APPENDIX 9.8
BIODIVERSITY NET GAIN REPORT

APPENDIX 9.8

(BIODIVERSITY NET GAIN – DESIGN STAGE REPORT)

TO

CHAPTER 9 OF THE ENVIRONMENTAL STATEMENT

ALLESTON FARM, PEMBROKESHIRE

carried out by

CLARKSON & WOODS
ECOLOGICAL CONSULTANTS

commissioned by

ALLESTON CLEAN ENERGY LIMITED

OCTOBER 2024

BIODIVERSITY NET GAIN – DESIGN STAGE REPORT

ALLESTON FARM, PEMBROKESHIRE

CONTENTS

DOCUMENT TRACKING

Project title:	Alleston Farm, Pembrokeshire		
Document title:	Biodiversity Net Gain – Design Stage Report	Project number:	8141
Client:	Pegasus Group	Author:	Charlie Fayers
Version	1.0 Draft for Comment	Issued on:	07/10/2024
Quality Assurance	Checked by:	Approved by:	
	Charlie Durigan	Hannah Montag	

1 INTRODUCTION

1.1 Overview

1.1.1 Clarkson and Woods Ltd. was commissioned by the Applicant to carry out a Biodiversity Net Gain (BNG) Assessment of a proposed solar photovoltaic (PV) development at Alleston Farm, Pembrokeshire, SA71 5NJ, hereafter referred to as 'the Site'.

1.1.2 The purpose of this report is to provide a quantitative assessment of the likely BNG which the project will achieve post-development, justifying and comparing the valuation of baseline and proposed habitats.

1.1.3 This assessment has been prepared by Charlie Fayers who is an associate member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and has over ten years of experience in ecological consultancy. Charlie has been assessed under the Clarkson and Woods QA processes as competent to complete this assessment. The biodiversity calculations and this report have been subject to a two-stage quality assurance review by appropriately experienced senior consultants who are members of CIEEM.

Site Context

1.1.4 The Site encompasses approximately 96 hectares (ha) and comprises several agricultural fields, separated by rows of mature hedgerows. This is with the exception of Alleston Farmhouse and associated buildings located within the centre of the Site. Within the central-east region of the Site, a collection of fields is currently in-use as an equestrian livery, whilst Alleston Wood, is located within central region of the Site, running south along the riparian corridor of the small stream network. Alleston Wood is a remnant mature woodland with Ancient Woodland Indicator species present.

1.1.5 Land use in the surrounding area of the Site is predominantly agricultural, with scattered farmhouses as well as residential development associated with Pembroke town and Lamphey village.

Development Proposals

1.1.6 The Development comprises the installation of an approximately 30MW ground mounted photovoltaic solar farm together with associated equipment, infrastructure and ancillary works. Connection to the electricity grid will be via the 132kV overhead pylon which crosses the Site. The Development will have an operational lifespan of 40 years, after which it will be decommissioned.

1.1.7 The landscape proposals for the Site (333100437 LN-LP Rev C Landscape Strategy Plan) include the following habitats to be created and / or enhanced:

- Enhancement of existing grassland.
- Proposed native hedgerow planting.
- Proposed modified grassland.
- Proposed new and infill native woodland planting.
- Proposed orchard planting

1.1.8 An Outline Landscape and Ecological Management Plan (LEMP) has been produced for the Development and should be read alongside this assessment. The prescriptions for the practical creation, management, enhancement and monitoring of the above habitats are set out in the LEMP, which it is anticipated will be finalised to inform the discharge of a planning condition post-consent.

1.2 Assessment Scope

1.2.1 This report, alongside other relevant documents (see below), provides a quantitative assessment of the likely BNG which the Development will achieve post-construction, assuming successful implementation of proposed landscaping and ecological mitigation and enhancement measures.

1.2.2 Habitat features are used as a proxy measure for quantifying the value and importance of nature within a site. Each habitat type is assigned a numerical value, based on various parameters, enabling assessments to be made of the present and future biodiversity value of a site through the calculation of biodiversity gains and losses. The process itself follows the mitigation hierarchy: this prioritises avoidance of impacts; then

minimisation of negative impacts through appropriate mitigation; with compensation for residual impacts as a last resort.

1.2.3 It should be noted that areas of the Site that will not be impacted, either positively or negatively, by the proposed Development have been excluded from the scope of this assessment. These areas include the central area of the Site comprising the farmyard and associated buildings, the adjacent Fields 12, 13 and 14, and the onsite pond, for which a condition assessment survey has not been undertaken. Should the plans change and these features are considered likely to be impacted by the Development, this assessment would need to be updated to include them.

1.2.4 For this Development, significant impacts have been avoided through careful design and mitigation; as such, no off-site habitat compensation measures are required.

1.2.5 Whilst the BNG assessment quantifies biodiversity losses and gains, this process is conducted in parallel to the valuation of ecological features conducted as part of an ecological impact assessment. Additionally, this is separate to the legal and planning duties accounting for the protection afforded to habitats and species, which decision-makers and developers should discharge. Therefore, due consideration must still be given to ensure legal compliance and that no environmental offences are committed.

1.2.6 This document aims to:

- Establish the quantitative baseline value of the Site, in terms of Habitat Units (HaU) and Hedgerow Units (HeU));
- Establish the future value of the Site, in terms of Habitat Units (HaU) and Hedgerow Units (HeU), by quantifying the value of all retained, enhanced or created habitats;
- Determine whether the proposals will result in net loss, no net loss, or net gain for biodiversity;
- Establish how BNG will be secured at the Site in the long term;
- Assess compliance with relevant policies regarding biodiversity gain; and
- Justify how each of the CIEEM BNG Principles[1] have been applied to the Site.

Relevant Documents

1.2.7 This document makes reference to, and should be read in conjunction with, the following documents:

- Statutory BNG Metric (Clarkson & Woods, October 2024)
- Alleston Solar Farm ES Chapter 9: Biodiversity (Clarkson & Woods, September 2024)
- Outline LEMP (Stantec, September 2024, 333100437/A5/LEMP)
- Baseline Habitats Plan (Clarkson & Woods, September 2024)
- Landscape Strategy Plan (Stantec, 333100437 LN-LP-14 Rev C)
- Hedgerow Removal Plan (Statkraft, SKUKX-ALLES-000-ADD-002B)

Cross-referencing

<u>BNG Metric</u>

1.2.8 It is expected that reviewers of this BNG assessment will be conversant in the biodiversity Metric, and rather than repeat all the information contained therein, this report focuses on the justification for the habitat types, conditions and strategic significance values assigned to both baseline and post-development habitats.

1.2.9 To enable easy cross-referencing, the habitat and hedgerow references given in the Metric are used in this report to identify individual features. In this way, this report functions as a succinct document which should be read alongside the Metric.

<u>LEMP</u>

1.2.10 The Outline Landscape and Ecological Management Plan (LEMP), which has been prepared for the Development, lays out the habitat management objectives for the Development to ensure a net gain for

[1] *Biodiversity Net Gain: Good Practice Principles for Development (CIEEM, CIRA, IEMA 2016)*.

biodiversity gain be achieved in the long-term. Once finalised, the LEMP will set out a series of Method Statements detailing measures for the creation, enhancement, and management of all operational habitats. If followed correctly, the Method Statements will ensure that the target habitat types and conditions detailed in this BNG report are achieved and the quantitative biodiversity gains are delivered.

