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PRELIMINARY ECOLOGICAL APPRAISAL

At

Land off Kennell Hill

Sharnbrook
Bedford
MK44 1PS

NGR: (TL) 500014 259666

Prepared for:

Written by:

Approved by:



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EXECUTIVE SUMMARY

United Environmental Services Ltd (UES) was commissioned by Anwyll Land Ltd to carry out a baseline ecological survey of a parcel of land off Kennell Hill, Sharnbrook, Bedfordshire. A desk study and preliminary ecological appraisal (PEA) survey were undertaken on 31st July 2017, including searches using the Multi Agency Geographic Information Centre (MAGIC) and Bedfordshire and Luton Biodiversity Recording and Monitoring Centre.

The PEA provides an assessment of potential ecological impacts associated with the development of the land parcel. The proposal involves the construction of residential dwellings and associated infrastructure.

The land parcel has an area of approximately 5.7ha and comprises improved grassland, dense scrub and scattered trees, with hedgerows on some sections of the site boundary. The site is currently used as grazing pasture for cattle and horses.

The results of the survey combined with the results of the desk study have highlighted the requirement for further work in relation to the following habitats and species:

- **Trees and hedgerows** – Root protection areas (RPAs) must be considered if undertaking excavation works close to the site perimeter.
- **Watercourse** – Sharnwood Brook is located to the southwest of the site, outside of the site boundary, and must be considered when planning construction works.
- **Bats** – A single mature tree in the grassland has the potential to support roosting bats, if this tree is to be removed or disturbed then further surveys will be required to determine the presence of any roosts. The woodland in the north of the site has the potential to be used by foraging and roosting bats, and as such if this area is to be affected then a bat scoping survey to identify specific roosting sites should be undertaken.
- **Breeding birds** – Trees and other vegetation on the site boundaries have the potential to support nesting birds. Vegetation removal to take place outside of the breeding bird season (nesting season runs from March to August inclusive). If this is not possible, a targeted nest survey is to be undertaken or an ecological clerk of works appointed to oversee the works.
- **Otters** – Otters have been recorded in Sharnwood Brook, adjacent to the site. Survey to determine the presence of any resting places used by otters within 30m of the site should be undertaken. Potential disturbance of the brook must be minimised for both the construction and operational phases of the development.

Mitigation measures, as detailed in section 4, should be adhered to, which may in some cases negate the need for further survey work.

The development also presents an opportunity to improve the habitats on site for wildlife, such as invertebrates and birds. The inclusion of nest boxes will provide suitable nesting and roosting features in the long term. Planting of native species will enhance local biodiversity.

This report should be read with appendices 1 to 7, which include results of the desk study, GIS phase 1 habitat mapping, photographs of site and relevant statutory guidance.

1 INTRODUCTION

1.1 Author, surveyors, qualifications and scope of study area

This report is written by [REDACTED] holds a level 4 Botanical Society for Britain and Ireland (BSBI) field identification skills certificate (FISC), which certifies him as competent to undertake botanical and habitat surveys up to National Vegetation Classification (NVC) level.

The report provides an assessment of the potential ecological impacts associated with the proposed development of land off Kennell Hill, Sharnbrook, Bedfordshire.

The zone of influence considered within the scope of the survey includes all land within the red line boundary. Where relevant, other ecological resources, receptors and important habitats which are spatially separate from the site are considered.

1.2 Survey objectives

UES was commissioned in July 2017 to conduct a PEA of the proposed development site. This was completed in order to:

- Establish baseline conditions and determine the importance of ecological features present or potentially present within the survey area
- Identify key ecological constraints to the project
- Make recommendations for design options to avoid significant effects on important ecological resources at an early stage of development planning
- Identify potential requirement for further surveys for nationally or internationally protected species which may be present on site
- Identify potential requirement for mitigation or compensation, including measures that may be required based on further surveys

1.3 Proposed development

The development proposals involve the construction of a residential housing development and associated infrastructure.

1.4 Structure of the report

This report is a baseline appraisal that forms the basis for further ecological surveys and Environmental Impact Assessments (EIA) if required. In the majority of cases the preliminary ecological assessment will not provide all of the ecological data required by the Local Planning Authority to determine an application, especially in the event that protected habitat or species issues are present or likely.

This report should be read with appendices 1 to 7, which include results of the desk study, GIS phase 1 habitat mapping, photographs of site and relevant statutory guidance.

2 METHODOLOGY

This PEA comprises a desk study and a field survey. The desk study is conducted in order to collate ecological information on species and / or habitats of interest that may be present. The field survey is conducted in order to assess the habitats and their importance, both on site and in the context of their wider surroundings.

2.1 Desk study

The following resources were used to inform the desk study:

- National – Using the UK government’s MAGIC website, statutorily protected sites were scoped to a distance of 10km from the application site.
- Local – The local biological record centre, Bedfordshire and Luton Biodiversity Recording and Monitoring Centre, was approached for records of protected species, habitats and designated sites, on the site and within a search radius of 2km from the site perimeter.

2.2 Field survey

An ecological walkover survey was carried out on 31st July 2017 by [REDACTED]. The purpose of the survey was to identify, record and map dominant habitats types within the development area and highlight any further species surveys that may be required based on the quality of those habitats. When conducting the surveys particular focus was concentrated on the following species and habitat features:

- Amphibians
- Reptiles
- Badger
- Bats
- Hazel dormouse
- Birds
- Trees
- Hedgerows
- Plant communities
- Invasive species
- Otter
- Water vole
- White-clawed crayfish

The habitats were assessed by using the phase 1 habitat survey technique, which is a system for environmental audit widely used within the environmental consultancy field. The survey was undertaken in accordance with the methodology in the ‘Handbook for phase 1 habitat survey - A technique for environmental audit’ (JNCC, 2010) as recommended by Natural England, and in the “Guidelines for Preliminary Ecological Appraisal” (CIEEM, 2013).

The survey area encompasses all of the land within the development footprint and the land to a distance of 30m outside it where accessible. In line with recognized guidelines, ponds were also scoped to a distance of 500m (250m radius from the survey area).

The phase 1 habitat survey methodology was extended to record any signs of habitats suitable to support protected / invasive species and any incidental observations of other noteworthy species.

2.3 Survey limitations

No limitations were encountered during the survey.

3 RESULTS.

3.1 Desk study

A desk study was conducted for the proposed development site and surrounding area. Statutorily protected sites were scoped to a distance of 10km. Further results of the desk study can be found at Appendix 1 – Desk study.

3.1.1 Statutorily protected sites

A single statutorily protected site is located within 2km of site:

- Felmersham Gravel Pits SSSI¹, approximately 900m southwest of site
Located on River Gravels between Sharnbrook and Felmersham, this site consists of a series of flooded pits which were active until about 1945. Many habitats have developed, with tall fen communities surrounding open water, neutral grassland, scrub and broadleaved woodland. This variety of habitat supports a very diverse flora, including several species rare and declining in the county and an exceptionally high number of dragonfly Odonata species.

Sixteen statutorily protected sites (designated for ecological reasons) are located between 2 and 10km from site

- Bozeat Meadow SSSI¹
- Bromham Lake LNR²
- Browns Wood LNR
- Dungee Corner Meadow SSSI
- Hanger Wood SSSI
- Harrold Odell Country Park LNR
- Hill Rise LNR
- Mowsbury Hill LNR
- Odell Great Wood SSSI
- Park Wood SSSI
- Putnoe Wood SSSI
- Stevington Marsh SSSI
- Swineshead Wood SSSI
- Tilwick Meadow SSSI
- Upper Nene Valley Gravel Pits SSSI, SPA³, Ramsar
- Yelden Meadows SSSI

3.1.2 Non-statutorily protected sites

A single non-statutorily protected site is located within 2km of the site:

- Sharnbrook Castle Close CWS⁴, approximately 600m to the west of the site
The site consists of an area of semi-improved neutral grassland with trees and scrub around the margins and in the southern half of the site. The site is situated on clay soil on level ground though shallow undulations are present in the centre of the site.

