



Elite Ecology

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**Land off Shawe Park Road,
Kingsley Holt**



Biodiversity Net Gain Report

March 2024



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Document Control			
Document Properties			
Organisation	Elite Ecology		
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Title	Land off Shawe Park Road, Kingsley Holt Biodiversity Net Gain Report		
Version History			
Date	Version	Status	Description/Changes
26/03/2024	V1	Draft	First Draft
27/03/2024	V1	Final Report	Proofread

0. Executive Summary

This report has been prepared at the request of Mr. & Mrs. Klucznik (landowners). It relates to the proposed re-development works at the Land at Shawe Park Road, Kingsley Holt, Staffordshire, ST10 2DJ (OS Grid Reference: SK 01618 45879). For this report, a biodiversity impact assessment calculation has been made. This document should be read in conjunction with the completed Excel spreadsheet. Under the current proposals, the plans are to erect up to four bungalows on the east of the site. It is also understood that the west of the site is to be used for biodiversity offsetting. Overall, this will result in both the permanent and temporary loss and/or alteration of some of the habitats located on the proposed re-development site.

The ecological assessment undertaken by Elite Ecology (March 2024) revealed multiple habitats on site. The phase 1 habitat map, habitat codes and target notes for the site are located within **Appendix C**. The following habitats were recorded on site (in habitat code order):

- **A2.2** – Scattered Scrub
- **A3.1** – Broad-leaved Scattered Trees
- **B4** – Improved Grassland
- **B5** – Marshy Grassland
- **C3.1** – Tall Ruderal Plants
- **C3.2** – Non-ruderal Plants
- **F2** – Marginal Vegetation
- **G2** – Running Water
- **J2.2.2** – Species-poor Defunct Hedgerow
- **J2.4** – Fence
- **J5** – Other (Brash)
- **J5** – Other (Soil Heap)

Habitat Mitigation Score

Biodiversity Unit Type	Baseline Units		Post-Development Units No Enhancements			Post-Development Units With Recommendations			
	On-Site	Off-Site	On-Site	Off-Site	% Net Gain	On-site	Off-site	Statutory biodiversity credits (government-provided)	% Net Gain
Area Habitat	2.08	N/A	2.24	N/A	7.71	2.81	N/A	N/A	35.25
Linear habitat – hedgerows or lines of trees	0.12	N/A	0.17	N/A	39.47	N/A	N/A	N/A	N/A
Linear Habitat – Rivers and Streams	0.72	N/A	0.84	N/A	16.00	N/A	N/A	N/A	N/A

Habitat Creation and Management

Habitat Creation and management details can be found within **Section 6**. Following the management plan will ensure that habitats meet their target conditions. Habitats that will be implemented are as follows:

- Scattered Trees
- Wildflower Planting
- Mixed Scrub

Timetables for post-monitoring can be found in **Section 7**.

Species Specific Enhancements

A number of species-specific enhancements can be found in **Section 6.2**.

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1. Introduction

1.1 Report Rationale

This report has been prepared at the request of Mr. & Mrs. Klucznik (landowners). It relates to the proposed re-development works at the Land at Shawe Park Road, Kingsley Holt, Staffordshire, ST10 2DJ (OS Grid Reference: SK 01618 45879). For this report, a biodiversity impact assessment calculation has been made. This document should be read in conjunction with the completed Excel spreadsheet.

1.2 Site Description

The site is situated in a semi-rural setting in the village of Kingsley Holt, itself located approximately 1.5km north-east of the Staffordshire market town and civil parish of Cheadle.

The site measures approximately 0.37ha and contains a number of habitats. These include brash, broad-leaved scattered trees, hedgerow, improved grassland, marginal vegetation, marshy grassland, non-ruderal plants, running water, scattered scrub, soil heap, and tall ruderal plants. The habitats on site could have the potential to support a number of protected species. Photographs of the site are found within **Appendix D**.

Within the wider landscape further habitats are present. These come in the form of amenity grass, arable land, hard standing ground, hedgerows, improved grassland, residential dwellings (and their associated gardens/yards), scattered trees, standing water, and woodland. This shows that the habitats in the area surrounding the site have the potential to support protected species.

Figure 1: An aerial map showing the boundary of the site at the Land off Shawe Park Road, Kingsley Holt (as shown by the red outline).



Figure 2: An aerial map showing the boundary of the site at the Land off Shawe Park Road, Kingsley Holt (as shown by the yellow star) in relation to some of the local landscape.

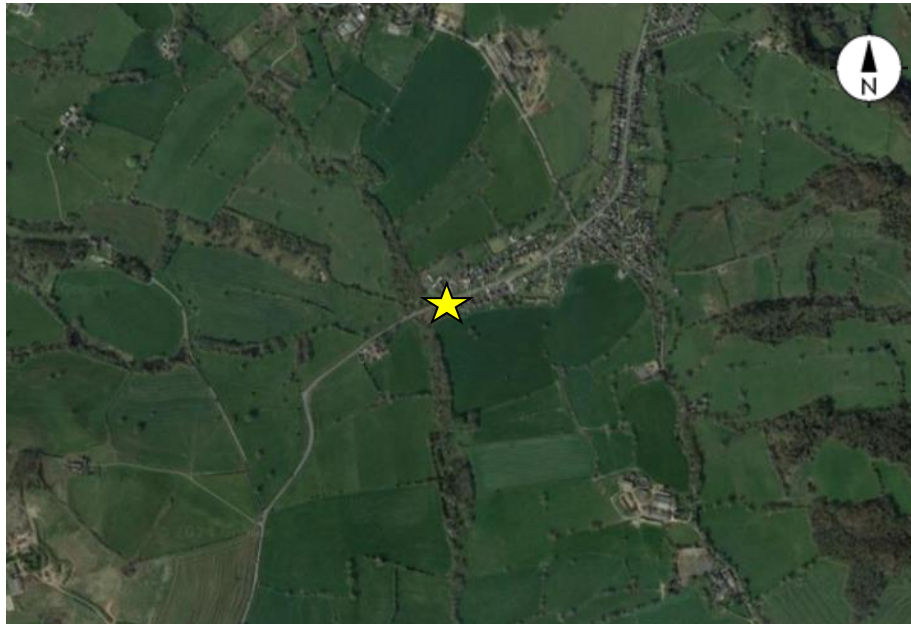


Figure 3: An OS map obtained from Bing showing the location of the Land off Shawe Park Road, Kingsley Holt (yellow star).



1.3 Proposals

Under the current proposals, the plans are to erect up to four bungalows on the east of the site. It is also understood that the west of the site is to be used for biodiversity offsetting. Overall, this will result in both the permanent and temporary loss and/or alteration of some of the habitats located on the proposed re-development site. Please refer to **Appendix A** for the site plans

1.4 Scope of Report

This report aims to:

- Establish the total number of baseline and lost habitat and hedgerow units at the site of the proposed scheme.
- Establish the total number habitat and hedgerow units that are to be created, retained and/or enhanced under landscape and ecological mitigation proposals at the proposed works site.
- Determine whether the proposed scheme will result in a net loss, no net loss, or a net gain for biodiversity.
- Make further recommendations to gain the required 10% minimum net gain for biodiversity.

1.5 Biodiversity Net Gain Relevant Policies

The appraisal has been compiled with reference to the following relevant nature conservation legislation, planning policy and the UK Biodiversity Framework from which the protection of sites, habitats and species is derived in England. These are:

- UK Biodiversity Action Plan (UKBAP).
- The Natural Environment and Rural Communities (NERC) Act 2006.
- The UK Post-2010 Biodiversity Framework (2011-2020).
- Biodiversity 2020: A strategy for England's wildlife and ecosystem services.
- The National Planning Policy Framework (NPPF) 2021.
- Environmental Act 2021.
- Local policy.

A full explanation of these policies can be found within **Appendix E**.

2. Methodology

Personnel

Field surveys have been undertaken by licensed ecologist/s, members of the Chartered Institute of Ecology & Environmental Management (CIEEM) and members of Elite Ecology staff. For details on Staff who carried out the surveys please consult the relevant reports. A walk over of the site was undertaken by **Mr. Connor Wild:** MSc, Senior Ecologist, Natural England Bat Survey Licence Number: 2022-10201-CL17-BAT Bat Survey Level 1, and **Miss Rebecca Kay:** FdSc, Assistant Ecologist.

The Biodiversity Net Gain Assessment has been carried out by **Mr. Lewis Webster:** MSc, Assistant Ecologist in line with CIEEM Guidelines on Good practice principles for development (2016), CIEEM A Practical Guide (2019) and BS 8683:2021 - Process for designing and implementing biodiversity net gain. This net gain report and assessment has been reviewed by **Mr. Richard Millington:** BSc (Hons), ACIEEM, CERPIT, MRSB, MArborA, Principal Ecologist or **Mr. Connor Wild:** MSc Senior Ecologist.

