

**PRELIMINARY ECOLOGICAL APPRAISAL**  
**PROPOSED RESIDENTIAL DEVELOPMENT AT WILLOWMERE, GARDEN**  
**HOUSE LANE, RICKINGHALL, DISS, IP22 1EA**



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## Non-Technical Summary

*The following summary is an extract of the report. Please ensure the report is read in its entirety for detailed survey findings.*

Introduction: Eco-Check was commissioned in June 2022 to undertake an ecological survey of a site on Willowmere, Garden House Lane, at Rickinghall. The site is centred grid reference: TM04947558. An ecological and protected species survey was conducted on 2<sup>nd</sup> June 2022 by James Hodson MSc (Bat Survey License 2017-30927-CLS-CLS, Great Crested Newt Licence 2018-36283-CLS-CLS). An inspection was made of the proposed construction area to assess the ecological value of the site and the likely presence/absence of any protected species, UK/Suffolk BAP species and habitats and provide recommendations for further investigations where necessary.

The footprint of the proposed site development comprises bare ground, buildings, scattered trees, scrub, semi and improved grassland and some tall ruderal vegetation. The site is bounded by hedging trees and fencing. The main ecological value of the study areas is the abundant scrub vegetation in association with the rank grassland, boundary trees, hedges and abundance of refuges and hibernaculum within brash and rubble piles and stored building materials. These habitats are of greater ecological value primarily as cover and foraging habitat for small mammals, herpetofauna and nesting birds and as a foraging and commuting corridor for bats. It is our opinion that these areas represent a significant aspect of the ecology of the study area.

Based on the habitat type present, it is considered that the site has potential to support the following protected species or groups of species: invertebrates (common and widespread species), nesting and breeding birds, common terrestrial mammals, reptiles and foraging/commuting bats.

In the absence of mitigation, the proposed development would give rise to a minor adverse impact on breeding birds, a minor adverse-neutral impact on terrestrial mammals and a minor-adverse-neutral impact on habitats, invertebrates and foraging/commuting bats. As the site is not within 2km of any statutory sites no direct or indirect impacts are anticipated. Mitigation has been proposed which would reduce the overall impact to minor adverse-neutral, including:

- Avoidance: Precautionary clearance of any tall ruderal vegetation and rank grassland; maintain grassland at a short height <100mm once cut; creation of artificial refugia/hibernaculum along the edge habitats of the site; retention of all trees and hedging adjacent to the site; timing of vegetation clearance and ground works to avoid the bird nesting season 1<sup>st</sup> March to 31<sup>st</sup> August inclusive; trenches and excavations to be covered at night or a mammal ramp provided; no trees to be removed without a preliminary bat roost assessment (PRA) being undertaken; no groundworks or plant machinery within the RPA's of trees; building materials to be stored off the ground on pallets; sensitive lighting design in accordance with Bat Conservation Guidelines; measures to be taken to avoid killing/injuring of terrestrial mammals.
- Mitigation: Landscape planting to include native fruit and berry bearing trees, new and infill hedging, shrubs and plants which provide a nectar source to improve foraging resources for a range of invertebrate and bird species. Species rich amenity grass seed mix for gardens and species rich wildflower seeding of green open spaces.
- Enhancement: Erection of bird and bat boxes, bat bricks, insect hotels.

The expected residual impact with implementation of the above mitigation would be **minor adverse-neutral** upon breeding birds, common invertebrates, reptiles and terrestrial mammals and **neutral** upon foraging/commuting bats, water vole, otter and white-clawed crayfish.

This report aims to establish an ecological baseline, identifying protected habitats and species that may be affected as a result of the proposed works. It aims to establish if further surveys are required and where possible make recommendations for design options that avoid significant effects on important ecological features and resources. The survey and assessment were completed by independent, qualified and experienced ecologists at an optimal time of year in ideal weather conditions.

The expected residual impact with implementation of the above mitigation would be **minor adverse-neutral** upon breeding birds, common invertebrates, commuting and foraging bats, amphibians and terrestrial mammals and **neutral** upon roosting bats, water vole, reptiles, otter and white-clawed crayfish. The following advisory recommendations include:

- Destruction of in-use nests or harm to adult birds caused by vegetation clearance and ground works during the main breeding bird season (1<sup>st</sup> March to 31<sup>st</sup> August). If works commence during this period a nesting bird survey must first be undertaken by an appointed ecological clerk of works (ECoW).
- 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 Plan (BEP)** is submitted and approved. The role of the BEP 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 BEP is also to ensure that biodiversity protection zones are enforced.
- Site Clearance- The site contains some rough grassland and some suitable refuge/hibernacula for amphibians and reptiles. It is recommended that clearance of the site is undertaken under the supervision of an ecological clerk of works ECoW.

#### **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, July 2022), as submitted with the planning application and agreed with the local planning authority prior to determination.”**

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.

**“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.

Table 1.0 – Executive summary

Protected Species / Habitat	Findings	Potential Effect	Recommended Mitigation, Enhancements & Further survey requirements.
Statutory Protected Site (SSSI, RAMSAR etc...)	N/A	N/A	N/A
Non-statutory Protected Sites (RSPB, LWS etc...)	Calke Wood-CWS Jacobites Wood-CWS Redgrave Lake-CWS Stubbings Wood-CWS	None	N/A
Protected/ Priority Habitats	None on site. Hedgerow H1 is species rich and over 40 years old and may be protected under Hedgerow Regulations Act 1997	N/A	N/A
Amphibians (Including Great Crested Newt)	Single record from 440m south-east of site (TM049749, 2015). Terrestrial habitat on site is of moderate value	No predicted impacts.	Maintain grassland at a short height across the construction area.  Precautionary approach to clearance of any stored building materials which may be used as refugia/hibernacula.
Badgers	No evidence found on site.	No predicted impact	Precautionary approach to ground works
Bats	Potential commuting and foraging	No predicted impacts subject to retaining mature trees with potential bat roost features.  Artificial lighting could impede bats from foraging along the arable field boundaries.	Prior to any arboricultural works a detailed tree roost assessment to be undertaken.  Artificial lighting should be kept to the minimum required for safety. Use of anti-pollution LED bollard lighting and avoid floodlights and security lights where possible. Use of timers and PIR/motion activated lights were suitable.
Birds	Hedgerows and trees provide habitat for nesting birds.	Loss of breeding and nesting habitat. Disturbance to ground nesting birds during works. Loss of foraging habitat within site.	Additional bird boxes to be added to buildings.  Works to avoid bird nesting season 1 <sup>st</sup> March to 31 <sup>st</sup> August.
Reptiles	High value terrestrial habitats and good refuges and hibernaculum	Risk of injuring / killing reptiles during development works.	Management of on-site habitats and new habitat creation for reptile species. Reptile avoidance and mitigation measures as proposed in Section 5.0 to be adhered to.

# 1. Introduction

## 1.1 Background

Introduction: Eco-Check was commissioned in June 2022 to undertake an ecological survey of a site at Willowmere, Garden House Lane, Rickinghall. The site is centred grid reference: TM04947558. An ecological walkover survey was conducted on 02/06/2022 to assess the ecological value of the site and the likely presence/absence of any protected species and provide recommendations for further investigations where necessary. This survey updates a previous survey by Eco-Check in 2016.

The purpose of the survey was to carry out a preliminary ecological appraisal, habitat and protected species scoping survey assessment and 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.

This report details the findings of the survey work and subsequent assessment. Methodologies employed are described including site surveys and evaluation. Recommended mitigation measures and the need for any further survey work are included as appropriate.

## 1.2 Site Description

The site is situated in a rural location on the southern edge of the village and civil parish of Rickinghall in the Mid-Suffolk District. The site is located approximately 8km south-west of Diss and approximately 15km north-east of Stowmarket. The site is accessed from Garden House Lane to the north-east approximately 250m north of the main A143. **(See Fig.1).**



Fig 1.0 Site Location Map – StreetMap, June 2022

The site is within Natural England Natural Area 50 East Anglian Plain, and in the South Norfolk and High Suffolk Claylands National Character Area 83 (NCA) which occupies a large area of central East Anglia stretching from just below Norwich in the north down to the River Gipping in the south. The area is bounded to the north by Mid Norfolk and The Broads NCAs and to the east by the sandy heathland of the Suffolk Coast and Heaths NCA. Large areas of woodland are scarce with most confined to a narrow band on the edges of the plateau. Views are frequently open, only sometimes confined by hedges, trees and scattered smaller woodlands that are still notable elements of the landscape. There are no ponds or areas of standing water within the site but there are 5 ponds within 500m of the site, 3 of which are on the distal side of the A143.

The key habitats, structure, quality and management were assessed so as to give an assessment of the likely presence of protected species. It is thought that the more valuable boundary features including the boundary trees and hedging will be retained and suitably protected during the development. Preliminary outline plans showing the existing and proposed site layout are provided in **Appendix 1**.

### **1.3 Proposed Works**

The proposed development is for the removal of existing store structures and relocation of the building compound. Four trees (T3, T4, T5 & T6) and a section of hedge (G6) require removal for the new access as shown in Appendix 1. The dwellings will have associated shares access, parking, garages, gardens, close boarded timber fencing and associated services.

### **1.4 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 badgers, birds, reptiles, amphibians, water voles 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);
- 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) and *Ecological Impact assessment* (CIEEM, 2016). Comments on the ecological value of the site as a wildlife resource and the significance of the change of land use follow the guidelines provided by Regini (2000).

### **1.5. Legal Framework**

The principal European and UK legislation relating to biodiversity and nature conservation relevant to the proposed development are:

- Conservation of Species and Habitats (Amendment EU Exit) Regulations 2019.
- The EC Directive on the Conservation of Wild Birds (791409/EEC).
- The Wildlife & Countryside Act (1981) and subsequent amendments.
- The CROW Act 2000, particularly Section 74 habitats and species.
- The Protection of Badgers Act (1992).
- Natural Environment and Rural Communities Act 2006
- Hedgerows Regulations 1997

The UK government is committed to a significant reduction of the current rate of biodiversity loss by 2030. This commitment is recognised in:

- The England Biodiversity Strategy
- Biodiversity 2030: A Strategy for England's Wildlife
- National Planning Policy Framework (Replacement of PPS9);
- BS 42020:2013- Code of Practice for Planning and Development

## 2. Methodology

### 2.1 Desk Study and Data Consultation

A desk study was undertaken to gather existing ecological records in relation to the site and the surrounding area, in order to provide ecological context for the site and to inform an assessment of the potential ecological constraints to development. A desk study was undertaken using to identify both statutory and non-statutory designated sites for conservation and to identify the presence of priority/protected habitats or species within 2km of the proposed works. In order to compile background information on the site and its immediate surroundings, Suffolk Biodiversity Information Service (SBIS) were contacted, with data requested on the basis of a search radius of 2km. OS maps and aerial photographs were used to identify the presence of features up to 500 m from the site which might be used by protected or notable species.

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.

SBIS do not allow its species records to be made publicly available, such as direct inclusion within this report. Species recorded have been taken into consideration for our impact assessment, however any accurate locations are determined to be sensitive and cannot be revealed.