¹ Site of Special Scientific Interest

² Local Nature Reserve

³ Special Protection Area

⁴ County Wildlife Site

3.1.3 Protected species

The following records of protected or otherwise notable species were highlighted by the local record centre search:

- Amphibians – common frog *Rana temporaria*, common toad *Bufo bufo*, midwife toad *Alytes obstetricans*, smooth newt *Lissotriton vulgaris*, great crested newt *Triturus cristatus*
- Reptiles – common lizard *Zootoca vivipara*, grass snake *Natrix natrix*
- Mammals – west European hedgehog *Erinaceus europaeus*, European otter *Lutra lutra*, Eurasian badger *Meles meles*, brown hare *Lepus europaeus*
- Birds: various species, including several NERC section 41 and Wildlife and Countryside 1981 Schedule 1 species

3.2 Baseline conditions – Habitats

The results of the PEA are also shown on the accompanying map at Appendix 2 – Phase 1 habitat plan. Habitats are colour-coded in accordance with the phase 1 standard.

The site is located in a suburban area amongst housing estates with some open green space and agricultural land in the wider landscape. The following principle habitat types were characterised on site:

- A1.1 Semi-natural broad-leaved woodland
- A2.1 Dense scrub
- A3.1 Scattered broad-leaved trees
- B4 Improved grassland
- J2.1.2 Species-poor intact hedge
- J2.2.2 Species-poor defunct hedge
- J2.4 Fence
- J3.6 Buildings

3.2.1 A1.1 Semi-natural broad-leaved woodland

The mature woodland contains a number of mature field maple *Acer campestre* and English elm *Ulmus minor*, some clad with ivy *Hedera helix*. Hawthorn *Crataegus monogyna*, ash *Fraxinus excelsior* and spindle *Euonymus europaeus* are also present. Ground vegetation consists of bramble *Rubus fruticosus* agg., dog's mercury *Mercurialis perennis*, ground ivy *Glechoma hederacea*, lords-and-ladies *Arum maculatum*, greater stitchwort *Stellaria holostea*, giant fescue *Schedonorus giganteus*, violet *Viola* sp., nipplewort *Lapsana communis*, common nettle *Urtica dioica* and hedge woundwort *Stachys sylvatica*.

3.2.2 A2.1 Dense scrub

An area of dense scrub is present in the north of the site adjacent to the public footpath. Blackthorn *Prunus spinosa* is the dominant species with elder *Sambucus nigra* and English elm. Little ground vegetation is present due to the dense canopy, with some bramble, common nettle, garlic mustard *Alliaria petiolata*, foxglove *Digitalis purpurea* and dog rose *Rosa canina* on the southern perimeter. The area immediately to the south has been subject to disturbance

with some bare ground, log piles and brash, recent rabbit *Oryctolagus cuniculus* diggings and introduced plants including bear's breeches *Acanthus mollis*.

3.2.3 A3.1 Scattered broad-leaved trees

A single mature field maple is present at TN1. The tree has a number of cavities in the main trunk. The canopies of trees outside of the site perimeter overhang sections of the grassland. A line of trees along Kennell Hill are outside of the site boundary, with English elm, sycamore *Acer pseudoplatanus* and goat willow *Salix caprea*.

3.2.4 B4 Improved grassland

The grasslands at TN2 and TN3 contain perennial rye-grass *Lolium perenne*, creeping bent *Agrostis stolonifera*, Yorkshire fog *Holcus lanatus*, red fescue *Festuca rubra*, meadow foxtail *Alopecurus pratensis*, crested dog's-tail *Cynosurus cristatus*, barley *Hordeum vulgare*, white clover *Trifolium repens*, lesser trefoil *Trifolium dubium*, red clover *Trifolium pratense*, selfheal *Prunella vulgaris*, creeping thistle *Cirsium arvense*, dandelion *Taraxacum* agg., cat's ear *Hypochaeris radicata*, common nettle, and field bindweed *Convolvulus arvensis*.

The grassland at TN2 is grazed by cattle. Taller vegetation on the perimeter of the grassland includes false oat-grass *Arrhenatherum elatius*, cock's-foot *Dactylis glomerata*, hedge woundwort *Stachys sylvatica*, hogweed *Heracleum sphondylium*, wood dock *Rumex sanguineus* and ivy.

The grassland at TN3 has been grazed by cattle and subject to a hay cut, leaving a short sward. Taller vegetation on the perimeter includes false oat-grass, cock's-foot, common nettle, common mallow *Malva sylvestris*, white campion *Silene alba*, agrimony *Agrimonia eupatoria* and saplings of blackthorn.

The grassland at TN4 is grazed by horses and is dominated by perennial rye-grass with Yorkshire fog, meadow foxtail, red fescue, selfheal, white clover, creeping buttercup *Ranunculus repens*, curled dock *Rumex crispus*, lesser stitchwort *Stellaria graminea* and dandelion.

An area of manure is located at TN5, with dense common nettle, broad-leaved dock *Rumex obtusifolius*, hedge bindweed *Calystegia sepium* and fat hen *Chenopodium album*.

3.2.5 J2.1.2 Species-poor intact hedge

The hedgerow at TN6 is a dense trimmed and managed hawthorn hedge with a width of 2m and height of 3m. Blackthorn, bramble, ash, English elm, white bryony *Bryonia alba* and traveller's joy *Clematis vitalba* are present.

The hedgerow at TN7 contains mature blackthorn, field maple, hawthorn, lilac *Syringa vulgaris*, bramble and ivy, and is contiguous with the woodland strip to the north.

3.2.6 J2.2.2 Species-poor defunct hedge

The hedgerow at TN8 is a sparse hedge of English elm with bramble.

The hedgerow at TN9 is a very sparse hedgerow of occasional hawthorn with mature field maple and hazel *Corylus avellana*.

3.2.7 J2.4 Fence

Timber and wire stock fencing borders the grasslands at TN2 and TN3. The grassland at TN4 is surrounded by electric fencing.

3.2.8 J3.6 Buildings

A small stable / feeding shelter is present in the grassland, constructed from timber beams with a corrugated roof. The well-trodden bare ground supports great plantain *Plantago major* and common knotgrass *Polygonum aviculare*.

3.3 Baseline conditions – Protected species or resources

As part of the PEA, specific observations of wildlife were also recorded. Wildlife observations focused on protected species, invasive species or species of conservation concern. Habitats with potential to support protected species were noted with a view to follow up surveys if required.

3.3.1 Amphibians

Common frog, common toad, midwife toad, smooth newt and great crested newt have been recorded within 2km of the site. A single great crested newt was recorded in a garden pond approximately 370m to the west of the site on the opposite side of Sharnwood Brook.

Two ponds are located within 250m of the site, a pond used for rearing wildfowl located approximately 80m to the northeast and a garden pond located approximately 20m to the south, on the opposite side of Sharnwood Brook.

No breeding habitat is present on the site, and the grazed grassland provides suboptimal habitat for amphibians, therefore presence on site is considered highly unlikely and no further issues are envisaged.

3.3.2 Reptiles

Grass snake and common lizard have been recorded within 2km of the site. The grazed grasslands provide suboptimal habitat for reptiles, and presence on site is considered highly unlikely.