Survey of Baseline Habitats and Condition

Habitat typing and condition assessments are undertaken during a Preliminary Ecological Appraisals (PEA) or similar studies. The baseline also takes into account historic records for the site and local area via a desktop study (satellite imagery, previous ecological reports), as well as additional surveys to assess the presence/absence of species in certain situations. Conditions of habitats and hedgerows are assessed using the scoring systems provided in the Technical Supplement.

River assessments are carried out through a MoRPH5 Pro survey and River type survey. At least one MoRPH5 is undertaken per reach on site that will be directly or indirectly impacted with a further MoRPH5 undertaken upstream to record a more “natural setting” if required. This data is then processed via Cartographer to give the condition of the rivers on site.

Conditions for baseline habitats are automatically assigned by the Metric Tool

Calculations of Baseline Habitats

Using Geographic Information Software (GIS), baseline habitats are measured in hectares (ha) using vector layer polygons. These measurements are then input into the DEFRA Statutory Biodiversity Calculation tool. Habitat condition and connectivity are then input into the calculator. The area of habitat retained is then entered into the calculation to give a final sum of baseline units and lost unit.

Each habitat has a base score of 1, this is then multiplied by the size of the habitat (ha). The habitat is then multiplied by its distinctiveness:

- Very low – 0
- Low – 2
- Medium – 4
- High – 6

The next multiplier is based on the condition of the habitat:

- N/A-other/agricultural – 0
- Poor – 1
- Fairly poor – 1.5
- Moderate – 2
- Fairly good – 2.5
- Good – 3

Calculations of Post-development Habitats

The calculation is informed by planning design, landscape plans, and proposed ecological mitigation. Plans are georeferenced into GIS and are similarly measured in hectares (ha) using vector layer polygons. These measurements are then converted into input into the DEFRA Statutory Biodiversity Calculation tool. A target condition will be assigned to each new habitat following the same scores as above. The calculator will generate a proposed time to hit this target condition and difficulty score.

3. Baseline Conditions

3.1 Habitats

The preliminary ecological appraisal survey revealed multiple habitats on site. The baseline habitat condition assessments can be found in **Appendix B**. The baseline habitat map for the site is located within **Appendix C**. The following habitats were recorded on site:

On Site:

Habitats		Condition	Justification
JNCC	Metric		
A2.2 – Scattered Scrub	Bramble Scrub	Condition Assessment N/A	Automatically calculated by the small site metric.
A3.1 – Broad-leaved Scattered Trees	Rural Tree	Moderate	Passes the following criteria: The tree canopy is predominantly continuous, with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide (individual trees automatically pass this criterion), The tree is mature (or more than 50% within the block are mature), There is little or no evidence of an adverse impact on tree health by human activities (such as vandalism, herbicide or detrimental agricultural activity). And there is no current regular pruning regime, so the trees retain >75% of expected canopy for their age range and height., and more than 20% of the tree canopy area is oversailing vegetation beneath.
B4 – Improved Grassland	Modified Grassland	Moderate	Does not pass the following condition: "There are 6-8 vascular plant species per m2 present, including at least 2 forbs." Note - this criterion is essential for achieving Moderate or Good condition.
B5 – Marshy Grassland	Other Neutral Grassland	Moderate	Does not pass the following condition: " The parcel represents a good example of its habitat type, with a consistently high proportion of characteristic indicator species present relevant to the specific habitat type (and relative to Footnote 3 suboptimal species which may be listed in the UKHab description).1 Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only." ..
C3.1 – Tall Ruderal Plants	Ruderal/Ephemeral	Moderate	Vegetation structure is not varied. The habitat contains a limited number of species. No invasive non native species have been identified.
C3.2 – Non-Ruderal Plants	Bracken	Condition Assessment N/A	Automatically calculated by the small site metric.
F2 – Marginal Vegetation	Bramble Scrub	Condition Assessment N/A	Habitat is Dominated by Bramble. Automatically calculated by the small site metric.
G2 – Running Water	Other Rivers and streams	Moderate	At the time of this report write up a River Condition Assessment has not been undertaken. A moderate condition has been given as a precaution.

J2.2.2 – Species-poor Defunct Hedgerow	Native Hedgerow	Poor	The hedgerow is on average Less than 1.5m in height with a gap between the ground and the base of the canopy being less than 0.5m, with gaps comprising more than 10% of the hedgerow length. Plant species indicative of nutrient-poor soil dominate less than 20% ground cover, and more than 90% of the hedgerow is free of obvious pollution.
J2.4 – Fence	N/A	N/A	Omitted due to size.
J5 – Other	N/A	N/A	No suitable habitat within the metric. Habitats area has been recorded within nearby habitats.

3.2 Strategic Significance

Habitats	Strategic Significance	Justification
All Habitats	Area/compensation not in local strategy/no local strategy.	Area not identified in the local plan/strategy.

3.3 Species

The preliminary ecological appraisal survey revealed that the habitats that have been outlined for the proposed development area do contain protected species potential. The following assessment has also taken into account the adjacent habitats and connectivity to the wider landscape for all protected and rare species.

Species	Further Works	Further Surveys Done	Summary of Results
Amphibians	Precautionary Measures	No	The site could be used by commuting amphibians as it is well connected to the surrounding landscape, features many suitable terrestrial habitats, and has one accessible standing water body within a 500m radius. Therefore, a herptile method statement is required to ensure no harm to any specimens that may be using the site.
Badgers	Surveys	No	At the time of surveying, no evidence of badger presence was identified (e.g. latrines, setts, etc.) on site or within 50m of it. However, badgers were recorded in the local landscape. It is therefore recommended that an update badger survey is undertaken if works do not commence within six months of the walkover date (4 th of March 2024).
Bats	Precautionary Measures	No	It is recommended that the linear features and the trees T1 and T2 on site are to be retained where possible. This is to ensure that bats have commutable flight paths throughout the site and that development works would not lead to habitat fragmentation. If the trees T1 and T2 are to be removed as part of the works, they will need to be soft felled following a method statement. This must be conducted during the bat survey season of May to September. However, Elite Ecology recommend this to be completed between June and August. To limit the potential impacts of artificial light on commuting/foraging bats on site and within the wider landscape, an Artificial Lighting Plan is required.
Birds	Precautionary Measures	No	Nesting potential on site. Enhancements will be recommended in this document.
Flora	Surveys	No	Due to the survey being undertaken outside of the optimal floral survey season, an updated floral survey is recommended to be undertaken to ascertain if any rare or protected floral species are present on site. This is required to be carried out during the

			optimal floral survey season of April to September (inclusive).
Hedgehogs	None	No	Enhancements will be recommended in this document.
Invertebrates	Surveys	No	It is recommended to complete an invertebrate survey to establish whether the site supports any invertebrate populations of conservation significance. This should be carried out by a suitably qualified ecologist between May to mid-September.
Otters	Precautionary Measures	No	There is suitable habitat for otters along the river present immediately offsite, meaning otters could potentially use the site. Therefore, mitigation measures are recommended to minimise any impacts the proposed works may have on otters.
Reptiles	Precautionary Measures	No	The site could be used by commuting reptiles with several habitats and mosaics present on site that could support reptiles. Therefore, a herptile method statement is required to ensure no harm to any specimens that may be using the site.
Water Voles	Precautionary Measures	No	There is suitable habitat for water vole (<i>Arvicola amphibius</i>) along the river immediately offsite. However, there are no records within the Ecological Data Search of the species being present within the area. Nonetheless, water voles could potentially use the site. Therefore, precautionary measures are required to reduce the impact of the development on water voles in the habitats surrounding the site development.

4. Baseline Calculation and Proposal Impact

4.1 Existing Habitats

Habitat Description	Habitat Area (ha)	Distinctiveness	Score	Condition	Score	Baseline Habitat Units	Habitats Retention (ha)			Habitat Units Lost
							Retained	Enhanced	Lost	
Bramble scrub	0.09	Medium	4	Condition Assessment N/A	1	0.36	0.07	0.00	0.02	0.08
Modified grassland	0.13	Low	2	Poor	1	0.26	0.04	0.00	0.09	0.18
Other neutral grassland	0.02	Medium	4	Poor	1	0.08	0.00	0.00	0.02	0.08
Ruderal/Ephe meral	0.05	Low	2	Poor	1	0.10	0.02	0.00	0.03	0.06
Bracken	0.04	Low	2	Condition Assessment N/A	1	0.08	0.00	0.00	0.04	0.08
Rural tree	0.15	Medium	4	Moderate	2	1.20	0.15	0.00	0.00	0.00
TOTALS:	0.33*					2.08	0.28	0.00	0.20*	0.48
* Area Excluding Rural Trees										

Based on the above information, the on-site habitat biodiversity value is calculated at **2.08** habitat units, with **0.48** units lost during the development. Therefore, **1.60** units will remain.

4.2 Existing Linear Habitats

Hedge Description	Hedge Length (km)	Distinctiveness	Score	Condition	Score	Baseline Hedge Units	Hedge Retention (km)			Hedge Units Lost
							Retained	Enhanced	Lost	
Native Hedgerow	0.06	Low	2	Poor	1	0.12	0.00	0.00	0.06	0.12
TOTALS:	0.06					0.51	0.00	0.00	0.06	0.12

Based on the above information, the on-site hedgerow biodiversity value is calculated at **0.12** hedgerow units, with **0.12** units lost during the development. Therefore, **0.00** units will remain.