1.3 Relevant Policy & Legislation

1.3.1 This BNG Assessment has been prepared with reference to the following relevant planning policies:

National Policy

1.3.2 The Planning Policy Wales (Edition 12; February 2023), states that:

The planning system has a key role to play in helping to reverse the decline in biodiversity and increase the resilience of ecosystems, at various scales, by ensuring appropriate mechanisms are in place to both protect against loss and to secure enhancement. Recognising that development needs to take place and some biodiversity may be impacted, the planning system should ensure that overall there is a net benefit for biodiversity and ecosystem resilience, resulting in enhanced well-being. Addressing the consequences of climate change should be a central part of any measures to protect, maintain and enhance biodiversity and the resilience of ecosystems. Information contained in SoNaRR, Area Statements, Local Nature Plans, Local Nature Recovery Action Plans, Local Biodiversity Action Plans and held by Local Environmental Record Centres should be taken into account. Development plan strategies, policies and development proposals must consider the need to:

- *support the maintenance and enhancement of biodiversity and the resilience of ecosystems;*
- *ensure action in Wales contributes to meeting international responsibilities and obligations for biodiversity and habitats, including the most recent targets set out in the 2022 UN Global Biodiversity Framework;*
- *ensure statutorily and non-statutorily designated sites and habitats are properly protected and managed and their role at the heart of resilient ecological networks is safeguarded;*
- *safeguard protected species and species of principal importance and existing biodiversity assets from direct, indirect or cumulative adverse impacts that affect their nature conservation interests and compromise the resilience of ecological networks and the components which underpin them, such as water, air and soil, including peat; and*
- *secure the maintenance and enhancement of ecosystem resilience and resilient ecological networks by improving diversity, extent, condition, and connectivity.*

1.3.3 The NPS for Renewable Energy Infrastructure (EN-3) Paragraph 2.50.10 states that applicants should ensure "proposed enhancements should take account of the above factors and as set out in Section 5.4 of EN1 and aim to achieve environmental and biodiversity net gain in line with the ambition set out in the 25 Year Environment Plan. This might include maintaining or extending existing habitats and potentially creating new important habitats, for example by instating: cultivated strips/plots for rare arable plants, rough grassland margins, bumblebee plant mixes, and wild bird seed mixes. It is advised that an ecological monitoring programme is developed to monitor impacts upon the flora of the site and upon any particular ecological receptors (e.g., bats and wintering birds). Results of the monitoring will then inform any changes needed to the land management of the site, including, if appropriate, any livestock grazing regime."

Local Policy

1.3.4 The Net Benefit for Biodiversity (NBB) approach by the Welsh Government is intended to demonstrate an overall improvement in biodiversity resulting from new development, which has been discussed in more detail within Chapter 9 of the ES. In this instance, the Statutory Biodiversity Net Gain metric which is used in England has been utilised to quantify the NBB and demonstrate a 10% or greater gain for biodiversity for all Biodiversity Units type (HU, HeU and RU) as a result of the Proposed Development at Alleston Farm.

1.3.5 The following BNG-related policy taken from the Pembrokeshire County Council Local Development Plan[2] is considered pertinent to the Development (the text of the policy is given in Appendix A at the end of this report):

- Policy GN.37: Protection and Enhancement of Biodiversity

2 METHODS

2.1 Desk Study & Field Survey

2.1.1 The methodologies used for the desk study and field surveys are set out within the following reports:

- Environmental Statement Chapter 9 – Alleston Solar Farm (Clarkson & Woods, June 2024)
- Preliminary Ecological Appraisal & Ecological Constraints and Opportunities Plan – Alleston Solar farm (Clarkson & Woods, March 2024)

2.2 BNG Assessment

2.2.1 This report follows the guidance 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).

2.2.2 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)*.

2.2.3 The 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 Version 3.28.15.

2.2.4 Condition sheets used to assess habitats within this report follow those presented in The Statutory Biodiversity Metric – Technical Annex 1: Condition Assessment Sheets and Methodology. The relevant condition sheets are provided in Appendix D.

2.2.5 To the best of the applicant's knowledge, any degradation of the Site's habitats since July 2023 has been accounted for in the baseline.

2.2.6 Figures showing baseline and proposed habitats, as well as relevant feature labelling are given in Appendices B and C.

2.3 Quality Assurance

2.3.1 A suitably competent person is defined within the BNG British Standard BS8683:2020 as a 'person who can demonstrate they have acquired through training, qualifications or experience, or a combination of these, the knowledge and skills enabling that person to perform a specified task.'

2.3.2 The BNG assessment has been prepared by Elvin Delaney who has 7 years' of ecological experience and holds a BSc in relevant subjects. Elvin has been assessed under the Clarkson and Woods QA processes as competent to complete this assessment.

2.3.3 The report has been subject to a two-stage quality assurance review by appropriately experienced senior consultants who are members of CIEEM.

2.4 Limitations

2.4.1 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.

[2] Pembrokeshire County Council Local Development Plan – Adopted 2013

2.5 Proposed Design

2.5.1 The proposed habitat types within the Site and their associated targeted condition assessments are described below and detailed within Appendix D1 to D9. A Proposed Habitats Plan, prepared on GIS and translating proposed habitat to the UK Habitat Classification (to allow comparison with the baseline situation), has been provided in Appendix C. The proposed habitats plan is based on the proposed design and Landscape Strategy Plan.

2.5.2 More details of the habitats to be created and / or enhanced and their management are provided within the submitted OLEMP (appendix 7.9 of the ES refers). Finalisation of the LEMP is to be secured as a condition of planning.

2.5.3 It has been necessary to make assumptions about the condition and distinctiveness of created and / or enhanced habitats to complete the Metric. Habitat creation and enhancement in the Metric is based on a realistic and achievable scenario. Targeted conditions and associated condition assessment are provided in Appendices D1 to D9 where a column specific to target condition has been added.

2.5.4 To represent the temporary nature of the construction-phase impacts in the metric, all habitats falling within the work areas were entered as being lost and then replaced like-for-like in the Habitat Creation tab.

2.5.5 Other biodiversity enhancements (such as habitat boxes and hibernacula) are not included within the assessment but have been described in the OLEMP report.

3 BASELINE HABITAT UNITS

3.1.1 The baseline habitat types recorded within the Site are described below, along with an explanation of the condition and strategic significance values assigned to them in the Metric. Relevant condition assessments are given in **Appendix D**.

Strategic Significance

3.1.2 Pembrokeshire does not have a Local Nature Recovery Strategy, and so the Natural Resources Wales (NRW) habitat networks have been used to assign strategic significance. The only habitats formally identified is the woodland parcel in the centre of the Site (Alleston Wood).

3.2 Cropland

Cereal Crops

Metric References

3.2.1 Fields 1, 2, 5, 7, 8, 9, and 11.

Habitat Description

3.2.2 The cereal crops fields occupied the vast majority of the Sites' areas (seven of 11 arable fields) and were intensively farmed monocultures, which were cultivated for maize production at the time of the survey. These were likely to receive periodic fertiliser and pesticide treatments.

Condition

3.2.3 Condition assessments are Not Applicable for the Cereal Crop habitat within the BNG metric.

Retention

3.2.4 All fields containing cereal crops with the exception of Fields F5 and F7, which will remain in arable production, will be lost to facilitate the construction of the solar farm and associated infrastructure, as well as to establish ecological mitigation habitats.

on-cereal Crops

Metric References

3.2.5 Fields 3, 4 and 6

Habitat Description

3.2.6 Three more of the Site's fields were planted with potatoes, a non-cereal crop.

Condition

3.2.7 Condition assessments are Not Applicable for the Non-cereal Crop habitat within the BNG metric.

Retention

3.2.8 Fields 3 and 4 of the non-cereal crop habitat will be lost through the development process and will be managed either for the purposes of the array or for the benefit of biodiversity. This excludes Field F6, which will be seeded and managed to create a tussocky grassland.

Summary

3.2.9 All of the habitat under the broad habitat classification 'Cropland' within the Site will be lost as a result of the development, as the land use of the Sites changes; the arable fields will no longer be farmed (with the exception of Fields 5 and 7), in order to accommodate the installation of the proposed solar arrays. The retention of Fields 5 and 7 in arable production represents approximately 18.28 HU.

Table 1: Summary of Baseline Habitat Units for Cropland

Habitat Loss (Units)	Habitat Retention (Units)
105.47	18.28

3.3 Grassland

Modified Grassland (MG)

Metric References

3.3.1 Field 10 and areas within Fields 3, 7, 8, 9 and 11.

Habitat Description

3.3.2 Field 10 was observed to be in use as an equestrian livery, which was parcelled up and well-grazed by horses and ponies at the time of the survey. The species-poor pasture grassland was dominated by perennial rye-grass *Lolium perenne* and so met the description of MG.

3.3.3 The west and south-west field margins of Fields 9 and 11, and the southern margin of Field 8 were not in arable production and were also classified as MG.

Condition

3.3.4 The pasture grassland and uncultivated field margins were assessed as being in '**poor**' condition, largely due to the lack of species diversity causing the habitat to fail essential Criterion A for low distinctiveness grassland. The full assessment is given in **Table D3** in Appendix D.

Retention

3.3.5 The majority of Field 10 will be given over the array footprint, resulting in the initial loss of the habitat, followed by its re-instatement and enhancement to moderate condition. It is assumed that the uncultivated field margin associated with Field 8 will be retained while the field is retained in arable production. The MG field margins associated with Fields 9 and 11 will be retained and protected throughout the development.

Summary

3.3.6 The existing MG field (Field 10) will be lost to facilitate the installation of the solar farm, with the post-construction habitat anticipated to be like-for-like. MG field margins, notably within the south of Fields 8, 9 and 11, will remain outside of the development footprint and be enhanced to ONG as a result of the development. It is assumed the at the grassland beneath the panels will be MG in poor condition and moderate condition between the strings, resulting in the delivery of 102.61HU post-development.

