



ECOLOGYSOLUTIONS

Part of the ES Group

WORKING DRAFT

GREAT WILSEY PARK,
HAVERHILL

**Protected Species
Survey Report**

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1. INTRODUCTION

1.1. Background

- 1.1.1. Ecology Solutions was commissioned by Redrow Homes in October 2018 to prepare materials to address the requirements of planning conditions for the development at Great Wilsey Park (reference: DC/15/2151/OUT).
- 1.1.2. A series of species surveys has been undertaken by Ecology Solutions in 2018 and 2019. This comprises work on [REDACTED] bats, Otters *Lutra lutra*, Water Voles *Arvicola amphibius*, Dormice *Muscardinus avellanarius*, wintering and breeding birds, reptiles and [REDACTED].

1.2. Site Characteristics

- 1.2.1. The site is situated to the north-east of the town of Haverhill, Suffolk. Haverhill Road bounds the site to the north and north-west, beyond which lies farmland. Housing development lies to the west and the south of the site. Open farmland is present to the east (see Plan ECO1).
- 1.2.2. The site consists largely of arable farmland, with field margins, mixed and broadleaved plantation, improved grassland, hedgerows and trees. A tributary of the Stour Brook runs from north-west to south-east across the site and is a tributary of the River Stour. Additionally, several ditches and ponds are present across the site (see Plan ECO2).

1.3. Purpose of this Report

- 1.3.1. This report sets out the results of the survey work undertaken at the site by Ecology Solutions between October 2018 and June 2019. It will continue to be updated as surveys are completed, and thus remains a working draft at the time of writing.
- 1.3.2. An assessment of the survey results and their implications for the proposals is made with reference to published guidance.

2. LEGISLATION AND ECOLOGY

2.1. Badgers

- 2.1.1. **Legislation.** The Protection of Badgers Act 1992 consolidates the previous Badgers Acts of 1973 and 1991. The legislation aims to protect the species from persecution, rather than being a response to an unfavourable conservation status, as the species is, in fact, common over most of Britain, with particularly high populations in the southwest.
- 2.1.2. As well as protecting the animal itself, the 1992 Act also makes the intentional or reckless destruction, damage or obstruction of Badger setts an offence. A sett is defined as, “*any structure or place which displays signs indicating current use by a Badger*”, by current Natural England guidance.
- 2.1.3. In addition, the intentional elimination of sufficient foraging area used to support a known social group of Badgers may, in certain circumstances, be construed as an offence by constituting ‘cruel ill treatment’ of a Badger.
- 2.1.4. Any work that disturbs Badgers is illegal without a licence granted by Natural England. Unlike general conservation legislation, the Badgers Act 1992 makes specific provision for the granting of licences for development purposes, including for the destruction of setts.
- 2.1.5. It should be noted that a licence cannot be issued until the site is in receipt of full and valid planning permission, and that generally licences are not granted between December and June inclusive to avoid disruption to the Badger breeding cycle.
- 2.1.6. **Ecology.** Badgers are a member of the Weasel family and are widespread throughout the British Isles. It has been estimated that Britain supports in the region of 250,000 Badgers. However, they are not uniformly distributed and are less common in upland areas, East Anglia and northern England. Their distribution is typically much greater in the south and southwestern areas of England.
- 2.1.7. Badgers are very social animals, and in most instances they live in social groups of approximately five to twelve individuals. Setts are usually dug into a suitably firm and free draining substrate, and as a result are often located in steep banks and mounds.
- 2.1.8. In lowland Britain earthworms are an important food item, though cereals and fruit may figure significantly in the seasonal diet of a Badger. They will also feed on a range of other invertebrates and animals, such as frogs, young rabbits and wasp grubs.
- 2.1.9. Badgers typically have a number of setts in their territory, of which the main sett is occupied year-round and is the most important for the social group. In addition, a social group will often maintain annex, subsidiary and outlier setts, each of which is of decreasing importance to the group as a whole.

2.2. Bats

2.2.1. **Legislation.** All bats are protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) and included on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (“the Habitats Regulations”). These include provisions making it an offence:

- Deliberately to kill, injure or take (capture) bats;
- Deliberately to disturb bats in such a way as to:-
 - (i) be likely to impair their ability to survive, to breed or rear or nurture their young; or to hibernate or migrate; or
 - (ii) affect significantly the local distribution or abundance of the species to which they belong;
- To damage or destroy any breeding or resting place used by bats;
- Intentionally or recklessly to obstruct access to any place used by bats for shelter or protection (even if bats are not in residence).

2.2.2. While the legislation is deemed to apply when bats are not in residence, Natural England guidance suggests that certain activities such as re-roofing can be completed outside sensitive periods when bats are not in residence provided these do not damage or destroy the roost.

2.2.3. The words deliberately and intentionally include actions where a court can infer that the defendant knew that the action taken would almost inevitably result in an offence, even if that was not the primary purpose of the act.

2.2.4. The offence of damaging (making worse for the bat) or destroying a breeding site or resting place is an absolute offence. Such actions do not have to be deliberate for an offence to be committed.

2.2.5. European Protected Species licences are available from Natural England in certain circumstances, and permit activities that would otherwise be considered an offence.

2.2.6. In accordance with the Habitats Regulations Natural England must apply the three derogation tests as part of the process of considering a licence application. These tests are that:

1. the activity to be licensed must be for imperative reasons of overriding public interest or for public health and safety;
2. there must be no satisfactory alternative; and
3. the favourable conservation status of the species concerned must be maintained.

2.2.7. Licences can usually only be granted if the development is in receipt of full planning permission.

2.2.8. **Ecology.** There are seventeen breeding bat species in Britain. Many of them are considered threatened due to a variety of factors including habitat loss and disturbance / damage to roosts. Of these seventeen species, a number regularly use buildings as roost sites.

2.2.9. Bats are highly mobile flying mammals, which, in Britain, feed entirely on insects. They are able to fly and feed in the dark, by using a system of echolocation that gives them a 'sound picture' of their surroundings.

2.2.10. In winter, when prey is scarce, British bats hibernate in humid parts of buildings, caves or hollow trees where temperatures are typically stable. They may wake occasionally but only become fully active again in the spring.

2.2.11. Female bats gather together in maternity roosts in summer to give birth and rear their single offspring. Like other mammal's bats have fur and give birth to live young. Infant bats suckle on their mother's milk for several weeks until they can fly and hunt insects for themselves. Bats are long-lived mammals and some British species are known to live to over 25 years of age.

2.3. **Otters**

2.3.1. **Legislation.** Otters are subject to the same level of legislative protection as bats (see above).