### 2.2 Surveyor and Weather Conditions

The field survey was undertaken by James Hodson MSc (Bat Survey License 2017-30927-CLS-CLS, Great Crested Newt Licence 2018-36283-CLS-CLS). . The weather was cloudy, north easterly winds of 10mph and approximately 18°C during the survey.

### 2.3 Phase One Habitat Survey

The site was walked over and the dominant vegetation and features were noted. Recent aerial photographs (See Fig.3.0) were also consulted. Dominant species notes were taken (Appendix 3) and the site was documented by a series of photographs (Appendix 2).

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, badgers, birds, dormice and water voles. Evidence of badgers was searched for throughout the site, including setts, footprints, feeding signs, hairs and droppings. 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. In some cases, protected or invasive species' use of a site may change over a shorter timescale, for instance the use of a badger sett by badgers, which may change month to month. In such cases, appropriate precautionary advice or recommendations for update surveys are given within this report. The survey was carried out during the optimal period for the majority of flowering plants (March-August), however early flowering plants may have gone unrecorded

## 2.4 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 1.0) (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 2.0 – 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 <sub>1</sub>	Geographic Location	Lowland England or upland England, Scotland and Wales
Sl <sub>2</sub>	Pond area	To the nearest 50m <sup>2</sup>
Sl <sub>3</sub>	Permanence	Number of years pond dry out of ten
Sl <sub>4</sub>	Water quality	Measured by invertebrate diversity
Sl <sub>5</sub>	Shade	Percentage shading of pond edge at least 1m from shore
Sl <sub>6</sub>	Fowl	Level of waterfowl use
Sl <sub>7</sub>	Fish	Level of fish population
Sl <sub>8</sub>	Pond count	Number of ponds within 1km divided by 3.14
Sl <sub>9</sub>	Terrestrial habitat	Quality of surrounding terrestrial habitat
Sl <sub>10</sub>	Macrophytes	Percentage extent of macrophyte cover

### Badgers

A visual assessment for setts, latrines, prints and evidence of foraging activity was undertaken within the site boundaries.

## 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 3.0.

**Table 3.0 - 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	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.)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.	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.  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.
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).	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.  Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
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.	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.  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.

The habitats on and around the site were assessed for their commuting and foraging potential for bats. An evaluation system was applied to the commuting and foraging potential using the following criteria.

- Negligible commuting and foraging potential for bats. Habitat features unlikely to be used by commuting or foraging bats.
- Low commuting and foraging potential for bats. Habitats that could be used by a small number of commuting or foraging bats such as, a gapped hedgerow, non-vegetated stream or lone trees, but are isolated and not well connected to the surrounding landscape.
- Medium commuting and foraging potential for bats. Habitats that are continuous and connected to the wider landscape such as, lines of trees, scrub, linked back gardens, grasslands and water features.
- High commuting and foraging potential for bats. Habitats that are continuous and connected to the wider landscape such as, river valleys and tree lined watercourses, hedgerows, lines of trees, deciduous woodland, and grazed parkland. These habitats are likely to be used regularly by commuting or foraging bats and are likely to be close to, or connected to, known roosts.

#### 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.

#### 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, there is no pre-existing refugia such as bricks and wood etc.

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 decide of the risk of a species presence or absence.

Table.4.0 Criteria for assessing presence of protected species

## 2.5 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, 2<sup>nd</sup> 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, 2016). These are based upon criteria identified in the CIEEM (2016) 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, 2016) 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, 2016).

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 summarized in Appendix 4. Ecological features valued at Local Importance (Lower Value) or of negligible value (as per the valuation criteria in Appendix B) 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, 2016). 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 5.0 – 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.

## 2.6 Limitations

### Desk Study

These results can only give an indication of species presence in this location. The absence of recent records for certain species in an area may be due to the lack of survey effort or the non-submission of records, rather than the absence of those species. Many species records are also at low resolution and do not indicate their exact location.

### Field Survey

The comprehensiveness 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.

## 2.7 Legislation

### Protected Species

#### 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.

#### 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.

#### 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 Suffolk, 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.

#### 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.

#### Badger

Badgers (*Meles meles*) are protected under the Protection of Badgers Act 1992 and the Wildlife and Countryside Act 1981 (as amended). Under Section 1 of the Protection of Badgers Act 1992, it is a criminal offence, subject to certain mitigating circumstances, to wilfully kill, injure or take a badger, and under Section 3 of this legislation it is a criminal offence, in most circumstances, to destroy, damage or obstruct access a badger sett or part of it. A badger sett is defined in the 1992 Act as any

structure or place that displays signs indicating use by a badger. Although a sett may be empty at a particular time, it may be used as part of a regular cycle throughout the year and can therefore be considered to be in use. Under certain conditions, activities that could otherwise give rise to an offence may be licensed by the Department for Environment, Food and Rural Affairs (Defra) (for agricultural or land drainage purposes) or Natural England (for development covered by planning permission). A sett which can be shown to have been unused for at least a full year is considered to fall outside of the provisions of the 1992 Act. The badger is listed under Schedule 6 of the Wildlife and Countryside Act 1981 (as amended), which identifies animals that may not be killed or taken by certain methods.

#### 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.

#### Local Non-statutory Designated Conservation Sites

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

#### Species and Habitats of Principal 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 several 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"<sup>1</sup> 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. Results

#### 3.1 Desk Study

##### Statutory Sites of Nature Conservation Significance <sup>1</sup>

There are no statutory wildlife sites within 2km of the proposed development area this includes SSSI's (Sites of Special Scientific Interest), Ramsar Sites, SPA's (Special Protection Areas), SAC's (Special Areas of Conservation), AONB's (Areas of Natural Beauty), NNR (National Nature Reserves) and LNR (Local Nature Reserves).

##### Non-Statutory Sites of Nature Conservation Significance <sup>2</sup>

There are four County Wildlife Site (CWS) within a 2km radius of the centre point of the site. These are Calke Wood, Jacobites Wood, Redgrave Lake and Stubbings Wood. The nearest is Jacobites Wood, 1.3km north-east. CWS are defined in Structure Plans and Local Plans under the Town and Country Planning System and are a material consideration in the determination of planning applications.

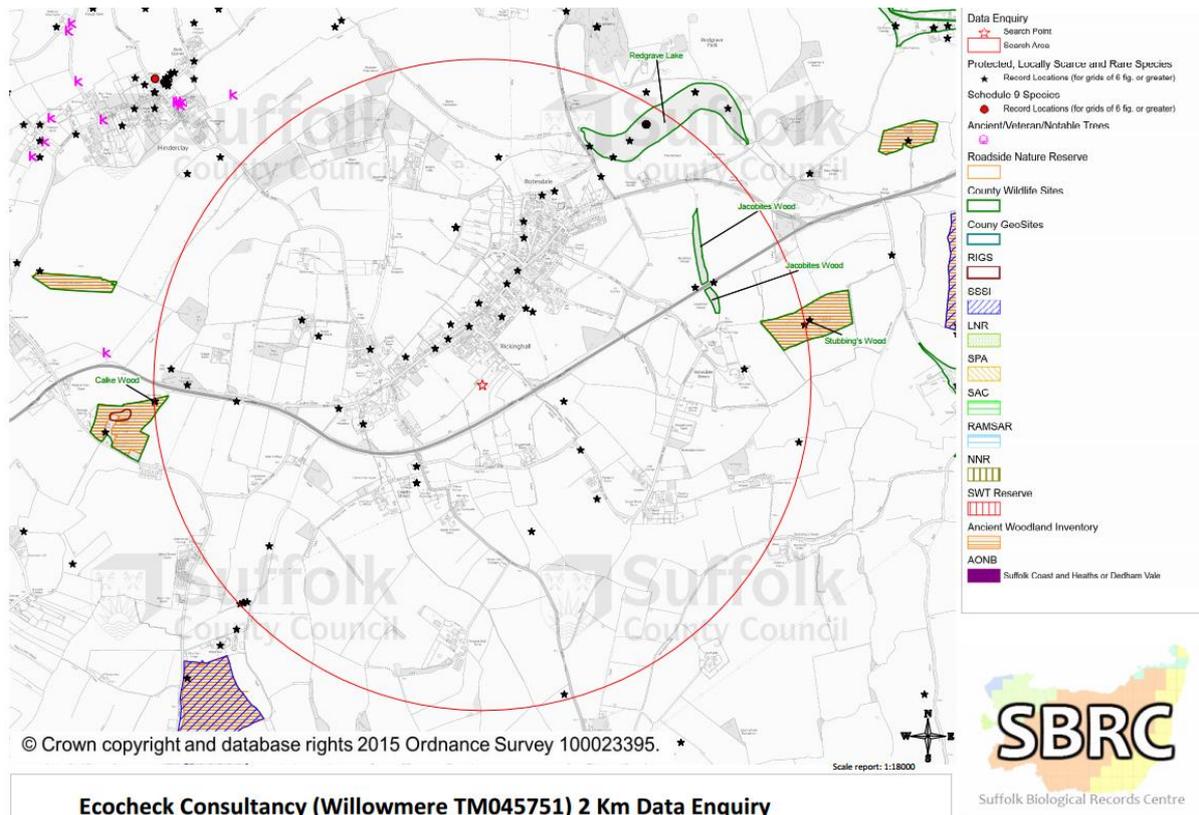


Figure 2.0 Map of Designated Wildlife Sites, Priority Habitats and SSSI Risk Zones within 2km

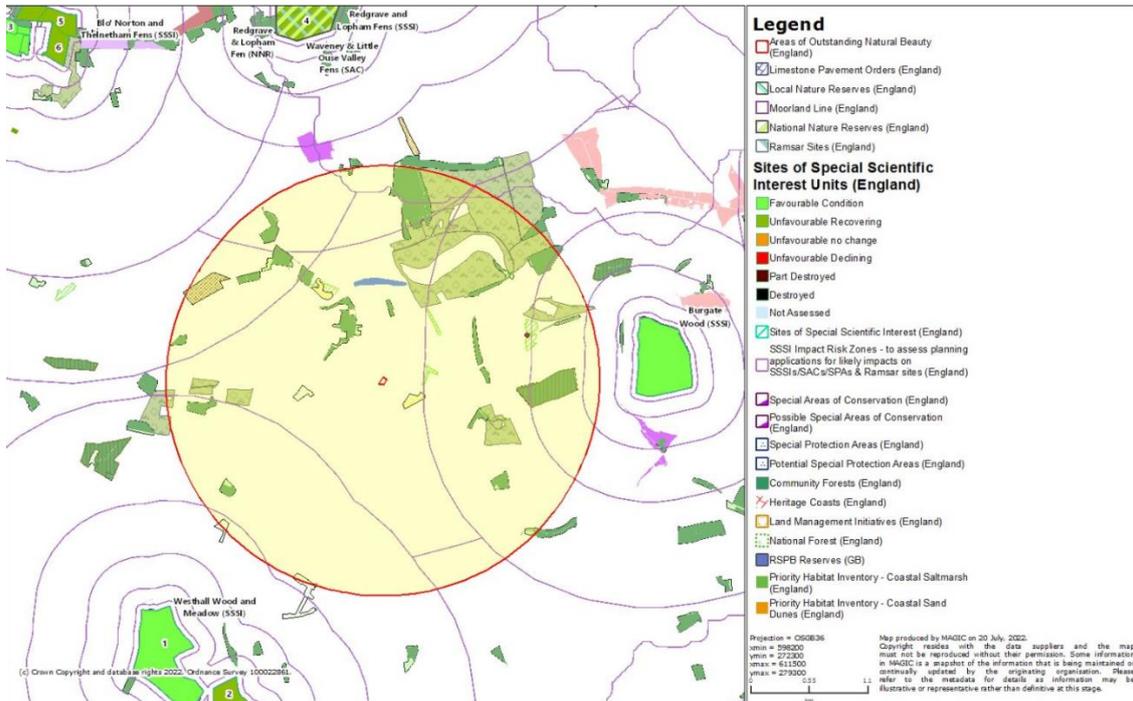


Figure 3.0 Map of Designated Wildlife Sites, Priority Habitats and SSSI Risk Zones within 2km

#### RSPB

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

#### Protected / Priority Habitats:

There are no UK Priority Habitats within or adjacent to the site although the wider field hedgerows may be classed as important or protected under the Hedgerows Evaluation Grading System (HEGS).

