Biodiversity Net Gain Assessment & Reasoning for Proposed Habitat Creation and Enhancement At East Claydon BESS

FOR STATERA ENERGY LTD

EAST CLAYDON BESS, EAST CLAYDON, BUCKS |

Date: NOVEMBER 2023 |

VERSION 1

FUTURE NATURE WTC LTD | Meadow Farm, Thame Road, Blackthorn, Oxfordshire, OX25 1TW

Wildlife Trust Consultancies

Client	Project	
Statera Energy Ltd	Project Name:	East Claydon BESS
4th Floor	Project code:	FN23-066
80 Victoria Street	Prepared by:	Marcus Militello
London	Reviewed by:	Louisa Medland
SW1E 5JL	Approved by:	Russell Hartwell
	Date:	November 2023

Document Control

Version	Date	Changes	Confidentiality	Prep	Rev	Auth
V1.0	Nov 2023	Draft to client	N/A	MM	LM	RH

Client Agreement

This report is issued to the Client for the purpose stated in the Agreement between the Client and Future Nature WTC Ltd, under which this work was undertaken. The report may only be used for this aforementioned purpose and copyright remains with Future Nature WTC Ltd. The report is only intended for the Client and must not be relied upon or reproduced by anyone other than the Client without the express written agreement of Future Nature WTC Ltd. The use of this report by unauthorised persons is at their own risk. Future Nature WTC Ltd accepts no duty of care to any such party.

Field Investigations, Data & Reports

Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by Future Nature WTC Ltd. for inaccuracies in the data supplied by any other party. Furthermore, the findings of the report and subsequent assessment and opinions of Future Nature WTC Ltd are based entirely on the facts and circumstances at the time the work was undertaken.

Declaration of Compliance

"The information which we have prepared and provided is true and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed within this document are our true and professional bona fide opinions". It must be noted that none of the information provided within this report constitutes legal opinion.

Statutory Disclosure Obligatio

Where required to do so by law or regulatory authority, Future Nature WTC Ltd may disclose any information obtained from the Client to a third party. Should Future Nature WTC Ltd become aware that the Client has breached or is likely to breach legislation relating to wildlife or the environment, Future Nature WTC Ltd will be entitled to disclose such information to the relevant authority, including the relevant governmental body or the police.

Third Party Disclaimer

Any disclosure of this report to a third party is subject to this disclaimer. The report was prepared by Future Nature WTC Ltd at the instruction of, and for use by, our client named on the front of the report. It does not in any way constitute advice to any third party who is able to access it by any means. No other warranty, expressed or implied is made as to the professional advice included in this report.

CONTENTS

EXECUTIVE SUMMARY

Future Nature was commissioned by Statera Energy in July 2023 to design the landscaping element for a new battery storage facility in East Claydon, Buckinghamshire and to ensure that biodiversity was the key consideration in its design to optimise outcomes for nature. This included undertaking a biodiversity net gain assessment of the proposals.

This report provides justification for the habitats on site which have been selected for enhancement, retention and creation, along with the species they currently support and may support going forward. This has taken into consideration the local context and regular reference is made to Buckinghamshire's Forward to 2030 Biodiversity Action Plan.

Habitats on site were classified using the UK Habitat Classification System. A total of five habitats were found on site currently, the majority of which was cropland.

The proposed landscaping first looked to retain as much of the existing habitat of value on the site, including grass margins (other neutral grassland) and hedgerows, scrub and a pond. Habitat creation within areas around any development comprised large areas of wildflower grassland, scattered trees, scrub, woodland and water bodies. Within developed areas, biodiverse roofs have been proposed on all inverter buildings.

A field in the south of the site was dedicated to habitat creation for biodiversity enhancement and included a large area of open, damp grassland and scrapes within the flood zone, plus areas of woodland, scrub and a traditional orchard.

A number of additional features were added to further enhance the site including hibernacula and habitat piles, solitary bee habitat, deadwood (standing and piled) and beetle banks.

The results of the Biodiversity Net Gain Assessment are summarised in Table ES1 below. The proposed development will result in the gain of 27.23 (47.32%) habitat units and 17.97 hedgerow units (44.98%).

Table ES1 Summary of Biodiversity Net Gain Assessment		
Onsite baseline	Habitat units	57.54
	Hedgerow units	39.95
Onsite post-intervention	Habitat units	84.77
	Hedgerow units	57.92
Total unit change	Habitat units	27.23
	Hedgerow units	17.97
Total % change	Habitat units	**47.32**
	Hedgerow units	**44.98**

1. INTRODUCTION

1.1 BACKGROUND

Future Nature was commissioned by Statera Energy in July 2023 to design the landscaping element for a new battery storage facility in East Claydon, Buckinghamshire and to ensure that biodiversity was the key consideration in its design to optimise outcomes for nature. This included undertaking a biodiversity net gain assessment of the proposals.

This report comprises an assessment to identify the known biodiversity on the site and within the surrounding area to help inform the guiding principles for the design of proposed habitat creation and enhancement.

The report includes details of the methods used to undertake the assessment (Section 2), the results gained (Section 3) and a discussion on the proposed habitats (Section 4), followed by conclusions reached (Section 5).

1.2 SITE LOCATION & DESCRIPTION

The proposed site of the East Claydon BESS is located approximately 450m west of the village of Granborough in Buckinghamshire, at postcode MK18 2NE and with an approximate central grid reference of SP 755 250, as illustrated in Figure 1. The survey area is approximately 25ha and comprises four agricultural fields dissected by hedgerows. A stream, that forms a tributary of Claydon Brook, lines the western site boundary and a pond is present along the eastern boundary. The red line boundary is shown on Figure 2.

The surrounding area comprises agricultural fields interspersed with minor roads and small villages. A substation is located approximately 375m to the north-west.

