

PRELIMINARY ECOLOGICAL APPRAISAL AND IMPACT ASSESSMENT

HAREWOOD, HARWICH ROAD, GREAT OAKLEY, COLCHESTER, CO12 5AD



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(Bat Survey License 2017-30927-CLS-CLS, Great Crested Newt Licence 2018-36283-CLS-CLS)

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1.0 Executive Summary

1. This report presents the findings and recommendations of a preliminary ecological appraisal (PEA) and ecological impact assessment (EIA) undertaken at Harewood, Harwich Road, Great Oakley, CO12 5AD. The application is for the construction of 3 dwellings on an area of garden land to the east and west of the doctors surgery to the north side of Harwich Road.

2. The application site extends to approximately 0.3ha in extent and comprised almost entirely of short managed amenity grassland, bare ground, scattered trees and ornamental plants and shrubs. The wider landscape is predominately arable farmland whilst to the north-east and south-west is residential housing and gardens.

3. The site falls outside the Zone of Influence (Zoi) for Essex Coast Recreational Disturbance Avoidance & Mitigation Strategy (RAMS). Adverse impacts to nearby designated sites are not considered likely due to the type, scale and location of the development.

4. No further surveys are recommended. No priority habitats and species are considered likely to be impacted from the proposed development.

5. Recommendations have been provided for site management and enhancement, primarily to retain suitable habitats wherever possible and to incorporate enhancements within the development. Where retention of habitat is not possible, further surveys may be required.

6. Breeding and nesting birds, hedgehog and common toad may utilise the habitats available onsite and therefore mitigation and enhancement measures are proposed for these species, including precautionary working methods, retention and protection of existing habitats and new habitat creation.

7. Overall, the site is considered to be of low ecological value, no demolition works are proposed and no valuable trees are being removed and so any impacts on roosting bats is considered unlikely.

8. Through implementing the recommended measures detailed in this report, it is considered that any adverse effects from the proposed development on the habitats and species on site will be fully mitigated. With suitable enhancement of the habitats on site, there could be a net gain for local biodiversity in line with relevant wildlife legislation and national planning policy (MHCLG, 2021), and local planning policies related to biodiversity.

9. Recommendations: Avoidance, mitigation and compensation measures have been proposed which would reduce the overall impact to minor adverse-neutral, including:

Avoidance: Retention of mature tree specimens; timing of vegetation clearance (hedges, trees and shrubs) and ground works to avoid the bird nesting season 1st March to 31st August inclusive; log and brush piles and other refugia to be created along the boundaries; tree protection measures and methods specified by a suitably qualified arborist are recommended in accordance with BS5837:2012; no groundworks or plant machinery within the RPA's of retained trees; building materials to be stored off the ground on pallets; sensitive lighting design in accordance with Bat Conservation Guidelines (2018); measures to be taken to avoid killing/injuring of terrestrial mammals.

Mitigation: Landscape planting to include native fruit and berry bearing trees, hedging, shrubs and plants which provide a nectar source to improve resources for a range of invertebrate and bird species.

Enhancement: Erection of bird and bat boxes and bat bricks within new dwellings, new tree and hedge planting along the boundaries to improve connectivity along the margins of the site

(particularly along the north boundary with adjacent field; creation of artificial refugia/hibernaculum along the edge habitats of the site.

Impact Assessment: The expected residual impact with implementation of the above mitigation would be minor adverse-neutral upon breeding/nesting birds and foraging/commuting bats and neutral on common invertebrates, terrestrial mammals, reptiles, amphibians (including great crested newt), water vole, hazel dormouse, otter and white clawed-crayfish. We suggest that any habitat loss associated with the proposal can be adequately mitigated through landscaping, planting and other biodiversity enhancement measures. The following advisory recommendations include:

Destruction of in-use nests or harm to adult birds caused by removal of trees/hedgerows on site during the main breeding bird season (1st March to 31st August). If works commence during this period a nesting bird survey must first be undertaken by an appointed ecological clerk of works (ECoW).

The adjacent hedge bases and associated refuges and hibernacula provide some suitable amphibian and reptile habitat. It is recommended that an Ecological Clerk of Works (ECoW) is appointed to supervise clearance of any suitable refugia/hibernacula.

An Ecological Constraints and Opportunities Plan (ECOP) would highlight the boundary habitats as a moderate (and ultimately replaceable) constraint on development. Before the start of construction, it is recommended that in line with the British Standard 42020:2013 Biodiversity – Code of practice for planning and development - that both a Construction Environment Management Plan (CEMP) and a Biodiversity Enhancement Strategy (BES) are submitted and approved. The role of the CEMP is to ensure that the identified risks to biodiversity are assessed and that suitable methods are adopted on site to minimise the risks through the production of a method statement. The CEMP is also to ensure that biodiversity protection zones are enforced.

PRIOR TO COMMENCEMENT: COMPLIANCE WITH ECOLOGICAL REPORT RECOMMENDATIONS

“All ecological mitigation and enhancement measures and/or works shall be carried out in accordance with the details contained within the report (Eco-Check, January 2023), as submitted with the planning application, and agreed with the local planning authority prior to determination.

A ‘statement of good practice’ shall be signed upon completion by the competent ecologist, and be submitted to the LPA, confirming that the specified enhancement measures have been implemented in accordance with good practice upon which the planning consent was granted”

2.0 Introduction

Eco Check Ltd were commissioned by Suffolk Design and Build Ltd to undertake a preliminary ecological appraisal (PEA) and ecological impact assessment (EclA) of the habitats within the site. The proposed site layout is shown in Appendix 1.

The purpose of the survey was to carry out a preliminary ecological appraisal, habitat and protected species scoping survey assessment to review the potential for the site to contain, or be used by, species protected under both UK and European nature conservation legislation, namely The Wildlife & Countryside Act (1981) (as amended) and the Species and Habitats Regulations 2017 (as amended).

This survey aims to highlight any evidence of (or potential for) protected species or habitats that could result in a constraint to the proposed development. The assessment follows guidelines produced by the Chartered Institute of Ecology and Environmental Management (CIEEM 2017) and to British Standard 42020:2013 (BSI, 2013). This report provides recommendations for enhancement of the site for biodiversity in line with the National Planning Policy Framework (NPPF) (Department of Communities and Local Government, 2018) and best practice guidelines. To provide information to support the ecological assessment, a bat scoping survey of the trees has also been undertaken.

2.1 Aim of Survey

This report details the methodology, results and conclusions of a daytime survey undertaken on the 2nd December 2022. The purpose of the survey was to confirm the presence or likely absence of protected and priority species and habitats. A general ecological appraisal of the wider area was also undertaken to assess if any other protected or priority species are likely to be present including great crested newt, [REDACTED] and herpetofauna.

2.2 Scope of Survey

The ecological investigations undertaken include:

1. A desk study to gather existing information on statutory and non-statutory sites of conservation interest, and any protected or notable species.
2. A survey to describe the vegetation and habitats of ecological importance utilizing the Handbook for Phase 1 Habitat Survey, (JNCC, 2010) and the National Vegetation Classification methodology as set out in the NVC Handbook (source: *“Handbook for using the National Vegetation Classification”* J.S.Rodwell, 2006 Joint Nature Conservation Committee).
3. A reconnaissance survey for evidence of protected species and identification of habitats suitable for such species. In particular the survey adopted the national survey methodologies for [REDACTED] birds, reptiles, amphibians and bats.
4. Analysis of the data gathered from desk and field surveys and identification of any likely significant effects on protected species, including proposals for avoidance, reduction, compensation and enhancement measures.

5. Assessing the magnitude and nature of any impact the existing and proposed land use would make on the site, evaluate any residual effects of the land use and recommendations for further investigations where necessary.

The assessment aims to:

- Describe the baseline condition of the ecological features within the site;
- Assess the potential construction and operational impacts resulting from biophysical changes incurred by the land use;
- Identify the mitigations necessary to reduce the potential impact of the land use on designated sites, habitats, protected and notable species (i.e. ecological features) which occur within the site), and;
- Summarise the residual impacts of the land use on the ecology and nature conservation in the zone of influence. The impact assessment presented in this report was undertaken in compliance with the Chartered Institute of Ecology and Environmental Management Preliminary Ecological Appraisal (CIEEM, 2017).

2.3 Site Location and Description

The site is situated in within the village and civil parish of Great Oakley in the Tendring district of Essex, England. It is a long, narrow parish lying on the top of a low (25 m) ridge south of Ramsey Creek which drains northeast towards Harwich. The parish extends south to Oakley Creek, a branch of Hamford Water, where stood Great Oakley Dock, now disused. The site is accessed off the B1414 Harwich Road approximately 2km south of the A120, grid reference TM195277 (See Fig 1). The survey incorporated a garden area bordering the doctor's surgery. The site comprises of habitats of low ecological value including amenity grassland, hard standing, scattered trees, hedging and ornamental plants and shrubs. Beyond the immediate site the landscape is primarily large open arable fields and pasture with scattered trees and hedging.

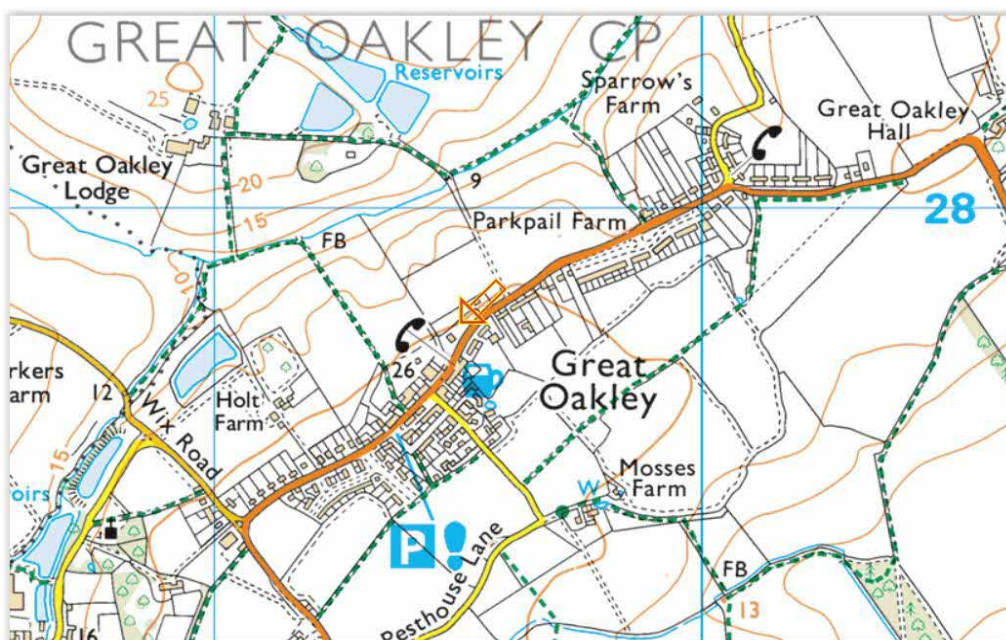


Fig 1. Site Location Map – Street Map



Fig 2. Aerial Site View and Buildings – Google Earth, March 2022

2.5 Proposed Works

This application is for the construction of three detached dwellings. Plot 1 is located to the west of the doctors surgery and Plot 2 & 3 to the east of the surgery. Plot 1 will have a modified access off the existing driveway and Plots 2 & 3 will have a new private access each, bisecting the defunct species poor hedgerow H2 along Harwich Road.

2.6 Desk Study Results

Statutory designated sites¹ –

The site falls outside the zone of influence of the Essex RAMS. There are five statutory designations all for the same site ‘Hamford Water’ situated approximately 1.75km south-east of the site. These sites are of international value. Confidence in this assessment is high.

Name & Designation	Proximity to site	Description
Hamford Water-National Nature Reserve NNR/RAMSAR	1.75km south-east	A coastal reserve with mudflats, marsh, and sands known for its large population of over-wintering birds. Notably Little Tern <i>Sternula albifrons</i> , and avocet <i>Recurvirostra avosetta</i> . The coastal grassland above the saltmarshes also supports one of Britains rarest plants Sea Hogg’s fennel <i>Peucedanum officinale</i> .
Hamford Water SSSI	1.75km south-east	“
Hamford Water SAC	1.75km south-east	“
Hamford Water SPA	1.75km south-east	“

Table 1- Statutory sites designated under Habitats Regulations 2019 within the 10km of the site

The site falls within the SSSI Impact Risk Zone with Hamford Water, however the proposed scheme does not fall into the listed impacts that warrant consultation with Natural England. All of these sites are considered to be of National value.

Locally designated sites² –

There was one Local Wildlife Sites within 2km of the site, which is Soils Wood/TE110 approximately 1.1km north-east of the site and which is designated as deciduous woodland priority habitat and is designated for a small strip of ancient coppice woodland with characteristic flora surviving along the Soils Brook, where old meanders and damp hollows remain.

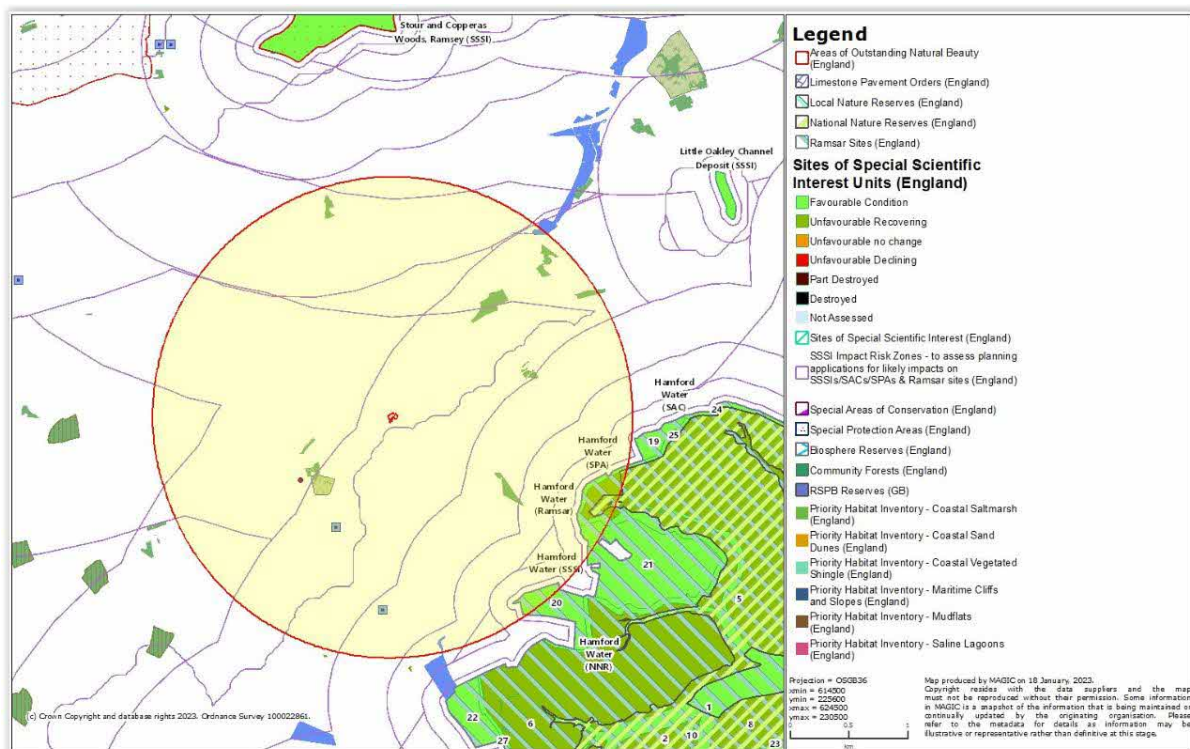


Fig 3 -Magic Site Search 2km Radius


Protected Habitats and Habitats Subject to Conservation Designations-

There are no priority Habitats, as listed under the NERC Act 2006 Section 41 Habitats of Principal Importance found on or adjacent to the site. Other Priority Habitats to occur within 2km (identified using MAGIC – managed by Natural England), include Coastal Saltmarsh, Mudflats, Coastal and Floodplain Grazing Marsh, Deciduous woodland, Wood Pasture and Parkland. A MAGIC search map is provided in Fig.3 and Appendix 3.

