

BAT SURVEY

FIELDHEAD, LONGHORSLEY, NORTHUMBERLAND



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CONTENTS

A. SUMMARY.....	5
B. INTRODUCTION.....	7
B.1 CURRENT DEVELOPMENT INFORMATION	8
C. METHODOLOGY	8
C.1 SCOPE OF STUDY	8
C.2 DESK STUDY	9
C.3 PRELIMINARY FIELD STUDY METHODOLOGY	9
C.3.1 PRELIMINARY ASSESSMENT	9
C.3.2 DAYTIME BAT RISK ASSESSMENT (STRUCTURES).....	9
C.3.3 PRELIMINARY SURVEY - EQUIPMENT	10
C.3.4 PRELIMINARY SURVEY – DATES & ENVIRONMENTAL CONDITIONS.....	10
C.4 PERSONNEL	10
C.5 ASSESSMENT METHODOLOGY	11
D. RESULTS.....	12
D.1 DESKTOP STUDY	12
D.1.1 PRE-EXISTING INFORMATION	12
D.1.2 CONSULTATION.....	12
D.2 DAYTIME RISK ASSESSMENT.....	12
D.2.1 HABITATS.....	12
D.2.2 BUILDINGS.....	13
D.2.3 TREES	15
D.3 OVERVIEW OF SITE SUITABILITY	15
D.4 ADDITIONAL SPECIES GROUPS.....	16
E. SITE ASSESSMENT	18
E.1 ASSESSMENT OF SURVEY FINDINGS	18
E.2 LIMITATIONS AND CONSTRAINTS.....	18
F. IMPACT ASSESSMENT	19
G. RECOMMENDATIONS	19
G.1 FURTHER SURVEY	19
G.2 AVOIDANCE AND MITIGATION STRATEGY	19
G.2.1 SITE DESIGN	19
G.2.2 TIMING OF WORKS.....	19
G.2.3 WORKING METHODS AND BEST PRACTICE.....	19
G.3 COMPENSATION STRATEGY.....	19
G.4 MONITORING	20
G.5 ADDITIONAL ENHANCEMENT RECOMMENDATIONS	20
APPENDIX 1. LEGISLATION	21
NATIONAL PLANNING POLICY	21
RELEVANT LEGISLATION	23
PRIORITY SPECIES	24
APPENDIX 2. BAT ECOLOGY	25
APPENDIX 3. BATS AND DEVELOPMENT.....	28
APPENDIX 4. AMPHIBIAN METHOD STATEMENT.....	29

TABLES

TABLE 1: GUIDELINES FOR ASSESSING THE POTENTIAL SUITABILITY OF PROPOSED DEVELOPMENT SITES FOR BATS, BASED ON PRESENCE OF HABITAT FEATURES WITHIN THE LANDSCAPE.	9
TABLE 2: GUIDELINES FOR ASSESSING THE POTENTIAL SUITABILITY OF PROPOSED DEVELOPMENT SITES FOR BATS, BASED ON PRESENCE OF ROOSTING HABITAT FEATURES (STRUCTURES).....	10

TABLE 3: DAYTIME SURVEY CONDITIONS.....	10
TABLE 4: PERSONNEL	10
TABLE 5: ECOLOGICAL RECEPTOR VALUATION.....	11
TABLE 6: OVERVIEW OF SITE SUITABILITY FOR BATS	15
TABLE 7: NATIONAL PLANNING POLICY FRAMEWORK: CONSERVING AND ENHANCING THE NATURAL ENVIRONMENT	21

FIGURES

FIGURE 1: SITE BOUNDARY.....	7
FIGURE 2: SITE AND SETTING.....	8
FIGURE 3: BUILDING LOCATIONS.....	15

A. SUMMARY

It is proposed to convert two large agricultural sheds into residential housing at Fieldhead, Longhorsley. Detailed plans are not yet available.

Consultation with the MAGIC website¹ indicated that there are no protected sites listed for bats within 2km. Longhorsley Moor Site of Special Scientific Interest (SSSI) lies approximately 1.3km away. Fieldhead is within the Impact Risk Zone (IRZ) of this SSSI however the terms for consultation with Natural England are not relevant to this site.