2.4. **Water Voles**

2.4.1. **Legislation.** Water Voles are fully protected under the Wildlife & Countryside Act 1981. It is an offence to:

- Intentionally kill, injure or take (capture) a Water Vole;
- Possess or control a live or dead Water Vole, or any part of a Water Vole;
- To sell, offer for sale or advertise for live or dead Water Voles;
- Intentionally or recklessly damage, destroy, or obstruct access to any structure or place which Water Voles use for shelter or protection or disturb Water Voles while they are using such a place.

2.4.2. The words deliberately and intentionally include actions where a court can infer that the defendant knew that the action taken would almost inevitably result in an offence, even if that were not the primary purpose of the act.

2.4.3. Operations where Water Voles are to be trapped or displaced require a conservation licence from Natural England. This may be in the form of a class licence or a site-specific licence dependent on whether the proposals meet particular criteria. To obtain either licence the project must deliver a net benefit for Water Voles.

2.5. Dormice

- 2.5.1. **Legislation.** Dormice are subject to the same level of legislative protection as bats (see above).
- 2.5.2. **Ecology.** The Dormouse is a highly arboreal and nocturnal animal that lives mainly in deciduous woodland and scrub, where it feeds among branches and trees.
- 2.5.3. This species will consume a wide variety of foods including fruit, flowers and insects and becomes most active whilst foraging for fruit during the summer. Dormice do not generally disperse great distances, highlighting their need for varied and diverse habitat.
- 2.5.4. During the winter Dormice will save energy and, given the lack of food resources at this time of year, will go into hibernation. The species will generally hibernate on lower ground somewhere moist and cool to ensure metabolic processes are slowed efficiently and their fat reserves last the winter.

2.6. Birds

- 2.6.1. **Legislation.** Section 1 of the Wildlife and Countryside Act 1981 (as amended) is concerned with the protection of wild birds, whilst Schedule 1 lists species that are protected by special penalties. All species of birds receive general protection whilst nesting.

2.7. Reptiles

- 2.7.1. **Legislation.** All reptile species receive protection under legislation in the UK. Smooth Snake *Coronella austriaca* and Sand Lizard *Lacerta agilis* receive full legal protection in England due to their status as scarce, rather local, species. These species are highly unlikely to be present within the site on account of their habitat requirements and geographical distribution.
- 2.7.2. The other reptile species, namely Slow Worm *Anguis fragilis*, Common Lizard *Zootoca vivipara*, Grass Snake *Natrix helvetica* and Adder *Vipera berus*, are common and widespread across the country. As such, these species receive only partial protection under the Wildlife and Countryside Act 1981 (as amended), being protected from deliberate killing or injury, their habitat receiving no statutory protection.
- 2.7.3. **Ecology.** There are six native reptile species in Britain. They are found in a wide variety of habitats, including woodland edge, heaths and especially rough grassland. Ideally reptiles require a varied habitat structure that provides shelter, a range of sunny and shady spots and frost-free areas to hibernate over winter.
- 2.7.4. Reptile species cannot generate their own body heat and therefore need to raise their body temperatures using external heat sources, especially by basking in the sun, which greatly influences their behaviour.

- 2.7.5. Most reptiles hibernate between October and March, when weather conditions are unsuitable for activity however during warm weather can be active until November. During April to September reptiles are generally only active in warm weather, but avoid prolonged exposure to the sun on very hot days. Reptiles are usually inactive during the night.
- 2.7.6. Snakes occupy fairly large ranges, sometimes covering several kilometres during the course of a year, although they usually return to the same area each year to hibernate. Adders and Smooth Snakes eat mostly reptiles and small mammals, while Grass Snakes prey largely on amphibians.
- 2.7.7. Lizards have smaller ranges than snakes and are often found in close proximity to landscape features such as embankments. Common Lizards and Sand Lizards spend relatively large amounts of time basking, while Slow Worms are often hidden in vegetation or found under refuges. All three species of lizard eat invertebrates.

2.8. Amphibians

- 2.8.1. **Legislation.** All British amphibian species receive a degree of protection under the Wildlife and Countryside Act 1981 (as amended). The level of protection varies from protection from sale or trade only, as is the case with species such as Smooth Newt *Lissotriton vulgaris* and Common Toad *Bufo bufo*, to the more rigorous protection afforded to species such as the Great Crested Newt, which is also protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended); included on Schedule 2 of the Conservation of Habitats and Species Regulations 2017.
- 2.8.2. Common Toads are also species of principal importance for the conservation of biodiversity under Section 41 (England) of the NERC Act 2006.
- 2.8.3. The NERC Act 2006 requires the Secretary of State to:
... take such steps as appear... to be reasonably practicable to further the conservation of the living organisms and types of habitat included in any list published under this section, or... promote the taking by others of such steps.
- 2.8.4. **Ecology.** There are six species of amphibian native to the UK. Common Frog *Rana temporaria*, Common Toad, Smooth Newt and Palmate Newt *Lissotriton helveticus* are all common and widespread across most of Britain. Although Great Crested Newts are regularly encountered locally and throughout much of England, the UK holds a large percentage of the world population of the species. The UK has an international obligation to conserve the species and it receives full protection under domestic and European legislation. Natterjack Toads *Epidalea calamita* are rare in Britain and found only in coastal sand dune systems and sandy heaths.
- 2.8.5. The Great Crested Newt is the UK's largest newt species. The majority of their lives are spent on land and in spring adults migrate

to aquatic habitats to breed. Rough grassland, woodland and scrub are considered to provide suitable terrestrial habitats for amphibians. Great Crested Newts tend to use suitable habitats within 500m of their breeding ponds. Their diet consists of invertebrates and tadpoles.

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3. SURVEY METHODOLOGY

3.1. Desk Study

- 3.1.1. In order to compile background information on the site and its immediate surroundings, Ecology Solutions contacted Suffolk Biodiversity Information Service (SBIS).

3.2. Badger Surveys

- 3.2.1. During the surveys completed in 2018 and 2019, the area was thoroughly searched for evidence of Badger setts. For any setts encountered each sett entrance would be noted and plotted, even if the entrance appeared disused. The following information would be recorded:

- i) The number and location of well used or very active entrances; these are clear of any debris or vegetation and are obviously in regular use and may, or may not, have been excavated recently.
- ii) The number and location of inactive entrances; these are not in regular use and have debris such as leaves and twigs in the entrance or have plants growing in or around the edge of the entrance.
- iii) The number of disused entrances; these have not been in use for some time, are partly or completely blocked and cannot be used without considerable clearance. If the entrance has been disused for some time all that may be visible is a depression in the ground where the hole used to be together with the remains of the spoil heap.

- 3.2.2. Secondly, evidence of Badger activity such as well-worn paths, run-throughs, snagged hair, footprints, latrines and foraging signs was recorded so as to build up a picture of the use of the site by Badgers.