Table 2: Summary of Baseline Habitat Units for Grassland

Habitat Loss (Units)	Habitat Retention (Units)
14.60	2.78

3.4 Woodland

Woodland and forest - Other woodland; broadleaved

Strategic Significance

3.4.1 As a designated Ancient Woodland, the baseline woodland has been assigned the strategically significant multiplier. As such, no baseline habitat units for this habitat type are given in the metric.

Habitat Description

3.4.2 Alleston wood occupies the centre of the Site and is a remnant ancient woodland, comprising broadleaved trees and a stream running through south-north through it.

Condition

3.4.3 The woodland was assessed as being in '**moderate**' condition, due largely to its composition of native species, general tree health, lack of herbivore damage and presence of ancient woodland indicator species. The full assessment is given in **Table D1** in Appendix D.

Retention

3.4.4 The existing woodland (Alleston Woods), which is designated Ancient Woodland, will be retained throughout the development. A buffer of at least 15m will be installed around the peripheries of the woodland throughout the construction and operational phases of the Development.

Table 3: Summary of Baseline Habitat Units for Woodland

Habitat Loss (Units)	Habitat Retention (Units)
0.0	Irreplaceable habitat

3.5 Heathland and shrub

Mixed Scrub

Habitat Description

3.5.1 An area of mixed scrub measuring approximately 0.128ha had established in the northwest of Field 1 around the base of an electricity pylon.

Condition

3.5.2 The scrub was assessed as being in '**moderate**' condition, due largely to its composition of native species and a well-developed edge. The full assessment is given in **Table D2** in Appendix D.

Retention

3.5.3 The majority of the scrub patch will be retained, though there will be some reduction to accommodate a solar array fenceline in the south.

Gorse Scrub

Habitat Description

3.5.4 An area of gorse scrub measuring approximately 0.372ha was recorded in the southeast of Field 4 on a steep bank sloping down to the riparian corridor in the centre of the Site. This was dominated by gorse *Ulex europeaus* and was interspersed with occasional broadleaved tree species, including oak *Quercus robur*.

Condition

3.5.5 The scrub was assessed as being in '**moderate**' condition, due to a lack of non-native species and the presence of grassy "glades" and well-developed edge. The full assessment is given in **Table D2** in Appendix D.

Retention

3.5.6 Woodland planting will take place within the area of gorse scrub. As such this habitat has been considered as lost as a result of the Development.

Summary

3.5.7 Existing areas of scrub are limited to an area of 0.15ha of mixed scrub at the base of a pylon in Field 1, which will be retained within the Development and a bank of 0.86ha of gorse scrub to the southeast of Field 4. The gorse scrub will be 'lost' as a result of woodland infill planting proposed here.

Table 4: Summary of Baseline Habitat Units for Heathland & Scrub

Habitat Loss (Units)	Habitat Retention (Units)
6.94	1.17

3.6 Sparsely vegetated land

Tall forbs

Habitat Description

3.6.1 An area of tall forbs had established along the northern boundary of field F7.

Condition

3.6.2 The tall forbs were assessed as being in '**moderate'** condition due largely to its composition of native species and a well-developed edge. The full assessment is given in **Table D4** in Appendix D.

Retention

3.6.3 The entire area of tall forbs will be lost and replaced with a broadleaf woodland belt.

Summary

3.6.4 The entire area of tall forbs will be lost to allow for woodland planting.

Table 5: Summary of Baseline Habitat Units for Tall Forbs

Habitat Loss (Units)	Habitat Retention (Units)
1.71	0.00

3.7 Urban

Artificially Unvegetated; Unsealed Surface

Habitat Description

3.7.1 Two crushed aggregate farm tracks were found on Site. One, between Fields 9 and 10, forms part of a public right of way, whilst the other forms part of an access track within Field 7.

Condition

3.7.2 Condition assessments are Not Applicable for the Artificial Unvegetated; Unsealed Surface habitat within the BNG metric.

Retention

3.7.3 The track between Fields 9 and 10, will be moved and extended, whilst the track in Field 7 will be lost to the development.

Developed Land; Sealed Surface

Habitat Description

3.7.4 Two hardstanding farm tracks were recorded within the Site and were classified as Developed Land; Sealed Surface.

Condition

3.7.5 Condition assessments are Not Applicable for the Developed Land; Sealed Surface habitat within the BNG metric.

Retention

3.7.6 All existing hardstanding or farm tracks will be retained forming the proposed network of internal access tracks within the Site. The habitat type of very low distinctiveness will not require any management post-development as a default condition is applied within the Metric.

Bare Ground

Habitat Description

3.7.7 An area of bare ground, adjacent to the farmyard and immediately north of Field 12 is intended for use as temporary construction compound. This area was added after the UKHab and BNG condition assessment

surveys were undertaken and so has been included within this assessment based on habitat notes that were taken during the initial Phase 1 survey. As such as condition assessment for this area has been assumed.

3.7.8 This area appeared to be bound by tall ruderal vegetation, although the centre comprised bare ground where the field had been regularly driven over by farm vehicles. The area was used for storage of haybales and other farm materials.

Condition

3.7.9 The bare ground was assessed as being **'poor'** condition due to passing only a single criterion relating to an absence of non-native species. The full assessment is given in **Table D6** in Appendix D.

Retention

3.7.10 It is not anticipated that the construction activities will extend beyond the two years allowed to classify the impacts as temporary under the BNG metric and the bare ground will therefore be retained.

Sparsely Vegetated Land; Ruderal / Ephemeral

Habitat Description

3.7.11 Similar to the area of bare ground detailed in 3.1.30-33 above, which was noted to be bound by tall ruderal vegetation, a condition assessment for this area has been assumed from data collected during the Phase 1 survey.

3.7.12 This area appeared to be bound by tall ruderal vegetation, although the centre comprised bare ground where the field had been regularly driven over by farm vehicles. The area was used for storage of haybales and other farm materials.

Condition

3.7.13 The ruderal/ephemeral vegetation was assessed as being in **'moderate'** condition due to a varied vegetation structure and an absence of non-native species. The full assessment is given in **Table D6** in Appendix D.

Retention

3.7.14 The construction compound will be offset from the boundary vegetation by no less than 5m, in line with recommendation made within Chapter 9 of the ES. As such, it is anticipated that the existing ruderal/ephemeral vegetation will be retained.

Table 6: Summary of Baseline Habitat Units for Urban

Habitat Loss (Units)	Habitat Retention Units)
0.77	0.29

3.8 Rural Trees

Habitat Description

3.8.1 Rural trees were present in clusters on the Site (in F7) and also present within the fields (in F1 and F6). These ranged from being Very Large to Small in size/maturity.

Condition

3.8.2 Most of the rural trees were in 'good' condition with some achieving 'moderate'.

Retention

3.8.3 All individual in-field trees will be retained within the Development. Potential fragmentation and isolation impacts have been counteracted by the planting of corridors of new hedgerow and trees to 'reconnect' the trees to field boundaries. This would improve their contribution to Green Infrastructure as corridors of dispersal. Such trees act as island or stepping-stones for wildlife and these are also to be buffered from development according to their ecological value (between 8m and 12m from extent of Root Protection Zone).

Summary

3.8.4 All rural trees are to be retained.

Table 7: Summary of Habitat Units for Rural Trees

Habitat Loss (Units)	Habitat Retention (Units)
0	3.93

4 CREATED HABITAT UNITS

4.1.1 The habitat types to be created within the Site are described below, along with an explanation of the condition and strategic significance values assigned to them in the Metric. Relevant condition assessments are given in **Appendix D**.

Strategic Significance

4.1.2 Pembrokeshire does not have a Local Nature Recovery Strategy, and so the Natural Resources Wales habitat networks have been used to assign strategic significance. The only habitats formally identified are woodland parcels in the centre of the site adjacent to Alleston Wood.

4.2 Grassland

Modified Grassland

Metric References

4.2.1 F1, F2, F3, F4, F8, F9, F10 and F11

Habitat Description

4.2.2 All areas beneath solar arrays will be seeded with a grassland seed mix and cut on an annual basis or grazed by sheep at a low stocking density.

