



Elite Ecology

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Land Adjacent to Flint House, Kelshall



Preliminary Ecological Appraisal

February 2026



01782 308418



Part of Harmil Environmental Ltd
Company Reg Number: 11310919
Company VAT Number: 320559225

www.eliteecology.co.uk
admin@eliteecology.co.uk



The New Barn, Suites 2/3, Shellow Lane,
Gawsworth, Cheshire, CW12 2FQ



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Organisation	Elite Ecology		
Prepared For	Colin Bullen (Client)		
Author	Miss. Rebecca Kay		
Approved (1 st Checker)	Mr. Marek Fraczek		
Approved (2 nd Checker)	Mr. Lewis Webster		
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0. Executive Summary

This report has been prepared at the request of Colin Bullen (client). It relates to the proposed re-development works at the Land Adjacent to Flint House, Kelshall, Hertfordshire, SG8 9SE (OS Grid Reference: TL 32849 36771). This survey effort involved both a desktop study and field survey being undertaken.

Under the current proposals, a three-bed residential dwelling and an additional annex with garage attached will be constructed on the land. 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.

Herts Environmental Records Centre (HERC) was commissioned to carry out an ecological data search of all protected species and sites recorded within a 2km radius of the site. No records lay on the proposed re-development site itself, although a number of records are present in close proximity. Please see **Section 3** for a review of the records revealed.

The preliminary ecological appraisal survey revealed multiple habitats on site. The phase 1 habitat map, habitat codes and target notes for the site are located within **Appendix D**. The following habitats were recorded on site (in habitat code order):

- **g4 – Modified Grassland**
- **r1g 50 – Other Standing Water; Ditch**
- **u1e 612 – Built Linear Features; Fence**
- **w1g 33 – Other Broadleaved Woodland; Line of Trees**

Designated Sites:

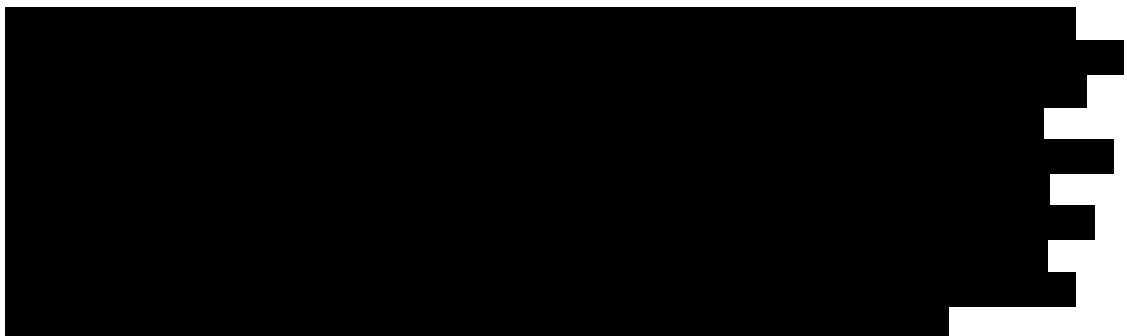
No designated sites that were revealed by the ecological data search provided by HERC fell on the proposed re-development site itself, nor were any revealed immediately adjacent to the site. Therefore, the proposed re-development will have no impact upon any local designated sites as the works are due to remain within the site boundary.

Habitats:

Priority Habitats: No habitats of conservation concern were located on the site itself. Therefore, the proposed scheme of works will not impact upon any rare or valuable habitats.

Species:

Amphibians (including great crested newts): Due to the suitable water features within the local landscape, it will be necessary to undertake eDNA surveys of the waterbodies within 500m radius of the site. Four ponds have been identified within 500m of the site. These surveys can be done from mid-April to late-June. If the results from these assessments come back positive, then further presence/absence surveys are required to establish a population count.



Bats: An artificial lighting plan is required. This lighting plan must be in accordance with the provisions set out by the Institute of Lighting Professionals and Bat Conservation Trust: Guidance Note 08/23: Bats and Artificial Lighting at Night and must comply with the following general guidance: Any artificial lighting installed on site during construction and post-development must face downwards to limit the spill of artificial light onto the wider landscape. It is also recommended that all external artificial lighting post-development is sensorised (such as PIR sensorised) and is only triggered by large bodies (so that moths or other small objects do not cause the lights to turn on). It is also recommended that this lighting plan incorporates 'dark zones' around bat foraging/commuting habitats within the wider landscape. These measures will minimise the negative impacts artificial light could have upon foraging and commuting bats in the area. More information regarding bats and artificial light can be found in **Appendix G**.

Birds: Due to there being suitable bird breeding habitat within the site all building works should be undertaken outside of the bird breeding season (March to August). If vegetation and/or structures are required to be removed during the bird breeding season, then a further inspection by a suitably qualified ecologist is required no more than twenty-four hours before these are to be removed. This is to ensure that no active nest site is illegally destroyed, due to the protection afforded to all active bird nests under the Wildlife and Countryside Act 1981. If an active nest is found by a site inspection, an exclusion zone around the nest will be necessary, where no vegetation removal can take place, to preserve this feature until the chicks have fledged the nest.

Hedgehogs (*Erinaceus europaeus*): If hedge or dense vegetation is cleared between the 1st of November and the 31st of March then an inspection by a suitably qualified ecologist is required to ensure no hibernating hedgehogs are present on site. It is recommended that precautionary measures are incorporated if construction is undertaken at other times of the year. This will be to create provisions for hedgehogs to escape from all trenches dug into the ground, by creating slopes or providing ramps at the end of each working day. Additionally, any pipework left on site that is greater than 150mm in diameter will need to be planked off. Should this information be strictly adhered to, then the development works will not negatively impact on the local mammal populations.

Reptiles: As suitable reptile habitats have been identified on site, it is recommended that a full presence/absence survey is undertaken on the site to establish if any hotspot areas are identified. This will enable adequate compensation and mitigation to ensure the specimens identified remain in favourable conservation status. This consists of setting artificial refugia around the site, with these allowed to bed-in for two weeks. Following this, seven separate visits are undertaken to establish presence/absence on site.

Site Enhancements:

For the proposed site enhancements, please see **Section 5.4** of this report.

Biodiversity Net Gain:

The project is a self-build development it is exempt from the 10% net gain as mandated by DEFRA as it meets all the following conditions to qualify for exemption as set out by government guidance on [exempt developments](#).

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1. Introduction

1.1 Report Rationale

This report has been prepared at the request of Colin Bullen (client). It relates to the proposed re-development works at the Land Adjacent to Flint House, Kelshall, Hertfordshire, SG8 9SE (OS Grid Reference: TL 32849 36771). This survey effort involved both a desktop study and field survey being undertaken.

The main purpose of this assessment was to identify the broad habitats (as stated in the UK Habitat Classification Version 2.0) and the flora species present within the survey area, with any further evidence of protected species usage and/or features of potential ecological interest also included.

The field survey was carried out on the 28th of May 2024 by **Mr. Matthew Cotterill**: PG Diploma, BSc (Hons), Senior Ecologist, Natural England Bat Survey Licence Number: 2019-43981-CLS-CLS Bat Survey Level 1, This survey was subsequently updated on the 23rd of January 2026 by **Mr. Peter Royall**: BSc (Hons), Ecologist, Natural England Great Crested Newt Level 1 Survey Licence Number: 2025-83152-SCI-CL08, (accredited under **Mr. Connor Wild**: MSc, Senior Ecologist) and **Miss. Emily Baughn**: MSc, Assistant Ecologist.

1.2 Site Description and Works

The site is situated in the small village of Kelshall in north-eastern Hertfordshire, approximately 5km south-east of the town of Royston.

The site measures approximately 0.19ha and contains a number of habitats. These include fence, modified grassland, scattered trees, and ditch. The habitats on site could have the potential to support a number of protected species. The photographs of the site are found within **Appendix E**.

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.

Under the current proposals, a three-bed residential dwelling and an additional annex with garage attached will be constructed on the land. Overall, this will result in both the permanent and temporary loss and/or alteration of some of the habitats located on the proposed redevelopment site. Please refer to **Appendix A** for the site plans.

Figure 1: An aerial map showing the boundary of the site at the Land Adjacent to Flint House, Kelshall (as shown by the red outline).



Figure 2: An aerial map showing the site at the Land Adjacent to Flint House, Kelshall as shown by the yellow star) in relation to some of the local landscape.

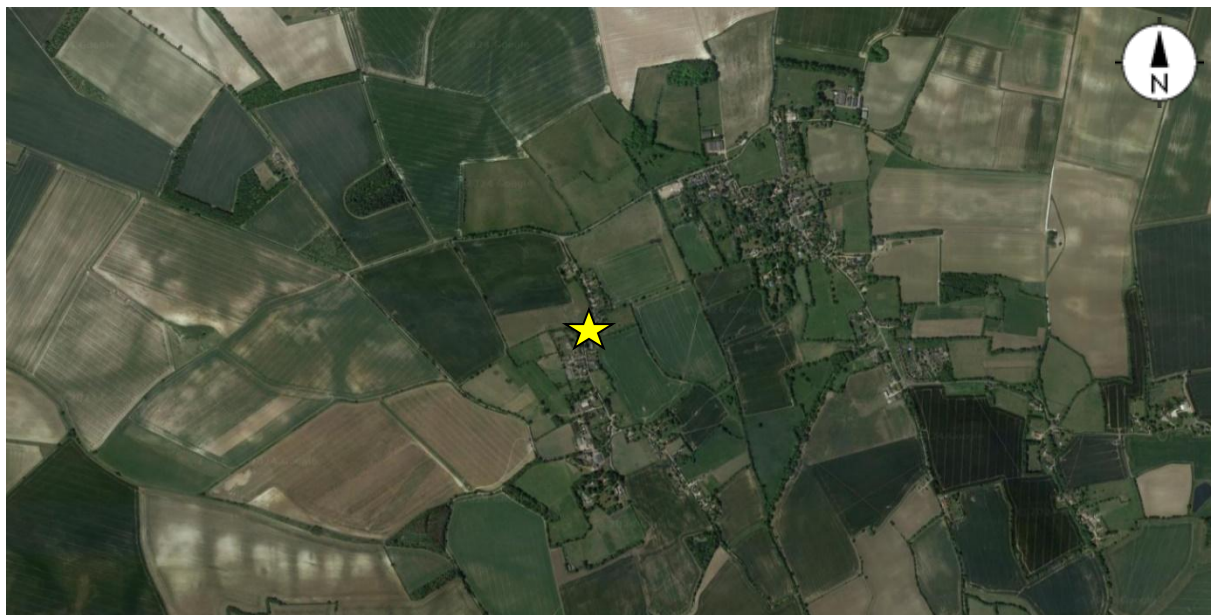
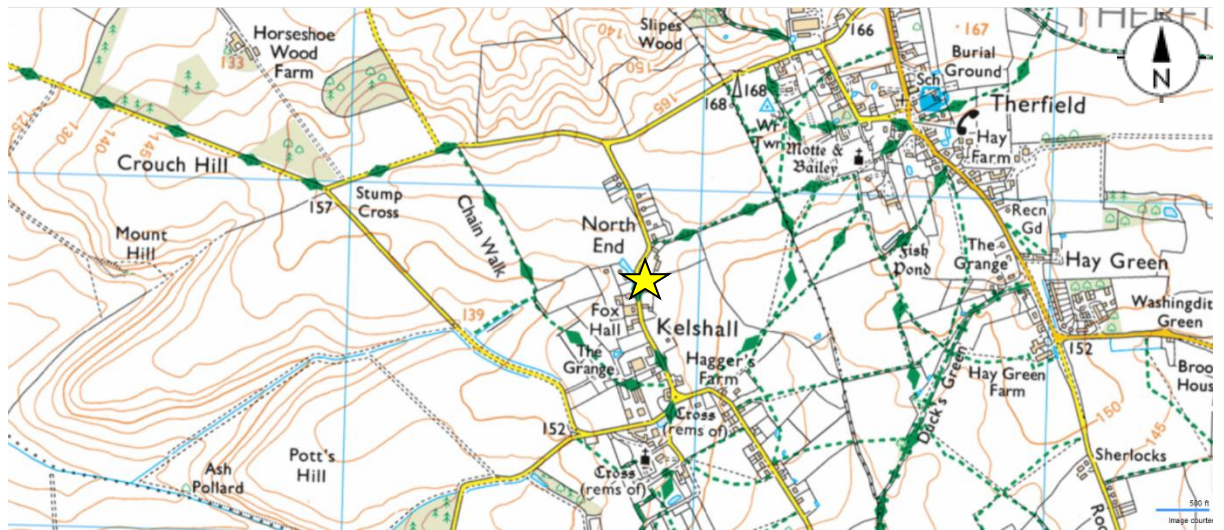


