GREAT CRESTED NEWT, BAT AND REPTILE SURVEY REPORT

TELBRIDGE PROPERTIES LTD.

TWINEHAM COURT FARM
BOB LANE, TWINEHAM
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EXECUTIVE SUMMARY

CT Ecology Ltd. was commissioned to undertake great crested newt (*Triturus cristatus*), bat activity transects and reptile surveys in order to ascertain presence/likely absence and distribution of these species' groups within the proposed development site at Twineham Court Farm. These assessments were undertaken throughout 2023 and follow on from a Preliminary Ecological Appraisal (CT Ecology, 2023) which identified potentially suitable on-site habitat for these species within the site. Surveys were therefore required to determine whether protected species could pose constraints to development and to enable suitable mitigation to be devised. Proposals are for the demolition of nine former agricultural and storage buildings and erection of a new events venue and new car parking area. The pond within the wider farm estate will be retained and enhanced as part of the design proposals and a series of attenuation ponds will also be created in the wider site. Associated access will remain the same.

The main findings of the surveys are as follows:

Great Crested Newt

* Great crested newts were found in two of the eight ponds (Ponds 1 and 8) surveyed during the course of the six survey visits. Both ponds were found to support a **low** great crested newt population, based on current guidelines. Great crested newts were found to be breeding within Pond 8.
* Based on the distance and distribution of known great crested newt ponds, it can be assumed that a low population may pass through the site between ponds and to access the breeding pond to the south-west of the site. The proposed works will directly impact areas of terrestrial habitat through ground excavations and through the transport of machinery and storage of materials and associated equipment. This species therefore considered to pose a significant constraint to the scheme.
* Overall, the site has been assessed and is considered to be of importance to great crested newts **at a local level**, with interconnected terrestrial habitats; to include habitats within the application site, providing connectivity to a network of breeding ponds to the east and west.
* Based on the results of the assessment, in the absence of mitigation, the **construction phase** of the works will result in a **permanent negative impact** upon small numbers of great crested newts, which are considered to be of **local importance**.
* Mitigation will be required to safeguard this species. There are two mitigation options for this site; either registering on the DLL Scheme to enable works to proceed or applying to Natural England for a PSML to translocate individuals away from the development footprint prior to works.

- Effects of the proposed works on great crested newts are **not likely to be significant** in the long-term, providing suitable mitigation is put in place to safeguard individuals throughout works and ensuring any post development landscaping replaces and enhances features for use by great crested newts during their terrestrial phase. The pond within the wider site will also be enhanced as part of the development proposals along with the creation of new attenuation ponds on the south, which will serve to improve suitability for amphibians in the long-term.

Bats

- The bat activity transects and static monitoring surveys recorded a low level of bat activity, with highest levels of activity associated with the western site boundary and habitats immediately adjacent to the pond. Significantly less bat activity was associated with the central site extent.
- A total of four different bat species were recorded across all surveys to include common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), noctule (*Nyctalus noctula*) and brown long-eared (*Plecotus auritus*).
- The site is assessed as being of value for bats **at a local level** based on the current survey data.
- Based on the results of the assessment, unmitigated, the **construction** and **operational phases** of the works will result in a **permanent negative impact** upon **small** numbers of individual foraging and commuting bats, **significant within the zone of influence of the site.**
- Boundary tree lines and associated scrub will be retained as part of the proposals however in the absence of mitigation, direct and indirect impacts will result from the works.
- Mitigation is required to ensure that there is no net increase in light levels on retained boundary features and the pond as a result of the works in order to retain connectivity for bats.
- Enhancing boundary features through additional planting and creating wildflower grassland areas as part of the re-development will serve to enhance the site for the range of bat species currently supported at the site.
- Providing mitigation in respect to lighting and landscaping is implemented throughout the construction and operational phases, the effects of the proposed works on bats are **not likely to be significant** in the long-term.

Reptiles

- A **Good** breeding population of slow worm and a **Low** breeding population of grass snake was identified during the course of the seven survey visits.

- The majority of individuals were located within tussock grassland to the south of the pond with a small number of individuals found within ruderal and grassland vegetation adjacent to the former agricultural units in the north of the site
- Overall, the site is assessed as being of value for reptiles **within the zone of influence of the site** based on the results of the current survey.
- Proposals will result in the loss of areas of grassland, ruderal vegetation and scrub, to include habitats where reptiles were encountered during the survey, therefore site preparation works required as part of the proposals to include the clearance of vegetation and the tracking of machinery has the potential to impact negatively on reptiles. This is through both habitat loss and the killing or injury of individuals.
- Based on the results of the assessment, unmitigated, the **construction phase** of the works will result in a **permanent negative impact** upon **low** numbers of individual widespread reptiles, **significant within the zone of influence of the site only**.
- Based on the low population of reptiles present and the current distribution of individuals within the working footprint, a formal translocation to move reptiles from the site is not considered necessary. Instead, adopting a precautionary approach to include phased vegetation clearance in order to deter animals from the working area is considered sufficient to fully safeguard this species group and is considered to be the most suitable and proportionate approach in this situation. Mitigation will need to be co-ordinated with any mitigation in place for great crested newt.
- Providing a precautionary approach for reptiles is followed, the effects of the proposed works on reptiles are **not likely to be significant** in the long-term
- Details regarding mitigation and site enhancement measures are provided in Section 5 of the report.

1. INTRODUCTION

Background

1.1 CT Ecology Limited was commissioned by Telbridge Properties Ltd. to undertake a series of great crested newt (*Triturus cristatus*), bat activity transect and reptile surveys in order to ascertain the presence/likely absence and distribution of these species' groups within the proposed development site at Twineham Court Farm. This assessment follows on from a Preliminary Ecological Appraisal (PEA) which identified potentially suitable habitat for these species within the site (CT Ecology, 2023).

1.2 Targeted surveys in relation to great crested newts, bats and reptiles were therefore undertaken throughout the 2023 active season. This report provides an assessment of the status of these species' groups at the site, providing information on their presence/absence and distribution. Potential impacts of the proposed development are identified and measures to mitigate the effects of the development are discussed.

1.3 This assessment has been prepared with reference to best practice guidance in place at the time of undertaking the surveys (British Standard 42020:2013 Biodiversity. Code of Practice for Planning and Development, 2013; CIEEM, 2013 & 2016; English Nature, 2001; English Nature 2004; Froglife, 1999; HGBI, 1998; Collins, 2016; and Mitchell-Jones & McLeish. 2004).

Development Proposals

1.4 Proposals are for the demolition of nine former agricultural and storage buildings and erection of a new events venue and new car parking area. The pond within the wider farm estate will be retained and enhanced as part of the design proposals and a series of attenuation ponds will also be created in the wider site. Associated access will remain the same. A small number of semi-mature and self-seeded trees will require removal to facilitate the new events building.

Site Description

1.5 Twineham Court Farm is within a rural location within the north-western extent of Twineham, in the Mid Sussex District of West Sussex at National Grid Reference TQ245 208. Twineham Court Farm is dominated by a series of former farm buildings with associated fields, boundary features and a pond. Vehicular access is via an unmade track extending from Bob Lane to the south. The area included in the current application comprises the existing access track, the network of former farm buildings and areas of semi-natural habitats surrounding the buildings.

1.6 Twineham Court Farm is bounded by a combination of grazed fields and a large electricity substation to the north, grazed fields to the east and west and south beyond Bob Lane. A woodland block is also to the west, together with a network of ponds to the east and west.

1.7 In the wider surrounds, a combination of pasture and arable fields are located in all directions together with areas of woodland and residential properties. The town of Burgess Hill is approximately 5km to the south-east.

2. METHODOLOGY

Personnel

2.1 The assessments were led by Carly Teague BSc (Hons), MSc, MCIEEM and Jack Kellett BSc (Hons) MCIEEM, both suitably qualified ecologists with over 16 years' and 10 years' commercial survey experience consecutively. Both surveyors hold Natural England Great Crested Newt Class Licences (Level 1) and Jack Kellet also holds a Bat Class Licence (Level 1). Both surveyors have co-ordinated and led pond surveys throughout the south of England. Carly has also held Protected Species Mitigation Licences in respect to great crested newts and been involved in the implementation of mitigation for this species for both large and small-scale projects. Health and safety support was provided throughout the surveys by experienced field ecologists.

Data Search

2.2 Records for great crested newts, bats and reptiles were obtained as part of the initial PEA assessment from Sussex Biodiversity Record Centre (SxBRC, 2023).

Great Crested Newt Survey

Surveyed Water Bodies

2.3 A total of eight waterbodies were included in the survey with one pond excluded from the pond surveys. The location of the surveyed waterbodies together with the pond excluded from the assessment are represented on Figure 1 in Appendix A.

Pond Surveys

2.4 The survey protocol followed that set out in the Great Crested Newt Mitigation Guidelines (English Nature, 2001). The four surveys required to demonstrate presence or absence were conducted in May with two of the visits taking place within the peak survey time between mid-April and mid-May. An additional two surveys were then undertaken to enable a population assessment to be made, with one of these being undertaken within the peak survey period.

2.5 All surveys were undertaken in periods of suitable weather conditions; avoiding strong winds and heavy rain. For each survey visit at least three of the following four survey techniques were employed, where access permitted:

* Torch survey: conducted at dusk using a 500,000 candlepower Clulite lamp to search the accessible margins of the water bodies;
* Egg search: a thorough search was made for newt eggs of any suitable vegetation present along the water margins. This comprised a search for any obviously folded leaves of emergent or marginal vegetation;

* Bottle trapping: following the torch survey, bottle-traps (made from two litre plastic bottles) were placed along the accessible margins of areas of open water. Traps were left overnight for a maximum of twelve hours and checked and removed the following morning; and/or
* Sweep netting: a standard professional long handled net was used to sample the water column throughout the pond around the margins and in the centre. The net was swept backwards and forwards through the water and the emptied out into a white plastic container and the contents examined and recorded. This method was stopped once newt eggs were found in a pond in order to minimise disturbance to the eggs.

Population Assessment

2.6 Where great crested newts were found to be present, a population assessment was made in accordance with the population size class assessment in the Great Crested Newt Mitigation Guidelines (English Nature 2001). These guidelines categorise the population as small, medium or high. The three categories are summarised in the table below.

Table 2.1: Great Crested Newt Population Assessment

Population Size Class	Great Crested Newt Count
Small	Maximum count up to 10
Medium	Maximum counts 11 to 100
High	Maximum counts over 100

Bats

Bat Activity Transect Surveys

2.7 A series of activity transect surveys were carried out between May and August 2023. The site was previously identified as providing moderate potential for foraging bats as a whole, although the potential within the proposed development area is reduced. The recommended methodology for the activity surveys is adapted from current guidelines in place at the time of the surveys (Collins 2016) based on the overall potential for the development area to support bats.