Figure 1: East Claydon Site Location

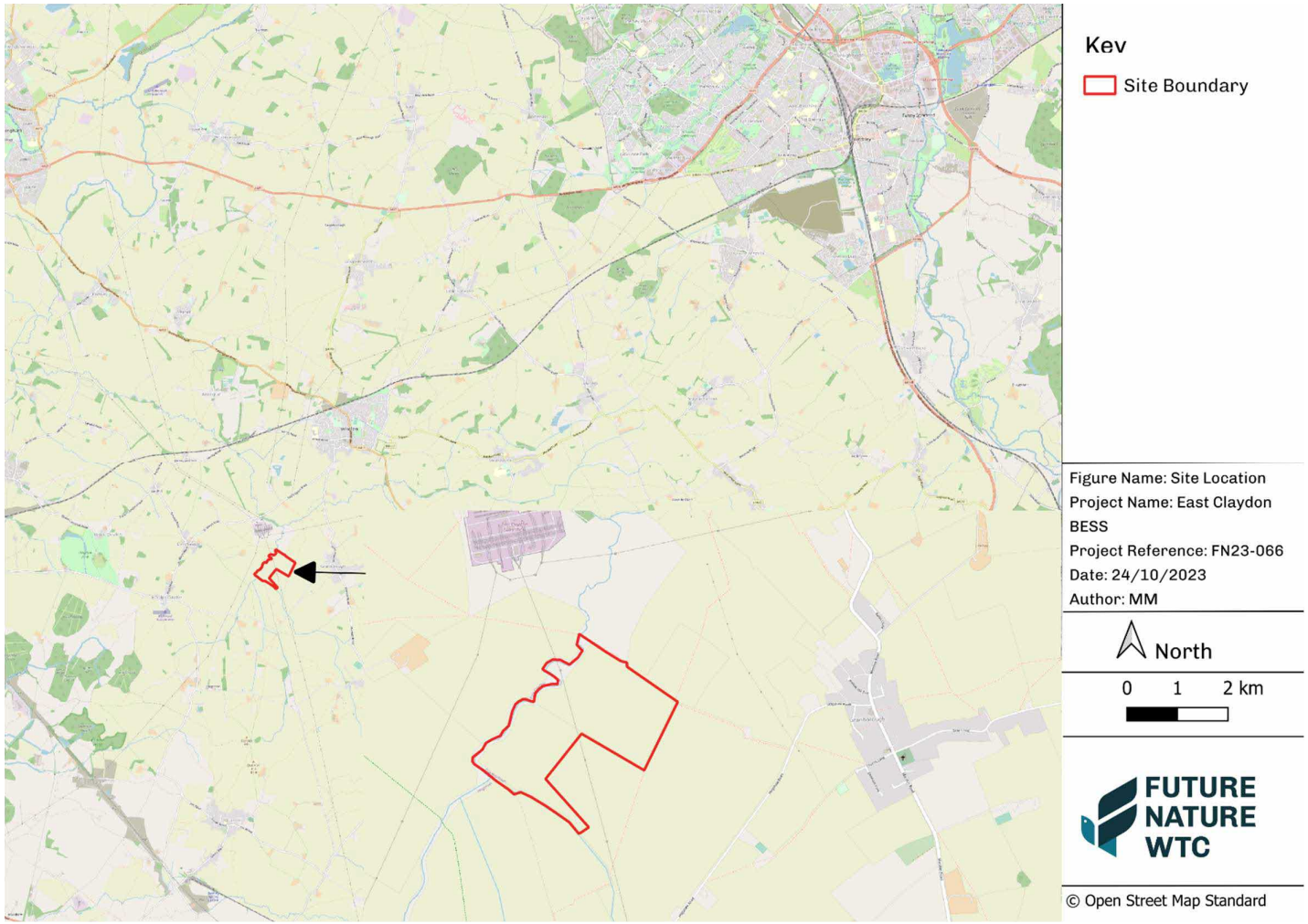
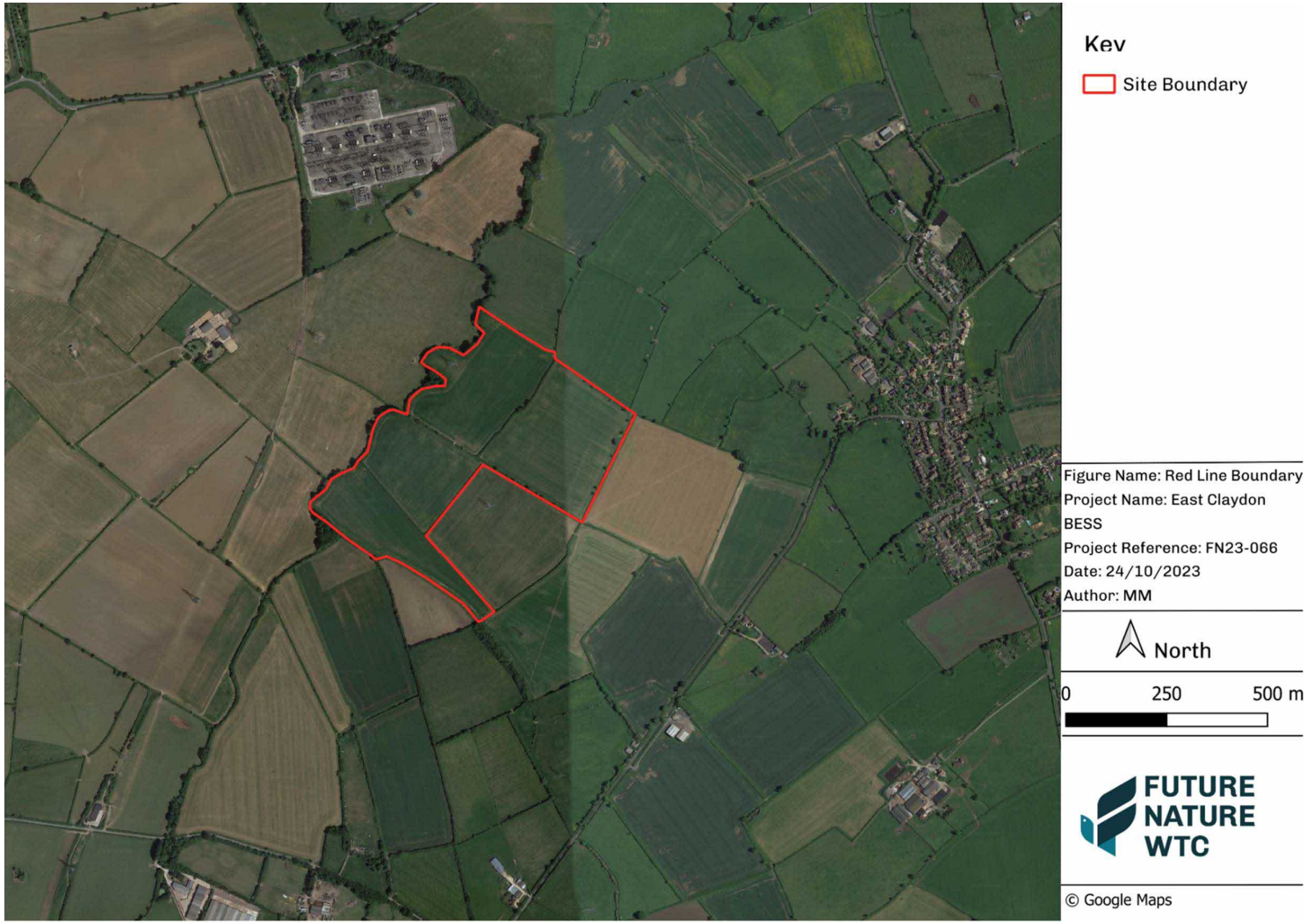


Figure 2: The East Claydon Red Line Boundary



1.3 REPORT OBJECTIVES

The objectives of this report are to:

- Establish the existing biodiversity value of the site and surrounding area and opportunities for enhancement using desk- and field-based survey information;
- Verify the habitat types on the site and determine their condition;
- Calculate the baseline value of the site in biodiversity units;
- Identify habitats that can be retained and enhanced on the site;
- Identify key habitats and species of local provenance that will inform the landscape design and the biodiversity enhancements it will incorporate; and
- Calculate the value of the proposed habitats in biodiversity units.

2. METHODOLOGY

2.1 DESK STUDY

A desk study has been undertaken to determine the presence of existing habitats and species of interest within the area. It also sought to identify whether key habitats or species could be targeted that are currently absent or declining from the local landscape. This information has then be used to provide justification for the selected proposed habitats by highlighting known habitats/species on site, those likely to be on site and those which may in time be found on site as a result of works to be carried out.

Species information has been derived from a Preliminary Ecological Appraisal[1] (PEA) of the site, survey data and the Forward to 2023: Biodiversity Action Plan for Buckinghamshire and Milton Keynes[2].

2.2 UK HABITAT CLASSIFICATION SURVEY

The site was subject to a UK Hab Survey, following best-practice guidance[3], during which habitat types and boundaries were verified against the previous PEA in case of any subsequent changes. Habitat types were defined as per the UK Hab survey criteria during a walkover of the areas within the redline boundary.

Condition assessments were undertaken for all relevant habitats following the guidance provided using the Natural England Condition Assessment sheets and methodology. All habitats are assigned as good, moderate or poor. For some habitats, such as ornamental hedgerows, the condition is pre-determined by the metric.

1 Haines, R. (2022) 'Preliminary Ecological Appraisal, Land off Hogshaw Road, Granborough' MKA Ecology.

2 Bucks MK NEP 'Forward to 2030: Biodiversity Action Plan, More, Bigger, Better and More Joined-up across Buckinghamshire and Milton Keynes' Buckinghamshire & Milton Keynes Natural Environment Partnership.

3 Butcher, B., P, C., R, E., Norton, L., & Treweek, J. (2020). The UK Habitat Classification User Manual Version 1.1. http://www.ukhab.org.

The survey was carried out on the 20th July 2023 by Adam Price MSc BSc (Consultant Ecologist) in suitable weather conditions. Adam is experienced in undertaking UKHab surveys.

2.3 BIODIVERSITY ENHANCEMENTS AND BNG ASSESSMENT

The data gathered during the desk and field-based surveys was used to inform appropriate habitat creation and enhancement measures for the site.

Habitats to be created, retained or enhanced on site are referenced against the BAP at both the county and regional (Aylesbury Vale) level, with information on how each piece of work to create or enhance on site habitat delivers elements of the BAP.

The landscape design was then used to determine the baseline biodiversity units for the site which were calculated using the DEFRA statutory metric. This required information on a habitat's area, distinctiveness, condition and strategic significance. The habitat areas and habitat condition are based on the habitat survey methods discussed above.

Distinctiveness refers to the relative scarcity of the habitat and its importance for nature conservation. The distinctiveness categories are predetermined by the metric.

Strategic significance is assessed against information in the local plan or policies for that habitat and its location. This is considered separately for each habitat type.

The data were input into the Biodiversity Net Gain metric accessed on 30/11/2023.

The post-development biodiversity units were calculated using the site Masterplan provided by Statera (DWG no. SL261_L_X_GA_1).

Any changes to the proposed development plans or landscaping plans may require the recommendations, BNG, proposed mitigation and/or enhancement measures to be updated accordingly.