3.3. Bat Surveys

- 3.3.1. All trees within the site were assessed for their potential to support roosting bats in October 2018. Features typically favoured by bats or evidence of past use by bats were searched for including:

- Obvious holes, e.g. rot holes and old Woodpecker holes;
- Dark staining on the tree, below the hole;
- Tiny scratch marks around a hole from bats' claws;
- Cavities, splits and or loose bark from broken or fallen branches, lightning strikes etc; and
- Very dense covering of mature Ivy over trunk.

- 3.3.2. In addition to the tree assessment, surveyors undertook activity surveys. These were carried out on 17 and 23 October 2018, 23 April, 23 May, 19 June and 9 July 2019 using iPads paired with Echo

Meter Touch 2 PRO bat detectors. Further surveys will be conducted monthly between August and October 2019.

- 3.3.3. The surveys were undertaken across set routes (transects) that covered the majority of the site with the aim of identifying any bats using the site for foraging or dispersal.
- 3.3.4. In order to maximise the encounter rate of bats (i.e. of both early- and late-emerging species), transects commenced around sunset and continued until approximately 120 minutes after sunset.
- 3.3.5. The surveyors observed the behaviour of any bat recorded, i.e. foraging or commuting, together with noting the species present and number of bats present at that location.
- 3.3.6. Surveys were conducted when the night-time temperature was above 10°C. The insectivorous diet of bats means there is little or no food available when temperature falls below this level and consequently levels of activity are low and may not accurately reflect the value of the application site for bats. The weather conditions for the surveys were recorded and any limitations noted.
- 3.3.7. A total of four static SM4BAT+ bat detectors were deployed within the site for periods of at least five consecutive nights in October 2018, and April, May, June and July 2019. The detectors were programmed to record from 30 minutes before sunset to 30 minutes after sunrise. Recorded data was subsequently analysed using Kaleidoscope software.
- 3.3.8. All field surveys were undertaken with regard to best practice guidelines issued by Natural England (2004¹), the Joint Nature Conservation Committee (2004²) and the Bat Conservation Trust (2016³).

3.4. Otter Surveys

- 3.4.1. Otters, being a large mammalian predator, are present in watercourses of varying sizes ranging from small lakes to rivers, estuaries and coasts.
- 3.4.2. The site was assessed for its suitability to support Otters in October 2018 and was subject to a specific survey for Otters in April 2019 by a suitably qualified ecologist to identify any characteristic signs of otters. The following signs sought for:
 - Spraint – Irregular, sometimes short, rounded segments containing fish bones, scales or crayfish parts;
 - Footprints of otters in soft substrates along the watercourse typically 8cm wide and 10cm long;

¹Mitchell-Jones, A. J. (2004). *Bat Mitigation Guidelines*. English Nature, Peterborough.

²Mitchell-Jones, A.J. & McLeish, A.P. (Eds.) (2004). *Bat Workers' Manual*. 3rd edition. Joint Nature Conservation Committee, Peterborough.

³ Collins, J. (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 3rd Edition. The Bat Conservation Trust, London.

- Holts and couches on the banks of the watercourse; and
- Slides on the banks of the watercourse.

3.5. Water Vole Surveys

- 3.5.1. The site was assessed for its suitability to support Water Voles in October 2018 and was subject to a specific survey for Water Vole in April 2019.
- 3.5.2. As Water Voles are rarely seen, the survey was based around the identification of characteristic signs. The survey followed guidance by Natural England and consisted of a close examination of all the ditches on site and banks up to two metres from the water's edge.
- 3.5.3. The experienced Water Vole surveyors completing the survey carefully searched the length of the watercourse, ditches and ponds and their associated banks, for the characteristic field signs of Water Vole. The following signs were sought:
- Faeces - 8-12 mm long and 4-5 mm wide with blunt ends;
 - Latrines - Water Voles will deposit the majority of their droppings at points of their territory boundary;
 - Feeding Stations – Water voles often bring pieces of cut vegetation to favoured feeding stations close to the water's edge;
 - Burrows - Typically 4-8 cm in diameter and found in the river / ditch bank;
 - Footprints of Water Vole in soft substrates along the ditches; and
 - Animals / Water Voles that may be observed directly.

3.6. Dormouse Surveys

- 3.6.1. A nest tube and nest box survey for Dormouse is currently being undertaken in respect of suitable areas of hedgerows within the site. At the time of writing six such surveys have been completed in October and November 2018, and April, May, June and July 2019. Surveys will continue during the 2019 survey season until the necessary 20 points are obtained in the survey index. Surveys will also be undertaken in 2021 between the months of April to November.
- 3.6.2. Features of importance to Dormice include diverse well-structured hedgerows offering a range of food sources throughout the year. Good arboreal links through the canopy layer of hedgerows / woodlands are required along with suitably dense cover for nest sites and good hibernation sites. Typical indicator tree / plant species include Hazel *Corylus avellana*, Honeysuckle *Lonicera periclymenum* and Bramble *Rubus fruticosus* agg.; but a mix of other species (such as Oak *Quercus* sp., Ash *Fraxinus excelsior*, Sycamore *Acer pseudoplatanus*, Blackthorn *Prunus spinosa* and Hawthorn *Crataegus monogyna*) can prove equally important and the presence of food sources throughout the active period for Dormice, coupled with the presence of suitable hibernation sites, is

of more importance than the presence / absence of any one key indicator species.

- 3.6.3. The survey technique involves the installation and checking of nest tubes and nest boxes within all habitats within the considered to be species-rich or of potential value to Dormice.
- 3.6.4. The Dormouse nest tubes / boxes utilised were those approved as standard by the Mammal Society. In total, 248 nest tubes and six nest boxes were installed.
- 3.6.5. Nest tubes / boxes were placed in accordance with the guidance provided by the Mammal Society and Natural England⁴. Typically, tubes are placed within scrub, hedgerows and woodland approximately every 20 metres where suitable locations can be identified. Nest boxes are placed at lower densities but in similarly selected locations as for nest tubes. The nest tubes were attached with wire ties underneath suitably sturdy horizontal branches and positioned approximately 1.5 metres above ground level on average.
- 3.6.6. The survey has been scored for effort according to the method developed from the South West Dormouse Project and carried through in the second edition of *The Dormouse Conservation Handbook* (English Nature, 2006)⁵. The system used provides an overall score that reflects the chances of Dormice being discovered if present, and thus provides an indicator of the 'thoroughness' of a survey. This score is based on the number of tubes used and the number of months the tubes were in place.
- 3.6.7. The months of the year are weighted according to the likelihood of recording Dormice, as set out in Table 3.1 below.

| Month | Weighting |
|-----------|-----------|
| April | 1 |
| May | 4 |
| June | 2 |
| July | 2 |
| August | 5 |
| September | 7 |
| October | 2 |
| November | 2 |

Table 3.1. Monthly Score Weighting for Dormouse surveys (Chanin & Woods 2003).

