Proposed Solar PV Development

Byers Gill Solar
EN010139

6.4.6.6 Environmental Statement Appendix 6.6 Biodiversity Net Gain Assessment

Planning Act 2008

APFP Regulation 5(2)(q)

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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1. Introduction

1.1 Purpose of Document

1.1.1 This document has been prepared by RSK Biocensus, on behalf of RWE (the Applicant), to present the results of a Biodiversity Net Gain (BNG) assessment for the proposed construction, operation and decommissioning of Byers Gill Solar (the Proposed Development). The proposals for the Proposed Development, including proposed mitigation and enhancement measures, are depicted in the Environmental Masterplan (Document Reference 2.5).

1.1.2 The document provides:

- a detailed methodology, including assumptions, for undertaking the BNG assessment;
- the baseline biodiversity value of habitats within the Order Limits prior to construction;
- the likely biodiversity value of habitats within the Order Limits post-development based on the current design information; and
- the relative biodiversity change of habitats within the Order Limits after construction compared with before construction, determining whether the Proposed Development has achieved a 10% net gain in biodiversity.

1.2 Landscape context

1.2.1 The majority of the Proposed Development is located within the administrative boundary of Darlington Borough Council, with a section of the cable route situated within the administrative boundary of Stockton-on-Tees Council. A very small section of the Order Limits is within the administrative boundary of Durham County Council.

1.2.2 The Order Limits comprises numerous land parcels north-east of Darlington (Ordnance Survey Grid reference: NZ 35750 21286) as shown in ES Figure 1.1 Location Plan (Document Reference 6.3.1.1). The Order Limits covers an area of approximately 490 hectares (ha) and is dominated by agricultural land and hedgerows with some areas of broadleaved woodland. The cable route runs along minor road networks (often lined by hedgerows) and rural residential areas.

1.2.3 The Proposed Development is situated in a largely rural context, surrounded by a network of arable fields and pasture interconnected by hedgerows, woodlands, ditches and small streams. The village of Brafferton is situated to the west, the villages of Great Stainton and Old Stillington are situated to the north, the village of Whitton is situated to the north-east, the village of Bishopton is situated to the south-east and the village of Little Stainton is situated to the south.

1.3 The Proposed Development

1.3.1 The Proposed Development consists of a solar farm capable of generating over 50MW Alternating Current (AC) of electricity with co-located Battery Energy Storage Systems (BESS), located between Darlington and Stockton-on-Tees in north-east England. The Proposed Development is approximately 490 ha and comprises six solar photovoltaic (PV) panel areas (Panel Areas A-F). The solar PV panels would be mounted on a metal frame in groups, fixed in position aligned in East-West rows with panels facing south. An on-site substation would be located within Panel Area C.

1.3.2 The Proposed Development includes up to 32.5km of 33kilovolt (kV) underground cabling between the Panel Areas and the on-site substation, as well as approximately 10km of 132kV underground cable to connect the Proposed Development to the grid connection at the existing Norton substation (located to the north-west of Stockton-on-Tees) with both on-road and off-road options. A range of supporting infrastructure is required for the Proposed Development, comprising BESS; transformers and inverters for managing the electricity produced; storage containers to hold this equipment; and security measures such as fencing, CCTV and lighting. The Proposed Development includes environmental mitigation and enhancement measures to avoid or reduce adverse impacts on the surrounding environment and nearby communities.

1.4 Policy context

1.4.1 The primary aims of the Biodiversity Net Gain process are for developments to secure a measurable improvement in habitat for biodiversity, to minimise biodiversity losses and to help to restore ecological networks whilst streamlining development processes. The below legislation and policy provide the context behind the need to achieve BNG.

The Environment Act

1.4.2 The Environment Act 2021 mandates a statutory requirement for developments to deliver a minimum of 10% BNG. It is expected that this will become mandatory for Nationally Significant Infrastructure Project (NSIPs), such as the Proposed Development, in 2025.

National Policy Statements

1.4.3 The requirements of the Environment Act 2021 in relation to BNG are reflected in the latest drafts of the revised National Policy Statements (NPS) for energy, which were published in November 2023. Section 4.6 Environmental and Biodiversity Net Gain of the Overarching NPS for Energy (EN-1) requires that applicants seek opportunities for delivering net gain and calculate and report the planned BNG outcomes within the DCO application using the most current version of the Defra biodiversity metric. The revised NPS are expected to become designated policy imminently, replacing the 2011 suite of energy NPS which predate the Environment Act 2021 and the introduction of mandatory BNG.

National Planning Policy Framework

1.4.4 The National Planning Policy Framework (NPPF) [1] sets out the Government's planning policies for England and how these are expected to be applied by Local Authorities within their Local Development Frameworks (LDF). The revised National Planning Policy Framework was published on 5 September 2023.

1.4.5 Chapter 15 of the NPPF 'Conserving and enhancing the natural environment' sets out the requirements to consider BNG in planning decisions. Paragraph 170 states: "*Planning policies and decisions should contribute to and enhance the natural and local environment by: … d) minimising impacts and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*"

Local Plans

1.4.6 The Darlington Borough Council Local Plan [2] contains Policy ENV 8 – *Assessing a Development's Impact on Biodiversity* which states:

"Development proposals will be required to provide net gains in biodiversity (prevailing in national policy) and demonstrate achievement of this using the Defra Biodiversity Metric."

1.4.7 The Stockton-on-Tees Borough Council Local Plan [3] contains Policy ENV 5 – *Preserve, Protect and Enhance Ecological Networks, Biodiversity and Geodiversity* which states:

"Development proposals should seek to achieve net gains in biodiversity wherever possible."

1.4.8 The County Durham Plan [4] contains Policy 41 – *Biodiversity and Geodiversity* which states:

"Proposals for new development will be expected to minimise impacts on biodiversity by retaining and enhancing existing biodiversity assets and features and providing net gains for biodiversity including by establishing coherent ecological networks. Measures should be appropriate, consistent with the biodiversity of the site and contribute to the resilience and coherence of local ecological networks."

2. Methods

2.1 Introduction

2.1.1 This assessment has been carried out as a desk-based exercise. The results of UK Habitat Classification (UKHab) surveys carried out within the Order Limits by RSK Biocensus in 2022 and 2023 has been used to determine the biodiversity value of habitats within the Order Limits before construction. These are detailed in ES Appendix 6.1 Preliminary Ecological Appraisal Report (Document Reference 6.4.6.1) The Environmental Masterplan (Document Reference 2.5) and ES Appendix 2.14 Landscape and Ecology Management Plan (LEMP) (Document Reference 6.4.2.14) submitted with the DCO application have been used to determine the biodiversity value of habitats within the Order Limits after construction. The delivery of the proposals detailed in the Environmental Masterplan and the LEMP would be secured through the DCO once granted, as set out in the draft DCO (Document Reference 3.1).

2.2 Biodiversity assessment methods

2.2.1 To calculate the change in biodiversity unit (BU) value as a result of the Proposed Development, this assessment uses methods set out by Defra in their latest Biodiversity Metric 4.0 (hereafter the 'Defra Metric') user guide (Natural England, 2023) [6].

2.2.2 The Defra Metric is designed to quantify losses and gains of biodiversity as a result of proposed development or land management to inform and improve planning, design, land management and decision-making. The Defra Metric uses habitats and BUs as a proxy to describe biodiversity. It uses three core measurements:

- Area of area habitats (e.g. woodland, grasslands, wetlands);
- Length of hedgerows (e.g. hedgerows and lines of trees)
- Length of watercourses (e.g. culverts, canals, wet ditches, rivers and streams).

2.2.3 Consequently, a site can have three different biodiversity unit values, which are assessed using the Defra Metric, but which cannot be summed together and traded between.

2.2.4 The area or length of a habitat is multiplied by several factors in the Defra Metric (called multipliers) that indicate its quality and value (distinctiveness, condition and strategic location), and this provides its BU value. This can be used for existing and future created/enhanced habitats.

2.2.5 In addition, for those habitats that are to be created or enhanced, the risk of failure is accounted for by applying multipliers for risk factors (i.e. difficulty, time to target condition and off-site risk).