Figure 3: An OS map obtained from Bing showing the location of the Land Adjacent to Flint House, Kelshall (as shown by the yellow star).



2. Survey Methodology

2.1 Desktop Survey

A variety of resources were independently consulted to assess the known local records within the nearby area and the importance of the site within the local landscape from an ecological perspective. The resources used were the Local Records Centre, www.naturalengland.org.uk, www.ordnancesurvey.co.uk, Google Maps, Google Earth, and Bing Maps. A search of other relevant nature conservation information was made through the use of the Multi-Agency Geographic Information for the Countryside (MAGIC) database.

The local records centre was contacted to provide data on all protected species and sites within 2km of the proposed development site. Herts Environmental Records Centre (HERC) was the relevant local record centre for this project.

2.2 Field Survey

A Preliminary Ecological Appraisal (previously referred to as an Extended Phase 1 Habitat Survey) was carried out using the method outlined in The UK Habitat Classification Version 2.0. This method aims to map and describe the broad habitat types and notable features present on the surveyed site.

The classification of the habitats themselves was done using the definitions outlined in UK Habitat Classification (UKHab) in *The UK Habitat Classification Version 2.0 (2023)*.

As part of the field survey, the floral species will be identified and noted down. This will consider the dominant, abundant, frequent, occasional, and rare (DAFOR) species within each habitat on the survey site. The impacts of the proposed development scheme will be assessed by this report.

Each habitat will be assessed for the presence and/or the potential presence of protected species. The impacts of the proposed scheme of works on all potential protected species on site will be assessed. From this, either remedial action or recommended phase 2 presence/absence surveys will be devised.

Habitat Surveys can be carried out at any time of the year, with the optimal time period falling between the months of April through until September. This survey was carried out in January 2026, which is outside the optimal time period for flora surveys. Elite Ecology feels confident that this report reflects an accurate representation of the site's suitability for protected species to be present.

All sites surveyed by Elite Ecology will be run against the relevant Local Wildlife Site Criteria to assess whether or not they meet the required standards.

3. Desktop Survey Results

3.1 Statutory Sites

The ecological data received from HERC revealed no statutory protected sites (e.g., LNR, SSSI, SPA, SAC, or Ramsar) within the 2km radius of the site.

3.2 Non-statutory Sites

The ecological data received from HERC revealed thirteen non-statutory protected sites within 2km of the site. These were in the form of Local Wildlife Sites (LWS) and a Wildlife Trust Nature Reserve (WTNR). They are as follows:

Site Name	Designation	Approx. Distance (m)	Heading
Bell Meadow	LWS	770	NE
Collins Green Lane	LWS	1,950	SSE
Coombe Bottom, Thrift Hill	LWS	1,810	NW
Crouch Hill Road Verge	LWS	950	WNW
Ducks' Green & Kelshall Lane	LWS	830	SE
Ducks' Green West Meadow	LWS	740	E
Hawkins Wood	LWS/WTNR	1,970	SE
Hay Green Grassland	LWS	1,020	E
Lord's Wood (N.E. of Sandon)	LWS	1,430	S
Mount Hill	LWS	1,410	W
Philpott's Wood	LWS	1,650	S
Therfield Green Lane	LWS	1,290	NE
Therfield Motte and Bailey	LWS	570	NE

3.3 Woodland Sites

The information provided by HERC revealed one Ancient and Semi-natural Woodland (ASNW) site within the 2km search radius.

Site Name	Designation	Approx. Distance (m)	Heading
Lord's Wood	ASNW	1,430	S

3.4 Regionally Important Geological Sites (RIGS)

The information provided by HERC revealed no RIGS within the 2km search radius.

A further search on MAGIC maps revealed no priority habitats within the 500m search radius.

3.5 **Species Records**

3.5.1 **Amphibians**

Within the ecological data search provided by HERC, two amphibian species were revealed within 2km of the survey site. These were common toad (*Bufo bufo*) and great crested newt (*Triturus cristatus*). The closest record to the site was of common toad, recorded approximately 1,250m east of the site centroid.

A further search on MAGIC maps revealed no Great Crested Newt Class Survey Licence Returns located within 2km of the site. There have been no great crested newt pond surveys within a 2km radius of the site. No European Protected Species Licences have been granted within 2km of the site.

3.5.2 **Birds**

Within the ecological data set received by HERC, ninety-nine bird species were revealed. The closest record to the site was of Mandarin duck (*Aix galericulata*) recorded approximately 98m to the south-west of the site.

A table with the collated bird species recorded can be found within **Appendix B**.

3.5.3 **Crustaceans**

Within the ecological data set received by HERC, no crustacean species were revealed.

3.5.4 **Fish**

Within the ecological data set received by HERC, one fish species was revealed. This was of bullhead (*Cottus gobio*). Records given are to two digit grid references making the location of this species vague due to the 10km accuracy.

3.5.5 **Flora**

Within the ecological data search provided by HERC, thirty-three floral species have been revealed, of which two are invasive. Invasive species revealed were giant hogweed (*Heracleum mantegazzianum*) and Japanese knotweed (*Fallopia japonica*). The closest of the higher plants was corn gromwell (*Buglossoides arvensis*) which was located approximately 440m to the south-east of the site centroid.

A table with the collated floral species recorded can be found within **Appendix B**.

3.5.6 **Fungi**

Within the ecological data search provided by HERC, one fungi species was revealed within 2km of the site. This was *Psammia stipitata* located approximately 577m to the south of the site centroid.

3.5.7 Invertebrates

Within the ecological data search provided by HERC, sixty-five invertebrate records were identified within a 2km radius of the site. The closest occurrences to the site were of cinnabar (*Tyria jacobaeae*) and Essex skipper (*Thymelicus lineola*), both recorded approximately 190m to the south-west of the site centroid.

A table with the collated invertebrate species recorded can be found within **Appendix B**.

3.5.8 Lichens

Within the ecological data set received by HERC, twelve lichen species were revealed. The closest records to the site are of recorded *Acrocordia conoidea*, *Aspicilia grisea*, *Parmelina tiliacea*, *Physcia tribacia*, and *Rhizocarpon geographicum*, approximately 560m to the south-west of the site centroid.

A table with the collated lichen species recorded can be found within **Appendix B**.

3.5.9 Mammals

Bats

Within the ecological data search provided by HERC, six species of bat were revealed within the 2km search radius.

The UKBAP species recorded in the search were brown long-eared (*Plecotus auratus*), soprano pipistrelle (*Pipistrellus pygmaeus*), and western barbastelle (*Barbastella barbastellus*) bats.

The non-BAP species recorded in the search were common pipistrelle (*Pipistrellus pipistrellus*), Natterer's (*Myotis nattereri*), and serotine (*Cnephaeus serotinus*) bats.

Also recorded were unidentified bat (Chiroptera indet.) and unidentified pipistrelle (*Pipistrellus sp.*).

The closest records to the survey site were of brown long-eared, common pipistrelle, serotine, and soprano pipistrelle bats, all found approximately 447m to the south-east of the site. No European Protected Species Licences have been granted within 2km of the site.

Other Mammals

The ecological data search provided by HERC, revealed nine other mammals within the 2km search radius. These come in the form of brown hare (*Lepus europaeus*), Chinese muntjac (*Muntiacus reevesi*), eastern grey squirrel (*Sciurus carolinensis*), [REDACTED], Eurasian red squirrel (*Sciurus vulgaris*), harvest mouse (*Micromys minutus*), stoat (*Mustela erminea*), weasel (*Mustela nivalis*), and West European Hedgehog (*Erinaceus europaeus*). The closest records to the proposed site are of Chinese muntjac, eastern grey squirrel, and west European hedgehog, all located approximately 624m to the south-east of the site centroid.

3.5.10 Reptiles

Within the ecological data set received by HERC, two reptile species were revealed. These were of common lizard (*Zootoca vivipara*) and slow worm (*Anguis fragilis*). Records given are to two digit grid references, making the location of these species only accurate to within 10km.

4. Field Survey

4.1 Habitats

The preliminary ecological appraisal survey revealed multiple habitats on site. The phase 1 habitat map, habitat codes and target notes for the site are located within **Appendix D**. The following habitats were recorded on site and in the surrounding area (in habitat code order):

4.1.1 g4 – Modified Grassland

The majority of the site is comprised of modified grassland. This habitat is dominated by cock's foot (*Dactylis glomerata*) with abundant cow parsley (*Anthriscus sylvestris*), and ground ivy (*Glechoma hederacea*). Frequently occurring species include common nettle (*Urtica dioica*) with occasional species cleavers (*Galium aparine*), creeping buttercup (*Ranunculus repens*), English ivy (*Hedera helix*), and wood avens (*Geum urbanum*). Rarely occurring species are bramble (*Rubus fruticosus* agg.), cranesbill (*Geranium pratense*), dandelion (*Taraxacum officinale*), hogweed (*Heracleum sphondylium*), lesser celandine (*Ficaria verna*), pendulous sedge (*Carex pendula*), ragwort (*Jacobaea vulgaris*), rose (*Rosa* sp.), sheep sorrel (*Rumex acetosella*), snowdrop (*Galanthus nivalis*), spiny thistle (*Sonchus asper*), white clover (*Trifolium repens*), and winter aconite (*Eranthis hyemalis*). This habitat is unmanaged and the sward height is varied. As such, this habitat has the potential to support several protected species in foraging and commuting, and as refugia.