Protected/Priority Species^{3 4}-

A search for relevant notable and protected species records within 2km of the site returned a number of priority and protected species records. The biodiversity data search within 2 km of the site indicated 209 species records. Protected species records include 19 flowering plant species, 109

bird species, 1 amphibian species and 10 mammal species. Records of note within 2km and relevant to the proposed development works are:

- 11 records of Schedule 8 protected plant species were reported within the data search. Of these, 8 were of bluebell *Hyacinthoides non-scripta* and one for water germander *Teucrium scordium*. 16 records of Schedule 9 invasive plant species were reported in the data search. Species included New Zealand Pigmyweed *Crassula helmsii*, Goat's Rue *Galega officinalis*, Spanish bluebell *Hyacinthoides hispanica* giant butterbur *Petasites japonicus*, Turkey oak *Quercus cerris*, Alexanders *Smyrnum olusatrum* and lesser bullrush *Typha angustifolia* and all records were over 500m from the site.
- 109 species or bird were recorded within 2km and of these the data search returned 22 records of 10 species listed under Schedule 1 of the WCA 1981 within 2km. These were species such as fieldfare *Turdus pilaris*, kingfisher *Alcedo atthis*, Greylag goose *Anser anser*, Whooper Swan *Cygnus cygnus*, Peregrine *Falco peregrinus*, Hobby *Falco subbuteo*, Crossbill *Loxia curvirostra*, Firecrest *Regulus ignicapilla*, Redwing *Turdus iliacus* and barn owl *Tyto alba*. 201 records were obtained for red-listed Birds of Conservation Concern (BoCC) (Eaton et al. 2015), with species relevant to the sites habitats and context including, Lapwing *Vanellus vanellus*, Turtle Dove *Streptopelia turtur*, Tawny Owl *Strix aluco*, Swift *Apus apus*, Song Thrush *Turdus philomelos*, Lesser redpoll *Acanthis cabaret*, Mallard *Anas platyrhynchos*, Black-head gull *Chroicocephalus ridibundus*, hawfinch *Coccothraustes coccothraustes*, stock dove *Columba oenas*, cuckoo *Cuculus canorus*, house martin *Delichon urbicum*, corn bunting *Emberiza calandra*, kestrel *Falco tinnunculus*, herring gull *Larus argentatus*, common gull *Larus canus*, lesser black-backed gull *Larus fuscus*, linnet *Linaria cannabina*, nightingale *Luscinia megarhynchos*, house sparrow *Passer domesticus*, marsh tit *Poecile palustris*, dunnock *Prunella modularis*, bullfinch *Pyrrhula pyrrhula*, woodcock *Scolopax rusticola*, starling *Sturnus vulgaris*, redwing *Turdus iliacus* and mistle thrush *Turdus viscivorus*. The majority of these species are known to breed in the UK and have been recorded within 2km of the site.
- The Essex Field Club identified 12 records for great crested newts *Triturus cristatus* within 2km of the site, all from the same pond in 2015 (TM187272) approximately 900m south-west of the site. The site falls within a Green Risk Zone for Great Crested Newt in Essex.
- 
- 7 records of hedgehog *Erinaceus europaeus*.
- 22 bat records, with the most recent from 2021 including unidentified pipistrelles *Pipistrellus sp*, Common pipistrelle *Pipistrellus pipistrellus*, Soprano pipistrelle *Pipistrellus pygmaeus*, Noctule *Nyctalus noctule*, brown long-eared *Plecotus auratus*, Natterer's *Myotis nattereri* and Daubenton's *Myotis daubentonii*. Two records for an EPS Mitigation License (EPSM20111-3444) for common and soprano pipistrelle and 2017-32904-EPS-MIT-2 for brown long-eared, common pipistrelle and Natterer's bat.

RSPB

There are no RSPB sites within 2km of the site.

Pond and waterbodies:

A search for ponds and waterbodies within 250m was conducted using Ordnance Survey Data (OS Explorer Map 237 Scale 1:25,000) and publicly available Environment Agency data: There is 1 pond within 250m, that being P1 located approximately 180m south-west of the site. The pond is on private land and could not be accessed to assess its suitability for great crested newt.

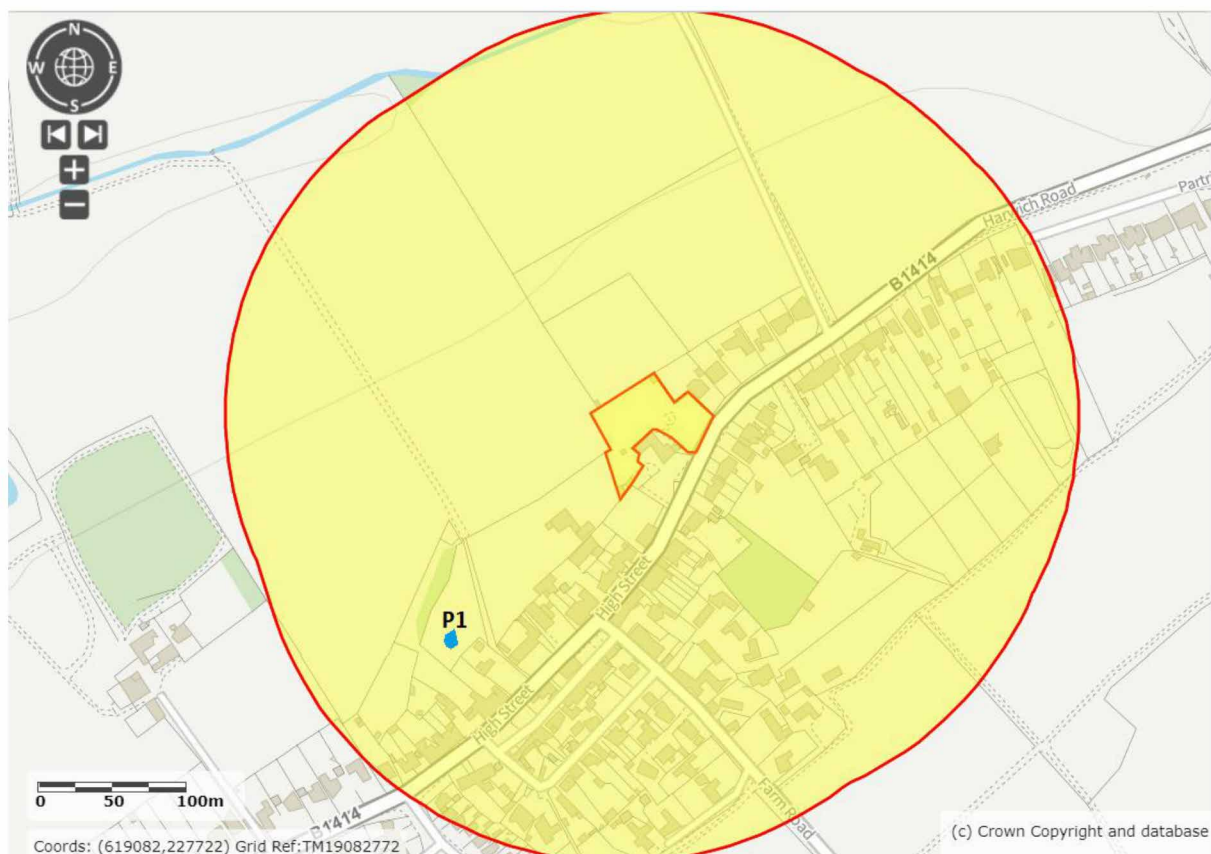


Fig 9. Pond Map- 250m radius

1 Statutory designation include Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, National Nature Reserves (NNR), Sites of Special Scientific Interest (SSSI) and Local Nature Reserves (LNR).

2 Non-statutory sites are designated by local authorities and protected through the planning process (e.g. County Wildlife Sites, Sites of Importance for Nature Conservation or Local Wildlife Sites).

3 Legally protected species include those listed in Schedules 1, 5 or 8 of the Wildlife and Countryside Act 1981; Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended); [REDACTED]

4 Notable species include Species of Principal Importance under the Natural Environment and Rural Communities Act 2006; Local Biodiversity Action Plan (LBAP) species; Birds of Conservation Concern (Eaton et al., 2009); and/or Red Data Book/nationally notable species (JNCC, undated).

3.0 Legislation

Protected Species

3.1 Bats

All bat species are listed under Annex IV (and certain species also under Annex II) of the European Union's Council Directive 92/43/EEC (The Habitats Directive), and are given UK protected status by Schedule 2 of the Conservation of Habitats and Species Regulations 2017. Bats and their roosts also receive protection from disturbance from by the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000). This protection extends to both the species and roost sites. It is an offence to kill, injure, capture, possess or otherwise disturb bats. Bat roosts are protected at all times of the year (making it an offence to damage, destroy or obstruct access to bat roosts), regardless of whether bats are present at the time.

All species of bat are fully protected under The Conservation of Habitats and Species (Amendment EU Exit) Regulations 2019, through their inclusion on Schedule 2. Regulation 39 prohibits:

- Deliberate killing, injuring or taking (capture) of Schedule 2 species (e.g. bats);
- Deliberate disturbance of bat species as:
 - a) to impair their ability:
 - (i) to survive, breed, or reproduce, or to rear or nurture young;
 - (ii) to hibernate or migrate
 - b) to affect significantly the local distribution or abundance of the species;
 - Damage or destruction of a breeding site or resting place; and
 - Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

Bats are also currently protected under the Wildlife and Countryside Act 1981 (as amended) through their inclusion on Schedule 5. Under this Act, they are additionally, protected from:

- Intentional or reckless disturbance (at any level);
- Intentional or reckless obstruction of access to any place of shelter or protection; and
- Selling, offering or exposing for sale, possession or transporting for purpose of sale.

An EPS Licence issued by the relevant countryside agency (e.g. Natural England) will be required for works liable to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

Though there is no case law to date, the legislation may also be interpreted such that, in certain circumstances, important foraging areas and/or commuting routes can be regarded as being afforded de facto protection, for example, where it can be proven that the continued usage of such areas is crucial to maintaining the integrity and long-term viability of a bat roost.

The species protection provision of the Habitats Directive, as implemented by The Conservation of Habitats and Species (Amendment EU Exit) Regulations 2019 contain three “derogation tests” which must be applied by the Local Planning Authority when deciding whether to grant planning permission for a development that could harm a European Protected Species. The three tests are that:

The activity to be licensed must be for imperative reasons of overriding public interest or for public health and safety
There must be no satisfactory alternative; and
Favourable conservation status of the species must be maintained.

It is the responsibility of the applicant to submit sufficient information to address these tests when applying for planning permission. NB: For development activities, a Natural England EPS Licence application can only be obtained after planning permission has been granted. However, the granting of planning permission does not guarantee that a licence will be issued by Natural England.

3.2 Birds

All bird species are protected under the Wildlife and Countryside Act 1981 as amended. This prevents killing or injuring any bird or damaging or destroying nests and eggs. Certain species (including barn owl *Tyto alba*) are also listed under Schedule 1 of the Wildlife and Countryside Act 1981, which prevents disturbance of the species or its nest and/or eggs at any time with protection by special penalties.

3.3 Reptiles

All native reptiles are listed on Schedule 5 of the Wildlife and Countryside Act 1981, and are afforded protection under Sections 9(1) and 9(5). For the reptile species occurring in Norfolk, adder *Vipera berus*, grass snake *Natrix natrix*, slow-worm *Anguis fragilis* and common lizard *Zootoca vivipara*, this protection prohibits deliberate or reckless killing and injury but does not include habitat protection. Herpetofauna- Native species of herpetofauna are protected solely under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). Species such as the adder *Vipera berus*, grass snake *Natrix natrix*, common lizard *Zootoca vivipara* and slowworm *Anguis fragilis* are listed in respect to Section 9(1) & (5).

3.4 Great Crested Newts

The great crested newt *Triturus cristatus* is fully protected in accordance with both national and international legislation. The species is listed under Annexes IV and II of European Directive 92/43/EEC, and Schedule 2 of The Conservation of Habitats and Species Regulations 2017. The species is also protected by Sections 9(4) and 9(5) of the Wildlife and Countryside Act 1981 as amended. It is an offence to knowingly or recklessly kill, injure, disturb, handle or sell the animal, and this protection is afforded to all life stages. It is unlawful to deliberately or recklessly damage, destroy, or obstruct the access to any structure or place used for shelter or protection; this includes both the terrestrial and aquatic components of its habitat.

3.6 Water Voles and Otters

The water vole and otter are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 and are priority conservation species. It is an offence to:

- intentionally capture, kill or injure water voles or otters
- damage, destroy or block access to their places of shelter or protection (on purpose or by not taking enough care)
- disturb them in a place of shelter or protection (on purpose or by not taking enough care)
- possess, sell, control or transport live or dead water voles or parts of them (not water voles bred in captivity)

3.7 Statutory Designated Conservation Sites

National ecological designations, such as Sites of Special Scientific Interest (SSSI) and National Nature Reserves (NNR), are also afforded statutory protection. SSSIs are notified and protected under the jurisdiction of the Wildlife and Countryside Act 1981 as amended. SSSIs are notified based on specific criteria, including the general representativeness and rarity of the site and of the species or habitats supported by it.

3.8 Local Non-statutory Designated Conservation Sites

Local sites of importance to biodiversity, but falling below the criteria for SSSI selection, are designations as County Wildlife Sites (CWS). These sites have no statutory protection but are normally given consideration within local plans.

3.9 Species and Habitats of Principle Importance

Other priority species and habitats which are a consideration under the National Planning Policy Framework (NPPF) 2012, placing responsibility on Local Planning Authorities to aim to conserve and

enhance biodiversity and to encourage biodiversity in and around developments. There is a general biodiversity duty in the Natural Environment and Rural Communities (NERC) Act 2006 (Section 40) which requires every public body in the exercising of its functions to 'have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'. Biodiversity, as covered by the Section 40 duty, includes all biodiversity, not just the Habitats and Species of Principal Importance.

Section 41 of the NERC Act lists a number of species and habitats as being Species/Habitats of Principal Importance. These are species/habitats in England which had been identified as requiring action under the UK BAP, and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework. The protection of either Species of Principal Importance or Habitats of Principal Importance is not statutory, but "specific consideration"¹ should be afforded by Local Planning Authorities when dealing with them in relation to planning and development control. Also, there is an expectation that public bodies would refer to the Section 41 list when complying with the Section 40 duty.

3.10 Natural Environment and Rural Communities Act 2006 (NERC)

The NERC Act 2006 states that 'every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity', otherwise known as the Biodiversity Duty. Under Section 41 of the Act, the Secretary of State must publish a list of the living organisms and types of habitats which in the Secretary of State's opinion are of principal importance for the purpose of conserving biodiversity.

This list is based on those species listed in the UK Biodiversity Framework as priority species (see Section 2.3) in addition to Annex II species listed under The Conservation (Natural Habitats, &c.) Regulations 2017. The S41 list replaces the list published under Section 74 of the Countryside and Rights of Way (CRoW) Act 2000.