2.2.6 A brief description of the different multipliers contained within the Defra Metric are detailed below.

Habitat distinctiveness

2.2.7 Habitats are classified using UKHab surveys (Butcher et al., 2023) [6].

2.2.8 The Defra Metric pre-assigns each habitat type to a distinctiveness band according to its distinguishing features, including its species richness, rarity (at local, regional, national and international scales) the extent to which the habitat is protected by designations and the degree to which a habitat supports species rarely found in other habitats.

Habitat condition

2.2.9 Habitat condition measures the varying quality of similar habitats against what is perceived to be their optimal state. Technical Annex 1 of the Defra Metric contains condition sheets for all habitats to which the metric can apply. The condition sheets contain a habitat description, contextual information to aid the assessment, and the assessment criteria. The criteria describe what components need to be present for a habitat to be in good, fairly good, moderate, fairly poor or poor condition.

Strategic significance

2.2.10 Strategic significance describes the local significance of the habitats based on location and the habitat type. It works at a landscape scale, allowing additional value to be added to habitats in 'priority' or 'biodiversity target' areas. This include statutory and non-statutory sites and other areas with biodiversity value or potential (including Local Nature Recovery Strategies (LNRSs), where these have been prepared), and this is mainly identified from local plans, strategies, policies and objectives.

Difficulty of creation and restoration

2.2.11 The risks associated with creating new, or enhancing existing, habitats are known as 'difficulty factors'; for example, where habitats can readily fail to establish owing to natural changes in local conditions, incorrect management or for unknown reasons. The Defra Metric contains default values for each habitat based on the average difficulty of creating or enhancing that specific habitat.

Temporal risk

2.2.12 The temporal risk multiplier represents the average time lag, measured in years, between the start of habitat creation or enhancement works and the target outcome. This is known known as 'time to target condition'. This multiplier is automatically applied by the Defra Metric and changes depending on data input.

2.2.13 The time to target condition can be advanced or delayed. This function can be used when habitats are created prior to development works starting or if the development

will last multiple years so enhancements may not be put in until several years after the initial loss. Advancing or delaying the time to target condition can also be used on sites where local conditions or bespoke enhancements may take more or less time to achieve target condition. In these situations, the adjustments to the time to target condition must be justified.

Spatial risk

2.2.14 Often it will not be possible to compensate adequately for loss of biodiversity within the site boundary, so off-site compensation is required. The spatial risk multiplier reflects the relationship between the location of on-site biodiversity loss and the location of off-site habitat compensation. It affects the number of biodiversity units provided to a project by penalising proposals where off-site habitat is located at distance from the impact site.

2.3 BNG good practice principles for development

2.3.1 The Defra Metric has been designed as a tool to help inform plans and decisions; however, when undertaking BNG assessments this must be undertaken in accordance with set principles outlined in the user guide (Natural England Joint Publication, 2023). These are outlined in Table 2-1 along with a full justification how each principle has been considered.

Table 2-1 Defra metric good practice principles and justification

Principle	Justification of how principle has been applied
Principle 1: This metric does not change existing biodiversity protections, statutory obligations, or policy requirements. The use of this metric does not override the ecological mitigation hierarchy and other requirements (such as consenting or licensing processes, for example woodlands).	Existing levels of protection afforded to protected species and habitats are not changed by use of this or any other metric. Statutory obligations will still need to be satisfied. The Environmental Statement details the presence of protected and/or notable species, sites and habitats, and assesses potential impacts and outlines suitable mitigation measures to address these.
Principle 2: This metric should be used in accordance with established good practice guidance and professional codes.	The mitigation hierarchy has been applied to the design of the Proposed Development. The area of permanent habitat loss has been kept to a minimum without comprising the development. The habitats that will be created and enhanced within the Order Limits will be appropriate, and of the correct distinctiveness, to compensate for the habitats that will be impacted.
Principle 3: This metric is not a complex or comprehensive ecological model and is not a substitute for expert ecological advice.	RSK Biocensus acknowledges that the Defra Metric has been kept deliberately simple to be of practical use. The calculations have been undertaken by specialists and input is underpinned by robust baseline evidence and ecological knowledge and experience.
Principle 4: Biodiversity units are a proxy for biodiversity and should be treated as relative values.	RSK Biocensus acknowledges that the Defra Metric is tool to be used as a means of assessing changes in biodiversity value (losses or gains) brought about by the proposed development and is a habitat based approach to

Principle	Justification of how principle has been applied
	determining a proxy biodiversity value within the Order Limits and the output does not represent absolute values.
Principle 5: This metric is designed to inform decisions in conjunction with locally relevant evidence, expert input, or guidance.	Impacts to protected and notable species and habitats have been fully assessed as part of the EIA undertaken for the Proposed Development.
Principle 6: Habitat interventions need to be realistic and deliverable within a relevant project timeframe.	The habitats chosen for creation and enhancement have been done so based on the existing on-site conditions and local context, not purely to achieve the greatest possible BNG result using the Defra Metric. The post-development habitats will be created, enhanced. managed and maintained in accordance with the LEMP which will ensure the habitats achieve their target condition.
Principle 7: Created and enhanced habitats should seek, where practical and reasonable, to be local to any impact and deliver strategically important outcomes for nature conservation.	The created and enhanced habitats to achieve the BNG requirements are all being delivered within the Order Limits and are therefore local to the impacts. The landscape plans has been designed to be in keeping with the local character of the area whilst also being in accordance with the Lawton principles of 'bigger, better, more and joined up'. [7]
Principle 8: The metric does not enforce a minimum habitat size ratio for compensation of losses. However, proposals should aim to: ▪ maintain habitat extent (supporting more, bigger, better and more joined up ecological networks) and ▪ ensure that proposed or retained habitat parcels are of sufficient size for ecological function	Where possible, in the first instance the same habitat type of better condition will be created. If conditions do not allow for the same habitat type to be created, consideration will be given to the creation of different habitats of the same broad type or higher and of better condition. A buffer of habitat will be either retained, created or enhanced around the perimeter of the Proposed Development which will continue to provide an ecological corridor to the wider landscape.

2.4 Assumptions and limitations

2.4.1 This BNG assessment is based on the landscape plans provided (Figure 3) and therefore provide an indicative BNG assessment based on the latest design. If the design developments and this plan changes, this BNG assessment will need to be updated by a suitably qualified and experienced ecologist.

2.4.2 The landscape plans used to determine the habitats that will be present after construction uses landscape typologies as opposed to UKHab typologies which are required in the Defra Metric. A suitable qualified and experience ecologist has translated the landscape typologies into the best fitting UKHab typologies for the calculations to be run through the Defra Metric.

2.4.3 This BNG assessment uses the UKHab survey results that were completed in 2022 and 2023 within the Order Limits as part of the Preliminary Ecological Appraisal (Document Reference 6.4.6.1). If the onsite conditions change between when these

surveys were done and the construction activities begin, further ecological surveys may be required which could result in the need to update this BNG assessment.

2.4.4 There are no anticipated impacts to watercourses as a result of the Proposed Development. The Proposed Development has been designed to include appropriate exclusion zones from all watercourses to ensure no riparian encroachment. As such there are no losses and gains of watercourse units in this assessment.

2.4.5 It was not possible to complete habitat condition assessments for all existing habitats within the Order Limits during the field surveys. Habitat condition assessments for each land parcel was completed following the field surveys by the suitably qualified and experience ecologist who completed the field surveys using professional judgement.

2.4.6 The LEMP (Document Reference 6.4.2.14) captures that seven individual trees will be lost as a result of the Proposed Development. These trees have been entered into the Defra Metric as medium sized, moderate condition trees.

2.4.7 To assign the Strategic Significance multiplier when undertaking the BNG calculations, a review of the local authorities biodiversity policies and strategies was undertaken. Using Darlington's Green Infrastructure Strategy [8] and Tees Valley Nature Partnership's list of priority habitats and species [9], the following habitats were formally identified in the local strategies and have therefore been assigned high strategic significance in the BNG calculations:

- Arable field margins
- Meadows
- Hedgerows
- New traditional orchards
- Parks and recreation grounds
- School grounds

3. Biodiversity Assessment

3.1 Overview

3.1.1 To calculate the overall biodiversity accounting position for the Proposed Development, the BU values for the existing habitats (pre-development) and the proposed newly created/enhanced habitats (post-development) need calculating.

3.1.2 The full results of this assessment are presented in Appendix A1 and Appendix A2.

3.2 Pre-development

3.2.1 The UKHab map (ES Figure 6.2, Document Reference 6.3.6.2) has been used to identify all the habitats present within the Order Limits before construction.