#### Other Priority Habitats

Other priority habitats within 2km include deciduous woodland, traditional orchards and Wood pasture and Parkland BAP habitat.

#### Protected / Noteworthy Species <sup>3 4</sup>:

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 1km of the site indicated 311 species records:

- **Amphibians and Reptiles:** There is a single record of great crested newt from a drain/pond approximately 400m south-east of the site (TM049749, 2015), recorded during a torch survey with mostly females and 2-3 males present. It is of note the record is on the distal side of the main A143 which is likely a significant barrier to dispersal. There is a single common toad (BAP) record (TM032741, 2005). There are no reptile records within the last 10 years.

- **Bats:** Records include daubenton's from Redgrave Lake (TM054766, 2014) and Botesdale Lodge (TM061752, 2002). Common pipistrelle records include a breeding colony from Hazel Cottage, Rickinghall (TM0475, 2007) and a roost at St Mary's Church, Rickinghall (TM041745, 2004). Brown long-eared bat maternity and other roosts have also been recorded from St Mary's Church (TM041745, 2004, 2009). The nearest records are from the church approximately 500m west of the site.
- **Birds:** There are a number of UK/LBAP and Red/Amber List Bird Species as well as SoCC (Species of Conservation Concern) including barn owl, song thrush, cuckoo, green woodpecker, lapwing, yellowhammer, skylark and starling.
- **Badger:** There is a single badger record from a pit at Snape Plantation (TM026752, 2007) approximately 1.8km west of the site.
- **Otter & Water Vole:** There is a single record of otter from Redgrave Lake (TM053765, 2001) approximately 1.5km north-east of the site. There is a single water vole record from Botesdale (TM046765, 1999) approximately 1.3km north.
- **Other mammals:** Other notable records include brown hare 3 records (TM048742, 1997) nearest record 860m south, hedgehog (21 records 2013-2014), harvest mouse 4 records (TM030737, 2010). 30 returned records for Hedgehog *Erinaceus europaeus*.
- **Invertebrates:** Small heath butterfly and cinnabar moth (BAP) have been recorded and notable plants include Suffolk lungwort and shepherd's-needle.

#### 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 are no ponds or areas of standing water within the site but there are 5 ponds within 500m of the site, 3 of which are on the distal side of the A143. There is a large artificial swale (Pond 1) approximately 175m east of the site which takes drainage water off the A143 and a smaller natural pond (P2) to the south of P1.

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 Species and Habitats (Amendment EU Exit) Regulations 2019; or in the Protection of Badgers Act 1992 (as amended).

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).

### 3.2 Phase 1 Habitat Survey

The botanical diversity of the development area is relatively low and comprises improved grassland, species poor hedges, trees and tall ruderal vegetation. The following broad habitat types were recorded on or adjacent to the site:

Conditions	2 <sup>nd</sup> June 2022
Temperature (°C)	18
Cloud Cover (%)	80
Precipitation	-
Wind Speed	10 mph NE

Table 6.0- Weather conditions on survey

- Arable
- Bare ground and buildings
- Improved and semi-improved grassland
- Scattered trees
- Scattered Scrub
- Hedging and trees
- Tall ruderal vegetation

#### Arable

The south-west boundary (H2) adjoins cultivated arable land and to the north-east of the existing access is a further large arable field. The wider landscape includes large open cultivated arable fields delineated by defunct hedgerow sections with some tree belts and scattered trees. The ecological value of this habitat is low although crop cover can provide a food source and nesting habitat for small mammals and ground nesting birds during the growing season.

#### Bare ground and Buildings

The entrance to the site comprises a concrete drive opening into a larger concrete apron and beyond an unmade bare earth track through the middle of the site extending approximately half the length of the proposed development area. Other areas of bare ground include frequent rubble spoil and timber piles.

The existing buildings to be demolished include three timber Porto cabin style structures, two concrete block and corrugated sheet storage buildings, a glass greenhouse and a timber flat roof shed. There are also some metal shipping containers to be removed. All of the buildings lacked cavity spaces, cracks and voids suitable for roosting bats although some open buildings could be used by nesting birds.

The ecological value of the buildings and bare ground is generally low but some of the open buildings are of value to nesting birds. The timber, rubble piles, tyres, sheet materials etc may also provide good refuges and hibernaculum for herpetofauna

## Improved and Semi-Improved Grassland

The roadside boundary and curtilage of the dwelling comprise species poor amenity grassland, some areas bordering the access and buildings were typical of species poor improved grassland. These areas appear to be cut on a semi-regular basis with a sward height of approximately <10cm.

The dominant improved grassland species included ryegrass (>50% *Lolium perenne*), creeping buttercup (*Ranunculus repens*), white clover (*Trifolium repens*), cleavers (*Galium aparine*), creeping thistle (*Cirsium arvense*), nettle (*Urtica dioica*), ribwort plantain (*Plantago lanceolata*), ground ivy (*Glechoma hederacea*), docks (*Rumex spp.*), dandelion (*Taraxacum sp.*) and broadleaved plantain (*Plantago major*).

The south-west half of the site was typical of species poor semi-improved and improved grassland that has established a result of lack of cutting/grazing or other management. The grassland had a long and variable sward height between 40-80cm, species diversity and sward height were generally greater where other common and ephemeral weed species have established. The semi and improved grassland areas contained a diversity of species and included other grassland species such as annual meadow grass (*Poa annua*), cocks foot (*Dactylis glomerata*), barren brome (*Anisantha sterilis*), creeping bent (*Agrostis stolonifera*), Yorkshire fog (*Holcus lanatus*), lesser celandine (*Ranunculus ficaria*), spear thistle (*Cirsium vulgare*), sheep's sorrel (*Rumex acetosella*), common vetch (*Vicia sativa*), smooth sow-thistle (*Sonchus oleraceus*) and black medick (*Medicago lupulina*).

Flowering plants included white dead nettle (*Lamium album*), yellow hawk-weed (*Hieracium caespitosum*), purple dead nettle (*Lamium purpureum*), field forget-me-not (*Myosotis arvensis*), daisy (*Bellis perennis*), bristly oxtongue (*Helminthotheca echioides*), scentless mayweed (*Tripleurospermum inodorum*), groundsel (*Senecio vulgaris*), chickweed (*Stellaria media*), rough hawkbit (*Leontodon hispidus*), Dove's foot cranesbill (*Geranium molle*) and cut-leaved cranesbill (*Geranium dissectum*).

These areas associated with the scattered trees, hedging and scrub are of moderate to high ecological value, providing foraging habitat for small mammals, herpetofauna and possibly ground nesting birds.

## Scattered trees

There are a small number of middle-aged fruit trees in the north-east corner of the site around the greenhouse and vegetable patch including apple (*Malus sp.*) and plum (*Prunus sp.*) and frequent elder (*Sambucus nigra*). Along the north half of the south-east boundary is approximately 10 early mature poplar trees (*Populus nigra*).

There is a further mature tree line running the length of the majority of the north-west boundary (H3) and tree species recorded include apple, willow (*Salix sp.*), sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*) and field maple (*Acer campestre*). There were a few mature specimens of ash and sycamore with dense creeping ivy that may provide bat roosting potential.

No significant or notable trees will require removal to facilitate the new dwellings although some disturbance of the boundary trees is anticipated along the new access into the site. The ecological value of the boundary trees is moderate as provide potential bird nesting habitat, a flight line for

foraging and commuting bats, possible roost spaces and there was frequent fallen wood suitable for deadwood invertebrates.

No significant or notable trees will require removal to facilitate the new dwellings although some disturbance of the boundary trees is anticipated along the new access into the site. The ecological value of the boundary trees is moderate as provide potential bird nesting habitat, a flight line for foraging and commuting bats, possible roost spaces and there was frequent fallen wood suitable for deadwood invertebrates.

### Scattered Scrub

A block of dense scrub vegetation is present in the north-east portion of the site and belts of scattered scrub are frequent along the field margins and around the buildings, stored materials etc. The scrub was almost entirely dominated by stands of bramble (*Rubus fruticosus*) with occasional field rose (*Rosa arvensis*), dog rose (*Rosa canina*), elder (*Sambucus nigra*) and some willow (*Salix spp*). The ecological value of scrub habitat is moderate as provides a food source and refuge for nesting birds, small mammals, herpetofauna and invertebrates.

### Hedging and Trees

An assessment of the hedgerows was made using the HEGS approach and the hedge sections are numbered H1, H2 and H3 on the habitat map (Figure 4). The details of these hedges are provided below in Table 3.

Hedge Number	Linear Length (m)	Woody Species (Hedge)	Valuable or Protected under HEGS	Dominant Hedge and Tree Species
H1	60	3	No- Defunct species poor hedgerow DSPH	Unmanaged remnant double hedgerow with some gaps and dominated by blackthorn <i>Prunus spinosa</i> with occasional dog rose and frequent bramble. Rank grassland margin on both sides of hedge. Hedge dimensions approximately 4m high by 2.5m wide.
H2	45	5	No- Defunct species poor hedgerow DSPH	Short discontinuous and gappy hedge consisting of hawthorn and occasional blackthorn with bramble
H3	200	8	Yes- Intact species rich hedgerow ISRH.	Mature continuous tree and hedge line with a wet ditch bordering the south-west corner. Bordered by rank grassland, scrub and tall ruderal vegetation. Hedge species included hawthorn, blackthorn, elder, hazel ( <i>Corylus avellana</i> ) and field maple. Mature tree specimens included ash, sycamore, apple, willow and Leyland cypress ( <i>Cupressus leylandii</i> ).