4.1.2 r1g 50 – Other Standing Water; Ditch

UKHAB Secondary Code(s)	Definition
50	Ditch

A ditch is present along the southern boundary. At the time of survey, water was present within the ditch. The water is of poor quality due to the low invertebrate density. In addition, there is limited submerged vegetation and lack of macrophyte cover. There is an absence of fish and little indication of impact on pond vegetation from the waterfowl present. The surrounding terrestrial habitat offers moderate opportunities for foraging and shelter for amphibians. This habitat has the potential to support several protected species in foraging and commuting, and as refugia.

4.1.3 u1e 612 – Built Linear Feature; Fence

UKHAB Secondary Code(s)	Definition
612	Fence

This habitat borders the site on all boundaries and consists of a post and rail fence with a wire mesh. This fence is of no ecological significance and does not impede the ability of protected species to move across the site due to the potential for species to dig under the feature.

4.1.4 w1g 33 – Other Broadleaved Woodland; Line of Trees

UKHAB Secondary Code(s)	Definition
33	Line of trees

At the south of the site, a broadleaved woodland can be seen along the southern boundary. This habitat features frequent occurrences of hazel (*Corylus avellana*), with rare occurrences of field maple (*Acer campestre*), horse chestnut (*Aesculus hippocastanum*), and sycamore (*Acer pseudoplatanus*).

In addition, a line of trees can be found surrounding the site on the western boundary. This line of trees is dominated by beech (*Fagus sylvatica*) with rare occurrences ash (*Fraxinus excelsior*). These habitats have the potential to support nesting birds, and commuting and foraging bats. The ivy present on the trees has been identified as potential roosting features for bats.

4.2 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 considered the adjacent habitats and connectivity to the wider landscape for all protected and rare species.

4.2.1 **Amphibians (including great crested newts)**

While no ponds have been identified on site, the grassland on site has potential to support terrestrial amphibians for foraging and commuting. Two ponds have been identified immediately off site. A great crested newt Habitat Suitability Index (HSI) was carried out on the ditch on site, as well as the ponds designated **P1** and **P2**. The results of these are shown within **Table 1**. In addition to these two further ponds have been identified within 500m of the site however, no HSI survey has been completed on these due to their distance from the site.

Figure 4: An aerial map of the site of Land Adjacent to Flint House, Kelshall in relation to the nearby brook. The brook locations has been identified using Ordnance Survey data and satellite imagery.



Table 1: Habitat Suitability Index (HSI) of the surveyed water bodies within 500m of the proposed development site Land Adjacent to Flint House, Kelshall.

Water Body Reference:	Ditch	P1	P2
SI1 – Location	1	1	1
SI2 – Pond Area	0.25	0.1	1
SI3 – Pond drying	0.9	0.1	0.9
SI4 – Water Quality	0.33	0.33	0.33
SI5 – Shade	1	0.6	1
SI6 – Fowl	0.67	1	0.67
SI7 – Fish	1	1	0.67
SI8 – Ponds	1	1	1
SI9 – Terrestrial Habitat	0.67	0.67	0.67
SI10 – Macrophytes	0.3	0.3	0.3
HSI Score:	0.63	0.72	0.70
HSI Category	Average	Good	Good

Categorisation of HSI Scores	
HSI - Water Body Suitability	
<0.50	Poor
0.50 – 0.59	Below average
0.60 – 0.69	Average
0.70 – 0.79	Good
>0.80	Excellent

The evaluation of HSI score revealed that the **ditch** onsite has average suitability with 55% likelihood the waterbody will contain amphibians. **P1** and **P2** have good suitability for great-crested newts with 79% likelihood the waterbody will contain amphibians

The site is therefore deemed to be of **moderate** potential to support amphibians. It will be necessary to undertake eDNA surveys of the waterbodies within 500m radius of the site (please refer to **Section 5.3** for additional information).

4.2.2



4.2.3 Bats

The on-site habitats are deemed to contain **moderate** potential to support roosting, foraging and commuting bats. These trees look to be retained during the development. Potential roosting features have been identified within the trees on site on due to the ivy present on them. Further precautionary methods are required (please see **Section 5.3**).

4.2.4 Birds

The trees on site have **high** potential to support breeding birds. Therefore, precautionary measures are required when developing (please see **Section 5.3**).

4.2.5 Crustaceans

There are no suitable habitats on site, and due to this, the potential for the site to support crustaceans is **negligible**. Therefore, no further action is required.

4.2.6 Fish

There are no suitable habitats for fish on site. Due to this, the potential for the site to support fish is **negligible**, so no further action will be required.

4.2.7 Flora

The site contains no protected floral species, and the habitats are not considered likely to support any protected floral species. The potential for protected flora species to be affected is **negligible**.

4.2.8 Hedgehogs (*Erinaceus europaeus*)

Hedgehogs are likely to be present within the local landscape and could use the surveyed site to commute. Therefore, with the presence of suitable habitats onsite the surveyed site is **low** potential for supporting hedgehogs, and requires further precautionary measures when developing (please see **Section 5.3**). Enhancements can also be incorporated post-development to support hedgehogs further (please see **Section 5.4**).

4.2.9 Invertebrates

The habitats on site have the potential to support a variety of common invertebrate species. However, there is no significant vegetation to support rare or protected species, therefore, no further survey effort is required.

4.2.10 Molluscs

Due to the habitats on site the potential to support rare or protected molluscs is **negligible**, meaning no further survey effort is required.

4.2.11 Otters (*Lutra lutra*)

No otter signs (e.g. holts, paths, etc) were identified on site or within 30m of it. There are no habitats on site likely to be used by foraging and commuting otters. Therefore, no further action is required.

4.2.12 Reptiles

The habitats on site are ideal for reptiles providing refugia and basking spots along the mown path. Therefore, the potential is **moderate** and therefore recommendations are required to prevent any harm to reptiles present (please see **Section 5.3**).

4.2.13 Water Voles (*Arvicola amphibius*)

No water vole signs (e.g. burrows, feeding signs, etc) were identified on site or within 50m of it. There are no habitats on site likely to be used by foraging and commuting water voles. Therefore, no further action is required.

4.3 Potential Impacts of the Works

Based upon the results from the desktop survey, field survey and using a degree of academic supposition, the uncompensated development impacts have been summarised as follows:

Species	Impacts & Justification	
	Before Development	After Development
Amphibians	Moderate The site contains habitats to support amphibians with good connectivity to the ponds off site.	Low The terrestrial habitat that amphibians could utilise of the grassland, is set to be affected by the development due to some clearing and the connectivity to waterbodies blocked by fences.
Bats (foraging and commuting)	Moderate The trees on site have the potential to support bat species in foraging and commuting.	Negligible The trees on site will remain intact.
Bats (roosting)	Unknown The trees on site offer potential roosting features for bats.	Unknown The trees on site will remain intact
Birds	High Birds could use the trees for foraging, commuting, refugia, and nesting.	Low The trees on site will remain intact.
Crustaceans	Negligible No habitats to support crustaceans were present on site.	Negligible No habitats to support crustacean species were present on site.
Fish	Negligible No habitats to support fish were present on site.	Negligible No habitats to support fish species were present on site.
Flora	Negligible No rare or protected floral species were present on site.	Negligible No rare or protected floral species were present on site
Hedgehogs	Low The habitats present on site have the potential to support hedgehogs.	Low The habitats to support hedgehogs will be remain present on site but commuting may be blocked by physical features such as fences.
Otters	Negligible No habitats to support otters were present on site.	Negligible No habitats to support otters were present on site.
Invasive Species	Negligible No invasive species were present on site.	Negligible No invasive species were present on site.
Invertebrates	Negligible The site featured no vegetation or habitats to support rare or protected invertebrate species.	Negligible The site still features no vegetation or habitats to support rare or protected invertebrate species.

Molluscs	Negligible No habitats to support mollusc species were present on site.	Negligible No habitats to support mollusc species were present on site.
Reptiles	Moderate The grassland on site may have supported commuting/dispersing reptile species.	Low The terrestrial habitat that amphibians could utilise of the grassland, is set to be affected by the development due to some clearing and the connectivity to other off site habitats blocked by fences.
Water Voles	Negligible No habitats to support water voles were present on site.	Negligible No habitats to support water voles were present on site.

5.1 Designated Sites

5.2 Habitats

5.3 Species

5.3.1 Amphibians (including great crested newts)

5.3.2

[REDACTED]

A

5.3.3 Bats

An artificial lighting plan is required. This lighting plan must be in accordance with the provisions set out by the Institute of Lighting Professionals and Bat Conservation Trust: Guidance Note 08/23: Bats and Artificial Lighting at Night and must comply with the following general guidance: Any artificial lighting installed on site during construction and post-development must face downwards to limit the spill of artificial light onto the wider landscape. It is also recommended that all external artificial lighting post-development is sensorised (such as PIR sensorised) and is only triggered by large bodies (so that moths or other small objects do not cause the lights to turn on). It is also recommended that this lighting plan incorporates 'dark zones' around bat foraging/commuting habitats within the wider landscape. These measures will minimise the negative impacts artificial light could have upon foraging and commuting bats in the area. More information regarding bats and artificial light can be found in **Appendix G**.

5.3.4 Birds

Due to there being suitable bird breeding habitat within the site all building works should be undertaken outside of the bird breeding season (March to August). If vegetation and/or structures are required to be removed during the bird breeding season, then a further inspection by a suitably qualified ecologist is required no more than twenty-four hours before these are to be removed. This is to ensure that no active nest site is illegally destroyed, due to the protection afforded to all active bird nests under the Wildlife and Countryside Act 1981.

If an active nest is found by a site inspection, an exclusion zone around the nest will be necessary, where no vegetation removal can take place, to preserve this feature until the chicks have fledged the nest.

5.3.5 Hedgehogs (*Erinaceus europaeus*)

If hedgerow, scrub or dense vegetation is cleared between the 1st of November and the 31st of March, then an inspection by a suitably qualified ecologist is required to ensure no hibernating hedgehogs are present on site.

It is recommended that precautionary measures are incorporated if construction is undertaken at other times of the year. This will be to create provisions for hedgehogs to escape from all trenches dug into the ground, by creating slopes or providing ramps at the end of each working day.

Additionally, any pipework left on site that is greater than 150mm in diameter will need to be planked off. Should this information be strictly adhered to, then the development works will not negatively impact on the local mammal populations.

5.3.6 Reptiles

As suitable reptile habitats have been identified on site, it is recommended that a full presence/absence survey is undertaken on the site to establish if any hotspot areas are identified. This will enable adequate compensation and mitigation to ensure the specimens identified remain in favourable conservation status. This consists of setting artificial refugia around the site, with these allowed to bed-in for two weeks. Following this, seven separate visits are undertaken to establish presence/absence on site.