- 3.6.8. Generally speaking, the index of effort is calculated based on the use of 50 nest tubes as a standard minimum. The total number of nest tubes deployed was 248, with a further six nest boxes. Tubes were deployed in suitable habitats at the recommended frequency

⁴ Chanin, P. & Woods, M. (2003). *Surveying Dormice Using Nest Tubes – Results & Experiences from the South West Dormouse Project*. Research Report 524. English Nature, Peterborough.

⁵ English Nature (2006). *The Dormouse Conservation Handbook*. English Nature, Peterborough.

of approximately every 20m, and therefore this is considered to be reasonable survey effort.

- 3.6.9. A score of 20 (or above) is deemed a thorough survey and a score of 15 to 19 may be regarded as adequate where circumstances do not permit more time or more tubes (particularly if other survey methods have also given negative results).
- 3.6.10. At the time of writing the index stands at a score of 13, surveys will continue to be undertaken on a monthly basis until September 2019 when 25 points will have been achieved, exceeding the 20 points necessary in the survey index.
- 3.6.11. The site does not contain areas dominated by Hazel and therefore hazelnut searches were not employed as part of the Dormouse survey effort.
- 3.6.12. In addition to traditional nest tube and box surveys, footprint tunnel surveys were undertaken within the site in October and November 2018, and June and July 2019. The application of these tunnels follows the recommendations of the Suffolk Wildlife Trust⁶. Footprint tunnel surveys will be carried out in concert with the nest tube surveys.
- 3.6.13. Footprint tunnels comprise 65mm square drainpipe tubing containing a plywood insert lined with a sheet of high-quality white card. A non-toxic ink, made from a mix of olive oil and pharmaceutical grade charcoal powder, is applied to ink pads at both entrances, which when passed over will transfer ink from the mammal's feet to the white card. A total of 80 tunnels were deployed along a transect within areas of suitable habitat at approximately 15 to 20 metres apart, and at a height of approximately 1 to 1.5 metres off the ground, depending on the habitat present. Tunnels should be checked every two weeks to re-ink the pads and change the white card if required.
- 3.6.14. Dormice have a distinctive footprint compared to those of other small mammals that may use the tunnels, with Dormice displaying three obvious triangles when a good print is captured.
- 3.6.15. Currently, footprint tunnel surveys are only used as a presence / likely absence technique and must be used in combination with at least one other verified survey method. Despite this, footprint tunnels have been shown to have a higher detection rate for areas of scrub and hedgerow than nest tube and box surveys alone.
- 3.6.16. Footprint tunnel surveys should be completed for at least three months, typically between May and October, though the tunnels can be installed as early as late March. As April has a low detection rate, if there are no results recorded for this period then this month should be excluded from the three-month survey period. For areas that are primarily considered to be dispersal corridors, as opposed to

⁶ Bullion, S., Looser, A. and Langton, S. (2018). An Evaluation of the Effectiveness of Footprint Tracking Tunnels for Detecting Hazel Dormice. *In Practice*, (101), pp.36-41.

permanently occupied by Dormice, the months of September and October should be included.

3.7. Wintering Bird Surveys

- 3.7.1. Wintering bird surveys were undertaken at the site by Ecology Solutions in November and December 2018, and January and February 2019.
- 3.7.2. Transects were designed to take in all the different habitats within the site and to allow visual inspections of all the open habitats within these areas. The direction in which transects were walked was varied to increase the likelihood of seeing a wider range of bird species.
- 3.7.3. The surveys commenced at or soon after sunrise, lasted approximately two hours and were performed in suitable weather conditions. The transect route was chosen so that the entire site was covered and all features likely to support wintering birds were surveyed.

3.8. Breeding Bird Surveys

- 3.8.1. Three breeding bird surveys have been undertaken during suitable weather conditions in April, May and June 2019.
- 3.8.2. The transect was designed to take in all the different habitats within the site and to allow visual inspections of all the open habitats within these areas.
- 3.8.3. All birds seen or heard within the survey area were identified and recorded, as was their behaviour. Binoculars and a telescope were used when necessary. The survey began around sunrise and took approximately two hours.

3.9. Reptile Surveys

- 3.9.1. Specific surveys for reptiles were carried out in April to June 2019. The methodology utilised principally derived from guidance given in Froglife Advice Sheet 10⁷, the *Herpetofauna Workers' Manual*⁸, the Herpetofauna Groups of Britain and Ireland's (HGBI) advisory note⁹ and Natural England's Standing Advice for Reptiles¹⁰.
- 3.9.2. Areas of suitable habitat were surveyed for the presence of reptiles using artificial refugia ("tins"). A total of 157 0.5m x 0.5m roofing felt tins were placed within areas of suitable reptile habitat within the site.

⁷ Froglife (1999) *Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10. Froglife, Halesworth.

⁸ Gent, T and Gibson, S. (2003). *Herpetofauna Workers' Manual*. JNCC, Peterborough.

⁹ Herpetofauna Groups of Britain and Ireland (HGBI). (1998). *Evaluating Local Mitigation / Translocation Programmes: Maintaining Best Practice and Lawful Standards*.

¹⁰ Natural England (2011). Standing Advice for Reptiles.
http://www.naturalengland.org.uk/Images/Reptile%20feb11_tcm6-21712.pdf

- 3.9.3. The tins provide shelter and heat up more quickly than the surroundings in the morning and can remain warmer than the surroundings in the late afternoon. Being ectothermic (cold blooded), reptiles use them to bask under and raise their body temperature which allows them to forage earlier and later in the day.
- 3.9.4. To determine presence / absence the tins are checked for reptile activity over seven visits at appropriate times of the day (avoiding the middle of the day when the ambient air temperature is at its highest) in accordance with Natural England guidance. Optimum weather conditions for reptile surveying are temperatures between 10°C and 17°C, intermittent or hazy sunshine and little or no wind.

3.10. **Great Crested Newt (eDNA) Surveys**

- 3.10.1. To determine the absence / presence of Great Crested Newts within on site ponds and ponds within 500m of the site, eDNA testing was undertaken. Water samples were taken in accordance with recognised guidelines.
- 3.10.2. Testing for eDNA is a relatively new method to establish absence or presence of Great Crested Newts approved by Natural England. While residing within a waterbody, Great Crested Newts deposit traces of DNA which can be detected through sampling the pond water and undergoing analysis within the laboratory. Water samples can be collected between 15 April and 30 June inclusive.
- 3.10.3. Water samples of any given waterbody are taken in 20 separate locations, with a focus towards areas of high suitability for Great Crested Newts. The samples are then pooled together into a self-supporting Whirl-pak Bag. Once the pooled samples have been mixed thoroughly 15ml of water is removed and transferred into an ethanol filled test tube. This is repeated a further five times leaving six test tubes that contain a mix of the sampled water and ethanol. These are then sent to a laboratory to undergo analysis.
- 3.10.4. Within the laboratory the samples are pooled together and tested via real time PCR (or q-PCR) in order to amplify select parts of the DNA allowing it to be detected and measured. A result of presence or absence is returned by the laboratory. However, if found to be present, no measure of the population size is obtained through this survey method.
- 3.10.5. If presence is confirmed a more detailed survey may be required, to inform the Natural England licensing process. This would typically take the form of bottle trapping, torching and egg searches. These surveys are undertaken between mid-March to mid-June.