Area habitats

3.2.2 The total area of each area habitat recorded within the Order Limits before construction, the condition of each habitat (i.e. its current status) and a summary of the BUs this represents, are all presented in Table 3-1.

Table 3-1 Baseline biodiversity unit values for each area habitat recorded within Order Limits before construction

Habitat type (UKHab classification)	Baseline habitat condition	Area (ha)	Baseline biodiversity unit value (BU)
Non-cereal crops	Condition Assessment N/A	90.85	181.70
Arable field margins tussocky	Condition Assessment N/A	2.33	10.72
Temporary grass and clover leys	Condition Assessment N/A	19.11	38.22
Cereal crops	Condition Assessment N/A	252.12	504.24
Modified grassland	Good	4.47	26.82
Modified grassland	Moderate	12.13	48.52
Modified grassland	Poor	62.41	124.82
Other neutral grassland	Moderate	5.32	48.94
Other neutral grassland	Poor	4.00	18.40
Blackthorn scrub	Poor	0.05	0.20
Bramble scrub	Condition Assessment N/A	0.15	0.60

Habitat type (UKHab classification)	Baseline habitat condition	Area (ha)	Baseline biodiversity unit value (BU)
Hawthorn scrub	Moderate	0.15	1.20
Hawthorn scrub	Poor	0.82	3.28
Mixed scrub	Good	0.59	7.08
Mixed scrub	Moderate	1.25	10.00
Mixed scrub	Poor	1.29	5.16
Ponds (non-priority habitat)	Moderate	0.02	0.16
Ponds (non-priority habitat)	Poor	0.01	0.04
Developed land; sealed surface	N/A - Other	26.66	0.00
Artificial unvegetated, unsealed surface	N/A - Other	0.65	0.00
Vacant or derelict land	Good	0.02	0.12
Wet woodland	Moderate	0.5	6.90
Lowland mixed deciduous woodland	Good	0.12	2.48
Lowland mixed deciduous woodland	Moderate	3.14	43.33
Lowland mixed deciduous woodland	Poor	0.85	5.87
Other woodland; broadleaved	Moderate	0.54	4.32
Other woodland; broadleaved	Poor	0.26	1.04
Rural tree	Moderate	0.22	1.78
Rural tree	Poor	0.08	0.31
Total	**Area with individual trees**	**490.11**	**1096.26**
	Area without individual trees	**489.81**	

3.2.3 The total area of each existing area habitat that will be lost, retained or enhanced within the Order Limits and a summary of the BUs this represents, are all presented in Table 3-2.

Table 3-2 Extent of baseline area habitats being lost, retained and enhanced within Order Limits along with their associated biodiversity unit values

Habitat type	Baseline habitat condition	Area lost (ha)	Arearetained (ha)	Area enhanced (ha)	Forecast biodiversity units (BU) lost	Forecast biodiversity units (BU) retained	Baseline biodiversity units (BU) enhanced
Non-cereal crops	Condition Assessment N/A	78.73	12.12	0.00	157.46	24.24	0.00
Arable field margins tussocky	Condition Assessment N/A	2.31	0.02	0.00	10.63	0.09	0.00
Temporary grass and clover leys	Condition Assessment N/A	9.51	9.6	0.00	19.02	19.20	0.00
Cereal crops	Condition Assessment N/A	232.73	19.39	0.00	465.46	38.78	0.00
Modified grassland	Good	3.83	0.64	0.00	22.98	3.84	0.00
Modified grassland	Moderate	10.02	2.11	0.00	40.08	8.44	0.00
Modified grassland	Poor	49.24	13.17	0.00	98.48	26.34	0.00
Other neutral grassland	Moderate	2.68	2.64	0.00	24.66	24.29	0.00
Other neutral grassland	Poor	1.77	2.23	0.00	8.14	10.26	0.00
Blackthorn scrub	Poor	0.00	0.05	0.00	0.00	0.20	0.00
Bramble scrub	Condition Assessment N/A	0.00	0.15	0.00	0.00	0.60	0.00
Hawthorn scrub	Moderate	0.00	0.15	0.00	0.00	1.20	0.00
Hawthorn scrub	Poor	0.02	0.8	0.00	0.08	3.20	0.00
Mixed scrub	Good	0.00	0.59	0.00	0.00	7.08	0.00
Mixed scrub	Moderate	0.01	1.24	0.00	0.08	9.92	0.00
Mixed scrub	Poor	0.00	1.29	0.00	0.00	5.16	0.00
Ponds (non-priority habitat)	Moderate	0.00	0.02	0.00	0.00	0.16	0.00

Habitat type	Baseline habitat condition	Area lost (ha)	Arearetained (ha)	Area enhanced (ha)	Forecast biodiversity units (BU) lost	Forecast biodiversity units (BU) retained	Baseline biodiversity units (BU) enhanced
Ponds (non-priority habitat)	Poor	0.00	0.01	0.00	0.00	0.04	0.00
Developed land; sealed surface	N/A - Other	0.53	26.13	0.00	0.00	0.00	0.00
Artificial unvegetated, unsealed surface	N/A - Other	0.50	0.15	0.00	0.00	0.00	0.00
Vacant or derelict land	Good	0.00	0.02	0.00	0.00	0.12	0.00
Wet woodland	Moderate	0.00	0.5	0.00	0.00	6.90	0.00
Lowland mixed deciduous woodland	Good	0.00	0.12	0.00	0.00	2.48	0.00
Lowland mixed deciduous woodland	Moderate	0.00	3.14	0.00	0.00	43.33	0.00
Lowland mixed deciduous woodland	Poor	0.00	0.85	0.00	0.00	5.87	0.00
Other woodland; broadleaved	Moderate	0.00	0.54	0.00	0.00	4.32	0.00
Other woodland; broadleaved	Poor	0.00	0.26	0.00	0.00	1.04	0.00
Rural tree	Moderate	0.22	0.00	0.00	1.78	0.00	0.00
Rural tree	Poor	0.08	0.00	0.00	0.31	0.00	0.00
Total		**392.18**	**97.93**	**0.00**	**849.16**	**247.10**	**0.00**

Hedgerows

3.2.4 The total length of each hedgerow recorded within the Order Limits before construction, the condition of each habitat (i.e. its current status) and a summary of the BUs this represents, are all presented in Table 3-3.

Table 3-3 Baseline biodiversity unit values for each hedgerow recorded within Order Limits before construction

Habitat type (UKHab classification)	Baseline habitat condition	Length (km)	Baseline biodiversity unit value (BU)
Native hedgerow	Good	3.03	20.91
Native hedgerow	Moderate	19.23	88.46
Native hedgerow	Poor	28.89	66.45
Non-native and ornamental hedgerow	Poor	1.81	1.81
Line of trees	Moderate	3.21	14.77
Line of trees	Poor	1.46	3.36
Total		**57.63**	**195.75**

3.2.5 The total length of each existing hedgerow that will lost, retained or enhanced within the Order Limits and a summary of the BUs this represents, are all presented in Table 3-4.

Table 3-4 Extent of baseline hedgerows being lost, retained and enhanced within Order Limits along with their associated biodiversity unit values

Habitat type	Baseline habitat condition	Length lost (km)	Length retained (km)	Length enhanced (km)	Baseline biodiversity units (BU) lost	Baseline biodiversity units (BU) retained	Baseline biodiversity units (BU) enhanced
Native hedgerow	Good	0.01	3.02	0.00	0.07	20.84	0.00
Native hedgerow	Moderate	0.05	19.18	0.00	0.23	88.23	0.00
Native hedgerow	Poor	0.06	13.7	34.80	0.14	31.51	31.51
Non-native and ornamental hedgerow	Poor	0.01	1.8	0.00	0.01	1.80	0.00
Line of trees	Moderate	0.01	3.2	0.00	0.05	14.72	0.00
Line of trees	Poor	0.01	1.45	0.00	0.02	3.34	0.00
Total		**0.15**	**42.35**	**34.80**	**0.52**	**160.43**	**34.90**

Watercourses

3.2.6 There are no existing watercourses within the Order Limits and therefore pre-development calculations for watercourses have not been included in this assessment.