3.3.3 Badger

No evidence of the presence of badgers was identified during the survey. Records of badgers in the local area are of road casualties. Therefore, no further issues are envisaged.

3.3.4 Bats

The stable on site has no potential roosting features (PRFs) and has negligible potential to support roosting bats.

A mature field maple at TN1 presents some PRFs in the form of cavities in the main trunk, and further assessment will be required if this tree is to be removed or directly affected by works or related disturbance.

The woodland area contains a number of mature trees, some covered with ivy, which have the potential to support roosting bats.

3.3.5 Hazel dormouse

This species has not been recorded within 2km of the site. No suitable habitats will be affected by the proposed development, therefore no issues are envisaged.

3.3.6 Birds

Various species, including several NERC section 41 and Wildlife and Countryside 1981 Schedule 1 species have been recorded within 2km of the site. Barn swallow *Hirundo rustica*, Eurasian magpie *Pica pica* and green woodpecker *Picus viridis* were recorded on site during the survey.

3.3.7 Trees

Mature trees are present on the perimeter of the site, with canopies and root zones within the site itself. Trees on site may be subject to Tree Preservation Orders (TPO).

The woodland area contains a number of mature trees, some covered with ivy, which have the potential to support roosting bats.

3.3.8 Hedgerows

Hedgerows are present on the perimeters of the site. The hedgerows do not qualify as 'important under the Hedgerow Regulations on ecological grounds but may qualify on historical grounds.

3.3.9 Plant communities

No plant communities or individual species were recorded on site which are afforded statutory protection in their own right.

3.3.10 Invasive species

No species listed on Schedule 9 of the 1981 Wildlife and Countryside Act were recorded on the site.

3.3.11 Otter, water vole and white-clawed crayfish

Otters have been recorded in Sharnwood Brook, which runs adjacent to the site, and further afield in the River Great Ouse. Sharnwood Brook will not be affected by the proposed development, but the presence of and impact on features used by otters for shelter must be assessed.

White-clawed crayfish *Austropotamobius pallipes* and water vole *Arvicola amphibius* have not been recorded in the local area, no potential habitat will be affected by the proposed works.

4 EVALUATION AND RECOMMENDATIONS

This section provides a brief assessment of the likely impacts associated with the proposed development on the receptors identified during the walkover survey and desk study. It also includes any mitigation and compensation measures which may be required for the proposed development to proceed.

4.1 Habitats

4.1.1 Designated sites

The sites identified during the desk study were cross-referenced with the survey area relevant to this report. The closest statutorily protected site is Felmersham Gravel Pits SSSI, which lies approximately 900m to the southwest of the proposed development site. The closest non-statutorily protected site is Sharnbrook Castle Close County Wildlife Site, located approximately 600m to the west of the site.

Given the type of development, intervening habitat and existing connectivity, it is considered unlikely that the proposed development will have any direct or indirect impact on these or any other local designated sites.

4.1.2 Trees and hedgerows

There are a number of trees on the site, with immature trees in the north of the site, a single mature field maple at TN1, and a number of trees in hedgerows and in adjacent properties with canopies and root zones extending onto the site. Hedgerows are present on some of the site boundaries.

It is recommended that the woodland in the north of the site is retained based on biodiversity value of the mature habitat.

Construction impacts

Site clearance and setting out may involve the direct loss of trees on site as an ecological resource, or may result in damage to any trees and hedgerows which are to be retained.

Mitigation

A check for any TPOs should be undertaken. A BS5837 arboricultural survey should be undertaken to catalogue the location and species of the trees on site.

Root protection areas should be established and implemented around the trees which are to be retained. These areas should be adequately protected by appropriately designed protective barriers and ground protection throughout the entire development process.

Compensation

If any trees are to be removed, they should be replaced accordingly as part of a detailed landscaping scheme, with only native species to be planted.

Operational impacts

Excessive removal or pruning of trees should be avoided to maximise the growth and plant matter available to wildlife. Pruning should be left until late winter to leave seeds and berries for wintering wildlife and to ensure no impact on breeding and nesting birds.

4.1.3 Watercourse

Sharnwood Brook is located outside of the site boundary to the southwest.

Construction impacts

Construction works adjacent to Sharnwood Brook could result in disturbance and / or pollution to the watercourse.

Mitigation

Specific procedures and control measures will need to be implemented to ensure that there is no risk of input into the watercourse. These measures should be set out by the contractors prior to the commencement of works and will need to be agreed with the Local Planning Authority (LPA) and other statutory consultees. These measures should conform to best practice guidance and include the cleaning of all machinery and equipment before use on site to prevent contamination of the watercourse with foreign abiotic and biotic materials.

A buffer zone should also be retained along the length of the watercourse to protect it from disturbance. The buffer zone should be adequately fenced off and no vegetation clearance or other construction activities should take place within it.

Operational impacts

No operational impacts are envisaged.

4.2 Species

4.2.1 Bats

The tree at TN1 has the potential to support roosting bats. Bats may use linear features such as the site boundaries as foraging and commuting routes. The woodland area contains a number of mature trees, some covered with ivy, which have the potential to support roosting bats.

Construction impacts

Loss of TN1 may result in the loss of bat roosts and would risk harm to any bats present at the time of the works. Security and site lighting during construction has the potential to disturb commuting and foraging bats.

Mitigation

An aerial inspection of the tree at TN1 to identify use by bats should be undertaken. If any roosts are identified then further surveys to determine the level of use and species present should be undertaken during the bat survey season (May to September inclusive). If any bat roosts are identified then appropriate mitigation and compensation measures should be designed to ensure that potential of harm to bats is minimised, and that bat roosting habitat is retained on the site.

The area of woodland has the potential to support roosting and foraging bats, and if this feature is to be directly affected then a bat scoping survey to identify specific roosting features should be undertaken.

Artificial lighting used during the construction phase should be directed away from potential bat commuting and foraging habitat on the site perimeter.

Compensation

Any necessary compensation can be determined following the bat presence / absence surveys.

Operational impacts

Increased artificial lighting from the proposed development has the potential to affect bat commuting and foraging areas both on and off-site. An appropriate lighting scheme should be designed to ensure that the potential for light spillage is minimised (see Appendix 5 – Bats and external lighting).

4.2.2 Birds

The trees and other vegetation on site have the potential to support nesting birds.

Construction impacts

Vegetation removal could result in the direct loss of nests, any individuals within the nests and of available nesting territories if conducted during the breeding season.

Mitigation

Vegetation removal should be carried out outside of the breeding bird season, March to August inclusive. If this is not possible, a targeted breeding bird nest scoping survey should be conducted prior to the start on site or an ecological clerk of works appointed.

Compensation

Consideration should be given to providing additional habitat for foraging and nesting birds. The following could be installed on trees on the site perimeter and on buildings:

- Schwegler 1B nest box (hung on trees)
- Schwegler 1SP sparrow terrace
- Schwegler 3S starling nest box

Correct siting of bird boxes should be conducted with the aid of the project ecologist.

If any additional planting is proposed on site, species should be native, of local provenance or have a proven benefit to biodiversity. Further information can be found at Appendix 6 – Landscape design for birds. Landscaping ideas relevant to site include:

- Planting and management of hedgerows
- Planting of specimen trees
- Planting of berry and nut bearing shrub species to encourage winter birds
- Planting and management of shrubs which develop a mosaic of structures to support breeding birds
- Use of nectar bearing flowers to encourage invertebrates (such as bees, flies, beetles and butterflies)

Operational impacts

Inappropriate management of the habitats on site could degrade them and render them unsuitable for wildlife.