4.0 Methodology

4.1 Desk Study

A desk study for statutory and non-statutory wildlife sites and protected and priority species was undertaken using the Magic website. 1:25000 scale maps and local satellite imagery was also reviewed prior to the field survey to identify features of potential interest including ponds, woodland, meadows and adjacent high-quality habitat.

The potential for protected rare and/or priority species to be on site has been assessed considering the nature of the site and the habitat requirement of the species in question. Absence of records does not constitute absence of a species. Habitats on-site may be suitable to support other protected/priority species that have not previously been recorded within the search area.

Species recorded have been taken into consideration for our impact assessment, however any accurate locations are determined to be sensitive and cannot be revealed. Natural England's Multi-Agency Geographic Information for the Countryside (MAGIC) database (Natural England, 2020) and Essex Field Club (EFC) and Magic were used to provide records of:

- Natura 2000 sites such as Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites within 2km of the study area;

- Statutory sites designated for nature conservation within a 2km radius of the study area;

- Natural England's Impact Risk Zones (IRZs) for Sites of Special Scientific Interest (SSSI), Special Areas of Conservation, Special Protection Areas and Ramsar sites within which the study area was located; and

- Any European Protected Species Mitigation Licenses granted by Natural England within a 2km radius of the study area.

- Non-statutory nature conservation designations, such as County Wildlife Sites (CWS);

- Legally protected species, such as great crested newts, reptiles, birds and bats; and

- Notable species, such as those listed in the local Biodiversity Action Plan

4.2. Phase 1 Site Survey

The survey was undertaken by James Hodson of Eco-Check Ltd on the 2nd December 2022, an experienced ecological consultant with a BSc (Hons) in Environmental Sciences and MSc in Environmental Impact Assessment and licensed to undertake bat surveys and to disturb bats under Natural England Level 2 Bat Survey License 2017-30927-CLS-CLS and great crested newts 201836283-CLS-CLS.

The vegetation and habitat types within the site were noted during the survey in accordance with the categories specified for a Phase 1 Vegetation and Habitat Survey (JNCC, 2010). Dominant plant species were recorded for each habitat present. The site was inspected for evidence of and its potential to support protected or notable species, especially those listed under the Conservation of Habitats and Species (Amendment) Regulations 2017, the Wildlife & Countryside Act 1981 (as amended), including those given extra protection under the Natural Environment and Rural Communities (NERC) Act 2006 and Countryside & Rights of Way (CROW) Act 2000, and listed on the UK and local Biodiversity Action

Plans. Such species include amphibians, reptiles, bats, [REDACTED] birds, dormice and water voles.

[REDACTED] The site was searched for evidence of invasive plant species, such as Japanese knotweed (*Fallopia japonica*), Himalayan balsam (*Impatiens glandulifera*), giant hogweed (*Heracleum mantegazzianum*), horizontal/wall cotoneaster (*Cotoneaster horizontalis*) and floating pennywort (*Hydrocotyle ranunculoides*).

As the attributes of the site and its potential for protected, notable and invasive species may change over time, this report is broadly considered valid for a duration of two years, after which time it is recommended that an update site assessment is undertaken. [REDACTED]

4.4 Protected and Key Species Survey

Amphibians (Including Great Crested Newts)

Any ponds, lakes, reservoirs or other water bodies on site, or within 250M (with good habitat connectivity) were assessed for their potential to support breeding populations of amphibians, specifically Great Crested Newts. Assessing potential suitability for Great Crested Newt is undertaken using the Habitat Suitability Index (HSI), a geometric mean of ten habitat suitability criteria (see table 2.0) (Oldham *et al.* 2000). The resulting HSI score should be interpreted as either; Excellent (>0.8), Good (0.7 – 0.79), Average (0.6 – 0.69), Below Average (0.5 – 0.59) potential for supporting Great Crested Newts (Oldham *et al.* 2000)

Table 2 – Habitat suitability criteria used to calculate (HSI), the suitability of a pond to support Great Crested Newts (based on Oldham *et al.* 2000)

Indices	Name:	Description:
Sl ₁	Geographic Location	Lowland England or upland England, Scotland and Wales
Sl ₂	Pond area	To the nearest 50m ²
Sl ₃	Permanence	Number of years pond dry out of ten
Sl ₄	Water quality	Measured by invertebrate diversity
Sl ₅	Shade	Percentage shading of pond edge at least 1m from shore
Sl ₆	Fowl	Level of waterfowl use
Sl ₇	Fish	Level of fish population
Sl ₈	Pond count	Number of ponds within 1km divided by 3.14
Sl ₉	Terrestrial habitat	Quality of surrounding terrestrial habitat
Sl ₁₀	Macrophytes	Percentage extent of macrophyte cover

Birds

On-site habitats were assessed for their potential to support breeding (nesting) birds. All bird species observed during the two field surveys as well as the reptile survey visits were recorded. Birds observed were categorized based on both their RSPB and BAP status.

Bats

A Preliminary Roost Assessment (PRA) was undertaken in accordance with methods outlined in the Bat Conservation Trusts “Bat Surveys for Professional Ecologists” (Collins, 2016) Including both a desk-based and field-based assessment. Details of these guidelines can be found in table 5.

Table 3 - Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape (Adapted from table 4.1 pp. 35 in Collins, 2016)

Suitability.	Description of Roosting habitats.	Description of Commuting and Foraging habitats.
Negligible	Negligible habitat features on-site likely to be used by roosting bats.	Negligible habitat features on-site likely to be used by commuting or foraging bats.
Low	<p>A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation.)</p> <p>A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.</p>	<p>Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat.</p> <p>Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.</p>
Medium	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	<p>Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens.</p> <p>Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.</p>
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	<p>Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge.</p> <p>High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.</p>

Dormice

An initial inspection for evidence of Dormice or habitats that could support Dormice was undertaken.

Invertebrates

Specific sampling for invertebrates falls outside of the remit of a Preliminary Ecological Assessment. However, any invertebrates observed incidentally during the survey were recorded.

Otters, Water voles, and White-Clawed Crayfish.

On-site habitats were assessed for their suitability to support Otters, Water Voles and White-Clawed Crayfish.

Reptiles

All on-site habitats were assessed for their potential to support reptiles and all any pre-existing refugia including discarded plastics, paving slabs, bricks and wood were carefully examined in search of live individuals.

Risk Category	Definition
PRESENT	Presence confirmed in the course of current survey or recent, confirmed records.
HIGH	On-site habitat of high quality for a given species/species group. Site within/peripheral to a national or regional population stronghold. Good quality surrounding habitat and good connectivity.
MODERATE	On-site habitat of moderate quality, providing most or all of the known key requirements of a given species/species group. Local returns from the data search, within national distribution, suitable surrounding habitat. Factors limiting the likelihood of occurrence may include small habitat area, habitat severance, disturbance etc.
LOW	On-site habitat of poor to moderate quality for a given species/species group. Few or no returns from data search but presence cannot be discounted on the basis of national distribution, nature of surrounding habitats, habitat fragmentation, recent on-site disturbance etc.
NEGLIGIBLE	While presence cannot be absolutely discounted, the site includes very limited or poor quality habitat for a particular species or species group. No local returns from a data search, outside or peripheral to known national range for a species, surrounding habitat considered unlikely to support wider populations of a species/species group.
UNKNOWN	Insufficient data to make a determination of the risk of a species presence or absence.

Table.4 Criteria for assessing presence of protected species

4.5 Impact Assessment

The assessment was undertaken in accordance with CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd Edition. Chartered Institute of Ecology and Environmental Management, Winchester. In summary the impact assessment process involves:

- Assessing the value of ecological receptors at the site and those nearby that could be affected (e.g. designated sites, habitats, species);
- Identifying the unmitigated impacts of the development (magnitude, spatial extent, duration, timing/frequency, reversibility);
- Providing measures to avoid and mitigate for impacts;
- Assessing the significance of residual impacts after specified mitigation;
- Identifying appropriate compensation measures to offset significant residual effects, and;
- Identifying enhancement opportunities to provide a new benefit for biodiversity.

Value/scale of ecological features:

The value of ecological features uses conservation status (i.e. extent, relative abundance and distribution) to assign geographic levels at which the feature is considered to hold importance.

Ecological features should be evaluated within a defined geographical context (CIEEM, 2018). These are based upon criteria identified in the CIEEM (2018) guidance, which categorise the geographic context of ecological importance as within one of the following:

- International and European;
- National;
- Regional;
- County, or local authority; and,
- Local Importance/Parish (High or Low Value).

Only features deemed “important ecological features” (the term used in CIEEM, 2018) are carried forward into the assessment of potential impacts. Important ecological features are:

- Considered to be sufficiently valuable to the decision-making process; and specifically of “Local Importance (Higher value)” or higher using the geographic frames of reference in Appendix B and,
- Likely to be significantly affected by the project (CIEEM, 2018).

For habitats, this includes the structure and composition of plant communities, the species they may support, and over what distance the habitat may have influence over e.g. wetlands may attract wintering birds from hundreds of miles away, whereas a small block of scrub may only support fauna in the local area. For species, this includes the abundance and distribution within a given geographical area e.g. a small population of great crested newt may be assessed to be of ‘local’ importance in the south of England where populations are abundant but, but of ‘county’ importance in the north of England where the species is scarcer. In depth details of geographic values of importance are summarised in Appendix 3.

Ecological features valued at Local Importance (Lower Value) or of negligible value (as per the valuation criteria in Appendix 3) are not considered significant features and are scoped out of impact assessment. It is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable (CIEEM, 2018). In some cases the data collected as part of the scoping process will be sufficient to inform the assessment of effects on a given feature. In other cases additional surveys will need to be undertaken. Ecological features which are within the zone of influence of a development, but not considered important ecological features, can be ‘scoped out’ (excluded), with justification.

Scale of impact and confidence levels:

Impacts on ecological features can occur either directly (e.g. loss of habitats, habitat fragmentation, noise/light disturbance) or indirectly (e.g. water/air quality, noise and light pollution, recreational disturbance). The overall impact is subjectively assessed taking into consideration a range of factors, including conservation status of an ecological feature, magnitude, spatial extent, duration, timing/frequency and reversibility. Impacts can be both positive and negative. The guidance used to quantify the scale of impacts is provided below;

Major	Loss of over 50% of a site feature, habitat or population Adverse change to all of a site feature, habitat or population For benefits, an impact equivalent in nature conservation terms to gain of over 50% of a site feature, habitat or population
Intermediate	Loss affecting 20-50% of a site feature, habitat or population Adverse change to over 50% of a site feature, habitat or population For benefits, an impact equivalent in nature conservation terms to a gain of 20-50% of a site feature, habitat or population
Minor	Loss affecting 5-19% of a site feature, habitat or population Adverse change to 20-50% of a site feature, habitat or population For benefits, an impact equivalent in nature conservation terms to a gain of 5-19% of a site feature, habitat or population
Neutral	Loss affecting up to 5% of a site feature, habitat or population Adverse change to less than 20% of a site feature, habitat or population For benefits, an impact equivalent in nature conservation terms to a gain of up to 5% of a site feature, habitat or population

Table 5 – Definitions of impact magnitude

The assessment of these impacts is subjective and based on predictions based on the available evidence and therefore may be inaccurate if predicted activities change or scale/extent of the proposed development alters. Therefore, we provide an indication of confidence levels for our assessment using the following criteria:

Certain	probability estimated at above 95%
Likely	probability estimated above 50% but below 95%
Possible	probability estimated at above 5% but below 50%
Unlikely	probability estimated at less than 5%

Consideration is also given to the potential for the development proposal to give rise to significant negative impact in combination with other proposed development in the area, where relevant. An overall assessment of value and predicted impact is provided, and this is based upon the highest level of value of any of the features or species present or likely to be present on the site, and similarly the overall assessment would be the impact of greatest significance.

4.6. Limitations

The extensiveness of the ecological assessment was limited by the season in which the site visit was made. To confirm the presence or absence of all protected species usually requires multiple visits at suitable times of the year. Summer surveys between May and September are considered optimal. The site visit focussed on assessing the potential of the site to support species given protection under British or European law. In view of the above constraints this assessment cannot be considered to provide a comprehensive survey of the ecological interest of the site. It does however provide a “snapshot “of the ecological interest present on the day of the visit and highlights areas where further survey work may be required.

It is expected that evidence of bats (particularly in exposed areas or on external faces of the buildings) which may be present at other times of the year may not have been visible during the survey. A difficulty in inspecting buildings for bats is that the presence of smaller roosts is generally harder to detect than more significant colonies, particularly those of crevice dwelling bats such as pipistrelle. In addition, bats are very transient in nature with complex roosting behaviour and often move between several different roosting sites during the year. Therefore, the presence of transient singleton roosts (e.g. single male roost) can be present at any time of year.

The main constraints to this survey are the timing of the season which may have reduced the ability to identification of some plant species, but given the habitats present the shortfall is not anticipated to present a significant constraint.

5.0 Survey Results

5.1 Nesting Birds

Some bird nests were recorded in the hedgerows H1 & H2 as well as in some of the tree canopies, particularly those with dense foliage such as cypress. Bird nests found included those of blue tit *Cyanistes caeruleus*, pigeon *Columba palumbus*, blackbird *Turdus merula* and wren *Troglodytes troglodytes*. The following birds and nesting birds (N) were recorded within the site;

Red listed: Starling *Sturnus vulgaris*

Green listed: Blackbird *Turdus merula* (N), Chaffinch *Fringilla coelebs*, Great tit *Parus major*, Rook *Corvus frugilegus*, Woodpigeon *Columba palumbus* (N), Wren *Troglodytes troglodytes* (N) and swallow *Hirundo rustica*.

Introduced: Pheasant *Phasianus colchicus*

5.2 Bats: (All species)

The data search returned records of 7 species of bat within the search area. These included: common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auritus*, natterer's *Myotis nattereri* and noctule *Nyctalus noctula*. This is considered to be a moderate diversity of species for this area. With the exception of noctule all of these species frequently roost within buildings. Two bat mitigation licenses were returned within 2km of the site.

There are no buildings within the application site with the exception of two shed buildings within the garden area. A detailed search of the exterior of the buildings found no bat droppings, feeding remains or any evidence of bat activity or roosting bats. An internal inspection of the buildings was not undertaken due them being inaccessible. The majority of the buildings are of a construction providing little in the way of potential roost features (PRF's), constructed from timber frame, tight fitting timber boards and bitumen felt roofs.

The structures on site were all assessed as having Negligible probability of bat interest due to the lack of evidence of any bat activity or roosts and the general lack of potential roosting features and suboptimal roosting conditions. The survey was undertaken in accordance with Bat Surveys-Good Practice Guidelines, J. Collins, 2016 and 'Bat Workers Manual, 3rd Edition, Mitchell and Jones, 2004 buildings with Negligible roost potential require no further survey effort.

I consider that the buildings all have low enough bat roosting evidence/potential such that the visual inspection was sufficient to provide reasonable confidence in a negative roost assessment, particularly as no works are proposed to the buildings. There is therefore no reasonable expectation that impacts to bats, such as would be considered an offence under Article 12 (1) of the Habitats Directive of The Conservation of Habitats and Species (Amendment EU Exit) Regulations 2019 will occur as a result of the proposal. The potential for roosting bats however can rarely be excluded entirely due to the highly mobile nature of bats and seasonal use of roosts.