2.4 LIMITATIONS

The UKHab survey took place during the optimal season (between March and September) when most plants are evident and in flower. However, a survey is only a snap-shot of the habitats and species observed on that day and cannot provide a full account of the ecology present.

BNG uses habitats as a proxy for biodiversity and is a simplification of the real world. Ecological function must also be considered to manage this limitation and this is detailed throughout relevant sections of the report.

Data used to inform the justification for proposed habitats selected comes from a combination of sources. Selected species records from a data search with the Buckinghamshire and Milton Keynes Environmental Records Centre carried out for the Preliminary Ecological Appraisal written by MKA Ecology provide some information do not account for all species present in a given area and some species will no doubt have been missed.

3. RESULTS

3.1 DESK STUDY

3.1.1 Protected and Notable Species on-site and within the surrounding area

Species highlighted in the PEA within 2km of the site

Table 3.1 details the protected and notable species identified in the desk study undertaken for the PEA and from subsequent site surveys. It details species recorded both on site and within a 2km buffer, those species recorded whilst the PEA was being undertaken and the authors opinion on likelihood of species being found on site.

Table 3.1 –Species records on site and within 2km

Taxon Group	Species	Legislation	PEA assessment of likelihood of site presence	Recorded on site
Plants & Fungi	Bluebell Hyacinthoides Non-scripta	Sch. 8 of the Wildlife and Countryside Act (WACA) (1981, as amended)	Negligible	
Plants & Fungi	Juniper Juniperus communis	S41 (NERC act 2006)	Negligible	
Invertebrates	Black hairstreak Satyrium pruni	S41 (NERC act 2006	Moderate	
Fish	Not specified	Various	low	
Amphibians	Common Toad Bufo bufo	Section 9 (5) (WACA 1981)	High	
Amphibians	smooth newt Lissotriton vulgaris	Section 9 (5) (WACA 1981)	High	
Amphibians	Common frog Rana temporaria	Section 9 (5) (WACA 1981)	High	
Amphibians	Great Crested newt Triturus cristatus	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a	High	Y
Reptiles	Grass Snake Natrix helvetica	WACA-Sch5-s9.1k/s9.5a	Moderate	
Reptiles	Common lizard Zootoca vivipara	WACA-Sch5-s9.1k/s9.5a	Moderate	
Birds	Red Kite Milvus milvus	WACA-Sch1-p1	Confirmed	Y
Birds	Skylark Alauda arvensis	NERC S41, bird-red	Confirmed	Y

Birds	Wren Troglodytes troglodytes	Bird-amber	confirmed	Y
Birds	Yellowhammer Emberiza citrinella	NERC S41, bird-red	Confirmed	Y
Birds	Peregrine Falco peregrinus	WACA-Sch1-p1	N/A	
Birds	Redwing Turdus iliacus	WACA-Sch1-p1, bird-amber	N/A	
Birds	Fieldfare Turdus pilaris	WACA-Sch1-p1, bird-red	N/A	
Birds	Reed bunting Emberiza Schoeniclus	NERC S41 Bird-red	N/A	
Birds	Tree Sparow Passer montanus	NERC S41 Bird-red	N/A	
Mammals (bats)	Common pipistrelle Pipistrellus pipistrellus	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b, HabDir-A4	Moderate	
Mammals (bats)	soprano pipistrelle Pipistrellus pygmaeus	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b, HabDir-A4, RL-GB-post2001-NT	Moderate	
Mammals (bats)	brown long-eared bat Plecotus auritus	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b, HabDir-A4	Moderate	
Mammals (bats)	noctule Nyctalus noctula	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b, HabDir-A4	Moderate	
Mammals (bats)	lesser noctule Nyctalus leisleri	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b, HabDir-A4	Moderate	
Mammals (bats)	myotis sp. Myotis	HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a/s9.5b, HabDir-A2np, HabDir-A4, RL-GB-post2001-CR, RL-GB-post2001-DD	Moderate	
Mammals	Badger Meles meles	Badgers-1992	low	
Mammals	Hedgehog Erinaceus europaeus	NERC S41, RL-GB-post2001-VU	moderate	

Mammals	Water vole Arvicola amphibius	WACA-Sch5-s9.4a/s9.4b/s9.4c, NERC-S41, RL-GB-post2001-EN	Moderate	
Mammals	Brown hare Lepus europaeus		Moderate/ high	
Mammals	Otter Lutra lutra	HabDir-A2np, HabDir-A4, HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a, NERC-S41	May pass through site	
Mammals	Hazel dormouse Muscardinus avellanarius	HabDir-A4, HabReg-Sch2, WACA-Sch5-s9.4b/s9.4c/s9.5a, NERC-S41, RL-GB-post2001-VU	Negligible	

Table 3.3 –Species observed during surveys in 2023

Taxon Group	Species/ group	Means of observation
Birds	Red Kite	2 x Active nests observed
Mammals (bats)	Common pipistrelle	Detector
Mammals (bats)	Soprano pipistrelle	Detector
Mammals (bats)	Noctule	Detector
Reptile	Grass snake	Artificial refugia
Reptile	Common lizard	Artificial refugia

3.1.2 Other Additional Species Highlighted in the BAP in the Aylesbury Vale area

Table 3.2 details a number of other species that are specifically highlighted in the Aylesbury Vale area, within the BAP. There is scope for the site at East Claydon to support at least some of these species.

Table 3.2 –BAP Species in the Aylesbury Vale Area

Taxon Group	Species/ group
Birds	Barn Owl Tyto alba
Birds	Farmland birds
Birds	Snipe Gallinago gallinago
Birds	Curlew Numenius arquata
Birds	Lapwing Vanellus vanellus
Birds	Redshank Tringa totanus

Birds	Golden Plover Pluvialis apricaria (wintering)
Birds	Kingfisher Alcedo atthis
Mammals (bats)	Bechstein's bat Myotis bechsteinii
Higher Plants	Black poplar Populus nigra
Higher plants	Great burnet Sanguisorba officinalis
Higher Plants	Meadow Sweet Filipendula ulmaria
Higher Plants	Arable weed communities (unspecified)
Invertebrates	Brown Hairstreak Thecla betulae
Fish	Dace Leuciscus leuciscus
Fish	Chub Squalius cephalus
Fish	Roach Rutilus rutilus
Fish	Brown Trout Salmo trutta

3.2 UK HABITAT CLASSIFICATION SURVEY

Table 3.1 and Table 3.2 provide information on the habitats and hedgerows found on site during the baseline survey. This is followed by Figure 3 which shows the baseline habitats map.

Table 3.1: East Claydon Area Habitat Descriptions

Habitat Feature	Area	Condition	Description
g4 modified grassland	10.057	Poor	Modified grassland occurred in the two fields at the south west of the site. The sward was typically species poor and dominated by a few fast growing species tolerant of fertile soils.
g3c5 Arrhenatherum other neutral grassland	0.586 & 1.299	Poor	The western site boundary adjoined the Claydon Brook and comprised wide field edges. Narrow field margins measuring 1m to 2m wide also occurred along the boundaries of the arable fields. The sward was dominated by false oatgrass *Arrhenatherum elatius* with creeping thistle *Cirsium arvense* and stinging nettle

			Urtica dioica sometimes abundant. In wetter areas reed canary grass *Phalaris arundinacea* became common.
h3h Mixed scrub	0.022	moderate	Dense scrub occurred surrounding and overshading the pond at the eastern edge of the site. Species included blackthorn *Prunus spinosa* and bramble *Rubus fruticosus agg.*
c1c Cereal crops	14.268	n/a	The two large fields at the north east of the site were under wheat during the time of survey. The route of the proposed access track and footpath also fall within cereal crop.

Table 3.2: East Claydon Linear Habitat Descriptions

Habitat Feature	Length	Condition	Description
h2a Native hedgerow (priority habitat)	1.327	moderate	Native hedgerow with trees. Species including aspen *Populus tremula*, hawthorn *Crataegus monogyna*, blackthorn, English oak, bramble and elm *Ulmus sp.*
h2 hedgerow. Native hedgerow associated with bank or ditch	1.400	Good/ moderate	Native hedgerow. Species including aspen *Populus tremula*, hawthorn *Crataegus monogyna*, blackthorn, English oak, bramble and elm *Ulmus sp*
w1g6 ecologically valuable line of trees	0.994	Poor	Trees alongside brook including willows *Salix sp.* and aspen

3.3 Baseline Biodiversity Net Gain Units

This section of the report reviews the baseline value of the habitats present based on the Defra statutory metric. A summary of the biodiversity unit calculations for the baseline habitat features is presented in Table 3.3 and 3.4. The technical evidence associated with the statutory metric is presented in Appendix D. Please refer to the accompanying spreadsheet for the full BNG calculations.