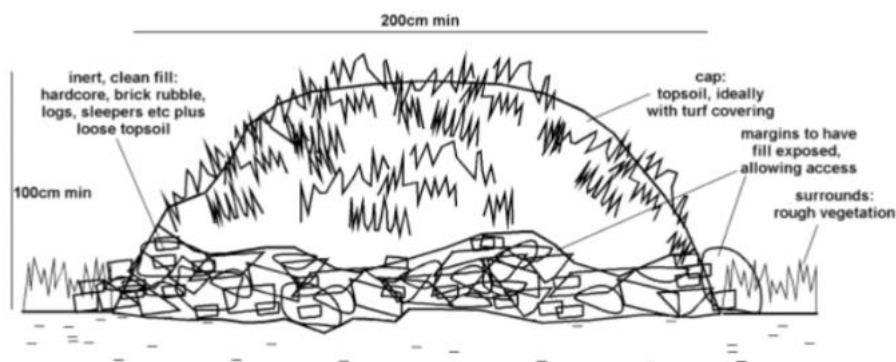
5.4 Site Enhancements

For the proposed development works, the following site enhancement measures could be incorporated into the site post-development. These measures are optional but are bespoke to the site surveyed for the enhancement of biodiversity. Once the options have been finalised, the locations of these features should be placed on a master plan.

5.4.1 Amphibians

It is recommended that at least two hibernacula is 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**. These hibernacula will provide cover and refugia opportunities for herptiles in the local area.

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



5.4.2 Bats

In order to improve the roosting opportunities on site, a variety of bat boxes can be installed around the site. These can be purchased by contacting admin@eliteecology.co.uk.

The site can be enhanced by introducing a bat friendly planting scheme in the soft landscaping plan. The table below outlines species recommended by the Bat Conservation Trust, all of which could be incorporated into the site post development.

Flowers for borders	Trees, shrubs & climbers
Aubretia	Bramble
Candytuft	Common alder
Cherry pie	Dogrose
Corncockle	Elder
Corn marigold	English oak
Corn poppy	Gorse
Echniacea	Guelder rose
English bluebell	Hawthorn
Evening primrose	Hazel
Field poppies	Honeysuckle (native)
Honesty	Hornbeam
Ice plant 'pink lady'	Ivy
Knapweed	Jasmine
Mallow	Pussy willow
Mexican aster	Rowan
Michaelmas daisy	Silver birch
Night-scented stock	Herbs
Ox-eye daisy	Angelica
Phacelia	Bergamot
Poached egg plant	Borage
Primrose	Coriander
Red campion	English marigolds
Red valerian	Fennel
Scabious	Feverfew
St. John's Wort	Hyssop
Sweet William	Lavenders
Tobacco plant	Lemon balm
Verbena	Marjoram
Wallflowers	Rosemary
Wood forget-me-not	Sweet Cicely
Yarrow	Thyme

5.4.3 Birds

The site could be enhanced for birds by installing a variety of bird boxes on site, such as an Apex Bird Box and an Apex Robin Box. Boxes can be ordered by contacting Elite Ecology at: admin@eliteecology.co.uk.

5.4.4 Flora

At present, the site is not considered to have a diverse range of flora. Therefore, it is recommended that a small section of the site is converted into a 'wild meadow' that uses native wildflower seed mixes. A variety of these can be found on the [Meadowmania](#) or [Wildflower Turf](#) webpages.

To enhance the site for the local bat and bird populations several native shrubs and herbs could be included within the 'wild meadow' which will provide excellent foraging habitat. More information on shrubs for bats can be found on the [Wildlife Trust website](#) and more information on shrubs for birds can be found on the [RSPB website](#). There are several different shrubs to choose from but it is important to avoid invasive species such as buddleia, more information on invasive flora can be found on the [RSPB website](#).

5.4.5 Hedgehogs (*Erinaceus europaeus*)

The site could be enhanced for the local hedgehog population by installing at least two Eco Hedgehog Nest Boxes around the site. These can be ordered by contacting Elite Ecology at: admin@eliteecology.co.uk. This will create more opportunities for hedgehogs within the local landscape.

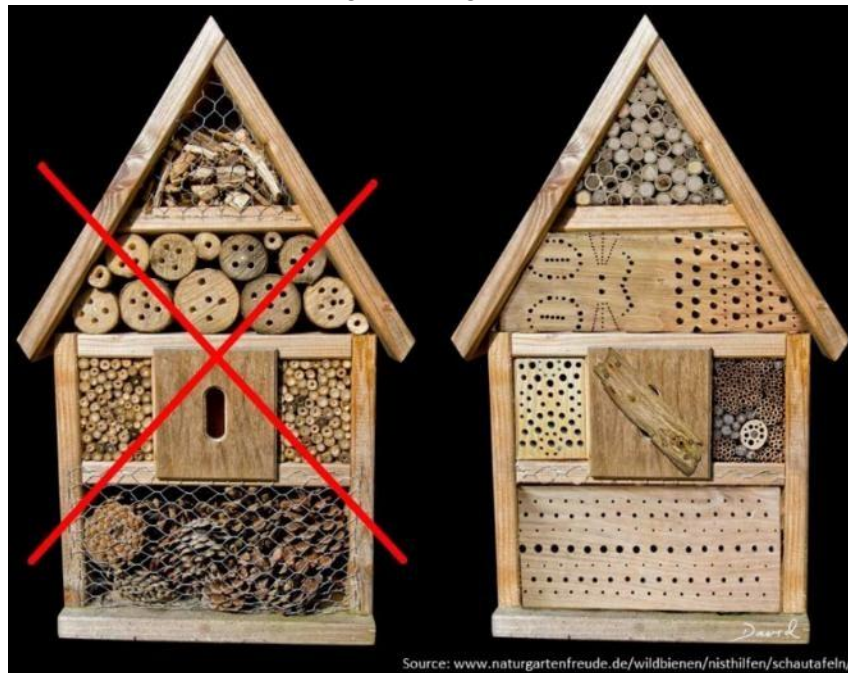
5.4.6 Invertebrates

At present, the site is not considered to be of any importance to local invertebrate populations. In conjunction with the wildflower planting, it is recommended that at least two [Bumblebee Boxes](#) are incorporated into the scheme, along with at least two [Bug Hotels](#). These can be ordered by contacting Elite Ecology at: 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 6**). 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 6: Image showing the difference between a good (right) and a bad (left) insect hotel, taken from the Entomologist Lounge website.



The site would benefit from plants rich in a pollen source throughout the year to enhance the area for the potential of bees. In order to ensure a nectar source year-round it is important to use plants that are relevant to the season. The table below includes just a few examples of which plants thrive through the different seasons to ensure a bee friendly area.

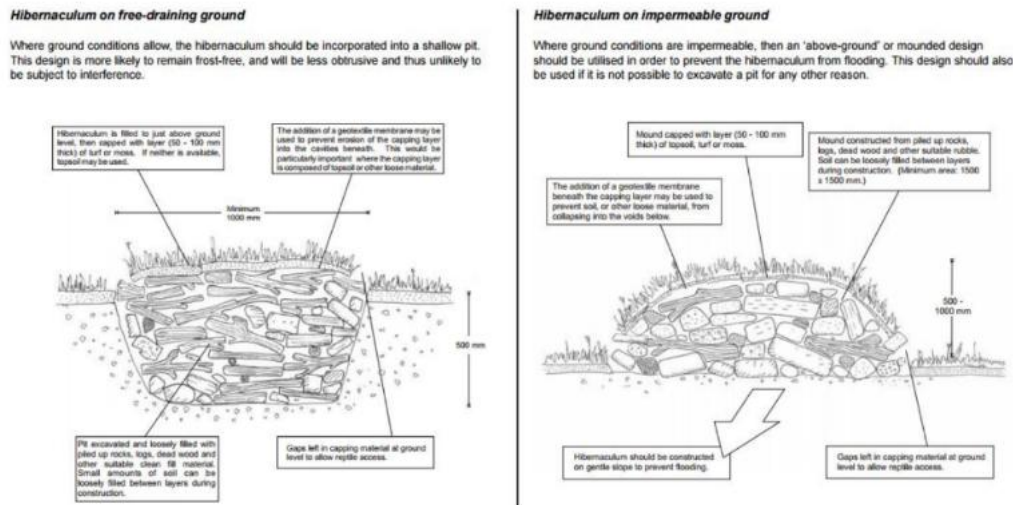
SPRING	SUMMER	AUTUMN	WINTER
• Alliums Bugle • Crab Apple • Daffodils • Flowering Cherry • Hawthorn • Sea Thrift	• Angelica sylvestris • Campanula latifolia • Comfrey • Echinops • Foxgloves • Scabious	• Aster tripolium • Common Ivy • Sedums	• Hellebores foetidus, • Salix aegyptica • Salix caprea • Winter-flowering heather

5.4.7 Reptiles

Hibernacula are be scattered though the site. These hibernacula can be made of cut timber, brash, inert hardcore, bricks, rubble, rocks, tree roots, and building rubble. A minimum of two of these are advised for this project. The key design features include:

- A sunny location.
- A well-drained section of the site.
- One of the long sides faces south.
- Access for reptiles through openings.
- Locate within suitable habitat (rough grassland and scrubland in this scenario).
- Minimal anthropogenic disturbance.
- Measure at least 4m length x 2m width x 1m height, but the larger the better.

Figure 7: A diagram illustrating the recommended reptile hibernacula



5.5 Biodiversity Net Gain

The project is a self-build development it is exempt from the 10% net gain as mandated by DEFRA as it meets all the following conditions to qualify for exemption as set out by government guidance on [exempt developments](#).

The conditions to qualify for exemption are that the development must:

- consist of no more than 9 dwellings
- be on a site that has an area no larger than 0.5 hectares
- consist exclusively of dwellings that are self-build or custom housebuilding as defined in [section 1\(A1\) of the Self-build and Custom Housebuilding Act 2015](#)