4.2 Existing River Habitats

River Type	River Length (km)	Distinctiveness	Score	Condition	Score	Baseline River Units	Encroachment (watercourse or riparian buffer)	River Retention (km)		River Units Lost
								Enhanced	Lost	
Other rivers and streams	0.08	High	6	Moderate	2	0.72	No encroachment Major encroachment on both banks	0.08	0.00	0.72
TOTALS:	0.04					0.72		0.08	0.00	0.72

There is no encroachment into the wetted channel of the canal, however there is major encroachment to the riparian buffer due to the artificial habitats on both banks of the canal. Based on the above information, the river biodiversity value is calculated at **0.14** river units, with **0.00** units lost during the development. Therefore, **0.14** river units will remain.

4.3 Proposed Habitats

The tables below summarise the habitats of the new development, along with its target condition.

Habitats

Habitat Description	Habitat Area (ha)	Target Distinctiveness	Score	Target Condition	Score	Time Till Target Condition		Difficulty of Creation		Habitat Biodiversity Value
						Time (years)	Score	Difficulty	Score	
Developed land; sealed surface	0.09	V. Low	0	N/A - Other	0	0	1.000	Low	1	0.00
Vegetated garden	0.11	Low	2	Condition Assessment N/A	1	1	0.965	Low	1	0.21
Rural tree	0.14	Medium	4	Moderate	2	27	0.382	Low	1	0.43
TOTALS	0.20*									0.64
*Area Excluding Rural Trees										

The above habitat, valued at **1.60** habitat units, combined with the remaining habitats valued at **0.64** units, will result in a habitat biodiversity value score of **2.24** habitat units.

Hedgerows

Hedge Description	Hedge length (km)	Target Distinctiveness	Score	Target Condition	Score	Time Till Target Condition		Difficulty of Creation		Hedge Biodiversity Value
						Time (years)	Score	Difficulty	Score	
Native Hedgerow	0.05	Low	2	Moderate	2	5	0.837	Low	1	0.17
TOTALS	0.05									0.17

The above hedgerows, valued at **0.17** hedgerow units, combined with the remaining valued at **0.00** units, a hedgerow biodiversity value score of **0.17** hedgerow units is given by the metric calculation.

River

River Description	River Length (Km) Enhanced	Proposed River Enhancement	Distinctiveness Movement	Condition Change	Encroachment (watercourse or riparian buffer)	Baseline Habitat Units	Habitat Units Post Enhancement
Other rivers and streams	0.08	Other rivers and streams	High – High	Poor - Poor	No encroachment Major encroachment/ No Encroachment	0.72	0.84
Total						0.72	0.84

The Eastern bank of the river will no longer be considered agricultural land and will be returned to a more natural state. Enhancements made to the retained habitats on site will increase the total value of from **0.72** units to **0.84** units.

4.4 Total Net Unit Change

The Net Unit change for the habitats on site is calculated at **0.16** which correlates to a gain of **7.71%** in habitat biodiversity.

The Net Unit change for the hedgerows on site is calculated at **0.05**, which correlates to a gain of **39.47%** in hedgerow biodiversity.

The Net Unit change for the rivers on site is calculated at **0.12**, which correlates to a gain of **16.00%** in river biodiversity.

4.5 Trading Rules

The trading rules for this project have not been satisfied. The project fails on the requirements to meet the trading rules for both low and medium distinctiveness habitats.

The table below breaks down the factors for passing a failing trading rules:

Trading Summary			
Distinctiveness Group	Trading Rule	Trading Satisfied	Reason
Very High	Same habitat required – bespoke compensation option	Yes	No Habitats of this distinctiveness were identified on site.
High	Same habitat required =	Yes	No Habitats of this distinctiveness were identified on site.
Medium	Same broad habitat or a higher distinctiveness habitat required ($\geq$)	No	0.16 Units are required
Low	Same distinctiveness or better habitat required $\geq$	Yes	Units lost offset by Higher Distinctiveness habitats

The following tables provided information on the units lost from the baseline, how they are offset by the proposal, and suggested actions to ensure that trading rules are satisfied.

Medium Distinctiveness Habitat Group	Habitat Description	Baseline Units	Baseline Units Lost	Habitat Provided	Units Provided By proposals	Difference	Suggested action to address habitat losses
Grassland	Other Neutral Grassland	0.08	0.08	N/A	0.00	-0.08	Same broad habitat or a higher distinctiveness habitat required ($\geq$)
Heathland and Shrub	Bramble Scrub	0.36	0.08	N/A	0.00	-0.08	Same broad habitat or a higher distinctiveness habitat required ($\geq$)
Total:						-0.16	

Units provided must equal the value of lost medium distinctiveness habitat units within the same broad category, or a total of 0.16 units is to be provided by a habitat of higher distinctiveness.

5. Recommendations

5.1 Habitats

The initial score, with enhancements, resulted in a **0.16** gain in habitat units (**7.71%**), a **0.05** gain in hedgerow units (**+39.47%**), and a **0.12** gain in river units (**+16.00%**). As it stands the project does not meet DEFRA 10% minimum increase. The following includes suggested additional habitats and enhancements to proposed habitats to improve their score and target conditions.

Changes to the Existing Baseline Habitat Retention

Habitat Description	Habitat Area (ha)	Distinctiveness	Score	Condition	Score	Baseline Habitat Units	Habitats Retention (ha)			Habitat Units Lost
							Retained	Enhanced	Lost	
Bramble scrub	0.09	Medium	4	Condition Assessment N/A	1	0.36	0.07	0.00	0.02	0.08
Modified grassland	0.13	Low	2	Poor	1	0.26	0.04	0.00	0.09	0.18
Other neutral grassland	0.02	Medium	4	Poor	1	0.08	0.00	0.00	0.02	0.08
Ruderal/Ephemeral	0.05	Low	2	Poor	1	0.10	0.02	0.00	0.03	0.06
Bracken	0.04	Low	2	Condition Assessment N/A	1	0.08	0.00	0.00	0.04	0.08
Rural tree	0.15	Medium	4	Moderate	2	1.20	0.15	0.00	0.00	0.00
TOTALS:	0.33*					2.08	0.28	0.00	0.20*	0.48
* Area Excluding Rural Trees										

Based on the above information, the on-site habitat biodiversity value is calculated at **2.08** habitat units, with **0.88** units lost during the development. Therefore, **1.20** units will remain.

Recommended New Habitats

Habitat Description	Habitat Area (ha)	Target Distinctiveness	Score	Target Condition	Score	Time Till Target Condition		Difficulty of Creation		Habitat Biodiversity Value
						Time (years)	Score	Difficulty	Score	
Developed land; sealed surface	0.09	V. Low	0	N/A - Other	0	0	1.000	Low	1	0.00
Vegetated garden	0.11	Low	2	Condition Assessment N/A	1	1	0.965	Low	1	0.21
Rural tree	0.14	Medium	4	Moderate	2	27	0.382	Low	1	0.43
Other neutral grassland	0.06	Medium	4	Good	3	10	0.700	Low	1	0.50
Mixed scrub	0.07	Medium	4	Moderate	2	5	0.837	Low	1	0.47
TOTALS	0.20*									1.61
*Area Excluding Rural Trees										

The above habitat, valued at **1.61** habitat units, combined with the remaining habitats valued at **1.20** units, will result in a habitat biodiversity value score of **2.24** habitat units.

Recommended Hedgerows

No further recommendations have been made for Hedgerows on site.

River

No further recommendations have been made for the river.

5.2 Net Unit Change

If the above habitats are implemented on site:

The Net Unit change for the habitats on site is calculated at **0.73** which correlates to a gain of **35.25%** in habitat biodiversity.

The Net Unit change for the hedgerows on site is calculated at **0.05**, which correlates to a gain of **39.47%** in hedgerow biodiversity.

The Net Unit change for the rivers on site is calculated at **0.12**, which correlates to a gain of **16.00%** in river biodiversity.

5.3 Trading Rules

The trading rules have not been satisfied. The project fails on the requirements to meet the trading rules for both low and medium distinctiveness habitats.

The table below breaks down the factors for passing a failing trading rules:

Trading Summary			
Distinctiveness Group	Trading Rule	Trading Satisfied	Reason
Very High	Same habitat required – bespoke compensation option	Yes	No Habitats of this distinctiveness were identified on site.
High	Same habitat required =	Yes	No Habitats of this distinctiveness were identified on site.
Medium	Same broad habitat or a higher distinctiveness habitat required ($\geq$)	Yes	Units offset with same broad habitats
Low	Same distinctiveness or better habitat required $\geq$	Yes	Units lost offset by Higher Distinctiveness habitats

6. Habitat Creation and Management

6.1 Soil Preparation

SOILS: Subgrade/subsoil to be prepared in accordance with BS 8601:2013 and BS 4428:1989 and scarified or ripped to 300mm depth (excluding root protection areas of retained trees refer to Tree Protection Plan) prior to spreading topsoil to alleviate compaction and promote drainage. Imported and as saved topsoil to be in accordance with BS 3882: 2015 'Multipurpose Grade' with minimum soil organic matter contents 1% greater than the minima value (or as approved). Imported topsoil (and 'as saved' if requested) is to be laboratory tested to BS 3882:2015 and ameliorated as required to meet the required characteristics as detailed within Table 1 of BS 3882:2015 specification.