Condition

4.2.3 Clarkson & Woods Ltd. has undertaken monitoring of over 100 solar Sites, assessing grassland condition and providing management recommendations to enhance habitat condition within the Sites. During this work, the difference in habitat condition between grassland within the margins of solar sites and beneath the arrays has been evident. Achieving higher habitat condition beneath the panels can be challenging due to the sub-optimal microclimate created by panel shading resulting in a lower species diversity and a higher proportion of undesirable species and injurious weeds. Therefore, the grassland directly beneath the panels has been created as a '**Poor'** condition Modified Grassland. The grassland between the panel strings, which will be less impacted by shading, would be expected to achieve '**moderate**' condition. The full assessment is given in **Table D3** in Appendix D.

4.2.4 The majority of habitat creation within the Site will replace cropland habitats with MG, around 38.78ha.

4.2.5 Other Neutral Grassland

Metric References

4.2.6 The peripheries of Field 1, along with the western margin of Field 3 and the northern corner of Field 4.

Habitat Description

4.2.7 Approximately 16.69ha of ONG will be created. Three different types of ONG are proposed within the Site, as follows:

- Diverse, species-rich grassland within undeveloped buffers and easements
- Tussocky grassland margins

- Existing low diversity and tussocky grassland within undeveloped field margins to be enhanced to achieve ONG.

4.2.8 These areas are assumed to achieve '**poor**' condition for the tussocky grassland and '**moderate**' condition elsewhere. This habitat type will cover approximately 16.69ha.

Condition

4.2.9 As these areas will be free from detrimental impacts caused by the solar array, they have been assessed as likely to achieve a '**moderate**' condition. The full assessment is given in **Table D4**.

Summary

4.2.10 Large areas of grassland will be created within the Site, resulting in a large uplift of both habitat types.

Table 7: Summary of Created Habitat Units for Grassland

Habitat Creation (Other Neutral Grassland) (Units)	Habitat Creation (Modified Grassland) (Units)
98.81	111.58

4.3 Traditional orchard

Metric References

4.3.1 Southeast corner of field F6

Habitat Description

4.3.2 An area of 0.083ha of traditional orchard will be planted. Trees will be spaced widely apart (3m – 20m) and suitably managed through a regime of formative pruning and scrub removal. Grazing within the orchard will be limited (either by stocking density or frequency of grazing) to ensure grassland beneath the trees is not overgrazed and the ground does not become poached.

Condition

4.3.3 The orchard planting will be managed to achieve '**moderate**' condition. Owing to the lack of diversity in age classes of the trees and presence of deadwood within newly planted orchards, 'good' condition cannot be achieved. While grazing beneath the orchard is possible, the orchard will be managed to ensure that the grassland achieves a diverse sward and is not overgrazed.

4.4 Woodland and forest

Other broadleaved woodland

Metric References

4.4.1 Small parcels within Fields 1, 4, 6, 7 and 10, as well as infill planting through the central band of existing woodland.

Habitat Description

4.4.2 Planting of copses comprising native species have been incorporated within strategic areas to extend existing areas of woodland and provide screening, notably along the northern site boundary and within the central belt around Alleston Wood. This will occupy approximately 2.72ha.

Condition

4.4.3 As good condition woodland is not possible without a range of tree age classes and ecological niches being present, it is anticipated that new woodland planting would achieve '**moderate**' condition.

Table 8: Summary of Created Habitat Units for Traditional Orchard and Woodland

Habitat Creation (Traditional Orchard) (Units)	Habitat Creation (Other Broadleaved Woodland) (Units)
0.49	12.77

4.5 Urban

Developed Land; Unsealed Surface

Metric References

4.5.1 New internal access tracks to allow vehicular access between fields will primarily be constructed running east-west though Fields 6 and 8, and north-south through Fields 9 and 11.

Habitat Description

4.5.2 New internal vehicular access tracks will be constructed of compacted crushed stone.

Condition

4.5.3 Condition assessments are Not Applicable for the Developed Land; Unsealed Surface habitat within the BNG metric.

5 ENHANCED HABITAT UNITS

5.1.1 The habitat types to be enhanced within the Site are described below, along with an explanation of the condition and strategic significance values assigned to them in the Metric. Relevant condition assessments are given in **Appendix D**.

5.2 Grassland

Modified Grassland

Metric References

5.2.1 F8, F10 and F11

Habitat Description

5.2.2 The retained parcels of existing MG within the south of Fields 8, 9 and 11 will be managed so as to achieve ONG in the long-term.

Condition

5.2.3 Management of these parcels will target the diversification of the grassland sward, which will be seeded if required to achieve at least '**moderate**' condition. The full assessment is given in **Table D4** in Appendix D.

Summary

5.2.4 The enhancements will lead to a higher condition grassland.

Table 9: Summary of Enhanced Habitat Units for Grassland

Habitat Enhancement (MG to ONG) (Units)
20.29

6 BASELINE HEDGEROW UNITS

6.1.1 The baseline hedgerow types recorded within the Site are described below, along with an explanation of the condition and strategic significance values assigned to them in the Metric. Relevant condition assessments are given in **Appendix D**.

Strategic Significance

6.1.2 Pembrokeshire does not have a Local Nature Recovery Strategy, and so the Natural Resources Wales habitat networks have been used to assign strategic significance.

6.2 Hedgerow

Metric References

6.2.1 Five UKHab hedgerow types were identified on site:

- Native hedgerows: H1, H2, H5, H11, H13, H14, H15, H16, H17, H18, H19, H22a, H22b, H23, H24, H27, H28, H30, H32 and H34
- Native hedgerows associated with bank or ditch: H3 and H12
- Native hedgerows with trees: H7, H8, H20, H21 and H25
- Native hedgerows with trees associated with bank or ditch: H4, H9, H26, H29, H31 and H33
- Species-rich native hedgerow with trees associated with bank or ditch: H6

Habitat Description

6.2.2 The Site contains a network of 36 hedgerows that total approximately 8.36km in length, of which 13 contained occasional mature and/or semi-mature trees. Only one hedgerow (H6 northern section) was considered to be species-rich. Seven hedgerows were also associated with a drainage ditch (or straightened section of stream), which dry out for a portion of the year (<4 months). A single line of trees was recorded (H6 southern section).

6.2.3 The hedgerows were generally dominated by blackthorn *Prunus spinosa* and hawthorn *Crataegus monogyna*, with sporadic hazel *Corylus avellana* and dog rose *Rosa canina*.

6.2.4 The hedgerows generally appeared to be subject to a low intensity management regime with many achieving heights >2m, although there were generally very small (<1m) margins at the base of many of the hedgerows noted.

Condition

6.2.5 The vast majority of hedgerows (25 of 34) were in **'good'** condition, with most failing only one or two of the assessment criteria, specifically those relating to nutrient enrichment and growth of associated perennial vegetation (C2) and variation in tree classes (E1). Eight hedgerows were in **'moderate'** condition due to the fact they also failed the criteria relating to undisturbed ground flora and perennial vegetation (C1). Only one hedgerow (H27) was found to be in poor condition as, in addition to those previously mentioned, it failed the criteria relating to hedgerow height (A1) and hedgerow gaps (B1 and B2).

6.2.6 Assessments for all hedgerows are given in **Table D7** in Appendix D.

Retention

6.2.7 Nearly all existing hedgerow will be retained and protected through the development process, although approximately 130m will be lost, comprising gaps required in H8, H9, H11, H16, H19, H22 and H28 for the creation of new access tracks or to allow the installation of security fencing. This loss will be offset by the creation of new hedgerows.

6.3 Line of Trees

Metric References

6.3.1 H6 (southern section).

Habitat Description

6.3.2 A single line of trees was observed, forming the southern part of hedgerow H6 along the western boundary of Field 6.

Condition

6.3.3 The Line of Trees was assessed as being in **'moderate'** condition owing to there being an undisturbed buffer of <6m on either side of the feature due to existing farming practices.

6.3.4 This assessment is given in **Table D8** in Appendix D.

Retention

6.3.5 This feature will be retained and protected through the development.

Summary

6.3.6 There will be some loss of hedgerow units resulting from removal of small sections for Site access, however, the majority of hedgerows on the Site will be retained.

Table 10: Summary of Baseline Hedgerow Units for Hedgerows and Line of Trees

Hedgerow Loss (Units)	Hedgerow Retention (Units)	Line of Trees Retention (Units)
0.92	76.77	0.21

7 CREATED HEDGEROW UNITS

7.1.1 The hedgerow types to be created within the Site are described below, along with an explanation of the condition assigned to them in the Metric. Relevant condition assessments are given in **Appendix D**.

7.2 Hedgerow

Habitat Description

7.2.1 Six new hedgerows will be planted comprising five species-rich native hedgerows (a total of approximately 0.15km) and one species-rich native hedgerow with trees (a total of approximately 1.3km) around the edges of the solar arrays and along access tracks.

