, resulting a Riparian Encroachment assessment of 'No encroachment / No encroachment' within the Metric.
- 4.4.4 Ditches D3/4 and D5 have part of one bank outside of the Site boundary. It is anticipated that moderate encroachment will occur in the riparian zone of the bank outside of the Site boundary, as between 10-25% of the riparian zone will remain in permanent agriculture. A Riparian Encroachment assessment of 'Moderate/No encroachment' are assigned to these ditches within the Metric.
- 4.4.5 Ditches D6 and D9 have one bankside outside of the Site boundary for the entire length of the ditch. As such, the bankside outside of the Site will be expected to remain in permanent agriculture, meaning that one of the banksides will be subject to 'Major' riparian encroachment (i.e. encroachment of more than 25% of the riparian zone. The riparian zone of the bank within the site boundary will be subject to no encroachment. A Riparian Encroachment assessment of 'Major/No encroachment' are assigned to these ditches within the Metric.
- 4.4.6 Table 7 below outlines the expected watercourse units to be delivered through reducing the impact of riparian encroachment on the ditch network at the Site.



**Table 7: Post-development Watercourse – Enhanced**

UK Hab Category	Parcel Ref (Annex A refers)	Condition	Watercourse Encroachment	Riparian Encroachment	Length (m)	Watercourse Units (WU) Delivered
Ditches	D1, D2, D15	Poor	No encroachment	No encroachment / No encroachment	887	3.90
Ditches	D3/4, D5	Poor	No encroachment	Moderate/ No encroachment	644	2.61
Ditches	D6, D9	Poor	No encroachment	Major / No encroachment	833	3.19
<b>Watercourses Total</b>					<b>2,364</b>	<b>9.70</b>

## 5 BNG METRIC

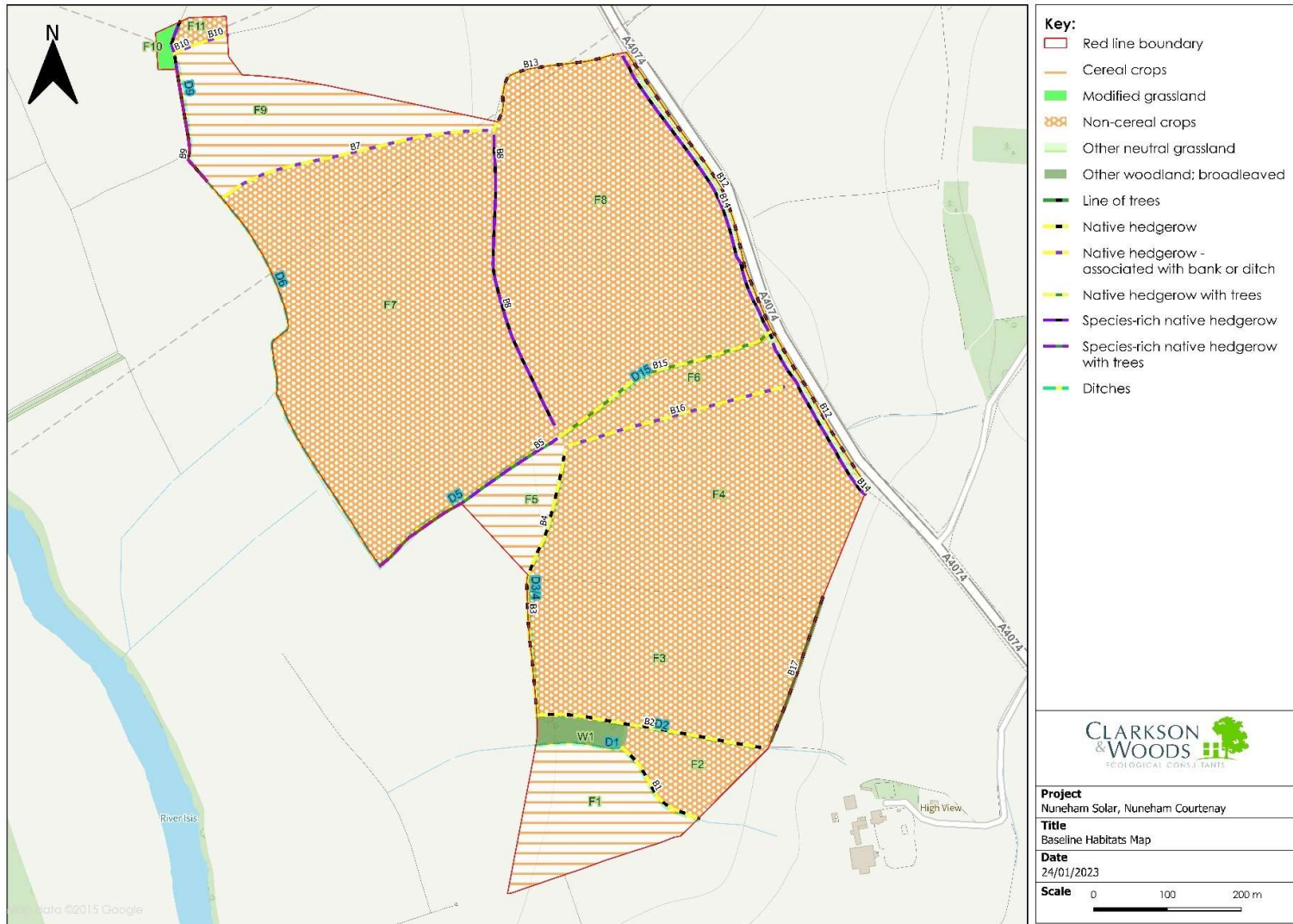
- 5.1.1 The information provided in the Metric is directly related to the Habitat Baseline Plan and the Proposed Habitats Plan ((Annexes A & B of this report respectively) The completed Metric spreadsheet will be submitted separately.
- 5.1.2 The proposed development will result in a total net increase of 70.94% Habitat Units, 61.48% Hedgerow Units, and 24.32% Watercourse Units. This represents a **net gain** in all biodiversity units, as shown in the headline results below.