Mitigation

It is important to implement good horticultural practice in any landscaping scheme, including the use of peat-free composts, mulches and soil conditioners. The use of pesticides (herbicides, insecticides, fungicides and slug pellets) should be discouraged to prevent fatal effects on the food chain. Any pesticides used should be non-residual.

4.2.3 Otters

Otters have been recorded in Sharnwood Brook, which runs adjacent to the southwestern boundary of the site.

Construction impacts

No direct impacts are anticipated, however site clearance and construction works have the potential to disturb places used for rest and shelter by otters.

Mitigation

A survey to identify any resting places used by otters should be undertaken in the section of Sharnwood Brook adjacent to the site and accessible sections upstream and downstream of the site. The survey will advise on any necessary mitigation works including buffer-zones / stand-offs required.

Operational impacts

Artificial lighting may disturb foraging and commuting otters. Introduction of domestic pets, especially dogs, may disturb otters.

Mitigation

The lighting scheme for the site must consider the potential presence of otters along the brook. Appropriate fencing should be installed between any residential properties and the brook corridor to ensure that domestic pets cannot access the corridor.

5 CONCLUSION

The proposed development site has an area of approximately 5.7ha and consists of extensive areas of improved grassland with small areas of scrub and woodland. Hedgerows are present on some sections of the site perimeter. The site is currently used as grazing pasture for cattle and horses.

The proposed development of the site involves the construction of residential dwellings with associated gardens and infrastructure.

The site is located close to Sharnbrook village, with smaller residential areas, main roads and a railway line in close proximity, in a wider landscape largely dominated by agricultural pasture.

The preliminary ecological appraisal has highlighted potential issues with the following ecological receptors on or adjacent to site: trees, hedgerows, watercourse, bats, breeding birds and otters. Provided these issues are addressed in accordance with the recommendations detailed in this report, the development may proceed without adversely impacting the aforementioned ecological receptors.

6 REFERENCES

CIEEM (2013). *Guidelines for Preliminary Ecological Appraisal*.

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JNCC (2010). *Handbook for Phase 1 habitat survey: A technique for environmental audit*.

National Biodiversity Network (2016). *NBN Gateway* [online]. Available at: <https://data.nbn.org.uk/>.

APPENDICES

Appendix 1 – Desk study



Legend

- Local Nature Reserves (England)
- National Nature Reserves (England)
- National Parks (England)
- Ramsar Sites (England)

Sites of Special Scientific Interest Units (England)

- Favourable Condition
- Unfavourable Recovering
- Unfavourable no change
- Unfavourable Declining
- Part Destroyed
- Destroyed
- Not Assessed

Sites of Special Scientific Interest (England)

- SSSI Impact Risk Zones - to assess planning applications for likely impacts on SSSIs/SACs/SPAs & Ramsar sites (England)
- Special Areas of Conservation (England)
- Special Protection Areas (England)
- Biosphere Reserves (England)

Projection = OSGB36
 xmin = 494700
 ymin = 256900
 xmax = 505300
 ymax = 262000

Map produced by MAGiC on 2 August, 2017.
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Legend

- Local Nature Reserves (England) - points
- National Nature Reserves (England) - points
- National Parks (England)
- Ramsar Sites (England)
- Sites of Special Scientific Interest Units (England)**
- Favourable Condition
- Unfavourable Recovering
- Unfavourable no change
- Unfavourable Declining
- Part Destroyed
- Destroyed
- Not Assessed
- Sites of Special Scientific Interest (England)
- Special Areas of Conservation (England)
- Special Protection Areas (England)
- Biosphere Reserves (England)

Projection = OSGB36
 xmin = 475300
 ymin = 246800
 xmax = 525500
 ymax = 271000

Map produced by MAGiC on 2 August, 2017.
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Appendix 2 – Phase 1 habitat plan

Target note 1 – Mature field maple with bat roosting potential

Target note 2 – Improved grassland

Target note 3 – Improved grassland

Target note 4 – Improved grassland

Target note 5 – Manure patch

Target note 6 – Intact hedge

Target note 7 – Intact hedge











Target note 8 – Defunct hedge

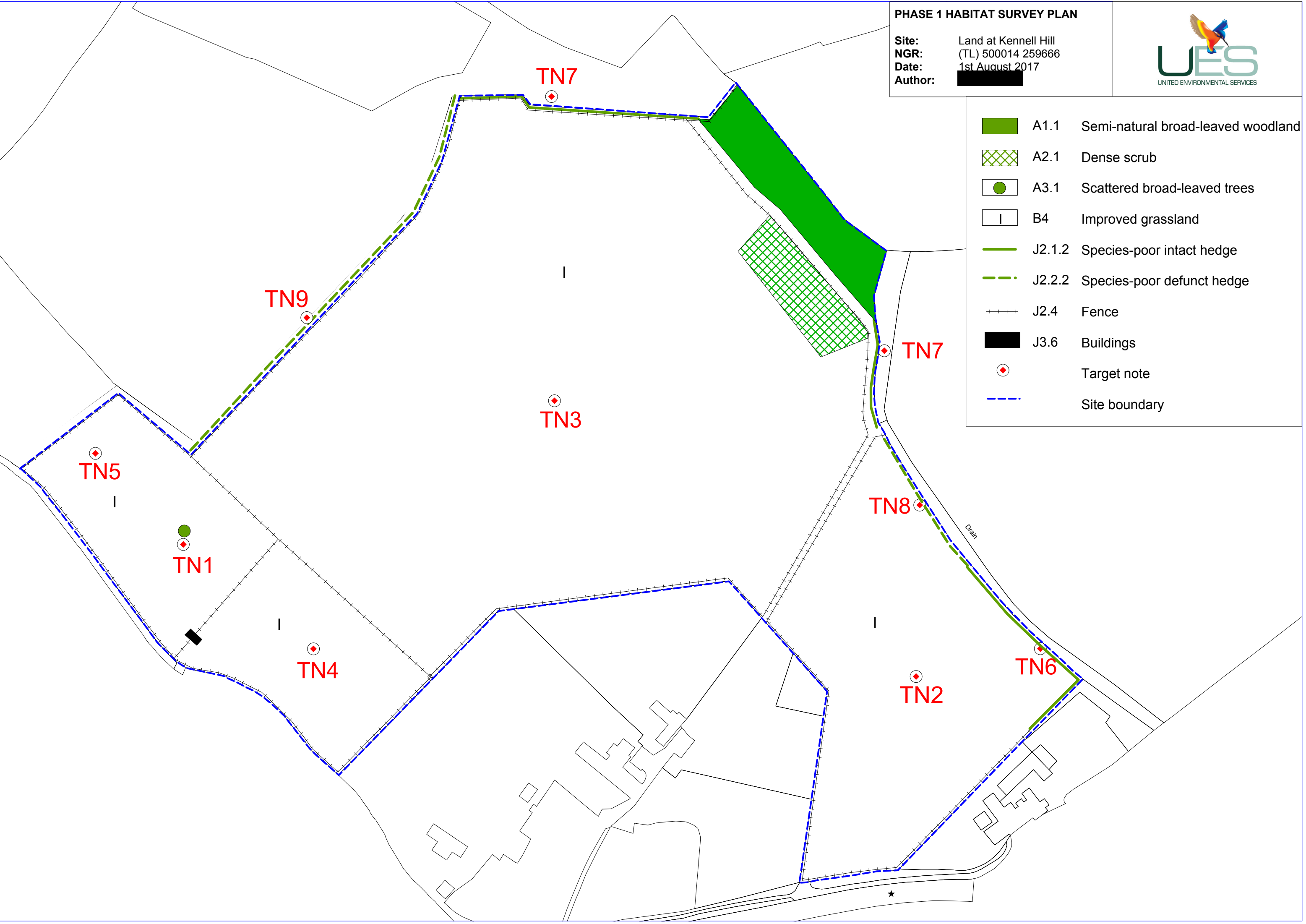
Target note 9 – Defunct hedge

PHASE 1 HABITAT SURVEY PLAN

Site: Land at Kennell Hill
NGR: (TL) 500014 259666
Date: 1st August 2017
Author: [REDACTED]