The other neutral grassland, mixed scrub and pond on site are mentioned specifically in either the County-wide Buckinghamshire and Milton Keynes BAP or more specifically in the Aylesbury Vale area region. For this reason they have been classified, in terms of strategic significance, as 'formally identified in local strategy'.

The habitats on site currently provide a total of 57.54 habitat units and 39.95 hedgerow units.

Table 3.3: Biodiversity Units of Baseline Habitats

Habitat	Area (Ha)	Condition	Biodiversity Units
Modified grassland	10.057	Poor	20.11
Other neutral grassland	0.586	Poor	2.70
Other neutral grassland	1.299	Poor	5.98
Mixed scrub	0.022	Moderate	0.20
Ponds (non-priority habitat)	0.004	Poor	0.02
Cereal crops	14.268	Condition Assessment N/A	28.54
Total	**26.24**		**57.54**

Table 3.4: Biodiversity Units of Baseline Hedgerows			
Hedgerow Type	**Length**	**Condition**	**Units**
Native hedgerow with trees - associated with bank or ditch	1.327	Moderate	18.31
Native hedgerow - associated with bank or ditch	0.953	Good	13.15
Native hedgerow - associated with bank or ditch	0.447	Moderate	4.11
Ecologically valuable line of trees	0.994	Poor	4.37
Total	**3.72**		**39.95**

Figure 3. Habitat Baseline

4. HABITATS TO BE ENHANCED AND CREATED

The details of the proposed habitats that have been included in the landscape masterplan are provided below along with justification for why they have been included to benefit biodiversity on the site. They are shown on Figure 4.

Table 4.1 provides a summary of the proposed habitats. Habitat names refer to those listed on the East Claydon Masterplan, an additional column is added for habitats which have a corresponding name in the Biodiversity metric.

Table 4.1 Proposed on-site habitats

Habitat	Proposed Habitat under Metric	Created?	Enhanced?
Existing Hedgerow	Native hedgerow with trees – associated with bank or ditch		Y
New hedgerow	Native hedgerow –associated with bank or ditch, species-rich native hedgerow with trees – associated with bank or ditch	Y	
Ponds	Ponds (non-priority habitat)	Y	Y
Wildflower grassland	Modified grassland	Y	
Enhanced wet meadow	Other neutral grassland		Y
Retained grassland	Other neutral grassland		Y
Scrub	Mixed scrub	Y	
Native broadleaved woodland	Other woodland; broadleaved	Y	
Orchard	Traditional Orchard	Y	
Existing standard trees	Rural Tree		
Proposed standard trees	Rural Tree	Y	
Biodiverse green roof	Biodiverse green roof	Y	
Hibernacula	N/A	Y	
Solitary bee habitat	N/A	Y	
Standing/piles of deadwood	N/A	Y	
Beetle bank	Sparsely vegetated land - ruderal/ephemeral	Y	

4.1 VALUE OF HABITATS IN RELATION TO THE BUCKINGHAMSHIRE AND MILTON KEYNES BIODIVERSITY ACTION PLAN

The Buckinghamshire and Milton Keynes BAP focuses primarily on habitat targets as a proxy for species. Action plans are laid out for the county as a whole and also on a more targeted regional level. East Claydon falls under the 'Aylesbury Vale' region, which covers the National Character Areas (NCA) 108: Upper Thames Clay Vales and 109: Midvale Ridge[4].

Each Habitat detailed in Table 4.1 is referenced in relation to the relevant area wide action plans and the Aylesbury Vale specific action plan. It should be noted that there are some exceptions to the habitats above which are not included specifically in the Action plans and the benefit of these to biodiversity is covered in Section 4.2. These are as follows:

- Biodiverse green roofs
- Beetle bank
- Hibernacula
- Solitary bee habitat

4.1.1 Hedgerow

Existing hedgerow/ new hedgerow (Native hedgerow –associated with bank or ditch, species-rich native hedgerow with trees –associated with bank or ditch) –Area Wide Action Plans

Hedgerow is detailed under the area wide action plan 2 "Increase the overall land area of wildlife-important habitats and of land positively managed for wildlife and high nature value habitats". The recommended action across the county is to "*Restore, enhance, expand or create, and manage, habitats, such as:..hedgerows for nesting birds and invertebrates*" in order to improve habitats for pollinators and link for species movement. Action plan 2 suggests that in general hedgerows should be: "more, improved and managed".

[4] Natural England (2014) National Character Area Profiles. Accessed online National Character Area profiles - GOV.UK (www.gov.uk)

Under 5. "*Action plan to Connect quality habitats across the landscape to enable species movement across larger areas to improve habitat and species resilience to external pressures, with a focus on connectivity within and between Biodiversity opportunity areas (BOAs) as well as into the wider landscape*" the recommended action in relation to hedgerows is to "*Ensure new habitats improve landscape connectivity*" with an example of how to deliver being "*Restoration and management of native hedgerows and hedgerow trees to enhance connectivity*".

Under 7. "*Action plan to ensure biodiversity is a key factor in the design of the urban environment and of new developments*" the relevant action "*create new, connected green spaces as part of new development*" can be delivered through "*providing…hedgerows…. maintain and enhance ponds and hedgerows; conserve veteran trees, hedgerows and woods; seek habitat linkages when creating new habitats*".

Existing hedgerow/ new hedgerow (Native hedgerow –associated with bank or ditch, species-rich native hedgerow with trees –associated with bank or ditch) –Aylesbury Vale Specific Action Plan

Action 2 is "*Maintain and enhance hedgerows and field/ hedgerow trees*" with examples of how to deliver being: "*Conserve veteran trees in fields, hedgerows and woods*." And "*Increase hedgerow planting within the landscape*."

Under action 5. "*Restore and connect ancient and semi-natural woodlands*" delivery may be achieved through "*the restoration of hedgerows where these will link patches of woodland*"

Summary of how hedgerow at East Claydon fulfills the aims of the BAP

Across the action plans, the aims for hedgerows add up to creating more hedgerows, enhancing and managing those which already exist, bringing both new and current hedgerows under better management. Additional aims include enhancing connectivity, protecting hedgerow trees (particularly veterans) and linking patches of deciduous woodland. Proposals for East Claydon comply with all of the above recommendations with the exception of linking patches of ancient and semi-natural woodland, which is a largely underrepresented habitat in

the immediately surrounding area, though it is arguable that hedgerows will provide important linkage for new areas of deciduous woodland being planted on site.

4.1.2 Ponds

Ponds (non-priority habitat) –Area wide action plans

Ponds are relevant to 2. "*Action plan to: Increase the overall land area of wildlife-important habitats and of land positively managed for wildlife and high nature value habitats*..". under the action "*Promote and support landowner and farmer-led initiatives*", the recommended way this is to be delivered is to "*promote sensitive resource use (e.g. water –flood attenuation and water quality measures: such as..field corner storage ponds.…in upper catchment areas as part of natural flood management (NFM) to "slow the flow*""

Under 7. "*Action plan to: Ensure biodiversity is a key factor in the design of the urban environment and of new developments*." the action "*Maintain existing greenspaces and create new, connected green spaces as part of new development*", the recommended way this can be delivered is to "*Take cues from existing wildlife, habitats and landscape, e.g. maintain and enhance ponds..seek habitat linkages when creating new habitats*."

Ponds (non-priority habitat) –Aylesbury Vale Specific Action Plan

Under Action 1. "*Restore and create wetland habitats*" the following example of how to deliver is provided: "*As hydrological conditions sustainably allow, provide for a range of wildlife and contribute positively to the wider mosaic of habitats in the landscape including wet grassland, ponds and fens*."

Summary of how pond creation and enhancement at East Claydon fulfills the aims of the BAP

The sites position in the Claydon Brook Tributary, one of the headwaters of the Upper Ouse operational catchment, means that ponds on site are well positioned to provide NFM benefits, thus fulfilling action plan 2.

Given that ponds are both created and enhanced on site, Action plan 2 is also fulfilled. Due to the presence of 12 other ponds within 500m of the site, the creation and enhancement of on-site ponds also increases habitat linkage by providing additional stepping stones between pre-existing ponds.

Action 1 of the Aylesbury Vale specific plan is addressed through ponds on site comprising part of a larger mosaic of wetland habitats, including the wet grassland on site.