6. References

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7. Appendices

Appendix A: Site Plans

Appendix B: Desktop Study Table

Appendix C: Desktop Study Maps

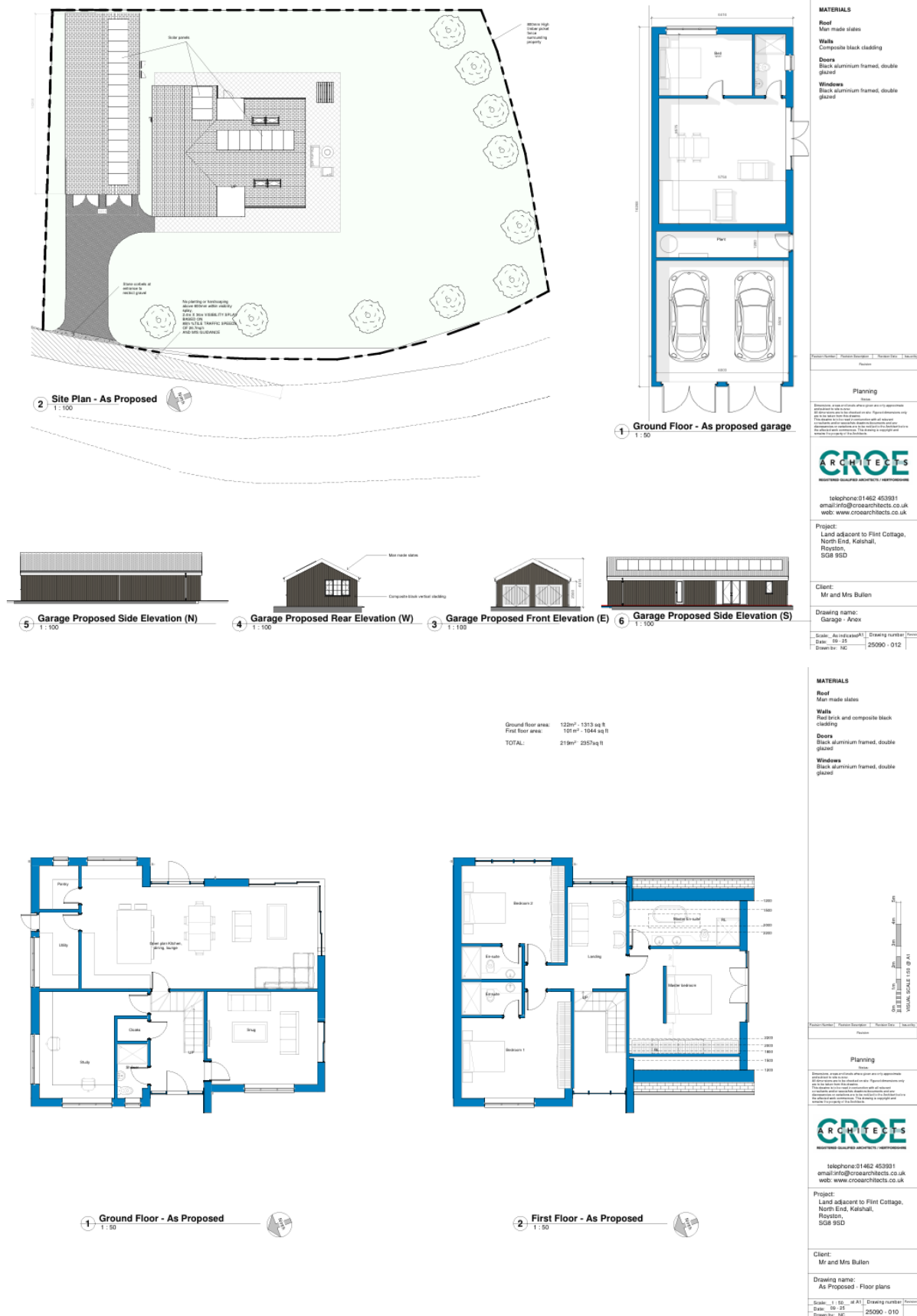
Appendix D: Phase 1 Habitat Map

Appendix E: Site Photographs

Appendix F: Biodiversity Legislation and Policy

Appendix G: Bat and Artificial Light

Appendix A: Site Plans



Appendix B: Desktop Study Tables

The results within the following table are a collation of the species identified within the desktop search, undertaken by HERC.

Amphibians	
Common Name	Latin Name
Common Toad	<i>Bufo bufo</i>
Great Crested Newt	<i>Triturus cristatus</i>
Birds	
Common Name	Latin Name
Barn Owl	<i>Tyto alba</i>
Black Redstart	<i>Phoenicurus ochrurus</i>
Black-headed Gull	<i>Chroicocephalus ridibundus</i>
Blue Tit	<i>Cyanistes caeruleus</i>
Brambling	<i>Fringilla montifringilla</i>
Bullfinch	<i>Pyrrhula pyrrhula</i>
Buzzard	<i>Buteo buteo</i>
Canada Goose	<i>Branta canadensis</i>
Coal Tit	<i>Periparus ater</i>
Common Gull	<i>Larus canus</i>
Corn Bunting	<i>Emberiza calandra</i>
Crossbill	<i>Loxia curvirostra</i>
Cuckoo	<i>Cuculus canorus</i>
Dotterel	<i>Charadrius morinellus</i>
Dunnock	<i>Prunella modularis</i>
Fieldfare	<i>Turdus pilaris</i>
Firecrest	<i>Regulus ignicapilla</i>
Goldcrest	<i>Regulus regulus</i>
Golden Plover	<i>Pluvialis apricaria</i>
Goldfinch	<i>Carduelis carduelis</i>
Great Black-backed Gull	<i>Larus marinus</i>
Great Grey Shrike	<i>Lanius excubitor</i>
Great Spotted Woodpecker	<i>Dendrocopos major</i>
Great Tit	<i>Parus major</i>
Green Woodpecker	<i>Picus viridis</i>
Greenfinch	<i>Chloris chloris</i>
Grey Heron	<i>Ardea cinerea</i>
Grey Partridge	<i>Perdix perdix</i>
Grey Plover	<i>Pluvialis squatarola</i>
Grey Wagtail	<i>Motacilla cinerea</i>
Greylag Goose	<i>Anser anser</i>
Hen Harrier	<i>Circus cyaneus</i>

Herring Gull	<i>Larus argentatus</i>
Hobby	<i>Falco subbuteo</i>
House Martin	<i>Delichon urbicum</i>
House Sparrow	<i>Passer domesticus</i>
Kestrel	<i>Falco tinnunculus</i>
Lapwing	<i>Vanellus vanellus</i>
Lesser Black-backed Gull	<i>Larus fuscus</i>
Lesser Redpoll	<i>Acanthis cabaret</i>
Lesser Spotted Woodpecker	<i>Dryobates minor</i>
Linnet	<i>Linaria cannabina</i>
Little Owl	<i>Athene noctua</i>
Long-eared Owl	<i>Asio otus</i>
Mallard	<i>Anas platyrhynchos</i>
Mandarin Duck	<i>Aix galericulata</i>
Marsh Harrier	<i>Circus aeruginosus</i>
Marsh Tit	<i>Poecile palustris</i>
Meadow Pipit	<i>Anthus pratensis</i>
Merlin	<i>Falco columbarius</i>
Mistle Thrush	<i>Turdus viscivorus</i>
Moorhen	<i>Gallinula chloropus</i>
Nuthatch	<i>Sitta europaea</i>
Osprey	<i>Pandion haliaetus</i>
Pallid Harrier	<i>Circus macrourus</i>
Peregrine	<i>Falco peregrinus</i>
Pied Wagtail	<i>Motacilla alba yarrellii</i>
Pied Wagtail	<i>Motacilla alba</i>
Quail	<i>Coturnix coturnix</i>
Red Kite	<i>Milvus milvus</i>
Redstart	<i>Phoenicurus phoenicurus</i>
Redwing	<i>Turdus iliacus</i>
Reed Bunting	<i>Emberiza schoeniclus</i>
Ring Ouzel	<i>Turdus torquatus</i>
Robin	<i>Erithacus rubecula</i>
Rook	<i>Corvus frugilegus</i>
Rough-legged Buzzard	<i>Buteo lagopus</i>
Sand Martin	<i>Riparia riparia</i>
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>
Short-eared Owl	<i>Asio flammeus</i>
Shoveler	<i>Spatula clypeata</i>
Siskin	<i>Spinus spinus</i>
Skylark	<i>Alauda arvensis</i>
Song Thrush	<i>Turdus philomelos</i>
Sparrowhawk	<i>Accipiter nisus</i>
Spotted Flycatcher	<i>Muscicapa striata</i>

Starling	<i>Sturnus vulgaris</i>
Stock Dove	<i>Columba oenas</i>
Stonechat	<i>Saxicola rubicola</i>
Stone-curlew	<i>Burhinus oedicnemus</i>
Swallow	<i>Hirundo rustica</i>
Swift	<i>Apus apus</i>
Tawny Owl	<i>Strix aluco</i>
Tree Pipit	<i>Anthus trivialis</i>
Tree Sparrow	<i>Passer montanus</i>
Treecreeper	<i>Certhia familiaris</i>
Tufted Duck	<i>Aythya fuligula</i>
Turtle Dove	<i>Streptopelia turtur</i>
Wheatear	<i>Oenanthe oenanthe</i>
Whinchat	<i>Saxicola rubetra</i>
Whitethroat	<i>Curruca communis</i>
Whooper Swan	<i>Cygnus cygnus</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Woodcock	<i>Scolopax rusticola</i>
Woodpigeon	<i>Columba palumbus</i>
Wren	<i>Troglodytes troglodytes</i>
Yellow Wagtail	<i>Motacilla flava</i>
Yellowhammer	<i>Emberiza citrinella</i>
Yellow-legged Gull	<i>Larus michahellis</i>
Fish	
Common Name	Latin Name
Bullhead	<i>Cottus gobio</i>
Flora	
Common Name	Latin Name
Basil Thyme	<i>Clinopodium acinos</i>
Bluebell	<i>Hyacinthoides non-scripta</i>
Blueish Veilwort	<i>Metzgeria violacea</i>
Chalk Eyebright	<i>Euphrasia pseudokernerii</i>
Chicory	<i>Cichorium intybus</i>
Common Fragrant-orchid	<i>Gymnadenia conopsea</i>
Common Rock-rose	<i>Helianthemum nummularium</i>
Corn Marigold	<i>Glebionis segetum</i>
Crested Cow-wheat	<i>Melampyrum cristatum</i>
Dwarf Spurge	<i>Euphorbia exigua</i>
Field Gromwell	<i>Lithospermum arvense</i>
Field Mouse-ear	<i>Cerastium arvense</i>
Field Scabious	<i>Knautia arvensis</i>
Fine-leaved Sandwort	<i>Minuartia hybrida</i>