3.3 Post-development

3.3.1 The Environmental Masterplan (Document Reference 2.5) has been used to identify all the habitats that will be created, enhanced or retained within the Order Limits after construction. There are no proposed biodiversity offsets off-site for the Proposed Development.

Area habitats

3.3.2 A breakdown of areas for each proposed area habitat created or enhanced post-development within Order Limits and a summary of the BUs this represents are presented in Table 3-5.

Table 3-5 Post-development area habitat biodiversity unit values within the Order Limits based on the current design

Habitat type	Forecast habitat condition	Forecast area (ha)	Forecast biodiversity unit value (BU)
Arable field margins game bird mix	Condition Assessment N/A	56.04	248.76
Arable field margins tussocky	Condition Assessment N/A	56.04	248.76
Other neutral grassland	Moderate	56.04	431.44
Temporary grass and clover leys	Condition Assessment N/A	82.48	183.06
Other neutral grassland	Poor	82.48	353.31
Arable field margins game bird mix	Condition Assessment N/A	23.18	102.90
Other neutral grassland	Good	22.53	217.73
Mixed scrub	Moderate	0.77	5.15
Other woodland; broadleaved	Moderate	1.87	8.77
Traditional orchards	Poor	1.7	8.54
Vegetated garden	Condition Assessment N/A	0.25	0.48
Rural tree	Poor	0.765	3.06

Habitat type	Forecast habitat condition	Forecast area (ha)	Forecast biodiversity unit value (BU)
Developed land; sealed surface	N/A - Other	8.5	0.00
Total		**391.88**	**1811.97**

3.3.3 A breakdown of the total areas and BU values of retained area habitats within Order Limits are detailed in Table 3-2.

3.3.4 The post-development biodiversity accounting calculations for area habitats have been undertaken using the following assumptions based off the Environmental Masterplan (Document Reference 2.5) and the Landscape and Ecology Management Plan (Document Reference 6.4.2.14):

- The PV Areas (enclosed by a security fence) will be sown with either a seed mix of wildflowers or a legume rich herbal ley, 50% of individuals fields being allocated to one or other treatment. A low maintenance grass rich sward will be under the PV panels and will establish a low maintenance grassland. Based on the seed mix, the on-site conditions and the management prescriptions, the low maintenance grass rich sward under the PV panels has been entered into the Defra Metric as Other neutral grassland in poor condition. Based on the seed mix, the on-site conditions and the management prescriptions, the legume rich herbal ley around the PV panels has been entered into the Defra Metric as Temporary grass and clover leys.
- The Biodiversity Enhancement/ Wildflower Meadow area will be seeded with a wildflower seed mix. Based on the seed mix, the on-site conditions and the management prescriptions the Biodiversity Enhancement / Wildflower Meadow area has been entered into the Defra Metric as Other neutral grassland in good condition.
- The Tree Planting areas will be planted with native tree and scrub planting. Based on the species that will be planted, the on-site conditions and the management prescriptions, the Tree Planting areas have been entered into the Defra Metric as Other woodland; broadleaved in moderate condition.
- The Amenity Recreation Areas will mainly comprise a community orchard/arboretum community with a small sensory garden/forest school area for the local school. Based on the planting proposals, the on-site conditions and the management prescriptions, the Amenity Recreation Areas have been entered into the Defra Metric as Traditional Orchard in Poor condition with a small area of Vegetated garden respectively.
- Retained Agricultural Land will continue to be managed as it currently is and therefore will not be subject to any changes in habitat type or habitat condition.
- The Planting and Seed Areas outside the PV Areas will be sown as follows: a third will be sown with a bird mix, a third will be sown with a tussocky grassland mix and a third will be sown with a wildflower mix. Based on the seed mix, the on-site conditions and the management prescriptions, the Planting and Seed Areas has

been split into thirds and entered into the Defra Metric as Arable field margins game bird mix, Arable field margins tussocky grassland and Other neutral grassland in moderate condition respectively.

- One large, mature ash tree in moderate condition is being felled to leave a c.5 m monolith to prevent a fall risk onto the proposed PV panels. This ash tree will be allowed to resprout from the stump and is therefore retained. To account for this, a large tree in moderate condition has entered into the Defra Metric as lost and a new large tree in poor condition has been entered into the creation tab, with the advance temporal multiplier set to 30+ years. This is in accordance with the Defra Metric user guide for how to deal with a habitat that is being retained but degraded.

3.3.5 The planting schedules and seed mixes for each newly created / enhanced area habitat are detailed within the LEMP (Document Reference 6.4.2.14).

3.3.6 Condition assessment criteria for newly created and enhanced area habitats are provided in Appendix A2.

3.3.7 There is a known issue with a formula in the Defra Metric spreadsheet causing the Defra Metric to state *'Error – Area created does not equal area lost'*. This happens when individual trees are included in the calculations. The error message is incorrect as the total area created does equal the area lost when excluding individual trees.

Hedgerows

3.3.8 A breakdown of lengths for each proposed hedgerow created or enhanced post-development within Order Limits and a summary of the BUs this represents are presented in Table 3-6.

Table 3-6 Post-development hedgerow biodiversity unit values within the Order Limits based on the current design

Habitat type	Forecast habitat condition	Habitat intervention	Forecast length (km)	Forecast biodiversity unit value (BU)
Species-rich native hedgerow	Moderate	Creation	11.73	90.31
Species-rich native hedgerow with trees	Moderate	Enhancement	28.89	156.64
Total			**40.62**	**246.95**

3.3.9 The total lengths and BU values of retained hedgerows within the Order Limits is detailed in Table 3-4.

3.3.10 The post-development biodiversity accounting calculations for hedgerows have been undertaken using the following assumptions based off the Environmental Masterplan (Document Reference 2.5) and the Landscape and Ecology Management Plan (Document Reference 6.4.2.14):

- The retained hedgerows will be subject to relaxed management and planting with native trees and shrubs to change them from Native hedgerows to Species-rich hedgerows with trees with an increased condition score. Defunct/ gappy retained hedgerows will be reinforced with planting and subject to relaxed management to also develop Species-rich hedgerows with trees.
- New hedgerows will be planted with native stock and managed in according with the retained hedgerows. Based on the species that will be planted, the onsite conditions and the management prescriptions, these have been entered into the Defra Metric as Species-rich native hedgerow in moderate condition.

3.3.11 The planting schedules and seed mixes for each newly created / enhanced hedgerow are detailed within the LEMP (Document Reference 6.4.2.14).

3.3.12 Condition assessment criteria for newly created and enhanced hedgerows are provided in Appendix A2.

Watercourses

3.3.13 There is no proposed creation or enhancement of watercourses within the Order Limits and therefore post-development calculations for watercourses are not included in this assessment.

3.4 Change in biodiversity value

3.4.1 The habitat creation and enhancement proposals as per the Environmental Masterplan (Document Reference 2.5) is anticipated to result in a net increase of both area habitat and hedgerow BUs and no change to watercourses. This is summarised in Table 3-7.

Table 3-7 Change in biodiversity units as a result of the Proposed Development

Post-development area habitat biodiversity units (BU)		Baseline area habitat area biodiversity units (BU)		Change in area habitat biodiversity units (BU)
2059.07	-	1096.26	=	962.81
Post-development hedgerow biodiversity units (BU)		**Baseline hedgerow biodiversity units (BU)**		**Change in hedgerow biodiversity units (BU)**
407.38	-	195.75	=	211.64
Post-development watercourse biodiversity units (BU)		**Baseline watercourse biodiversity units (BU)**		**Change in watercourse biodiversity units (BU)**
0.00	-	0.00	=	0.00

3.4.2 The change in biodiversity value for the Proposed Development, as set out in Table 3-7, indicates that post-development:

- there would be an increase of 962.81 area habitat BUs which equates to an **87.83% net gain in area habitats**. The trading rules associated with the Defra Metric have also been met for area habitats as a result of the Proposed Development.
- there would also be an increase of 211.64 hedgerow BUs which equates to an **108.12% net gain in hedgerows**. The trading rules associated with the Defra Metric have also been met for hedgerows as a result of the Proposed Development.
- there would be no changes to watercourse BUs.