2.8 The surveys were carried out to assess the site for general foraging and commuting activity. Echo Meter Touch 2 Pro's and Anabat Scout detectors were used for the surveys. Two surveyors were used during the first survey for health and safety reasons, walking the transect route together. A single surveyor was used for the subsequent transect surveys due to the presence of other surveyors carrying out targeted emergence surveys in other parts of the site.

2.9 All surveyors walked a set transect around the site with stopping points along the route. The survey began 10 minutes prior to sunset and finished approximately 2 hours after sunset depending on levels of bat activity.

2.10 Post-survey analysis of all recordings was carried out by an experienced ecologist using appropriate software for the bat detectors. The bat activity transect routes and associated results are displayed in Figure 2 in Appendix A.

2.11 All surveys followed current, standard protocols and accepted standards at the time of the surveys (Mitchell-Jones and McLeish, 2004; Collins, 2016).

Automated Static Detector Surveys

2.12 Automated static bat detector surveys were undertaken in order to augment the bat activity transects. The purpose of the static bat monitoring survey was:

* to provide details regarding bat activity over a block of time each month throughout the survey period;
* to identify any key commuting and foraging routes across the site;
* to evaluate the nature conservation value or the site and adjacent areas in relation to bats;
* to recommend suitable mitigation; and
* to provide recommendations for site enhancement.

2.13 A single automated static detector was used (SD1), the same location to the south-west of the pond in the central extent of the farm estate was used throughout the surveys. The location is shown in Figure 2 in Appendix A.

2.14 An Anabat Express bat detector was used and set at a sensitivity setting of 10. The detector was deployed for a minimum of five consecutive days over five monitoring blocks. The monitoring survey dates are listed below:

* 11th May 2023 - 17th May 2023
* 05th June 2023 – 11th June 2023
* 6th July 2023 - 12th July 2023

- 2nd August 2023 - 7th August 2023

2.15 The detectors were set to record every night throughout each monitoring period (22 nights in total).

Static Detector Surveys-Post-Survey Data Handling

2.16 A quantitative assessment of bat activity within the study area was made. The recorded data was downloaded and analysed using AnalookW bat call analysis software. Each file containing a bat call was considered to represent a "bat pass" and all species utilising the site were recorded. Although not synonymous with actual numbers of bats, this information provides an indication of the relative abundance of bat species across a study area. The surveys and subsequent data analysis were undertaken by Carly Teague.

Reptile Presence / Absence Survey

2.1 The survey protocol followed accepted standards for reptile surveys as set out in Froglife (1999), Hill et al (2005) and English Nature (2004).

2.2 The survey involved a combination of visually searching for reptiles (direct observation) and the use of artificial refugia.

2.3 On the 4th April 2023 artificial refugia were placed around the application site (and adjacent to it), throughout areas of suitable reptile habitat. Refugia comprised individual 0.5m^2 (approximately) sections of roofing felt. These were laid out at approximately 5m intervals around the site.

2.4 Potentially suitable reptile habitat within the survey area consisted of areas of grassland, ruderal and marginal scrub habitat equating to approximately 0.6ha.

2.5 In total of 60 refugia were used, equating to a density of approximately 100 per ha.

2.6 A total of seven survey visits were undertaken in April, May and June 2023. Refugia was checked during appropriate weather conditions, that is, where temperatures ranged between 11°C and 18°C, with little rain or wind. Visits were carried out, where possible, between the hours of 08.30-11.00 or 16.00-18.30, which are the optimum times for recording reptiles, although the time of day varied slightly according to weather conditions.

Population Size Estimate

2.7 An assessment of the reptile population size is based on Froglife (1999) guidance which requires a minimum of 20 repeat survey visits. Population sizes are then assigned to one of three categories (Low, Good or Exceptional) based on the peak count of individuals for each species across all the visits.

2.8 It should be noted that only seven visits were carried out and that the population assessment for the proposed development site is only an estimate based on the current guidance (see Table 2.2). Population assessments are however typically based on a relatively low survey effort with a maximum of 10 refuge sheets per ha, in contrast to a density of 100 refuge sheets per ha as employed at the site, and therefore it is considered likely that the survey data is more robust and sufficient to enable a population estimate to be made.

Table 2.2: Population score (Froglife, 1999).

Species	Low Population	Good Population	Exceptional Population
Adder	<5	5-10	>10
Grass Snake	<5	5-10	>10
Common Lizard	<5	5-20	>20
Slow Worm	<5	5-20	>20

Evaluation and Impact Assessment

Evaluation

2.9 The ecological value of the target species has been assessed broadly following guidance issued by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2016) which ranks nature conservation value according to a geographic scale of reference; international and European; national; regional; metropolitan, county, vice county or other local authority-wide area; local (district, borough or parish); or of value at the zone of influence of the site only. In line with current guidelines, a range of factors are considered when making this evaluation, including: nature conservation designations, rarity, vulnerability, distribution and the conservation significance of any great crested newt populations.

Impact Assessment

2.10 An assessment is provided on the likely impacts of the development proposals on target species, and all associated habitats located within or immediately adjacent to the site boundary. In respect to great crested newt, this assessment is made with reference to Section 6[1] of the Great Crested Newt Mitigation Guidelines (English Nature, 2001) and Natural England's standing advice[2]. This includes a summary of the scale of impact according to population size, breeding status, scale of habitat loss (aquatic and terrestrial) and development effect. In respect to bats, this assessment has been made in Chapter 11 of the Bat Survey Guidelines (Collins 2016).

Constraints

2.11 It is important to note that even where data is held, a lack of records for a defined geographical area does not necessarily mean that there is a lack of ecological interest; the area may be simply under-recorded.

2.12 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no investigation can ensure the complete characterisation and prediction of the natural environment.

Great Crested Newt Survey

2.13 Due to the large number of ponds within 500m, a 250m radius was selected for survey. A single pond within 250m of the site could not be accessed where the landowner could not be contacted, however all other ponds within 250m from the site were surveyed which provided a robust data set to enable a detailed assessment to be made regarding use of the application site by this species.

Bat Activity Surveys/Static Detector Surveys

2.14 Bat activity levels can vary at sites throughout the year however undertaking surveys throughout the optimum active period for bats together with a series of static monitoring surveys will provide an accurate representation of typical bat activity at the site. The weather conditions during the surveys were considered suitable. The number of static monitoring surveys, which were undertaken within the peak activity period for bats will serve to provide a robust data set for the site.

[1] Summarising the scale of site level impacts, the Great Crested Newt Mitigation Guidelines (English Nature, 2001

[2] Great crested newts: surveys and mitigation for development projects, first published 28 March 2015 [https://www.gov.uk/guidance/great-crested-newts-surveys-and-mitigation-for-development-projects] accessed on 5/6/2017.

Reptile Survey

2.15 Reptile surveys can be undertaken throughout March to October, in the active period for reptiles, in suitable weather conditions. The optimum months for survey are April, May and September (Froglife 1999).

2.16 All survey visits were carried out within the recommended survey period with four of the survey visits carried out within the optimal survey time. However due to the cold weather conditions experienced throughout March and the start of April which were likely to delay activity and potential breeding by reptiles, it is considered that June and July were both more optimal months in the 2023 survey season. All surveys were carried out in suitable weather conditions, and it the survey was considered sufficiently rigorous to determine the presence/likely absence and distribution of reptiles within the proposed development site at that time.

3. RESULTS

Great Crested Newt Survey

Data Search

3.1 The data search returned 61 recent (post 2011) records for great crested newt within 2km of the site. No records were returned from within the site. The closest record was from a woodland pond approximately 20m to the west where a small population of great crested newt were recorded in 2019. A low population has also been returned from a network of three ponds between 60m and 130m to the south-west.

3.2 A large number of records were also returned for common frog (*Rana temporaria*), common toad (*Bufo bufo*), smooth newt (*Lissotriton vulgaris*) and palmate newt (*L. helveticus*) within a 2km radius. The closest records were for common frog and smooth newt from the woodland pond approximately 20m to the west in 2019.

Overview

3.3 A description of each pond included in the survey is provided in Table 3.1 below, together with the HSI scores and a summary of the results. The locations of all water bodies, including those that could not be surveyed, are shown in Figure 1 in Appendix A. Full survey data is presented in Appendix C.

Pond Survey

3.4 Great crested newts were found in two of the eight ponds (Ponds 1 and 8) surveyed during the course of the six survey visits. Both ponds were found to support a low great crested newt population, based on current guidelines (English Nature 2001). Great crested newts were found to be breeding within Pond 8. Great crested newt eggs were also found in Ponds 6 and 7 during the surveys, indicating this specie sis passing between these ponds.

3.5 Smooth newt was present in Ponds 1, 7, and 8 with a peak count of two within Pond 1 during the first survey visit and two within Pond 8 during the fifth survey visit. Palmate newt was recorded within Ponds 7 and 8 with a peak count of four recorded in Pond 7 during the fourth survey visit and a peak count of four recorded within Pond 8 during the fifth survey visit.

Table 3.1: Survey Summary

Waterbody Reference	Description	Distance from Site	HSI Score	Probability of pond supporting GCN	GCN Found
Pond 1	A medium sized, irregular shaped pond was within the eastern extent of the wider site, measuring approximately 500m^2. This was heavily shaded by trees including alder (*Alnus glutinosa*), in addition to alder and blackthorn (*Prunus spinosa*) scrub. As a result, the water appeared to be of low quality and supported a large amount of fallen dead wood. No aquatic plant species were observed within the water column at the time of the assessment.	Adjacent to the east of the development footprint)	0.78	Good	Yes
Pond 2	A large woodland pond to the west of the application site, measuring approximately 1,000m^2. The pond was heavily shaded by trees including oak (*Quercus* sp.) and willow (*Salix* sp.). The banks supported varying gradients with steep sections present along the northern pond margin. Aquatic vegetation was restricted to clumps of rushes (*Juncus* sp.) and sedges (*Carex* sp.). Fallen branches were also present around the pond margins.	40m west	0.75	Good	No
Pond 3	A small woodland pond to the west of the application site, measuring approximately 350m^2. The pond was heavily shaded by trees including oak and willow. The banks were steep with scrub encroaching around the northern and western margins. Aquatic vegetation was restricted to discrete clumps of rushes (*Juncus* sp.) and sedges (*Carex* sp.). Fallen tree branches were also present throughout the pond.	140m southeast	0.70	Good	No
Pond 4	A small pond along a field boundary, heavily shaded by trees and overhanging bramble (*Rubus fruticosus* agg.) scrub. The pond measured	140m	0.51	Below Average	No