Table. 7 Hedgerow Evaluation - HEGS

### Tall ruderal vegetation

Tall ruderal vegetation is frequent interspersed within the rank grassland and in association with the hedgerows, scrub and buildings. The species noted included bracken (*Pteridium aquilinum*), prickly-sow thistle (*Sonchus asper*), nettle (*Urtica dioica*), garlic mustard (*Alliaria petiolata*), mugwort (*Artemisia vulgaris*), hogweed (*Heraclium sphondylium*), ragwort (*Senecio vulgaris*), sheep's sorrel (*Rumex acetosella*), yarrow (*Achillea millefolium*), cow parsley (*Anthriscus sylvestris*) and rosebay willow-herb (*Epilobium angustifolium*).

### 3.3 Fauna-

Faunal species observed or evidence of presence at the site or in close proximity to the site is presented in Table.8.0.

Common Name	Scientific Name
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus melua</i>
Robin	<i>Erithacus rubecula</i>
Wood Pigeon	<i>Columba palumbus</i>
House Sparrow	<i>Passer domesticus</i>

Table.8.0 Faunal species recorded



Figure 4.0 Aerial View of Site, hedgerows and trees and surrounding landscape, as well as building locations – Google Maps, May 2022

### 3.4 Preliminary Tree Roost Assessment-

A search was made of the boundary hedgerow trees and any other notable scattered trees, in particular those that are within 15m of the proposed working areas. The bat roost assessment is as follows:

Four trees (T3, T4, T5 & T6) and a section of hedge (G6) require removal for the new access as shown in Appendix 1. A ground level inspection of the trees revealed no obvious potential roost features (PRF's) apart from some dense creeping ivy and lattices which could potentially support roosting bats and/or obscure other PRF's. On the basis of the inspection these trees were assessed as having either negligible or low bat roost potential.

There are no other trees that require removal to facilitate the development. Subject to the protection and retention of the adjacent trees in accordance with BS:5837: 2012- Trees in Relation to Design, Demolition and Construction no further works are required in respect of trees with bat roosting features. Prior to felling the listed trees, a more detailed inspection and elevated survey must be undertaken.

### 3.5 Great Crested Newt HSI Assessment-

There is a single record of great crested newt from a drain/pond approximately 400m south-east of the site (TM049749, 2015), recorded during a torch survey with mostly females and 2-3 males present. It is of note the record is on the distal side of the main A143 which is likely a significant barrier to dispersal. There is a single common toad (BAP) record (TM032741, 2005).

There are no ponds or areas of standing water within the site but there are 5 ponds within 500m of the site, 3 of which are on the distal side of the A143. There is a large artificial swale (Pond 1) approximately 175m east of the site which takes drainage water off the A143 and a smaller natural pond (P2) to the south of P1. The swale has steep sides, a shallow water depth and is densely overgrown with reed-mace (*Typha latifolia*) and rosebay willow-herb. Local knowledge indicates that it contains some silver fish and evidence of waterfowl was also noticed. The HSI score for the pond (See Appendix 3) was 0.58 indicating below average potential for a breeding population.

HSI	P1	P2
<b>S1- Geographic zone</b>	1	1
<b>S2- Pond area</b>	0.96	0.25
<b>S3- Pond drying</b>	0.1	0.1
<b>S4- Water quality</b>	0.33	0.01
<b>S5- Shade</b>	1	0.8
<b>S6- Fowl</b>	0.67	1
<b>S7- Fish</b>	0.33	1
<b>S8- Pond density</b>	1	1
<b>S9- Terrestrial habitat quality</b>	0.67	0.33
<b>S10- Macrophyte cover</b>	0.9	0.36
<b>HSI</b>	<b>0.58 (Below Average)</b>	<b>0.35 (Poor)</b>

Table 9– HSI Assessment



Figure 5.0 Pond 1 (left), Pond 2 (right)

The second pond (Pond 2) is situated on-top of the A143 embankment approximately 350m south-west of the nearest boundary. The pond was very shallow and likely seasonally wet only, densely overgrown and shaded by willow and elder and had poor water quality. The pond is bordered by arable fields and a main road and so has poor connecting habitats. The HSI score for the pond was 0.35 indicating poor potential for a breeding population.

The HSI scores of the ponds suggests that no further GCN surveys are required. However, given the terrestrial habitats, refuges and hibernaculum present a precautionary approach to site clearance and construction works must be adopted. This includes cutting tall vegetation and scrub, checking wood and rubble piles by hand and removing or ring-fencing construction materials such as demolition materials etc.

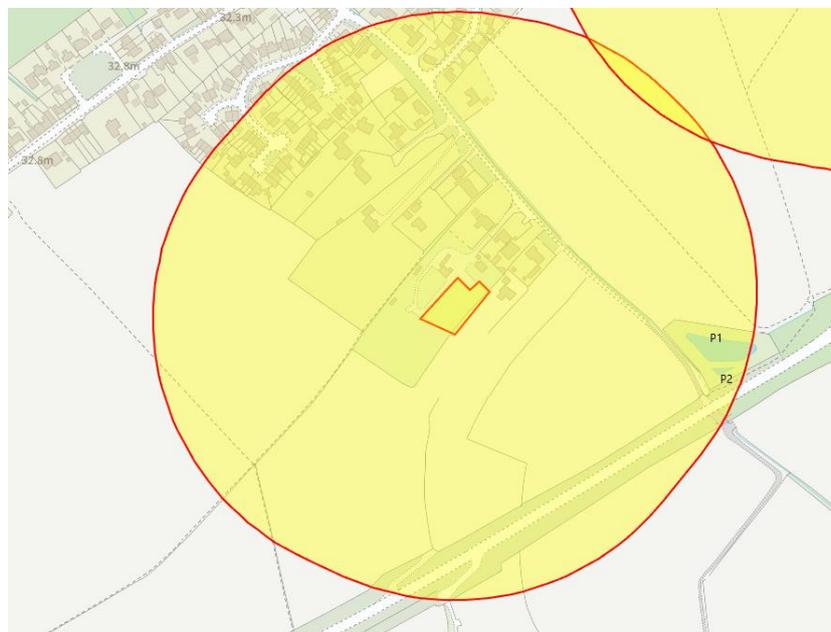


Figure 6.0 Map of ponds within 250m

## 4. Evaluation and Impact Assessment

In the following section an outline of the likely impacts to ecological receptors from the proposed changes of use and development of the land. The possible magnitude of the impacts has been included at this stage to give an indication of the anticipated impacts to the ecological receptors identified above. The current intention is to remove as little of the natural habitats as possible other than to allow improved access to the site for development and post development.

The impacts should be further assessed in conjunction with a master plan. In line with the British Standard 42020:2013 Biodiversity – Code of practice for planning and development it is recommended that in conjunction with the designing of the master plan an Ecological Constraints and Opportunities Plan (ECOP) is employed to minimise any potential impacts, and maximise ecological benefits from the design stage of the project onwards. Impact magnitude categories and criteria are defined based on Byron (2000).

- Major negative – that which has a harmful effect on the integrity of a conservation site or the conservation status of a population of a species within a defined geographical area; e.g., fundamentally reduces the capacity to support wildlife for the entirety of a conservation site, or compromises the persistence of a species' population.
- Intermediate negative – that which has no adverse effect on the integrity of a conservation site or the conservation status of a species' population, but does have an important adverse effect in terms of achieving certain ecological objectives; e.g., sustaining target habitat conditions and levels of wildlife for a conservation site, or maintaining population growth for a species.
- Minor negative – some minor detrimental effect is evident, but not to the extent of the above.
- Neutral – that which has no predictable effect.

The potential impacts from the development of the site include construction and operational impacts

**Habitats:** The habitats on site comprise broad-leaved scattered trees (A3.1), improved grassland (B4), bare ground (J4), hedging and trees (J2.3.2) and tall ruderals (C3.1). Species recorded were typical of the habitats recorded at the site, although the variety of habitats present is likely to provide a suitable foraging and nesting resource for a range of species, including birds, bats, amphibians, terrestrial mammals and invertebrates.

The habitats within the site interior are of low ecological significance comprising species poor improved grassland which is managed and interspersed with other habitats and stored materials, this will result in a likely minor adverse-neutral impact in the short-term but minor positive in the long term. The mature trees and hedging bordering the site are of parish value however the proposed development does not extend into these areas. The unmitigated impact is assessed as being minor adverse, reduced to neutral within implementation of the recommended avoidance and mitigation in Section 5.0. and enhancements in Section 6.0.

**Construction impacts:**

The proposed land use change and development will require removal of most habitats within the site, some minor short-term clearance in preparation for the construction works and associated access and will remove/disturb vegetation. Insertion of infrastructure and foundations will disturb the soil structure, and give rise to spoil which may need removal from the site or re-distribution on the site. The proposed layout avoids the root protection areas (RPA's) of the trees and hedges and so no highly valuable ecological receptors will be likely lost or degraded. There will be a high level of human disturbance during construction, which may affect receptors outside the site as well as within it.

**Post construction impacts:**

Ground disturbance within the site will be increased as a result of more vehicle movements and habitats more intensively managed within the gardens, although there is already regular access and disturbance of the site due to its use as a building compound. There will be additional hard surfaces and lighting. The new buildings may offer potential habitats for some species. The following are an indication of the likely impacts to the ecological receptors associated with the site should a worst-case scenario be assumed.

**Statutory Protected Sites:**

The application site falls outside the "zone of potential impact" for any statutory designated sites as none are present within 2km. The proposal is unlikely to result in a significant or notable increase in the number of visitors to the wider area or increase in recreational pressure on any statutory wildlife sites. This is as a result of the development comprising 10 or less new dwellings.

**Non-statutory protected sites:**

We deem the potential impact of the application on the other CWS's within 2km to be negligible, again, based on the lack of any such sites within 1km and habitats separating the sites.

*Sites of National Importance-*

Due to the local topography, small scale of the development, surrounding habitats and distance from any relevant designated sites, this development proposal is very unlikely to have an adverse effect on any such sites. 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.

*Sites of Regional/Local Importance-**Habitats-*

Habitats on site offering some ecological interests are limited to the mature scattered trees and boundary trees and hedges which are of value to foraging/nesting birds, foraging and commuting bats, small mammals and invertebrates.

Overall, the habitats on Site are provisionally assessed as being at the **Lower** value at the **Parish/Neighbourhood scale**. A summary of the ecological significance of the habitats on site is presented below, Table.10.

Habitat	Local Ecological Significance	Justification
<b>Arable</b>	Low	Cultivation and nutrient enrichment mean the only vegetation cover is restricted to crop plants and arable weeds and grasses. Provides foraging habitat for small mammals and for ground nesting birds such as skylark.
<b>Bare Ground and Buildings</b>	Low	Support few species and regular disturbance reduces potential for colonization by other flora. The derelict and workshop/store buildings are of low value for roosting bats but open section may be used by nesting birds. Rubble, sheet materials and timber piles of high value to herpetofauna.
<b>Improved/Semi Improved Grassland</b>	Low/Moderate	Improved grassland is species poor and widely distributed. Taller rank semi-improved grassland of greater value to small mammals, ground nesting birds and herpetofauna.
<b>Scattered Trees</b>	Moderate	Mature specimens contained suitable bat roosting features. Other trees of value to nesting birds and foraging and commuting bats.
<b>Scrub</b>	Moderate	Scrub provides a food source and cover for nesting birds, small mammals and herpetofauna.
<b>Hedgerows</b>	Moderate	Support a variety of species and are of value to nesting birds, foraging and commuting bats and provide shelter and food for small mammals, herpetofauna and invertebrates. Hedgerow H3 was species rich and contained features to make it of greater value to wildlife.
<b>Tall Ruderal</b>	Low	Comprises a low diversity of common species which are abundant and widespread. Generally, of limited value to protected and BAP species.