Condition

7.2.2 The hedgerows will comprise a range of native species and will be managed to a minimum height of 2.5m with a bushy base, satisfying functional groups A and B. Any invasive non-native species will be removed through appropriate management. The hedgerows should therefore achieve a '**good**' condition

7.2.3 This assessment is given in **Table D7** in Appendix D.

8 ENHANCED HEDGEROW UNITS

8.1.1 The hedgerow types to be enhanced within the Site are described below, along with an explanation of the condition assigned to them in the Metric. Relevant condition assessments are given in **Appendix D**.

8.2 Hedgerow

Habitat Description

8.2.1 The existing hedgerow in poor condition (H27) will be enhanced through infill planting.

Condition

8.2.2 The hedgerow will satisfy all criteria following the development, therefore achieving at least **'moderate'** condition.

8.2.3 This assessment is given in **Table D7** in Appendix D.

8.3 Line of Trees

Habitat Description

8.3.1 The Line of Trees will be enhanced as a result of the Development due to the resultant increase in an undisturbed buffer of >6m following the removal of crops from Field 6.

Condition

8.3.2 The Line of Trees will satisfy all criteria following the development, therefore achieving a '**good'** condition.

8.3.3 This assessment is given in **Table D8** in Appendix D.

Summary

8.3.4 The creation of new hedgerows and enhancement of existing ones will mitigate for the loss of the small hedgerow breaches, giving an uplift of 11.87 units compared with the loss of 0.92 units.

Table 11: Summary of Enhanced Hedgerow Units for Hedgerows and Line of Trees

Hedgerow Created (Units)	Hedgerow Enhanced (Units)
11.45	0.42

9 BASELINE RIVER UNITS

9.1.1 The baseline river types recorded within the Site are described below, along with an explanation of the condition and strategic significance values assigned to them in the Metric. Relevant condition assessments are given in **Appendix D**.

Strategic Significance

9.1.2 Pembrokeshire does not have a Local Nature Recovery Strategy, and so the Natural Resources Wales habitat networks have been used to assign strategic significance. Given the hydrological connection of the Site to the Pembrokeshire Mill Ponds SSSI, the baseline strategic significance of the streams has been input as 'ecologically desirable'.

9.2 Other Rivers and Streams

Metric References

9.2.1 Watercourse reference Streams 1-6.

Habitat Description

9.2.2 A network of small, gently flowing streams, generally <2m in width and <0.5m in water depth, were recorded around the Site.

9.2.3 Of these, Stream sections 5 and 6 were considered likely to have been straightened to act as drainage between Fields 5 and 6, and Field 7 and 8. Stream sections 1, which also acted as field drainage, 5 and 6 had generally small (<1m) margins, often with agricultural activities occurring within 0.5m of the bank tops.

9.2.4 Stream sections 2, 3 and 4, were noted to run through Alleston Wood and the associated belt of trees to the south, with generally no encroachment as a result of agricultural activities recorded within this riparian corridor (>10m).

Condition

9.2.5 The conditions attributed to each of the stretches of streams within the Site have been determined through a full Modular River Physical (MoRPh) assessment of the watercourses and range from '**fairly poor**' to '**moderate**' and '**fairly good**' condition. Culverted sections of the streams are automatically assigned '**poor**' condition.

9.3 Ditches

Metric References

9.3.1 Watercourse reference Ditch 7.

Habitat Description

9.3.2 A single narrow ditch was identified on the Site, which ran adjacent to the west of the main access road to the farmyard from Lamphey Road. This was associated with Hedgerow H4 and comprised shallow (<50cm) flowing water.

Condition

9.3.3 The ditch was assessed as being in '**poor**' condition due to encroachment, a general lack of aquatic vegetation and low water levels. This assessment is given in **Table D9** in Appendix D.

Retention

9.3.4 The ditch will be retained within the proposed Development.

9.3.5 All exiting stream crossings and culverts will be utilised by the development. No new crossings will be constructed to facilitate the Development.

10 ENHANCED RIVER UNITS

10.1.1 The river types to be created through enhancement of existing watercourses within the Site are described below, along with an explanation of the condition values assigned to them in the Metric. Relevant condition assessments are given in **Appendix D**.

Other Rivers and Streams / Ditches

Metric References

10.1.2 Watercourse reference Streams 1, 5 and 6, Ditch 7.

Condition

10.1.3 The stream sections and ditch will remain as **'poor'** condition, however, the removal of encroachment from the at least one bank of each feature resulting from the cessation of agricultural activities within adjacent fields will result in a minor enhancement in the river units delivered by these features.

10.1.4 The Ditch assessment is given in **Table D9** in Appendix D.

Summary

10.1.5 With the exception of three sections of stream (Streams 1, 5 and 6) and the ditch (Ditch 7), which show an enhancement in river units due to the removal of encroachment resulting from agricultural activities from at least one bank, watercourses will be retained and protected throughout the construction and operational phases of the development. Impacts will be avoided through the implementation of a buffer of at least 8m from the bank tops of all watercourses.

Table 12: Summary of River Units for Streams and Ditches

Watercourse Loss (Units)	Watercourse Retention (Units)	Watercourse Enhancements (Units)
0.00	24.63	12.87

11 BNG GOOD PRACTICE PRINCIPLES FOR DEVELOPMENT

11.1.1 Table 1 provides full justification of how each of the ten BNG Principles have been applied as part of the BNG assessment.

Table 12: BNG Good Practice Principles and Justification

BNG Principle	Justification
Principle 1. Apply the Mitigation Hierarchy	Measures to avoid and minimise biodiversity loss and to rehabilitate/restore biodiversity affected by the project are defined and documented within Chapter 9 of the ES. Their implementation, management and monitoring requirements are detailed within the OLEMP and Section 8 of this report.
Principle 2. Avoid losing biodiversity that cannot be offset by gains elsewhere	No irreplaceable habitats will be adversely impacted by the Proposed Development. The existing remnant Ancient Woodland (Alleston Wood) will be retained and appropriately buffered throughout the construction and operational phases of the Development.
Principle 3. Be inclusive and equitable	Evidence of stakeholder engagement, which has included Pembrokeshire CC, NRW and PEDW to-date, is provided within Appendix 1 of Chapter 9 of the ES. The BNG Report and Metric will be submitted with the planning application to enable officers to adequately determine whether BNG will be achieved as part of the Development.
Principle 4. Address risks	The OLEMP sets out a programme of regular monitoring for the life of the Development to ensure habitat creation and management objectives are met. The final LEMP will ensure that personnel are appointed to be responsible for this delivery throughout the duration of the Development. The LEMP will also allow for the amendment and variation of management objectives and practices to best suit the conditions on Site, specific practicalities and challenges, and the outcome of monitoring which may arise over the life of the scheme.
Principle 5. Make a measurable Net Gain	Gains anticipated from habitat creation, enhancement and positive management are quantified relative to the predicted condition in the absence of BNG activities, see Section 6. The BNG assessment determined a quantitative: • 62.59% net gain in Habitat Units • 13.68% net gain in Hedgerow Units • 5.53% net gain in River Units

BNG Principle	Justification
Principle 6. Achieve the best outcomes for biodiversity	Evidence is provided that BNG commitments contribute (now or in the future) to regional and national conservation goals. The BNG design has considered local conservation priorities (species and habitats), which includes the Pembrokeshire BAP. The presence of locally and nationally designated sites for nature conservation have also been considered along with opportunities to enhance or extend these features. In particular, the BNG design has considered to contribute to supporting the following priority species populations and priority habitats: • Hedgerows and Hedgerow Trees • Woodland • Farmland birds • Bats Details are provided within the OLEMP.
Principle 7. Be additional	The proposed biodiversity gains will result from the development activities and would not have occurred in other circumstances. The reversion from intensive agriculture to low (or no) input (fertiliser and soil improvers) grassland alone would be expected to provide a modest net gain in plant and invertebrate species diversity over time.
Principle 8. Create a Net Gain legacy	See Section 8. Stakeholders have been fully engaged from an early stage of the project. The Site design has taken into account climate change resilience through additional planting of species which will withstand flooding. Minimum professional and technical requirements for those responsible for the delivery of the LEMP and BNG-related habitat management will be specified in the final LEMP.
Principle 9. Optimise sustainability	Monitoring surveys will be undertaken and data ideally submitted to SEUK or Lancaster University as part of continued research into the ecological impacts of solar farms. Local contractors will be used as much as possible. New public rights of way will be provided.
Principle 10. Be transparent	The commitment to BNG is stated by the developer the LEMP and this report, which are publicly available documents once submitted as part of the planning application. Part of the monitoring and reporting commitments will include the submission of findings to the Local Environmental Records Centres. The habitat creation methods have been chosen by drawing from extensive experience in this field. The finalised LEMP will further detail the choices taken in deciding seed mixes, ground preparation and aftercare. The LEMP monitoring methodology will follow published guidance[3] which has been designed to be part of a wider scientific study looking at environmental and ecological interactions on solar farms. The data collected during monitoring will be submitted as part of this study. The best practice guidance was prepared by ecologists, academics and those in the industry.