FINAL RESULTS		
<b>Total net unit change</b> (Including all on-site & off-site habitat retention, creation & enhancement)	<i>Habitat units</i>	85.00
	<i>Hedgerow units</i>	24.83
	<i>Watercourse units</i>	1.90
<b>Total net % change</b> (Including all on-site & off-site habitat retention, creation & enhancement)	<i>Habitat units</i>	70.94%
	<i>Hedgerow units</i>	61.48%
	<i>Watercourse units</i>	24.32%
<b>Trading rules satisfied?</b>	Yes ✓	

**Figure 2: Headline Results (taken from the Statutory Biodiversity Metric)**

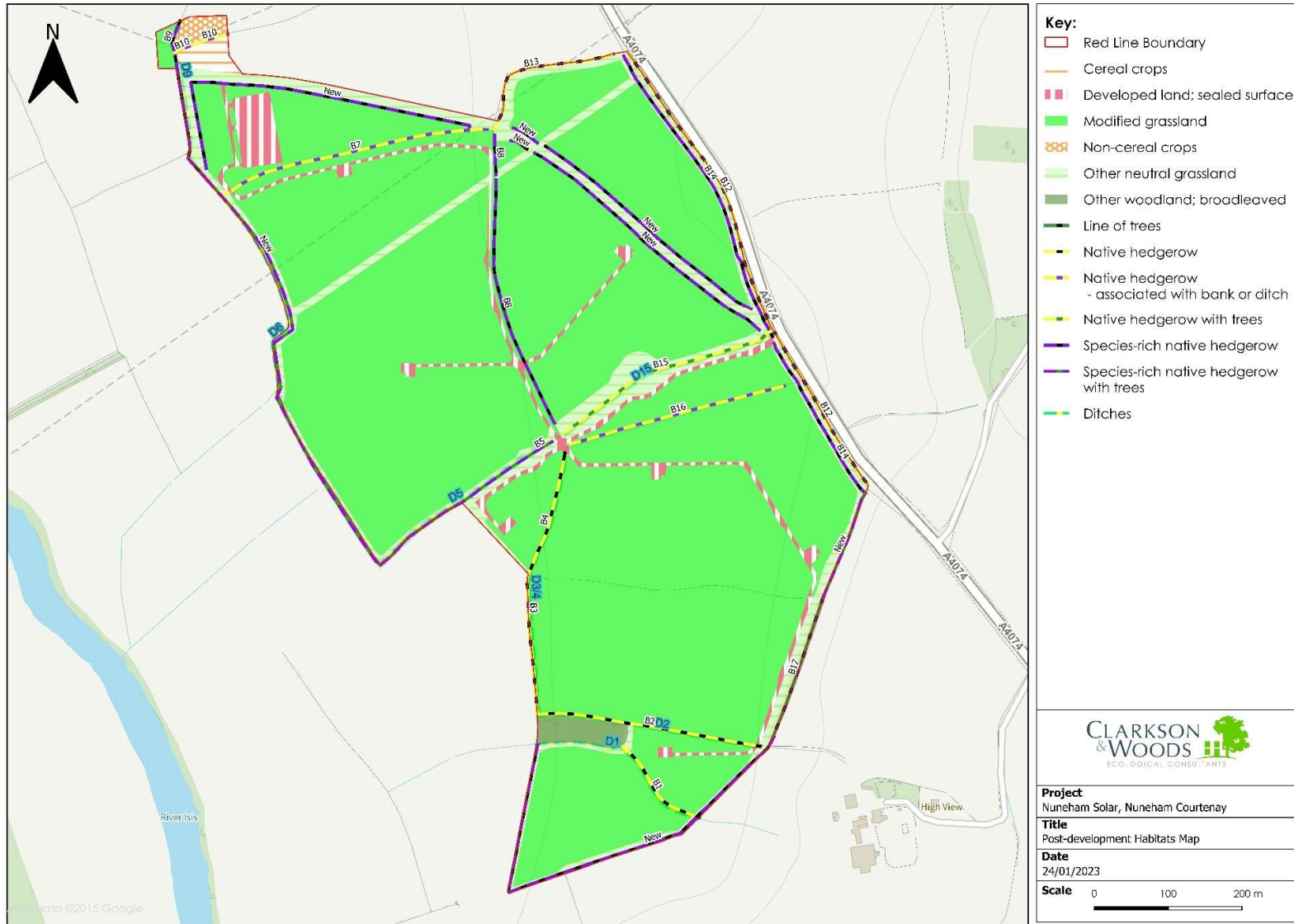


## ANNEX A: BASELINE HABITAT MAP





## ANNEX B: POST-DEVELOPMENT HABITATS PLAN





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## **ANNEX C: EXISTING HABITAT CONDITION ASSESSMENTS**

The Statutory Biodiversity Metric uses habitat condition as one of the measures of habitat quality. The process of assessing habitat condition considers key physical characteristics and a habitat's ability to support typical flora and fauna.

Annexes C1 to C6 cover all habitat types found within the Site and their relevant condition sheet. On completion of condition assessments using the condition sheets in Annex C, all habitat parcels have been assigned one of three condition categories: Good, Moderate or Poor.

This method of assessing habitat condition has been used to assess the condition of pre-intervention or baseline habitats to inform baseline biodiversity unit calculations.