4.1.3 Wildflower grassland

Wildflower grassland, retained grassland (modified grassland) and enhanced wet meadow (other neutral grassland) –Area wide action plans

Under 2. "*Action plan to: Increase the overall land area of wildlife-important habitats and of land positively managed for wildlife and high nature value habitats*.:". the action "*Restore, enhance, expand or create, and manage, habitats, such as: species-rich grassland (including wet grassland).… edge habitats and scrubby grassland (e.g. road verges, hedgerows for nesting birds and invertebrates)…Wildflower-rich meadows and wildflower verges*" the following example of how to deliver is given: "*Secure long-term protection and management of existing…grassland areas to improve quality, connectivity and resilience; and plan and manage new grassland… areas*".

Action plan 3 "*Enhance existing habitats and improve habitat condition*", the action "*Follow best practice for wildlife on farmland to improve biodiversity*" may be delivered through following DEFRA guidelines on managing species rich grassland laid out in the various agri-environmental scheme documents

Wildflower grassland, retained grassland (modified grassland) and enhanced wet meadow (other neutral grassland) –Aylesbury Vale specific Action Plan

Under Action 1. "*Restore and create wetland habitats*" delivery may be achieved through doing the following "*As hydrological conditions sustainably allow, provide for a range of wildlife and contribute positively to the wider mosaic of habitats in the landscape including wet grassland, ponds and fens*"

Summary of how grassland creation and enhancement at East Claydon fulfills the aims of the BAP

The combination of creating new grasslands and enhancing pre-existing grasslands, assured protection of these grasslands for at least the next 30 years, along with the improved quality of connected grassland running alongside the Claydon Brook and improved resilience of soils in areas converted from arable to grassland means that the project achieves Action plan 2.

In terms of Action plan 3, whilst grassland is not being managed under an agri-environmental scheme, recommended management interventions detailed in the 'East Claydon battery storage facility Landscape specification'[5] lay out very similar specifications for management, meaning that grasslands should reach a similar good quality condition to those created under agri-environment schemes.

Action 1 of the Aylesbury Vale specific plan is addressed through wet grassland on site comprising part of a larger mosaic of wetland habitats, including the ponds and the brook itself.

4.1.4 Scrub

Scrub (Mixed Scrub) –Area Wide Action Plans

Scrub is mentioned Under 2. "*Action plan to: Increase the overall land area of wildlife-important habitats and of land positively managed for wildlife and high nature value habitats…*", with particular reference to the action "*Restore, enhance, expand or create, and manage, habitats, such as: Scrub and edge habitats and scrubby grassland (e.g. road verges, hedgerows for nesting birds and invertebrates) – improve habitats for pollinators, link for species movement and create new such habitats*". Delivery is achieved through creation anywhere but ideally targeted In Biodiversity Opportunity Areas (BOAs), and looking to boost connectivity. Delivery should utilise the Lawton Principles.

[5] Morton : Pattison (2023) East Claydon battery storage facility Landscape specification.

Under 3. "*Action plan to: Enhance existing habitats and improve habitat condition*", the action most relevant to scrub is: "*Follow best practice for wildlife on farmland to improve biodiversity*, *this may be delivered through following DEFRA guidelines on managing scrub and scrub mosaics laid out in the various agri-environment scheme documents*"

Summary of how scrub creation at East Claydon fulfills the aims of the BAP

Scrub creation on site ticks almost all boxes mentioned in Action plan 2. However since the site does not fall within a BOA, scrub created on site may be of lower value to wildlife than other parts of the county, this cannot be helped.

Likewise with the section on grassland above, recommendations for scrub management on site are very similar to those laid out in DEFRA guidelines for scrub management under agri-environment schemes and therefore the development at East Claydon can be said to address Action Plan 3

Scrub is not detailed in the Aylesbury Vale specific Action Plan

4.1.5 Woodland

Native broadleaved woodland (Other woodland; broadleaved) –Area Wide Action Plans

Under 2. "*Action plan to: Increase the overall land area of wildlife-important habitats and of land positively managed for wildlife and high nature value habitats*…". the woodland specific action "*Restore, enhance, expand or create, and manage, habitats, such as:…Native semi-natural woodland*" is achieved through creation anywhere but ideally targeted to BOAs, and looking to boost connectivity. Delivery should utilise the Lawton Principles.

In Action plan 3: "*Enhance existing habitats and improve habitat condition*", the action "*Incorporate well-designed green infrastructure…within new development*" delivery may be achieved through "*Long-term and appropriate management secured for trees and woodlands*"

Under 4. "*Action Plan to : Create and manage buffers around existing and new areas of priority habitat and other core and high quality biodiversity and habitat sites following best practice guidelines…*" for the action "*Create and manage buffers/improve land surrounding existing and*

new areas of priority habitat as well as around other core and high quality biodiversity and habitat sites. Delivery may be achieved through: Follow(ing) best-practice guidelines" e.g.:

- Forestry Commission and Natural England advice (updated 2018): Ancient woodland, ancient trees and veteran trees: protecting them from development.
- Woodland Trust guidelines (2019) requiring a seminatural buffer of a minimum of 50m for ancient woodland: Planners manual for ancient woodland."

For Action plan 5: "*Connect quality habitats across the landscape to enable species movement across larger areas to improve habitat and species resilience to external pressures, with a focus on connectivity within and between BOAs as well as into the wider landscape*" under the action "*Promote cooperative land management across wider areas*" delivery can be achieved through doing the following "*Promote and raise awareness of cooperative management across wider areas to support larger and better-integrated resources for wildlife and a sense of connectivity: e.g.… woodland management areawide across multiple landowners to avoid fragmentation*".

Native broadleaved woodland (Other woodland; broadleaved) –Aylesbury Vale specific Action Plan

Under Action 5. "*Restore and connect ancient and semi-natural woodlands*" Examples of how to deliver are: "*Restore coppice management and conifer Plantations on Ancient Woodland Sites (PAWS) back to native broad-leaved woodlands where appropriate. Develop a co-ordinated approach to deer management with landowners. Encourage the restoration of hedgerows where these will link patches of woodland*."

Summary of how woodland creation at East Claydon fulfills the aims of the BAP

Woodland creation at East Claydon delivers on certain key elements of the county wide and regional action plans. Whilst the site is outside of a BOA, it will still deliver in a meaningful way, creation of semi-natural native woodland is highlighted in Action plan 2.

Given that the biodiversity net gain agreement will secure ongoing appropriate management for created woodland for at least the next 30 years, woodland creation on site meets the targets laid out in Action plan 3 also.

Action plan 4 cannot be achieved on site due to the fact that there is no other adjoining, pre-existing woodland or ancient woodland to buffer.

Given that this site is standalone, it will not currently deliver on Action plan 5 because it is not part of a larger collective of landowners or land managers such as a farmer cluster which is looking to facilitate woodland management on a landscape scale. Despite this fact, it is recommended that the land at East Claydon, could easily in future with minimal changes to the habitat management plan, become part of a larger land management collective.

Woodland creation partially delivers on Action 5 of the Aylesbury vale local action plan. There is no scope to restore or connect ancient woodlands in the area, since the closest are nearly 3km to the south west. At present there is no plan to carry out deer management, however in the interests of this project and Action plan 5, it is recommended that deer management is incorporated into habitat management plans, particularly in the early years of establishment.

This part of Buckinghamshire is known to support significant numbers of deer, in particular Muntjac *Muntiacus reevesi* and Chinese Water Deer *Hydropotes inermis*, which are likely to have a detrimental effect upon the growth of young saplings in the woodland and hedgerows. Lastly new woodlands are largely linked across the site by the new and pre-existing hedgerows which again delivers on Action 5.

4.1.6 Orchard

Orchard (Traditional Orchard) –Area Wide Action Plans

Under 3. "*Action plan to: Enhance existing habitats and improve habitat condition*" and the action "*Engage other sectors in caring for biodiversity" examples of how to deliver include: "sponsorship of a habitat or species / targeted land management, such as creating orchards which could help a bespoke business and or public amenity space…. sponsoring targeted land management that would help a specific habitat or species, e.g. creating orchards which could help a bespoke business and/ or public amenity space*."

Under 6. "*Action Plan to Improve people's connectedness with nature – so that communities across Buckinghamshire and Milton Keynes value and understand the role of nature in mental and physical wellbeing*." The particular action "*Work towards achieving the NEP's Vision and*

Principles for the Improvement of Green Infrastructure across Buckinghamshire and Milton Keynes" examples of how to deliver are: "*Work to increase and improve accessibility of nature-rich species, while maintaining and enhancing their biodiversity value (with wider benefits, e.g. to air quality, pollinators, climate change, water use and quality, etc), e.g.… Community projects: orchards*."