-  A1.1 Semi-natural broad-leaved woodland
-  A2.1 Dense scrub
-  A3.1 Scattered broad-leaved trees
-  B4 Improved grassland
-  J2.1.2 Species-poor intact hedge
-  J2.2.2 Species-poor defunct hedge
-  J2.4 Fence
-  J3.6 Buildings
-  Target note
-  Site boundary



Appendix 3 – Aerial photographs




WES

WATER ENVIRONMENTAL SERVICES

Land at Kennell Hill

Close aerial photograph

 Site boundary





UES

UNITED ENVIRONMENTAL SERVICES

Land at Kennell Hill

Wide aerial photograph



Appendix 4 – Photographs



Photograph 1 – TN1, tree with potential bat roosting features



Photograph 2 – TN2, improved grassland



Photograph 3 – TN3, improved grassland



Photograph 4 – TN4, improved grassland



Photograph 5 – TN5, manure and nutrient-enriched area



Photograph 6 – TN6, intact hedgerow



Photograph 7 – TN7, mature hedgerow and overhanging trees



Photograph 8 – TN8, defunct hedgerow



Photograph 9 – TN9, defunct mature hedgerow



Photograph 10 – Stable building



Photograph 11 – Sharnwood Brook, outside site boundary



Photograph 12 – Dense scrub and debris



Photograph 13 – Public footpath between dense scrub and mature woodland



Photograph 14 – Mature woodland

Appendix 5 – Bats and external lighting

Lighting scheme in relation to bats

The two most important features of street and security lighting with respect to bats are:

1. The UV component. Low or zero UV installations are preferred to reduce attraction of insects to lighting and therefore to reduce the attraction of foraging bats to these areas.
2. Restriction of the area illuminated. Lighting must be shielded to maintain dark areas, particularly above lighting installations, and in many cases, land adjacent to the areas illuminated. The aim is to maintain dark commuting corridors for foraging and commuting bats. Bats avoid well lit areas, and these create barriers for flying bats between roosting and feeding areas.

UV characteristics:

Low

- Low pressure Sodium Lamps (SOX) emit a minimal UV component.
- High pressure Sodium Lamps (SON) emit a small UV component.
- White SON, though low in UV, emit more than regular SON.

High

- Metal Halide lamps emit more UV than SON lamps, but less than Mercury lamps
- Mercury lamps (MBF) emit a high UV component.
- Tungsten Halogen, if unfiltered, emit a high UV component
- Compact Fluorescent (CFL), if unfiltered, emit a high UV component.
- Variable
- Light Emitting Diodes (LEDs) have a range of UV outputs. Variants are available with low or minimal UV output.
- Glass glazing and UV filtering lenses are recommended to reduce UV output.

Street lighting

- Low-pressure sodium or high-pressure sodium must be used instead of mercury or metal halide lamps. LEDs must be specified as low UV. Tungsten halogen and CFL sources must have appropriate UV filtering to reduce UV to low levels.
- Lighting must be directed to where it is needed and light spillage avoided. Hoods must be used on each lamp to direct light and contain spillage. Light leakage into hedgerows and trees must be avoided.
- If possible, the times during which the lighting is on overnight must be limited to provide some dark periods. If the light is fitted with a timer this must be adjusted to reduce the amount of 'lit time' and provide dark periods.

Security and domestic external lighting

The above recommendations concerning UV output and direction apply. In addition:

- Lighting should illuminate only ground floor areas. Light should not leak upwards to illuminate first floor and higher levels.
- Lamps of greater than 2000 lumens (150 W) must not be used.
- Movement or similar sensors must be used. They must be carefully installed and aimed, to reduce the amount of time a light is on each night.
- Light must illuminate only the immediate area required, by using as sharp a downward angle as possible. Light must not be directed at or close to bat roost access points or flight paths from the roost. A shield or hood can be used to control or restrict the area to be lit.
- Wide angle illumination must be avoided as this will be more disturbing to foraging and commuting bats as well as people and other wildlife.
- Lighting must not illuminate any bat bricks and boxes placed on buildings, trees or other nearby locations.

Appendix 6 – Landscape design for birds

SPECIES	F	SIZE				LOCATION			SOIL MOISTURE	BENEFITS TO WILDLIFE
		T	S	M	L	H	W	Su/Sh		
TREES										
Alder*	D			Y				Su	M	Seed food for birds
Beech*	D		Y	Y	Y			Su	D	Seed food for birds
Birch*	D		Y	Y	Y			Su	D	Seed food for birds
Bird cherry *	D		Y	Y				Su	D	Food for birds, flowers attract insects
Crab apple*	D		Y	Y	Y			Su	D	Food for birds, flowers attract insects
English oak*	D				Y			Su	D	Food for birds, insects and mammals, nesting sites
European larch*	D				Y			Su	M	Seed food for birds
Holly*	E		Y	Y	Y	Y		Su	D	Fruits eaten by birds, food plant of holly blue butterfly
Juniper*	E							Su	D	Shelter and nest sites, fruits eaten by thrushes
Lime*	D				Y	Y		Su	D	Seed food for birds
Rowan*	D			Y	Y			Su	D	Fruits eaten by birds
Scot's pine*	E				Y			Su	D	Seed food for birds
Swedish whitebeam	D		Y	Y	Y			Su	D	Food for birds, flowers attract insects
Wild cherry*	D			Y	Y			Su	D	Food for birds, flowers attract insects
Yew*	E		Y	Y	Y	Y		Su	D	Food for birds, nesting sites
SHRUBS										
Barberry	B	Y	Y	Y	Y	Y		Su	D	Good shelter and nest cover for birds, berries may provide food
Blackthorn*	D			Y	Y	Y		Su	M	Attracts insects, food for birds, nesting sites
Buckthorn*	D			Y	Y	Y		Su/Sh	D	Food plant of brimstone butterfly, fruits eaten by birds
Butterfly bush	E	Y	Y	Y	Y	Y		Su	D	Attracts insects
Californian lilac	E			Y	Y	Y	Y	Su	D	Flowers attractive to various insects
Cotoneaster	B	Y	Y	Y	Y	Y	Y	Su	D	Flowers attractive to insects, fruits eaten by birds
Dogwood*	D			Y	Y	Y		Su	D	Food for birds, winter stem colour
Elder*	D			Y	Y	Y	Y	Su	D	Food for birds
Escallonia	E			Y	Y	Y		Su	M	Flowers attractive to various insects, tolerant of salt - good in coastal areas
Field maple*	D			Y	Y	Y	Y	Su	D	Good source of insect food for birds
Firethorn	E	Y	Y	Y	Y	Y	Y	Su	D	Berries popular with many bird species
Flowering current	D			Y	Y	Y		Su	D	Early flowers attractive to insects
Forsythia	D			Y	Y	Y	Y	Su	D	Early flowers attractive to insects
Garria	E	Y	Y	Y	Y		Y	Su	D	Winter catkins, early cover for nesting birds
Goat willow*	D	Y	Y	Y	Y			Su	D	Catkins attractive to bees, good source of insect food for birds
Gorse*	E			Y	Y	Y		Su	D	Early flowers attractive to insects, good protection for birds
Rhynchospora	E			Y	Y	Y		Su	D	Good cover, tolerant of salt - good in coastal areas
Guelder-rose*	D			Y	Y	Y		Su	D	Food for birds & insects
Hawthorn*	D			Y	Y	Y	Y	Su	D	Flowers attractive to insects, fruits eaten by birds, good shelter and nesting site
Hazel*	D	Y		Y	Y	Y		Su	D	Food for birds, insects and mammals, nesting sites