## C1 CONDITION ASSESSMENT SHEET: GRASSLAND HABITAT TYPE (LOW DISTINCTIVENESS)

### Grassland - Modified Grassland (MG)

BNG Condition Assessment Criterion Achieved (Y/N)		Field F10 (0.136ha)
1	There are 6-8 vascular plant species per m <sup>2</sup> , including at least 2 forbs. If a grassland has 9 or more species per m <sup>2</sup> it should be classified as a medium distinctiveness grassland habitat type. <b>NB- this criterion is essential for achieving Moderate condition.</b>	N
2	Sward height is varied (at least 20% of the sward is less than 7cm 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.	N
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.	Y
4	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 cause by high levels of access, or any other damaging management activities.	Y
5	Cover of bare ground between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens).	Y
6	Cover of bracken less than 20%.	Y
7	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981).	Y
<b>Condition</b>		<b>Poor (5/7 – Fails Essential Criterion 1)</b>

Condition Assessment Result	Condition Assessment Score
Passes 6 or 7 criteria including passing essential criterion 1	Good (3)
Passes 4 or 5 of 7 criteria; OR Passes 4 or 5 of 7 criteria including passing essential criterion 1	Moderate (3)
Passes 0, 1, 2 or 3 of 7 criteria: OR 4, 5 or 6 criteria but failing criterion 1	Poor (1)



## C2 CONDITION ASSESSMENT SHEET: GRASSLAND HABITAT TYPE (MEDIUM, HIGH & VERY HIGH DISTINCTIVENESS)

### Grassland - Other Neutral Grassland

BNG Condition Assessment Criterion Achieved (Y/N)		Grassland Strip along Eastern Site Boundary (0.54ha)
1	The appearance and composition of the vegetation closely matches characteristics of the specific grassland habitat type (see UKHab definition). sedges and indicator species for the specific grassland habitat type are very clearly and easily visible throughout the sward. <b>NB - This criterion is essential for achieving Moderate condition for non-acid grassland types only.</b>	Y
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.	Y
3	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	Y
4	Cover of bracken less than 20% and cover of scrub (including bramble) less than 5%.	Y
5	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981). Combined cover of species indicative of sub-optimal condition and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area.	Y
6	There are greater than 9 species per metre squared. <b>NB - This criterion is essential for achieving Good condition (non-acid grassland types only).</b>	N
<b>Condition</b>		<b>Moderate (5/6 – Fails Essential Criterion 6)</b>

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





### C3: CONDITION ASSESSMENT SHEET: WOODLAND HABITAT TYPE

#### Woodland - Other Broadleaved Woodland

BNG Condition Assessment					Other Woodland; Broadleaved (0.4ha)
Indicator	Good (3 points)	Moderate (2 points)	Poor (1 point)		
1	<b>Age Distribution</b>	3 age classes present	2 age classes present	1 age class present	1
2	<b>Herbivore Damage</b>	No significant browsing damage evident	Evidence of significant browsing pressure in 40% or less of whole woodland	Evidence of significant browsing pressure in 40% or more of whole woodland	1
3	<b>Invasive Species</b>	No invasive plant species	Rhododendron & laurel not present, other invasive species cover <10%	Rhododendron or laurel present, or other invasive species cover >10%	1
4	<b>No. of Native Tree Species</b>	5 or more native tree/shrub species present	3-4 native tree/shrub species present	0-2 native tree or shrub species present	3
5	<b>Cover of Native Species</b>	>80% of canopy & understory shrubs are native	50-80% of canopy & understory shrubs are native	<50% canopy & understory shrubs are native	3
6	<b>Open Space</b>	0-20% woodland has temporary areas of open space	21-40% woodland has temporary areas of open space	>40% woodland has temporary areas of open space	3
7	<b>Regeneration</b>	All 3 classes present	1 or 2 classes present	No classes or coppice regrowth present	1
8	<b>Tree Health</b>	Tree mortality <10%	11-25% tree mortality	>25% tree mortality and any high risk pest/disease	2
9	<b>Vegetation &amp; Ground Flora</b>	Ancient woodland indicators present	Recognisable NVC community present	No recognisable NVC community	1
10	<b>Vertical Structure</b>	3 or more storeys across all survey plots	2 storeys across all survey plots	1 or less storeys across all survey plots	2
11	<b>Veteran Trees</b>	2 or more veteran trees/ha	1 veteran tree/ha	No veteran trees present	1
12	<b>Deadwood</b>	50% survey plots have deadwood	25-50% survey plots have deadwood	<25% survey plots have deadwood	3
13	<b>Disturbance</b>	No nutrient enrichment or damaged ground	<20% damaged ground and/or <1ha nutrient enrichment	>20% damaged ground and/or >1ha nutrient enrichment	1