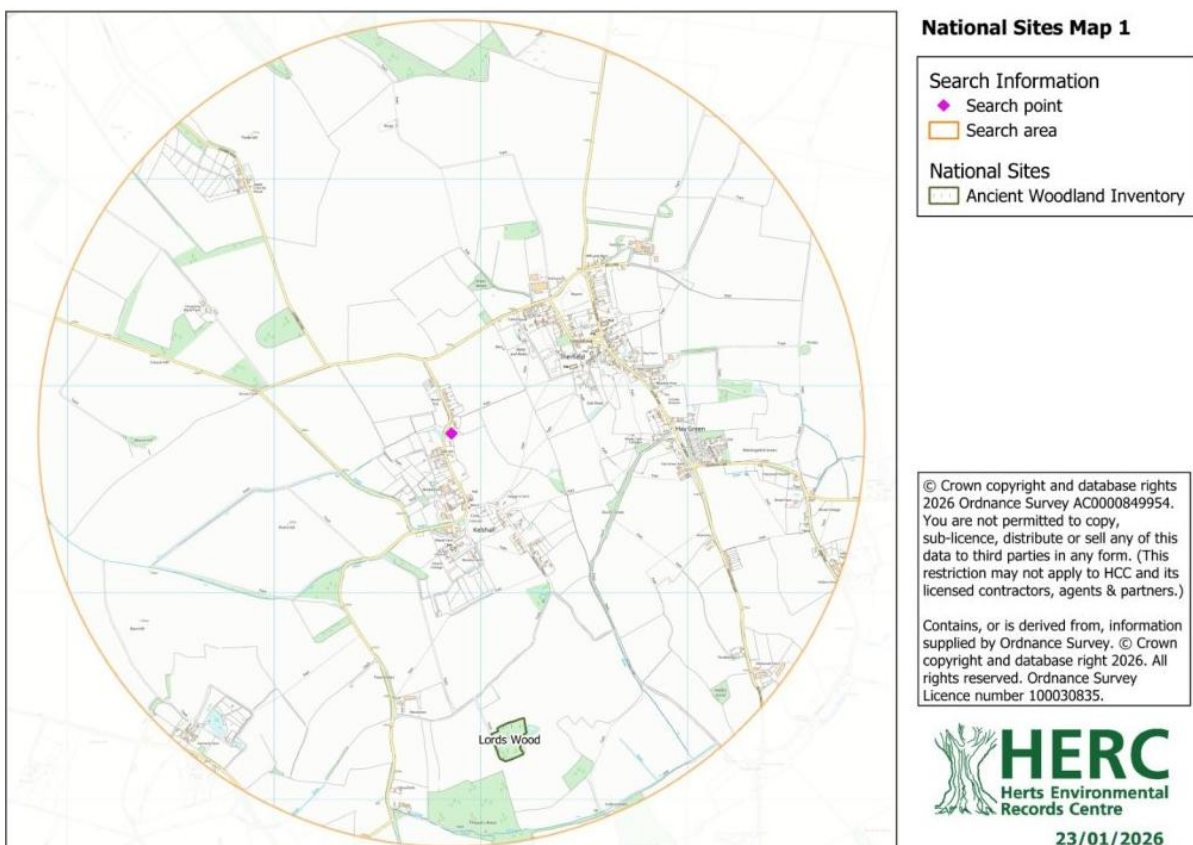
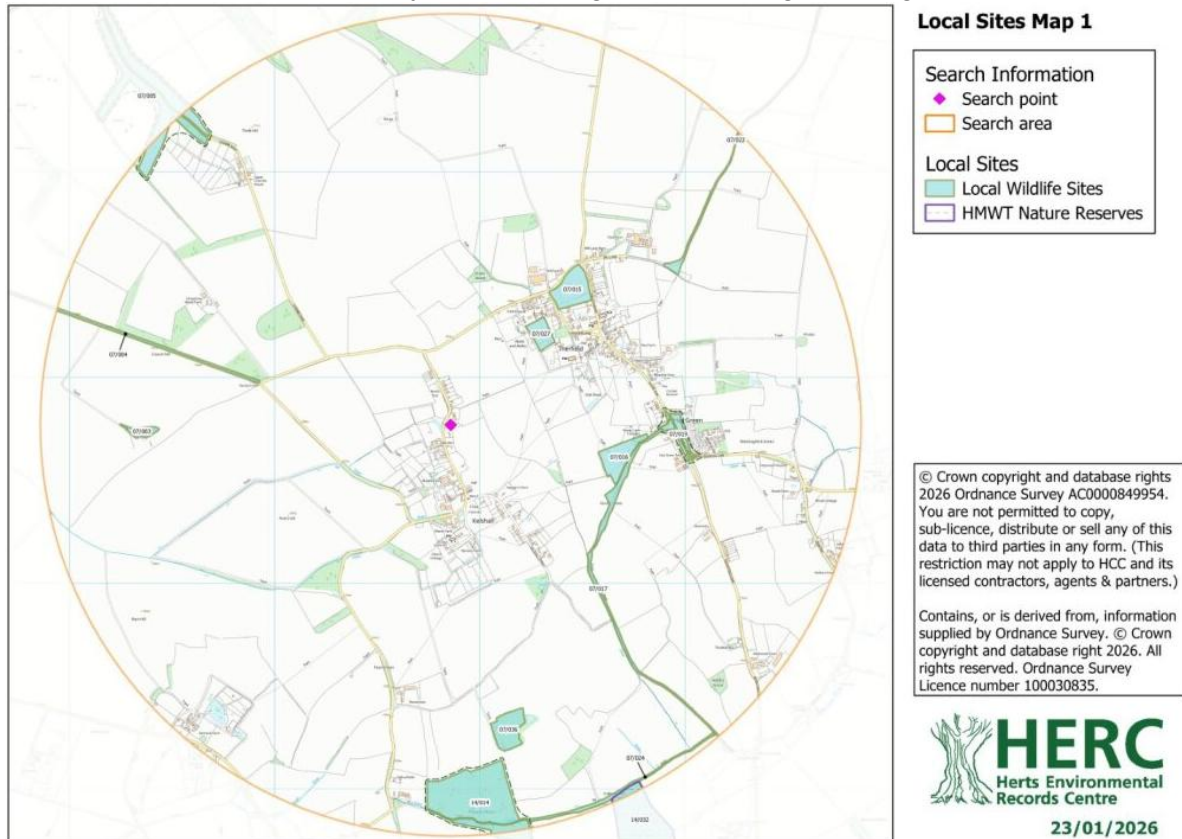
Giant Hogweed	<i>Heracleum mantegazzianum</i>
Harebell	<i>Campanula rotundifolia</i>
Hoary Plantain	<i>Plantago media</i>
Japanese Knotweed	<i>Fallopia japonica</i>
Many-fruited Thyme-moss	<i>Plagiomnium affine</i>
Pasqueflower	<i>Pulsatilla vulgaris</i>
Quaking-grass	<i>Briza media</i>
Red Hemp-nettle	<i>Galeopsis angustifolia</i>
Sanicle	<i>Sanicula europaea</i>
Short-leaved Pocket-moss	<i>Fissidens incurvus</i>
Spiny Restharrow	<i>Ononis spinosa</i>
Sterile Beardless-moss	<i>Weissia sterilis</i>
Stinking Chamomile	<i>Anthemis cotula</i>
Strawberry Clover	<i>Trifolium fragiferum</i>
Treacle-mustard	<i>Erysimum cheiranthoides</i>
Wall Feather-moss	<i>Rhynchostegium murale</i>
Wild Strawberry	<i>Fragaria vesca</i>
Invertebrates	
Common Name	Latin Name
11-spot Ladybird	<i>Coccinella undecimpunctata</i>
Adonis Blue	<i>Polyommatus bellargus</i>
Bastard-toadflax Bug	<i>Canthophorus impressus</i>
Beaded Chestnut	<i>Agrochola lychnidis</i>
Beet Moth	<i>Scrobipalpa ocellatella</i>
Brown-spot Pinion	<i>Anchoscelis litura</i>
Buff Ermine	<i>Spilosoma lutea</i>
Centre-barred Sallow	<i>Atethmia centrargo</i>
Chalk Hill Blue	<i>Polyommatus coridon</i>
Cinnabar	<i>Tyria jacobaeae</i>
Dark Green Fritillary	<i>Speyeria aglaja</i>
Dark Spruce Knot-horn	<i>Assara terebrella</i>
Deep-brown Dart	<i>Aporophyla lueneburgensis</i>
Dingy Knot-horn	<i>Hypochalcia ahenella</i>
Dingy Skipper	<i>Erynnis tages</i>
Dot Moth	<i>Melanchra persicariae</i>
Double Dart	<i>Graphiphora augur</i>
Dusky Brocade	<i>Apamea remissa</i>
Dusky Thorn	<i>Ennomos fuscantaria</i>
Essex Skipper	<i>Thymelicus lineola</i>
Five-spot Dot	<i>Ectoedemia quinquella</i>
Flame Seedhead Moth	<i>Metzneria aprilella</i>
Fox Moth	<i>Macrothylacia rubi</i>

Ghost Moth	<i>Hepialus humuli</i>
Grass Rivulet	<i>Perizoma albulata</i>
Green-brindled Crescent	<i>Allophyes oxyacanthae</i>
Grey Dagger	<i>Acronicta psi</i>
Grizzled Skipper	<i>Pyrgus malvae</i>
Gypsy Moth	<i>Lymantria dispar</i>
Hedge Marble	<i>Endothenia nigricostana</i>
High Brown Fritillary	<i>Fabriciana adippe</i>
Knot Grass	<i>Acronicta rumicis</i>
Large Nutmeg	<i>Apamea anceps</i>
Latticed Heath	<i>Chiasmia clathrata</i>
Limnephilus affinis	<i>Limnephilus affinis</i>
Lunar Yellow Underwing	<i>Noctua orbona</i>
Maple Stilt	<i>Caloptilia semifascia</i>
Meadowsweet Borer	<i>Monochroa lutulentella</i>
Mottled Grasshopper	<i>Myrmeleotettix maculatus</i>
Mottled Rustic	<i>Caradrina morpheus</i>
Oak Hook-tip	<i>Watsonalla binaria</i>
Phytoecia cylindrica	<i>Phytoecia cylindrica</i>
Plain Golden Y	<i>Autographa jota</i>
Rosy Rustic	<i>Hydraecia micacea</i>
Rustic	<i>Hoplodrina blanda</i>
Scabious Longhorn	<i>Nemophora metallica</i>
Shaded Broad-bar	<i>Scotopteryx chenopodiata</i>
Silver-spotted Skipper	<i>Hesperia comma</i>
Sisyra nigra	<i>Sisyra nigra</i>
Small Emerald	<i>Hemistola chrysoprasaria</i>
Small Heath	<i>Coenonympha pamphilus pamphilus</i>
Small Heath	<i>Coenonympha pamphilus</i>
Small Phoenix	<i>Ecliptopera silaceata</i>
Small Purple-barred	<i>Phytometra viridaria</i>
Small Skipper	<i>Thymelicus sylvestris</i>
Small Square-spot	<i>Diarsia rubi</i>
Sprawler	<i>Asteroscopus sphinx</i>
Stripe-winged Grasshopper	<i>Stenobothrus lineatus</i>
Twin-spot Plume	<i>Stenoptilia bipunctidactyla</i>
Wall	<i>Lasiommata megera</i>
White Ermine	<i>Spilosoma lubricipeda</i>
White Satin Moth	<i>Leucoma salicis</i>
White-letter Hairstreak	<i>Satyrrium w-album</i>
White-line Dart	<i>Euxoa tritici</i>
White-speckled Fungus Moth	<i>Nemapogon koenigi</i>
Willow Maze-miner	<i>Phyllocnistis saligna</i>
Lichens	

Common Name	Latin Name
Acrocordia conoidea	<i>Acrocordia conoidea</i>
Aspicilia grisea	<i>Aspicilia grisea</i>
Bacidia rubella	<i>Bacidia rubella</i>
Caloplaca cirrochroa	<i>Caloplaca cirrochroa</i>
Eagle's Claws	<i>Anaptychia ciliaris</i> subsp. <i>ciliaris</i>
Lecanora horiza	<i>Lecanora horiza</i>
Opegrapha atra	<i>Opegrapha atra</i>
Parmelina tiliacea	<i>Parmelina tiliacea</i>
Physcia tribacia	<i>Physcia tribacia</i>
Pleurosticta acetabulum	<i>Pleurosticta acetabulum</i>
Ramalina fraxinea	<i>Ramalina fraxinea</i>
Rhizocarpon geographicum	<i>Rhizocarpon geographicum</i>
Mammals	
Common Name	Latin Name
Bat	<i>Chiroptera</i>
Brown Hare	<i>Lepus europaeus</i>
Brown Long-eared Bat	<i>Plecotus auritus</i>
Chinese Muntjac	<i>Muntiacus reevesi</i>
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>
Eastern Grey Squirrel	<i>Sciurus carolinensis</i>
Eurasian Red Squirrel	<i>Sciurus vulgaris</i>
Harvest Mouse	<i>Micromys minutus</i>
Natterer's Bat	<i>Myotis nattereri</i>
Pipistrelle	<i>Pipistrellus pipistrellus</i>
Pipistrelle Bat species	<i>Pipistrellus</i>
Serotine	<i>Eptesicus serotinus</i>
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>
Stoat	<i>Mustela erminea</i>
Weasel	<i>Mustela nivalis</i>
West European Hedgehog	<i>Erinaceus europaeus</i>
Western Barbastelle	<i>Barbastella barbastellus</i>
Reptiles	
Common Name	Latin Name
Common Lizard	<i>Zootoca vivipara</i>
Slow-worm	<i>Anguis fragilis</i>

Appendix C: Desktop Study Maps

This map has been produced by HERC. All rights concerning it belong to them.