Laurel-leaved viburnum	E	Y	Y	Y	Su	D	Early flowers good for insects, good cover for birds	
Lavender	E	Y	Y	Y	Y	Su	Flowers attract many insects, seeds popular with finches	
Lilac	D	Y	Y	Y	Su	D	Flowers attractive to insects	
Oregon grape	E	Y	Y	Y	Su/Sh	M	Early flowers good for insects	
Pheasant berry	E	Y	Y	Su	D	D	Berries popular with many bird species	
Privet*	E	Y	Y	Y	Y	Su	Flowers attract butterflies, produces berries	
Rose	D	Y	Y	Y	Y	Y	Su	Fruits of some varieties attractive to birds
Rosemary	E	Y	Y	Y	Y	Su	D	Flowers attract many insects
Shad bush	D	Y	Y	Su	M	Flowers attract insects, early forming berries good for thrushes		
Snowberry	D	Y	Y	Y	Su/Sh	D	Flowers attractive to bees, fruits attractive to birds, dense stems provide cover	
Spindle*	D	Y	Y	Y	Su	D	Berries eaten by birds, but poisonous to mammals	
Tamarix	D	Y	Y	Y	Su	D	Flowers attractive to various insects, tolerant of salt - good in coastal areas	

CLIMBERS & RAMBLERS									
Bramble*	D	Y	Y	Y	Y	Y	Su/Sh	D	Food for birds, insects and mammals, nesting sites
Clematis	D	Y	Y	Y	Y	Su	D	D	Nesting sites
Honeysuckle*	D	Y	Y	Y	Y	Y	Su/Sh	D	Attractive to insects, good nesting site, food for birds
Ivy*	E	Y	Y	Y	Y	Y	Su/Sh	D	Attractive to insects, good nesting site, food for birds
Rose	D	Y	Y	Y	Y	Y	Su	D	Fruits of some varieties attractive to birds
Virginia creeper	D	Y	Y	Y	Y	Y	Sh/Sh	D	Good cover for nests on walls, shelter for insects
Winter jasmin	E	Y	Y	Y	Y	Y	Su	D	Early flowers attractive to insects
Wisteria	D	Y	Y	Y	Y	Su	D	D	Attractive to insects, good nesting site

KEY			
*	Native (NB: some varieties are cultivars or non-native)	Location	H = may be used as a hedge plant
F	D = Deciduous		W = may be used as a wall shrub
Foliage type	E = Evergreen		Su = Sunny borders
	B = Both		Sh = Shade tolerant
Size	T = Terraces & balconies		Su/Sh = Grows in partial shade
Suitable for garden sizes	S = Small garden (<= 6m x 4m)	Soil moisture	D = Well drained
	M = Medium gardens (<= 12m x 6m)		M = Moist
	L = Large gardens (> 12m x 6m)		W = Wet soil

SPECIES	PLANT TYPE					LOCATION	SOIL	ATTRACTIVE TO			
	P	B	A	Ar	H	Su/Sh	MOISTURE	Be	Bu	Mo	Ho
FLOWERS											
Alyssum	Y	Y				Su	D	Y	Y	Y	Y
Angelica*	Y					Su	D				Y
Annual coreopsis			Y			Su	D	Y	Y		
Annual scabious			Y			Su	D	Y	Y		Y
Bee sage			Y			Su	D	Y			
Borage			Y			Su	D	Y			
Candytuft			Y	Y		Su	D	Y	Y		Y
Catmint	Y					Su	D	Y		Y	
Chives	Y				Y	Su	D	Y	Y		
Clover	Y					Su	D	Y		Y	
Comfrey*	Y					Su	D	Y		Y	
Common poppy*			Y	Y		Su	D	Y	Y		
Corn chamomile*			Y	Y		Su	D	Y			Y
Corn marigold*			Y	Y		Su/Sh	D	Y			Y
Corn spurrey*			Y	Y		Su/Sh	D				
Corncockle*			Y	Y		Su	D	Y			
Cornflower*	Y	Y	Y	Y		Su	D	Y	Y	Y	Y
Dahlias			Y			Su	D	Y	Y		
Deadnettle*	Y			Y		Su/Sh	D	Y			
Devil's-bit-scabious	Y					Su/Sh	M	Y	Y		Y
Evening primrose		Y				Su	D			Y	
Fennel	Y				Y	Su	D				Y
Field scabious*	Y					Su	D		Y	Y	Y
Field woundwort*	Y			Y		Su	D	Y		Y	
Foxglove*		Y				Su	D	Y		Y	
Foxtail millet	Y					Su	D				
French marigold	Y		Y			Su	M	Y	Y		Y
Goldenrod*	Y					Su	D	Y		Y	Y
Greater knapweed*	Y					Su/Sh	D	Y	Y	Y	Y
Hemp agrimony*	Y					Su/Sh	D		Y	Y	Y
Honesty		Y				Su/Sh	D		Y		Y
Larkspur			Y	Y		Su	D	Y	Y		
Lesser snapdragon*			Y	Y		Su	D	Y			
Lungwort	Y					Sh	D	Y			
Meadow clary*	Y					Su	D	Y		Y	
Mexican hat			Y			Su	D	Y	Y		
Michaelmas daisy	Y					Su	D		Y	Y	Y
Nasturtium			Y		Y	Su	D	Y	Y		
Pinks	Y					Su	D			Y	
Red valerian	Y					Su	D			Y	Y
Round-leaved fluelin*			Y	Y		Su	D	Y			
Sage	Y				Y	Su	D	Y		Y	
Sea holly	Y					Su	D	Y			
Sedum	Y					Su	D	Y	Y		Y
Small scabious*	Y					Su	D		Y	Y	Y
Soapwort	Y					Su	D			Y	
Spiked speedwell*	Y					Su	D	Y		Y	

Sunflower	Y	Y	Su	D	Y	Y	Y
Sweet william		Y	Su	D	Y	Y	Y
Teasel*		Y	Su	D	Y	Y	Y
Thistle*		Y	Su	D	Y		Y
Tobacco plant			Y	Su	D	Y	Y
Viper's bugloss*		Y	Y	Su	D	Y	
Whorled clary*	Y			Su	D	Y	Y
Wild carrot*		Y		Su	D		Y
Wild clary*	Y			Su	D	Y	Y
Wild marjoram*	Y		Y	Su	D	Y	Y

KEY	
*	Native
Plant type	P = Herbaceous perennial B = Biennial A = Annual Ar = Arable flower H = Herb
Location	Su = Sunny borders Sh = Shade tolerant Su/Sh = Grows in partial shade
Soil moisture	D = Dry soil M = Moist soil W = Wet soil
Attractive to	Be = Bees Bu = Butterflies Mo = Moths Ho = Hoverflies

Appendix 7 – Planning and statutory context

Ecological assessments

Ecological assessments play an important part within the planning context; they include an initial assessment which highlights any specific interests of a site. From the initial site assessment, the surveyor assesses the suitability of habitats within the site to support protected species and makes recommendations for further survey works if required. The following paragraphs provide a brief interpretation of legislative protection in relation to the following species and habitats:

Amphibians

- Great crested newts
- Other amphibians

Reptiles

- Badgers

- Hazel dormouse

- Bats

- Birds

Trees

- Hedgerows

- Invasive plant species

- Otters

- Water voles

- White-clawed crayfish

- Planning policy

Amphibians

Great crested newts

Great crested newts (GCN) *Triturus cristatus* and their habitat (aquatic and terrestrial) are afforded full protection by the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. If both national and international legislation are taken together, it is an offence to:

- Deliberately, intentionally or recklessly kill, injure or capture GCN
- Deliberately, intentionally or recklessly disturb GCN in such a way to be likely to significantly affect:
 - their ability to survive, breed, reproduce, rear or nurture their young
 - their ability to hibernate or migrate
 - their local distribution or abundance
- Deliberately, intentionally or recklessly take or destroy the eggs of GCN
- Damage or destroy breeding sites or resting places of GCN
- Intentionally or recklessly disturb sheltering GCN, or obstruct access to their resting place
- Keep, transport, sell or exchange, or offer for sale or exchange any live or dead GCN, any part of GCN or anything derived from GCN

Penalties for offences include fines of up to £5000, plus up to six months imprisonment, for each offence committed.