Foraging and commuting bats

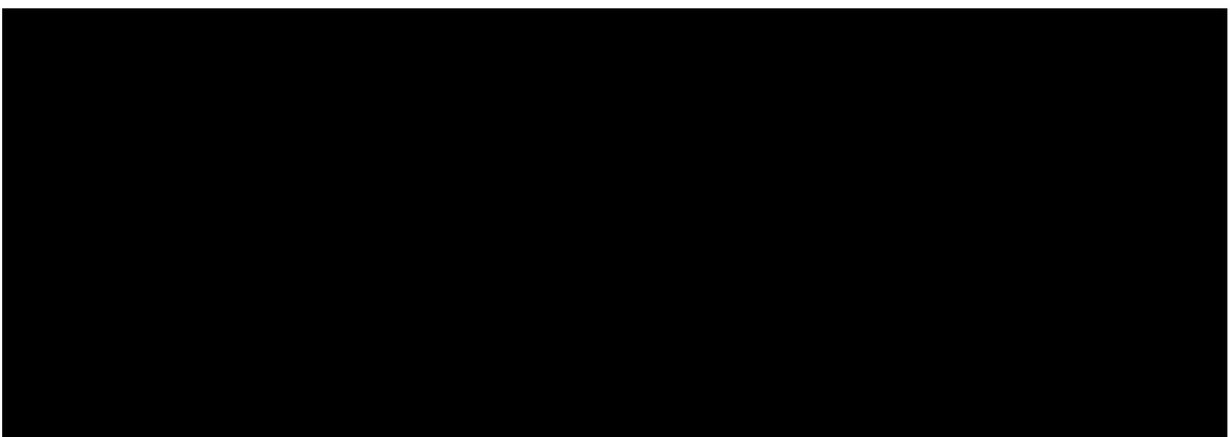
Due to the habitats present within the site and the local landscape it is considered likely that foraging or commuting bats use the wider site area. The immediate site is unlikely to be a strategic foraging and commuting corridor for bats given the large open arable fields surrounding the site and potential lighting disturbance from buildings. There is a small block of semi-natural plantation woodland to the south of the buildings and connecting hedgerows which are likely used by foraging/commuting bats. If any new lighting is required, a sensitive lighting scheme must be implemented to limit light spillage onto adjacent habitats.

5.3 Great Crested Newt

12 records of great crested newt were found within 2km but all from the same pond in 2015 (TM187272) approximately 900m south-west of the site. The terrestrial habitats on the site are of low value (hedge bases and short amenity grassland) and negligible value (buildings and hardstanding) for GCN. Terrestrial habitats adjacent the site is predominately unsuitable for GCN consisting of arable fields and residential buildings and gardens. The site falls within the Green risk zone for GCN district level licensing, which is classified as “containing sparsely distributed GCN and are less likely to contain important pathways of connecting habitat for this species” (Natural England, 2021).

5.4 Reptiles

The data search returned no records or reptiles within 2km and only 1 record of common lizard *Zootoca vivipara* approximately 2.4km west of the site. The habitats on the site are considered predominantly unsuitable for reptiles, consisting of bare ground, buildings, hard standing and amenity grassland with a short sward height. There are areas of tall ruderal habitat and grassland along the margins which could be suitable for reptiles if they were present in the terrestrial habitats adjacent the site arable fields and hardstanding. The cultivated arable land across the wider landscape provides mostly unsuitable habitat for reptile species such as common lizard and grass snake. Subject to a precautionary approach to any site clearance including maintaining the grassland at a short height and dismantling any potential refugia/hibernacula by hand, this species group is not considered to represent a constraint to development.



5.6 Invertebrates:

45 different invertebrate species were recorded in the data search. Due to the common habitats present within the site, it is considered unlikely that the proposed works will significantly impact important populations of invertebrates. Trees, shrubs, hedging etc. provide some suitable habitat for saproxylic invertebrates, as dead wood is evident in and around the roadside hedgerow H2. The site lacks the required diversity of deadwood to support significant populations of saproxylic invertebrates and is therefore not considered to be of importance to saproxylic invertebrates outwith the zone of immediate influence.

5.7 Hedgehog and Brown Hare:

Hedgehogs are protected under Schedule 6 of the Wildlife and Countryside act (as amended) and is listed as a Priority Species under the UK Biodiversity Action Plan. Brown hare are closely associated with cereal crops and woodland edges. Habitats within site were considered negligible for this species, though habitats in the wider landscape were suitable. As such, the site is considered to be of negligible importance for brown hare, with confidence in this currently high.

Hedgehogs can utilise a range of habitats including woodland, hedgerows, residential gardens, farmland and grassland. They are known to nest (summer/maternity/hibernation) in brash piles, dense scrub and buildings. The site contained brash piles, stored materials and areas of marginal scrub along with outbuildings suitable for use by nesting hedgehogs, with suitable habitat for foraging and commuting hedgehogs present in the immediate landscape. It is therefore considered probable that the site is used by individuals for foraging and sheltering.

5.8 Other Protected/Priority Species:

Harvest mice *Micromys minutus* require habitats such as tall grassland containing cereal crops, hedgerows, reed beds and dykes for foraging and nest building. The sward height of the poor amenity and improved grassland and species recorded on site and within boundary habitats did not offer the structural complexity or species diversity suitable to support harvest mice. As such, this species is considered to be absent from site and not considered further.

5.9 Phase 1 Habitats

The habitats on the site are of low ecological value, being mainly amenity grassland, buildings, and hardstanding with scattered trees, hedging and ornamental plants and shrubs. Table 6 below details the habitats recorded on site, the dominant species present and their overall biodiversity value.

Habitat	Description	Dominant Species	Biodiversity Value	Additional notes
Amenity Grassland (J1.2)	Most of the site comprises amenity grassland. The grass within the application site had a short-mown sward of less than 5cm.	Ryegrass (<i>Lolium perenne</i>), common dandelion (<i>Taraxacum officinale</i>), clover (<i>Trifolium repens</i>), white dead-nettle (<i>Lamium album</i>), daisy (<i>Bellis perennis</i>), groundsel (<i>Senecio vulgaris</i>), ribwort plantain (<i>Plantago lanceolata</i>), cleavers (<i>Galium aparine</i>), black medic (<i>Medicago lupulina</i>), ground ivy (<i>Glechoma hederacea</i>), bristly ox-tongue (<i>Helminthotheca echioides</i>) and doves-foot cranesbill (<i>Geranium mole</i>), The ruderals are restricted to occasional stems of nettle <i>Urtica dioica</i> , cow parsley (<i>Anthriscus sylvestris</i>), broad-leaved dock (<i>Rumex obtusifolius</i>) and creeping thistle (<i>Cirsium arvense</i>).	Low	Limited foraging and refuge habitat for small mammals, birds and invertebrates.
Bare Ground (J4)	Areas of bare ground, concrete aprons and hard surfaces border the doctor's surgery as well as a patio area to the east of it.	-	Low	Evidence of groundworks and management of habitats around the buildings with some regrowth of common plant species and grassland.
Buildings (J3.6)	Some timber sheds with bitumen felt roofs are present within the site		Negligible	All buildings assessed as having negligible/low roost potential.
Hedge with Trees-Species Poor (J2.3.2)-	Along the south boundary of the proposed Plots 2 & 3 is a defunct species poor hedge with some low value tree specimens and which will be partly removed for the new access.	Species present include hawthorn (<i>Crataegus monogyna</i>), elm, dog rose (<i>Rosa canina</i>). Other hedgerow species included ivy (<i>Hedera helix</i>) and bramble (<i>Rubus fruticosus</i>). Tall ruderal vegetation and improved grassland was present in the understory of the hedgerows.	Moderate	The hedging and trees provide sufficient food, shelter and cover for nesting birds, small mammals and invertebrates

Intact Hedge-Species Poor (J2.1.2)	Along the north-west corner of the site is a managed beech hedge approximately 1m high and which is flailed and well managed.	Beech (<i>Fagus sylvatica</i>)	Low	Provides some bird nesting habitat.
Ornamental Plants and Shrubs (J1.4)	Ornamental plants and shrubs were frequent and included	Cotoneaster, Comfrey, Tulip, Grape Hyacinth, Rose, Snowdrop, Laburnum, Lemon Balm, Cornflower, Poppy, Lavender, Ceanothus, Lilac and Wild Strawberry.	Low	Value to birds, invertebrates and common small mammals.
Scattered Trees (A3.1)	The site contains and is bordered by occasional young, early-mature and semi-mature tree specimens with the most notable specimens present along the west boundary,	Willow Salix (<i>Salix babylonica</i>), cherry (<i>Prunus avium</i>), holly (<i>Ilex aquifolium</i>), bay laurel (<i>Laurus nobilis</i>), leyland cypress (<i>Leyandii</i> sp.), apple tree (<i>Malus domestica</i>), rowan (<i>Sorbus aucuparia</i>), beech tree (<i>Fagus sylvatica</i>), Locus tree (<i>Robinia pseudoacacia</i>), Ceanothus, silver birch (<i>Betula pendula</i>), Fig (<i>Ficus carica</i>), Quince (<i>Cydonia oblonga</i>), Cedar (<i>Pseudotsuga menziesii</i>) and oak (<i>Quercus robur</i>).	Moderate- No trees identified as having bat roosting potential within 10m of the buildings.	Potential habitat for nesting birds and food source. Habitat for invertebrate species.
Tall Ruderal (C3.1)	Tall ruderal vegetation is frequent around the periphery of the site margins, buildings, fence lines, disturbed ground etc.	Nettle (<i>Urtica dioica</i>), scentless mayweed (<i>Tripleurospermum inodorum</i>), cow parsley (<i>Anthriscus sylvestris</i>), hogweed (<i>Heracleum sphondylium</i>), willow-herb (<i>Epilobium angustifolium</i>).	Low	Provides some additional cover for birds, small mammals and herpetofauna.

Table 6 – Habitats and Vegetation

6.0 Evaluation and Recommendations

6.1 Sites of National Importance-

Given the nature of the development and its distance (at least 1.7km) from nearby sites of international importance, it is not considered likely that the development would have an impact on nearby internationally designated sites. This includes typical impacts such as increased recreational pressure, as the proposed development is a small-scale residential development of less than 5 dwellings. Additionally, the site is not considered applicable under the Essex Coast RAMS as the development is not within the impact risk zone; direct and indirect impacts are not considered likely due to the distance from site and lack of shared habitats, direct and indirect impacts are not considered likely upon nearby LWSs. It is predicted that the development will have a neutral impact on designated sites.

The application site does however lie within a 'SSSI impact risk zone' of Hamford Water. The proposal is for less than 5 dwellings and therefore consultation with Natural England is not required.

All internationally designated sites are fully protected by the Conservation of Habitats and Species Regulations 2017. Any new development must avoid having a significant adverse effect on the ecological features for which a SSSI was designated. Any such effect must be considered in combination with potential effects from other developments within influencing distance of the designated site. The proposal is not considered to be detrimental to any statutory designated sites and no direct or indirect impact are considered likely. No further surveys or mitigation is recommended.

6.2 Sites of Regional/Local Importance-

Habitats-

Habitats on site offering some ecological interests are limited to the scattered trees and hedging which are of value to foraging and nesting birds, foraging and commuting bats, small mammals and invertebrates. Hedgerows are a habitat of principle importance and so must be retained and protected. Overall, the habitats on Site are provisionally assessed as being at the Lower value at the Site/Local level. The scale, type and location of the new dwellings and any associated ecological Impacts are considered to be Negligible/Low.

6.3 Protected and Notable Species

Please note that all evaluation and recommendations are based upon the findings of this preliminary ecological appraisal and on the proposals outlined in 2.4 above. If the site changes, then the potential for protected species to use the site may change accordingly. If the proposals alter from those at present, then it is possible that the likely impacts will also change.

6.3.1 Bats

Roosting bats - trees

Whilst the proposed works are unlikely to have any direct impacts on roosting bats in trees due to a lack of any suitable trees, mitigation has been suggested with regards to providing new bat roosting opportunities such as bat boxes and bat bricks. The unmitigated impact of the proposed development on tree roosting bats is assessed as being neutral.

Foraging and commuting bats

The site contains some suitable habitat for foraging bats across the site interior. There are several mature trees within the wider landscape that may provide roosting potential and the garden habitats provide suitable foraging habitat. In order to avoid a detrimental impact on bats using the site, it is recommended that there should be no increased light spillage on to the trees and hedgerows or adjacent gardens where bats are most likely to forage and commute. Lighting should be restricted to the interior of the site and should be kept to a low level. The following measures should be implemented within the lighting scheme:

- Minimise light spill, through use of lighting hoods, and setting the height and angle appropriately.

- Reduce the light intensity to the minimum required for safety and security.

- Set lighting curfews, e.g. lights off at night

- Where security lamps are used these should use a trigger to illuminate them (e.g. infra-red detector), and switch off after a short period, rather than remaining on all night.

The site is assessed as being of value at the Site/Local scale for foraging and commuting bats. The unmitigated impact of the proposed development is provisionally assessed as being minor adverse due to a potential increase in lighting across the site. This would be reduced to Minor adverse-neutral with the implementation of mitigation including a sensitive lighting scheme as detailed in Section 7.0.

6.3.2 Birds

The site contains trees, hedging and shrubs, all of which are suitable for nesting birds during the nesting season (1st March to 31st August inclusive). The proposed works involve the removal of some hedgerow habitat (H2) and the loss of bird nesting habitat. Evidence of nesting birds was found in the boundary trees and hedging.

It is recommended therefore that hedge removal and vegetation clearance works are only undertaken outside the nesting season to avoid destruction of active nests. Vegetation removal may only be undertaken during the nesting season if a careful check by a suitably experienced ecologist can confirm that no active nests are present. If bird nests are present within vegetation to be removed, they must be left in situ and not disturbed until all the young have fledged and cease to return to the nest.

There is a Moderate risk of bird species breeding within vegetated habitats and buildings at the Site. Due to the size of the site and low diversity of habitats there is a Low risk of important bird assemblages being present. The site is considered to be of value at the Site/Local scale for breeding birds. The unmitigated impact of the proposed development is assessed as being minor adverse. Impacts would be reduced to Minor adverse-neutral with the mitigation provided in Section 7.0.

Neutral effects are predicted for Schedule 1 bird species, as the habitats expected to be impacted by the development are believed to be unused by these species. Nesting birds are vulnerable to construction impacts including direct destruction of nests and indirect disturbance. Without best practice measures to reduce the risks, minor impacts on local populations of nesting birds would be probable, but not significant.

6.3.3 Great Crested Newts and Amphibians

The application site is of low/negligible value to GCN. The terrestrial habitats bordering the garden comprise only small areas of suitable habitat and beyond comprising bare ground, cultivated arable land and hard standing of low value to GCN and so no further surveys are required. The site falls within the Green Risk Zone for GCN. The application site is considered to be of value at a Site only scale for great crested newt. The site was considered to be of negligible importance to any local great crested newt population, confidence in this assessment is high. This assessment was driven by the absence of possible breeding ponds ecologically connected to the site. GCN are not considered further in this report. Common toads require access to aquatic habitats in order to reproduce. Outside of the breeding season, toads can utilise a range of habitats including scrub, hedgerows, woodland, brash piles, buildings and private gardens. Due to the habitats present on site and within the wider landscape, the site is considered to be of some value for common toad, with confidence in this currently high. The boundary habitats within the site, hedgerows and scattered trees were considered to provide suitable sheltering and foraging opportunities for common toad.