4. SURVEY RESULTS

4.1. Badgers

Desk Study

- 4.1.1. [REDACTED]

Field Survey

- 4.1.2. A walkover survey of the Redrow site was undertaken on first instruction, [REDACTED]

- 4.1.3. [REDACTED]

- [REDACTED]

4.2. Bats

Desk Study

- 4.2.1. *Myotis* sp., Soprano Pipistrelle *Pipistrellus pygmaeus*, Common Pipistrelle *Pipistrellus pipistrellus* and Noctule *Nyctalus noctula* were all recorded on site in 2014.
- 4.2.2. The most recent record for Common Pipistrelle dates from 2015 and was recorded approximately 0.8km south of the site.
- 4.2.3. Three records for Barbastelle Bat *Barbastella barbastellus* was returned by the data search. All records date from 2014 with the closest recorded approximately 0.1km to the east of the site (within the wider site).
- 4.2.4. A single record for Serotine *Eptesicus serotinus* was located approximately 0.8km south of the site in 2014.

4.2.5. A single record for Nathusius' Pipistrelle *Pipistrellus nathusii* was returned. The record dates from 2014 located approximately 0.9 south-east of the site.

4.2.6. A single record for Brown Long-eared Bat *Plecotus auritus* was located approximately 0.3km south-west of the site in 2012.

Tree Assessment

4.2.7. All trees identified in the outline ES as being suitable to support roosting bats were subject to a further ground appraisal. Further tree assessments will be carried out in 2019.

Transect Surveys

4.2.8. Transect surveys were completed on 17 October and 23 October 2018, and 23 April, 23 May, 19 June and 9 July 2019.

4.2.9. The surveys were undertaken in favourable weather conditions. Conditions and timings of the surveys are summarised in Table 4.1 below.

| Date | 17.10.18 | 23.10.18 | 23.04.19 | 23.05.19 | 19.06.19 | 09.07.19 |
|------------------|-----------------|------------------------|-----------------|------------------------|-----------------------|-----------------------|
| Survey Type | Activity Survey | Activity Survey | Activity Survey | Activity Survey | Activity Survey | Activity Survey |
| Sunset | 18:01 | 17:48 | 20:09 | 20:57 | 21:22 | 21:18 |
| Survey Start | 18:01 | 17:50 | 20:08 | 20:57 | 21:22 | 21:18 |
| Survey End | 20:01 | 19:50 | 22:25 | 22:57 | 23:27 | 23:50 |
| Cloud Cover (%) | 25 | 0 | 85 | 35 | 75 | 100 |
| Temperature (°C) | 14 - 12 | 13 - 12 | 14 - 12 | 18 - 14 | 16 - 15 | 17 - 16 |
| Weather & Wind | Dry and calm | Dry with strong breeze | Dry and calm | Dry with gentle breeze | Dry with light breeze | Dry with light breeze |

Table 4.1. Bat survey conditions and timings.

Transect Survey 17.10.18 and 23.10.18

4.2.10. The results of the transect surveys completed on the evening of 17 and 23 October are summarised in Table 4.2 below and illustrated on Plan ECO3a.

4.2.11. Over the course of the surveys a total of 68 registrations were recorded. The majority of registrations recorded are attributed to Soprano Pipistrelle. Common Pipistrelle, *Pipistrellus* sp., Noctule, Brown Long-eared Bat and Barbastelle Bat were also recorded but less frequently.

4.2.12. Areas shown to be of greater interest for bats are Great Field Plantation, trees associated with the Stour Brook tributary and Hedgerow H4 in the south of the site.

| Transect | Species | Number of Registrations | First Recording after Sunset |
|----------|---------|-------------------------|------------------------------|
| Southern | Pa | 5 | 35 minutes |
| | Ppip | 4 | 1 hour 5 minutes |
| | Ppyg | 35 | 38 minutes |
| | Psp | 11 | 1 hour 19 minutes |
| | Nn | 1 | 1 hour 3 minutes |
| | Bb | 1 | 1 hour 34 minutes |
| Northern | Pa | 1 | 34 minutes |
| | Ppyg | 9 | 56 minutes |
| | Bb | 1 | 30 minutes |
| Total | | 68 | |

Table 4.2. Summary of transect surveys undertaken on 17.10.18 and 23.10.18¹¹.

Transect Survey 23.04.19

- 4.2.13. The results of the transect surveys completed on the evening of 23 April are summarised in Table 4.3 below and illustrated on Plan ECO3b.
- 4.2.14. Over the course of the surveys a total of 228 registrations were recorded. The majority of registrations recorded are attributed to Common Pipistrelle and Soprano Pipistrelle. Nathusius' Pipistrelle, *Myotis* sp., Serotine and Barbastelle Bat were also recorded but less frequently.

| Transect | Species | Number of Registrations | First Recording after Sunset |
|----------|---------|-------------------------|------------------------------|
| Southern | Ppip | 54 | 26 minutes |
| | Ppyg | 56 | 15 minutes |
| | Pnat | 1 | 1 hour 56 minutes |
| | Myo | 3 | 1 hour 10 minutes |
| Northern | Ppip | 71 | 25 minutes |
| | Ppyg | 38 | 13 minutes |
| | Myo | 2 | 1 hour 10 minutes |
| | Es | 1 | 52 minutes |
| | Nyc | 1 | 1 hour 52 minutes |
| | Bb | 1 | 30 minutes |
| Total | | 228 | |

Table 4.3. Summary of transect surveys undertaken on 23.04.19

¹¹In all cases the following abbreviations are used: Bb/Barbastelle *Barbastella barbastellus*; Es/Serotine *Eptesicus serotinus*; Myo/*Myotis* species; Md/Daubenton's *Myotis daubentonii*; Nn/Noctule *Nyctalus noctula*; NI/Leisler's Bat *Nyctalus leisleri*; Pa/Brown Long-eared Bat *Plecotus auritus*; Psp/Pipistrelle species; Pnat/Nathusius' Pipistrelle *Pipistrellus nathusii*; Ppip/Common Pipistrelle *Pipistrellus pipistrellus*; Ppyg/Soprano Pipistrelle *Pipistrellus pygmaeus*; Nyc/*Nyctalus* species and Un/Unidentified bat.