Table.10 Ecological Significance of Habitats

Species Group	Reason for Consideration	Likelihood of Presence
<b>Amphibians</b>	5 ponds within 500m and record of GCN within 500m.	<b>Moderate</b> – Single record of great crested newt and ponds within 500m. Ponds within 250m have below average and poor potential for breeding population. Terrestrial habitats within construction area of value to amphibians.  The value of the site to amphibians is assessed as <b>Lower</b> at the <b>Parish/Neighbourhood scale</b> and the impact of the development is <b>Neutral</b> .

<b>Badger</b>	Connectivity to wider landscape.	<p><b>Low</b>– No record of a badger sett within 1km. No evidence of badgers was recorded although the site has connectivity to the wider landscape with potential foraging habitat only within the site.</p> <p>The value of the Site to badgers is assessed as <b>Lower</b> at the <b>Parish/Neighbourhood</b> scale and the impact of the development is considered to be <b>Neutral</b>.</p>
<b>Bats</b>	Potential commuting and foraging corridors.	<p><b>High</b>- Three bat species recorded within 2km of the site and roosts within 500m. Low roosting potential of buildings but boundary features of value to foraging and commuting bats.</p> <p>The impact of the development upon roosting bats is considered to be <b>Neutral</b> subject to retention and protection of the boundary trees and hedges. The built scheme should take the opportunity to enhance vegetation connectivity in the locale and provide landscape planting (native species or species which are attractive to insects, and thus enhance foraging opportunity). Roosting features to be incorporated into the new house.</p>
<b>Breeding Birds</b>	Potential for bird nesting habitat to be present on site. Several birds were noted during the survey. Records of birds of conservation concern and BAP species.	<p><b>Present</b>- Evidence of nesting and nest building species. Good nesting potential for species nesting in trees, scrub and hedgerows. Evidence of recent bird nesting within hedges H1 and H2 and within areas of dense scrub.</p> <p>The value of the site, for breeding birds is assessed as likely being of <b>Lower</b> value at the <b>Parish/ Neighbourhood</b> scale and the impact of the development is judged to be <b>Minor Adverse</b>. The site could be enhanced for birds through the use of bird boxes, planting of hedgerows and trees and the use of berry and nectar bearing species.</p>
<b>Dormouse</b>	NA	<b>Negligible</b> – No records or suitable habitats
<b>Otter</b>	Record from Redgrave Lake	<b>Negligible</b> – No suitable habitats within the site.
<b>Reptiles</b>	High value terrestrial habitats and good refuges and hibernaculum.	<p><b>Moderate/High</b> –The majority of the south-west site area comprises scrub and rank grassland which is regularly used by reptiles and site had good connectivity to the wider landscape and other suitable terrestrial habitats. Presence of sheet materials and rubble and timber piles increases likelihood of presence.</p> <p>The value of the site to reptiles is therefore assessed as <b>Moderate</b> at the <b>Parish/Neighbourhood</b> scale. The impact of the development upon reptiles is considered to be <b>Minor Adverse-Neutral</b>.</p>

Table.11 Ecological Significance of Habitats

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

Table 12 – Summary of ecological features, unmitigated impact and residual impact with mitigation

## 5. Avoidance, Mitigation & Compensation

The development proposals for this site have been considered in terms of the mitigation hierarchy (BSI 2013) <sup>5</sup>. 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 NPPF<sup>6</sup>. Suggestions for enhancement are provided below in Section 9.

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

<sup>6</sup> National Planning Policy Framework (NPPF) July 2021-  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1005759/NPPF\\_July\\_2021.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf)

### **5.1 Ground Clearance Works-**

- As per the recommendations above scrub clearance, vegetation clearance and tree work across the site should ideally be performed outside of the active bird breeding season 1<sup>st</sup> March- 31<sup>st</sup> 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 (brash, grass, sheeting) would be hand-searched for the presence of reptiles and amphibians prior to commencement of works.
- Care should be taken with regards to vegetation clearance and earthworks close to the hedges and hedge bases due to potential disturbance to nesting birds, herpetofauna and small mammals.
- A minimum buffer strip of 3m should be left undisturbed along the hedgerows upon project completion to maintain some habitat connectivity and this should be protected by suitable post and rail fencing. Care should be taken with regards to vegetation clearance and earthworks due to potential disturbance to nesting birds, herpetofauna and small mammals.

### **5.2 Construction and Working Practices-**

- The timing of construction 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 new buildings to provide additional nesting and roosting opportunities and to compensate for potential disturbance to nesting birds from site clearance and habitat loss. 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 ramp 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, hedge bases and margins. 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.

### 5.3 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 or tree canopies Low intensity lighting will 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);

#### **5.4 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 1<sup>st</sup> March and 31<sup>st</sup> August inclusive 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.

#### **5.5 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.

## 6. Biodiversity Enhancement

The Natural Environment and Rural Communities Act 2006 (NERC) came into force on 1<sup>st</sup> 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.

### 6.1 Habitat Supplementation-

**6.1.1 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;

- 5 x Eco-Roost bird boxes (32mm)
- 5 x Eco-Roost nest boxes (28mm)
- 5 x Eco-Roost deep nest boxes for robins/wren
- 5 x Eco-Roost swift boxes or bricks
- 5 x Eco-Roost Double house sparrow boxes
- 1 x Barn owl/tawny owl box to be fitted to a mature trees or pole mounted

**6.1.2 Bats**- The combination of trees, hedges and grassland are valuable to foraging and commuting bats. As a biodiversity enhancement and to compensate for the potential disturbance, areas for bats to roost in should be created and could include;

- 4 x Eco-Roost- Double Chamber Bat Boxes;
- 4 x Eco-Roost -Kent Boxes bat boxes
- 5 x Eco-Roost- Integrated bat bricks

These boxes are to be installed on the new buildings and mature trees, 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.

**6.1.3** 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.

**6.1.4** Infill hedge planting and well as new hedge planting within the site will be implemented during the first available planting season. Boundary 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 spinose*), Field Maple (*Acer Campestre*), Hazel (*Corylus Avellana*), Hornbeam (*Carpinus Betulus*), Holly (*Ilex aquafolium*), Dogwood (*Cornus Sanguinea*) and Guelder Rose (*Viburnum opulus*), See Table 13.

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.

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-3l	40-60cm
10% Hazel ( <i>Corylus avellana</i> )	0.45m	1+1 or 1/1	BR	40-60cm

Table 13.- Proposed Hedgerow Planting Mix

**6.1.5** To provide a shelter for small mammals and herpetofauna an artificial refugia/hibernaculum to be created in the south-west corner of the site. This will also serve as a receptor site in the event any wildlife needs relocating away from the working areas.

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

## 7. Ecological Conditions and Recommendations for Further Surveys

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 vegetation clearance and/or construction works on site during the main breeding bird season (1<sup>st</sup> March to 31<sup>st</sup> August). If works commence during this period a nesting bird survey must first be undertaken by an appointed ecological clerk of works (EcoW).
- 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 Plan (BEP)** is submitted and approved. The role of the BEP 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 BEP is also to ensure that biodiversity protection zones are enforced. This will also include lighting details to show lux contours and maximum luminescence from any new lighting to demonstrate that potential bat foraging and commuting areas are not disrupted.
- Site Clearance- The site contains some rough grassland and some suitable refuge/hibernacula for amphibians and reptiles. It is recommended that clearance of the site is undertaken under the supervision of an ecological clerk of works EcoW.

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

### **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, July 2022), as submitted with the planning application and agreed with the local planning authority prior to determination.”**

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.

**“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.

We recommend that the following condition from BS42020:2013 is attached to any planning consent;

**“Occasionally European protected species, such as bats, can be found during the course of development even when the site appears unlikely to support them or after an ecological survey has found no previous evidence of them. In the event that this occurs, the developer must stop work immediately and seek the advice of a suitability qualified ecological consultant and/or the relevant statutory nature conservation organisation.”**

Reason: In accordance with the requirements of the adopted Joint Core Strategy and paragraph 118 of the National Planning Policy Framework, and for the undertaking of the council’s statutory function under the Natural Environment and Rural Communities Act (2006).

If development has not commenced within 2 years of June 2022, it is recommended that an updated survey is undertaken, as the suitability of the site for protected species may have changed.

## 8. References

British Standards Institution (2013). BS42020 – Biodiversity – Code of practice for planning and development.

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Froglife (1999) *Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10, Froglife, Halesworth

Gent T & Gibson S (2003)- *Herpetofauna Workers Manual*. JNCC, Peterborough.

Hill, D, FashaM, Tucker G, Shewry M & Shaw P (2005) *Handbook of Biodiversity Methods: Survey Evaluation and Monitoring*, Cambridge University Press, Cambridge

Collins, J (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3<sup>rd</sup> edition*, Bat Conservation Trust.

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JNCC, (1993). *Handbook for Phase 1 Habitat Survey: A technique for environmental audit (2010 reprint)*. Joint Nature Conservation Committee, Peterborough.

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Froglife (2001), *Great Crested Newt Conservation Handbook*, Froglife, Halesworth, Suffolk

Mitchell-Jones, & McLeish, A.P. Ed.(2004),3<sup>rd</sup> Edition *Bat Workers' Manual*

[Biodiversity 2020: A strategy for England's wildlife and ecosystem services \(2011\).](#)

Natural England, MAGIC MAP Search, July 2022, [www.magic.gov.uk](http://www.magic.gov.uk)

# APPENDIX 1



**GENERAL NOTES - PLANTING**  
 All plants to conform to BS 2836 and be free from pests, disease, discoloration and deformity. All plants to be supplied by nurseries registered with the NTA Nursery Certification Scheme. All trees & shrub planting, and turfing, to be carried out in accordance with BS 3336:4:08.

Trees and shrubs to be planted in the first planting season (October to March) following completion of the development, avoiding frost or waterlogged conditions. Existing vegetation to be cleared from planting areas before digging. Planting areas to be topsoiled (200mm min.) over cleared areas. Planting areas to be watered thoroughly after planting and 10mm depth of mulch applied.

Trees and shrub plants to be planted on site equal in depth and 50% wider than the root system. Glazed edges to be broken up using a fork as necessary. Backfill with friable soil to the height of the root collar in layers, firming gently. Top-soil, if required.

To be screened. Hedge plants to be planted using 'T' or 'L' roots, in a double row, staggered, 450mm between rows and at 450mm centres. Exact locations of shrubs and trees are subject to below ground services. Contractors/engineers to ensure spaces and locations are acceptable in relation to underground services and compliance with MRC 4.2.