Appendix D: Phase 1 Habitat Map



Elite Ecology

Passionate about Ecology

01782 3009118

admin@eliteecology.co.uk

www.eliteecology.co.uk

Elite Ecology Environmental Ltd

The New Barn, Sables 2/3, Sableway Lane

Camerton, Glos, GL12 2JQ

Job title

Land Adjacent off Flint House, Kelshall

Client

Colin Bullen (client)

Map title

Baseline Habitat Map

Date

28/01/2026

Legend

Red Line Boundary

g4 - Modified Grassland

r1g 50 - Other Standing Water; Ditch

u1e 612 - Built Linear Feature; Fence

w1g - Other Broadleaved Woodland

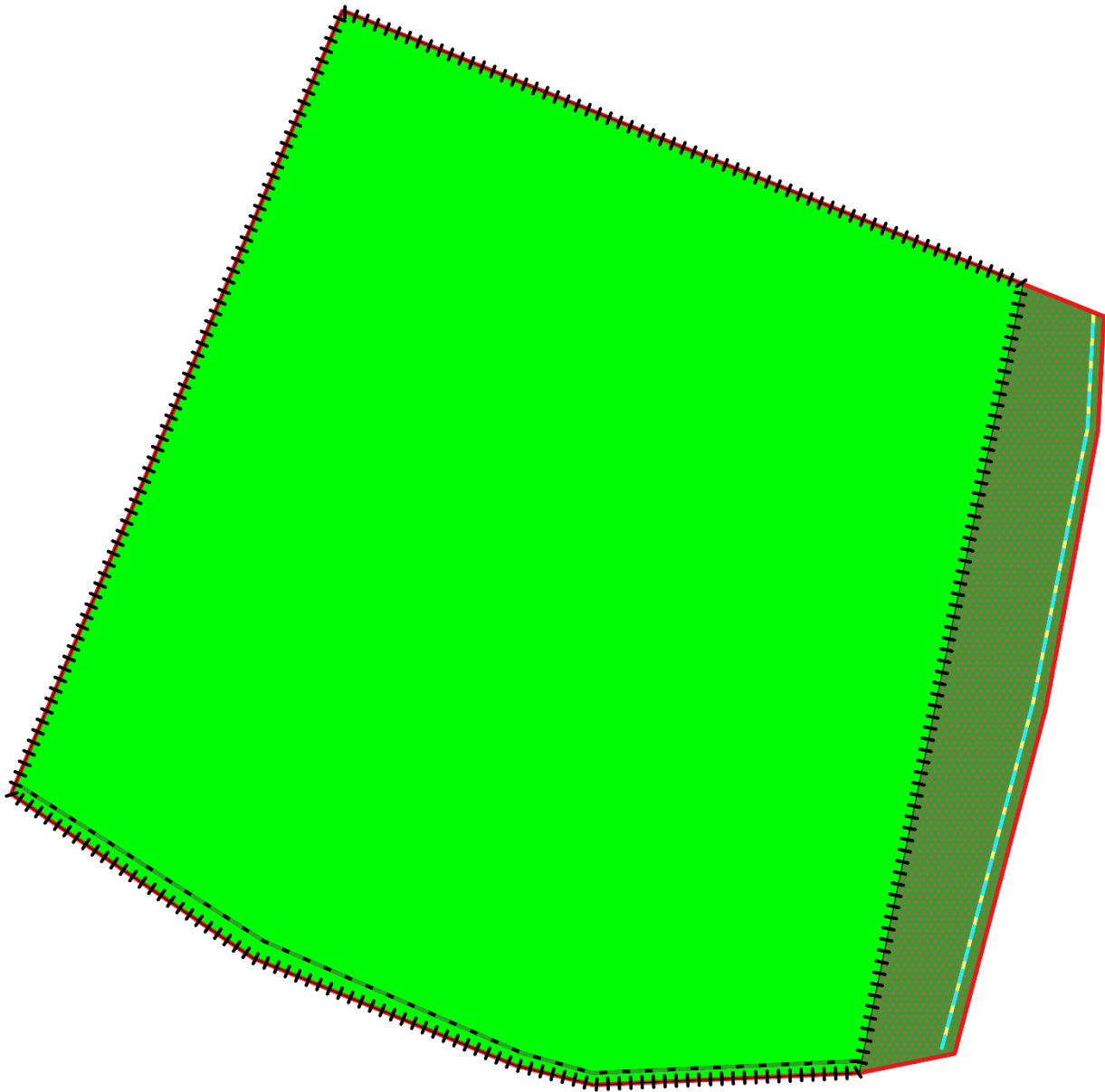
w1g 33 - Line of Trees

Scale: 290@A3

0

5

10 m



The map displays a large, irregularly shaped area of land. The majority of this area is colored bright green, representing 'Modified Grassland' (g4). A smaller, elongated section on the right side of the main area is filled with a green cross-hatch pattern, representing 'Other Broadleaved Woodland' (w1g). The entire mapped area is enclosed by a red line, indicating the 'Red Line Boundary'. Several other boundary lines are shown: a dashed blue line, a dashed yellow line, and a dashed cyan line, which correspond to 'Built Linear Features' (u1e 612) such as fences or ditches. A north arrow is located in the top right corner, and a scale bar below it indicates distances of 0, 5, and 10 meters. The map is oriented with the north arrow pointing towards the top right of the page.

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Appendix E: Site Photographs

Plate 1: Image showing the modified grassland and line of trees.



Plate 2: Image showing part of the mown section of the modified grassland, line of trees, and fence.



Plate 3: Image showing the ditch on site.



Plate 4: Image showing P1.



Plate 5: Image showing P2.



Plate 6: Image showing the broadleaved woodland on site.



Appendix F: Biodiversity Legislation and Policy

General Legislation and Policy:

The framework of legislation and policy which underpins nature conservation in England. This is a material consideration in the planning process in England.

Conservation of Habitats and Species Regulations 2017 (Habitats Regulations 2010 as amended)

The Conservation of Habitats and Species Regulations 2017 consolidate and update the Conservation Regulations 1994 and the conservation of habitats and species regulations 2010 (and all their amendments). The Conservation of Habitats and Species Regulations 2017 are the principal means by which the EEC Council Directive 92/43 (The Habitats Directive) as amended is transposed into English and Welsh law.

The Conservation of Habitats and Species Regulations 2017 place duty upon the relevant authority of government to identify sites which are of importance to the habitats and species listed in Annexes I and II of the Habitats Directive. Those sites which meet the criteria are, in conjunction with the European Commission, designated as Sites of Community Importance, which are subsequently identified as Special Areas of Conservation (SAC) by the European Union member states. The regulations also place a duty upon the government to maintain a register of European protected sites designated as a result of EC Directive 79/409/EEC on the Conservation of Wild Birds (The Birds Directive). These sites are termed Special Protection Areas (SPA) and, in conjunction with SACs, form a network of sites known as Natura 2000. The Habitats Directive introduces for the first time for protected areas, the precautionary principle; that is that projects can only be permitted having ascertained no adverse effect on the integrity of the site. Projects may still be permitted if there are no alternatives, and there are imperative reasons of overriding public interest.

The Conservation of Habitats and Species Regulations 2017 also provide for the protection of individual species of fauna and flora of European conservation concern listed in Schedules 2 and 5 respectively. Schedule 2 includes species such as otter and great crested newt for which the UK population represents a significant proportion of the total European population. It is an offence to deliberately kill, injure, disturb or trade these species. Schedule 5 plant species are protected from unlawful destruction, uprooting or trade under the regulations.

The Wildlife and Countryside Act (WCA) 1981 (As amended)

The WCA, as amended, consolidates and amends pre-existing national wildlife legislation in order to implement the Bern Convention and the Birds Directive. It complements the Conservation (Natural Habitats. & c.) Regulations 1994 (as amended), offering protection to a wider range of species. The Act also provides for the designation and protection of national conservation sites of value for their floral, faunal or geological features, termed Sites of Special Scientific Interest (SSSIs).

Schedules of the act provide lists of protected species, both flora and fauna, and detail the possible offences that apply to these species.

The Countryside and Rights of Way (CROW) Act 2000

The CROW Act, introduced in England and Wales in 2000, amends and strengthens existing wildlife legislation detailed in the WCA. It places a duty on government departments and the National Assembly for Wales to have regard for biodiversity, and provides increased powers for the protection and maintenance of SSSIs.

The Act also contains lists of habitats and species (Section 74) for which conservation measures should be promoted, in accordance with the recommendations of the Convention on Biological Diversity (Rio Earth Summit) 1992.

The Natural Environment and Rural Communities (NERC) Act 2006

Section 40 of the NERC Act places a duty upon all local authorities and public bodies in England and Wales to promote and enhance biodiversity in all of their functions. Sections 41 (England) and 42 (Wales) list habitats and species of principal importance to the conservation of biodiversity. These lists supersede Section 74 of the CRoW Act 2000. These species and habitats are a material consideration in the planning process.

The Hedgerow Regulations 1997

The Hedgerow Regulations make provision for the identification of important hedgerows which may not be removed without permission from the Local Planning Authority.

UK Biodiversity Action Plan

The United Kingdom Biodiversity Action Plan (UKBAP), first published in 1994 and updated in 2007, is a government initiative designed to implement the requirements of the Convention of Biological Diversity to conserve and enhance species and habitats. The UKBAP contains a list of priority habitats and species of conservation concern in the UK, and outlines biodiversity initiatives designed to enhance their conservation status. Lists of Broad and Local habitats are also included. The priority habitats and species correlate with those listed on Section 41 and 42 of the NERC Act.

The UKBAP requires that conservation of biodiversity is addressed at a County level through the production of Local BAPs. These are complementary to the UKBAP, however are targeted towards species of conservation concern characteristic of each area. In addition, a number of local authorities and large organisations have produced their own BAPs. UKBAP and Local BAP targets with regard to species and habitats are a material consideration in the planning process.

Hertfordshire Biodiversity Action Plan

The Hertfordshire Biodiversity Action Plan was implemented in 1998 in order to co-ordinate conservation efforts in delivering the UK BAP targets at a local level. The Hertfordshire BAP contains a list of habitats and species-specific action plans, assigning specific targets and addressing relevant policy and land management practices pertaining to each.

Planning Policy (England) and National Planning Policy Framework

In early 2012, the National Planning Policy Framework (NPPF) replaced much previous planning policy guidance, including Planning Policy Statement 9: Biological and Geological Conservation. The government circular 06/05: Biodiversity and Geological Conservation - Statutory Obligations and Their Impact within the Planning System, which accompanied PPS9, still remains valid. A presumption towards sustainable development is at the heart of the NPPF. This presumption does not apply however where developments require appropriate assessment under the Birds or Habitats Directives. The latest National Planning Policy Framework was updated in December 2024, with the section in relation to conserving the natural environment being located within section 15.