Wildflower and private lawn areas to be unimproved topsoil or low fertility topsoil to BS 3882:2015. Grass areas to be a minimum depth of 150mm, Shrub beds 450mm depth and forestry/transplants 300mm depth. Any weed/grass growth to be sprayed out with appropriate herbicide at least ten days prior to cultivation. All areas to be cultivated to a minimum depth of 150mm removing weeds and rubbish/stones greater than 20mm in size. Incorporate proprietary non peat compost to BSI PAS 100 to 50mm depth evenly worked into soil during cultivation.

6.2 Turfing of Private Gardens

Private gardens to be turfed with [Medallion Turf](#) or similar approved cultivated turf to BS 3969 'Recommendations for Turf for general purposes' laid in accordance with BS 4428:1989. Prior to cultivation topsoil is to be free from perennial weeds, reasonably dry and workable and graded to remove all minor hollows or ridges and levelled as required with any debris or stones greater than 50mm diameter removed. Topsoil to be cultivated to full depth with top 25mm reduced to a fine tilth. Pre-turfing fertiliser to be applied in accordance with manufacturer's instructions. Turf to be laid during appropriate weather conditions from planks with broken joints well butted up, pegged to slopes where required. Lightly consolidate and firm turf as laying proceeds. Fill joints with fine topsoil and thoroughly water after laying to avoid shrinkage.

6.3 **Habitats**

6.3.1 **Wildflower Planting**

Wildflower areas is to be incorporated to maximise biodiversity. A variety of wildflower mixes can be found on the [Meadowmania](#) or [Wildflower Turf](#) webpages. It is recommended that [EM2 standard general purpose meadow mixture](#) and [Hedgerow Mixture EH1](#) around along the Ecological Corridor, or similar is used. Seeding is to be sown at a rate of 4g/m². A list of recommended species will be provided in **Section 7**. This must be connected to other habitat features to ensure beneficial invertebrates, such as bees and butterflies, can find and utilise this habitat. This is due to some species not crossing open areas, meaning connectivity with linear habitat features is critical.

These areas will be mown once a year:

- **Autumn cut** - Cut back to height of 7.5cm between the end of August and late November.

Management of the habitats will avoid mowing of the entire space, to allow patches of taller/rough grassland patches and flowering to take place.

6.3.2 **Mixed Scrub Creation**

To improve floral diversity on site, mixed scrub is to replace the introduced shrubs onsite. This scrub will provide nesting areas for birds, more foraging for bats and birds, and shelter for small mammals that are located on site. Mixed scrub is to include a mix of the following:

Scientific Name	Common name	Native to the UK	Number to be planted	Density per m ²
<i>Acer campestre</i>	Field maple	Yes	77	3
<i>Corylus avellana</i>	Common hazel	Yes	77	3
<i>Crataegus monogyna</i>	Common hawthorn	Yes	77	3
<i>Cornus sanguinea</i>	Common dogwood	Yes	77	3
<i>Euonymus europaeus</i>	European spindle	Yes	77	3
<i>Ilex aquifolium</i>	Common holly	Yes	77	3
<i>Ligustrum vulgare</i>	Wild privet	Yes	77	3
<i>Sambucus nigra</i>	Elder	Yes	77	3
<i>Viburnum opulus</i>	Gelder-rose	Yes	77	3

Mixed scrub is to be planted in accordance with BS 3936 and handled in accordance with NPS 'Handling & Establishment' guidelines and planted in accordance with BS 4428:1989.

Specimens are to be planted at two plants per m². Scrub is to be planted at random to avoid the creation of wind tunnels. Gaps within the scrub will be colonised as the scrub matures. Mixed scrub is to be under-seeded with [Woodland Mixture EW1](#), or similar, sown at a rate of 4g/m². New scrub should be left for a fifteen-year period to allow the habitat to reach maturity. Once this fifteen-year period has passed management is to be implemented.

Management for scrub is to be rotational, with one third (1/3) of the scrub coppiced every three years. For example, coppice 1/3, then three years hence coppice another 1/3, and finally coppice the remaining 1/3 after another three years. This process should then be repeated. This low-level management will allow for variation in the structure and maturity of the scrub whilst ensuring the habitat is still available for use by wildlife. Removal of scrub should be undertaken between November and January

6.3.3 Scattered Trees

New trees (not within private gardens) are to be planted throughout the development. These are to consist of the following species.

Scientific Name	Common name
<i>Acer campestre</i>	Field maple
<i>Betula pendula</i>	Silver birch
<i>Carpinus betulus</i>	European hornbeam
<i>Fagus sylvatic</i>	European beech
<i>Quercus robur</i>	English oak

These trees are to be planted accordance with BS3936, BS8545 and The National Plant Specification – 'Rootballed Trees'.

6.3.4 Control of Aggressive Weeds

Any weeds which grow on site and are thought to be aggressive and pose a threat to the success of the planted trees should be eradicated as soon as possible. These will be identified within a plant identification survey undertaken twice yearly; one in March and one in July. It will be necessary to remove all weeds found on site by hand during the first three years of the project, until the new trees are mature enough to survive. Any invasive species that appear on site will require eradication as soon as possible. The identification of any invasive species will take place within a plant identification survey undertaken twice yearly; one in March and one in July

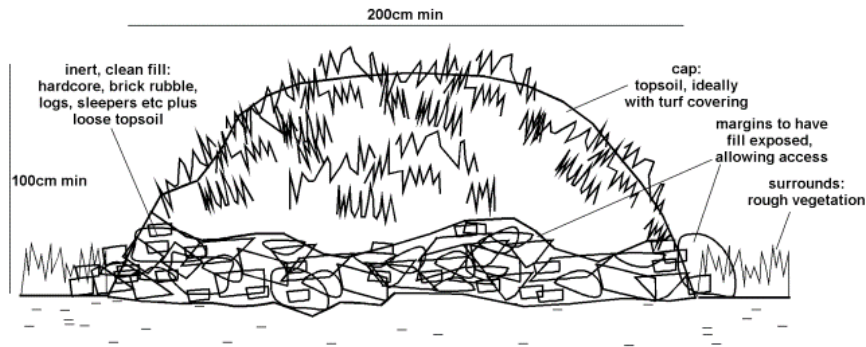
6.4 Species Specific Enhancements

The following is a list of enhancements that are to be implemented in site. Additional features may be required following the completion of outstanding surveys. This document will be updated if required.

6.4.1 Amphibians

Three hibernacula are to be included into the design scheme. These are usually comprised of rubble, rock, log piles, and earth banks. An example design for the hibernacula can be seen within **Figure 5**.

Figure 5: A diagram illustrating the recommended hibernacula (GCN Mitigation Guidelines).



6.4.2 Bats

It is recommended that the development site should incorporate a minimum of the following:

- Four Integrated Eco Bat Boxes

Including these boxes will provide further roosting opportunities. These should avoid any artificial lighting, whilst being sighted facing east, south-east, south, south-west, and/or west.

Boxes can be purchased by emailing admin@eliteecology.co.uk.

Artificial lighting **must avoid** linear features. If it is necessary to include artificial lighting in areas overlooking both hedgerows and trees, then this must include sensors to be triggered by larger bodies only. An artificial lighting plan should be drawn up to illustrate the spill of light. This is to include the proposed security lighting on the residential dwellings as well as all street lighting. This document should then be approved by a licenced bat ecologist. More information on bats and artificial lighting can be found within **Appendix F**.

6.4.3 Birds

The development site should be enhanced for birds by installing a variety of bird boxes on site. The development should incorporate a minimum of the following:

- One Apex Bird Box.
- One Apex Robin Box.
- One Large Bird Nest Box.
- One Sparrow Terrace.

Boxes can be purchased by emailing admin@eliteecology.co.uk.

The boxes should be positioned two to four metres high on a wall. They must be placed between northern and eastern elevations, thus avoiding strong sunlight and the wettest winds.

The entrance of the box must be kept clear of obstructions, such as branches and vegetation. All bird enhancements must be situated in a way that prevents access to predators, such as cats.

6.4.4 Hedgehogs (*Erinaceus europaeus*)

The site is to be enhanced for the local hedgehog population by two Eco Hedgehog Nest Boxes being installed at the site. This will create more opportunities for hedgehogs within the local landscape. These can be purchased by emailing admin@eliteecology.co.uk.