**EXISTING TREES & HEDGES**  
 Existing hedges and trees are to be adequately protected during construction - refer to Arboricultural Impact Assessment & Method Statement by Chilled Arboricultural Services ref. OAS 22-054-TS01 for details of existing trees, tree constraints, and proposed canopy and root protection plans.

**GRASS TO GARDENS**  
 Grass to front and rear amenity areas to be 'Family Lawn' characteristics with ryegrass and fescue. Apply topped to at least 100mm in depth, remove weeds and stones etc. and rake to a rough level. Generally compact, fill low spots. Apply

a general fertilizer to the manufacturer's instructions. Mix thoroughly into top 50mm. Rake over to fine silt. Lay turf 'brick' pattern (any or rail tightly on completion. Immediately irrigate and keep turf moist for first two-three weeks. Mow regularly but not for first 4 weeks.

**5 YEAR MANAGEMENT PLAN**  
 Following the implementation of the above recommendations, the following management is proposed:

**YEAR 1** - Shrubs and hedges only to be watered with 10 litres/m<sup>2</sup> if especially dry at the time of planting and/or following extended periods without rainfall (checked) to avoid waterlogging. Shrubs to have 500mm mulch circles around each plant. Mulch to be composed organic matter to ensure a weed-free environment and to aid establishment. Mulch to be applied to a depth of 100mm and must be kept clear of stems. Mulch levels to be maintained at this depth for 2 years after planting.

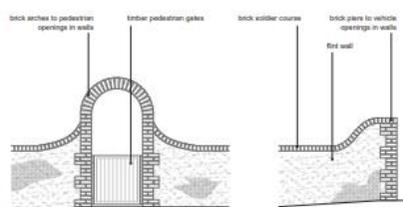
**YEAR 2, YEAR 3, YEAR 4** - Replace any dead plants with the same species and specification, where space allows following development of the surrounding shrubs. Maintain mulch levels as above.

**YEAR 5**  
 Remove protective guards from shrub planting. It is anticipated that the planting will be suitably established and that future management will be restricted to routine maintenance. Replace any dead plants with the same species and specification if space allows following development of surrounding shrubs.

**YEAR 5 to 10**  
 Consideration for the bird nesting season dictates that any treeing work will need to be restricted to the months of September to February. Continued observations regarding the establishment and development of the landscape planting and reviewing management options accordingly will be necessary to benefit the planting scheme.

**PARKING AND BICYCLE STORAGE**  
 P10s, P13 have garages, bicycles will also be stored in garages. P10s, P13 have dedicated cycle storage - see schedule drawing P303\_GA\_01/02 for outbuilding specifications and locations marked on plan above.

**REFUSE**  
 All plots have timber bin stores with living green roofs - see schedule drawing P303\_GA\_01/02 for specifications and locations marked on plan above.



**PROPOSED NEW FLINT AND BRICK GARDEN WALLS**

<p>NEW ADDRESS: [ ]</p> <p>PROJECT ADDRESS: [ ]</p> <p>DATE: [ ]</p> <p>SCALE: [ ]</p> <p>DATE: [ ]</p> <p>PROJECT: [ ]</p> <p>PROJECT NO: [ ]</p> <p>DATE: [ ]</p>	<p><b>TAS</b></p> <p>ARCHITECTS</p> <p>PROJECT NO: P303_LA_001</p> <p>DATE: [ ]</p>
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THIS DRAWING IS FOR PLANNING PURPOSES ONLY



**APPENDIX 2**



Hedge section G6 to be removed for new access (left), existing access (right)



Mature trees and hedging H1 (left), Tall ruderal vegetation and brush pile (right)



Corrugated asbestos sheet building to be demolished (left) and shipping containers (right)



View through site from north to south (left) and view from south to north (right)

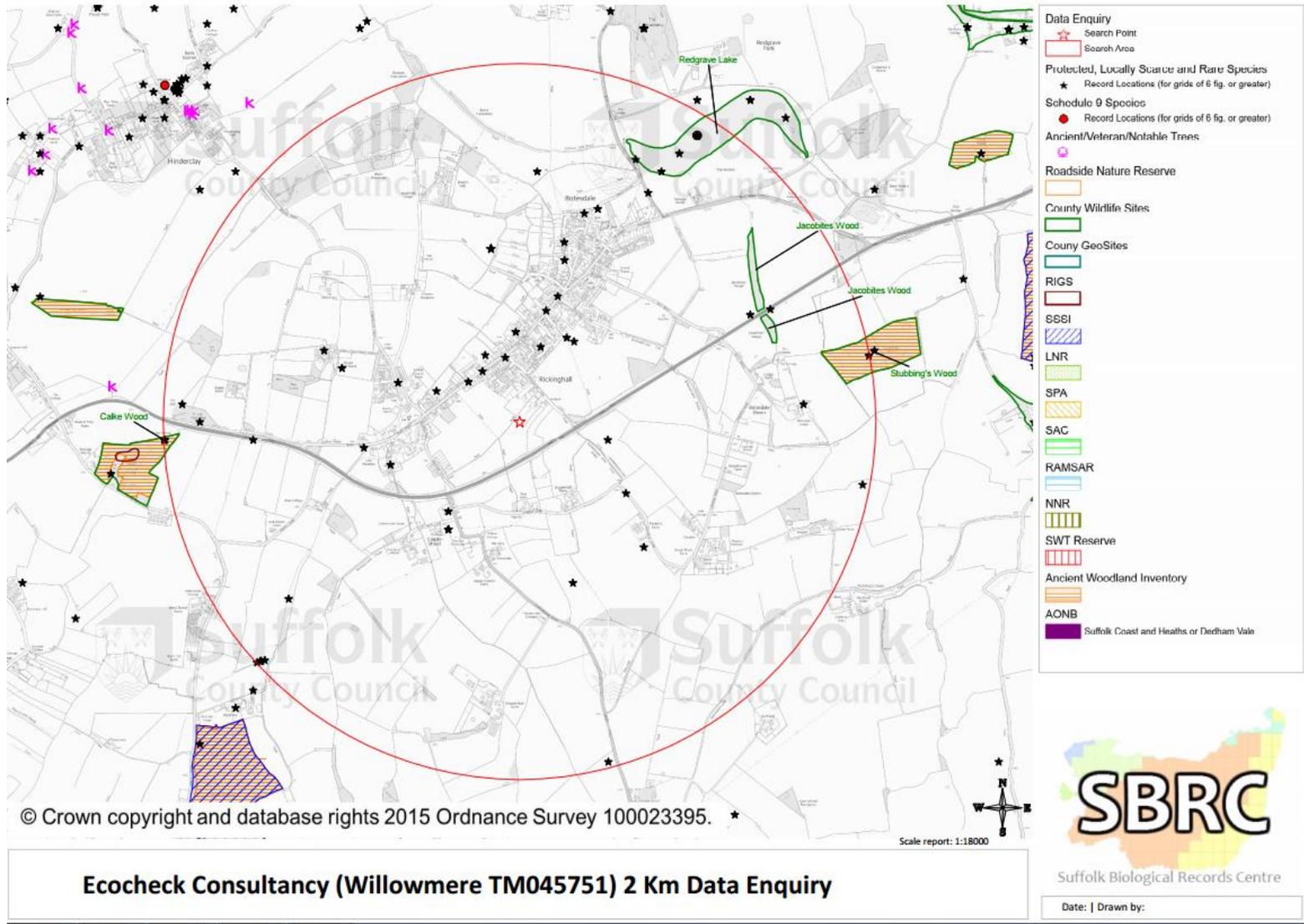
### APPENDIX 3

#### Species Recorded During Phase 1 Survey – Surveyors Notes

- Basil
- Bindweed
- Brassica
- Bull thistle
- Burdock
- Buttercup
- Cleavers
- Cocks Foot
- Common Thistle
- Cow Parsley
- Creeping Ivy
- Curly Dock
- Dock
- Fern/Bracken
- Forget-me-not
- Fumitory
- Garlic Mustard
- Ground Ivy
- Hemlock
- Herb Roberts
- Hogweed
- Mallow
- Mignonette
- Milk Thistle
- Mugwort
- Mullein
- Mustard
- Nettle
- Nightshade
- Pineapple Weed
- Pink Campion
- Poppy
- Ribbed Plantain
- Rubus Fructosa
- Scarlet Pimpernel
- Scentless Mayweed
- Sun spurge
- Teasel
- Vetch
- White Campion
- White fumitory
- Yorkshire Fog

<b>H1</b>	Cherry, Hawthorn, Ash, Hazel, Elm, Field maple, Crab apple
<b>H2</b>	Black thorn
<b>H3</b>	Blackthorn, Elder, Elm, Hawthorn
<b>H4</b>	Poplar tree line





# County Wildlife Site Citations

**CWS Number** Mid Suffolk 110  
**Site Name** CALKE WOOD  
**Parish** RICKINGHALL INFERIOR  
**District** Mid Suffolk  
**NGR** TM022749

**Description**

Calke Wood situated to the north east of Wattisfield is bordered along its southern boundary by Calkewood Lane and on the remaining three sides by arable fields. The semi-natural structure of Calke Wood has been altered considerably by the planting of exotic species. Poplars fringe the entrance to the wood and conifers have been planted in a disused pit which is located close to the entrance. Further into the wood, areas have been cleared and replanted with sycamore, horse chestnut and Norway maple. The remainder of the wood consists of neglected hazel coppice with small patches dominated by old hornbeam coppice. Some coppice stools are very large and are evidence of the wood's antiquity. The ground flora of Calke Wood is reasonably varied. In addition to a good range of common woodland flowers for example bluebell and primrose, the wood also supports a number of uncommon ancient woodland indicator plants including wood anemone. A small section of wood on the southern margin has been cleared to provide land for a bungalow and garden.

**RNR Number** 0

**Area** 9.56

# County Wildlife Site Citations

**CWS Number** Mid Suffolk 139  
**Site Name** JACOBITES WOOD  
**Parish** BOTESDALE  
**District** Mid Suffolk  
**NGR** TM058756

**Description**

Jacobites Wood is a small woodland which is situated to the south east of the village of Botesdale, close to two large ancient woodlands namely Burgate Wood (SSSI) and Stubbing's Wood. The tree canopy is composed largely of ash and field maple with smaller amounts of hornbeam, wych elm and oak standards. The northern end of the wood consists largely of regenerating sycamore. Dense patches of hawthorn and elder scrub together with areas of neglected hazel coppice form the shrub layer of the wood. Despite its small size, the wood is noted for a number of scarce woodland species which it supports. These include herb-Paris, yellow archangel and goldilocks buttercup. Of particular importance is a population of spurge laurel which is considered to be one of the largest populations of this species in the County. Although Jacobites Wood is not listed in the Suffolk Inventory of Ancient Woodlands (English Nature), it is undoubtedly a fragment of medieval woodland which is of considerable wildlife importance, and is therefore a valuable addition to the Register of County Wildlife Sites. Unfortunately the wood will be severed during the construction of the Rickinghall-Botesdale bypass. d

**RNR Number** 0

**Area** 2.4

# County Wildlife Site Citations

**CWS Number** Mid Suffolk 24  
**Site Name** REDGRAVE LAKE  
**Parish** BOTESDALE  
**District** Mid Suffolk  
**NGR** TM055767  
**Description**

Redgrave Lake is situated between the villages of Redgrave and Wortham, to the north of the A143. It is an extensive lake fringed with emergent vegetation, mainly common reed. Other wetland species which grow on the gently-shelving banks include pink water speedwell and celery-leaved buttercup. Although there is no public access to the site, bird surveys of the lake from adjacent land have shown that Redgrave Lake is of considerable ornithological importance. The muddy lake margins exposed when the water level is low attract waders, for example green sandpiper. In summer the lake is used by up to twenty five great crested grebes. In addition, a high diversity of wintering wildfowl including goosander, pochard, shoveler, teal and gadwall are regularly seen. Furthermore, birds on passage particularly common tern and black tern are regularly seen over the lake.