GCN are also protected by the Protection of Animals Act 1911, which prohibits cruelty and mistreatment. Releasing a GCN in such a way as to cause undue suffering may be an offence under the Abandonment of Animals Act 1960.

In addition to the above, there are various statutory provisions relating to the transport of animals, designed to ensure their welfare. GCN are also listed under Section 41 of the NERC Act (see bats section for further details).

It is important to identify the presence of GCN individuals and also to identify suitable habitat on sites so that legal obligations regarding this species can be observed. If a survey identifies the presence of GCN on the site, an assessment of the population size class is required. This can then inform a mitigation scheme, which would need to be developed in liaison with the local Natural England team, and which minimises direct threats to newts and compensates for any loss of habitat. A licence issued by Natural England is required for the legal implementation of a mitigation scheme.

A Natural England mitigation licence application requires a Mitigation Method Statement and a Reasoned Statement of Application. The Mitigation Method Statement contains details of the proposed mitigation works. The Reasoned Statement needs to provide a rational and reasoned justification as to why the

proposed development meets the requirements of the Conservation (National Habitats & c.) regulations 1994, namely Regulations 44(2)(e), (f) or (g), and 44(3)(a).

Other amphibians

More common British amphibians, such as common frog *Rana temporaria*, common toad *Bufo bufo*, smooth newt *Triturus vulgaris* and palmate newt *Triturus helveticus* are protected only by Section 9(5) of the Wildlife and Countryside Act 1981 (as amended). This section prohibits sale, barter, exchange, transporting for sale and advertising to sell or to buy.

The above named species are also listed as UK Species of Conservation Concern. Due to general declines in most British amphibian species in recent years, many local authorities require amphibian surveys as a planning condition, or as part of environmental information submitted as part of a planning application, even where the presence of GCN is ruled out.

Natterjack toad *Bufo calamita* and pool frog *Pelophylax lessonae* are also offered the same level of protection as GCN, through the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010.

Natterjack toad, common toad and pool frog are also listed under Section 41 of the NERC Act (see bats section for further details).

Water bodies that support all five (more common) species of British amphibians in high numbers, may be afforded protection in local plans, as Sites of Importance for Nature Conservation (SINC), or a similar equivalent, for sites of local importance. A site may require statutory protection as a Site of Special Scientific Interest (SSSI).

Reptiles

Common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, grass snake *Natrix natrix* and adder *Vipera berus* are protected under the Wildlife and Countryside Act 1981 (as amended). They are listed as a Schedule 5 species therefore part of Section 9(1) and section 9(5) apply. The Countryside and Rights of Way Act 2000 also strengthens their protection. It is offence to:

- Intentionally or recklessly kill or injure any of the species listed above
- Sell, offer, advertise or transport for sale a live or dead animal of the species listed above

If a proposed development is likely to have an impact on these reptiles the local statutory nature conservation organisation must be consulted.

Sand lizard *Lacerta agilis* and smooth snake *Coronella austriaca* receive full protection under the Wildlife and Countryside Act 1981 (as amended) and Conservation of Habitats and Species Regulations 2010. Read together, it is an offence to:

- Deliberately, intentionally or recklessly kill, injure or capture any sand lizards or smooth snakes
- Deliberately, intentionally or recklessly disturb sand lizards or smooth snakes in such a way to be likely to significantly affect:
 - their ability to survive, breed, reproduce, rear or nurture their young
 - their ability to hibernate or migrate
 - their local distribution or abundance
- Deliberately, intentionally or recklessly take or destroy the eggs of such an animal
- Damage or destroy breeding sites or resting places of such animals
- Intentionally or recklessly disturb sheltering sand lizards or smooth snakes, or obstruct access to their resting place
- Keep, transport, sell or exchange, or offer for sale or exchange any live or dead sand lizards or smooth snakes, any part of such an animal or anything derived from such an animal

Penalties for offences include fines of up to £5000, plus up to six months imprisonment, for each offence committed.

All reptile species are also listed under Section 41 of the NERC Act (see bats section for further details).

Badgers

European badgers *Meles meles* and their habitat are protected under The Protection of Badgers Act 1992 and are also included on Schedule 6 of the Wildlife and Countryside Act 1981, and Appendix III of the Bern Convention. The legislation affords badgers protection against deliberate harm or injury making it an offence to:

- Wilfully kill, injure, take, possess or cruelly ill-treat a badger (or attempt to do so)
- To interfere with a sett by damaging or destroying it
- To obstruct access to, or entrance of, a badger sett
- To disturb a badger whilst it is occupying a sett

Penalties for offences include fines of up to £5000, plus up to six months imprisonment, for each offence committed.

Works that disturb badgers whilst they are occupying a sett are illegal without a licence. Disturbance can occur even without direct interference or damage to the sett in question. In general, the following activities are likely to require a licence:

- Use of heavy machinery or significant earth moving within 30m of a sett
- Use of lighter machinery (usually any wheeled vehicles) within 20m of a sett
- Any digging, chain saw use or scrub clearance within 10m of a sett

Hazel dormouse

Hazel dormice *Muscardinus avellanarius* are offered full protection through the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. If both national and international legislation are taken together, it is an offence to:

- Deliberately, intentionally or recklessly kill, injure or capture dormice
- Deliberately, intentionally or recklessly disturb dormice in such a way to be likely to significantly affect:
 - their ability to survive, breed, reproduce, rear or nurture their young
 - their ability to hibernate or migrate
 - their local distribution or abundance
- Damage or destroy breeding sites or resting places of dormice
- Intentionally or recklessly disturb sheltering dormice, or obstruct access to their resting place
- Keep, transport, sell or exchange, or offer for sale or exchange any live or dead dormouse, any part of a dormouse or anything derived from a dormouse

Penalties for offences include fines of up to £5000, plus up to six months imprisonment, for each offence committed.

Dormice are also listed under Section 41 of the NERC Act (see bats section for further details).

Bats

In the United Kingdom, all species of bat and their roosts are afforded full protection under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010 (known as the "Habitats Regulations"). The Wildlife and Countryside Act is the domestic implementation of the Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) and was amended by the Countryside and Rights of Way Act 2000. This makes it an offence to:

- Deliberately, intentionally or recklessly kill, injure or capture a bat

- Deliberately, intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection
- Deliberately, intentionally or recklessly damage, destroy or obstruct access to any place that a bat uses for shelter or protection (even if the bat is not present at the time)
- Keep, transport, sell or exchange, or offer for sale or exchange any live or dead bat, any part of a bat or anything derived from a bat

Under UK law, a bat roost is *any structure or place which any wild [bat] ... uses for shelter or protection*. As bats often reuse the same roosts, legal opinion is that a roost is protected whether or not the bats are present at the time of the activity taking place.