It is also recommended that small gaps are left within any boundary fencing (if used) to enable the specimens to continue to commute through the area (an example can be found within **Figure 6**). This will ensure that the local hedgehog populations do not become fragmented within the local landscape.

Figure 6: An image of an example hedgehog tunnel (obtained from RSPB).



6.4.5 Invertebrates

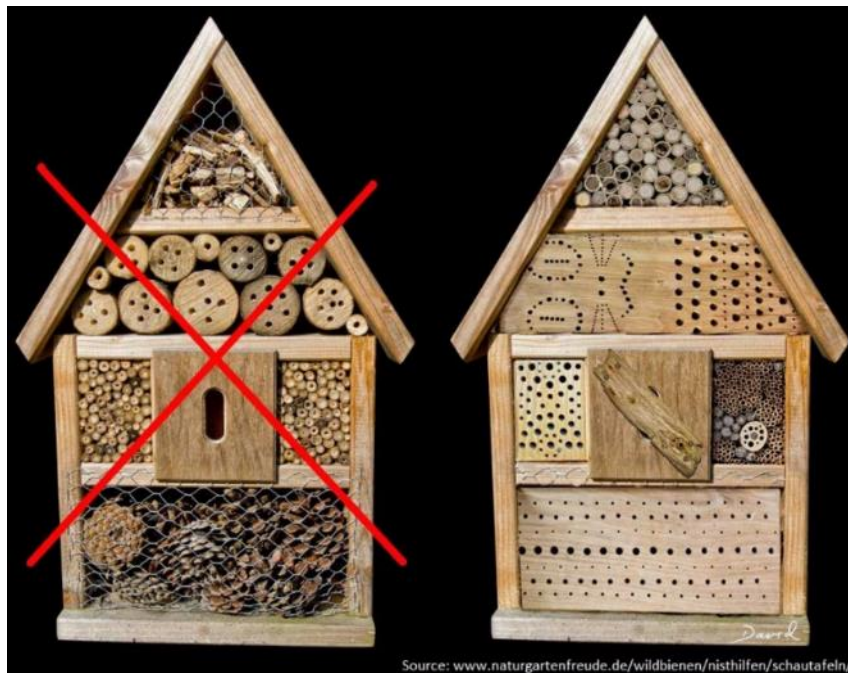
At present, the site is not considered to be of any importance to local invertebrate populations. In conjunction with the wildflower planting, the site is to incorporate least three Bumblebee Boxes into the scheme, along with three Bug Hotels. These can be purchased by emailing admin@eliteecology.co.uk. This will enhance the site for the local invertebrate populations, which will thus attract species further up in the trophic level.

Bumblebee boxes should be made from a wooden frame with nesting tubes within. Plastic should not be used. The frame should be at least height 15cm x width 15cm x length 15cm (slight variation on dimensions is allowed) and must have a solid back. The nesting tubes should be a minimum of 15cm long and should have an average diameter of 2-10mm. The bug hotel should follow similar dimensions and materials used; however additional elements can be included such as drilled pieces of timber where the holes are at least 10cm deep. Bug hotels including items such as pinecones, glued snail shells, wood shavings or clear plastic tubes should be strictly avoided (**Figure 7**).

Smaller, more frequent bumblebee boxes/insect hotels are preferred to larger insect boxes as the larger varieties are susceptible to spreading diseases and parasites and can actually cause more harm than good.

When situating the box, it should be fixed securely to a sturdy surface at least 1m off of the ground, ideally on an easter-southern elevation so that the box is in full sunlight. No vegetation should be in front the box as it would obscure the entrances to the tunnels. The box would benefit from being placed close to plants rich in a pollen source throughout the year.

Figure 7: Image showing the difference between a good (right) and a bad (left) insect hotel, taken from the Entomologist Lounge website.



7. Timing, Phasing, and Duration of Conservation Measures

7.1 Construction Phase

Creation	Timing	Species
Tree Planting	Plant between October and April.	English oak (<i>Quercus robur</i>), European beech (<i>Fagus sylvatic</i>), European hornbeam (<i>Carpinus betulus</i>), Field maple (<i>Acer campestre</i>), (<i>Acer rubrum</i>), Silver birch (<i>Betula pendula</i>),
New Scrub Planting	Plant between October and April.	Common dogwood (<i>Cornus sanguinea</i>), Common hawthorn (<i>Crataegus monogyna</i>), Common hazel (<i>Corylus avellana</i>), Common holly (<i>Ilex aquifolium</i>), Elder (<i>Sambucus nigra</i>), European spindle (<i>Euonymus europaeus</i>), Field maple (<i>Acer campestre</i>), Guelder-rose (<i>Viburnum opulus</i>), Wild privet (<i>Ligustrum vulgare</i>).
Wildflower Mix	May to September	General Purpose Mix Wildflowers total 20% Borage (<i>Borago officinalis</i>) 1.4%, Corn Poppy (<i>Papaver Rhoeas</i>) 2.0%, Cornflower (<i>Cenaturea Cyanus</i>) 1.6%, Lesser Knapweed (<i>Centaurea nigra</i>) 0.6%, Musk Mallow (<i>Malva moschata</i>) 0.4%, Ox Eye Daisy (<i>Leucanthemum Vulgare</i>) 0.6%, Red Campion (<i>Silene Dioica</i>) 3.0%, Wild Red Clover (<i>Trifolium pratense</i>) 1.0, Ribwort Plantain (<i>Plantago lanceolata</i>) 2.4%, Salad Burnet (<i>Sanguisorba Minor</i>) 3.0, Selfheal (<i>Prunella Vulgaris</i>) 1.0%, White Campion (<i>Silene Alba</i>) 2.4%, Yarrow, (<i>Achillea millefolium</i>) 0.6% Grasses (Total 80%) Common bent (<i>Agrostis capillaris</i>) 4.4%, Crested Dogs tail (<i>Cynosurus cristatus</i>) 1.6%, Strong Creeping Red Fescue (<i>Festuca rubra</i>) 28%, Chewings Fescue (<i>Festuca rubra</i> subsp. <i>commutata</i>) 24%, Slender Creeping Red Fescue (<i>Festuca rubra</i> subsp. <i>litoralis</i>) 20%, Yellow oat Grass (<i>Trisetum flavescens</i>) 1%, Sweet Vernal Grass (<i>Anthoxanthum odoratum</i>)1% Shade Tolerant Mix Wildflowers Common Knapweed (<i>Centaurea nigra</i>) 2.00%, Cow Parsley (<i>Anthriscus sylvestris</i>) 0.50%, Crosswort (<i>Cruciata laevipes</i>) 2.00%, Field Scabious (<i>Knautia arvensis</i>) 0.20%, Garlic Mustard (<i>Alliaria petiolata</i>) 1.00%, Grey Sedge (<i>Carex divulsa</i>) 1.50%, Hedge Bedstraw (<i>Galium album</i>) 0.50%, Hedge Crane's-bill (<i>Geranium pyreniacum</i>) 1.00%, Meadow Crane's bill (<i>Geranium pratense</i>) 0.10%, Moon Daisy (<i>Leucanthemum vulgare</i>) 1.00%, Musk Mallow (<i>Malva moschata</i>) 1.00%, Ragged Robin (<i>Silene flos-cuculi</i>) 0.50%, Red Campion (<i>Silene dioica</i>) 3.00%, Ribwort Plantain (<i>Plantago lanceolata</i>) 2.00%, Rough Chervil (<i>Chaerophyllum temulum</i>) 3.00%, Upright Hedge-parsley (<i>Torilis japonica</i>) 0.10%, Wild Teasel (<i>Dipsacus fullonum</i>) 0.20%, Wood Avens (<i>Geum urbanum</i>) 0.30% and Yarrow (<i>Achillea millefolium</i>) 0.10% Grasses Common Bent (<i>Agrostis capillaris</i>) 1.00%, Crested Dogstail (<i>Cynosurus cristatus</i>) 50.00%, False Brome (<i>Brachypodium sylvaticum</i>) 1.00%, Red Fescue (<i>Festuca rubra</i>) 20.00%, Sweet Vernal-grass (<i>Anthoxanthum odoratum</i>) 2.00%, Tufted Hairgrass (<i>Deschampsia cespitosa</i>) 2.00% and Wood Meadow-grass (<i>Poa nemoralis</i>) 4.00% Common bent (<i>Agrostis capillaris</i>) 4.4%, Crested Dogs tail (<i>Cynosurus cristatus</i>) 1.6%, Strong Creeping Red Fescue (<i>Festuca rubra</i>) 28%, Chewings Fescue (<i>Festuca rubra</i> subsp. <i>commutata</i>) 24%, Slender Creeping Red Fescue (<i>Festuca rubra</i> subsp. <i>litoralis</i>) 20%, Yellow oat Grass (<i>Trisetum flavescens</i>) 1%, Sweet Vernal Grass (<i>Anthoxanthum odoratum</i>)1% Woodland Mix Flowers total 100%: bluebell seed (Hyancith non Scripta) 2.5%, common agrimony (Agrimonia Eupotar) 5.0%, hedge bedstraw (Galium Mollugo) 15.0%, hedge garlic (Alliaria Petiolata) 10.0%, hedge woundwort (Stachys Sylvatica) 2.5%, herb bennet (Geum Urbanum) 5.0%, nettle leaved bell flower (Campanula Trachnium) 1.0%, ragged robin (Lychnis Flos Cuculi) 1.0%, red campion (Silene Dioica) 17.0%, self heal (Prunella Vulgaris) 17.0%, square st john's wort (Hypericum tetrapterum) 0.5%, sweet cicely (Myrrhis Odorta) 6.0%, upright hedge parsley (Torilis Japonica) 6.0%. Welsh Poppy (Meconopsis Cambria) 0.25%, wild angelica (Angelica Sylvestri) 2.0%, wild foxglove (Digitalis Purpurea) 7.5%, wood sage (Teucrium Scorodonia) 1.5%