**RNR Number** 0

**Area** 17.38

# County Wildlife Site Citations

**CWS Number** Mid Suffolk 25  
**Site Name** STUBBINGS WOOD  
**Parish** BOTESDALE  
**District** Mid Suffolk  
**NGR** TM065755

**Description**

Stubbing's Wood, listed in English Nature's Inventory of Ancient Woodland, is set amidst arable fields to the west of Burgate Great Wood which is scheduled as a Site of Special Scientific Interest. The tree canopy is dominated by oak standards and tall ash and field maple coppice. Hazel coppice with small amounts of hawthorn and spindle form the understorey. Although dominated by common woodland plants for example dog's mercury, bramble and ground ivy, the ground flora also supports a number of scarce woodland plants which are strongly associated with ancient woodland for example wood anemone and oxlip. A considerable amount of management work has taken place recently in the wood. This has involved the clearing of a wide track from the entrance to a large newly coppiced area in the centre of the wood. Standard trees, mainly oak have been left. Small areas lying adjacent to this track have also been recently coppiced. Furthermore, a glade has been cleared, close to the entrance of the wood. This area supports a species-rich plant community, including a number of wetland plants, for example meadowsweet. In addition to the production of coppiced timber, Stubbing's Wood is used extensively for pheasant rearing. Two pheasant pens are located within the wood.

**RNR Number** 0

**Area** 10.53

## Impact Assessment Methodology

### Scale Level

<p><b>County/ Metropolitan</b></p>	<ul style="list-style-type: none"> <li>● Designated or qualifying features within Local Nature Reserves or Wildlife Sites, selected on county/metropolitan criteria, or features that meet the published selection criteria for designation.</li> <li>● Semi-natural ancient woodland greater than 0.25 ha in area.</li> <li>● Significant and viable areas of habitat identified in County BAPs as requiring site protection.</li> <li>● Species populations of county/metropolitan importance.</li> <li>● Significant populations of a county/metropolitan important species (i.e. listed in a County/Metropolitan Red Data Book or BAP on account of their regional rarity or localisation).</li> </ul>
<p>● <b>District/Borough</b></p>	<ul style="list-style-type: none"> <li>● Biological features within Local Nature Reserves, etc., selected on District/Borough ecological criteria.</li> <li>● Areas of habitat identified in a sub-County (District/Borough) BAP or in the relevant Natural Area profile, and other features that are scarce within the District/Borough or that appreciably enrich the District/ Borough habitat resource.</li> <li>● Diverse and/or ecologically valuable hedgerow networks.</li> <li>● Semi-natural ancient woodland smaller than 0.25 ha in area.</li> <li>● Species populations of District/Borough importance.</li> <li>● Significant populations of a District/Borough important species (i.e. listed in a local BAP on account of their local rarity or localisation).</li> </ul>
<p><b>Parish/Neighbourhood</b></p>	<p>Areas of habitat considered to appreciably enrich the habitat resource within the context of the Parish or Neighbourhood, e.g. species-rich hedgerows.</p> <p>Valuable biological features within Local Nature Reserves selected on Parish ecological criteria.</p>

<b>Scale</b>	<b>Level of Value</b>
International	Very High
National	High
Regional	Medium
County/ Metropolitan	Medium
District/ Borough	Lower
Parish/ Neighbourhood	Lower

Table 1.2 Definitions of impact magnitude

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 1.3 Impact significance

Value of Receptor	Major Negative	Intermediate Negative	Minor Negative	Neutral	Minor Positive	Intermediate Positive	Major Positive
International (Very High)	Severe Adverse	Severe Adverse	Major Adverse	Neutral	Major Beneficial	Major Beneficial	Major Beneficial
National (High)	Severe Adverse	Major Adverse	Moderate Adverse	Neutral	Moderate Beneficial	Major Beneficial	Major Beneficial
Regional (Medium)	Major Adverse	Moderate Adverse	Minor Adverse	Neutral	Minor Beneficial	Moderate Beneficial	Major Beneficial
County/Metropolitan (Medium)	Moderate Adverse	Minor Adverse	Minor Adverse	Neutral	Minor Beneficial	Minor Beneficial	Moderate Beneficial
District/Borough (Lower)	Moderate Adverse	Minor Adverse	Minor Adverse	Neutral	Minor Beneficial	Minor Beneficial	Moderate Beneficial
Parish/Neighbourhood (Lower)	Minor Adverse	Minor Adverse	Minor Adverse	Neutral	Minor Beneficial	Minor Beneficial	Minor Beneficial
Negligible	Neutral	Neutral	Neutral	Neutral	Minor Beneficial	Minor Beneficial	Minor Beneficial

# Hedgerow Woody Species

## From Schedule 3 of Hedgerow Regulations 1997

Alder ( <i>Alnus glutinosa</i> )	Hazel ( <i>Corylus avellana</i> )
Apple, crab ( <i>Malus sylvestris</i> )	Holly ( <i>Ilex aquifolium</i> )
Ash ( <i>Fraxinus excelsior</i> )	Hornbeam ( <i>Carpinus betulus</i> )
Aspen ( <i>Populus tremula</i> )	Juniper, common ( <i>Juniperus communis</i> )
Beech ( <i>Fragus sylvatica</i> )	Lime, large-leaved ( <i>Tilia platyphyllos</i> )
Birch, downy ( <i>Betula pubescens</i> )	Lime, small-leaved ( <i>Tilia cordata</i> )
Birch, silver ( <i>Betula pendula</i> )	Maple, field ( <i>Acer campestre</i> )
Black-poplar ( <i>Populus nigra sub-species betulifolia</i> )	Mezereon ( <i>Daphne mezereum</i> )
Blackthorn ( <i>Prunus spinosa</i> )	Oak, pedunculate ( <i>Quercus robur</i> )
Box ( <i>Buxus sempervirens</i> )	Oak, sessile ( <i>Quercus petraea</i> )
Broom ( <i>Cytisus scoparius</i> )	Osier ( <i>Salix viminalis</i> )
Buckthorn ( <i>Rhamnus cathartica</i> )	Pear, Plymouth ( <i>Pyrus cordata</i> )
Buckthorn, alder ( <i>Frangula alnus</i> )	Pear, wild ( <i>Pyrus pyraster</i> )
Butcher's-broom ( <i>Ruscus aculeatus</i> )	Poplar, grey ( <i>Populus x canescens</i> )
Cherry, bird ( <i>Prunus padus</i> )	Poplar, white ( <i>Populus alba</i> )
Cherry, wild ( <i>Prunus avium</i> )	Privet, wild ( <i>Ligustrum vulgare</i> )
Cotoneaster, wild ( <i>Cotoneaster integerrimus/cambricus</i> )	Rose ( <i>Rose species</i> )
Currant, downy ( <i>Ribes spicatum</i> )	Rowan ( <i>Sorbus aucuparia</i> )
Currant, mountain ( <i>Ribes alpinum</i> )	Sea-buckthorn ( <i>Hippophae rhamnoides</i> )
Dogwood ( <i>Cornus sanguinea</i> )	Service-tree, wild ( <i>Sorbus torminalis</i> )
Elder ( <i>Sambucus nigra</i> )	Spindle ( <i>Euonymus europaeus</i> )
Elm ( <i>Ulmus species</i> )	Walnut ( <i>Juglans regia</i> )
Gooseberry ( <i>Ribes uva-crispa</i> )	Wayfaring-tree ( <i>Viburnum lantana</i> )
Gorse ( <i>Ulex europaeus</i> )	Whitebeam ( <i>Sorbus species</i> )
Gorse, dwarf ( <i>Ulex minor</i> )	Willow ( <i>Salix species</i> )
Gorse, western ( <i>Ulex gallii</i> )	Yew ( <i>Taxus baccata</i> )
Guelder Rose ( <i>Viburnum opulus</i> )	
Hawthorn ( <i>Crataegus monyogyna</i> )	
Hawthorn, midland ( <i>Crataegus laevigata</i> )	

**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 majority 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					See Jan to June
Bats	Surveys	*	Inspection of hibernation, tree and building roosts			No surveys	Activity surveys and inspection of building roosts. Emergence counts.					No surveys	Inspection of hibernation, tree and building roosts	
	Mitigation	**	Works on maternity roosts		Works on maternity roosts until mid-May. Works on hibernation roosts from mid-March			Works on hibernation roosts only			Hibernation roosts until November. Maternity roosts from mid-September		Works on maternity roosts only	

<sup>1</sup> Applies in Northern Ireland 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
Dormice	Surveys	*	Nut searches (sub-optimum time)		Nest searches (April sub-optimum time)		Cage traps and hair tube surveys to mid-October Nut searches from September (optimum time September to December) Nest searches (optimum time September to March)						Nut searches and nest searches (optimum time)	
	Mitigation	**	No clearance works				Clearance works (sub-optimum time)	No clearance works			Clearance works to early October (optimum time)		No clearance works	
Otters	Surveys	*	Surveys for otters can potentially be conducted all year round, though vegetation cover and weather conditions may limit the times at which surveys can be carried out											
	Mitigation	**	Mitigation can potentially be conducted in any month, but is likely to be restricted where otters are found to be breeding											
Pine martens	Surveys	*	Surveys may be conducted all year round weather permitting Optimum time is spring and summer. Surveys for breeding dens from March to May.											
	Mitigation	**	Works in areas of pine marten habitat and dens		Avoid all works in pine marten habitat								Works in areas of pine marten habitat and dens	
Red squirrels	Surveys	*	Surveys may be conducted all year round weather permitting Optimum time is spring and summer. Surveys for breeding females from December to September.											
	Mitigation	**	Avoid all works in red squirrel habitat										Works should preferably be conducted at this time	
Water voles (n/a in NI)	Surveys	*	Reduced activity	Initial surveys possible	All survey methods can be used during this period, though vegetation cover and weather conditions may limit the times at which surveys can be carried out. (Optimum time: March to June)							Initial surveys possible	Reduced activity	
	Mitigation	N <sup>2</sup>	Avoid all works in water vole habitat			Works in water voles habitat possible	Avoid all works in water vole habitat			Works in water vole habitat possible	Avoid all works in water vole habitat			
Sand lizards, smooth snakes (n/a in NI) <sup>1</sup> and common lizards	Surveys	*	No surveys – reptiles in hibernation		Activity surveys from March to June and in September / October. Surveys are limited by high temperatures during July and August. Peak survey months are April, May and September.							No surveys – reptiles in hibernation		
	Mitigation	**	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		

<sup>2</sup> The extent of legal protection of the water vole is currently under review; it has been proposed to fully protect water voles, as well as their habitats.