Initial site inspection was undertaken on 3rd September 2020 and comprised a detailed inspection of the structures on site. An assessment of the adjacent farmyard was also undertaken and consideration given to the potential presence of other protected or notable species.

The site itself comprises a farmyard and agricultural buildings, bordered by fence lines. The yard is principally bare ground with small areas of amenity or mown semi-improved grassland and ephemeral short perennial/tall ruderal patches around the edges. The site is of low habitat value. A small wooded area within the adjacent garden lies just off-site to the east; this is of local habitat value.

The site is situated in an area dominated by arable and pasture land with a few small pockets of woodland. There are some scattered trees along field boundaries, but most boundaries are fence lines. Overall, the habitats present in the local area are of low-moderate suitability for use by foraging/commuting bats.

The buildings comprise two adjoining large agricultural sheds. These are of breezeblock and corrugated sheet construction with corrugated asbestos roofs. Breezeblock walls are all sealed internally. The roof coverings appear in good condition, with no suitable gaps associated with roof supports or sheeting noted. The corrugated sheeting overlays the breezeblock walls externally but gaps associated with this area are only around 1.5m from the ground and only around 15cm deep, providing sub-optimal roosting opportunities. These areas were inspected during the survey with no evidence of bats recorded. Both buildings are in regular use. Large double locked doors are present at either end, although a gap was present above these at the western end. Overall, the buildings are considered to be of negligible suitability for use by roosting bats but might, at times, be used as a foul weather/early evening foraging resource. Better alternative roost sites are present associated with adjacent housing.

Thorough internal and external inspection of the buildings recorded no evidence of roosting bats.

A pond is shown on aerial imagery and Ordnance Survey mapping approximately 350m to the south east. The site itself lacks suitable habitat for great crested newts and the site is separated from the pond by an arable field, of poor habitat for the species. Given the small size of the site, distance from the pond and poor quality habitat both on site and between the site and the pond, great crested newt are likely to be absent from the site, even if present in the pond. There is a low risk that amphibians may be present on occasion.

Nesting birds may use the sheds, although no evidence of any nests, or roosting barn owl, was recorded at the time of survey. Badger and hedgehog may occasionally commute

¹ MAGIC website: www.magic.gov.uk

across the site. Given the habitats on site, other protected and notable species are likely to be absent.

Potential impacts of the development in order of conservation significance are:

- Harm to nesting birds should they be present at the time of works to the barns.
- Low risk of harm to mammals and amphibians during works.
- Very low residual risk of harm/disturbance to individual bats.

Key mitigation measures include:

- Works will be undertaken to a precautionary amphibian method statement.
- A check for nesting birds will be undertaken by a suitably experienced ornithologist if vegetation clearance/tree felling/building demolition works are undertaken between March and August inclusive.
- Any excavations left open overnight will have a means of escape for mammals that may become trapped in the form of a ramp at least 300mm in width and angled no greater than 45°.
- Asbestos sheets will need to be carefully removed by hand, which is in line with good practice when working on sites where there is even a very low residual risk of bats being present. In the unlikely event that bats are found during works, works will stop in that area and the ecological consultant will be contacted immediately. If it is necessary to move the bats for their safety, this will be undertaken by a licensed bat handler.

The new buildings will include bird nesting and bat roosting opportunities as enhancement.

The local planning authority and Natural England are likely to require the means of delivery of the mitigation to be identified. It is recommended that mitigation and enhancement proposals are incorporated into the master-planning documents.

If you are assessing this report for a local planning authority and have any difficulties interpreting plans and figures from a scanned version of the report, E3 Ecology Ltd would be happy to email a PDF copy to you. Please contact us on 01434 230982.

B. INTRODUCTION

E3 Ecology Ltd was commissioned by George F White in late August 2020 to undertake a daytime bat risk assessment of Fieldhead Farm, Longhorsley. Consideration was also given to the potential presence of other protected species.