6.3.4 Reptiles

The proposed works are not expected to result in the loss of any suitable reptile habitat. Although suitable reptile habitat is present adjacent to the site, they are in small quantities and would be unable to support a population in isolation. Reptiles are protected from killing or injury under Schedule 5 (Section 9) and of the Wildlife and Countryside Act 1981 (as amended). Further details of avoidance of injury to reptiles are given in the recommendations below. No further survey for reptiles is deemed necessary, as a precautionary measure, the following mitigation is recommended to avoid impacts on reptiles from the proposed works: Vegetation on site should be cut and maintained short (maximum height of 10cm) until the start of works, to discourage animals from using these areas. After these precautionary mitigation measures, we predict no impact on reptiles as a result of the development plans, and no further surveys are necessary.

The unmitigated impact of the proposed development is considered to be minor adverse-neutral due to the potential for loss/disturbance of habitat and the potential for killing and/or injury of reptiles during the clearance phase. This could be reduced to a neutral with the implementation of avoidance and mitigation as detailed in Section 7.0 which includes a precautionary approach to site clearance to prevent killing/injury of reptiles.

6.3.6 Invertebrates

One record of a red list invertebrate species, white-letter hairstreak *Satyrrium w-album*, was recorded within 2km of the site in the last 10 years. The closest records were 1.7km from the site. The site was considered largely sub-optimal to support a notable assemblage of invertebrates due to the developed nature of the site and limited connectivity. The boundary hedgerows contained native flora (including Elm *Ulmus minor*) and were considered to have greater potential. However, given their limited extent, structural diversity, and the restricted range of common flora observed, it was judged they were likely to support only a common invertebrate assemblage. The potential for individual NERC Act species (such as white-letter hairstreak *Satyrrium w-album*) to be present on site could not be discounted, however it was considered highly unlikely that the site would be of core importance to the local population. No further surveys are therefore recommended to adhere to legislation and planning policy.

Due to the common habitats present within the site, it is considered unlikely that the proposed works will significantly impact important populations of invertebrates. The proposed development offers good potential for enhancements, which will benefit invertebrates in the local area. Enhancements such as the planting of native trees and shrubs along the periphery of the buildings, gardens and parking areas would be beneficial to a wide variety of invertebrates. The site is considered to be of value at a **Site** only scale for invertebrates, with a **neutral** impact foreseen due to there being no habitat loss associated with the application. The impact would be reduced to **minor positive** with implementation of mitigation as recommended in Section 7.0.

6.3.7 Hedgehog and Brown Hare

There is a reasonable likelihood of Hedgehog presence on site. Hedgehogs are protected under Schedule 6 of the Wildlife and Countryside act (as amended) and is listed as a Priority Species under the UK Biodiversity Action Plan. The surrounding habitat of the site is considered suitable for hedgehogs. To maintain potential hedgehog routes within the site and between the site and further

habitats, we recommend that any new fencing, if installed, is porous and provides access openings for hedgehogs (see Appendix examples).

Due to the habitats present on site and within the wider landscape, and the number of records within the wider area for this species, the site is considered to be of site importance for hedgehogs, with confidence in this currently moderate. The site is considered to be of Site/Local value for terrestrial mammals with the unmitigated impact assessed as minor adverse-neutral during tidying up of the site and removal of any potential refugia/hibernacula. Impacts would be reduced to neutral with the implementation of mitigation measures as detailed in Section 7.0.

6.3.8 Otter, Water Vole and White-Clawed Crayfish: There is Negligible risk of Otter, Water Vole or White-Clawed Crayfish on site due a lack of suitable habitat.

6.3.9 Invasive Plant Species: No invasive plant or animal species listed on Schedule 9 of the Wildlife and Countryside Act (1981) (as amended) were recorded on the day of the survey.

6.3.10 Summary of Impacts at the Site

Ecological Feature	Scale of Value	Unmitigated Impact	Confidence Level	Residual or Long-Term Impact
Sites of International Importance	International	Neutral	Likely	-
Sites of National Importance	National	Neutral	Likely	-
Sites of Local Importance	District	Neutral	Likely	Neutral
Habitats	Parish	Neutral	Likely	Minor Positive
Green Infrastructure	Parish	Neutral	Likely	Neutral
Reptiles	Parish	Minor adverse-Neutral	Likely	Neutral
Great Crested Newts	Neutral	Neutral	Likely	Neutral
Rare/Scarce Plant Species	Low	Neutral	Certain	Neutral
Veteran Trees	Negligible	Negligible	Certain	-
Invertebrates	Parish/District	Minor adverse-Neutral	Likely	Neutral
Amphibians (excluding GCN)	Negligible	Negligible	Certain	-
Breeding Birds	Parish	Minor adverse	Likely	Minor adverse-Neutral
Wintering Birds	Negligible	Negligible	Certain	-
Aquatic Mammals	Negligible	Negligible	Certain	-
Terrestrial Mammals	Parish	Minor adverse-Neutral	Likely	Neutral
Roosting Bats	Parish	Neutral	Likely	Minor Positive
Foraging/Commuting Bats	Parish	Minor adverse-Neutral	Likely	Neutral

Table 7– Summary of ecological features, unmitigated impact and residual impact with mitigation

7. Avoidance, Mitigation & Compensation

The development proposals for this site have been considered in terms of the mitigation hierarchy (BSI 2013) ⁵. This consists of a 4-point framework of reference as reproduced below:

Avoidance, mitigation, compensation, and enhancement measures can be secured through planning conditions or obligations.

1. Avoidance should be the primary objective of any proposal.

If protected species are discovered on site either before or during the proposed works, all works should stop a suitably qualified ecologist should be contacted for advice on mitigation before continuing. Requirements below outline how impacts to reptiles, great crested newt, birds and small mammals such as hedgehogs can be avoided.

2. Mitigation measures aim to reduce or remove impacts.

Mitigation for this site should take the form of informed landscape planting and retention of boundary habitats to maintain a corridor for wildlife around and through the site.

3. Compensation is considered to be the last step on the hierarchy

Compensation 'should only be used in exceptional circumstances and as a last resort after all options for avoidance and mitigation have been fully considered' (BSI 2013). No compensation measures are considered necessary for these proposals.

4. Enhancement measures

These aim to provide opportunities for ecological gain as part of a development proposal in line with the NPPF13⁶. Suggestions for enhancement are provided below in Section 9.

⁵ BSI (2013). The British Standard BS 42020:2013 Biodiversity a Code of practice for planning and development

⁶ National Planning Policy Framework (NPPF) 2021

7.1 Ground Clearance Works-

- As per the recommendations above vegetation clearance and tree works across the site should ideally be performed outside of the active bird breeding season 1st March- 31st August inclusive. If this is not possible a bird surveyor should visit the site to check for evidence of nesting birds prior to any clearance works.
- Any artificial and natural refugia within the working areas (brush, grass, sheeting) would be hand-searched for the presence of reptiles and amphibians prior to commencement of any works.
- Care should be taken with regards to vegetation clearance and earthworks close to the trees and hedge bases due to potential disturbance to nesting birds, herpetofauna and small mammals.

7.2 Construction and Working Practices-

- The timing of any works will be sensitive to nesting birds. If possible, it is proposed that operations within the working area would preferably be started outside of the bird breeding season to minimise the risk of disturbance to breeding birds that have already commenced nesting. Once works commence birds are unlikely to start nesting within the working area. However, in order to avoid accidental harm to nesting birds, a 15m buffer zone will be marked around any nest using high visibility fencing to ensure that the nest is not disturbed, damaged or destroyed whilst in use.
- If any ground nesting birds are found to be nesting within or close to the working areas during the pre-inspection survey or clearance, a 25m standoff from the nest will be marked out and observed, within which no operational activity would be permitted until the breeding attempt had concluded.
- Bird and bat boxes will be erected on the boundary trees and the buildings to provide additional nesting and roosting opportunities and to compensate for potential disturbance to nesting birds. There is sufficient off-site habitat for nesting birds.
- In the event that protected species are discovered within the site, works would need to stop until the situation has been further assessed, and if necessary, a mitigation strategy developed and an application made for a site license.
- The site manager and other relevant staff will be briefed (by suitably qualified ecologist) on the possible presence of protected species in the area (Toolbox talk). Staff will be provided with information relating to the legislation which protects species and habitats and briefed on the procedures to prevent disturbance or destruction of individuals or their habitats. Staff will also be briefed on the emergency procedures to be implemented should protected species be found during clearance and construction works.
- Habitats removed, wherever possible will be replaced at the earliest opportunity with native or wildlife attracting species.
- Trenches, pits or holes dug on site that are to be left over night will be covered over or have a rough sawn piece of wood placed in them so that any wildlife that falls in can climb out safely;

- The proposed location of the site compounds and any material storage areas will not extend into more important habitats, notably the tree root protection areas RPA's. These key areas should be fenced off with Heras fencing or similar to prevent direct habitat disturbance.
- Care should also be taken if lighting any bonfires as these may be potential hedgehog refugia/hibernation sites. Any brash and log piles on site will be searched by hand before removal/burning (see above) and if discovered translocated to a suitable location.

7.3 Lighting-

- Any new external lights will be set on a motion detector and positioned in such a way that they do not shine on the adjacent hedgerows, woodland and pond area. Low intensity lighting should be used where possible in place of high intensity discharge or sodium lamps, this will minimize disturbance to foraging and commuting bats.

In accordance with the Bat Conservation Trust's publication Bats and artificial lighting (BCT, 2018) light pollution by artificial lighting will be kept to a minimum and light spillage avoided. The following specific mitigation will be put in place to minimize disturbance to bats caused by the lighting of the site. The following mitigation strategies have been taken from Bat Conservation Trust Landscape and Urban Design for Bats and Biodiversity (Gunnell et al., 2012) and other referenced sources:

Minimise light spill by eliminating any bare bulbs and upward pointing light fixtures. The spread of light should be kept near to or below the horizontal plane, by using as steep a downward angle as possible and/or shield hood. Flat, cut-off lanterns are best;

Use light sources that emit minimal ultra-violet light (van Langevelde and Feta, 2001) and avoid the white and blue wavelengths of the light spectrum, so as to avoid attracting insects and thus potentially reducing numbers in adjacent areas;

Limiting the height of lighting columns to eight metres and increase the spacing of lighting columns (Fure, 2006) can reduce the spill of light into unwanted areas;

Avoid using reflective surfaces under lights or light reflecting off windows (e.g. on to trees);

Only the minimum amount of light needed for safety and access should be used and or turned off when the site is not in use;

Artificial lighting proposals should not directly illuminate boundary habitats, which may be of value to foraging or commuting bats and birds (e.g. green corridors);

Lighting that is required for security reasons should use a lamp of no greater than 2000 lumens (150 Watts) and be PIR sensor activated, to ensure that the lights are not on only when required (Jones, 2000; Collins, 2016);

7.4 Tree Works-

- All middle aged and mature trees where possible to be retained and protected in line with British Standard: 5837:2012 “Trees in Relation to Design, Demolition and Construction”
- If tree removal is scheduled between the months of 1st March and 31st August then a breeding/nesting bird survey should be first undertaken by the ECoW.
- A search of any tree holes, cavities, flaking bark and dense creeping ivy will be undertaken to confirm the absence of any roosting bats, this is particularly important during the summer months when such features are used more frequently.
- In the event that any active nests are identified, no operational activity will be permitted within the stand-off zones until the breeding attempt had concluded.

7.5 Pollution Control-

Standard pollution prevention measures will be put in place including measures such as preventing dust by damping down bare ground and ensuring fuel is stored in bunded tanks. The Environment Agency PPG1 and PPG6 guidance on General Guide to the Prevention of Pollution and Working at Construction and Demolition Sites will be adhered to throughout the construction of the Proposed Development.

Liquid-

Many of the materials used in construction operations, such as oil, chemicals, cement, lime, cleaning materials and paint have the potential to cause serious pollution. All fuel, oil and chemical storage must be sited on an impervious base within a bund and secured. The base and bund walls must be impermeable to the material stored and of an adequate capacity.

Leaking or empty oil drums must be removed from the site immediately and disposed of via a licensed waste disposal contractor. The contents of any tank are to be clearly marked on the tank, and a notice displayed requiring that valves and trigger guns be locked when not in use. Concrete is highly alkaline and corrosive and can have a serious impact on groundwater, soil and watercourses. It is essential to take particular care with all works involving concrete and cement. Suitable provision is to be made for the washing out of concrete mixing plant or ready-mix concrete lorries so that washings do not flow into any drains or watercourse or seep underground.

Air, Noise and Vibration-

Contractors will be expected to take measures to minimize the presence of air borne dust during clearance and construction. If possible, any activities producing in excess of 70db should be avoided during the bird nesting season.

8. BIODIVERSITY ENHANCEMENT

The Natural Environment and Rural Communities Act 2006 (NERC) came into force on 1st October 2006. Under section 40 of the Act all public bodies have a duty to conserve biodiversity:

“Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.”

Section 40(3) of the Act explains that:

“Conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat”.

The duty applies to all local authorities and extends beyond just conserving what is already there to carrying out, supporting and requiring actions that may also restore or enhance biodiversity. This section sets out some measures which the developer should incorporate within the proposals to help maintain and improve the ecological value of the site generally during and after the proposed development.

8.1 Habitat Supplementation-

8.1.1 Birds – To increase nesting opportunities generally, nest boxes should be installed. Installation of the nest boxes will be supervised by ‘Eco- Check Ltd’ or an experienced ecologist to ensure the correct positioning for each species. The types of nest boxes will cover a range of species and could include;

- 2 x Eco-Roost/Schwegler (32mm)
- 2 x Eco-Roost/Schwegler (28mm)
- 2 x Eco-Roost/Schwegler wren roundhouse boxes
- 2 x Eco-Roost/Schwegler deep nest boxes for robins
- 2 x Eco-Roost/Schwegler house sparrow boxes

8.1.2 Bats- At present the availability of bat roosts within the site is limited. The combination of trees and grassland are valuable to foraging and commuting bats.

Bat Boxes- As a biodiversity enhancement and to compensate for the potential disturbance, areas for bats to roost in should be created and will include;

- 1 x Eco-Roost/Schwegler Hibernation Box
- 1 x Eco-Roost/Schwegler Kent Box
- 3 x Eco-Roost/Schwegler Bat Bricks

These boxes are to be installed on the boundary trees and buildings within the site, ideally one on each elevation to provide the best variation in temperature, shelter and flight lines. If only one elevation is used this should be south-east facing as this provides the most shelter and warmth.

8.1.3 Plant native broad-leaved trees. Suggested species include; blackthorn (*Prunus spinosa*), crab apple (*Malus sylvestris sens.str*), elder (*Sambucus nigra*), field maple (*Acer campestre*), guelder rose

(*Viburnum opulus*), hawthorn, honeysuckle (*Lonicera periclymenum*), holly (*Ilex aquifolium*) and English oak (*Quercus robur*) could be used to provide known benefit to wildlife.