Orchard (Traditional Orchard) –Aylesbury Vale Specific Action Plan

Under Action 6. "*Encourage green development and access to nature*" Delivery may be achieved through the "*creation of new traditional orchards using varieties of local provenance*."

Summary of how orchard creation at East Claydon fulfills the aims of the BAP

Orchard creation at East Claydon loosely fulfills the aims of the area wide action plans, providing some benefit to the client's business (Action 3). Public accessibility of nature is enhanced through the proposed footpath and the wider benefits to air quality, pollinators, climate change, water use and quality are delivered, thus achieving Action plan 6.

For the area specific action plan, the orchard on site again delivers on access to nature and the creation of the orchard; especially with the planting of local species such as Arthur Turner, Grenadier and Reverend W. Wilks apple varieties and the Aylesbury Prune damson, does deliver on elements of Action 6.

4.1.7 Standard Trees

Existing Standard trees and proposed standard trees (rural trees) –Area Wide Action Plans

Under 3. "*Action Plan to Enhance existing habitats and improve habitat condition*" the action "*Incorporate well-designed green infrastructure in both existing and within new development*" delivery may be achieved through "*Long-term and appropriate management secured for trees.*"

For 5. "*Action plan to Connect quality habitats across the landscape to enable species movement across larger areas to improve habitat and species resilience to external pressures, with a focus on connectivity within and between BOAs as well as into the wider landscape*" a recommended

action is to "*Ensure new habitats improve landscape connectivity*" with an example of how to deliver being "*Restoration and management of native hedgerows and hedgerow trees to enhance connectivity.*"

Under 7. Action Plan to: "*Ensure biodiversity is a key factor in the design…. new developments*" for the particular action: "*Maintain existing green spaces and create new, connected green spaces as part of new development*" delivery is achieved through following "*good practice in design of new developments to.… Target sources of e.g. noise, air and light pollution: line streets with vegetation (e.g. wilder verges, trees).… Ensure a diversity of new trees are planted and the correct species for the location is chosen*".

Standard trees –Aylesbury Vale specific Action Plan

Under Action 2. "*Maintain and enhance hedgerows and field/ hedgerow trees*" delivery can be achieved through "*Conserve veteran trees in fields, hedgerows and woods. Ensure there are successor trees and retain deadwood where possible*."

Summary of how standard tree planting and enhancement at East Claydon fulfills the aims of the BAP

Management of current and proposed trees will conform to the aims laid out in the area wide Action plan. The 30 year BNG agreement long-term appropriate management is secured for trees on site.

Standard trees, particularly those in hedgerows aid in enhancing landscape connectivity, thus fulfilling Action plan 5.

Action plan 7 is delivered through new and current trees acting to screen the battery storage facility, thus providing alleviation for noise pollution and potentially also light pollution. The new trees to be planted, have been selected based on trees currently found in the local area and thus are the correct species for the location.

Action 2 of the Aylesbury Vale specific plan is fulfilled through the conservation of current trees in tandem with the planting of new successor field trees.

4.1.8 Deadwood

Standard trees –Aylesbury Vale specific Action Plan

Under Action 2. "*Maintain and enhance hedgerows and field/ hedgerow trees*" delivery can be achieved through "*Conserve veteran trees in fields, hedgerows and woods. Ensure there are successor trees and retain deadwood where possible*."

Summary of how creation of deadwood piles at East Claydon fulfills the aims of the BAP

Deadwood piles will help to simulate fallen deadwood from larger veteran and ancient trees. This important resource for small mammals, herptiles and saproxylic invertebrates, delivers on retaining deadwood as detailed under action 2.

4.2 Value of Other Habitats to Enhancing Biodiversity

The following habitats have also been provided within the landscape proposals due to the additional benefits they would bring to biodiversity:

- Biodiverse green roofs
- Beetle bank
- Hibernacula
- Solitary bee habitat

4.2.1 Biodiverse Green Roofs

Biodiverse roofs are another option to reduce the footprint of the proposed development and provide a habitat of value that will enhance biodiversity.

A varied-depth substrate, materials mix, wildlife features (such as deadwood) and seeded open sward, offer quick returns for increasing biodiversity after installation, as many invertebrate species are early adopters even before plants are fully established. A mosaic complexity is key.

The green roofs for this project have been designed to have a low fire risk and are focussed on creating nesting and basking habitat for invertebrates more than a nectar source for

foraging as this is already catered for within other proposed habitats, such as the substantial areas of wildflower grassland.

The substrate depth would vary between (minimums) 80mm up to 150mm (settled depth) and be irregular in topography, as this promotes a diverse habitat of sun/shade, exposure/shelter, dry/damp, on the roof. The substrate would sit above a filter fleece (~2mm), drainage layer (~10-25mm) and protection layer (~3-5mm), exact depth varies according to the component selection. The protection layer would be laid over the building's waterproofing layer.

The biodiverse roof would be installed with a variety of non-flammable inorganic substrates, such as sand, crushed concrete, crushed brick, limestone aggregate, crushed recycled building waste and arranged in a natural rather than linear pattern. Additional items such as bee bricks and shade tiles can be added to the surface as habitat features. Timber/log piles will not be considered due to fire risk.

Typically, biodiverse roofs are seeded with a native provenance wildflower seed mix, species selected for the region, local climate, value as larval food plants, pollen and nectar sources, and hardy qualities. Minimal or no vegetation is proposed as the substrate and materials alone offer a habitat attractive to many invertebrates. Where an open mosaic is feasible with a limited vegetation finish, a relatively sparse wildflower flora could be provided growing with bare substrate patches, then the biodiversity would be further enhanced. The principal though is not to create a dense sward of vegetation.

The biodiverse roof as outlined above, requires a roof profile of between 3 and 8 degrees pitch. This is due to a steeper pitch being increasingly liable for substrate to be eroded by rain/weather conditions, especially the combination of stormwater and gravity at steeper pitches. For the 3-8 degree proposed, the substrate depth can be at its shallowest at the edges, therefore allowing a lower profile of retention angle to suit.

Maintenance of the biodiverse roofs should be allowed for. Two visits per year to clear unwanted or excess vegetation, and to check system integrity, are recommended.

Biodiverse roofs offer many benefits as well as increasing biodiversity, including the following;

- Biodiverse roofs can be a key element of SUDS design. They attenuate water at roof level and slow the release to drainage at ground level, reducing costs and mitigating against flooding. They can incorporate Blue Roofs to hold significant storm water, released gradually over a 24 hour period;
- They are a medium distinctiveness habitat in the DEFRA Metric;
- They add insulation and therefor reduce energy use and costs associated with heating and cooling (they also improve sound insulation);
- They help improve air and water quality by filtering out harmful particulates.

4.2.2 Beetle Bank

Large beetle banks have been proposed which would be created from the dig-out of waterbodies which would largely comprise clay and loam. They primarily serve as an overwintering habitat for beetles and other invertebrates but they also provide wider benefits. The increased abundance in invertebrates provides a food source for a range of insectivorous fauna and shelter for mammals such as hare and voles.

The beetle banks would be designed to create a variety of habitat niches. They would include steep or vertical sided faces that would remain more or less absent of vegetation. They would be south facing to provide optimal nesting and basking sites.

The remaining areas would be created to have a varied topography and would be left to vegetate naturally with an aim to establish a varied sward of ephemeral and ruderal vegetation. The development of a dense, thick grassland sward would be restricted to minimal areas.

To further aid diversity, a selection of materials will be added, such as; sand, limestone/chalk, and where practicable, site won construction waste, such as; crushed concrete and gravel.

4.2.3 Hibernacula

A number of hibernacula and refugia piles are proposed within the site. These would provide sites for reptiles, amphibians and invertebrates to hibernate and overwinter in and also provide shelter during the active season.

They would include areas dug to depth of approximately 50cm which would be back filled with logs, branches, bricks and rocks with soil above which would be seeded with a wildflower mix. This would create the stable temperature and protection required over winter.

In addition, refugia piles would be created using logs, branches, brash and grass clippings from the on-going landscape maintenance. These would provide shelter for a variety of fauna thoughout the year and suitable egg laying sites for grass snake.

4.2.4 Solitary bee habitat

The majority of the UK bee species are ‘solitary’ bees. They build individual nests which typically comprise holes in the ground. They require patches of warm, dry, bare, ground within which to build them and these can be provided by creating piles of different substrate within the site.