The purpose of this report is:

- To detail the results of the survey work of the buildings and trees on site that has been undertaken for bats.
- To provide recommendations to be incorporated into the design for the site.
- To provide recommendations for further survey work, where required.
- To set out the mitigation measures required to ensure compliance with nature conservation legislation and to address any potentially significant effects
- To identify appropriate enhancement measures

The site is located to the south east of Longhorsley at an approximate central grid reference of NZ 17166 94107.

The figures below illustrate firstly the site boundary and secondly, to provide context, the broad habitats present on site and within an approximate 500m buffer zone.



FIGURE 1: SITE BOUNDARY
(Reproduced under licence from Google Earth Pro.)



FIGURE 2: SITE AND SETTING
(Reproduced under licence from Google Earth Pro.)

B.1 CURRENT DEVELOPMENT INFORMATION

The planning application is for conversion of agricultural sheds to residential use. Detailed plans are not yet available.

C. METHODOLOGY

C.1 SCOPE OF STUDY

The scope of the study, in terms of the survey area and the desk study area, is based on professional judgement. The scope has been determined based on the site's characteristics, the nature of the surrounding area, the development proposed at the time of reporting and the likely associated zone of influence.

For this site the survey area comprised the green line boundary as defined within the figure in section B, with, in addition, a 50m buffer around the periphery appraised where access was available. The survey area included all potential roost sites within and adjacent to the survey area, which may be affected by the proposed development.

The desk study included an assessment of land-use in the surrounding area and a data search covering a 2km buffer zone (see below for further detail).

The level of survey effort employed at the site has taken account of the recommendations within the Bat Conservation Trust Good Practice Survey Guidelines².

² Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust

C.2 DESK STUDY

Initially, the site was assessed from aerial photographs and 1:25,000 Ordnance Survey maps. Following this, a data search was submitted to the local bat group in September 2020, requesting data relating to bats. In addition, a search was made of the MAGIC website³ for any Natura 2000 sites within 10km, where the development may have the potential to lead to indirect disturbance of these sites, and any relevant SSSI IRZ that indicates development proposal could potentially have adverse impacts on protected sites.

C.3 PRELIMINARY FIELD STUDY METHODOLOGY

C.3.1 PRELIMINARY ASSESSMENT

The potential suitability of the habitats within the survey area in relation to commuting and foraging bats was classified as negligible, low, moderate or high, based on guidelines provided by the Bat Conservation Trust⁴ and detailed within the table below.

TABLE 1: GUIDELINES FOR ASSESSING THE POTENTIAL SUITABILITY OF PROPOSED DEVELOPMENT SITES FOR BATS, BASED ON PRESENCE OF HABITAT FEATURES WITHIN THE LANDSCAPE. (TO BE APPLIED USING PROFESSIONAL JUDGEMENT, TABLE 4.1 BAT SURVEY GUIDELINES)	
Suitability	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland tree lined watercourses and grazed parkland. Site is close to and connected to known roosts.

C.3.2 DAYTIME BAT RISK ASSESSMENT (STRUCTURES)

A daytime assessment was made of all structures affected by the proposed development, in order to evaluate their potential for supporting bat roosts, and, where present, to record signs of use by bats.

Structures were inspected both externally and internally. Binoculars were used to assist with the inspection for droppings and other field signs.

Externally, the buildings were examined for potential roost access points indicated by clean crevices, urine marks, polished wood or stonework and droppings. Particular attention was

³ Multi Agency Geographic Information for the Countryside (www.magic.gov.uk)

⁴ Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust

given to sheltered areas under the eaves of buildings where droppings are less likely to have been washed off.

Structures were categorised as having negligible, low, moderate or high suitability to be used by roosting bats, based on guidelines provided by the Bat Conservation Trust⁵ and detailed within the table below.

TABLE 2: GUIDELINES FOR ASSESSING THE POTENTIAL SUITABILITY OF PROPOSED DEVELOPMENT SITES FOR BATS, BASED ON PRESENCE OF ROOSTING HABITAT FEATURES (STRUCTURES) (TO BE APPLIED USING PROFESSIONAL JUDGEMENT, TABLE 4.1 BAT SURVEY GUIDELINES)	
Suitability	Roosting Habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A structure with one or more potential roost site that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

Note that comments on the state of the structures within the site relate solely to their potential use by bats and must not be taken as a professional assessment of the structural integrity or safety of the structures. For example, descriptions of walls and roofs being in 'good' or 'poor condition' relate to likely provision of roost sites for bats, potential access routes to roost sites, and likely persistence of field signs such as droppings and feeding remains, which will not persist in exposed conditions. Maternity roosts are less likely to be present in cool, exposed, damp and draughty locations which may develop in a building in poor condition.