4. Evaluation and conclusion

4.1 Biodiversity Net Gain

4.1.1 The Proposed Development will predominately lead to modification of Cereal crops, Non-cereal crops and Modified grassland (low distinctiveness habitats) with small losses of other habitats including Hedgerows, Arable field margins, Temporary grass and clover leys, Other neutral grassland, Mixed scrub, Developed land; sealed surface and Artificial unvegetated, unsealed surface. However, to compensate and offset for these impacts the Proposed Development will result in the creation of Hedgerows, Arable field margins game bird mix, Modified grassland, Other neutral grassland, Mixed scrub, Other woodland; broadleaved and Temporary grass and clover leys. Retained hedgerows will also be enhanced through planting up gaps and improving their management. These measures will enhance habitat for foraging bird and bat species whilst ensuring retained open ground for ground nesting species such as Curlew.

4.1.2 Overall, the Proposed Development will result in a 87.83% net gain of in area habitat BUs and a 108.12% net gain of hedgerow BUs. The trading rules associated with the Defra Metric have been met for both area-habitats and hedgerows. There are no changes to watercourses.

4.1.3 The implementation of habitat creation and enhancement measures post-development are outlined in ES Appendix 2.14 Landscape and Ecology Management Plan (LEMP) (Document Reference 6.4.2.14) . The LEMP includes detailed drawings, management objectives and prescriptions and timetables, as well as definitions who is responsible for activities for the newly created or enhanced habitats within the Order Limits.

4.1.4 The LEMP details an adaptive management plan which will guide all habitat management within the Order Limits. The LEMP also includes necessary interventions should habitats fall short of their desired future condition. The implementation of the LEMP would be secured through the DCO once granted, as set out in the draft DCO (Document Reference 3.1).

4.1.5 Note – this BNG assessment does not include detailed habitat management proposals for areas of retained habitat or habitat to be created and enhanced as these are outlined in the LEMP.

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Appendices

Appendix A - BNG assessment

A.1 Pre-development calculations

Area habitats

Project Name: Byers Gill Solar Map Reference:
A-1 On-Site Habitat Baseline

Condense / Show Columns | Condense / Show Rows | Main Menu | Instructions

Area habitat summary	
Total Net Unit Change	963.81
Total Net % Change	87.83%
Trading Rules Satisfied	Yes ✓

	Existing area habitats			Distinctiveness	Condition	Strategic significance	Required Action to Meet Trading Rules	Ecological baseline	Retention category biodiversity				
Ref	Broad Habitat	Habitat Type	Area (hectares)	Distinctiveness	Condition	Strategic significance		Total habitat units	Area retained	Area enhanced	Baseline units retained	Baseline units enhanced	As habit
1	Cropland	Non-cereal crops	90.85	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	181.70	12.12		24.24	0.00	7
2	Cropland	Arable field margins tussocky	2.33	Medium	Condition Assessment N/A	Formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	10.72	0.02		0.09	0.00	2
3	Cropland	Temporary grass and clover leys	19.11	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	38.22	9.6		19.20	0.00	9
4	Cropland	Cereal crops	252.12	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	504.24	19.39		38.78	0.00	23
5	Grassland	Modified grassland	4.47	Low	Good	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	26.82	0.64		3.84	0.00	3
6	Grassland	Modified grassland	12.13	Low	Moderate	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	48.52	2.11		8.44	0.00	10
7	Grassland	Modified grassland	62.41	Low	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	124.82	13.17		26.34	0.00	45
8	Grassland	Other neutral grassland	5.33	Medium	Moderate	Formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	48.94	2.64		24.29	0.00	2
9	Grassland	Other neutral grassland	4	Medium	Poor	Formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	18.40	2.23		10.26	0.00	1
10	Heathland and shrub	Blackthorn scrub	0.05	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	0.20	0.05		0.20	0.00	0
11	Heathland and shrub	Bramble scrub	0.15	Medium	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	0.60	0.15		0.60	0.00	0
12	Heathland and shrub	Hawthorn scrub	0.15	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	1.20	0.15		1.20	0.00	0
13	Heathland and shrub	Hawthorn scrub	0.82	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	3.28	0.8		3.20	0.00	0
14	Heathland and shrub	Mixed scrub	0.59	Medium	Good	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	7.08	0.59		7.08	0.00	0
15	Heathland and shrub	Mixed scrub	1.25	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	10.00	1.24		9.92	0.00	0
16	Heathland and shrub	Mixed scrub	1.29	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	5.16	1.29		5.16	0.00	0
17	Lakes	Ponds (non-priority habitat)	0.02	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	0.16	0.02		0.16	0.00	0
18	Lakes	Ponds (non-priority habitat)	0.01	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	0.04	0.01		0.04	0.00	0
19	Urban	Developed land; sealed surface	26.66	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Compensation Not Required	0.00	26.13		0.00	0.00	0
20	Urban	Artificial unvegetated, unsealed surface	0.65	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Compensation Not Required	0.00	0.15		0.00	0.00	0
21	Urban	Vacant or derelict land	0.02	Low	Good	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	0.12	0.02		0.12	0.00	0
22	Woodland and forest	Wet woodland	0.5	High	Moderate	Formally identified in local strategy	Same habitat required =	6.90	0.5		6.90	0.00	0
23	Woodland and forest	Lowland mixed deciduous woodland	0.12	High	Good	Formally identified in local strategy	Same habitat required =	2.48	0.12		2.48	0.00	0
24	Woodland and forest	Lowland mixed deciduous woodland	3.14	High	Moderate	Formally identified in local strategy	Same habitat required =	43.33	3.14		43.33	0.00	0
25	Woodland and forest	Lowland mixed deciduous woodland	0.85	High	Poor	Formally identified in local strategy	Same habitat required =	5.87	0.85		5.87	0.00	0
26	Woodland and forest	Other woodland; broadleaved	0.54	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	4.32	0.54		4.32	0.00	0
27	Woodland and forest	Other woodland; broadleaved	0.26	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	1.04	0.26		1.04	0.00	0
28	Individual trees	Rural tree	0.223	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	1.78			0.00	0.00	0
29	Individual trees	Rural tree	0.0774	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Same broad habitat or a higher distinctiveness habitat required (≥)	0.31			0.00	0.00	0
30													
31													
32													
		Total habitat area	490.11					1096.26	97.93	0.00	247.10	0.00	39
		Site Area (Excluding area of Individual trees and Green walls)	489.81										

Total area lost (excluding area of Individual trees and Green walls) 39

Hedgerows

Project Name: Byers Gill Solar Map Reference:
B-1 On-Site Hedge Baseline

Condense / Show Columns | Condense / Show Rows | Main Menu | Instructions

Hedgerow summary	
Total Net Unit Change	211.64
Total Net % Change	108.12%
Trading Rules Satisfied	Yes ✓

	Existing hedgerow habitats			Distinctiveness	Condition	Strategic significance	Required Action to Meet Trading Rules	Ecological baseline	Retention category biodiversity			
Baseline ref	Hedge number	Hedgerow type	Length (km)	Distinctiveness	Condition	Strategic significance		Total hedgerow units	Length retained	Length enhanced	Units retained	Units enhanced
1		Native hedgerow	3.03	Low	Good	Formally identified in local strategy	Same distinctiveness band or better	20.91	3.02		20.84	0.00
2		Native hedgerow	19.23	Low	Moderate	Formally identified in local strategy	Same distinctiveness band or better	88.46	19.18		88.83	0.00
3		Native hedgerow	28.89	Low	Poor	Formally identified in local strategy	Same distinctiveness band or better	66.45	13.7	15.13	31.51	34.80
4		Non-native and ornamental hedgerow	1.81	V.Low	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	1.81	1.8		1.80	0.00
5		Line of trees	3.21	Low	Moderate	Formally identified in local strategy	Same distinctiveness band or better	14.77	3.2		14.72	0.00
6		Line of trees	1.46	Low	Poor	Formally identified in local strategy	Same distinctiveness band or better	3.36	1.45		3.34	0.00
7												
8												
9												
10												
11												
			57.63					195.75	42.35	15.13	160.43	34.80

A.2 Post-development calculations

Area habitat creation

Project Name: Byers Gill Solar Map Reference:
A-2 On-Site Habitat Creation

Condense / Show Columns | Condense / Show Rows | Main Menu | Instructions

Area habitat summary	
Total Net Unit Change	962.81
Total Net % Change	87.83%
Trading Rules Satisfied	Yes ✓
Area Check	Error - Area created does not equal area lo