Waterbody Reference	Description	Distance from Site	HSI Score	Probability of pond supporting GCN	GCN Found
	approximately 100m^2. Aquatic vegetation was absent and the water quality appeared to be poor with low water clarity. The pond dried significantly over the course of the surveys.	northeast			
Pond 5	A medium sized pond along a field boundary, heavily shaded by trees and overhanging bramble scrub. The pond measured approximately 250m^2. Aquatic vegetation was absent and the water quality appeared to be poor. The pond dried significantly over the course of the surveys.	140m northeast	0.56	Below Average	No
Pond 6	A small shallow pond created as previous mitigation associated with the electrical sub-station to the north-west. The pond measured approximately 135m^2 and is subject to regular drying each year. The pond was heavily vegetated with great reedmace (*Typha latifolia*), common water-plantain (*Alisma plantago-aquatica*), broad-leaved pondweed (*Potamogeton natans*), water dock (*Rumex hydrolapathum*), and water speedwell (*Veronica anagallis-aquatica*). Areas of open water were present within the centre of the pond. A relatively high diversity of aquatic invertebrates was observed during the surveys.	60m northwest	0.60	Below Average	No
Pond 7	A small shallow pond created as previous mitigation associated with the electrical sub-station to the north-west. The pond measured approximately 175m^2 and is subject to regular drying each year. The pond was heavily vegetated with great reedmace, common water-plantain, arrowhead (*Sagittaria sagittifolia*), broad-leaved pondweed , water dock, reed sweetgrass (*Glyceria maxima*) and willowherbs (*Epilobium* sp.). Areas of open water were present within the centre of the pond. A high diversity of aquatic invertebrates was observed during the surveys.	85m northwest	0.61	Below Average	No

Waterbody Reference	Description	Distance from Site	HSI Score	Probability of pond supporting GCN	GCN Found
Pond 8	A small shallow pond created as previous mitigation associated with the electrical sub-station to the north-west. The pond measured approximately 290m^2 and is subject to regular drying each year. The pond was vegetated throughout the water column with great reedmace, rushes (*Juncus* sp.), broad-leaved pondweed and water dock. A relatively high diversity of aquatic invertebrates was observed during the surveys	115m northwest	0.64	Average	Yes
Pond 9	No Access -landowner not contactable.	185m south	-	-	-

3.6 The table below presents peak counts of each species for all of the water bodies that were included in the pond surveys. Full survey data is presented in Appendix C.

Table 3.2: Summary of Great Crested Newt Survey Results (with peak counts in red).

Waterbody Reference	Great Crested Newt	Smooth Newt	Palmate Newt
Pond 1	2	2	0
Pond 2	0	0	0
Pond 3	0	0	0
Pond 4	0	0	0
Pond 5	0	0	0
Pond 6	0	0	0
Pond 7	0	1	4
Pond 8	1	2	4

Bats

Data Search

3.7 At least eight species of bat have been recorded within 2km of the site boundary. This includes pipistrelle species (*Pipistrellus* sp.); common pipistrelle (*Pipistrellus pipistrellus*); soprano pipistrelle (*P. pipistrellus*); myotis bat (*Myotis* sp.); noctule (*Nyctalus noctula*); serotine (*Eptesicus serotinus*); long-eared (*Plecotus* sp.); and brown long-eared bat (*P. auritus*).

3.8 The most frequently recorded bat species was brown long-eared followed by common pipistrelle with a total of 18 and 15 records for these species respectively.

3.9 The closest roost record was from 1990, which was an unspecified bat roost, approximately 400m from the site. The closest, recent record (post 2011) was for a long-eared maternity and feeding roost from 2014, approximately 800m from the site.

3.10 Records of foraging/commuting passes by noctule, myotis sp., common pipistrelle, soprano pipistrelle, and long-eared were returned approximately 1.5km to the south of the site, from 2019.

Bat Transect Surveys

Survey 1: 11th May 2023

3.11 The first survey was carried out on the 11th May 2023. Sunset was at 20:37hrs and the temperature at the start of the survey was 14.1°C, falling to 13.3°C at the end of the survey. The sky was largely clear with no breeze and no precipitation.

3.12 The surveyors walked a set transect route around the site, ensuring all areas of the application site together with potentially suitable habitat features within the wider farm estate were covered as part of the survey, stopping at pre-determined points for 5-minute intervals. The stopping points (SP's) were selected based on habitats/features present in order to obtain a robust data set for bats using the site as a whole.

3.13 Overall a low level of bat activity was recorded during the survey. In total three bat species; common pipistrelle, noctule and brown long-eared bat, were recorded, with highest level of activity associated with the western site boundary adjacent to off-site woodland. Comon pipistrelle was recorded most frequently during the survey.

3.14 The first bat pass was recorded at 20:47hrs along the north-western site boundary (SP3) by a common pipistrelle although the bat was not seen it was suspected to be flying in woodland to the north-east.

3.15 Occasional passes by common pipistrelle were then recorded within the north of the site boundary SP4 and SP5 between 20:53hrs and 21:04hrs. A faint pass by noctule was recorded in the south of the site at 21:08hrs near to the electricity pylon (SP6). A faint pass by brown long-eared was recorded within the west of the site at 21:26hrs (SP1) although this bat was not seen. The last pass was by common pipistrelle at 21:42hrs foraging along the eastern boundary fence line near to the entrance of the site (SP7).

Survey 2: 5th June 2023

3.16 The second survey was carried out on the 5th June 2023. Sunset was at 21:09hrs and the temperature at the start of the survey was 18.4°C, falling to 17.3°C at the end of the survey. The sky was clear with no breeze and no precipitation.

3.17 The surveyor walked the same transect route, stopping at pre-determined points for 5-minute intervals.

3.18 Overall a slightly higher level of bat activity was recorded compared to the May survey. In total the same three bat species were recorded which included common pipistrelle, noctule and brown long-eared bat. The highest level of activity was associated with the western site boundary adjacent to off-site woodland and in the east of the site near to the pond. Comon pipistrelle was recorded most frequently during the survey.

3.19 The first bat pass was by common pipistrelle recorded at 21:25hrs within the north of the site between SP4 and SP5 although the bat was not seen. Faint passes by common pipistrelle were then recorded in the east of the site (SP7) at 21:35hrs and at 21:45hrs within the western site extent (SP1). Faint passes by brown long-eared were then recorded at within the western site extent at 21:47hrs (SP1) and at 21:56hrs (SP2) although these passes were not seen. A faint pass by noctule was recorded at 22:10hs within the north of the site. Infrequent passes by common pipistrelle were then recorded around the western and eastern boundaries until the end of the survey. The last pass was recorded at 22:50hrs.

Survey 3: 6th July 2023

3.20 The third survey was carried out on the 6th July 2023. Sunset was at 21:15hrs and the temperature at the start of the survey was 19.4°C, falling to 18.6°C at the end of the survey. The sky was slightly overcast with no breeze and no precipitation. The surveyor walked the same transect route, stopping at pre-determined points for 5-minute intervals.

3.21 Overall a slightly higher level of bat activity was recorded compared to the previous transect surveys. In total three bat species were recorded which included common pipistrelle, soprano pipistrelle and brown long-eared, with the highest level of activity continuing to be associated predominantly with the western site boundary. Comon pipistrelle was recorded most frequently during the survey.

3.22 The first bat pass was by soprano pipistrelle, recorded at 21:17hrs within the northern extent of the site (SP3-SP4). This bat was not seen. A small number of passes by common pipistrelle were then recorded between SP4 and SP5 21:20hrs and 21:25hrs although no bats were seen.

3.23 Occasional passes by common and soprano pipistrelle were recorded along the eastern site boundary (SP6-SP7) between 21:35hrs and 21:45hrs and along the western site boundary between 22:10hrs and 22:20hrs.

3.24 A faint pass by brown long-eared was recorded near to SP4 at 22:46hrs. The last bat pass was at 22:56hrs at SP7. This was a faint call from a common pipistrelle although the bat was not seen.

Survey 4: 7th August 2023

3.25 The fourth survey was carried out on the 07th August 2023. Sunset was at 20:36hrs. The temperature at the start of the survey was 22°C, falling to 19.5°C at the end of the survey. The sky was clear with a gentle breeze and no precipitation.

3.26 The surveyor walked the same transect route, stopping at pre-determined points for 5-minute intervals.

3.27 Overall a similar level of activity was recorded during the July and August surveys. A total of three bat species were recorded which included common pipistrelle, soprano pipistrelle and brown long-eared, with similar levels of activity recorded by all species. Activity was once again concentrated along the western site boundary with some passes along the northern extent of the transect route and around the pond in the east of the site. The majority of bats were heard and not seen. The first pass was by soprano pipistrelle recorded at 21:47hrs between SP3 and SP4. Occasional passes by both common pipistrelle and soprano pipistrelle were recorded at SP4 and SP5 and adjacent to woodland between SP2 and SP3 during the survey. At 21:22hrs, two soprano pipistrelles were observed foraging over the hedgerow in the west of the site (SP2) towards woodland off-site to the west. A single, faint pass was recorded at 21:36hrs by brown long-eared within the north-west corner of the site, again associated with woodland to the west, as found during the previous surveys. The last pass was heard at 21:48hrs at SP6 with a common pipistrelle seen flying east to south towards fields in the wider farm estate.

Static Monitoring Surveys

Survey 1: 11th May 2023 - 18th May 2023

3.28 Sunset was between 20:37hrs and 20:47hrs and the night time temperature throughout the survey ranged from 9°C and 22.5°C. There were no periods of heavy rain during the survey with moderate to light winds throughout.

3.29 The survey recorded a low level of bat activity. At least four bat species were recorded during the monitoring period which included common pipistrelle, soprano pipistrelle, noctule and brown long-eared bat recorded within or immediately adjacent to the site. The total number of passes by each species is summarised in the table below.

Table 3.3: Summary of Bat Passes (May)

Species	Number of Passes
Common pipistrelle	19
Soprano pipistrelle	15

Noctule	3
Brown long-eared	5

Survey 2: 5th June 2023 – 11th June 2023

3.30 Sunset was between 21:09hrs and 21:11hrs and the night time temperature throughout the survey ranged between 21°C and 30.5°C. The survey nights were dry with clear to moderate cloud cover. The nights were generally calm in relation to wind levels.

3.31 The surveys recorded a lower level of activity compared to the first static survey. A total of three bat species were recorded during the monitoring period, which included common pipistrelle, soprano pipistrelle and brown long-eared bat recorded within or immediately adjacent to the site. The total number of passes by each species was lower than that recorded in May. The passes are summarised in the table below.

Table 3.4: Summary of Bat Passes (June)

Species	Number of Passes
Common pipistrelle	8
Soprano pipistrelle	1
Brown long-eared	1

Survey 3: 6th July 2023 - 12th July 2023

3.32 Sunset was between 21:11hrs and 21:15hrs and the night time temperature throughout the survey ranged between 11.5°C and 27.0°C. The survey nights were predominantly dry with a few light rain showers and clear to moderate cloud cover. The nights were generally calm in relation to wind levels.