Section 15, on conserving and enhancing the natural environment, sets out how the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and, where possible, provide net gains in biodiversity. Opportunities to incorporate biodiversity gains into a development should be encouraged.

If a proposed development would result in significant harm to the natural environment which cannot be avoided (through the use of an alternative site with less harmful impacts), mitigated or compensated for (as a last resort) then planning permission should be refused.

Species Specific Legislation

This section contains a summary of legislation with relation to the species present or potentially present in the survey area. The reader should refer to the original legislation for definitive interpretation.

Nesting and Nest Building Birds

Nesting and nest building birds are protected under the Wildlife and Countryside Act WCA 1981 (as amended). Some species (listed in Schedule 1 of the WCA) are protected by special penalties.

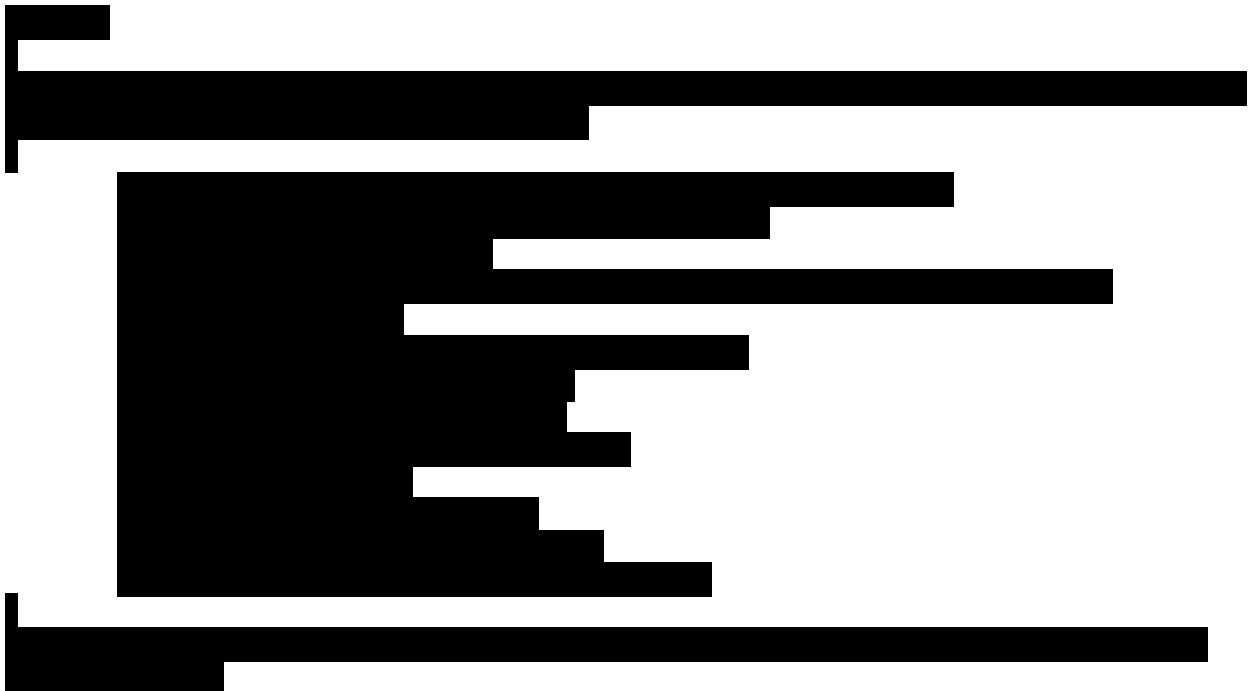
Subject to the provisions of the act, if any person intentionally:

- kills, injures or takes any wild bird;
- takes, damages or destroys the nest of any wild bird while that nest is in use or being built; or
- takes or destroys an egg of any wild bird, he shall be guilty of an offence.

'Reckless' offences with regard to the disturbance of nesting wild birds included in Schedule 1 of the Wildlife and Countryside Act were added by the Countryside and Rights of Way Act 2000.

The Natural Environment and Rural Communities (NERC) Act 2006 places a duty on Government Departments to have regard for the conservation of biodiversity and maintains lists of species and habitats which are of principal importance for the purposes of conserving biodiversity in England and Wales. These lists include a number of bird species.

The reader is referred to the original legislation for the definitive interpretation.



Bats

All species of bat are fully protected under a variety of domestic, European and international legislation and conventions. These include:

- Bern Convention (Appendix II)
- Bonn Convention (Appendix II)
- Conservation Regulations (Northern Ireland) 1995
- Conservation of Habitats and Species Regulations 2017
- Countryside Rights of Way Act 2000
- Eurobats Agreement
- Habitats Directive (Annexes IV and II)
- Habitats Regulations 1994 (as amended) Scotland
- NERC Act 2006
- Wildlife and Countryside Act 1981 (as amended)
- Wild Mammals Protection Act

In addition to this, some species have additional protection by being listed on the UK Biodiversity Action Plan (UKBAP).

The legislation afforded to bats makes it illegal to possess or control any live or dead specimens, to damage, destroy or obstruct access to any structure or place used for shelter, protection or breeding, and to intentionally disturb a bat while it is occupying a structure or place which it uses for that purpose.

All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended), which protects birds, nests, eggs and nestlings from harm. In addition to this, some rarer species, such as barn owls are afforded extra protection.

National Planning Policy Framework, Section 15:

The published framework in 2018 replaces the previous Planning Policy Statement 9 and National Planning Policy (dated 2012).

Section 15: Conserving and enhancing the natural environment reaffirms the government's commitment to maintaining green belt protections and preventing urban sprawl, retains the protection of designated sites and preserves wildlife. It also aims to improve the quality of the natural environment and halt declines in species and habitats, protects and enhances biodiversity and promotes wildlife corridors.

Biodiversity 2020:

This sets out to halt overall biodiversity loss and support healthy well-functioning ecosystems by establishing coherent ecological networks, with more and better places for nature, to the benefit of wildlife and people. The government's policy is aimed at individuals, communities, local authorities, charities, business and government, which all have a role to play in delivering Biodiversity 2020.

Freshwater White-clawed Crayfish

The white-clawed crayfish is partially protected under Wildlife and Countryside Act 1981 (as amended). It is listed on schedule 5 and therefore afforded protection under Section 9 (1 and 5). Therefore, it is an offence to take white-clawed crayfish and to sell, or attempt to sell, any part of the species, alive or dead, or intend to buy or sell.

Great Crested Newt

The great crested newt (*Triturus cristatus*) is fully protected under a variety of legislation and conventions. These include:

- Bern Convention (Appendix II)
- Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)
- Conservation of Habitats and Species Regulations 2017
- EU Habitats Directive (Annex II and IV)
- Nature Conservation (Scotland) Act 2004
- NERC Act 2006 (Section 41 England; Section 42 Wales)
- Wildlife and Countryside Act 1981 (as amended)

In addition to this, the great crested newt has been listed as a priority species on the UK Biodiversity Action Plan (UKBAP).

This legislation covers all aspects of newt life stages (eggs, efts and adult newts) and makes it illegal to damage, destroy or obstruct access to any structure or place used for shelter, protection or breeding, and to intentionally disturb a great crested newt while it is occupying a structure or place which it uses for that purpose.

Licenses can be obtained from Natural England (DEFRA) under the Conservation (Natural Habitats etc.) Regulations 1994, to permit activities for the purposes of:

- Regulation 44(2)(e): Preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment, or
 - Regulation 44(2)(f): Preventing the spread of disease
 - Regulation 44(2)(g): Preventing serious damage to any form of property or fisheries
- Or
- If there is no satisfactory alternative.

The above regulations allow people to carry out activities which would otherwise be illegal.

Hazel Dormouse

Hazel Dormouse and their habitats are protected by:

- Wildlife and Countryside Act 1981 (as amended)
- Countryside Rights of Way (CROW) 2000
- The Natural Environment and Rural Communities Act 2006
- Conservation of Habitat and Species Regulations 2017

These make it an offence to:

- Capture, injure or kill a Hazel Dormouse
- Disturb a Hazel Dormouse
- Damage or destroy breeding or nesting sites in use by Hazel Dormice
- Disturb a Dormouse whilst it is occupying a structure or place that they use for shelter or protection
- Obstruct access to any structure or place that the Dormouse uses for shelter and protection.
- To possess or control any live or dead specimens.

Otter

Otters are fully protected by the European Habitats Directive (92/43/EEC) by being incorporated in annex II of the legislation. In addition to this, otters are listed on schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:

- To intentionally kill, injure or take an otter.
- To possess or control any live or dead specimens.
- To intentionally or recklessly damage, destroy or obstruct access to any structure, feature or place of shelter in use by otters.
- To intentionally or recklessly disturb an otter whilst it is in occupation of a feature or structure.
- To sell, possess or transport for the purpose of sale or publicly declare the desire to buy or sell otters.

Reptiles

All six native reptiles within Great Britain are legally protected, with the extent of protection varying dependent upon their rarity and conservation importance.

Those that receive full protection under the Wildlife and Countryside Act 1981 (as amended) are the rare sand lizard and smooth snake. These species also receive protection under the Conservation (Natural Habitats &c.) Regulations 1994 (also referred to as the Habitats Directive). This means that they are protected from deliberate disturbance, killing, injury or capture and the habitat in which they live is also fully protected against damage or destruction. Any activity involving disturbance or damage to habitats utilised by sand lizards or smooth snakes would require a licence issued by the Department of the Environment, Food and Rural Affairs (DEFRA) following consultation with the statutory nature conservation organisation (Natural England).

The remaining four reptile species are 'partially protected' under the Wildlife and Countryside Act 1981 (as amended), with these species being slow-worm, common lizard, grass snake and adder. This means that these species are protected against intentional killing, injuring and against sale, but their habitat is not protected. In planning terms this means that the presence of these species is a material consideration and there is a requirement to ensure that any reptile interest is safeguarded. If a proposed development is likely to have an impact on these reptiles, then the statutory nature conservation organisation must be notified, particularly if capture and translocation is being proposed. In some parts of the UK, sites that support common reptile species such as common lizards and slow-worms can qualify as County Wildlife Sites. Sites of this designation may receive protection in planning policy.

Water Voles

Water Voles are fully protected under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:

- To intentionally kill, injure or take a water vole.
- To possess or control any live or dead specimens.
- To intentionally or recklessly damage, destroy or obstruct access to any structure, feature or place of shelter in use by water voles.
- To intentionally or recklessly disturb a water vole whilst it is in occupation of a feature or structure.
- To sell, possess or transport for the purpose of sale or publicly declare the desire to buy or sell water voles.

Non-native Floral Species

It is an offence under schedule 9 of the Wildlife and Countryside Act 1981 (as amended) to plant or otherwise cause non-native flora to grow in the wild. This includes the transportation of earth that has previously had non-native species growing and includes the spread of the species.

All stands of non-native floral species need to be disposed of safely at a licenced landfill site according to the Environmental Protection Act (Duty of Care) Regulations 1991.

Appendix G: 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 specify 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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