Post development/ post intervention habitats

Broad Habitat	Proposed habitat	Area (hectares)	Distinctiveness	Condition	Strategic significance	Temporal multiplier	Difficulty	Habitat units delivered	Comments
			Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final difficulty of creation		User comments
Cropland	Arable field margins game bird mix	56.04	Medium	Condition Assessment N/A	Formally identified in local strategy	Standard time to target condition applied	Low	248.76	Planting and seed area: 1/3 of grassland areas seeded with a bird mix (CS GS4 mix)
Cropland	Arable field margins tussocky	56.04	Medium	Condition Assessment N/A	Formally identified in local strategy	Standard time to target condition applied	Low	248.76	Planting and seed area: 1/3 of grassland areas seeded with a tussocky grassland mix (CS AB9 mix)
Grassland	Other neutral grassland	56.04	Medium	Moderate	Formally identified in local strategy	Standard time to target condition applied	Low	431.44	Planting and seed area: 1/3 of grassland areas seeded with a wildflower mix (CS AB9 mix)
Cropland	Temporary grass and clover leys	82.48	Low	Condition Assessment N/A	Formally identified in local strategy	Standard time to target condition applied	Low	183.06	PV Areas: 50% as legume rich herbal ley around/between PV panels
Grassland	Other neutral grassland	82.48	Medium	Poor	Formally identified in local strategy	Standard time to target condition applied	Low	353.31	PV Areas: 50% as GNG in poor condition under PV panels
Cropland	Arable field margins game bird mix	83.18	Medium	Condition Assessment N/A	Formally identified in local strategy	Standard time to target condition applied	Low	102.90	Field for bird mitigation
Grassland	Other neutral grassland	22.53	Medium	Good	Formally identified in local strategy	Standard time to target condition applied	Low	217.73	Biodiversity Enhancement / Wildflower Meadow
Heathland and shrub	Mixed scrub	0.77	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	Low	5.15	Scrub planting
Woodland and forest	Other woodland; broadleaved	1.87	Medium	Moderate	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	Low	8.77	Tree Planting area (mix of native trees and scrub)
Grassland	Traditional orchards	1.7	High	Poor	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	Low	8.54	Amenity Recreation Areas (community orchard/arboretum)
Urban	Vegetated garden	0.25	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	Low	0.48	Amenity Recreation Areas (sensory garden/forest school)
Individual trees	Rural tree	0.765	Medium	Poor	Area/compensation not in local strategy/ no local strategy	Check details - Is there evidence that habitat has reached target condition? ⚠	Low	3.06	Existing large tree that will be cut back down graded to poor condition
Urban	Developed land; sealed surface	8.5	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	Medium	0.00	Access tracks and other areas of hardstanding
	Total habitat area	392.65						1811.97	
	Site Area (Excluding area of Individual trees and Green walls)	391.88							

Hedgerow creation

Project Name: Byers Gill Solar Map Reference:
B-2 On-Site Hedge Creation

Condense / Show Columns | Condense / Show Rows | Main Menu | Instructions

Hedgerow summary	
Total Net Unit Change	109.88
Total Net % Change	56.13%
Trading Rules Satisfied	Yes ✓

		Proposed habitats		Distinctiveness	Condition	Strategic significance	Temporal multiplier		Difficulty risk multipliers	Hedge units delivered
Baseline ref	New hedge number	Habitat type	Length (km)	Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition (years)	Final difficulty of creation	
1		Species-rich native hedgerow	11.73	Medium	Moderate	Formally identified in local strategy	Standard time to target condition applied	5	Low	90.31
2										
3										
4										
5										
6										
			11.73							90.31

Hedgerow enhancement

Project Name: Byers Gill Solar Map Reference:
B-3 On-Site Hedge Enhancement

Condense / Show Columns | Condense / Show Rows | Main Menu | Instructions

Baseline Habitats

Baseline ref	Baseline habitat	Length (km)	Baseline distinctiveness band	Baseline distinctiveness score	Baseline condition category	Baseline condition score	Baseline strategic significance category	Baseline strategic significance score	Baseline habitat units	Required Action to Meet Trading Rules	Proposed (Pre-populated but can be overridden)
3	Native hedgerow	28.89	Low	2	Poor	1	High strategic significance	1.15	66.447	Same distinctiveness band or better	Species-rich native hedgerow with trees

Post development/ post intervention habitats

Change in distinctiveness and condition		Length (km)	Distinctiveness		Condition		Strategic significance			Temporal multiplier			
Distinctiveness movement	Condition movement		Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier	Standard Time to target condition (years)	Habitat enhanced in advance (years)	Delay in starting habitat enhancement (years)	Standard or adjusted time to target condition
Low - High	Lower Distinctiveness Habitat - Moderate	15.13	High	6	Moderate	3	Formally identified in local strategy	High strategic significance	1.15	10	0	0	Standard time to target condition applied

Difficulty risk multipliers						Hedge units delivered	Comments		
Final time to target condition (years)	Final Time to target multiplier	Standard difficulty of enhancement	Applied difficulty multiplier	Final difficulty of enhancement	Difficulty multiplier applied		User comments	Consenting body comments	GIS reference number
10	0.700	Low	Standard difficulty applied	Low	1	156.64	Gapping up hedgerows and relaxation of intense management		

Summary results

Byers Gill Solar

Headline Results

Scroll down for final results ⚠

Return to results menu

On-site baseline	*Habitat units*	1096.26	
	Hedgerow units	195.75	
	Watercourse units	0.00	
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	2059.07	
	Hedgerow units	407.38	
	Watercourse units	0.00	
On-site net change (units & percentage)	*Habitat units*	962.81	87.83%
	Hedgerow units	211.64	108.12%
	Watercourse units	0.00	0.00%
Off-site baseline	*Habitat units*	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site net change (units & percentage)	*Habitat units*	0.00	0.00%
	Hedgerow units	0.00	0.00%
	Watercourse units	0.00	0.00%
Combined net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	962.81	
	Hedgerow units	211.64	
	Watercourse units	0.00	
Spatial risk multiplier (SRM) deductions	*Habitat units*	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	

FINAL RESULTS

Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	962.81
	Hedgerow units	211.64
	Watercourse units	0.00
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	87.83%
	Hedgerow units	108.12%
	Watercourse units	0.00%
Trading rules satisfied?	Yes ✓	

Unit Type	Target	Baseline Units	Units Required	Unit Deficit	
Habitat units	10.00%	1096.26	1205.88	0.00	Unit requirement met or surpassed ✓
Hedgerow units	10.00%	195.75	215.32	0.00	Unit requirement met or surpassed ✓
Watercourse units	10.00%	0.00	0.00	0.00	Unit requirement met or surpassed ✓

A.3 Post-development detailed condition assessments

A.3.1.1 This appendix presents the condition assessments sheets in the Biodiversity Metric 4.0 Technical Annex 1 and shows the criteria that the newly created and enhanced habitats within the Order Limits will need to pass in order to achieve the target conditions outlined in this BNG assessment. Cropland habitats (Arable field margins game bird mix, Arable field margins tussocky and Temporary grass and clover leys) and Vegetated gardens do not have condition assessments as per the Biodiversity Metric 4.0 Technical Annex 1.

Grassland – Other neutral grassland (medium distinctiveness)

UKHAB classification	Grassland – Other neutral grassland
Distinctiveness	Medium

Condition Assessment Criteria

A. The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description - the appearance and composition of the vegetation closely matches the characteristics of the specific grassland habitat type. Indicator species listed by UKHab for the specific grassland habitat type are consistently present.
Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.

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 insects, birds and small mammals to live and breed.

C. Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warren[1].

D. Cover of bracken *Pteridium aquilinum* is less than 20% and cover of scrub (including bramble *Rubus fruticosus agg.*) is less than 5%.

E. Combined cover of species indicative of sub-optimal condition[2] 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.
Note - If any invasive non-native plant species3 (as listed on Schedule 9 of WCA4) are present, this criterion is automatically failed.

Additional criterion for non-acid grassland

F. There are 10 or more vascular plant species per m^2 present, including forbs that are characteristic of the habitat type (species referenced in Footnote 2 and 4 cannot contribute towards this count).
Note - this criterion is essential for achieving Good condition for non-acid grassland types only.