8.1.4 A new native hedgerow could be created along the north boundary adjoining the arable field. Hedging will be planted between October and April when the ground is moist and free from frost, set out in a staggered pattern in two rows 40cms apart. The native species will consist of 50% Hawthorn (*Crataegus monogyna*) with a mixture of at least five of the following species: - Blackthorn (*Prunus spinosa*), Field Maple (*Acer Campestre*), Hazel (*Corylus Avellana*), Hornbeam (*Carpinus Betulus*), Holly (*Ilex aquafolium*), Dogwood (*Cornus Sanguinea*) and Guelder Rose (*Viburnum opulus*), See Table 11

The hedgerow shrubs will be planted as a mixture, but with the supplementary species (Guelder Rose, Spindle and Dog Wood) distributed in groups of 3 or 4 ensuring that the plants are incorporated into both rows and not in a single line within one row. The hedgerow shrubs will be individually protected by 0.6 m Tubex wide mouthed shrub guards supported by a 0.75 m pressure treated softwood stake, or by 0.6m spiral guards supported by a cane. The hedges will be maintained until fully established with losses replaced annually, and then managed by biennial flailing to achieve the characteristic low box profile shape. The proposed hedgerow mix is beneficial to wildlife and planting to the following specification;

PLANTING SCHEDULE				
HEDGEROW MIX (As necessary)				
SPECIES	DENSITY	AGE	ROOT	HEIGHT
10% Blackthorn (<i>Prunus spinosa</i>)	0.45m	1+1 or 1/1	BR	40-60cm
50% Hawthorn (<i>Crataegus monogyna</i>)	0.45m	1+1 or 1/1	BR	40-60cm
10% Guelder Rose (<i>Viburnum opulus</i>)	0.45m	1+1 or 1/1	BR	40-60cm
10% Dog Rose (<i>Rosa Canina</i>)	0.45m	1+1 or 1/1	BR	20-30cm
5% Dog Wood (<i>Cornus sanguinea</i>)	0.45m	1+1 or 1/1	BR	20-30cm
5% Holly (<i>Ilex aquifolium</i>)	0.45m	1+1 or 1/1	CG-3I	40-60cm
10% Hazel (<i>Corylus avellana</i>)	0.45m	1+1 or 1/1	BR	40-60cm

Table 8-Proposed Hedgerow Planting Mix

8.1.6 Areas of bare soil and disturbed ground to be seeded with a species rich wildflower grass seed mix such as Emorsgate EM-4 or Germinality WFG20 species rich amenity grass. This would make a positive contribution towards a biodiversity net gain as the existing grassland is predominantly rye grass.

9. Ecological Conditions and Recommendations for Further Surveys

The following advisory recommendations include:

Destruction of in-use nests or harm to adult birds caused by removal of trees/hedgerows on site during the main breeding bird season (1st March to 31st August). If works commence during this period a nesting bird survey must first be undertaken by an appointed ecological clerk of works (ECoW).

The marginal]vegetation and associated refuges and hibernacula provide suitable hedgehog, amphibian and reptile habitat. It is recommended that an Ecological Clerk of Works (ECoW) is appointed to supervise clearance of any suitable refugia/hibernacula.

We advise that before the commencement of construction, it is recommended that in line with the British Standard 42020:2013 Biodiversity – Code of practice for planning and development - that a Biodiversity Enhancement Strategy is submitted and approved. The role of this is to ensure that the identified risks to biodiversity are assessed and that suitable methods are adopted on site to minimise the risks through the production of a method statement. The document is also to ensure that biodiversity protection zones are enforced.

The site and adjacent habitats may be used as a commuting/foraging corridor by bats and so a sensitive lighting scheme should be implemented to limit light spillage, particularly on the boundary trees and hedging and woodland to the south.

The suggested conditions below are based on BS42020:2013 and in terms of biodiversity net gain, the enhancements proposed will contribute to this aim. Recommended conditions:

PRIOR TO COMMENCEMENT: COMPLIANCE WITH ECOLOGICAL REPORT RECOMMENDATIONS

“All ecological mitigation and enhancement measures and/or works shall be carried out in accordance with the details contained within the report (Eco-Check, January 2023), as submitted with the planning application and agreed with the local planning authority prior to determination.”

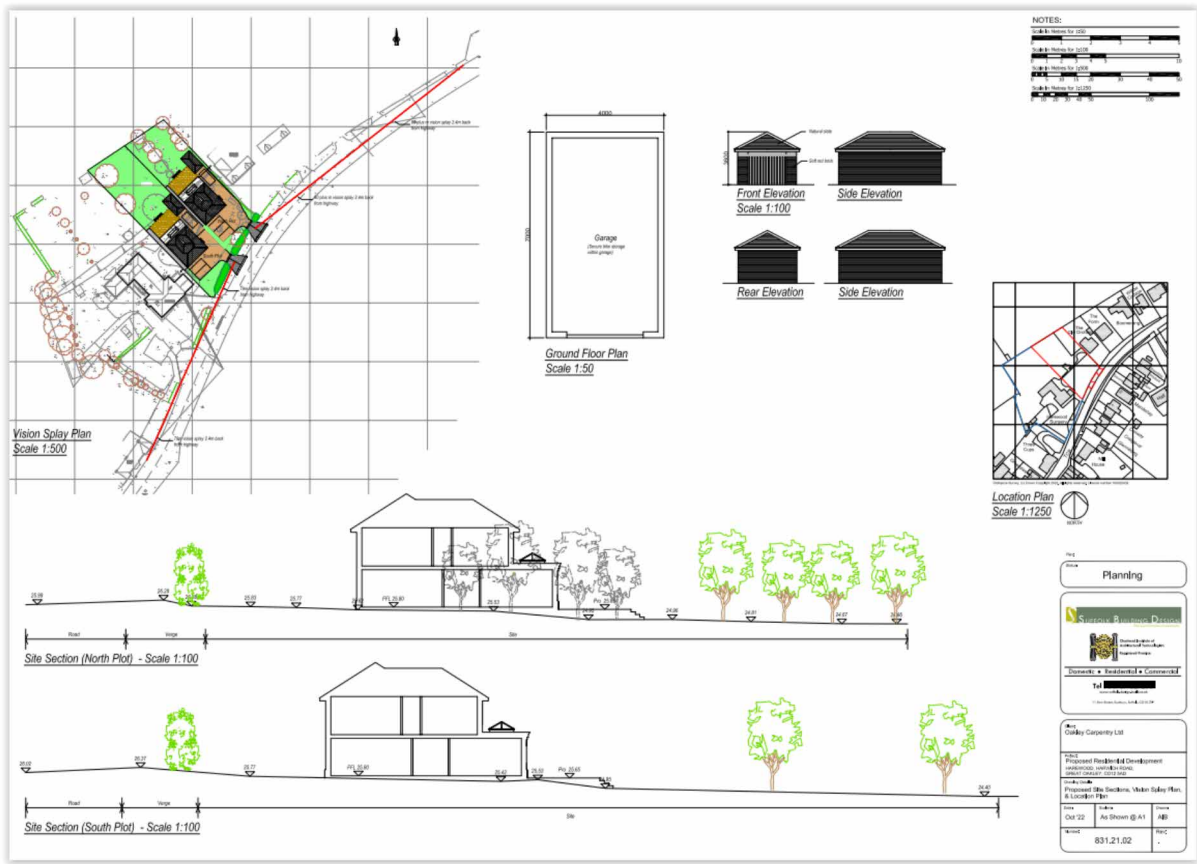
“A ‘statement of good practice’ shall be signed upon completion by the competent ecologist, and be submitted to the LPA, confirming that the specified enhancement measures have been implemented in accordance with good practice upon which the planning consent was granted’.

Reason: To conserve and enhance Protected and Priority species and allow the LPA to discharge its duties under the UK Habitats Regulations, the Wildlife & Countryside Act 1981 as amended and s40 of the NERC Act 2006 and s17 Crime & Disorder Act 1998.

10. REFERENCES

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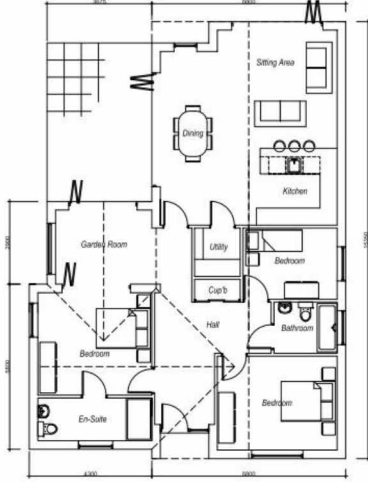
Appendix 1



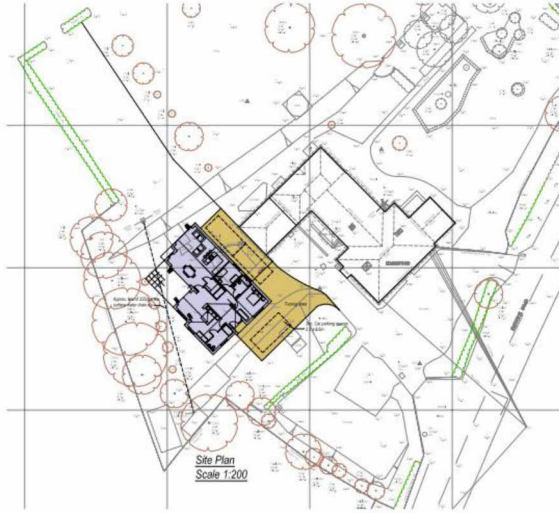


Front Elevation
Scale 1:100

NOTES
 1. All dimensions in mm
 2. All dimensions in mm
 3. All dimensions in mm



Floor Plan
Scale 1:50



Site Plan
Scale 1:200

Feasibility

Survey & Planning Division

Department of Environment & Heritage

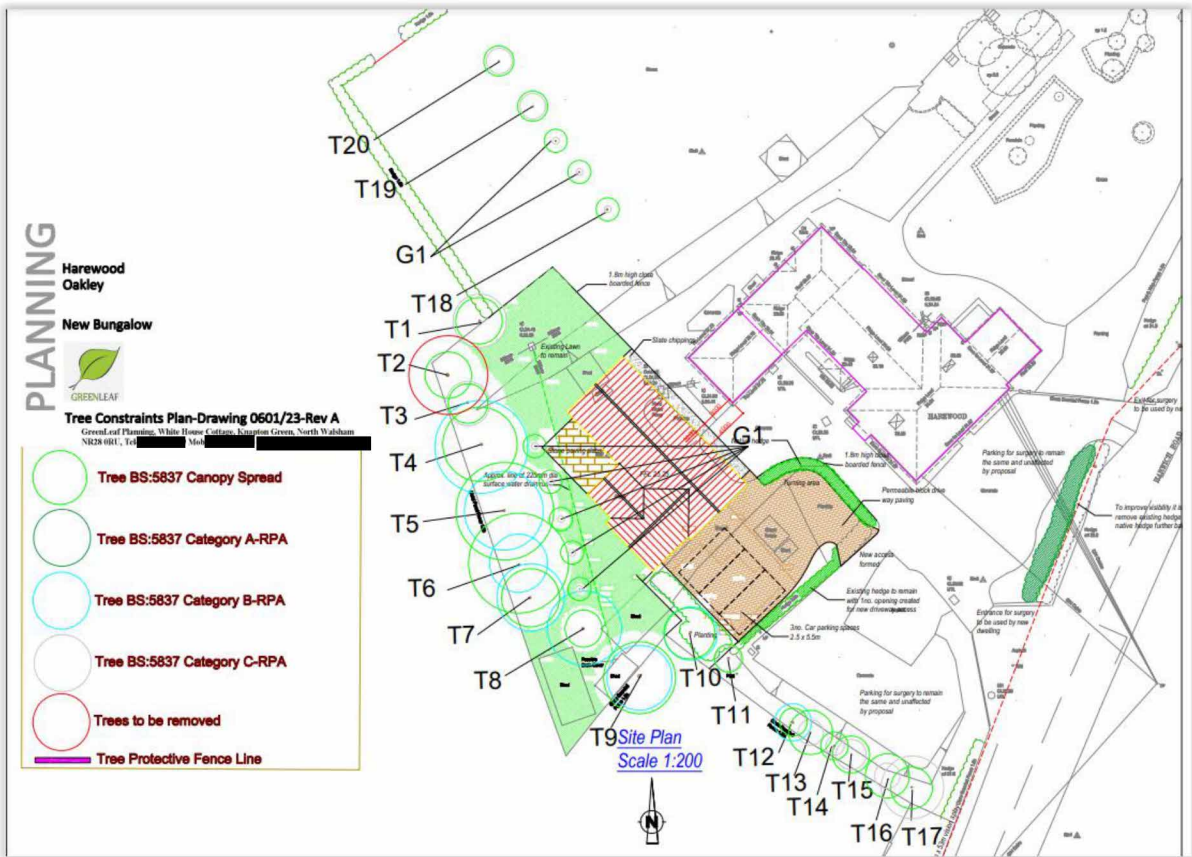
Project No. 846.22.01

Project Name: Proposed Residential Development

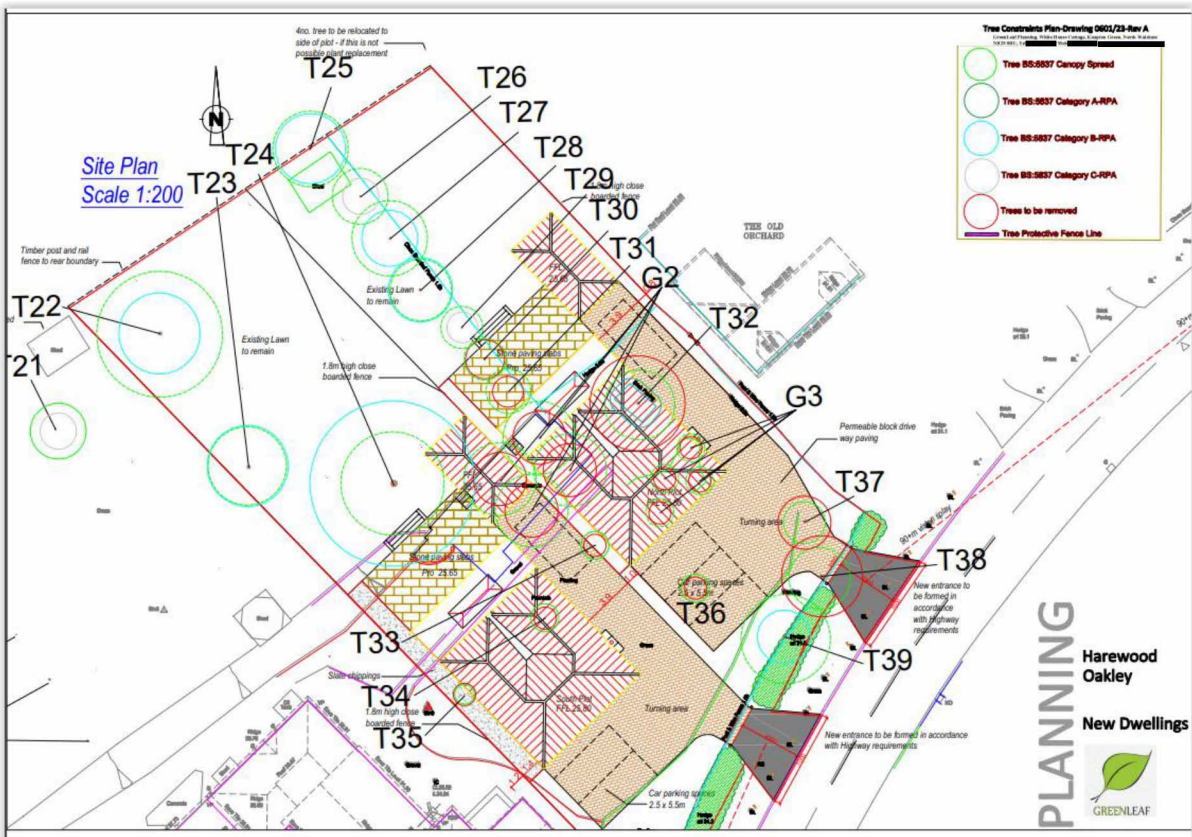
Project No. 846.22.01

Project No. / Site Name & Division

Site No.	846.22.01	Site	-
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Tree Constraints Plan- Plot 1