BNG Condition Assessment				Other Woodland; Broadleaved (0.4ha)
Indicator	Good (3 points)	Moderate (2 points)	Poor (1 point)	
Woodland Condition				Poor (23/39)

Condition Assessment Result	Condition Assessment Score
Total score >32 (33 to 39)	Good (3)
Total score 26 to 32	Moderate (2)
Total score <26 (13 to 25)	Poor (1)



#### C4: CONDITION ASSESSMENT SHEET: HEDGEROW LINEAR FEATURE TYPE

Attributes and functional groupings (A, B, C, D & E)		Criteria (the minimum requirements for 'favourable condition')	Baseline																
Core groups - applicable to all hedgerow types			B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	
A1.	Height	>1.5 m average along length	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	
A2.	Width	>1.5 m average along length	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
B1.	Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length	Y	Y	N	N	N	N	N	N	Y	Y	Y	N	Y	Y	N	N	
B2.	Gap - hedge canopy continuity	Gaps make up <10% of total length and No canopy gaps >5 m	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	N	
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)	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
C2.	Undesirable perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
D1.	Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native and recently introduced species	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
D2.	Current damage	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Additional Group - Applicable to Hedgerows with Trees Only																			
E1	Tree Class	More than 1 age class, and at least 1 mature, ancient or veteran tree per 20-50m	N/A	N/A	N/A	N/A	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N/A
E2	Tree Health	At least 95% of trees are in healthy condition	N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N/A
<b>Condition</b>			Moderate (4/8). 2 failures in C	Moderate (5/8). 2 failures in C	Moderate (5/8). 2 failures in B	Good (6/8)	Moderate (7/10)	Good (6/8)	Good (6/8)	Good (6/8)	Good (7/8)	Good (7/8)	Good (7/8)	Good (7/8)	Moderate (5/8). 2 failures in B	Good (6/8)	Moderate (5/8)	Good (8/10)	Moderate (5/8). 2 failures in B

#### Condition Categories for Hedgerows without Trees



<b>Maximum number of attributes that can fail to meet 'favourable condition' criteria</b>	<b>Metric Score</b>
No more than 2 failures in total; AND No more than 1 in any functional group	3
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 & C1 = Moderate condition)	2
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

<b>Condition Categories for Hedgerows with Trees</b>	
<b>Maximum number of attributes that can fail to meet 'favourable condition' criteria</b>	<b>Metric Score</b>
No more than 2 failures in total; AND No more than 1 in any functional group	3
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 & C1 = Moderate condition)	2
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



## C5: CONDITION ASSESSMENT SHEET: LINE OF TREES LINEAR FEATURE TYPE

BNG Condition Assessment Criterion Achieved (Y/N)		B17
1	At least 70% of trees are native species.).	Y
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.	Y
3	One or more trees has veteran features and or natural ecological niches for vertebrates and invertebrates, such as presence of standing and attached deadwood, cavities, ivy or loose bark.	Y
4	There is an undisturbed naturally-vegetated strip of at least 6 m on both sides to protect the line of trees from farming and other human activities (excluding grazing). Where veteran trees are present, root protection areas should follow standing advice.	N
5	At least 95% of the trees are in a healthy condition (deadwood or veteran features valuable for wildlife are excluded from this). 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.	Y
<b>Condition</b>		<b>Moderate (4/5)</b>

Condition Assessment Result	Condition Assessment Score
Passes 5 of 5 criteria	Good (3)
Passes 3 or 4 of 5 criteria	Moderate (2)
Passes 2 or fewer criteria	Poor (1)