3.33 The surveys recorded a higher level of activity compared to the June static survey. At least three bat species were recorded during the monitoring period, with common pipistrelle, soprano pipistrelle, noctule and brown long-eared being recorded within or immediately adjacent to the site.

Table 3.5: Summary of Bat Passes (July)

Species	Number of Passes
Common pipistrelle	25
Soprano pipistrelle	19

Noctule	5
Brown long-eared	8

Survey 4: 2nd August 2023 - 7th August 2023

3.34 Sunset was between 20:36hrs and 20:45hrs and the night time temperature throughout the survey ranged between 23°C and 12.75°C. The survey nights were generally dry with a few light rain showers and clear to moderate cloud cover. The nights were generally calm in relation to wind levels.

3.35 The surveys recorded a similar level of activity compared to the July static survey. At least four bat species were recorded during the monitoring period, with common pipistrelle, soprano pipistrelle, noctule and brown long-eared being recorded within or immediately adjacent to the site.

Table 3.6: Summary of Bat Passes (August)

Species	Number of Passes
Common pipistrelle	22
Soprano pipistrelle	20
Noctule	3
Brown long-eared	6

Reptile Survey

Data Search

3.36 The data search returned a small number of recent (post 2011) records for grass snake (*Natrix helvetica*) and common lizard (*Zootoca vivipara*) within 2km of the site. The closest record was from 2012 for grass snake, located approximately 60m to the north.

Presence / Absence

3.37 The survey was carried out through April, May and June 2023 by Carly Teague (lead surveyor) and Naomi Forbes. Both surveyors have extensive experience of undertaking surveys for reptiles. Carly has been involved in compiling and undertaking reptile mitigation, including formal reptile translocation projects, from small scale development projects through to large scale, multi-phased developments.

3.38 The survey identified a **good** population of slow worms within the site, with a peak (adult) count of 11 individuals recorded on the fifth survey visit on 19th June 2023. A peak count of one adult grass snake (found on the 25th May 2023) also confirmed a **low** population of this species within the site.

3.39 The majority of slow worms were encountered within tussock grassland to the south of the pond with a small number of individuals found within ruderal and grassland vegetation adjacent to the former agricultural units in the north of the survey area.

3.40 Grass snake was encountered within the tussock grassland to the south of the pond.

3.41 A juvenile grass snake was also found in this part of the site on the first survey visit on the 19th April 2023.A single juvenile slow worm was also recorded during the third survey visit on the 10th May 2023 which indicates that both species reptiles are currently breeding within or adjacent to the site.

3.42 The location of reptiles is presented in the survey map (Figure 3 in Appendix A) and a summary of the results is displayed in the table below. Full survey results are presented in Appendix C.

Table 3.7: Summary of reptile survey results (with peak counts (adults) in red).

Date	Slow Worm		Grass Snake	
	Adult/Sub-Adult	Juvenile	Adult/Sub-Adult	Juvenile
19/04/2023	1	0	0	1
08/05/2023	3	0	0	0
10/05/2023	1	1	0	0
25/05/2023	2	0	1	0
19/06/2023	11	0	0	0
26/06/2023	6	0	0	0
03/07/2023	7	0	0	0

Population Size Assessment

3.43 The peak count of 11 slow worms within the site equates to an exceptional population for this species based on current guidance (Froglife, 1999).

3.44 The true population size is more difficult to estimate, although guidance from Froglife (1999) suggests that peak counts from refuge surveys encounter only c.10% of individuals, albeit with a much lower sampling effort than employed here.

3.45 On this basis, the estimated slow worm population, within suitable habitat could be around 110 adult slow worms within the survey area as a whole. However, this is an approximate guide only and the true numbers may vary. When the population assessment is considered in relation to the site, regular long-term disturbance throughout much of the site is likely to restrict the distribution of reptiles to some degree, with individuals more likely to pass between suitable habitat to the north, east and west and when all factors are considered the actual population size supported is likely to be considerably less than that estimated above.

3.46 A peak count of one adult grass snake indicates that this species is present within the landscape and is likely to be using the adjacent pond for feeding however determining a population size for grass snake is difficult due to the transient nature of this species.

3.47 The presence of juveniles for both species indicates that these species groups are breeding within or adjacent to the site.

4. EVALUATION AND IMPACTS

Evaluation

Great Crested Newt

4.1 Great crested newts receive protection under the Wildlife and Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2017. Under current legislation both the individual and the habitats they use for shelter and breeding are protected.

4.2 The survey data shows that one pond included in the assessment supports a breeding population of great crested newt; associated with Pond 8, with Ponds 1 and 8 supporting a low population when applying Natural England's population size class assessment criteria (Natural England, 2001). Potentially suitable features for use by great crested newts within the proposed development site are restricted to areas of terrestrial habitat associated with the grassland and scrub habitats in the north and south together with boundary features.

4.3 Research suggests great crested newts rely on a network of breeding ponds with individuals moving between these ponds throughout the breeding season (English Nature 2001). Although the majority of the site has been subject to regular management over a pro-longed period, the grassland in the south of the site and the boundary features including grassland and scrub provide shelter and connectivity for individuals between the wider network of ponds to the east and west. Based on the proximity of the two ponds found to support a great crested newt population together with the good habitat connectivity between the ponds, it is likely that the populations within the ponds are acting as a single meta-population with Pond 8 being used for breeding by this species.

4.4 Overall, the site has been assessed and is considered to be of importance to great crested newts **at a local level**, with interconnected terrestrial habitats; to include habitats within the application site, providing connectivity to a network of breeding ponds to the east and west.

Bats

4.5 Bats receive protection under The Conservation of Habitats and Species Regulations 2017. Under current legislation it is an offence to deliberately kill, injure or capture this species or damage or disturb a breeding site or resting place (a roost).

Site

4.6 The development area supports semi-natural habitats including grassland, tree lines and boundary scrub which provide connectivity for this species between woodland and associated boundary features to the west, and grazed fields to the south and east.

4.7 Overall, a low level of bat activity was recorded at the site during the course of the bat surveys undertaken between May and August 2023. The highest level of activity was associated with boundary features within the west of the site, with significantly less activity associated with the central site extent. Bat foraging activity was associated with the pond adjacent to the proposed working area however the level of activity associated with this part of the site was also low. The site provides some connectivity for bats foraging to and from woodland to the west although the site is not considered to provide a particularly significant foraging or commuting resource for bats in the wider area.

4.8 Based on the increased level of bat activity recorded between June-August, the site is may also fall within core sustenance zones for common and soprano pipistrelle however based on the low level of overall activity, it is considered that the site is unlikely to form a significant part of any CSZ.

4.9 The farmhouse, which has been subject to surveys as part of a separate planning application, has been confirmed as supporting an occasional common pipistrelle day roost (CT Ecology 2023a), with the wider site likely to fall within the core sustenance zone (CSZ) for this species. However, the development area, to include that in proximity to the farmhouse, is dominated by agricultural units and hardstanding/bare ground habitat which are subject to regular disturbance, with the closest, higher value habitat associated with off-site woodland to the west, which is likely form more optimal core foraging habitat for any individual bats associated with the on-site roost.

4.10 Based on the results of the surveys, the on-site grassland and scrub to include boundary features provide a supporting function as a foraging and commuting resource for small numbers of bats, and provide connectivity to more optimal habitat adjacent to the west, to include bats associated with the roost within the farmhouse. Overall, based on the results of the survey, the site is assessed as being of value for bats **at a local level**.

Reptiles

4.11 All species of reptile are protected from killing or injury under the Wildlife and Countryside Act 1981 (as amended).

Site

4.12 Potentially suitable reptile habitat was restricted to areas of grassland, ruderal and marginal scrub habitat equating to approximately 0.6ha.

4.13 At the time of the survey, the on-site habitats supported suitable foraging, basking and sheltering opportunities, and although areas of continuous grassland provide less optimal conditions due to heavy shading at ground level resulting in an absence of basking features due to the dense sward, the interface between scrub and grassland edge habitats are extensive enough to support a viable population of reptiles, with connectivity between suitable habitat to the north, east and west.

4.14 The central extent of the site is subject to regular, long-term disturbance and the grassland adjacent to the farmhouse undergoes regular management through mowing throughout the year which would likely serve to restrict the distribution of reptile and the population size to some degree.

4.15 The reptile survey confirmed the presence of a **good** population of slow worm and a **Low** population of grass snake based on guidance from Froglife (1999). The majority of individuals were located within tussock grassland to the south of the pond with a small number of individuals found within ruderal and grassland vegetation adjacent to the former agricultural units in the north of the survey area.

4.16 Overall, the site is assessed as being of value for reptiles **within the zone of influence of the site** based on the results of the current survey. The on-site habitats provide a supporting function as a foraging, basking and sheltering resource for slow worm and grass snake.

4.17 The site provides connectivity for this species to off-site habitats however more optimal communing and sheltering habitat is present in the wider area. When considered in combination with the wider landscape, the site is of limited value to local reptile populations.

Impact Assessment

Great Crested Newt

4.18 The development proposals will result in both the temporary and permanent loss of habitat which provides suitable terrestrial habitat for great crested newt and other amphibians. No water bodies will be impacted by the proposed works.

4.19 Applying the Natural England Risk Assessment Tool provided in document WML–A14-2 (Method Statement, April 2020), based on the proximity of breeding ponds and the current design proposals, the risk of an offence being committed under current legislation is considered to be 'highly likely' and therefore registration on Mid Sussex District Council's District Level Licencing (DLL) Scheme or an application to Natural England for a Protected Species Mitigation Licence (PSML) in respect to this species will be required in order to progress with the proposal.

4.20 For the DLL option, which has been introduced since undertaking the pond surveys, Mid Sussex District Council, together with NatureSpace, the consultee for the DLL, will provide detailed advice on this as part of the planning submission. Registration on the scheme will involve payment of an initial fee to register the site on the scheme with the council and a second fee will then be required from the landowner at a later stage to secure monitoring and management of ponds in the wider area by the local authority.

4.21 For the PSML option, the current pond survey results remain valid for the purposes of the licence application for between two-three years. The licence application will include detailed measures to mitigate the impacts of the development on great crested newts.

4.22 Based on the results of the assessment, in the absence of mitigation, the **construction phase** of the works will result in a **permanent negative impact** upon small numbers of great crested newts, which are considered to be of **local importance**.

4.23 The proposed development footprint will be located to the north-west of the known great crested newt ponds and therefore the **operational phase** of the development will not result in any isolation of dispersal routes. Effects of the proposed works on great crested newts are **not likely to be significant** in the long-term, providing suitable mitigation is put in place to safeguard individuals throughout works and ensuring any post development landscaping replaces and enhances features for use by great crested newts during their terrestrial phase. The pond within the wider site will also be enhanced as part of the development proposals along with the creation of new attenuation ponds on the south, which will serve to improve suitability for amphibians in the long-term. Hard-landscaping should also be designed to integrate connectivity measures throughout the site to include newt friendly drainage features.