Tree Constraints Plan- Plots 2 & 3

Appendix 2



(Left) Raised bed and doctor's surgery, (right) ornamental shrubs and parking area



(Left) Timber shed (right) Patio and ornamental cherry trees



(Left) Beech hedgerow H1, (right) West boundary fence and tree line



(Left) Amenity grassland and scattered trees, (right) Ornamental plans and shrubs and hedge H2

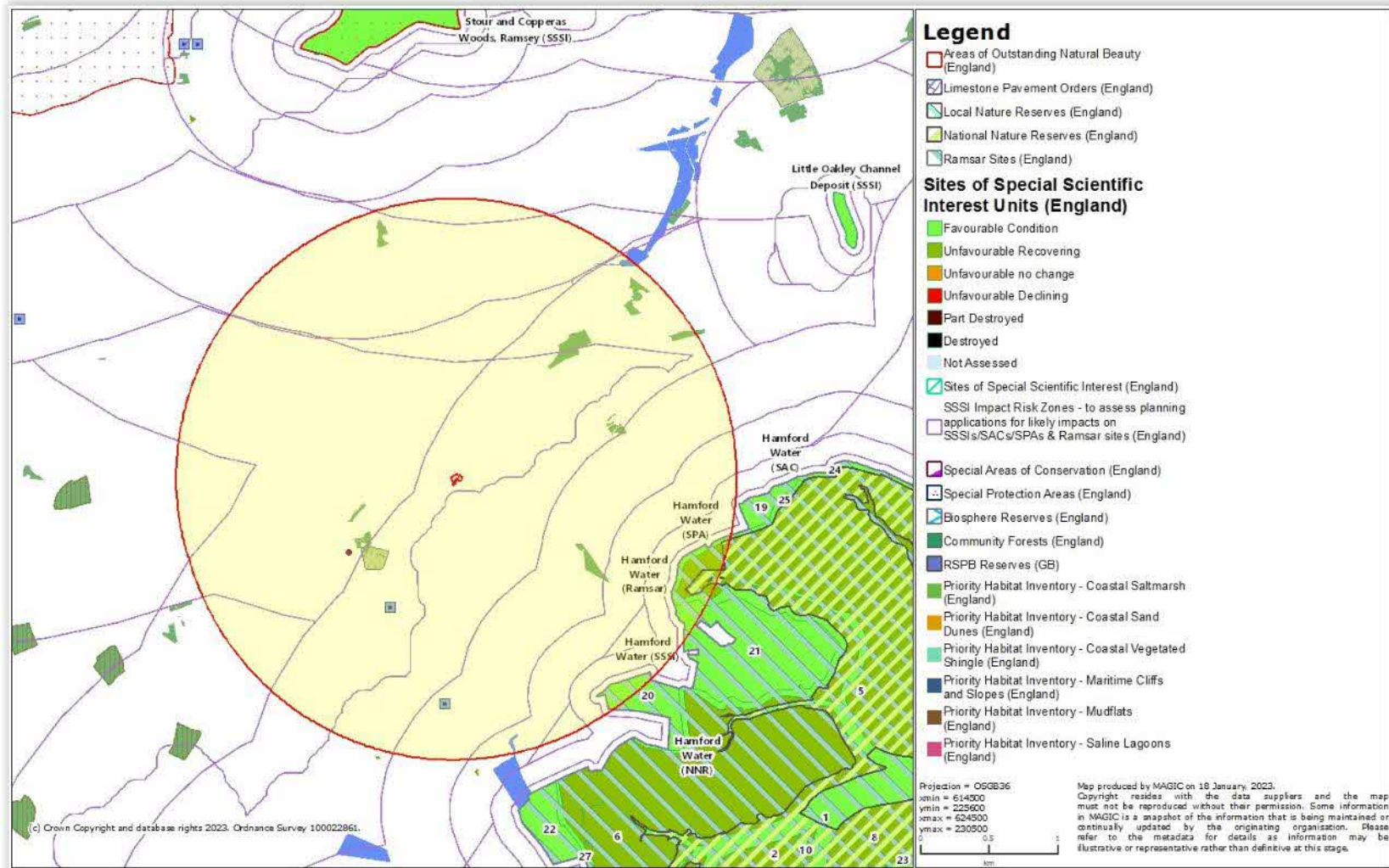


(Left) Ornamental hedging (right) Wood pile



(Left) Doctor's surgery and bare ground, (right) Birds nest in garden tree

Appendix 3



Map of Statutory Wildlife Sites and Priority Habitats – Magic Map

Taxon_grou	Taxon_Name	Common_Nam	Sample_Dat	Location	Abundance	Record_Typ	Obs_Commen	Survey_Nam
bird	Cuculus canorus	Cuckoo	01/05/2012	Beaumont cum Moze	1 Count	auditory record		Essex Wildlife Trust General Records
bird	Cuculus canorus	Cuckoo	27/04/2012	Great Oakley, Holt Farm	1 Count of Adult	auditory record	Heard at 6am. original grid ref	Essex Wildlife Trust General Records
bird	Cuculus canorus	Cuckoo	10/05/2012	Great Oakley	1 Count of Adult	Sighting	flying over gardens	Essex Wildlife Trust General Records
bird	Dendrocopos major	Great Spotted Woodpecker	23/04/2017	Glebe Wood Te97	Present Count	field record		EWT LRC website - General records
flowering plant	Euphorbia amygdaloides	Wood Spurge	23/04/2017	Soils Wood Te110	Present Count	field record		EWT LRC website - General records
insect - beetle (Coleoptera)	Lucanus cervus	Stag Beetle	20/06/2016	Tendring District	present Count	field record		National Stag Beetle Surveys (Great Stag Hunt)
insect - moth	Timandra comae	Blood-vein	16/08/2015	Great Oakley	2 Count	None	Parkpail Farm FP	Butterfly Conservation Records - Moths only
insect - moth	Tyria jacobaeae	Cinnabar	16/08/2015	Great Oakley	1 Count	None	Parkpail Farm FP	Butterfly Conservation Records - Moths only
terrestrial mammal	Erinaceus europaeus	West European Hedgehog	2015	Tendring District	Present Count	Dead	Roadkill	Big Hedgehog Map
terrestrial mammal	Erinaceus europaeus	West European Hedgehog	2015	Tendring District	Present Count	field record		Big Hedgehog Map
terrestrial mammal	Erinaceus europaeus	West European Hedgehog	2015	Tendring District	Present Count	field record		Big Hedgehog Map
terrestrial mammal	Erinaceus europaeus	West European Hedgehog	2015	Tendring District	Present Count	field record		Big Hedgehog Map
terrestrial mammal	Erinaceus europaeus	West European Hedgehog	2017	Tendring District	Present Count	Dead	Roadkill	Big Hedgehog Map
terrestrial mammal	Erinaceus europaeus	West European Hedgehog	2018	Great Oakley		field record		Big Hedgehog Map
terrestrial mammal	Erinaceus europaeus	West European Hedgehog	2018	Great Oakley		field record		Big Hedgehog Map
terrestrial mammal	Erinaceus europaeus	West European Hedgehog	2018	Great Oakley		field record		Big Hedgehog Map
terrestrial mammal	Erinaceus europaeus	West European Hedgehog	2018	Great Oakley		field record		Big Hedgehog Map
terrestrial mammal	Erinaceus europaeus	West European Hedgehog	2018	Great Oakley		field record		Big Hedgehog Map
terrestrial mammal	Erinaceus europaeus	West European Hedgehog	2018	Great Oakley		field record		Big Hedgehog Map
terrestrial mammal	Erinaceus europaeus	West European Hedgehog	2018	Great Oakley		field record		Big Hedgehog Map
terrestrial mammal	Erinaceus europaeus	West European Hedgehog	2018	Great Oakley		field record		Big Hedgehog Map
terrestrial mammal	Erinaceus europaeus	West European Hedgehog	2018	Great Oakley		field record		Big Hedgehog Map
terrestrial mammal	Pipistrellus	Pipistrelle Bat species	17/06/2006	Great Oakley	1 Count	not recorded	2006 Roadside Bat & Mamma	Essex Bat Group Records
terrestrial mammal	Pipistrellus	Pipistrelle Bat species	17/06/2006	Great Oakley	1 Count	not recorded	2006 Roadside Bat & Mamma	Essex Bat Group Records
terrestrial mammal	Pipistrellus	Pipistrelle Bat species	06/12/2014	Great Oakley	present Count of Roost	field record	sensitive data; see license rest	Natural England bat roost visit records from NBN Atlas
terrestrial mammal	Pipistrellus pipistrellus	Common Pipistrelle	17/06/2006	Great Oakley	1 Count	not recorded	2006 Roadside Bat & Mamma	Essex Bat Group Records
terrestrial mammal	Pipistrellus pipistrellus	Common Pipistrelle	17/06/2006	Great Oakley	1 Count	not recorded	2006 Roadside Bat & Mamma	Essex Bat Group Records

Record of Protected/Priority Species within 2km

Table 6.1 Guidance on the optimal timing for carrying out specialist ecological surveys and mitigation

This is not definitive and is intended to provide an indication only. The timing of surveys and animal activity will be dependent on factors such as weather conditions. Please consult the *species briefing sheets* for more detailed information, including species distribution.

KEY	
	Recommended survey time
	No surveys
	Mitigation conducted at these times
	Mitigation works restricted

- * Where survey techniques involve the capture, handling or disturbance of protected species then only licensed persons can undertake surveys; personal survey and monitoring licences are obtained from English Nature, Countryside Council for Wales, Environment and Heritage Service (NI) or Scottish Natural Heritage
- ** Where mitigation involves the killing, capture, injury and/or disturbance of protected species and/or the damage, destruction or obstruction of their habitats, a development licence must be obtained from the Department for Food and Rural Affairs (England), Scottish Executive's Environment and Rural Affairs Department, Welsh Assembly (Countryside Division) or the Environment and Heritage Service Northern Ireland. Licences will be granted only to persons who have proven competence in dealing with the species concerned. Development licence applications take approximately 30 days to be processed by government departments. Where mitigation works need to be conducted under licence before works begin, licence applications will need to be submitted considerably earlier.

		Licence required?	J	F	M	A	M	J	J	A	S	O	N	D
Habitats / vegetation	Surveys	N	Mosses and lichens. No other detailed plant surveys - Phase 1 surveys only (least suitable time)			Detailed habitat assessment surveys. Surveys for higher plants and ferns. Mosses and lichens in April, May and September only						Mosses and lichens. No other detailed plant surveys - Phase 1 surveys only (least suitable time)		
	Mitigation	N	Planting and translocation		No mitigation for security of species						Planting and translocation			
Birds	Surveys	N	Winter birds		Breeding birds / migrant species			Breeding birds		Breeding birds / migrant species		Winter birds		
	Mitigation	N	Clearance works may be conducted at this time, but must stop immediately if any nesting birds are found		No clearance or construction works. Bird nesting season						Clearance works may be conducted at this time, but must stop immediately if any nesting birds are found			
Badgers	Surveys	*	All survey methods - best time is in spring and early autumn / winter											
	Mitigation	**	Building of artificial setts - no disturbance of existing setts						Stopping up or destruction of existing setts					
Bats	Surveys	*	Inspection of hibernation, fire and building roosts		No surveys		Active surveys and inspection of hibernation roosts. Emergence counts.				No surveys		Inspection of hibernation, fire and building roosts	
	Mitigation	**	Works on watercourse courses		Works exclusively above spill and May. Works on hibernation roosts from mid-March		Works on hibernation roosts only		Removal work June-October. Refurbish roosts from end September		Works on watercourse courses only			

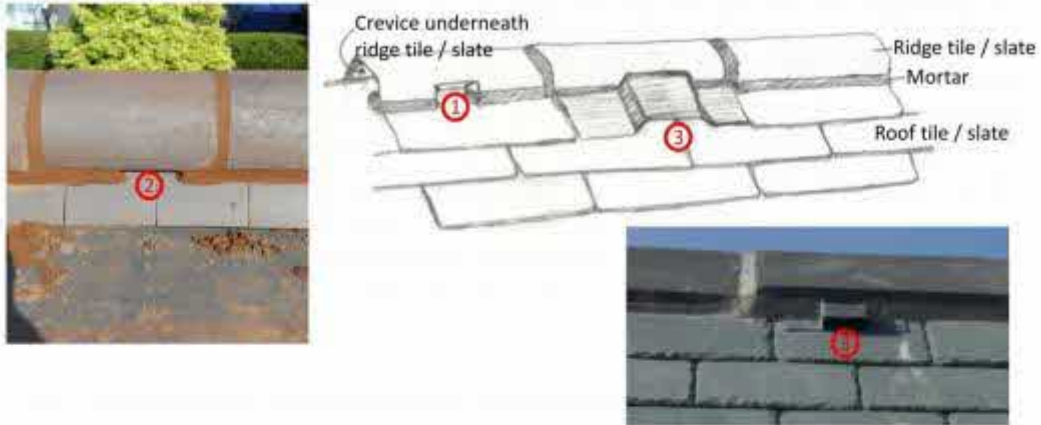
Table 6.1 Guidance on the optimal timing for carrying out specialist ecological surveys and mitigation (continued)

		Licence required?	J	F	M	A	M	J	J	A	S	O	N	D
Other reptiles	Surveys	N	No surveys - reptiles in hibernation		Active surveys from March to June and in September / October. Surveys are limited by high temperatures during July and August. Peak survey records are April, May and September.								No surveys - reptiles in hibernation	
	Mitigation	N	Scrub clearance		Capture and translocation programmes can only be conducted whilst reptiles are active (March to June and September / October). Trapping is limited by high temperatures during July / August. Scrub clearance								Scrub clearance	
Great crested newts (n/a in NI)	Surveys	*	No surveys - newts in hibernation		Pond surveys for adults mid-March to mid-June. Surveys must include visits undertaken between mid-April and mid-May. Egg surveys April to mid-June. Larvae surveys from mid-May. Terrestrial habitat surveys			Larvae surveys to mid-August. Terrestrial habitat surveys		Terrestrial habitat surveys		No surveys - newts in hibernation		
	Mitigation	**	No trapping of newts. Pond management only		Newt trapping programmes - in ponds and on land						Newt trapping on land only			No trapping of newts. Pond management only
Natterjack toads	Surveys	*	No surveys - toads in hibernation		Surveys of breeding ponds for adults. Surveys for tadpoles from May onwards. Surveys for adults on land				Surveys for adults on land		No surveys - toads in hibernation			
	Mitigation	**	Pond management works		Trapping of adults in ponds from April to July. Trapping of adults on land. Trapping of tadpoles from May to early September						Pond management works			
White-clawed crayfish	Surveys	*	Reduced activity		Surveys can be undertaken		Avoid surveys (females and releasing young)		Optimum time for surveys				Reduced activity	
	Mitigation	***	Avoid capture programmes. Use active traps only. Avoid any work to improve being easily missed		Exclusion of crayfish from construction areas		Avoid capture programmes		Exclusion of crayfish from construction areas				Avoid capture programmes. Use active traps only. Avoid any work to improve being easily missed	
Fish	Surveys	*	For coastal, river and stream-dwelling species, the timing of surveys will depend on the migration pattern of the species concerned. Where surveys require information on breeding, the timing of surveys will need to coincide with the breeding period, which may be summer or winter months, depending on the species.											
	Mitigation	**	Mitigation for the protection of watercourses is required at all times of year. Mitigation for particular fish species will need to be timed so as to avoid the breeding season. This varies from species to species.											