The steep/vertical faces proposed as part of the beetle banks will provide suitable areas for nesting creation but in addition specific piles of different substrate would also be created in different locations specifically to provide nesting sites. These should include piles of sand, fine gravel and crushed limestone. The piles would be created to have a varied topography and aspect to create as many different niches as possible.

4.3 Biodiversity Net Gain Assessment

This section of the reviews the value of the habitats present on the site post-development based on the Defra statutory metric. A summary of the biodiversity unit calculations for the post-development units are presented in Table 4.2 and 4.3. The headline results are summarised in Table 4.3. The technical evidence associated with the statutory metric is presented in Appendix D. Please refer to the accompanying spreadsheet for the full BNG calculations.

The majority of habitats on site are mentioned specifically in either the County-wide Buckinghamshire and Milton Keynes BAP or more specifically in the Aylesbury Vale area region. And for this reason most have therefore been classified, in terms of strategic significance, as ‘formally identified in local strategy’.

The habitats on site currently provide a total of 57.54 habitat units and 39.95 hedgerow units.

The habitats on site post development provide a total of 84.77 habitat units and 57.92 hedgerow units, an increase of 27.23 habitat units and 17.97 hedgerow units.

Table 4.2: Biodiversity Units of Post-Development Habitats

Habitat	Area (Ha)	Condition	Units
Developed land; sealed surface	10.3276	N/A - Other	0.00
Other woodland; broadleaved	1.3883	Poor	5.34
Ponds (non-priority habitat)	0.0732	Moderate	0.61
Traditional orchards	0.5190	Moderate	3.51
Modified grassland	9.3545	Good	43.74
Sustainable drainage system	0.6831	Good	2.30
Rural tree	0.5944	Moderate	2.09
Mixed scrub	1.5010	Moderate	11.56
Biodiverse green roof	0.4220	Good	2.38
Ruderal/Ephemeral	0.0671	Moderate	0.27
Enhanced: Grassland - Other neutral grassland	1.2990	Moderate	10.16
Enhanced: Lakes - Ponds (non-priority habitat)	0.0040	Moderate	0.03
Other neutral grassland (retained)	0.5860	Poor	2.70
Mixed scrub (retained)	0.0110	Moderate	0.10
Total	26.83		84.77

Table 4.3: Biodiversity Units of Post-Development Hedgerows

Hedgerow Type	Length	Condition	Units
Created: Species-rich native hedgerow with trees	0.598	Good	6.07

Enhanced Native hedgerow with trees - associated with bank or ditch	1.327	Good	17.33
Enhanced Native hedgerow - associated with bank or ditch	0.953	Good	17.76
Enhanced Native hedgerow - associated with bank or ditch	0.447	Good	6.06
Retained Native hedgerow with trees - associated with bank or ditch	0.441	Moderate	6.09
Retained Native hedgerow - associated with bank or ditch	0.027	Moderate	0.25
Retained Ecologically valuable line of trees	0.994	Poor	4.37
Total	**4.787**		**57.92**

Table 9: Summary of Biodiversity Net Gain Assessment		
Onsite baseline	Habitat units	57.54
	Hedgerow units	39.95
Onsite post-intervention	Habitat units	84.77
	Hedgerow units	57.92
Total unit change	Habitat units	27.23
	Hedgerow units	17.97
Total % change	Habitat units	**47.32**
	Hedgerow units	**44.98**

Figure 4 : On site Proposed Habitats

4.4 Value of Proposed Habitats to Protected and Notable Species

The species highlighted in the PEA, Buckinghamshire and Milton Keynes BAP and observed in surveys that are likely to be benefitted by habitat creation and enhancement on site are discussed below.

4.3.1 Invertebrates –Black and brown hairstreak, beetles

Both black and brown hairstreak butterflies are dependent upon untrimmed blackthorn *Prunus spinosa* sucker growth and untrimmed hedgerow/ scrub tops at varying heights. The brown hairstreak favours from younger sucker growth (approximately 0-2m in height), whilst the black hairstreak is thought to rely more heavily on older, taller growth (2m+ in height).

To favour both species on site, new planting of hedgerow and scrub should prioritise blackthorn over hawthorn *Crataegus monogyna* as the primary thorny species. Care should be taken to allow some blackthorn suckers to succeed into field margins. Master trees are also of importance, usually being ash *Fraxinus excelsior* or English oak *Quercus robur*.

Beetles, likely to be significantly benefitted on site by beetle banks and creation of the orchard are highlighted in chapter 3 of the BAP as being threatened by a combination of climate change, land use/intensification and habitat loss.

4.3.2 Amphibians –smooth newt, great crested newt, common frog, common toad

All of the above species, if currently present in the local area are likely to benefit from the creation of the new ponds and the enhancement of the existing pond, in terms of breeding and spring/summer habitat. The majority of the on-site created and enhanced habitats will benefit amphibians in terms of providing cover, connectivity, foraging, and overwintering habitat. Habitats likely to be beneficial are as follows: beetle bank, wildflower grassland, wet meadow, retained grassland, scrub, native broadleaved woodland, orchard, existing standard trees (scope for root cavities of larger trees and fallen deadwood to act as hibernacula), created hibernacula/habitat piles and standing/piles of deadwood.

4.3.3 Reptiles –grass snake, common lizard.

Both grass snake and common lizard will benefit from the array of habitats to be created and enhanced on site. As both are predatory species, they will favour the increased numbers of prey species likely to be present on site following management interventions. Grass snakes consume newts, fish, small mammals, birds and invertebrates, whilst common lizards will eat insects, spiders and other invertebrates.

Both species favour mixed habitat which provides dappled shade for basking. Scrub and hedgerow margins are particular hotspots, especially those that are south and south east facing. South and south east facing banks would be provided (beetle banks). The artificially created hibernacula, along with piles of deadwood, fallen deadwood and cavities around mature retained tree roots will provide potential hibernation and refuge sites for both species.

4.3.4 Higher plants –black poplar, great burnett, meadow sweet

The red listed black poplar despite declining on a nationwide scale is prevalent in this part of the country and thrives on the soils of the Upper Thames clay vale, particularly in areas which encounter seasonal inundation. Given the position of this site, next to the Claydon brook, the site is ideal for black poplars. One black poplar is proposed for planting on site and there are opportunities to plant more. It is noted that pollarding is selected as a means of management for willow on site. Pollarding is also a recommended method of extending the lifespan of black poplars, so in time this method of management would also benefit black poplars on site.

4.3.5 Birds –red kite, skylark, wren, yellowhammer, redwing, fieldfare, reed bunting, barn owl, snipe, other farmland birds (unspecified in BAP)

The farmland birds detailed above will benefit from the increased variety of habitats and structure on site, leading to greater provision of ‘the big 3’, i.e. safe nesting habitat, summer food and winter food, which is often lacking in the farmed landscape in his part of the UK. It should be noted that whilst the small passerine farmland birds and predatory birds such as red kite and kestrel *Falco tinnunculus* are likely to benefit from works, wading bird species, other than snipe are not included due to increase in wooded habitat generally decreasing the

breeding success of the species due to increased predator numbers in terms of fox *Vulpes vulpes* and carrion crow *Corvus corone*.

The area is not highlighted as being of particular interest for wading birds according to the British Trust for Ornithology's wader zonal maps, so this is considered to be of low concern but should be noted due to important local populations of waders elsewhere in the Upper Thames Clay Vales and the fact that various wading birds are highlighted in the BAP.

4.3.6 Mammals (bats) - common pipistrelle, soprano pipistrelle, brown long-eared, noctule, lesser noctule, Myotis sp.

Bats require roosting, foraging and commuting habitat. Works on site will lead to an increase in both commuting and foraging habitat. In the 30 years of the agreement period it is unlikely that any additional roosting habitat will develop, with the possible exception of standard trees in currently existing hedgerows.

Ponds will provide bats the water for rehydration and attract midges and other flying insects which will provide an important food source. Trees, woodland, orchard, scrub and grasslands will again attract a wide variety of invertebrate life.

Woodland edges, hedgerow and the Claydon brook all provide important commuting habitat. These features are used as navigational landmarks and also provide protection from predators. These linear features provide important routes for bats to use for echolocation at night. This project will increase the number of linear and edge habitats in the area, thus increasing connections and ease for bats to commute at night.

Bechstein's bat is left out of this list, despite being noted on the BAP, this is due to the requirement the species has for established deciduous woodland and old trees, which is found neither on site or in the immediate area.