**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		Activity surveys from March to June and in September / October. Surveys are limited by high temperatures during July and August. Peak survey months 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 are releasing young)		Optimum time for surveys				Reduced activity	
	Mitigation	***	Avoid capture programmes (low activity levels may lead to animals being easily missed)			Exclusion of crayfish from construction areas.	Avoid capture programmes		Exclusion of crayfish from construction areas				Avoid capture programmes (low activity levels may lead to animals 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.

### Habitat Protection

Where retained habitat is adjacent an area of development, what should you do?

- An exclusion zone should be put in place consisting of barriers separating construction activities from wildlife areas.
- No polluting materials should be used near rivers.
- Care should be taken to prevent the introduction or spread of invasive plants such as Japanese Knotweed or Giant Hogweed.
- 'Keep out wildlife exclusion zone' signs to be secured to barriers.



### Trees and Hedgerows

- The contractor should follow the specific requirements of the Local Authority in relation to Tree Preservation Orders.
- Trees should be fenced off by no less than the width of the canopy spread until all development work is complete.
- Do not use a tree for external fixtures or fittings.
- Nothing should be stored against the trunks of trees.
- There should be no change in soil depth within 2m of the trunks, unless it has been approved by an arboriculturist.
- Site Compounds should be erected outside of the tree canopy.



### Phased Clearance In Relation to Reptiles and Amphibians

- Any site clearance should be undertaken in a phased and controlled manner and under ecological supervision. This gives a chance to reptiles and amphibians to move out the way to somewhere safe before a site is cleared.
- All clearance work should be undertaken during April - August in order to coincide with the reptile and amphibian active seasonal period and should be undertaken within a temperature range of 16°C - 24°C.
- Strim grass to a height of 100mm and the cut material to be hand raked to the sides of the area. All strimming should commence in the centre of the site working outwards towards the periphery of the development footprint to where the habitat is to be retained.

# Wildlife & Construction Best Practice Guidance



## Protected Species

### Birds and their Nests

- All species of wild bird in the UK are protected during the breeding season.
- They are protected against intentional killing, injuring or taking, damaging or destroying nests in use or being built, and taking or destroying eggs.
- Birds can nest in places, such as scrub, hedgerows, trees, in or on buildings, ledges, cliffs and on the ground, depending on the species. In the UK they typically build their nests and lay their eggs between March and the end of July.

#### What if you find a bird nesting on site?

- All works in the area must stop until the birds have completed breeding.
- An exclusion zone around the nests area should be put up by an ecologist.
- **DO NOT** undertake scrub clearance during the bird-nesting season (March - end of July) if at all possible.
- **DO NOT** undertake scrub clearance during the bird-nesting season without an experienced ecological being present.

### Reptiles

- Reptiles are protected, which makes it an offence to intentionally and recklessly kill, injure or take any species of reptile.

#### Where are they found?

- Grass snake, slow worm and common lizard are fairly widespread and may be found within dense vegetation on sites that are directly next to open areas of rubble / rocks and / or short grassland.
- Clearance works should be undertaken in a phased manner and supervised by an ecologist.

#### What to do if you find a reptile?

- **STOP!** If you think you have found a reptile on site, stop all works and consult an ecologist immediately.

## Amphibians

- Amphibian species include the common toad, common frog, smooth (or common) newt and palmate newt, there is also the fully protected great crested newt.

- Common amphibians are protected, which makes it an offence to intentionally and recklessly kill, injure or take them. Great crested newts are further protected for disturbance and/or damaging or obstructing their habitats.

#### Where are they found?

- Amphibians can be found in or near ponds or other water bodies on development sites, including temporary pools. Most amphibians will hibernate on land during the winter months.

#### What should you do if you find an amphibian and are unsure of the identity?

- **STOP!** and consult an ecologist immediately.
- **STOP!** if you think you have found a great crested newt on site and consult an ecologist immediately.

## Bats and their Roosts

- All bat species and their roosts are protected, it is an offence to intentionally kill, injure or take a bat. It is also an offence to intentionally or recklessly damage, destroy or obstruct access to any place that a bat uses for shelter or protection (even if bats are not currently present).

#### Places you may find them?

- Holes, and cracks in trees, in roofs and walls of houses and buildings, under bridges, in underground caves or old railway tunnels. Every building and mature tree is a potential bat roost.

#### Things to look out for?

- Below bat roost entrances: Dark stains on walls, tree trunks or bat droppings on the ground.
- Bat droppings are dark brown or black and about half a centimetre long - they crumble when crushed.

#### What should you do if you think you have found a bat roost?

- **STOP!** all works in the area and contact an Ecologist immediately.



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# Wildlife and Construction Best Practice Guidance



## BIRDS AND THEIR NESTS

- All species of wild bird in the UK are protected during the breeding season.
- They are protected against intentional killing, injuring or taking, damaging or destroying nests in use or being built, and taking or destroying eggs.
- Birds can nest in places, such as scrub, hedgerows, trees, in or on buildings, ledges, cliffs and on the ground, depending on the species. In the UK they typically build their nests and lay their eggs between March and the end of July.
- What if you find a bird nesting on site?
- All works in the area must stop until the birds have completed breeding.
- An exclusion zone around the nest/s area should be put up by an ecologist.
- **DO NOT** undertake scrub clearance during the bird-nesting season (March – end of August) if at all possible.
- **DO NOT** undertake scrub clearance during the bird-nesting season without an experienced ecological being present.



## HABITAT PROTECTION

- Where retained habitat is adjacent an area of development, what should you do?
- An exclusion zone should be put in place consisting of barriers separating construction activities from wildlife areas.
- No polluting materials should be used near rivers.
- "Keep out wildlife exclusion zone" signs to be secured to barriers.



## REPTILES AND AMPHIBIANS

- Reptiles and amphibians are protected, which makes it an offence to intentionally and recklessly kill, injure or take any species of reptile.
- Amphibians can be found in or near ponds or other water bodies on development sites, including temporary pools. Most amphibians will hibernate on land during the winter months.
- What should you do if you find an amphibian or reptile and are unsure of the identity?
- Reptiles and amphibians are fairly widespread and may be found within dense vegetation on sites that are directly next to open areas of rubble / rocks and / or short grassland.
- Clearance works should be undertaken in a phased manner and supervised by an ecologist.
- **STOP!** if you think you have found a reptile or amphibian on site, stop all works and consult an ecologist immediately.

## TREES AND HEDGEROWS

- Trees should be fenced off by no less than the width of the canopy spread until all development work is complete.
- Do not use a tree for external fixtures or fittings.
- Nothing should be stored against the trunks of trees.
- There should be no change in soil depth within 2m of the trunks, unless it has been approved by an arboriculturist.
- Site Compounds should be erected outside of the tree canopy.



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## 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.<sup>1</sup> 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.<sup>2</sup>

##### 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 season<sup>3</sup>. 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.<sup>4</sup>

<sup>1</sup> 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>

<sup>2</sup> As above

<sup>3</sup> Pollard A. (2009) Visual constraints on bird behaviour. University of Cardiff

<sup>4</sup> 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 cross<sup>5</sup>. 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) process<sup>6</sup>. 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

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

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

guides<sup>7</sup>. 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 Plans<sup>8</sup>. 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 to 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*.

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

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

## Do

- *consider employing a competent lighting designer* who will apply the principals of providing the right light, in the right place, at the right time and controlled by the right system.
- *minimise the spread of light* to at, or near horizontal and ensure that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required.
- *consider the height of lighting columns*. It should be noted that a lower mounting height is not always better. A lower mounting height can create more light spill or require more columns. Column height should be carefully considered to balance task and mitigation measures.
- *consider no lighting solutions where possible* such as white lining, good signage and LED cats eyes. These options can also be effective. For example, light only high-risk stretches of roads, such as crossings and junctions, allowing headlights to provide any necessary illumination at other times.
- *use temporary close-boarded fencing until vegetation matures*, to shield sensitive areas from lighting.
- *limit the times that lights are on to provide some dark periods*. The task being lit often varies, for example roads are less used after 23.00hrs and car parks are empty. A lighting designer can vary the lighting levels as the use of the area changes reducing lighting levels or perhaps even switching installations off after certain times. This use of adaptive lighting can tailor the installation to suit human health and safety as well as wildlife needs.

## Technological specifications

Research from the Netherlands has shown that spectral composition does impact biodiversity.

- *Use narrow spectrum light sources* to lower the range of species affected by lighting.
- *Use light sources that emit minimal ultra-violet light*
- *Lights should peak higher than 550 nm*
- *Avoid white and blue wavelengths of the light spectrum* to reduce insect attraction and where white light sources are required in order to manage the blue short wave length content they should be of a warm / neutral colour temperature <4,200 kelvin.

Further guidance on the spectral composition of artificial lighting will be made available following the publication of research from the Netherlands.

### Further reading:

- A review of the impact of artificial light on invertebrates. Buglife. 2011
- Royal Commission on Environmental Pollution. 2009. Artificial light in the environment. London, HMSO
- The Ecological Consequences of Artificial Night Lighting" edited by Longcore and Rich
- Shedding Light: A survey of local authority approaches to lighting in England. CPRE 2014

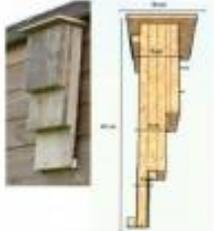
For more information on lighting and wildlife see:

- Bat Conservation Trust (BCT) — [www.bats.org.uk](http://www.bats.org.uk)
- Campaign for Dark Skies (CfDS) — [www.britastro.org/dark-skies](http://www.britastro.org/dark-skies)
- Bats and Lighting Research project — [www.batsandlighting.co.uk/index.html](http://www.batsandlighting.co.uk/index.html).
- Institution of Lighting Professionals (ILP) — [www.theilp.org.uk](http://www.theilp.org.uk)
- Lichtopnatuur - Impact of artificial light on flora and fauna in The Netherlands - <http://www.lichtopnatuur.org/>

<p><b>Eco-Roost Bat Brick</b></p>	
<p><b>Eco-Roost Double Chamber Bat Box</b></p>	
<p><b>Eco-Roost Double Kent Box</b></p>	
<p><b>Eco-Roost 28mm, 32mm and Open fronted bird boxes</b></p>	

## 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		<p>The 1FF bat box can be sited in trees or on buildings. Size: 43cm high x 27cm wide x 14cm deep.</p>
Schwegler 2F Bat Box		<p>The 2F bat box can be sited in trees or on buildings. Size: 33cm high x 16cm diameter.</p>
1FQ Schwegler Bat Roost (For External Walls)		<p>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.</p>
Improved Roost-Maternity Bat Box		<p>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.</p>
Timber Double Chamber Bat Box		<p>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.</p>
The Kent Bat Box		<p>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.</p>

## 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.