4.24 Smooth newt and palmate newt have also been found within Ponds 1, 7 and 8, and individuals of these species may also utilise on-site terrestrial habitats. Widespread amphibian species are afforded limited protection under current legislation due to their current status and widespread distribution in England and are not afforded the same level of protection as great crested newts. Enhancement measures undertaken in respect to great crested newts will however also serve to enhance habitats for widespread amphibians.

4.25 Further details are provided in Section 5.

Bats

4.26 Proposals will result in the removal of discrete areas of grassland and scrub and potentially a small number of scattered trees. Limited bat foraging and commuting activity was associated with the development area during the surveys with the majority of bat activity associated with the wider, western site boundary and pond; both areas are located outside the application site.

4.27 Habitat connectivity associated with the site boundaries will be retained as part of the proposals. The majority of grassland will also be retained with additional opportunities for foraging bats provided post works through the creation of attenuation ponds in the south of the site.

4.28 Based on the results of the assessment, unmitigated, the **construction** and **operational phases** of the works will result in a **permanent negative impact** upon **small** numbers of individual foraging and commuting bats, **significant within the zone of influence of the site.**

4.29 Boundary features will be retained. Therefore impacts resulting from the works will be in relation to direct and indirect impacts associated with;

* increased lighting during both the construction and operational phases of the development. This has the potential to impact negatively on bats to some degree through habitat loss and/or severance of commuting and foraging routes; and
* losses in grassland habitat within the southern site extent during both the construction and operational phases of the development. This has the potential to impact negatively on bats foraging through the site.

4.30 Mitigation is therefore required in order to minimise impacts on bats.

4.31 A sensitive lighting scheme must be implemented to ensure that there is no net increase in light levels on retained boundary features and newly created linear features within the site as a result of the works in order to safeguard bats. Ensuring that site boundaries, specifically the western boundary, together with habitats surrounding the pond and farmhouse, are not directly illuminated will also ensure connectivity for bats between the site and more optimal woodland habitat to the west, while maintaining bat commuting routes between the roost associated with the farmhouse and woodland habitat to the west.

4.32 Providing mitigation in respect to lighting is implemented throughout the construction and operational phases, the effects of the proposed works on bats are **not likely to be significant** in the long-term and are considered unlikely to have any significant negative impact on the availability of bat foraging and commuting habitat in the locality.

4.33 Enhancing boundary features through additional planting and creating wildflower grassland areas as part of the re-development will serve to enhance the site for the range of bat species currently supported at the site, with additional linear features provided throughout the site, which will encourage on-going use of the site by this species group in the long-term.

Reptiles

4.34 Proposals will result in both the permanent loss of areas of grassland and ruderal habitat, together with scattered scrub which provide suitable sheltering, foraging and basking habitat for reptiles. Although a good population of slow worms and a low population of grass snake were recorded during the survey, the majority of individuals were located to the south of the pond; located outside the proposed working area, with a small number of slow worms located within ruderal and grassland vegetation adjacent to the former agricultural units in the north of the application area.

4.35 Based on the distribution of reptiles recorded together with the currently proposed layout, the removal of on-site habitats to facilitate the development will not result in the loss of a reptile site, or significantly isolate the existing reptile population, with reptiles able to move through retained on-site habitats and continue to move off-site to the north and west during works. Once the development is complete, individuals will also be able to pass through the development area.

4.36 Based on the results of the assessment, the **construction phase** of the works will result in a **permanent negative impact** upon **low** numbers of individual widespread reptiles, **significant within the zone of influence of the site only**.

4.37 Unmitigated, site preparation works required as part of the proposals to include the clearance of vegetation and the tracking of machinery has the potential to impact negatively on reptiles. This is through both habitat loss and the killing or injury of individuals. Mitigation is therefore required in order to safeguard this species group.

4.38 Based on the distribution of reptiles at the site, adopting a precautionary approach to include phased habitat removal, which will serve to deter animals from the working area and displace individuals into retained habitats to the north and west, is considered sufficient to safeguard this species group, enabling individuals to continue to pass to off-site habitats during the construction phase. Suitable fencing (Herras™ or similar) must be installed around the working footprint to ensure retained habitats, particularly to the south of the pond, are protected. The fencing will serve to restrict machinery and materials encroaching into retained habitats.

4.39 Any vegetation within the working area must then be maintained at ground level for the duration of the construction phase in order to ensure the site remains unsuitable for colonisation by reptiles. Materials must also be stored away from fences to avoid the potential for reptiles using the stored materials as refugia. These measures will serve to protect the adjacent reptile population throughout the construction phase. Habitat connectivity will be maintained post works, with individuals being able to extend their range around re-landscaped areas post works. Retained grassland areas should also be managed in a sympathetic way for reptiles in the long-term, with a relaxed meadow management regime implemented to promote cover for reptiles 9and amphibians) during the active season. Providing a precautionary approach for reptiles is followed, the effects of the proposed works on reptiles are **not likely to be significant** in the long-term. Mitigation for reptiles will need to be co-ordinated with any mitigation in place for great crested newt.

5. SUMMARY AND RECOMMENDATIONS

Summary

5.1 This section summarises the data gathered during the surveys and the likely impacts on the target species that are present on the site, as described in previous sections of this report.

5.2 The following key ecological issues have been identified:

Great Crested Newt

* Great crested newts were found in two of the eight ponds (Ponds 1 and 8) surveyed during the course of the six survey visits. Both ponds were found to support a **low** great crested newt population, based on current guidelines. Great crested newts were found to be breeding within Pond 8.
* Based on the distance and distribution of known great crested newt ponds, it can be assumed that a low population may pass through the site between ponds and to access the breeding pond to the south-west of the site. The proposed works will directly impact areas of terrestrial habitat through ground excavations and through the transport of machinery and storage of materials and associated equipment. This species therefore considered to pose a significant constraint to the scheme.
* Overall, the site has been assessed and is considered to be of importance to great crested newts **at a local level**, with interconnected terrestrial habitats; to include habitats within the application site, providing connectivity to a network of breeding ponds to the east and west.
* Based on the results of the assessment, in the absence of mitigation, the **construction phase** of the works will result in a **permanent negative impact** upon small numbers of great crested newts, which are considered to be of **local importance**.
* Mitigation will be required to safeguard this species. There are two mitigation options for this site; either registering on the DLL Scheme to enable works to proceed or applying to Natural England for a PSML to translocate individuals away from the development footprint prior to works.
* Effects of the proposed works on great crested newts are **not likely to be significant** in the long-term, providing suitable mitigation is put in place to safeguard individuals throughout works and ensuring any post development landscaping replaces and enhances features for use by great crested newts during their terrestrial phase. The pond within the wider site will also be enhanced as part of the development proposals along with the creation of new attenuation ponds on the south, which will serve to improve suitability for amphibians in the long-term.

Bats

* The bat activity transects and static monitoring surveys recorded a low level of bat activity, with highest levels of activity associated with the western site boundary and habitats immediately adjacent to the pond. Significantly less bat activity was associated with the central site extent.
* A total of four different bat species were recorded across all surveys to include common pipistrelle, soprano pipistrelle, noctule and brown long-eared.
* The site is assessed as being of value for bats **at a local level** based on the current survey data.
* Based on the results of the assessment, unmitigated, the **construction** and **operational phases** of the works will result in a **permanent negative impact** upon **small** numbers of individual foraging and commuting bats, **significant within the zone of influence of the site.**
* Boundary tree lines and associated scrub will be retained as part of the proposals however in the absence of mitigation, direct and indirect impacts will result from the works.
* Mitigation is required to ensure that there is no net increase in light levels on retained boundary features and the pond as a result of the works in order to retain connectivity for bats.
* Enhancing boundary features through additional planting and creating wildflower grassland areas as part of the re-development will serve to enhance the site for the range of bat species currently supported at the site.
* Providing mitigation in respect to lighting and landscaping is implemented throughout the construction and operational phases, the effects of the proposed works on bats are **not likely to be significant** in the long-term.

Reptiles

* A **Good** breeding population of slow worm and a **Low** breeding population of grass snake was identified during the course of the seven survey visits.
* The majority of individuals were located within tussock grassland to the south of the pond with a small number of individuals found within ruderal and grassland vegetation adjacent to the former agricultural units in the north of the site
* Overall, the site is assessed as being of value for reptiles **within the zone of influence of the site** based on the results of the current survey.
* Proposals will result in the loss of areas of grassland, ruderal vegetation and scrub, to include habitats where reptiles were encountered during the survey, therefore site preparation works required as part of the proposals to include the clearance of vegetation and the tracking of machinery has the potential to impact negatively on reptiles. This is through both habitat loss and the killing or injury of individuals.

- Based on the results of the assessment, unmitigated, the **construction phase** of the works will result in a **permanent negative impact** upon **low** numbers of individual widespread reptiles, **significant within the zone of influence of the site only**.
- Based on the low population of reptiles present and the current distribution of individuals within the working footprint, a formal translocation to move reptiles from the site is not considered necessary. Instead, adopting a precautionary approach to include phased vegetation clearance in order to deter animals from the working area is considered sufficient to fully safeguard this species group and is considered to be the most suitable and proportionate approach in this situation. Mitigation will need to be co-ordinated with any mitigation in place for great crested newt.
- Providing a precautionary approach for reptiles is followed, the effects of the proposed works on reptiles are **not likely to be significant** in the long-term.

Recommendations

Great Crested Newt

5.3 The proposed works will directly impact areas of suitable terrestrial habitat through ground excavations and through the transport of machinery and storage of materials and associated equipment.

5.4 Due to the distribution of confirmed great crested newt ponds to the east and south-west of the application site, works must proceed under either a DLL from NatureSpace or a PSML from Natural England in order to legally disturb areas of terrestrial habitat.

5.5 For the DLL, Mid Sussex District Council, together with NatureSpace, the consultee for the DLL, will provide detailed advice on this as part of the planning submission. Registration on the scheme will involve payment of an initial fee which will then register the site on the scheme with the council. An additional fee will be required from the landowner at a later stage to secure monitoring and management of ponds in the wider area by the local authority, however NatureSpace will provide advice regarding this and it is recommended that they are contacted directly for more information as part of the planning application process. Once registered, works can start without the need for on-site mitigation.

5.6 The PSML option will require a formal translocation of great crested newts from the proposed working area to be undertaken as part of the licence.

5.7 A licence application can only be submitted to Natural England following the granting of full planning permission. It takes several weeks to compile the application and full details of the project would be required including the final design layout and detailed landscaping plans. Once submitted, Natural England state a minimum 30 working day assessment period, licenses are either granted, refused or queried. Please note that although 30 working days is stated, Natural England are currently experiencing long delays and so notification of their decision may be later than 30 working days. The translocation process and any subsequent ground works cannot commence until the great crested newt licence has been approved.