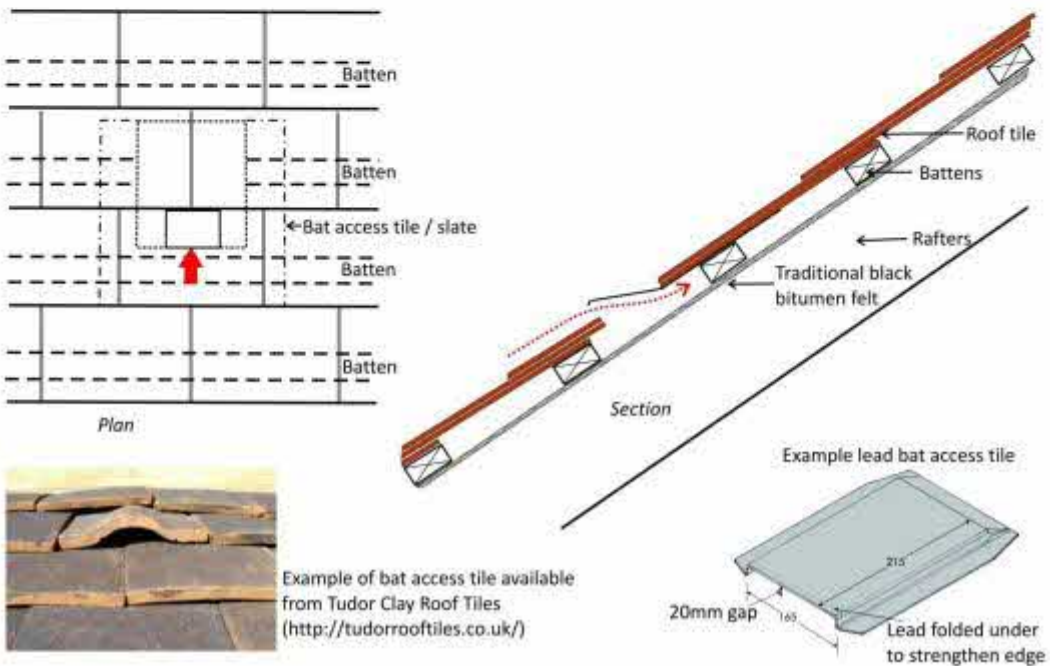
*** Where mitigation involves the capture of white-clawed crayfish, a mitigation licence must be obtained from English Nature, Countryside Council for Wales, Environment and Heritage Service (NI) or Scottish Natural Heritage. Licences will be granted only to persons who have proven competence in dealing with the species concerned.

Bat Ridge Tile Design

Ridge tiles with section of edge cut away to leave an access hole measuring 15mm-20mm high by 50mm-70 mm long (*shown as 1*); or an access hole of similar dimensions created by leaving an area free of mortar (*shown as 2*), or by straddling two tiles with a third (*not shown*) to leave an appropriate gap. If necessary (i.e. if weather ingress is considered a problem (e.g. where ridges are in very exposed locations)), a lead 'saddle' (*shown as 3*) should be used to increase the distance from the entry hole to the ridge hole.



Bat Access Tile Design



Examples of Bat Boxes

It is important that the bat boxes are positioned sufficiently high above the ground to dissuade ground predators, a minimum of 4m up; and at a distance from sources of artificial lighting. The boxes should be located on the west, south and east facing sides of the trees / buildings giving bats a range of microclimates through the year and direct access to foraging and commuting habitat along site boundaries.

Schwegler 1FF Bat Box		The 1FF bat box can be sited in trees or on buildings. Size: 43cm high x 27cm wide x 14cm deep.
Schwegler 2F Bat Box		The 2F bat box can be sited in trees or on buildings. Size: 33cm high x 16cm diameter.
1FQ Schwegler Bat Roost (For External Walls)		Suitable for a variety of crevice-dwelling bats, for larger roosts or maternity groups. Internal layout provides 3 different areas where bats can roost, offering different levels of light and temperature. Gaps ranging from 1.5cm to 3.5cm wide offering various places for bats to roost. Suitable to erect on most types of external brick, timber or concrete structures. Size: 60cm high x 35cm wide x 9cm deep.
Improved Roost-Maternity Bat Box		A large 3 crevice bat box. 3 separate crevices each with different temperature characteristics. Suitable for larger roosts or maternity groups of small crevice-dwelling species such as pipistrelle bats. Suitable to erect on buildings or trees. Size: 49cm high x 26cm wide x 13cm deep.
Timber Double Chamber Bat Box		This bat box is suitable for siting on trees in gardens or woodland and requires no annual maintenance. Should not be painted or treated with any type of preservative, as these can harm the bats. Size: 31.3cm high x 16cm wide x 16cm deep.
The Kent Bat Box		Made from untreated rough-sawn timbers ca.20mm thick. Crevices can be between 15mm and 25mm wide. Suitable to fit to walls, other flat surfaces or trees. Approximate dimensions (boxes vary in size): 24cm wide x 47.5cm high x 17cm deep.

Bird Nesting Habitat

CedarPlus Nest Box

Available with 2 entrance hole sizes:

32mm hole – suitable for great, marsh and coal tits, redstart, nuthatch, pied flycatcher, house sparrow and tree sparrows.

26mm hole – to allow access only to blue, marsh and coal tits (and possibly wrens).

Height: 370mm; Width: 156mm; Depth: 175mm



Schwegler 1B Bird Box

The 1B nest box will attract a wide range of species and is available with different entrance hole sizes to prevent birds from competing with each other for the boxes.

It is available in 4 colours: brown, green, white and red. The nest box can be attached to the tree or wall using an aluminium nail or by hanging over a branch and is made from Woodcrete to ensure that it is long-lasting.

Entrance hole sizes:

32mm hole – will attract great, blue, marsh, coal and crested tit, redstart, nuthatch, collared and pied flycatcher, wryneck, tree and house sparrow.

26mm hole – suits blue, marsh, coal and crested tit and possibly wren. All other species are prevented from using the nest box due to the smaller entrance hole.

Oval hole (29x55mm) – suits redstarts because more light enters the brood chamber. It is also suitable for all other species which nest in the 32mm boxes.

Height: 23cm; Diameter: 16cm



No. 10 Schwegler Swallow Nest

The Swallow Nest No. 10 consists of a woodcrete nesting bowl which is attached to a wooden panel of formaldehyde-free chipboard. The nest should be placed inside outbuildings such as sheds, barns or stables leaving a distance of at least 35mm between the top of the nest and wall top. Ensure there is always access for the birds through an open window or skylight, or other high level access (minimum of 50mm (H) x 70mm (W) gap). Multiple nests should not be placed at less than 1m intervals.

To avoid problems with droppings accumulating, a droppings board could be placed beneath each nest box to collect the droppings.



Eco-Roost Bat Brick



Eco-Roost Double Chamber Bat Box



Eco-Roost Double Kent Box



Eco-Roost 28mm, 32mm and Open fronted bird boxes





Artificial lighting and wildlife

Interim Guidance: Recommendations to help minimise the impact artificial lighting

Wherever human habitation spreads, so does artificial lighting. This increase in lighting has been shown to have an adverse effect on our native wildlife, particularly on those species that have evolved to be active during the hours of darkness. Consequently, development needs to carefully consider what lighting is necessary and reduce any unnecessary lighting, both temporally and spatially. When the impacts on different species groups are reviewed, the solutions proposed have commonalities that form the basis of good practice. These are outlined in the following document.

Overview of impacts

Invertebrates

Artificial light significantly disrupts natural patterns of light and dark, disturbing invertebrate feeding, breeding and movement, which may reduce and fragment populations. Some invertebrates, such as moths, are attracted to artificial lights at night. It is estimated that as many as a third of flying insects that are attracted to external lights will die as a result of their encounter.¹ Insects can become disoriented and exhausted making them more susceptible to predation. In addition, the polarisation of light by shiny surfaces attracts insects, particularly egg laying females away from water. Reflected light has the potential to attract pollinators and impact on their populations, predators and pollination rates. Many invertebrates natural rhythms depend upon day-night and seasonal and lunar changes which can be adversely affected by artificial lighting levels.

It is not always easy to disentangle the effects of lighting on moths from other impacts of urbanisation. However, it is known that UV and green and blue light, which have short wavelengths and high frequencies, are seen by most insects and are highly attractive to them. Where a light source has a UV component, male moths in particular will be drawn to it. Most light-induced changes in physiology and behaviour are likely to be detrimental. They discern it to be 'light', so they do not fly to feed or mate.²

Birds

There are several aspects of changes to bird behaviour to take into account. The phenomenon of robins and other birds singing by the light of a street light or other external lighting installations is well known, and research has shown that singing did not have a significant effect on the bird's body mass regulation. However, it was felt that the continual lack of sleep was likely to be detrimental to the birds' survival and could disrupt the long-term circadian rhythm that dictates the onset of the breeding season³. Many species of bird migrate at night and there are well-documented cases of the mass mortality of nocturnal migrating birds as they strike tall lit buildings. Other UK bird species that are particularly sensitive to artificial lighting are long-eared owls, black-tailed godwit and stone curlew.⁴

¹ Bruce-White C and Shardlow M (2011) A Review of the Impact of Artificial Light on Invertebrates - See more at: <http://www.buglife.org.uk/advice-and-publications/publications/campaigns-and-reports/review-impact-artificial-light#sthash:s7GPA1vL.dpuf>

² As above

³ Pollard A. (2009) Visual constraints on bird behaviour. University of Cardiff

⁴ Rodriguez A., Garcia A.M., Cervera F. and Palacios V. (2006) Landscape and anti-predation determinants of nest site selection, nest distribution and productivity in Mediterranean population of Long-eared Owls, *Asio otus*. *Ibis*, 148(1), pp. 133-145

Mammals

A number of our British mammals are nocturnal and have adapted their lifestyle so that they are active in the dark in order to avoid predators. Artificial illumination of the areas in which these mammals are active and foraging is likely to be disturbing to their normal activities and their foraging areas could be lost in this way. It is thought that the most pronounced effect is likely to be on small mammals due to their need to avoid predators. However, this in itself has a knock-on effect on those predators.

The detrimental effect of artificial lighting is most clearly seen in bats. Our resident bat species have all suffered dramatic reductions in their numbers in the past century. Light falling on a bat roost exit point, regardless of species, will at least delay bats from emerging, which shortens the amount of time available to them for foraging. As the main peak of nocturnal insect abundance occurs at and soon after dusk, a delay in emergence means this vital time for feeding is missed. At worst, the bats may feel compelled to abandon the roost. Bats are faithful to their roosts over many years and disturbance of this sort can have a significant effect on the future of the colony. It is likely to be deemed a breach of the national and European legislation that protects British bats and their roosts.

In addition to causing disturbance to bats at the roost, artificial lighting can also affect the feeding behaviour of bats and their use of commuting routes. There are two aspects to this: one is the attraction that short wave length light (UV and blue light) has to a range of insects; the other is the presence of lit conditions.

As mentioned, many night-flying species of insect are attracted to lamps that emit short wavelength component. Studies have shown that, although noctules, serotines, pipistrelle and Leisler's bats, take advantage of the concentration of insects around white street lights as a source of prey, this behaviour is not true for all bat species. The slower flying, broad-winged species, such as long-eared bats, barbastelle, greater and lesser horseshoe bats and the *Myotis* species (which include Brandt's, whiskered, Daubenton's, Natterer's and Bechstein's bats) generally avoid external lights.

Lighting can be particularly harmful if it illuminates important foraging habitats such as river corridors, woodland edges and hedgerows used by bats. Studies have shown that continuous lighting along roads creates barriers which some bat species cannot cross⁵. It is also known that insects are attracted to lit areas from further afield. This could result in adjacent habitats supporting reduced numbers of insects, causing a further impact on the ability of light-avoiding bats to feed.

These are just a few examples of the effects of artificial lighting on British wildlife, with migratory fish, amphibians, some flowering plants, a number of bird species, glow worms and a range of other invertebrates all exhibiting changes in their behaviour as a result of this unnatural lighting.

Recommendations

Survey and Planning

The potential impacts of obtrusive light on wildlife should be a routine consideration in the Environmental Impact Assessment (EIA) process⁶. Risks should be eliminated or minimised wherever possible. Some locations are particularly sensitive to obtrusive light and lighting schemes in these areas should be carefully planned.

In August 2013, Planning Minister Nick Boles launched the new National Online Planning Guidance Resource aimed at providing clearer protection for our natural and historic environment. The guidance looks at when lighting pollution concerns should be considered and is covered within one of the on line planning practice

⁵ Stone E. L., Jones G and Harris (2009) Street lighting disturbs commuting bats. *Current Biology*, 19, pp 1-5

⁶ See also: Institution of Lighting Professionals - Professional Lighting Guide (PLG 04) Guidance on undertaking lighting environmental impact assessments)

guides⁷. The guide provides an overview for planners with links to documents that aim to give planners an overview of the subject through the following discussion points:

1. When is obtrusive light / light pollution relevant to planning?
2. What factors should be considered when assessing whether a development proposal might have implications for obtrusive lighting / light pollution?
3. What factors are relevant when considering where light shines?
4. What factors are relevant when considering how much the light shines?
5. What factors are relevant when considering possible ecological impact?

This can help planners reach the right design through the setting of appropriate conditions relating to performance and mitigation measures at the planning stage.

The Institution of Lighting Professionals (ILP) recommends that Local Planning Authorities specify internationally recognised environmental zones for exterior lighting control within their Development Plans⁸. In instances lacking classification, it may be necessary to request a Baseline Lighting Assessment/Survey conducted by a Lighting Professional in order to inform the classification of areas, particularly for large-scale schemes and major infrastructure projects.

When assessing or commissioning projects that include the installation of lighting schemes, particularly those subject the EIA process, the following should be considered and relayed to applicants:

- *Ecological consultants should confirm the presence of any sensitive fauna and flora*, advising the lighting designers of bat routes and roosts and other areas of importance in order to ensure that reports correspond with each other.
- *Ecological consultants should consider the need for quantitative lighting measurements*. In some instances it may be necessary for further lighting measurements to be taken. For example, outside an important bat roost. These should follow best practice guidance from the ILP and would ideally be conducted by a Lighting Professional.
- *Where appropriate, professional lighting designers should be consulted* to design and model appropriate installations that achieve the task but mitigate the impacts. This should be done at the earliest opportunity. Early decisions can play a key role in mitigating the impact from lighting.
- *Reports submitted should outline the impacts of lighting in relation to ecology*, making clear reference to the ecological findings, highlighting any sensitive areas and detail proposed mitigation. Consideration should also be given to internal lighting where appropriate.
- *Post -installation checks and sign off upon commissioning should be carried out by the lighting designer* to ensure that the lighting installation has been installed in accordance with the design, that predictions were accurate and mitigation methods have been successful.

Principles and design considerations

Do not

- *provide excessive lighting*. Use only the minimum amount of light needed for the task.
- *directly illuminate bat roosts* or important areas for nesting birds

Avoid

- *installing lighting in ecologically sensitive areas* such as: near ponds, lakes, rivers, areas of high conservation value; sites supporting particularly light-sensitive species of conservation significance (e.g. glow worms, rare moths, slow-flying bats) and habitat used by protected species.
- *using reflective surfaces under lights*.

⁷<http://planningguidance.planningportal.gov.uk/blog/guidance/light-pollution/when-is-light-pollution-relevant-to-planning/>

⁸Institution of Lighting Professionals (2011) Guidance Notes for the Reduction of Obtrusive Light GN01:2011.