Condition	
Good	Passes 5 or 6 criteria including essential criterion A and additional criterion F
Moderate	Passes 3 - 5 criteria including essential criterion A
Poor	Passes 2 or fewer criteria or passes 3 or 4 criteria excluding criterion A and F

Footnotes

Footnote 1 – For example, this could include small, scattered areas of bare ground allowing for plant colonisation, or localised patches not exceeding 5% cover.

Footnote 2 - Species indicative of sub-optimal condition for this habitat type include: creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare*, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius*, common nettle *Urtica dioica*, creeping buttercup *Ranunculus repens*, greater plantain *Plantago major*, white clover *Trifolium repens* and cow parsley *Anthriscus sylvestris*. There may be additional relevant species local to the region and or site.

Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, by applying professional judgement.

Footnote 4 – Wildlife and Countryside Act 1981 (as amended).

Grassland – Modified grassland (low distinctiveness)

UKHAB classification	Grassland – Modified grassland
Distinctiveness	Low

Condition Assessment Criteria

A. There are 6-8 vascular plant species per m^2 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.
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.
C. Some scattered scrub (including bramble *Rubus fruticosus* 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.**
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.
E. Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens)[2].
F. Cover of bracken Pteridium aquilinum is less than 20%.
G. There is an absence of invasive non-native plant species[3] (as listed on Schedule 9 of WCA[4]).

Condition	
Good	Passes 6 or 7 criteria including passing essential criterion A
Moderate	Passes 4 or 5 criteria including essential criterion A
Poor	Passes 3 or fewer criteria OR Passes 4 - 6 criteria (excluding criterion A)

Footnotes

Footnote 1 – Creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare*, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius*, common nettle *Urtica dioica*, creeping buttercup *Ranunculus repens*, greater plantain *Plantago major*, white clover *Trifolium repens* and cow parsley *Anthriscus sylvestris*.

Footnote 2 – For example, this could include small, scattered areas of bare ground allowing establishment of new species, or localised patches where not exceeding 10% cover.

Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement.

Footnote 4 – Wildlife and Countryside Act 1981 (as amended).

Heathland and scrub – Mixed scrub (medium distinctiveness)

UKHAB classification	Heathland and scrub – Mixed scrub
Distinctiveness	Medium

Condition Assessment Criteria

A. The scrub is a good representation of the habitat type it has been identified as, based on its UKHab description (where in its natural range). The appearance and composition of the vegetation closely matches the characteristics of the specific scrub type. At least 80% of scrub is native, and there are at least three native woody species[1], with no single species comprising more than 75% of the cover (except hazel *Corylus avellana*, common juniper *Juniperus communis*, sea buckthorn *Hippophae rhamnoides* or box *Buxus sempervirens*, which can be up to 100% cover).
B. Seedlings, saplings, young shrubs and mature (or ancient or veteran[2]) shrubs are all present.
C. There is an absence of invasive non-native plant species[3] (as listed on Schedule 9 of WCA[4]) and species indicative of sub-optimal condition make up less than 5% of ground cover.
D. The scrub has a well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat.
E. There are clearings, glades or rides present within the scrub, providing sheltered edges.

Condition	
Good	Passes 5 criteria
Moderate	Passes 3 or 4 criteria
Poor	Passes 2 or fewer criteria

Footnotes

Footnote 1 – Native woody species as defined and listed in the Hedgerow Survey Handbook: DEFRA (2007) Hedgerow Survey Handbook: A standard procedure for local surveys in the UK. 2nd ed. [online]. Defra, London. PB1195. Available from: Hedgerow Survey Handbook (publishing.service.gov.uk).

Footnote 2 - See gov.uk standing advice on ancient and veteran species. Available from: Keepers of time: ancient and native woodland and trees policy in England (publishing.service.gov.uk) and Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)

Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement.

Footnote 4 – Wildlife and Countryside Act 1981 (as amended).

Footnote 5 - Species indicative of sub-optimal condition for this habitat type may include: non-native conifers, tree-of-heaven *Alianthus altissima*, holm oak *Quercus ilex*, European turkey oak *Quercus cerris*, cherry laurel *Prunus laurocerasus*, snowberry *Symphoricarpos spp*., shallon *Gaultheria shallon*, American skunk cabbage *Lysichiton americanus*, buddleia *Buddleja spp*., cotoneaster *Cotoneaster spp*., Spanish bluebell *Hyacinthoides hispanica* and hybrid bluebells *Hyacinthoides x massartiana*. There may be additional relevant species local to the region and or site.

Woodland and forest – Other woodland; broadleaved (medium distinctiveness)

UKHAB classification	Woodland and forest – Other woodland; broadleaved
Distinctiveness	Medium

Condition Assessment Criteria

INDICATOR	***GOOD (3 POINTS)***	***MODERATE (2 POINTS)***	***POOR (1 POINT)***
A. Age distribution of trees	Three age-classes[1] present.	Two age-classes[1] present.	One age-class[1] present.

B. Wild, domestic and feral herbivore damage	No significant browsing damage evident in woodland[2].	Evidence of significant browsing pressure is present in 40% or less of whole woodland[2].	Evidence of significant browsing pressure is present in 40% or more of whole woodland[2].
C. Invasive plant species	No invasive species[3] present in woodland.	Rhododendron *Rhododendron ponticum* or cherry laurel *Prunus laurocerasus* not present, other invasive species[3] <10% cover.	Rhododendron or cherry laurel present, or other invasive species[3] >10% cover.
D. Number of native tree species	Five or more native tree or shrub species[4] found across woodland parcel.	Three to four native tree or shrub species[4] found across woodland parcel.	Two or less native tree or shrub species[4] across woodland parcel.
E. Cover of native tree and shrub species	>80% of canopy trees and >80% of understory shrubs are native[5].	50 - 80% of canopy trees and 50 - 80% of understory shrubs are native[5].	<50% of canopy trees and <50% of understory shrubs are native[5].
F. Open space within woodland	10 - 20% of woodland has areas of temporary open space[6]. Unless woodland is <10ha, in which case 0 - 20% temporary open space is permitted[7].	21 - 40% of woodland has areas of temporary open space[6].	<10% or >40% of woodland has areas of temporary open space[6]. But if woodland <10ha has <10% temporary open space, please see Good category[7].
G. Woodland regeneration	All three classes present in woodland8; trees 4 - 7 cm Diameter at Breast Height (DBH), saplings and seedlings or advanced coppice regrowth.	One or two classes only present in woodland[8].	No classes or coppice regrowth present in woodland[8].
H. Tree health	Tree mortality less than 10%, no pests or diseases and no crown dieback[9].	11% to 25% mortality and/or crown dieback or low-risk pest or disease present[9].	Greater than 25% tree mortality and or any high-risk pest or disease present[9].
I. Vegetation and ground flora	Recognisable NVC plant community[10] at ground layer present, strongly characterised by ancient woodland flora specialists.	Recognisable woodland NVC plant community[10] at ground layer present.	No recognisable woodland NVC plant community[10] at ground layer present.
J. Woodland vertical structure	Three or more storeys across all survey plots or a complex woodland[11].	Two storeys across all survey plots[11].	One or less storey across all survey plots[11].
K. Veteran trees	Two or more veteran trees[12] per hectare.	One veteran tree[12] per hectare.	No veteran trees[12] present in woodland.
L. Amount of deadwood	50% of all survey plots within the woodland	Between 25% and 50% of all survey plots	Less than 25% of all survey plots within the woodland

	parcel have deadwood, such as standing deadwood, large dead branches and or stems, branch stubs and stumps, or an abundance of small cavities[13].	within the woodland parcel have deadwood, such as standing deadwood, large dead branches and or stems, stubs and stumps, or an abundance of small cavities[13].	parcel have deadwood, such as standing deadwood, large dead branches and or stems, stubs and stumps, or an abundance of small cavities[13].
M. Woodland disturbance	No nutrient enrichment or damaged ground evident[14].	Less than 1 hectare in total of nutrient enrichment across woodland area and or less than 20% of woodland area has damaged ground[14].	More than 1 hectare of nutrient enrichment and or more than 20% of woodland area has damaged ground[14].

Condition	
Good	Total score >32 (33 to 39)
Moderate	Total score 26 to 32
Poor	Total score <26 (13 to 25)

Footnotes

Footnotes below refer to the EWBG woodland condition assessment methodology: EWBG (No date). Assessing your Woodland's Condition [online]. Available from: Woodland Wildlife Toolkit (sylva.org.uk). When applying this condition sheet, good practice would be to use the methodology associated with the EWBG toolkit.