5. CONCLUSION

The majority of the habitats that would be affected by development are low distinctiveness habitats comprising modified grassland or cropland.

The proposals would result in the introduction of new and more higher value habitats onto the site, including; other neutral grassland, traditional orchards, broadleaved woodland, mixed scrub and individual trees. Some existing areas of habitat would also be enhanced through a change in management regime to improve their condition, including non-priority ponds and other neutral grassland.

The majority of existing hedgerows on the site would be retained and a number of new hedgerows are proposed.

The proposals result in a gain of 27.23 habitat units (47.32%) and 17.97 hedgerow units (44.98%).

A habitat management and monitoring plan (HMMP) should be produced detailing the habitats due to be created, how they will be secured for a 30 year term and how they will be managed and monitored.

APPENDICES

APPENDIX A - POLICY AND LEGISLATION

National Planning Policy Framework (NPPF)[6]

The National Planning Policy Framework sets out the government's planning policies for England and how these are expected to be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced. Planning law requires that applications for planning permission be determined in accordance with the development plan. The framework includes key paragraphs relating to the natural environment and how it should be considered in the planning context.

Government Circular ODPM 06/2005 Biodiversity and Geological Conservation [7] (England only)

This Circular provides administrative guidance on the application of the law relating to planning and nature conservation as it applies in England.

Part IV - Conservation of Species protected by Law details that the presence of a protected species is a material consideration when considering a development proposal that may result in harm to the species or its habitat and that planning authorities must have regard to species protected under the Habitat Regulations.

It goes on to say that: *it is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. The need to ensure ecological surveys are carried out should therefore only be left to coverage under planning conditions in exceptional circumstances, with the result that the surveys are carried out after planning permission has been granted.*

[6] NPPF February 2021 (https://www.gov.uk/government/publications/national-planning-policy-framework--2)

[7] ODPM Circular 06/2005 Office of the Deputy Prime Minister Eland House, Bressenden Place, London SWIE 5DU Government Circular: Biodiversity and Geological Conservation –Statutory Obligations and their Impact within the Planning System

Natural Environment and Rural Communities (NERC) Act 2006[8] [9]

Section 40 – To conserve biodiversity

Section 40 puts a duty on public authorities to conserve biodiversity when undertaking its duties and functions.

Section 41 –Biodiversity list and Action

Section 41 –Requires the Secretary of State *to publish a list of the living organisms and types of habitat which in the Secretary of State's opinion are of principal importance for the purpose of conserving biodiversity*. They must also *take such steps as appear to the Secretary of State to be reasonably practicable to further the conservation of the living organisms and types of habitat included in any list published under this section or promote the taking by others of such steps*.

The 2007 lists were superseded by the UK Post-2010 Biodiversity Framework.

[8] https://www.legislation.gov.uk/ukpga/2006/16/section/40

[9] https://www.legislation.gov.uk/ukpga/2006/16/section/41

APPENDIX B - GUIDING PRINCIPLES OF BIODIVERSITY NET GAIN

Principle 1: The metric does not change the protection afforded to biodiversity. 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. •

Principle 2: Biodiversity metric calculations can inform decision-making where application of the mitigation hierarchy and good practice principles11 conclude that compensation for habitat losses is justified.

Principle 3: The metric's biodiversity units are only a proxy for biodiversity and should be treated as relative values. While it is underpinned by ecological evidence the units generated by the metric are only a proxy for biodiversity and, to be of practical use, it has been kept deliberately simple. The numerical values generated by the metric represent relative, not absolute, values. 11 See: CIEEM, CIRIA, IEMA (2016) Biodiversity Net Gain –Good Practice Principles for Development [online]. Available from: Biodiversity-Net-Gain-Principles.pdf (cieem.net) 17

Principle 4: The metric focuses on typical habitats and widespread species; important or protected habitats and features should be given broader consideration.

- Protected and locally important species needs are not considered through the metric, they should be addressed through existing policy and legislation.
- Impacts on protected sites and irreplaceable habitats are not adequately measured by this metric. They will require separate consideration which must comply with existing national and local policy and legislation. Data relating to these can be entered into the metric, to give an indicative picture of the biodiversity value of the habitats present on a site, but this should be supported by bespoke advice.

Principle 5: The metric design aims to encourage enhancement, not transformation, of the natural environment. Proper consideration should be given to the habitats being lost in favour of higher-scoring habitats, and whether the retention of less distinctive but well-established habitats may sometimes be a better option for local biodiversity. •

- Habitat created to compensate for loss of natural or semi-natural habitat should be of the same broad habitat type (e.g. new woodland to replace lost woodland) unless there

is a good ecological reason to do otherwise (e.g. to restore a heathland habitat that was converted to woodland for timber in the past12).

- Although the metric does not explicitly consider the biodiversity value provided by individual species, consideration should be given to locally relevant species interests when creating or enhancing habitats.

Principle 6: The metric is designed to inform decisions, not to override expert opinion. Management interventions should be guided by appropriate expert ecological advice and not just the biodiversity unit outputs of the metric. Ecological principles still need to be applied to ensure that what is being proposed is realistic and deliverable based on local conditions such as geology, hydrology, nutrient levels, etc. and the complexity of future management requirements.

Principle 7: Compensation habitats should seek, where practical, to be local to the impact. They should aim to replicate the characteristics of the habitats that have been lost, taking account of the structure and species composition that give habitats their local distinctiveness.

- Where possible compensation habitats should contribute towards nature recovery in England by creating 'more, bigger, better and joined up' areas for biodiversity13 .
- Through the strategic significance and spatial risk factors the biodiversity metric 3.1 places greater reward for habitat creation where it is strategically important and locally relevant.

Principle 8: The metric does not enforce a mandatory minimum 1:1 habitat size ratio for losses and compensation but consideration should be given to maintaining habitat extent and habitat parcels of sufficient size for ecological function. A difference can occur because of a difference in quality between the habitat impacted and the compensation provided. For example, if a habitat of low distinctiveness is impacted and is compensated for by the creation of habitat of higher distinctiveness or better condition, the area needed to compensate for losses can potentially be less than the area impacted. The metric calculates losses and gains by size as well as by biodiversity unit value or percentage. Note: consideration should be given to whether reducing the area or length of habitat provided as compensation is an appropriate outcome.

APPENDIX C - TECHNICAL CALCULATIONS FOR BNG METRIC

Table 5-1: Area habitat distinctiveness categories and multiplier scores (excluding intertidal habitats)

Category	Score	Definition
Very High	8	• Priority Habitats as defined in Section 41 of the Natural Environment and Rural Communities (NERC) Act that are highly threatened, internationally scarce and require conservation action, e.g. blanket bog. • Small amount of remaining habitat with a high proportion unprotected by designation. • Endangered or Critical European red list habitats.
High	6	• Priority Habitats as defined in Section 41 of the NERC Act requiring conservation action, e.g. lowland fens. • Remaining Priority Habitats not in very high distinctiveness band & other red list habitats.
Medium	4	• Semi-natural habitats not classed as a Priority Habitat but with significant wildlife benefit, e.g. mixed scrub. • One Priority Habitat (arable field margins).
Low	2	• Habitat of low biodiversity value e.g. temporary grass and clover ley. • Agricultural and Urban land of lower biodiversity value
Very Low	0	• Little or no biodiversity value e.g. hard standing or sealed surface. • Urban –artificial structures which are un-vegetated, sealed surfaces or built linear features of very low biodiversity value

The process of assessing habitat condition for use in biodiversity metric is tailored to habitat type and considers whether a habitat meets a number of criteria relating to key physical characteristics of that habitat and its ability to support typical species. This is explained in detail in Part 1 of the Technical Supplement.

Table 5-3: Condition categories and multiplier scores for area habitats

Category	Score
Good	3
Fairly Good	2.5
Moderate	2
Fairly Poor	1.5
Poor	1

Strategic significance relates to the spatial location of a habitat parcel and works at a landscape scale. It gives additional biodiversity unit value to habitats that have been identified as habitats of strategic importance to that local area. The strategic significance categories and scores are presented below.

Habitat strategic significance categories and scores

Category	Score	Description
High	1.15	• High potential –Area/action formally identified within a local plan, strategy or policy
Medium	1.1	• Good potential - Location ecologically desirable but area/action not identified in local plan, strategy or policy
Low	1.0	• Low potential - Area/action not identified in any local plan, strategy or policy • No local strategy in place

A non-linear habitat's biodiversity unit was then calculated as:

((ha) × ×) × ( )

The biodiversity unit for linear habitat is calculated as:

(ℎ (km) × ×) × ( )