## C6: CONDITION ASSESSMENT SHEET: DITCHES

BNG Condition Assessment Criterion Achieved (Y/N)		D1	D2	D3/4	D5	D6	D9	D15
A	The ditch is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution.	N	N	N	N	N	N	N
B	A range of emergent, submerged and floating-leaved plants are present. As a guide >10 species of emergent, floating or submerged plants present in a 20 m ditch length.	N	N	N	N	N	N	N
C	There is less than 10% cover of filamentous algae and or duckweed Lemna spp. (these are signs of eutrophication).	Y	Y	Y	Y	Y	Y	Y
D	A fringe of aquatic marginal vegetation is present along more than 75% of the ditch.	N	N	N	N	N	N	N
E	Physical damage is evident along less than 5% of the ditch, with examples of damage including: excessive poaching, damage from machinery use or storage, or any other damaging management activities.	Y	Y	Y	Y	N	Y	Y
F	Sufficient water levels are maintained - as a guide a minimum summer depth of approximately 50 cm in minor ditches and 1 m in main drains.	N	N	N	N	N	N	N
G	Less than 10% of the ditch is heavily shaded.	N	N	N	N	Y	N	N
H	There is an absence of non-native plant and animal species	Y	Y	Y	Y	Y	Y	Y
<b>Condition</b>		<b>Poor (3/8)</b>	<b>Poor (3/8)</b>	<b>Poor (3/8)</b>	<b>Poor (3/8)</b>	<b>Poor (3/8)</b>	<b>Poor (3/8)</b>	<b>Poor (3/8)</b>

Condition Assessment Result	Condition Assessment Score
Passes 8 of 8 criteria	Good (3)
Passes 6 or 7 of 8 criteria	Moderate (2)
Passes 5 or fewer criteria	Poor (1)



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## **ANNEX D: PROPOSED HABITAT CONDITION ASSESSMENTS**

The Statutory Biodiversity Metric uses habitat condition as one of the measures of habitat quality. The process of assessing habitat condition considers key physical characteristics and a habitat's ability to support typical flora and fauna.

Condition assessment sheets for all newly created habitat and enhanced habitats are provided in this section. Condition assessment sheets for retained habitats which will not be enhanced have not been provided; the condition of these habitats is expected to remain as per baseline conditions for each, set out in Annex C

Annexes D1 to D3 cover all new habitat types expected to be present within the developed Site and their relevant condition sheet. On completion of condition assessments using the condition sheets in this Annex, all habitat parcels have been assigned one of three condition categories: Good, Moderate or Poor. The Metric tool does allow for intermediate categories (Fairly Good and Fairly Poor) if it is not possible to distinguish between two main condition categories.

This method of assessing habitat condition has been used to assess the condition of post-intervention habitats and inform habitat creation and enhancement interventions by defining what each condition state would look like for the habitat in question.



## D1: CONDITION ASSESSMENT SHEET: GRASSLAND HABITAT TYPE (LOW DISTINCTIVENESS)

### Grassland - Modified Grassland (MG)

BNG Condition Assessment Criterion Achieved (Y/N)		Directly beneath Panels (24.1045 ha)	Within Perimeter Fence but not Directly Beneath Panels (24.1045 ha)
1	There are 6-8 vascular plant species per m <sup>2</sup> , including at least 2 forbs. If a grassland has 9 or more species per m <sup>2</sup> it should be classified as a medium distinctiveness grassland habitat type. <b>NB- this criterion is essential for achieving Moderate condition.</b>	N	Y
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.	N	Y
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.	Y	Y
4	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 cause by high levels of access, or any other damaging management activities.	Y	Y
5	Cover of bare ground between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens).	N	Y
6	Cover of bracken less than 20%.	Y	Y
7	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981).	Y	Y
<b>Condition</b>		<b>Poor (4/7 – fails Essential Criterion 1)</b>	<b>Good (7/7)</b>