7.2 Operational Phase

Management	Reason for and Frequency of schedule	Yearly Management									
Wildflowers	To maximise biodiversity. Beneficial to invertebrates	Year 1 Sow May to September	Year 2 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November.	Year 3 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November	Year 4 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November	Year 5 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November.	Year 6 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November	Year 7 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November	Year 8 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November.	Year 9 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November	Year 10 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November
		Year 11 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November.	Year 12 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November.	Year 13 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November	Year 14 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November	Year 15 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November.	Year 16 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November	Year 17 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November	Year 18 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November.	Year 19 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November	Year 20 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November
		Year 21 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November.	Year 22 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November.	Year 23 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November	Year 24 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November	Year 25 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November.	Year 26 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November	Year 27 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November	Year 28 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November.	Year 29 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November	Year 30 Autumn - Cut back to height of 7.5cm only and complete this cut between the end of August and late November
Mixed Scrub	Allow for variation in the structure and maturity of the scrub whilst ensuring the habitat is still available for use by wildlife	Year 1 Remove one third of existing scrub Plant Recommended Species Leave to mature	Year 2 No action	Year 3 No action	Year 4 Remove one third of existing scrub Plant Recommended Species Leave to mature	Year 5 No action	Year 6 No action	Year 7 Remove one third of existing scrub Plant Recommended Species Leave to mature	Year 8 No action	Year 9 No action	Year 10 No action
		Select one third of the new mixed scrub for coppice in Year 11 . Re-coppice section every nine years	Year 12 No action	Year 13 No action	Select Second third of the new mixed scrub for coppice in Year 14 . Re-coppice section every nine years	Year 15 No action	Year 17 No action	Select last third of the new mixed scrub for coppice in Year 17 . Re-coppice section every nine years	Year 18 No action	Year 19 No action	Re-coppice 1 st section in Year 20 . Re-coppice section every nine years
		Year 21 No action	Year 22 No action	Re-coppice 2 nd section in Year 23 . Coppice one third of the new scrub that replaced the existing Re-coppice section every nine years	Year 24 No action	Year 25 No action	Re-coppice 3 rd section in Year 26 . Coppice 2 nd third of the new scrub that replaced the existing Re-coppice section every nine years	Year 27 No action	Year 28 No action	Re-coppice 1st section in Year 29 . Coppice Last third of the new scrub that replaced the existing Re-coppice section every nine years	Year 30 No action
Control of Aggressive Weeds	Any weeds which grow on site and are thought to be aggressive and pose a threat to the success of the planted trees should be eradicated. Plant ID survey undertaken twice yearly	Year 1 Plant ID survey: March	Year 2 Plant ID survey: March	Year 3 Plant ID survey: March	Year 4 Plant ID survey: March	Year 5 Plant ID survey: March	Year 6 Plant ID survey: March	Year 7 Plant ID survey: March	Year 8 Plant ID survey: March	Year 9 Plant ID survey: March	Year 10 Plant ID survey: March
		Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July
		Year 11 Plant ID survey: March	Year 12 Plant ID survey: March	Year 13 Plant ID survey: March	Year 14 Plant ID survey: March	Year 15 Plant ID survey: March	Year 16 Plant ID survey: March	Year 17 Plant ID survey: March	Year 18 Plant ID survey: March	Year 19 Plant ID survey: March	Year 20 Plant ID survey: March
		Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July

Biodiversity Net Gain Report

		Year 21	Year 22	Year 23	Year 24	Year 25	Year 26	Year 27	Year 28	Year 29	Year 30
		Plant ID survey: March	Plant ID survey: March	Plant ID survey: March	Plant ID survey: March	Plant ID survey: March	Plant ID survey: March	Plant ID survey: March	Plant ID survey: March	Plant ID survey: March	Plant ID survey: March
		Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July	Plant ID survey: July

7.3 Post-works - Habitat Condition Monitoring Timetable

Post-Monitoring Type	Colour
Progression Check	
Assessing if habitat has met target condition	
Monitoring if Target condition is retained	

Habitat	Year														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Wildflower Meadow															
New scattered trees															
Mixed Scrub															
Habitat	Year														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Wildflower Meadow															
New scattered trees															
Mixed Scrub															

8. Good Practice Principles for Development

8.1 Principle 1: Mitigation Hierarchy

Surveys for the site have yet to be undertaken. At the time of this report write up, this principle has not been met.

8.2 Principle 2: Irreplaceable Habitats

No irreplaceable habitats occur on site. The habitats on site are common and of varying quality. This report has offered recommendations for habitats of a higher standard.

8.3 Principle 3: Inclusivity

Feedback from the stakeholders is welcome and this document is to be updated to fit requirements. This Biodiversity Net Gain Report has included recommendations to benefit the site while allowing it to be used for its intended purpose.

8.4 Principle 4: Risks

Post monitoring and a management scheme has been recommended to ensure habitats meet the target conditions.

8.5 Principle 5: Measurable Net Gain Contribution

If the above habitats are implemented on site:

The Net Unit change for the habitats on site is calculated at **0.73** which correlates to a gain of **35.25%** in habitat biodiversity.

The Net Unit change for the hedgerows on site is calculated at **0.05**, which correlates to a gain of **39.47%** in hedgerow biodiversity.

The Net Unit change for the rivers on site is calculated at **0.12**, which correlates to a gain of **16.00%** in river biodiversity.

8.6 Principle 6: Best Outcomes for Biodiversity

If recommendations are implemented on site, this will increase the biodiversity value from the baseline, offering habitats of higher nature interest. In addition to this, species-specific enhancements have also been proposed.

8.7 Principle 7: Be Additional

The habitats and species-specific enhancements recommended will improve the site for local fauna.

8.8 Principle 8: Net Gain Legacy

Post monitoring and a management scheme has been recommended to ensure the recommended habitats meet the target conditions. This will cover the minimum thirty-year period.

8.9 Principle 9: Sustainability

No green infrastructure has been proposed for the site.

8.10 Principle 10: Transparency

Feedback from the stakeholders is welcome and this document is to be updated to fit requirements. This Biodiversity Net Gain Report has included recommendations to benefit the site while allowing it to be used for its intended purpose.