[3] https://solarenergyuk.org/resource/solar-energy-uk-guidance-a-standarised-approach-to-monitoring-biodiversity/

12 BNG METRIC

12.1.1 The information provided in the Metric are directly related to the Habitat Baseline Plan (Appendix B) and the Proposed Habitats Plan (Appendix C). The completed Metric spreadsheet will be submitted separately.

12.1.2 The proposed development will result in a significant net gain of biodiversity units, including HU, HeU and RU, as shown in the headline results below.

Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	104.31
	Hedgerow units	10.66
	Watercourse units	2.08
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	62.59%
	Hedgerow units	13.68%
	Watercourse units	5.53%

Figure 1: Headline Results (taken from Statutory Biodiversity Metric)

12.1.3 The proposals will result in a total net change of **104.31 HU**, representing an increase of **62.59%.** The majority of HU will be delivered by the creation of Modified and Other Neutral Grassland within the Site, which will be managed to maximise biodiversity value.

12.1.4 The proposals will result in a total net change of **10.66 HeU**, representing an increase of **13.68%.** The net gain in HeU will be provided as a result of hedgerow creation around the Site.

12.1.5 The proposals will result in a total net change of **2.08 RU**, representing an increase of **5.53%.** A net gain in RU will be provided as a result of enhancement of existing ditches and watercourses through the removal of encroachment.

13 PROJECT IMPLEMENTATION AND CONSTRUCTION PLAN

13.1.1 The information required for the Project Implementation and Construction Plan are provided within the following documents and should be referred to:

- Landscape Ecological Management Plan (Ref)
- Ecological Protection and Mitigation Strategy (Ref)

13.1.2 The information provided in these documents have not been included in the BNG report so as to avoid duplication.

14 BIODIVERSITY NET GAIN MANAGEMENT AND MONITORING PLAN

14.1.1 The OLEMP provides outline management and maintenance information for Years 1 – 5 and with broader management aims for the lifetime of the BNG commitment (30 years) and the lifetime of the project, 40 years. The information provided in the LEMP has not been included in the BNG report so as to avoid duplication.

14.1.2 A UKHab survey and associated BNG Condition Assessment of the establishing habitats will be undertaken at an appropriate time of the year (April to September inclusive) throughout the length of the BNG commitments of the project (30 years). The BNG monitoring surveys will be spread out so that they coincide with the Years to Target Creation or Enhancement (as stated in the Metric) for the various habitats proposed at the Site. The specific years are: Years 1, 2, 3, 4, 5, 8, 11, 14, 17, 20, 25 and 30 as shown in Table X below. Each survey will focus on the relevant targeted habitat but will also assess the progression of other habitats not yet established to monitor progress and likely success.

14.1.3 Outcomes of the BNG monitoring surveys will help to inform adaptive habitat management and ongoing maintenance activities to ensure that biodiversity gains can still be delivered.

14.1.4 A BNG monitoring report will be prepared after each BNG monitoring survey and will include a summary of habitat type, extent, and condition (with a comparison where applicable against the expected condition proposed in the BNG report). The BNG monitoring reports will be submitted to the planning authority.

Table 13: BNG Monitoring Survey Requirements – Specific Targeted Years

Habitat & Condition	Targeted Condition	Target to Creation & Monitoring Year	Target to Enhancement & Monitoring Year
Habitat Units			
Cropland - Cereal crops	Condition Assessment N/A	1	N/A
Cropland - Non-cereal crops			
Grassland - Modified Grassland	Poor		
Grassland - Modified Grassland	Moderate	3	
Grassland - Other Neutral Grassland	Moderate	5	N/A
Heathland and shrub - Mixed scrub	Good	10	N/A
Grassland - Other Neutral Grassland	Moderate		
Grassland - Modified Grassland	Moderate to Good	N/A	10
Grassland - Other Neutral Grassland	Moderate to Good		

Grassland - Other Neutral Grassland	Poor to Moderate		
Woodland and forest - Other woodland; broadleaved	Moderate	15	N/A
Grassland - Modified Grassland	Poor to Good	N/A	15
Grassland - Other Neutral Grassland	Poor to Good		
Hedgerow Units			
Native Species-rich Hedgerow with Trees	Good	20	N/A
Native Species-rich Hedgerow	Good	10	N/A
Native Hedgerow	Poor to Good	N/A	5
Line of Trees	Moderate to Good	N/A	10
River Units			
Culvert	Poor	1	N/A
Ditches	Poor to Moderate	N/A	4

APPENDIX A: LOCAL PLANNING POLICY RELATING TO BNG

Policy Reference	Key Policy Text
Pembrokeshire County Council Local Development Plan - Adopted 2013	
Policy GN.37: Protection and Enhancement of Biodiversity	All development should demonstrate a positive approach to maintaining and, wherever possible, enhancing biodiversity. Development that would disturb or otherwise harm protected species or their habitats, or the integrity of other habitats, sites or features of importance to wildlife and individual species, will only be permitted in exceptional circumstances where the effects are minimised or mitigated through careful design, work scheduling or other appropriate measures. The protection and enhancement of biodiversity is fundamental to the high environmental quality of Pembrokeshire. Planning proposals that affect internationally, nationally, regionally and locally designated sites, shown on the Proposals Map, are a material consideration when considering a development proposal and will be assessed in accordance with national planning policy and guidance, working with stakeholders and statutory consultees, and using appropriate data sources. Development proposals with potential for adverse effect on internationally or nationally important sites will require detailed assessment before progressing. Specifically if any development proposal is likely to have a significant effect on a European site or species it shall be subject to an Appropriate Assessment of the implications in relation to the site's conservation objectives. This policy aims to ensure that species and their habitats in countryside and urban environments are protected from the potentially adverse effects of development, and where possible enhanced. Potentially adverse effects may include disruption to species and habitats prior to, during and/or after construction, or the cumulative impacts of a development, for example unacceptable noise, lighting or traffic impacts. This policy aims to protect against such adverse effects and therefore mitigation and/or enhancement may be required as an integral part of a development proposal. This policy also aims to protect and maintain ecological connectivity corridors and 'stepping stone' habitats, such as road verges, gardens, rivers and green spaces, and where possible to extend these in order to safeguard biodiversity and habitats and prevent their fragmentation and/or species isolation. The principles underpinning this policy lie at the heart of the Pembrokeshire Local Biodiversity Action Plan (LBAP) and the concept of sustainable development. The LBAP identifies priority species and habitats considered to be of national, regional and local importance which this policy aims to protect. Due regard is also given to the Natural Environment and Rural Communities (NERC) Act (2006) Section 42 List of "Species and Habitats of Principal Importance for Conserving the Biological Diversity of Wales". Only in exceptional circumstances will development proposals that detrimentally impact upon such species and/or their habitats be permitted, and in such circumstances the effects must be mitigated through careful design or work scheduling. Translocation is seldom successful in sustaining the nature conservation interest of affected habitats and should not be used to support a proposal which would otherwise be unacceptable.