Transect Survey 23.05.19

- 4.2.15. The results of the transect surveys completed on the evening of 23 May are summarised in Table 4.4 below and illustrated on Plan ECO3c.
- 4.2.16. Over the course of the surveys a total of 184 registrations were recorded. The majority of registrations recorded are attributed to Common Pipistrelle. Soprano Pipistrelle, Serotine, *Myotis* sp. and Barbastelle Bat were also recorded but less frequently.

| Transect | Species | Number of Registrations | First Recording after Sunset |
|----------|---------|-------------------------|------------------------------|
| Southern | Ppip | 77 | 38 minutes |
| | Ppyg | 26 | 38 minutes |
| | Es | 7 | 1 hour 22 minutes |
| | Nyc | 3 | 38 minutes |
| | Bb | 1 | 1 hour 52 minutes |
| Northern | PPip | 45 | 58 minutes |
| | Ppyg | 4 | 30 minutes |
| | Myo | 1 | 59 minutes |
| | Nyc | 1 | 47 minutes |
| | Bb | 19 | 49 minutes |
| Total | | 184 | |

Table 4.4. Summary of transect surveys undertaken on 23.05.19

Transect Survey 19.06.19

- 4.2.17. The results of the transect surveys completed on the evening of 19 June are summarised in Table 4.5 below and illustrated on Plan ECO3d.
- 4.2.18. Over the course of the surveys a total of 103 registrations were recorded. The majority of registrations recorded are attributed to Common Pipistrelle. Soprano Pipistrelle and Nathusius' Pipistrelle were also recorded but less frequently.

| Transect | Species | Number of Registrations | First Recording after Sunset |
|----------|---------|-------------------------|------------------------------|
| Southern | Ppip | 44 | 28 minutes |
| | Ppyg | 27 | 3 minutes |
| | Pnat | 4 | 56 minutes |
| Northern | PPip | 26 | 26 minutes |
| | Ppyg | 2 | 17 minutes |
| Total | | 103 | |

Table 4.5. Summary of transect surveys undertaken on 19.06.19

Transect Survey 09.07.19

- 4.2.19. The results of the transect surveys completed on the evening of 9 July are summarised in Table 4.6 below and illustrated on Plan ECO3e.
- 4.2.20. Over the course of the surveys a total of 109 registrations were recorded. The majority of registrations recorded are attributed to Common Pipistrelle. Soprano Pipistrelle, Brown Long-eared Bat, *Myotis* sp., *Nyctalus* sp. and Barbastelle Bat were also recorded but less frequently.
- 4.2.21. Areas shown to be of greater interest for bats across all surveys are Great Field Plantation, trees associated with the Stour Brook tributary and Hedgerow H4 in the south of the site.

| Transect | Species | Number of Registrations | First Recording after Sunset |
|----------|---------|-------------------------|------------------------------|
| Southern | Ppip | 24 | 25 minutes |
| | Ppyg | 7 | 41 minutes |
| | Pa | 3 | 57 minutes |
| Northern | PPip | 62 | 13 minutes |
| | Ppyg | 5 | 23 minutes |
| | Myo | 5 | 1 hour 37 minutes |
| | Nyc | 1 | 1 hour 21 minutes |
| | Pa | 1 | 1 hour 26 minutes |
| | Bb | 1 | 1 hour 12 minutes |
| Total | | 109 | |

Table 4.6. Summary of transect surveys undertaken on 09.07.19

Remote Surveys

- 4.2.22. SM4BAT+ detectors were deployed in four locations (as shown on Plans ECO3a to ECO3e) on five occasions to monitor activity across consecutive nights. The results of this work are summarised in Tables 4.7 to 4.11 below.

| Position | Species | | | | | | | Total |
|----------------|---------|------|------|-----|----|-----|----|-------|
| | Ppip | Ppyg | Pnat | Psp | Nn | Myo | Bb | |
| 1 (E11) | 40 | 0 | 0 | 3 | 0 | 0 | 0 | 43 |
| 2 (E24) | 64 | 58 | 0 | 4 | 1 | 0 | 17 | 144 |
| 3 (E12) | 120 | 102 | 2 | 2 | 0 | 1 | 13 | 240 |
| 4 (E21) | 22 | 10 | 1 | 5 | 1 | 0 | 14 | 53 |
| Total | 246 | 170 | 3 | 14 | 2 | 1 | 44 | 480 |

Table 4.7. Summary of Static Detector Results for 17.10.18 to 21.10.18.

- 4.2.23. Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, *Pipistrellus* sp., Noctule, *Myotis* sp., and Barbastelle Bat were all recorded across the five nights from 17 October to 21 October.

| Position | Species | | | | | | | | | | Total |
|--------------|---------|------|------|-----|----|-----|----|----|-----|-----|-------|
| | Ppip | Ppyg | Pnat | Psp | Nn | Myo | NI | Pa | Nyc | Bb | |
| 1 (E9) | 129 | 18 | 0 | 0 | 0 | 1 | 3 | 2 | 0 | 67 | 220 |
| 2 (E25) | 134 | 48 | 0 | 0 | 0 | 2 | 9 | 0 | 20 | 37 | 250 |
| 3 (E11) | 733 | 95 | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 833 |
| 4 (E1) | 392 | 27 | 2 | 0 | 1 | 0 | 5 | 1 | 0 | 6 | 434 |
| Total | 1388 | 188 | 3 | 0 | 1 | 3 | 21 | 3 | 20 | 110 | 1737 |

Table 4.8. Summary of Static Detector Results for 23.04.19 to 03.05.19.

- 4.2.24. Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, Noctule, Leisler's Bat *Nyctalus leisleri*, *Myotis* sp., Brown Long-eared Bat, *Nyctalus* sp. and Barbastelle Bat were all recorded across the ten nights from 23 April to 3 May.

| Position | Species | | | | | | | | | | Total |
|--------------|---------|------|------|-----|----|-----|----|----|-----|----|-------|
| | Ppip | Ppyg | Pnat | Psp | Nn | Myo | NI | Pa | Nyc | Bb | |
| 1 (E1) | 566 | 57 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 628 |
| 2 (E6) | 129 | 18 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 151 |
| 3 (E12) | 2847 | 217 | 0 | 5 | 0 | 9 | 0 | 0 | 8 | 12 | 3098 |
| 4 (E9) | 404 | 10 | 9 | 0 | 0 | 1 | 0 | 0 | 0 | 14 | 438 |
| Total | 3946 | 302 | 9 | 5 | 0 | 13 | 0 | 0 | 14 | 26 | 4315 |

Table 4.9. Summary of Static Detector Results for 23.05.19 to 28.05.19 and 28.05.19 to 05.06.19.