9. References

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10. Appendices

Appendix A: Site Plans

Appendix B: Baseline Habitat Map

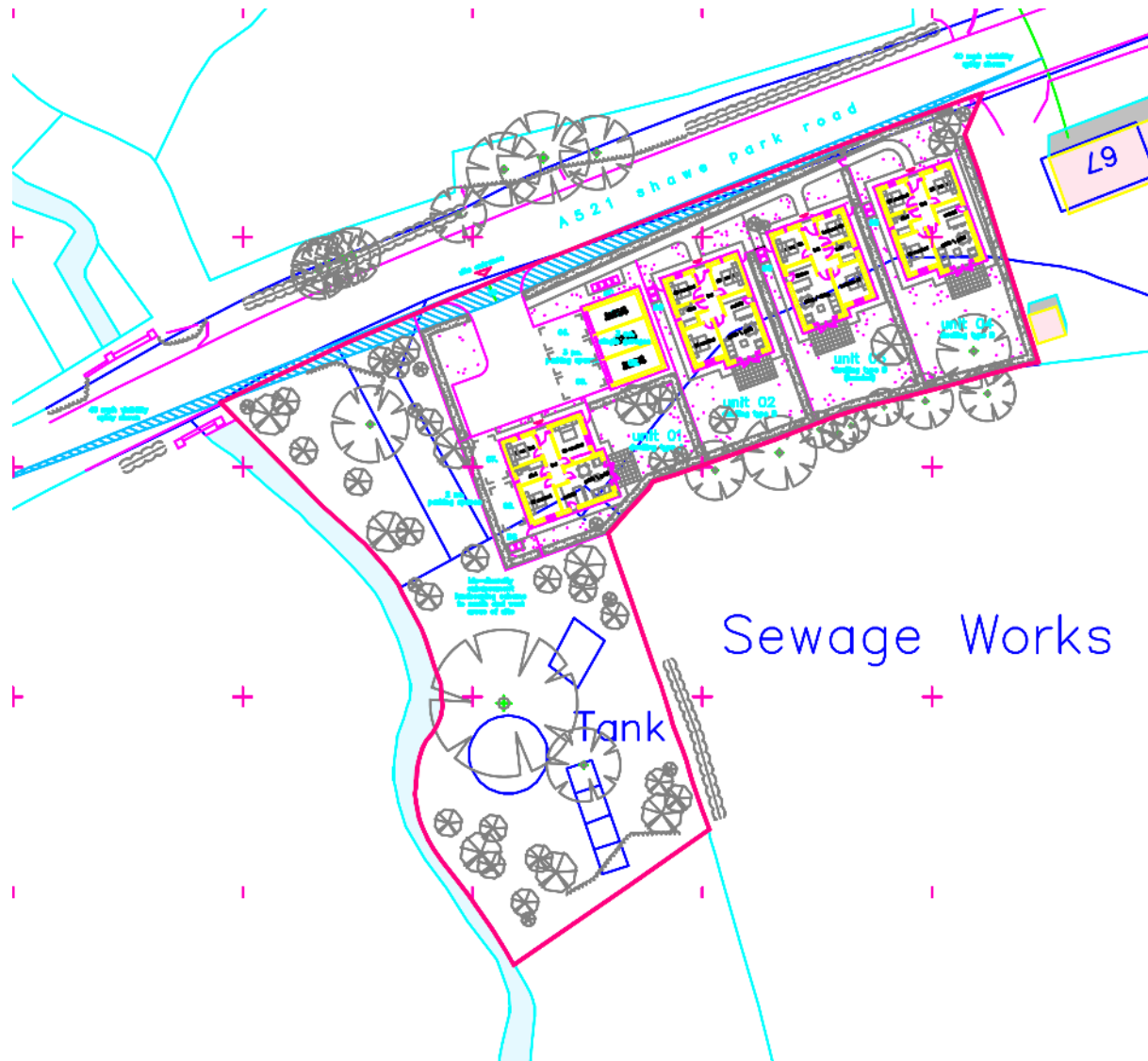
Appendix C: New Habitat Maps

Appendix D: Site Photographs

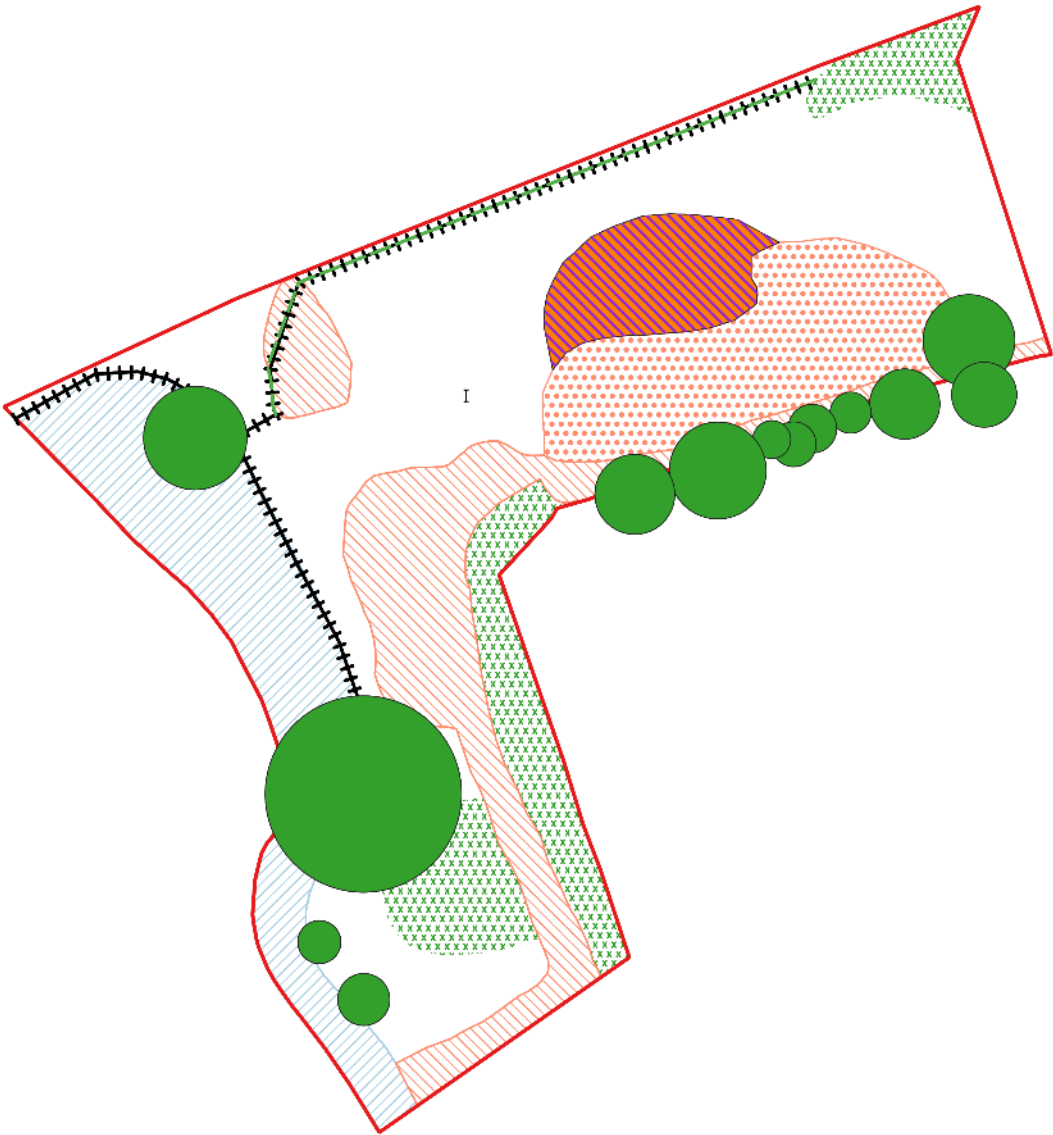
Appendix E: Biodiversity Net Gain Relevant Policies

Appendix F: Bat and Artificial Light

Appendix A: Site Plans



Appendix B: Baseline Habitat Map





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Elite Ecology Limited, Unit 10, The Old Mill, Kingsley Holt, Dorset, DT101 9JQ

The New Barn, Station Road, Shaftesbury, Dorset, DT11 1JQ

Job title

Land off Shawe Park Road, Kingsley Holt

Client

Mr. & Mrs. Klucznik (landowners)

Map title

Phase 1 Habitat Map

Date

26/03/2023

Legend



Redline Boundary



A2.2 - Scattered Scrub



A3.1 - Scattered Broadleaved Trees



B4 - Improved Grassland



B5 - Marshy Grassland



C3.1 Tall Ruderal



C3.2 - Non-Ruderal



F2 - Marginal Vegetation



J2.2.2 - Species-poor Defunct Hedgerow



J2.4 - Fence



Scale:

500@A3

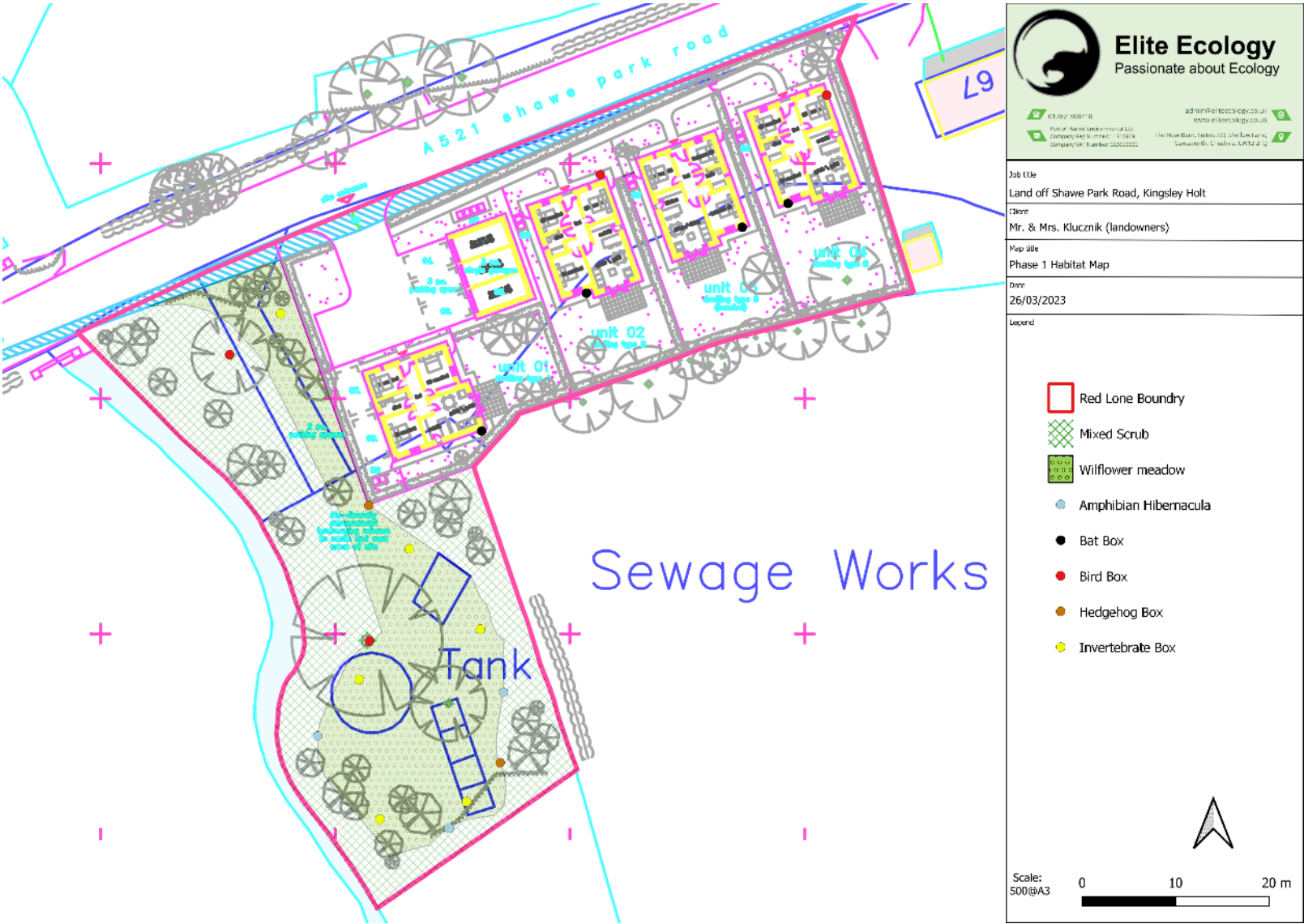
0

10

20 m

34

Appendix C: New Habitat Maps



Appendix D: Site Photographs

Plate 1: Image showing some of the scattered scrub on site.



Plate 2: Image showing the line of scattered trees on the southern margin of the site.



Plate 3: Image showing the improved grassland on site.



Plate 4: Image showing marshy grassland at the east of the site.



Plate 5: Image showing an area of tall ruderal plants on site.



Plate 6: An image showing the non-ruderal habitat.



Plate 7: Image showing the marginal vegetation and running water at the west of the site.



Plate 8: An image showing the defunct hedge at the northern boundary.



Appendix E: Biodiversity Net Gain Relevant Policies

Environmental Act 2021

Part 6 on nature and biodiversity covers all areas of biodiversity net gain across two core sections. This Act mandates that all planning meets a minimum of a 10% gain in biodiversity calculated using the appropriate Metric and that the newly created habitats are secured for at least 30 years.

National Planning Policy Framework (NPPF)

While currently not a legal obligation, biodiversity and environmental net gains are mentioned in the revised National Planning Policy Framework (NPPF) within the following paragraphs (please refer to the NPPF for the full quotations):

Achieving sustainable development

Paragraph 8 Section C. *“an environmental objective – **to protect and enhance our natural, built and historic environment**; including making effective use of land, **improving biodiversity**, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.”*

Preparing and reviewing plans

Paragraph 32. *“Local plans and spatial development strategies should be informed throughout their preparation by a sustainability appraisal that meets the relevant legal requirements. This **should demonstrate how the plan** has addressed relevant economic, social and **environmental objectives** (including **opportunities for net gains**). Significant **adverse impacts on these objectives should be avoided** and, wherever possible, alternative options which reduce or eliminate such impacts should be pursued. Where significant adverse impacts are unavoidable, suitable mitigation measures should be proposed (or, where this is not possible, compensatory measures should be considered).”*

Identifying land for homes

Paragraph 73 section C. *“consider the opportunities presented by existing or planned investment in infrastructure, the area’s economic potential and the scope for **net environmental gains**”*

Transport infrastructure:

Paragraph 104. *“Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:
d) the environmental impacts of traffic and transport infrastructure can be identified assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for **net environmental gains**.*

Planning decisions:

Paragraph 119 *“Planning decisions and planning policy should a) encourage multiple benefits from both urban and rural land ... and taking opportunities to **achieve net environmental gains** - such as developments that would enable new habitat creation.”*

Conserving and enhancing the natural environment

Paragraph 174 Section D. “**minimising impacts on and providing net gains for biodiversity**, including by establishing coherent ecological networks that are more resilient to current and future pressures”

Habitats and biodiversity

Paragraph 179. “To protect and enhance biodiversity and geodiversity, plans should:

a) Identify, map and **safeguard components of local wildlife-rich habitats** and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, **enhancement, restoration or creation**;

and b) promote **the conservation, restoration and enhancement of priority habitats**, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing **measurable net gains for biodiversity**.”

Paragraph 180. “When determining planning applications, local planning authorities should apply the following principles:

a) if **significant harm to biodiversity** resulting from a development **cannot be avoided** (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then **planning permission should be refused**;

b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

c) development resulting in the **loss or deterioration of irreplaceable habitats** (such as ancient woodland and ancient or veteran trees) **should be refused**, unless there are wholly exceptional reasons and a suitable compensation strategy exists;

and d) development **whose primary objective is to conserve or enhance biodiversity should be supported**; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can **secure measurable net gains for biodiversity** or enhance public access to nature where this is appropriate.”

The client has an obligation to ensure new habitats are created, managed and maintained to a high standard. This is not only secured through the National Planning Policy Framework (NPPF), but also through local planning policies.

Local Policy

Staffordshire Moorlands Local Plan

Staffordshire Moorlands Local Plan 2014 - 2033

Policy NE 1 Biodiversity and Geological Resources Point 5

Expecting all development where possible seeks to deliver a net gain in biodiversity proportionate to the size and scale of the development. In circumstances where adverse impacts are demonstrated to be unavoidable, developers will be required to ensure that impacts are appropriately mitigated, with suitable compensation September 2020 119
Staffordshire Moorlands Local Plan - Adopted measures towards loss of habitat used only as

a last resort where there is no alternative. Where any mitigation and compensation measures are required, they should be appropriately scheduled and managed according to the nature, size and scale of the development so as to minimise impacts that may disturb protected or important habitats and species

Appendix F: Bats and Artificial Light

Artificial lighting is known to affect bat's roosting and foraging behaviour, with lighting resulting in a range of impacts that includes roost desertion (BCT, 2009), delayed emergence of roosting bats (Downs et al., 2003), increased activity of some bat species and decreased activity by others (Stone et al., 2012).

An experimental approach using LED units, demonstrated that relatively fast-flying bat species, including the common pipistrelle, showed no significant impacts as a result of new artificial lighting, even when lighting was set at relatively high levels close to 50 lux.

In contrast, slow flying bats such as the myotis bats (*Myotis* spp.) showed sharp reductions in presence, even at low light levels of 3.6 lux (Stone et al., 2012).

Current recommendations for all bat species specifies that no bat roost should be directly illuminated.

Due to the impacts of lighting, mitigation and sensitive lighting design schemes are required for projects where bats are present. These should include bat friendly lighting plans that should aim to avoid lighting wherever possible. If this is not possible, then the minimisation of any lighting impacts is required by adopting the following measures:

➤ **To introduce lighting curfews or use of PIR sensors.**

Lighting curfews can be an effective way of avoiding impacts on bats. These curfews may involve either turning off lighting or dimming light units at specific times of the night, dimming units at key times of the year, providing the luminaire allows for this option via a control unit. Lighting to be triggered by PIR sensors can be expected to be illuminated only when required and for a low proportion of time.

➤ **To consider no lighting solutions where possible.**

Options such as white lining, good signage and LED cat's eyes should be considered as preferable. Reflective fittings may help make use of headlights to provide any necessary illumination in some areas.

➤ **To use only high pressure sodium or warm white LED lamps where possible.**

High pressure sodium and warm white LED lamps emit lower proportions of insect attracting UV light than mercury, metal halide lamps and white LED lighting. Generally, lamps should have a lower proportion of white or blue wavelengths, with a colour temperature <4200 kelvin recommended (BCT, 2014).

➤ **To minimise the spread of light.**

The light spread should be kept at or near horizontal to ensure that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required. Baffles, hoods, louvres and shields should be used where necessary to reduce light spill.

➤ **To consider the height of the lighting column.**

While downward facing bollard lighting is often preferable, it should be noted that a lower mounting height does not automatically reduce impacts to bats as bollard lighting can often be designed to provide up-lighting. Where bollard lighting is considered to be the most appropriate system, bollard spacing or unit density should be kept to a minimum and units should be fitted with the appropriate hoods/deflectors to reduce any up-lighting.

➤ **To avoid reflective surfaces below lights.**

The polarisation of light by shiny surfaces attracts insects increasing bat activity (BCT, 2012). Consequently, surface materials around lighting require consideration.

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No reliance should be made on any such comments in relation to the structural integrity of the features located on the surveyed site. All information within the report is based solely on evidence that has been found on site during the service provided. No individual opinion or inference will be made other than that of the suitably qualified ecologist appointed to the project.