5.8 Outline recommendations to be included in the PSML are provided below.

5.9 A formal translocation of great crested newts from the proposed working area will be required as part of the licence. This will include the installation of newt exclusion fencing around the perimeter of the working area together with a series of pitfall traps located along the inside of the fence line.

5.10 The design of the fencing should be the same as that illustrated in the Great Crested Newt Mitigation Guidelines (Natural England 2004).

5.11 The fence should be made of UV resistant polythene approximately 500mm in height and buried 200mm deep into the ground. There should also be a turn out or roll down at the top of the fence facing out from the development area. The exclusion fence will be retained until completion of the construction and landscaping period and will be removed under an ecological watching brief. The installation of exclusion fencing around the working boundary will restrict movement of any newts into the development footprint prior to and during the works.

5.12 The area will then be subject to a 30-day trapping exercise (based on a low population being supported). In accordance with best practice, trapping can only be undertaken in the active period for great crested newts, taken to nominally run between March and October inclusive. This process will also serve to safeguard other more widespread amphibians that may be present within the site, in accordance with local and national planning policy.

5.13 Prior to the translocation commencing, a suitable receptor area will need to be selected for the translocated individuals. It is always recommended that the receptor area is as close to the translocation area as possible, and wherever practicable, individuals should be retained on-site within an area protected from the works. The selected receptor area may require enhancement as part of the works to ensure the area can support the increased carrying capacity. This may include the installation of hibernacula piles and grassland management.

5.14 It is recommended that retained habitat adjacent to the south of the pond, in addition to the retained boundary features are used for the translocated individuals. These areas will remain free from any development activity and can be enhanced specifically for amphibians. These areas will enable individuals to continue to pass around the site boundaries and between the network of ponds for the duration of the works, ensuring connectivity is retained for the wider newt population with enhancement measures serving to improve the overall suitability of terrestrial habitat at the site in the long-term. Post works, newly created ponds and enhanced grassland in the south of the site will also enable newts to continue to pass through the site, maintaining connectivity between the site and off-site areas. The receptor area will be enhanced through the provision of two log piles and a hibernaculum.

5.15 Based the design proposals, works are likely to result in 'partial destruction of terrestrial habitat' and 'modified management' of some terrestrial areas within the development footprint however the proposals will not result in fragmentation or any subsequent isolation between the adjacent ponds and suitable terrestrial and breeding habitat in the wider surrounds. The pond in the wider site will be retained and enhanced as part of the landscaping design. It is therefore anticipated that, with careful landscaping, additional linear features can be created with areas of terrestrial habitat being reinstated post works and with connectivity between the wider landscape retained both during and post development.

5.16 A requirement of any PSML is for post development monitoring of the population to ensure that the favourable conservation status of great crested newts in their natural range is maintained. Based on the anticipated impacts of the proposals at this stage, it is likely that a two-year presence/absence monitoring programme will need to be undertaken at the site.

Bats

Lighting

5.17 Different species of bat have been found to react differently to night-time lighting however research has found that generally, all species of bats are sensitive to artificial lighting and that excessive lighting can delay bats from emerging, thus shortening the time available for foraging, as well as causing individuals to move away from suitable foraging grounds or roost sites, to alternative dark areas (Jones, 2000). Bats can also become isolated from their foraging grounds if the linear features they use for commuting are suddenly illuminated, creating a light barrier (Fure, 2006).

5.18 Currently the site receives limited light spill. New development provides the opportunity to enhance the site's value for foraging bats and to minimise indirect impacts from lighting associated with the new development. This can be achieved by following accepted best practice (Institute of Ecology and Environmental Management 2006, Institute of Lighting Engineers 2009, Bat Conservation Trust, 2014):

* The level of artificial lighting including security lighting should be kept to a minimum, with light spill controlled so boundary habitats, in addition to grassland surrounding the farmhouse and the pond are not directly illuminated;
* recent LED technology should be utilised where possible. LED lights do not emit UV radiation, towards which insects are attracted, drawing them away from bat foraging areas in the surrounding landscape;
* all lights should be directed at a low angle with minimal light spillage wherever possible. The use of low-level lighting columns along the access road/parking areas should be implemented or the use of integrated hoods or cowls could help to minimise light spill on adjacent boundary features and retained trees; and
* ideally the site boundaries should be kept dark, preferably at bat emergence (0-1 hour after sunset) and during peak bat activity periods (e.g., 1.5 hours after sunset and 1.5 hours before sunrise). Therefore, where possible, if lighting is required this should be installed with the light directed down into the entrance/access/parking areas wherever possible and lighting should be controlled through the use of PIR and/or timers.

5.19 The above features should be included within a lighting strategy, compiled as part of the proposed development in consultation with the project ecologist.

Bat Roost Provision

5.20 In order to provide a net gain in bat roosting provision as a result of the works it is recommended that two bat boxes are installed on suitable mature or semi-mature trees around the site as part of the re-development. The boxes should be sited at a height of at least 4m and away from any light source. The specification of the boxes recommended includes the following model:

* Cavity Bat Box (i.e. the Eco Crevice cavity box) x 2 boxes – suitable for crevice or cavity roosting bats including pipistrelles, long-eared bats and noctules.

Reptiles

5.21 Reptiles must be displaced by the persuasion method which must be carried out in the active period for this species; taken to run between **mid-March and October** inclusive. This will involve carrying out phased vegetation cutting throughout the working area to remove any cover opportunities and to encourage reptiles to move into retained grassland to the north of the site. A working methodology is provided below but this may need to be altered to correspond with the mitigation strategy compiled for great crested newts.

* Prior to Construction- Habitat Enhancement (Retained Habitats)
    - Prior to construction commencing, habitat enhancement measures must be undertaken throughout retained habitats in the south of the site. This should include relaxed grassland management, installation of log piles and management of scrub. More details are provided in the site enhancement section below.
* Prior to Construction- Phased Habitat Management
    - In the first phase, all standing vegetation within the working footprint should be reduced in height to approximately 250mm above ground level. Vegetation should be cleared using hand tools, such as chainsaws and strimmers. All cut vegetation should be removed from the site;
    - the second phase should then be undertaken the following day. Vegetation should be cut to ground level using the same method as detailed above; and
    - for each phase, the vegetation should be cut towards the southern extent of the working area to enable reptiles to move into retained grassland.
* Prior to Construction- Fence Installation/Site Maintenance
    - Once all suitable habitat is removed, suitably robust fencing should be installed around the working footprint in order to stop materials and machinery encroaching into retained habitats; and
    - All vegetation within the working footprint should be managed at ground level in the lead up to construction commencing. This may require weekly strimming during the plant growing season (March to September inclusive).

- During Works
    - All fencing must remain in situ for the duration of the construction works; and
    - All vegetation within the working footprint should be managed at ground level throughout the construction period. This may require weekly strimming during the plant growing season (March to September inclusive).
- Post Construction
    - The perimeter fencing must remain in place until all construction activities, including the use of heavy machinery, are complete.

Site Enhancement

5.22 In addition to details provided in this report, recommendations made in Section 5 of the PEA report (CT Ecology 2023) should also be implemented at the site in order to achieve a net gain in biodiversity as a result of the works.

Log Piles

5.23 To further enhance the retained habitats for reptiles to the south of the pond, a series of two log piles should be constructed in order to provide additional hibernation and basking opportunities, located within grassland, as detailed above in relation to great crested newts.

5.24 Log piles will be oriented so as to maximise their daily exposure to the sun and will be made from neatly stacked cord wood, locally sourced where possible, and stacked approximately 1m in height, either in a pyramidal shape (bound with wire to prevent them breaking apart over time) or stacked against a semi-mature/mature tree trunk or fence post. The piles will be oriented such that their longest side faces south.

5.25 Log piles are ideal environments for reptiles; the surface of the structures may be used for basking and they may also be used as a refuge from predators. The dead wood in the log piles also supports a diverse invertebrate fauna; a food source for reptiles.

Scrub Management

5.26 Periodic scrub clearance should be undertaken to control encroachment of scrub in order to maintain the open grassland supported at the site.

5.27 In order to avoid any potential impact on breeding birds, the clearance of any scrub will be timed to occur outside the main bird nesting season and in the active period for reptiles, with clearance works undertaken between **September and October,** as required.

Grassland Management

5.28 A sympathetic grassland cutting regime should be implemented for the retained grassland areas to enhance the site for reptiles, amphibians and foraging bats. Adopting an annual cut late in the year, after the plant growing season, will serve to encourage a greater wildflower diversity and structural variation throughout the sward. Annual cutting will serve to control the dominance of coarse grasses over the long-term while enabling the grassland sward to develop during the summer months when reptiles are active.