Footnote 1 - See EWBG method INDICATOR 1 for more information. If tree species is not a birch Betula sp., cherry Prunus sp. or Sorbus sp.: 0 – 20 years (Young); 21 - 150 years (Intermediate); and >150 years (Old). For birch, cherry or Sorbus species; 0 - 20 years = Young; 21 - 60 years =Intermediate; >60 years = Old. A recognisable age-class should be a consistent recognisable layer across the woodland or stand being assessed. Presence of a few saplings would not indicate that the woodland has an 'age-class' of young trees.

Footnote 2 - See EWBG method INDICATOR 2 for more information. Browsing pressure is considered to be significant where >20% of vegetation visible within each survey plot shows damage from any type of browsing pressure listed.

Footnote 3 - See EWBG method INDICATOR 3 for more information. Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly.

Check for the presence of all plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), particularly the following invasive non-native species: American skunk *cabbage Lysichiton americanus*; Himalayan balsam *Impatiens glandulifera*; Japanese knotweed *Reynoutria japonica*; cherry laurel *Prunus laurocerasus*; shallon *Gaultheria shallon*; snowberry *Symphoricarpos albus*; variegated yellow archangel *Lamiastrum galeobdolon subsp. argentatum*; rhododendron *Rhododendron ponticum*; and tree-of-heaven *Alianthus altissima*.

Footnote 4 - See EWBG method INDICATOR 4 and Table 2 for more information. The number of different native tree or shrub species including young trees and shrubs. A list of commonly found native tree and shrub species is provided in Table 2. Not all species listed are native to all parts of the UK. Note a list of commonly found non-native tree species are also included and should be recorded if present.

Footnote 5 - See EWBG method INDICATOR 5 and for more information. The abundance of native tree species in upper (>5 m) and understorey (up to 5 m) layers including young trees and shrubs.

Footnote 6 - See EWBG method INDICATOR 6 for more information. Open space within woodland in this context is temporary open space in which trees can be expected to regenerate (for example, glades, rides, footpaths, areas of clear-fell). This differs from permanent open space where tree regeneration is not possible or desirable (for example, tarmac, buildings, rivers). Area is at least 10 m wide with less than 20% covered by shrubs or trees.

Footnote 7 – Given the increased ratio of edge habitat to woodland where the woodland is <10ha.

Footnote 8 - See EWBG method INDICATOR 8 for more information. This indicator measures regeneration potential of the woodland by considering three classes: seedlings; saplings; and young trees of 4-7 cm DBH. All three classes would fall in the 'young' category of the 'age distribution of trees' indicator, but the regeneration indicator gathers additional information by considering regeneration potential - if seedlings, saplings and young trees are all present that means natural regeneration processes are happening.

Footnote 9 - See EWBG method INDICATOR 9 for more information and Table 3 for a list of diseases and pests and their risk level.

Footnote 10 - See EWBG method INDICATOR 10 directing to NVC key for more information. The 'UKHab to NVC translation table' in the UK Habitat Classification resources may also be useful to assess this.

Footnote 11 – This criterion looks at structural diversity and is useful to understand in conjunction with the age of trees in a woodland. Vertical structure is defined as the number of canopy storeys present. Possible storey values are: 1) Upper; 2) Complex: recorded when the stand is composed of multiple tree heights that cannot easily be stratified into broad height bands (such as upper, middle or lower); 3) Middle; 4) Lower; and 5) Shrub layer. There might be no storeys where the woodland has been felled. See EWBG INDICATOR 11 for more information.

Footnote 12 - See EWBG method INDICATOR 12 for more information. See gov.uk standing advice on ancient and veteran trees. Available from: Keepers of time: ancient and native woodland and trees policy in England (publishing.service.gov.uk) and: Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)

Footnote 13 – See EWBG method INDICATOR 13 for more information. This includes logs, large dead branches on the forest floor and stumps (<1 m tall) >20 cm diameter at narrowest point and >50 cm long. Also includes standing dead trees (>1 m tall) and also deadwood on standing live trees. Diameter is measured at the narrowest point on the stem. Minimum diameter of 20 cm.

Footnote 14 - See EWBG method INDICATOR 15 for more information. Examples of disturbance are: significant nutrient enrichment; soil compaction from trampling, machinery, animal poaching or litter.

Grassland – Traditional orchard (high distinctiveness)

UKHAB classification	Grassland – Traditional orchard
Distinctiveness	High
Condition Assessment Criteria	
A. Presence of ancient1 and or veteran1 trees. **Note - this criterion is essential for achieving Good condition.**	
B. Presence of deadwood in or on trees, or on the ground: at least 20% of mature trees have deadwood associated with them.	

Some examples of deadwood are: standing, attached and fallen trees or limbs; dead stems; branches and branch stubs greater than 10 cm diameter; and internal cavities. The types and distribution of deadwood provide a range of habitats suitable to support a wide assemblage of saproxylic invertebrates.
Note - this criterion is essential for achieving Good condition.

C. Less than 5% of fruit trees are smothered by scrub. Small patches of dense scrub and or scattered scrub growing between trees can be beneficial to biodiversity, however these occupy less than 10% of ground cover.
D. There is evidence of formative and or restorative pruning to maintain longevity of trees.
E. At least 95% of the trees are free from damage caused by humans or animals, for example browsing, bark stripping or rubbing on non-adjusted ties.
F. Grassland is not overgrazed, poaching is not evident around the trees, with no more than 10% of trees poached under the canopy.
G. Species richness of the grassland is equivalent to a medium, high, or very high distinctiveness grasslan
H. There is an absence of invasive non-native plant species2 (as listed on Schedule 9 of WCA3) and species indicative of sub-optimal condition4 make up less than 10% of ground cover.

Condition	
Good	Passes 6- 8 criteria, including essential criteria A and B.
Moderate	Passes 4 or 5 criteria; OR Passes 6 or 7 criteria but fails an essential criterion. "
Poor	Passes 3 or fewer criteria.

Footnotes

Footnote 1 - See gov.uk standing advice on ancient and veteran trees. Available from:
Keepers of time: ancient and native woodland and trees policy in England (publishing.service.gov.uk)
and:
Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)

Footnote 2 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, by applying professional judgement.

Footnote 3 – Wildlife and Countryside Act 1981 (as amended).

Footnote 4 - Species indicative of sub-optimal condition for this habitat type include: creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare*, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius* and common nettle *Urtica dioica*. There may be additional relevant species local to the region and or site.

Native species-rich hedgerow and Native species-rich hedgerow with trees

UKHAB classification	Hedgerow (priority habitat)
Distinctiveness	Medium & High

Habitat Description

Hedgerow consisting predominantly (i.e. 80% or more cover) of at least one woody UK native species. Species to include Hazel, Hawthorn, Holly, Wild Privet, Blackthorn, Elder and Guelder Rose. Used as screening of the development along the northern and western boundaries.

Condition Assessment Criteria

A1. Height - >1.5 m average along length
A2. Width >1.5 m average along length
B1. Gap – hedge base – Gap between ground and base of canopy <0.5 m for >90% of length
B2. Gap – hedge canopy continuity – Gaps make up <10% of total length and no canopy gaps >5m
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 at least one side of the hedge.

C2. Nutrient-enriched perennial vegetation– plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground
D1. Invasive and neophyte species - >90% of the hedgerow and undisturbed ground is free of invasive non-native plant species (including those listed on Schedule 9 of WCA) and recently introduced species.
D2. Current damage - >90% of the hedgerow or undisturbed ground is free of damage caused by human activities

Additional group – application to hedgerows with trees only

E1. There is more than one age-class (or morphology) of tree present (for example: young, mature, veteran and or ancient), and there is on average at least one mature, ancient or veteran tree present per 20 - 50m of hedgerow.
E2. At least 95% of hedgerow trees are in a healthy condition (excluding veteran features valuable for wildlife). 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.

Condition (without trees)	
Good	No more than 2 failures in total; AND No more than 1 failure in any functional group.
Moderate	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 and C2 = Moderate condition).
Poor	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 and B2 = Poor condition).
Condition (with trees)	
Good	No more than 2 failures in total; AND No more than 1 failure in any functional group.
Moderate	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, C2 and E1 = Moderate condition).
Poor	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 and B2 = Poor condition).