Penalties for offences include fines of up to £5000, plus up to six months imprisonment, for each offence committed.

If an activity is likely to result in any of the above offences, a licence can be applied for to derogate from the protection afforded. These licences must provide appropriate mitigation and are issued by Natural England.

A Natural England mitigation licence application requires a Mitigation Method Statement and, in many cases, a Reasoned Statement of Application. The Mitigation Method Statement contains details of the proposed mitigation works. The Reasoned Statement needs to provide a rational and reasoned justification as to why the proposed development meets the requirements of the Conservation (National Habitats & c.) regulations 1994, namely Regulations 44(2)(e), (f) or (g), and 44(3)(a).

The Natural Environment and Rural Communities (NERC) Act 2006 lists the following bat species as species of principle importance under Section 41:

- Barbastelle *Barbastella barbastellus*
- Bechstein's bat *Myotis bechsteinii*
- Noctule *Nyctalus noctula*
- Soprano Pipistrelle *Pipistrellus pygmaeus*
- Brown Long-eared bat *Plecotus auritus*
- Greater Horseshoe *Rhinolophus ferrumequinum*
- Lesser Horseshoe *Rhinolophus hipposideros*

Section 40 requires every public body in the exercising of its functions 'have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity' (all biodiversity and not just section 41 species and habitats); therefore making these bats a material consideration in the planning process and requiring a detailed ecological bat survey before planning permission can be granted.

Birds

All wild birds, their nests and young are protected throughout England and Wales by the Wildlife & Countryside Act 1981 (as amended). It is illegal to kill, injure or take any wild bird, or damage or destroy the nest or eggs of breeding birds. The legislation applies to all bird species, common and rare.

In addition to the protection afforded to all wild birds, more vulnerable species listed on Schedule 1 of the Act receive enhanced protection when breeding. Schedule 1 species, including their dependent young, are protected from intentional or reckless disturbance whilst at or near the nest, in addition to the protection afforded the more common species.

The NERC Act offers further protection to the nests of some species that regularly re-use their nests, even when the nests are not in use.

The leading governmental and non-governmental conservation organisations in the UK have reviewed the population status' of 244 UK bird species. "Birds of Conservation Concern 4: the Red List for Birds" is the most recent publication summarising their findings. Three lists, Red, Amber and Green, have been produced based on the most up-to-date evidence available and criteria include conservation status at global and European levels and, within the UK: historical decline, trends in population and range, rarity,

localised distribution and international importance. These lists are a valuable resource when considering conservation priorities.

Trees

Trees may be protected on an individual or group level through a Tree Preservation Order (TPO). In order to carry out works to trees with a TPO, prior written consent must be obtained from the Local Planning Authority. Trees may also be protected through a condition of planning consent or designated conservation areas.

Hedgerows

The Hedgerow Regulations are made under Section 97 of the Environment Act 1995 and came into operation on 1st of June 1997. They aim to protect important hedgerows in the countryside by controlling their removal through a system of notification to the Local Planning Authority.

A hedgerow can only be considered for classification as “important” if it, or the hedgerow of which the section belongs to is over 20m in length (or which meets a hedgerow at either end) and has existed for 30 years or more.

Invasive plant species

A number of invasive, non-native plant species are listed under Schedule 9 (Part II) of the Wildlife and Countryside Act 1981 (as amended). The most commonly encountered listed species in ecological surveys are Japanese knotweed *Fallopia japonica*, giant hogweed *Heracleum mantegazzianum* and Himalayan balsam *Impatiens glandulifera*. Section 14(2) of this Act makes it an offence to *plant or otherwise cause to grow in the wild* any plant listed on Schedule 9 (Part II). These provisions are necessary to prevent the establishment of non-native species which may be detrimental to our native wildlife.

Soil or plant material contaminated with non-native and invasive plants can cause ecological damage and may be classified as controlled waste. It is an offence to keep, treat or dispose of waste that could harm the environment or human health. If there is any doubt, contact the local authority or Environment Agency.

Otters

European otter *Lutra lutra* are offered full protection through the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. If both national and international legislation are taken together, it is an offence to:

- Deliberately, intentionally or recklessly kill, injure or capture otters
- Deliberately, intentionally or recklessly disturb otters in such a way to be likely to significantly affect:
 - their ability to survive, breed, reproduce, rear or nurture their young
 - their ability to migrate
 - their local distribution or abundance
- Damage or destroy breeding sites or resting places of otters
- Intentionally or recklessly disturb sheltering otters, or obstruct access to their resting place
- Keep, transport, sell or exchange, or offer for sale or exchange any live or dead otter, any part of an otter or anything derived from otter

Penalties for offences include fines of up to £5000, plus up to six months imprisonment, for each offence committed.

Otters are also listed under Section 41 of the NERC Act (see bats section for further details).

Water voles

Water voles *Arvicola amphibius* are protected by the provisions of Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:

- Intentionally kill, injure or take water vole
- Possess or control live or dead water vole or any part of a water vole
- Intentionally or recklessly damage destroy or obstruct access to any structure or place which a water vole uses for shelter or protection, or disturb water vole using such a place
- Sell, offer, advertise or transport live or dead water voles for sale

Licences are available from Natural England to allow activities that would otherwise be an offence, including:

- Scientific or educational purposes
- For the purposes of ringing or marking
- Conserving wild animals or introducing them into particular areas
- Preserving public health or public safety
- Preventing the spread of disease
- Preventing serious damage to any form of property or to fisheries

Penalties for offences include fines of up to £5000, plus up to six months imprisonment, for each offence committed.

Water voles are also listed under Section 41 of the NERC Act (see bats section for further details).

White-clawed crayfish

White-clawed crayfish *Austropotomobius pallipes* are protected under the Wildlife and Countryside Act 1981 (as amended). They are listed as a Schedule 5 species therefore part of Section 9(1) and section 9(5) apply. The Countryside and Rights of Way Act 2000 also strengthens their protection. It is offence to:

- Intentionally or recklessly kill or injure white-clawed crayfish
- Sell, offer, advertise or transport for sale a live or dead white-clawed crayfish

If a proposed development is likely to have an impact on white-clawed crayfish then the local statutory nature conservation organisation must be consulted.

Penalties for offences include fines of up to £5000, plus up to six months imprisonment, for each offence committed.

Their inclusion on the EC Habitats Directive allows areas to be designated as Special Areas of Conservation (SAC) for the presence of white-clawed crayfish. Such a designation brings legal protection under the Conservation of Habitats Regulations 2010, this includes how the site is managed and what development can occur on and in proximity to these sites.

White-clawed crayfish are also listed under Section 41 of the NERC Act (see bats section for further details).

Planning policy

National Planning Guidance is issued in the form of the National Planning Policy Framework 2012 (NPPF). The most relevant section is *11. Conserving and enhancing the natural environment*.

Key relevant principles stated in *11. Conserving and enhancing the natural environment* are;

- 109 The planning system should contribute to and enhance the natural and local environment by:
- Protecting and enhancing valued landscapes, geological conservation interests and soils

- Recognising the wider benefits of ecosystem services
- Minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitments to halt the overall decline in biodiversity, including establishing coherent ecological networks that are more resilient to current and future pressures

117 To minimise impacts on biodiversity and geodiversity, planning policies should:

- Plan for biodiversity at a landscape-scale across local authority boundaries
- Identify and map components of the local 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 local partnerships for habitat restoration or creation
- Promote the preservation, restoration and re-creating of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets

118 When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:

- Development proposals where the primary objective is to conserve or enhance biodiversity should be permitted
- Opportunities to incorporate biodiversity in and around developments should be encouraged