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Appendix A
Survey Maps

Figure 1: Twineham Court Farm Great Crested Newt Survey Map

Drawn by: CT
Date: 04/04/2024
Scale: See Map

CT Ecology

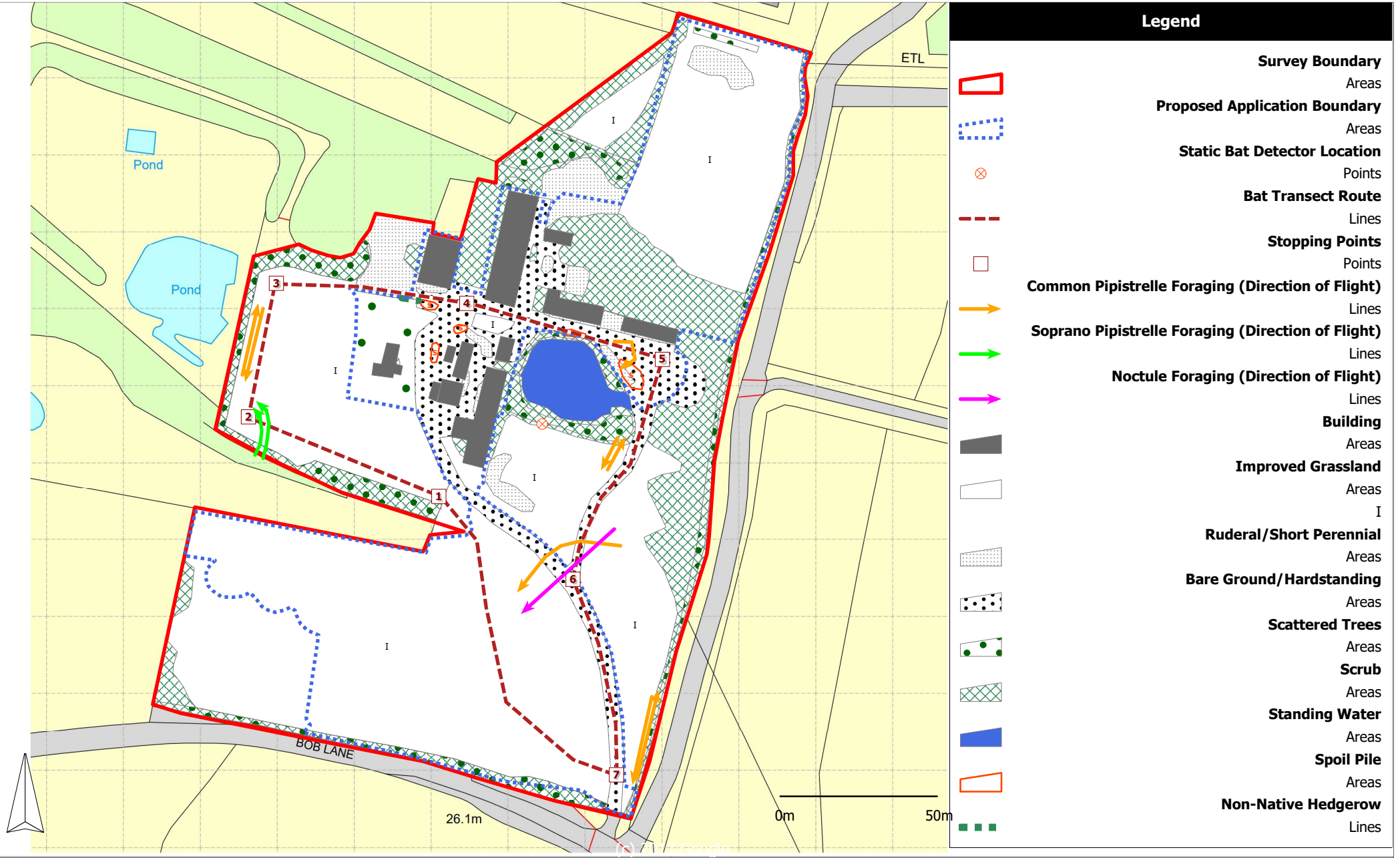
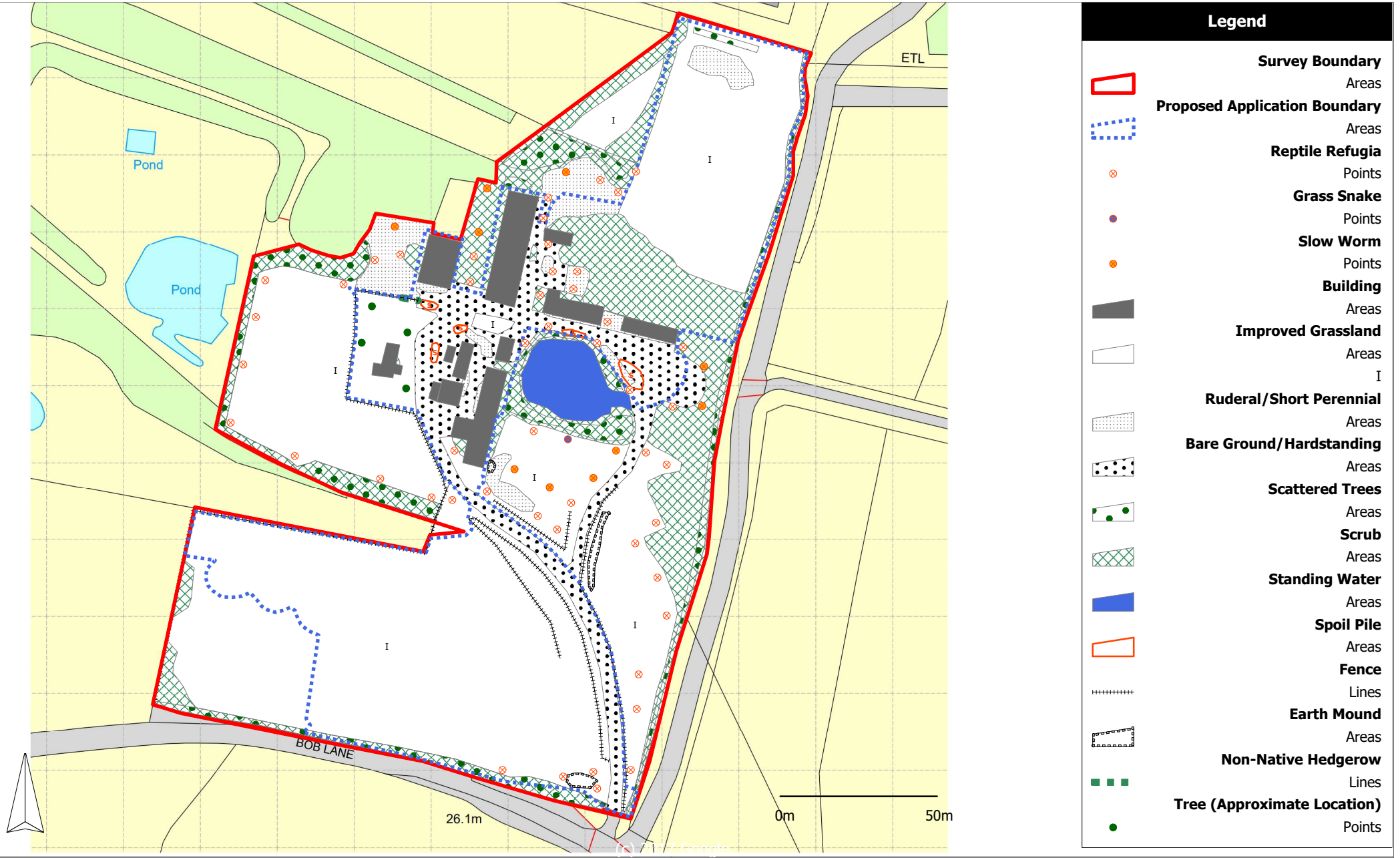


Figure 2: Twineham Court Farm Bat Survey Map

Drawn by: CT
Date: 04/04/2024
Scale: See Map

CT Ecology



Legend

- **Survey Boundary** — Areas
- **Proposed Application Boundary** — Areas
- **Reptile Refugia** — Points
- **Grass Snake** — Points
- **Slow Worm** — Points
- **Building** — Areas
- **Improved Grassland** — Areas — I
- **Ruderal/Short Perennial** — Areas
- **Bare Ground/Hardstanding** — Areas
- **Scattered Trees** — Areas
- **Scrub** — Areas
- **Standing Water** — Areas
- **Spoil Pile** — Areas
- **Fence** — Lines
- **Earth Mound** — Areas
- **Non-Native Hedgerow** — Lines
- **Tree (Approximate Location)** — Points

Figure 3: Twineham Court Farm Reptile Survey Map

Drawn by: CT
Date: 04/04/2024
Scale: See Map

CT Ecology

Appendix B
Legislation

LEGISLATIVE FRAMEWORK

This section contains information pertaining to the legislation and planning policy applicable in Britain. This information is not applicable to Northern Ireland, the Republic of Ireland the Isle of Man or the Channel Islands. Information contained in the following appendix is provided for guidance only.

Species

The objective of the EC Habitats Directive[1] is to conserve plants and animals which are considered to be rare across Europe. The Directive is transposed into UK law by The Conservation of Habitats and Species Regulations 2017 (as amended) (formerly The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) and The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended).

The Wildlife and Countryside Act 1981 (as amended) implements the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and also implements the obligations set out for species protection from the Council Directive 2009/147/EC (formerly 79/409/EEC) on the Conservation of Wild Birds (EC Birds Directive) in Great Britain.

Various amendments have been made since the Wildlife & Countryside Act came into force in 1981. Further details pertaining to alterations of the Act can be found on the following website: www.opsi.gov.uk. Key amendments have been made through the Countryside and Rights of Way (CRoW) Act (2000) and Nature Conservation (Scotland) Act 2004.

There are a number of other legislative Acts affording protection to species and habitats. These include

* Countryside and Rights of Way (CRoW) Act 2000
* Deer Act 1991
* Natural Environment & Rural Communities (NERC) Act 2006
* Protection of Badgers Act 1992
* Wild Mammals (Protection) Act 1996

Bats

Bats are protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). This act protects individuals from:

- intentional or reckless disturbance (at any level);

[1] Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora.

- intentional or reckless obstruction of access to any place of shelter or protection; and
- selling, offering or exposing for sale, possession or transporting for purpose of sale

In addition, all species of bat are fully protected under The Conservation of Habitats and Species Regulations 2017 (as amended) through their inclusion on Schedule 2. Regulation 41 prohibits:

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

A Protected Species Mitigation Licence (PSML) issued by Natural England will be required for works liable to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake activities listed above. A licence is required to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and monitored.

Herpetofauna (Reptiles and Amphibians)

The following species receive full protection under the Conservation of Habitats and Species Regulations 2017 (as amended) through their inclusion on Schedule 2.

- sand lizard (*Lacerta agilis*);
- smooth snake (*Coronella austriaca);*
- natterjack toad (*Epidalea calamita);*
- great crested newt (*Triturus cristatus);* and
- pool frog (*Pelophylax lessonae).*

Under this legislation, Regulation 41 prohibits:

- deliberate killing, injuring or capturing of species listed on Schedule 2;
- deliberate disturbance of any Schedule 2 species as to impair their ability:
  (i) to survive, breed, or reproduce, or to rear or nurture young; and
  (ii) to hibernate or migrate.
- deliberate disturbance of any Schedule 2 species as to affect significantly the local distribution or abundance of the species;
- deliberate taking or destroying of the eggs of a Schedule 2 species;

- damage or destruction of a breeding site or resting place; and
- keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part of a species.

With the exception of the pool frog, these species are also currently listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under this Act, they are additionally protected from:

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

Other native species of herpetofauna are protected solely under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). These species include:

- adder (*Vipera berus*);
- grass snake (*Natrix natrix*);
- common lizard (*Zootoca vivipara*); and
- slow-worm (*Anguis fragilis*).

Under this legislation, for these species it is prohibited under Section 9(1) & (5) to:

- intentionally (or recklessly in Scotland) kill or injure these species
- sell, offer or expose for sale, possess or transport for purpose of sale these species, or any part thereof.

The following species are listed in respect to Section 9(5) of Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) which only affords them protection against sale, offering or exposing for sale, possession or transport for the purpose of sale:

- common frog (*Rana temporaria);*
- common toad (*Bufo bufo);*
- smooth newt (*Lissotriton vulgaris);* and
- palmate newt (*L. helveticus*).