APPENDIX B: HABITAT BASELINE PLAN

Project:

Alleston Farm Solar

Document:

Habitat Baseline Plan

Legend:

- Existing Very Large Rural Tree
- Existing Large Rural Tree
- Existing Medium Rural Tree
- Existing Small Rural Tree
- Line of trees
- Native hedgerow
- Native hedgerow - associated with bank or ditch
- Native hedgerow with trees
- Native hedgerow with trees - associated with bank or ditch
- Species-rich native hedgerow
- Culvert
- Ditches
- Other rivers and streams
- Artificial unvegetated, unsealed surface
- Cereal crops
- Developed land; sealed surface
- Scrub
- Modified grassland
- Non-cereal crops
- Other woodland; broadleaved
- Ruderal/Ephemeral
- Tall forbs
- Bare ground
- RLB
- BNG Area

Drawing no.: A

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:4840 @ A3

0 250

CLARKSON & WOODS
ECOLOGICAL CONSULTANTS

Project:

Alleston Farm Solar

Document:

Hedgerow Baseline Plan

Legend:

- Line of trees
- Native hedgerow
- Native hedgerow - associated with bank or ditch
- Native hedgerow with trees
- Native hedgerow with trees - associated with bank or ditch
- Species-rich native hedgerow
- BNG Area

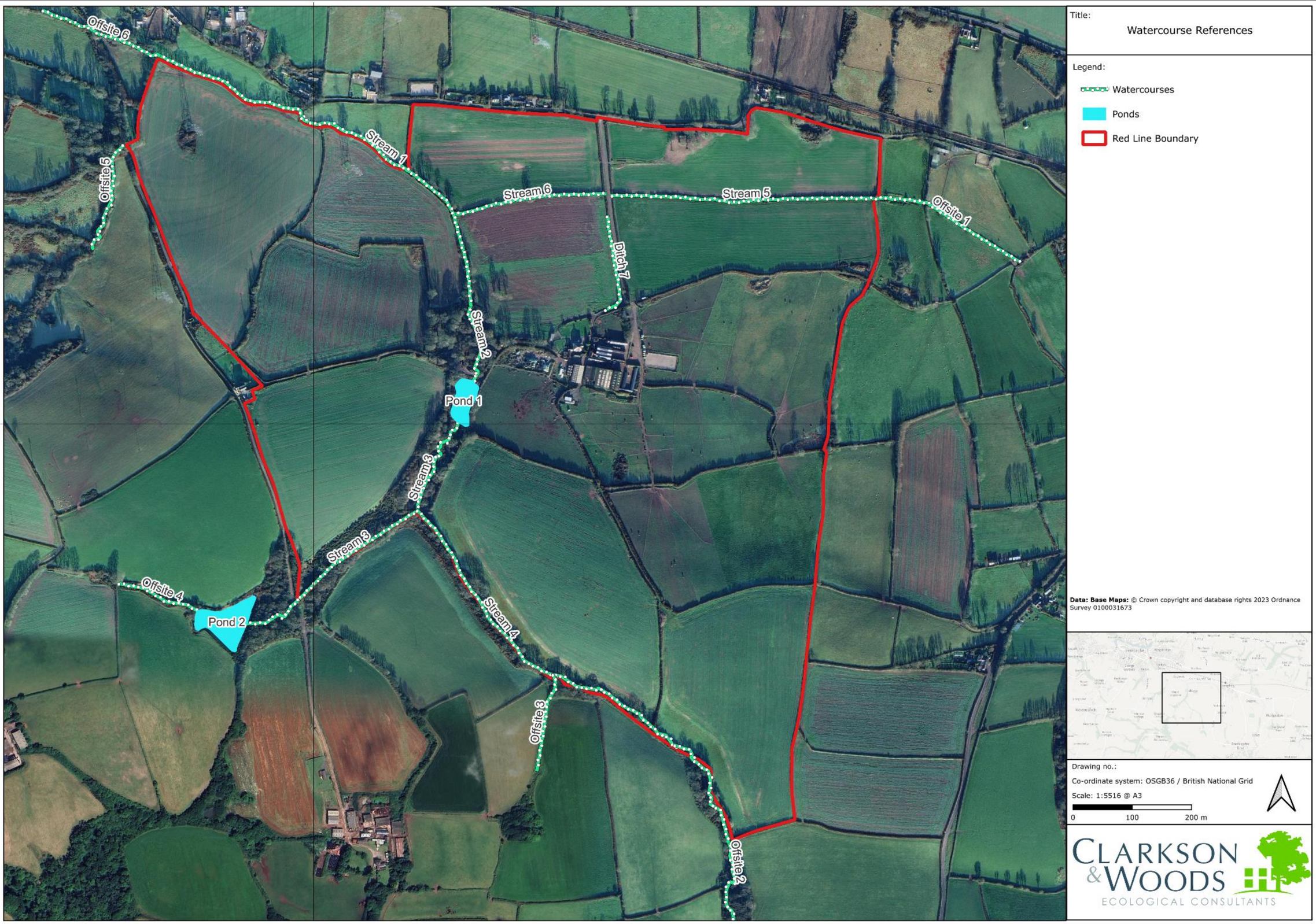
Drawing no.: A

Co-ordinate system: OSGB36 / British National Grid

Scale: 1:4840 @ A3

0 250

CLARKSON & WOODS
ECOLOGICAL CONSULTANTS


Offsite 6
Stream 1
Offsite 5
Stream 6
Stream 5
Offsite 1
Ditch 7
Stream 2
Pond 1
Stream 3
Offsite 4
Pond 2
Stream 4
Offsite 3
Offsite 2
Title:
Watercourse References
Legend:
Watercourses
Ponds
Red Line Boundary
Data: Base Maps: © Crown copyright and database rights 2023 Ordnance Survey 0100031673
Drawing no.:
Co-ordinate system: OSGB36 / British National Grid
Scale: 1:5516 @ A3
0
100
200 m
CLARKSON & WOODS
ECOLOGICAL CONSULTANTS

Appendix C: Proposed Habitats Plan

APPENDIX D: BASELINE & 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. The tables in Appendices D1 to D9 cover all habitat types found in within the Site and their relevant condition sheet. On completion of condition assessments using the condition sheets in Appendix D, 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:

a) Assess the condition of pre-intervention or baseline habitats to inform baseline biodiversity unit calculations.

b) Assess the condition of post-intervention habitats as part of ongoing monitoring requirements.

c) Inform habitat creation and enhancement interventions by defining what each condition state would look like for the habitat in question.

D1 Condition Assessment Sheet: WOODLAND Habitat Type

Woodland and forest - Other woodland; broadleaved

BNG Condition Assessment					Baseline Moderate Woodland	Woodland to be created to targeted condition Mod.
Indicator		Good (3 points)	Moderate (2 points)	Poor (1 point)		
1	**Age Distribution**	3 age classes present	2 age classes present	1 age class present	2	1
2	**Herbivore Damage**	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	3	3
3	**Invasive Species**	No invasive plant species	Rhododendron & laurel not present, other invasive species cover <10%	Rhododendron or laurel present, or other invasive species cover >10%	2	3
4	**No. of Native Tree Species**	5 or more native tree/shrub species present	3-4 native tree/shrub species present	0-2 native tree or shrub species present	2	3
5	**Cover of Native Species**	>80% of canopy & understory shrubs are native	50-80% of canopy & understory shrubs are native	<50% canopy & understory shrubs are native	3	3
6	**Open Space**	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	2	3
7	**Regeneration**	All 3 classes present	1 or 2 classes present	No classes or coppice regrowth present	2	1
8	**Tree Health**	Tree mortality <10%	11-25% tree mortality	>25% tree mortality and any high risk pest/disease	3	3
9	**Vegetation & Ground Flora**	Ancient woodland indicators present	Recognisable NVC community present	No recognisable NVC community	3	1
10	**Vertical Structure**	3 or more storeys across all survey plots	2 storeys across all survey plots	1 or less storeys across all survey plots	2	1
11	**Veteran Trees**	2 or more veteran trees/ha	1 veteran tree/ha	No veteran trees present	1	1
12	**Deadwood**	50% survey plots have deadwood	25-50% survey plots have deadwood	<25% survey plots have deadwood	2	2
13	**Disturbance**	No nutrient enrichment or damaged ground	<20% damaged ground and/or <1ha nutrient enrichment	>20% damaged ground and/or >1ha nutrient enrichment	2	3
Woodland Condition					**Moderate (29/39)**	**Moderate (28/39)**

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)

D2 CONDITION ASSESSMENT SHEET: SCRUB HABITAT TYPE

Heathland and shrub - Gorse scrub

Heathland and shrub - Mixed scrub

Criteria	Baseline (Mixed Scrub)	Baseline (Gorse Scrub)	Scrub to be created to targeted condition Good
Habitat is representative of UKHab description (where in its natural range). There are at least three woody species, with no one species comprising more than 75% of the cover (except common juniper, sea buckthorn or box, which can be up to 100% cover).	Y	N	Y
There is a Good age range – all of the following are present: seedlings, young shrubs and mature shrubs.	N	N	N
There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and species indicative of sub-optimal condition make up less than 5% of ground cover.	Y	Y	Y
The scrub has a well-developed edge with scattered scrub and tall grassland and/or herbs present between the scrub and adjacent habitat(s).	Y	Y	Y
There are clearings, glades or rides present within the scrub, providing sheltered edges.	N	Y	Y
Condition	**Mod. (3/5)**	**Mod. (3/5)**	**Mod. (4/5)**