- 4.2.25. Three remote detectors were deployed in positions one to three between 23 May to 28 May with a fourth detector being deployed in position four between 28 May to 05 June.
- 4.2.26. Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, *Pipistrellus* sp., *Myotis* sp., *Nyctalus* sp. and Barbastelle Bat were all recorded across the five nights from 23 May to 28 May and 28 May to 5 June.

| Position | Species | | | | | | | | | | | Total |
|--------------|---------|------|------|-----|----|-----|----|----|-----|----|----|-------|
| | Ppip | Ppyg | Pnat | Psp | Nn | Myo | NI | Pa | Nyc | Es | Bb | |
| 1 (E25) | 415 | 38 | 0 | 0 | 0 | 2 | 0 | 3 | 11 | 3 | 39 | 511 |
| 2 (E19) | 922 | 137 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 5 | 1067 |
| 3 (E23) | 4577 | 276 | 42 | 0 | 1 | 4 | 0 | 4 | 5 | 1 | 10 | 4920 |
| 4 (E7) | 752 | 17 | 0 | 1 | 1 | 3 | 0 | 14 | 1 | 2 | 33 | 824 |
| Total | 6666 | 468 | 42 | 1 | 3 | 9 | 0 | 21 | 19 | 6 | 87 | 7322 |

Table 4.10. Summary of Static Detector Results for 24.06.19 to 01.07.19.

- 4.2.27. Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, *Pipistrellus* sp., Noctule Bat, *Myotis* sp., Brown Long-eared Bat,

Nyctalus sp., Serotine and Barbastelle Bat were all recorded across the seven nights from 24 June to 01 July.

| Position | Species | | | | | | | | | | | |
|--------------|---------|------|------|-----|----|-----|----|----|-----|----|----|-------|
| | Ppip | Ppyg | Pnat | Psp | Nn | Myo | NI | Pa | Nyc | Es | Bb | Total |
| 1 (E12) | 84 | 3 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 92 |
| 2 (E14) | 448 | 144 | 0 | 0 | 1 | 0 | 0 | 0 | 11 | 0 | 1 | 605 |
| 3 (E8) | 37 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 44 |
| 4 (E9) | 280 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 282 |
| Total | 849 | 148 | 0 | 0 | 1 | 2 | 0 | 4 | 17 | 0 | 2 | 1023 |

Table 4.11. Summary of Static Detector Results for 09.07.19 to 15.07.19.

- 4.2.28. Common Pipistrelle, Soprano Pipistrelle, Noctule Bat, *Myotis* sp., Brown Long-eared Bat, *Nyctalus* sp. and Barbastelle Bat were all recorded across the six nights from 9 July to 15 July.
- 4.2.29. The majority of the registrations recorded in all locations, across all five occasions were attributed to Common Pipistrelle.
- 4.2.30. The timings of the registrations recorded throughout all surveys suggest that bats could potentially be roosting in trees within the site, or in proximity to the site. The results also show that the network of hedgerows, woodland and treelines provide important foraging and commuting habitats for locally present bat species.

4.3. Otters

Desk Study

- 4.3.1. Two records for Otter were returned by the data search. The closest and most recent record dates from 2017 approximately 1km south of the site. The second record dates from 2013, approximately 1.2km south east of the site on the Stour Brook.

Field Survey

- 4.3.2. Waterbodies within and immediately adjacent to the site were checked for their suitability to support Otters with any field signs for this species also being sought in October 2018 and April 2019. The main waterbody running through the site – a tributary to the Stour Brook – as well as drainage ditches across the site contained little to no water at the time of the surveys. The moat associated with Great Wilsey Farm has steep sides and little vegetation cover. The ponds within the site are not considered suitable to support Otters. No field signs were recorded within any of the waterbodies surveyed.

4.4. **Water Voles**

Desk Study

- 4.4.1. Two records were returned for Water Vole from within the search area. The closest and most recent record dates from 2017 approximately 1km south of the site. The second record dates from 2003, located within a 1km grid square approximately 0.7km south of the site at its nearest point.

Field Survey

- 4.4.2. Waterbodies within and immediately adjacent to the site were checked for their suitability to support Water Voles with any field signs for this species also being sought in October 2018 and April 2019. The Stour Brook tributary and the drainage ditches across the site contained little to no water at the time of the surveys. The moat associated with Great Wilsey Farm has steep sides, no connectivity to other waterbodies, no emergent vegetation and only limited marginal vegetation. The ponds within the site are not considered suitable to support Water Voles. Pond P4 adjacent to the site contains some limited opportunities to support this species. No field signs were recorded within any waterbody surveyed within or immediately adjacent to the site.

4.5. **Dormice**

Desk Study

- 4.5.1. A single record was returned for Dormouse approximately 0.6km to the south-east of the site (within the wider site) in 2015.

Nest Tube and Box Survey

- 4.5.2. Nest tube and box surveys for Dormice have to date been undertaken in the months of October and November 2018 and April to July 2019. No evidence of their presence has been recorded. The distribution of the Dormouse tubes is shown on Plan ECO4. Further surveys are to be completed across summer 2019.

Footprint Tracking Tunnel Survey

- 4.5.3. A footprint tunnel survey was undertaken in October and November 2018, and June and July 2019 with no evidence of Dormouse presence recorded. The distribution of the footprint tracking tunnels is shown on Plan ECO4.

4.6. **Birds**

Desk Study

- 4.6.1. A large number of bird records were returned by SBIS. Several records from the locality relate to species listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended), as well as species listed under section 41 of the NERC Act 2006. These species

include Greylag Goose *Anser anser*, Pintail *Anas acuta*, Red Kite *Milvus milvus*, Hen Harrier *Circus cyaneus*, Hobby *Falco subbuteo*, Green Sandpiper *Tringa ochropus*, Barn Owl *Tyto alba*, Kingfisher *Alcedo atthis*, Black Redstart *Phoenicurus ochruros*, Fieldfare *Turdus pilaris*, Redwing *Turdus iliacus* and Brambling *Fringilla montifringilla*. The most recent record dates from 2017 and relates to a Kingfisher recorded approximately 0.9km south-west of the site. the closest record is for a Barn Owl, recorded on site in 2014.

- 4.6.2. A number of other species that are listed under section 41 of the NERC Act 2006 that are not also listed Schedule 1 of the Wildlife & Countryside Act 1981 (as amended) were also recorded. These include Grey Partridge *Perdix perdix*, Lapwing *Vanellus vanellus*, Turtle Dove *Streptopelia turtur*, Cuckoo *Cuculus canorus*, Skylark *Alauda arvensis*, Yellow Wagtail *Motacilla flava*, Spotted Flycatcher *Muscicapa striata*, House Sparrow *Passer domesticus*, Lesser Redpoll *Carduelis cabaret*, Yellowhammer *Emberiza citrinella* and Reed Bunting *Emberiza schoeniclus*. Yellowhammer was recorded on site in 2014. The most recent records date from 2016 and relate to Lapwing, Cuckoo, Yellow Wagtail, Spotted Flycatcher, House Sparrow and Yellowhammer.