Appendix C
Survey Data

ARGUK GCN HSI Calculator

	Pond Number		1	2	3	4	5	6	7	8
SI No	SI Description		SI Value	SI Value	SI Value	SI Value	SI Value	SI Value	SI Value	SI Value
1	Geographic location		1	1	1	1	1	1	1	1
2	Pond area		1	0.95	0.7	0.2	0.5	0.27	0.35	0.58
3	Pond permanence		1	1	0.5	0.1	0.1	0.1	0.1	0.1
4	Water quality		0.67	0.67	0.67	0.33	0.33	0.67	0.67	0.67
5	Shade		0.6	0.4	0.4	0.6	0.6	1	1	1
6	Water fowl effect		0.67	0.67	1	1	1	1	1	1
7	Fish presence		1	1	1	1	1	1	1	1
8	Pond Density		1	1	1	1	1	1	1	1
9	Terrestrial habitat		1	1	1	1	1	1	1	1
10	Macropyhyte cover		0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
HSI Score			**0.78**	**0.75**	**0.70**	**0.51**	**0.56**	**0.60**	**0.61**	**0.64**
Pond suitability (see below)			Good	Good	Good	Below Average	Below Average	Below Average	Average	Average

Categorisation of HSI Score

HIS Score	**Pond Suitability**
< 0.50	Poor
0.50 - 0.59	Below average
0.60 - 0.69	Average
0.70 - 0.79	Good
> 0.80	Excellent

Based on ARGUK advice note 5 - Great Crested Newt Habitat Suitability Index

Great Crested Newt Survey Pond 1

	Visit 1				Visit 2				Visit 3			
Date	30/03/2023				04/04/2023				18/04/2023			
Personnel	JK, CT				CT, JK				JK, CT			
Temperature (ºC)	9				8				8			
Weather	Rain at end of survey. Calm				Dry, no breeze				Dry, no wind			
Turbidity	1				1				1			
Vegetation cover	1				1				1			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	x		x	egg	x		x	egg	x	10		egg
T. cristatus												
male					1					1		
female					1					1		
unknown												
total adults												
immature												
larvae												
eggs present?	no				no				no			
L. vulgaris	2 M											
L. helveticus												
R. temporaria												
B. bufo												
Other												

	Visit 4				*Visit 5*				*Visit 6*			
Date	20/04/2024				24/04/2024				04/05/2024			
Personnel	JK, CT				JK, CT				JK, CT			
Temperature (ºC)	7				7				8			
Weather	Blustery with clear skies.				Overcast, dry				Overcast, dry and still			
Turbidity	1				1				1			
Vegetation cover	1				1				1			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	x	10		egg	x	10		egg	x			egg
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?	no				no				no			
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

Great Crested Newt Survey Pond 2

	Visit 1				Visit 2				Visit 3			
Date	30/03/2023				04/04/2023				18/04/2023			
Personnel	JK, CT				CT, JK				JK, CT			
Temperature (ºC)	9				8				8			
Weather	Rain at end of survey. Calm				Dry, no breeze				Dry, no wind			
Turbidity	1				1				1			
Vegetation cover	1				1				1			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	x		x	egg	x		x	egg	x	30		egg
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?	no				no				no			
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

	Visit 4				*Visit 5*				*Visit 6*			
Date	20/04/2024				24/04/2024				04/05/2024			
Personnel	JK, CT				JK, CT				JK, CT			
Temperature (ºC)	7				7				8			
Weather	Blustery with clear skies.				Overcast, dry				Overcast, dry and still			
Turbidity	1				1				1			
Vegetation cover	1				1				1			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	x	30		egg	x	32		egg	x			egg
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?	no				no				no			
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

Great Crested Newt Survey Pond 3

	Visit 1				**Visit 2**				**Visit 3**			
Date	30/03/2023				04/04/2023				18/04/2023			
Personnel	JK, CT				CT, JK				JK, CT			
Temperature (ºC)	9				8				8			
Weather	Rain at end of survey. Calm				Dry, no breeze				Dry, no wind			
Turbidity	1				1				1			
Vegetation cover	1				1				1			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	x		x	egg	x		x	egg	x	15		egg
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?	no				no				no			
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

	Visit 4				*Visit 5*				*Visit 6*			
Date	20/04/2024				24/04/2024				04/05/2024			
Personnel	JK, CT				JK, CT				JK, CT			
Temperature (ºC)	7				7				8			
Weather	Blustery with clear skies.				Overcast, dry				Overcast, dry and still			
Turbidity	1				1				1			
Vegetation cover	1				1				1			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	x	15		egg	x	15		egg	x			egg
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?	no				no				no			
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

Great Crested Newt Survey Pond 4

	Visit 1				Visit 2				Visit 3			
Date	30/03/2023				04/04/2023				18/04/2023			
Personnel	JK, CT				CT, JK				JK, CT			
Temperature (ºC)	9				8				8			
Weather	Rain at end of survey. Calm				Dry, no breeze				Dry, no wind			
Turbidity	1				1				1			
Vegetation cover	0				0				0			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	x		x	egg	x		x	egg	x	5		egg
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?	no				no				no			
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

	Visit 4				*Visit 5*				*Visit 6*			
Date	20/04/2024				24/04/2024				04/05/2024			
Personnel	JK, CT				JK, CT				JK, CT			
Temperature (ºC)	7				7				8			
Weather	Blustery with clear skies.				Overcast, dry				Overcast, dry and still			
Turbidity	1				1				1			
Vegetation cover	0				0				0			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	x	5		egg	x	5		egg	x			egg
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?	no				no				no			
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

Great Crested Newt Survey Pond 5

	Visit 1				Visit 2				Visit 3			
Date	30/03/2023				04/04/2023				18/04/2023			
Personnel	JK, CT				CT, JK				JK, CT			
Temperature (ºC)	9				8				8			
Weather	Rain at end of survey. Calm				Dry, no breeze				Dry, no wind			
Turbidity	1				1				1			
Vegetation cover	0				0				0			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	x		x	egg	x		x	egg	x	10		egg
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?	no				no				no			
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

	Visit 4				*Visit 5*				*Visit 6*			
Date	20/04/2024				24/04/2024				04/05/2024			
Personnel	JK, CT				JK, CT				JK, CT			
Temperature (ºC)	7				7				8			
Weather	Blustery with clear skies.				Overcast, dry				Overcast, dry and still			
Turbidity	1				1				1			
Vegetation cover	0				0				0			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	x	10		egg	x	10		egg	x			egg
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?	no				no				no			
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

Great Crested Newt Survey Pond 6

	Visit 1				Visit 2				Visit 3			
Date	30/03/2023				04/04/2023				18/04/2023			
Personnel	JK, CT				CT, JK				JK, CT			
Temperature (ºC)	9				8				8			
Weather	Rain at end of survey. Calm				Dry, no breeze				Dry, no wind			
Turbidity	0				1				1			
Vegetation cover	3				3				3			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	x		x	e & t	x		x	e & t	x	8		e & t
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?	no				yes				yes			
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

	Visit 4				*Visit 5*				*Visit 6*			
Date	20/04/2024				24/04/2024				04/05/2024			
Personnel	JK, CT				JK, CT				JK, CT			
Temperature (ºC)	7				7				8			
Weather	Blustery with clear skies.				Overcast, dry				Overcast, dry and still			
Turbidity	1				1				1			
Vegetation cover	3				3				3			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	x	8		e & t	x	8		e & t	x			e & t
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?	yes				yes				yes			
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

Great Crested Newt Survey Pond 7

	Visit 1				Visit 2				Visit 3			
Date	30/03/2023				04/04/2023				18/04/2023			
Personnel	JK, CT				CT, JK				JK, CT			
Temperature (ºC)	9				8				8			
Weather	Rain at end of survey. Calm				Dry, no breeze				Dry, no wind			
Turbidity	0				1				1			
Vegetation cover	2				3				3			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	x		x	egg	x		x	e & t	x	10		e & t
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?	yes				yes				yes			
L. vulgaris												
L. helveticus												
R. temporaria												
B. bufo												
Other												

	Visit 4				*Visit 5*				*Visit 6*			
Date	20/04/2024				24/04/2024				04/05/2024			
Personnel	JK, CT				JK, CT				JK, CT			
Temperature (ºC)	7				7				8			
Weather	Blustery with clear skies.				Overcast, dry				Overcast, dry and still			
Turbidity	1				1				1			
Vegetation cover	3				3				3			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	x	10		e & t	x	10		e & t	x			e & t
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?	yes				yes				yes			
L. vulgaris	1 F											
L. helveticus	2 M 2 F											
R. temporaria												
B. bufo												
Other												

Great Crested Newt Survey Pond 8

	Visit 1				Visit 2				Visit 3			
Date	30/03/2023				04/04/2023				18/04/2023			
Personnel	JK, CT				CT, JK				JK, CT			
Temperature (ºC)	9				8				8			
Weather	Rain at end of survey. Calm				Dry, no breeze				Dry, no wind			
Turbidity	0				1				1			
Vegetation cover	2				3				3			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	x		x	egg	x		x	e & t	x	15		e & t
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?	yes				yes				yes			
L. vulgaris	1											
L. helveticus												
R. temporaria												
B. bufo												
Other												

	Visit 4				*Visit 5*				*Visit 6*			
Date	20/04/2024				24/04/2024				04/05/2024			
Personnel	JK, CT				JK, CT				JK, CT			
Temperature (ºC)	7				7				8			
Weather	Blustery with clear skies.				Overcast, dry				Overcast, dry and still			
Turbidity	1				1				1			
Vegetation cover	3				3				3			
Methods												
indicate methods used or number of bottle traps	torch	trap	net	other	torch	trap	net	other	torch	trap	net	other
	x	15		e & t	x	15		e & t	x			e & t
T. cristatus												
male												
female												
unknown												
total adults												
immature												
larvae												
eggs present?	yes				yes				yes			
L. vulgaris					2 F							
L. helveticus					2 M, 2 F							
R. temporaria												
B. bufo												
Other												

Reptile Survey Results. Twineham Court Farm

Survey Number	Date	Time	Temp/°C	Rain	Sky/Octares	Species	Sex	Number	Location
1	19/04/2023	12.00	10	0	1	grass snake	Juv	1	Grassland south of pond
						slow worm	M	1	Grassland south of pond
2	08/05/2023	09.30	14	0	1	slow worm	F	2	In north of site
						slow worm	M	1	East embankment
3	10/05/2023	12.00	17	0	0	slow worm	M	1	In north of site
						slow worm	F	1	In north of site
						slow worm	Juv	1	Grassland south of pond
4	25/05/2023	9.30	16	0	0	grass snake	M	1	East embankment
						slow worm	M	1	East embankment
						slow worm	F	1	In north of site
5	19/06/2023	10.30	18	0	2	slow worm	M	6	Grassland south of pond
						slow worm	F	5	Grassland south of pond
6	26/06/2023	9.45	19	0	2	slow worm	F	5	Grassland south of pond, in north section of site
						slow worm	M	1	East embankment
7	03/07/2023	11.30	18	0	4	slow worm	F	4	Grassland south of pond
						slow worm	M	3	Grassland south of pond