Condition Assessment Result	Condition Assessment Score
Passes 6 or 7 criteria including passing essential criterion 1	Good (3)
Passes 4 or 5 of 7 criteria; OR Passes 4 or 5 of 7 criteria including passing essential criterion 1	Moderate (3)





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Passes 0, 1, 2 or 3 of 7 criteria: OR 4, 5 or 6 criteria but failing criterion 1	Poor (1)
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**D2: CONDITION ASSESSMENT SHEET: GRASSLAND HABITAT TYPE (MEDIUM, HIGH & VERY HIGH DISTINCTIVENESS)**

**Grassland - Other Neutral Grassland**

<b>BNG Condition Assessment Criterion Achieved (Y/N)</b>		<b>Tussock Grassland outside of Site Perimeter Fencing (5.584ha)</b>
1	The appearance and composition of the vegetation closely matches characteristics of the specific grassland habitat type (see UKHab definition). sedges and indicator species for the specific grassland habitat type are very clearly and easily visible throughout the sward. NB - <b>This criterion is essential for achieving Moderate condition for non-acid grassland types only.</b>	Y
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.	Y
3	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	Y
4	Cover of bracken less than 20% and cover of scrub (including bramble) less than 5%.	Y
5	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981). Combined cover of species indicative of sub-optimal condition and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area.	Y
6	There are greater than 9 species per metre squared. NB - <b>This criterion is essential for achieving Good condition (non-acid grassland types only).</b>	N
<b>Condition</b>		<b>Moderate (5/6 – Fails Essential Criterion 6)</b>

<b>Condition Assessment Result</b>	<b>Condition Assessment Score</b>
Passes 5 or 6 criteria, including essential criteria 1 and 6	Good (3)
Passes 3 or 4 criteria, including essential criterion 1	Moderate (2)



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Passes 0, 1 or 2 of 6 criteria; OR Passes 3 or 4 criteria excluding criteria 1 and 6
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Poor (1)
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### D3: CONDITION ASSESSMENT SHEET: HEDGEROW HABITAT TYPE

#### Hedgerows

Attributes and functional groupings (A, B, C, D & E)		Criteria (the minimum requirements for 'favourable condition'	B2 (Enhanced)	B3 (Enhanced)	Native Species-Rich Hedgerow (New)	Native Species-Rich Hedgerow with Trees (New)
A1.	Height	>1.5 m average along length	N	Y	Y	Y
A2.	Width	>1.5 m average along length	Y	Y	Y	Y
B1.	Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length	Y	N	Y	Y
B2.	Gap - hedge canopy continuity	Gaps make up <10% of total length and No canopy gaps >5 m	Y	Y	Y	Y
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)	Y	Y	Y	Y
C2.	Undesirable perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	N	N	Y	Y
D1.	Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native and recently introduced species	Y	Y	Y	Y
D2.	Current damage	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	Y	Y	Y	Y
<b>Additional Group - Applicable to Hedgerows with Trees Only</b>						
E1	Tree Class	More than 1 age class, and at least 1 mature, ancient or veteran tree per 20-50m	N/A	N/A	N/A	N
E2	Tree Health	At least 95% of trees are in healthy condition	N/A	N/A	N/A	Y
<b>Condition</b>			<b>Good (6/8)</b>	<b>Good (6/8)</b>	<b>Good (8/8)</b>	<b>Good (9/10)</b>

Condition Categories for Hedgerows without Trees	
Maximum number of attributes that can fail to meet 'favourable condition' criteria	Metric Score
No more than 2 failures in total; AND No more than 1 in any functional group	3
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 & C1 = Moderate condition)	2



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
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<b>Condition Categories for Hedgerows with Trees</b>	
<b>Maximum number of attributes that can fail to meet 'favourable condition' criteria</b>	<b>Metric Score</b>
No more than 2 failures in total; AND No more than 1 in any functional group	3
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 & C1 = Moderate condition)	2
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

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