Field Survey

- 4.6.3. Four wintering bird surveys were completed, in November and December 2018, and in January and February 2019. A total of 47 species were recorded, including 17 species that are listed as NERC species of principal importance, Suffolk LBAP and / or on the UK Birds of Conservation Concern Red and Amber lists. Species recorded include Song Thrush *Turdus philomelos*, Skylark, Yellowhammer, Kestrel *Falco tinnunculus*, Linnet *Carduelis cannabina*, Redwing, Fieldfare, Stock Dove *Columba oenas*, Bullfinch *Pyrrhula pyrrhula*, Dunnock *Prunella modularis*, Mistle Thrush *Turdus viscivorus*, Starling *Sturnus vulgaris*, House Sparrow, Reed Bunting, Black-headed Gull *Chroicocephalus ridibundus*, Lesser Black-backed Gull *Larus fuscus* and Mallard *Anas platyrhynchos* (see Plans ECO5a to 5d).

- 4.6.4. [REDACTED]

- 4.6.5. [REDACTED]

- 4.6.6. Of these species, singing males of Dunnock, Linnet, Yellowhammer, Skylark, Stock Dove, Reed Bunting, Song Thrush and Willow Warbler were all recorded within the site (see Plans ECO6a and ECO6c) and are therefore categorised as possible breeders. The

three gull species that were recorded were observed flying over the site and do not use the site itself to a significant degree, and there is no suitable breeding habitat for these species.

4.6.7. [REDACTED]

4.6.8. Families of Great Tit, Blue Tit *Cyanistes caeruleus*, Jackdaw *Corvus monedula*, Bullfinch, Magpie *Pica pica*, Goldfinch *Carduelis carduelis*, Whitethroat *Sylvia communis*, Blackbird *Turdus merula* and Long-tailed Tit *Aegithalos caudatus* were recorded on site during the survey completed in June.

4.6.9. [REDACTED]

4.7. Reptiles

4.7.1. A presence / absence survey for reptiles was completed from April to June 2019. The results of the surveys show that low populations of Grass Snake and Common Lizard are present, with the main areas of interest being Hedgerow H4 and the southern edge of the new plantation in the south of the site. The results of the surveys undertaken are summarised in Table 4.12 below. The distribution of the reptile tins as well as the location of the reptiles found are shown on Plans ECO7a to ECO7g.

| Date | Survey | Temp. (°C) | Cloud Cover (%) | Reptiles Recorded |
|----------|--------|------------|-----------------|-----------------------------------|
| 23.04.19 | 1 | 17 | 90 | 1 aGS |
| 26.04.19 | 2 | 12 - 14 | 50 | 3 aGS, 2 mCL, 1 fCL, 4 uCL |
| 03.05.19 | 3 | 9 | 100 | 1 aGS, 1 mCL, 1 fCL, 1 jCL |
| 13.05.19 | 4 | 10 | 30 | 1 mCL |
| 21.05.19 | 5 | 13 - 16 | 5 | 1 aGS, 2 mCL, 1 fCL, 1 jCL, 1 uCL |
| 28.05.19 | 6 | 13 | 25 | 3 aGS, 2 mCL, 6 fCL, 3 jCL, 4 uCL |
| 05.06.19 | 7 | 15 | 80 | 1 aGS, 1 mCL, 5 uCL |

Table 4.12. Reptile survey results. CL: Common Lizard; GS: Grass Snake; a: adult; m: male; f: female; j: juvenile; u: unsexed.

4.8. **Amphibians**

- 4.8.1. On-site ponds and ponds within 500 metres of the site were subject to eDNA testing where permission was granted (see Plan ECO8). The results of the eDNA testing were returned as negative (see Appendix 1), indicating the likely absence of this species.

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5. DISCUSSION

- 5.1. Surveys undertaken in 2018 and 2019 find the site and the identified ecological receptors to remain similar to the results set out in the ES and previous ES Addendum submitted with the outline planning application. The survey programme will be completed in 2019 as set out in this report.
- 5.2. Further details of subsequent monitoring are set out in the Biodiversity Monitoring Strategy submitted to discharge condition 45 of the reserved matters application.
- 5.3. Mitigation measures prescribed in the ES and previous Addendum remain the same, having been adopted in full for the reserved matters application. Further details of mitigation and enhancement measures to be adopted within the site are set out in the Landscape and Ecological Management Plan and Ecological Implementation Strategy submitted to discharge conditions 7 and 42 of the reserved matters application.

DRAFT

6. SUMMARY AND CONCLUSIONS

6.1. Ecology Solutions was commissioned by Redrow Homes in October 2018 to update surveys to support a series of reserved matters applications to be submitted in 2019.

6.2. [REDACTED]

[REDACTED]

6.4. **Bats.** The site contains trees suitable to support roosting bats and further tree assessments will be carried out in 2019. Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, *Pipistrellus* sp., Noctule, Leisler's Bat, Serotine, *Myotis* sp., *Nyctalus* sp., Brown Long-eared Bat and Barbastelle Bat were all recorded on site. Areas shown to be of greater interest are Great Field Plantation, trees associated with the Stour Brook tributary and Hedgerow H4 in the south of the site.

6.5. **Otters.** Waterbodies within and immediately adjacent to the site were checked for their suitability to support Otters with any field signs for this species also being sought. No evidence of their presence was recorded.

6.6. **Water Voles.** Waterbodies within and immediately adjacent to the site were checked for their suitability to support Water Voles with any field signs for this species also being sought. No evidence of their presence was recorded.

6.7. **Dormice.** Surveys for Dormice were undertaken in October and November 2018 and April to July 2019 with no evidence of their presence recorded.

6.8. **Wintering Birds.** Four wintering bird surveys were completed, in November and December 2018, and in January and February 2019. A total of 47 species were recorded, including 17 species that are listed as NERC species of principal importance, Suffolk LBAP and / or on the UK Birds of Conservation Concern Red and Amber lists.

6.9. [REDACTED]

- 6.10. **Reptiles.** A presence / absence survey for reptiles has been completed across April to June 2019. The results of the surveys show that low populations of Grass Snake and Common Lizard are present, with the main areas of interest being Hedgerow H4 and the southern edge of the new plantation in the south of the site.
- 6.11. **Amphibians.** On site ponds and ponds within 500 metres of the site were subject to eDNA testing where permission was granted. The results of the eDNA testing were returned as negative.
- 6.12. Surveys undertaken in 2018 and 2019 find the site and the identified ecological receptors to remain similar to the results set out in the ES and previous ES Addendum. Mitigation measures prescribed in the ES and previous Addendum remain the same, having been adopted in full for the reserved matters application. The survey programme will be completed in 2019, and further monitoring work is to be undertaken as set out in the Biodiversity Monitoring Strategy.
- 6.13. Further details of mitigation and enhancement measures to be adopted within the site are set out in the materials submitted to discharge conditions 7, 42 and 45 of the reserved matters application.

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