Condition Assessment Result	Condition Assessment Score
Passes 5 of 5 criteria	Good (3)
Passes 3 or 4 of 5 criteria	Moderate (2)
Passes 0, 1 or 2 of 5 criteria	Poor (1)

D3 CONDITION ASSESSMENT SHEET: GRASSLAND HABITAT TYPE (LOW DISTINCTIVENESS)

Grassland - Modified Grassland (MG)

	BNG Condition Assessment	Baseline Poor MG	MG to be created to targeted condition Poor
1	There must be 6-8 species per m^2. If a grassland has 9 or more species per m2 it should be classified as a medium distinctiveness grassland habitat type. **NB- this criterion is essential for achieving Moderate condition.**	N	N
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	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	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-N	Y
5	Cover of bare ground between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens).	Y	N
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
Condition		**Poor (4 or 5/7 excl. essential criterion 1)**	**Poor (4/7 excl. essential criterion 1)**

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)

D4 CONDITION ASSESSMENT SHEET: GRASSLAND HABITAT TYPE (MEDIUM, HIGH & VERY HIGH DISTINCTIVENESS)

Grassland - Other Neutral Grassland

Grassland - Tall herb communities

BNG Condition Assessment		**ONG to be created or enhanced to targeted condition Moderate**
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 - **This criterion is essential for achieving Moderate condition for non-acid grassland types only.**	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-N
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 - This criterion is essential for achieving Good condition (non-acid grassland types only).**	N
Condition		**Good (6/6)**

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)

D5 CONDITION ASSESSMENT SHEET: ORCHARD HABITAT TYPE

Traditional Orchard

BNG Condition Assessment		Orchard to be created to targeted condition Moderate
1	Presence of ancient1 and or veteran1 trees. **Note - this criterion is essential for achieving Good condition.**	N
2	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.**	N
3	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.	Y
4	There is evidence of formative and or restorative pruning to maintain longevity of trees.	Y
5	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.	Y
6	Grassland is not overgrazed, poaching is not evident around the trees, with no more than 10% of trees poached under the canopy.	Y
7	Species richness of the grassland is equivalent to a medium, high, or very high distinctiveness grassland.	Y
8	There is an absence of invasive non-native plant species2 (as listed on Schedule 9 of WCA3) and species indicative of suboptimal condition4 make up less than 10% of ground cover.	Y
Condition		**Moderate (6/8) excl. essential criteria 1 or 2**

Condition Assessment Result	Condition Assessment Score
Passes 6-8 criteria, including essential criteria 1 and 2	Good (3)
Passes 4 or 5 criteria; OR Passes 6 or 7 criteria but fails an essential criterion.	Moderate (2)
Passes 3 or fewer criteria	Poor (1)

D6 CONDITION ASSESSMENT SHEET: URBAN HABITAT TYPE

Sparsely vegetated land - Ruderal/ephemeral (R/E)

Urban - Vacant / derelict land / bare ground (BG)

BNG Condition Assessment		Baseline Poor BG	Baseline Moderate R/E
1	Vegetation structure is varied, providing opportunities for insects, birds and bats to live and breed. A single ecotone (i.e. scrub, grassland, herbs) should not account for more than 80% of the total habitat area.	N	Y
2	There is a diverse range of flowering plant species, providing nectar sources for insects. These species may be either native, or non-native but beneficial to wildlife. NB - To achieve GOOD condition, criterion 2 must be satisfied by native species only (rather than non-natives beneficial to wildlife). Note that Biodiverse green roofs are exempt from this requirement, and can include non-native sedums, as set out in footnote 1.	N	N
3	Invasive non-native species (Schedule 9 of WCA) cover less than 5% of total vegetated area. NB - To achieve GOOD condition, criterion 3 must be satisfied by a complete absence of invasive non-native species (rather than <5% cover).	Y	Y
Condition		**Poor (1/3)**	**Moderate (2/3)**

Condition Assessment Result	Condition Assessment Score
Passes 3 of 3 core criteria; AND Meets the requirements for good condition within criteria 2 and 3	Good (3)
Passes 2 of 3 core criteria: OR Passes 3 of 3 core criteria but does not meet the requirements for good condition within criteria 2 and 3	Moderate (2)
Passes 0 or 1 of 3 criteria	Poor (1)

D7 CONDITION ASSESSMENT SHEET: HEGDEROW HABITAT TYPE

Native hedgerow

Native hedgerow - associated with bank or ditch

Native hedgerow with trees

Native hedgerow with trees - associated with bank or ditch

Native species rich hedgerow

Native species rich hedgerow with trees - associated with bank or ditch

Attributes and functional groupings (A, B, C, D & E)		**Criteria (the minimum requirements for 'favourable condition'**	**Poor Baseline Hedgerow**	**Moderate Baseline Hedgerows and Hedgerows to be enhanced to targeted condition Mod.**	**Good Baseline Hedgerows and Hedgerows to be created or enhanced to targeted condition Good**
Core groups - applicable to all hedgerow types					
A1	Height	>1.5 m average along length	Y	Y	Y
A2	Width	>1.5 m average along length	Y	Y	Y
B1	Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	N	Y-N	Y
B2	Gap - hedge canopy continuity	Gaps make up <10% of total length and No canopy gaps >5 m	N	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)	N	Y-N	Y-N
C2	Undesirable perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	N	Y-N	Y-N
D1	Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species	Y	Y	Y
D2	Current damage	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	Y	N	Y
Hedgerow Condition			**Poor (4 failures incl. 2 in any functional group)**	**Moderate (3 to 4 failures)**	**Good (1 failure)**
Additional group - applicable to hedgerows with trees only					
E1	Tree age	At least one mature tree per 30m stretch of hedgerow. A mature tree is one that is at least 2/3 expected fully mature height for the species.	N	N-Y	N-Y
E2	Tree health	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	Y	Y	Y

		adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.			
Hedgerow With Trees Condition			**Poor (6 failures)**	**Moderate (3 to 5)**	**Good (1 to 2 failures)**

Condition Categories for Hedgerows without Trees	
Maximum number of attributes that can fail to meet 'favourable condition' criteria	**Condition Assessment 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
Condition Categories for Hedgerows with Trees	
Maximum number of attributes that can fail to meet 'favourable condition' criteria	**Condition Assessment Score**
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 & E1 = 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

D8 CONDITION ASSESSMENT SHEET: LINE OF TREES HABITAT TYPE

Line of trees (LoT)

BNG Condition Assessment		Baseline Moderate LoT	Moderate Baseline LoT to be Enhanced to targeted condition Good
1	More than 70% of trees are native species.	Y	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	Y
3	Includes one or more mature1 or veteran2 tree.	Y	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 anthropogenic operations.	N	Y
5	At least 95% of the 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.	Y	Y
Condition		**Moderate (4/5)**	**Good (5/5)**

Condition Assessment Result	Condition Assessment Score
Passes 5 of 5 criteria	Good (3)
Passes 3 or 4 of 5 criteria	Moderate (2)
Passes 0, 1 or 2 of 5 criteria	Poor (1)

D9 CONDITION ASSESSMENT SHEET: DITCH HABITAT TYPE

Rivers and streams - Ditches

BNG Condition Assessment		Poor Baseline Ditch
1	The ditch is of Good water quality, with clear water (low turbidity) indicating no obvious signs of pollution.	Y
2	A range of emergent, submerged or floating leaved plants are present. As a guide >10 species of emergent, floating or submerged plants in a 20m ditch length.	N
3	There is less than 10% cover of filamentous algae and/or duckweed (these are signs of eutrophication).	Y
4	A fringe of marginal vegetation is present along more than 75% of the ditch.	N
5	Physical damage evident along less than 5% of the ditch, such as excessive poaching, damage from machinery use or storage, or any other damaging management activities.	Y
6	Sufficient water levels are maintain; as a guide a minimum summer depth of approximately 50cm in minor ditches and 1m in main drains.	N
7	Less than 10% of the ditch is heavily shaded.	Y
8	There is an absence of invasive non-native plant and animal species.	Y
Ditch Condition		**Poor (5/8)**

Condition Assessment Result	Condition Assessment Score
Passes 8 of 8 criteria	Good (3)
Passes 6 or 7 of 8 criteria	Moderate (2)
Passes 0, 1, 2, 3, 4 or 5 of 8 criteria	Poor (1)

Clarkson and Woods Ltd.
Overbrook Business Centre,
Poolbridge Road, Blackford,
Somerset BS28 4PA

t: 01934 712500
e: info@clarksonwoods.co.uk

www.clarksonwoods.co.uk

CLARKSON & WOODS