C.3.3 PRELIMINARY SURVEY - EQUIPMENT

- High powered torch.
- Good quality binoculars.
- Digital camera

C.3.4 PRELIMINARY SURVEY – DATES & ENVIRONMENTAL CONDITIONS

TABLE 3: DAYTIME SURVEY CONDITIONS				
DATE	TEMPERATURE °C	CLOUD COVER %	PRECIPITATION	WIND CONDITIONS
3.9.20	14	60	Dry	F1

C.4 PERSONNEL

The table below details the personnel who undertook the survey work.

TABLE 4: PERSONNEL			
Name	Position	Professional Qualifications	Natural England Survey Licence Numbers
Mary Martin	Director	BSc MCIEEM	2015-12822-CLS-CLS

⁵ Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust

Further details of experience and qualifications are available at www.e3ecology.co.uk.

C.5 ASSESSMENT METHODOLOGY

The relative value of the ecological receptors (habitats, species and designated sites) was assessed using a geographical frame of reference. For designated sites this is generally a straightforward process with the assigned designation generally being indicative of a particular value, e.g. Sites of Special Scientific Interest are designated under national legislation and are therefore generally considered to be receptors of national value. The assignment of value to non-designated receptors is less straightforward and as recognised by the Guidelines for Ecological Impact Assessment produced by the Chartered Institute of Ecology and Environmental Management⁶, is a complex and subjective process and requires the application of professional judgement.

When assessing the value of species and habitats, relevant documents and legislation are considered including the lists of species and habitat of principal importance annexed to the NERC Act (2006) and those provided within relevant local Biodiversity Action Plans. Data provided through consultation is also considered. These data sources can provide context at a local, regional and national scale.

The table below provides examples of receptors of value at different geographical scales.

TABLE 5: ECOLOGICAL RECEPTOR VALUATION	
Level of Value	Examples
International	An internationally designated site or candidate site.
	A site meeting criteria for international designation.
	The site is of functional importance* to a species population with internationally important numbers (i.e. >1% of the biogeographic population)
National	A nationally designated site.
	The site is of functional importance* to a species population with nationally important numbers (i.e. >1% of the national population)
Regional	The site is of functional importance* to a species population with regionally important numbers (i.e. >1% of the regional population)
County	A Local Wildlife Site (LWS) or equivalent, designated at a County level
	The site is of functional importance* to a species population of county value (i.e. >1% of the county population)
District	A Local Wildlife Site (LWS) or equivalent, designated at a District level
	The site is of functional importance* to a species population of district value (i.e. >1% of the district population)
Parish	A species population considered to appreciably enrich the nature conservation resource within the context of the parish.
	Local Nature Reserves
Local	A species population that contributes to local biodiversity but are not exceptional in the context of the parish.
Low	Habitats that are unexceptional and common to the local area.
* Functional importance defined as 'a feature which, based on professional judgement, is of importance to the day to day functioning of the population, the loss of which would have a detectable adverse effect on that population'.	

6 Chartered Institute for Ecology and Environmental Management (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland - Terrestrial, Freshwater and Coastal

D. RESULTS

D.1 DESKTOP STUDY

D.1.1 PRE-EXISTING INFORMATION

ORDNANCE SURVEY MAPPING AND AERIAL PHOTOGRAPHY

The figures in Sections B show that the general land use in the surrounding area is arable and pasture land, with small pockets of trees.

The most recent aerial photograph of the site (Section B, 2020) indicates that habitats on site are dominated by buildings and hard standing. Historic imagery suggests that the buildings have been present since at least 2002, that the farmyard to the east was grazed pasture to sometime between 2002 and 2006 and that, in the same period, farm buildings to the west of the buildings were converted or demolished to make way for new housing.

MAGIC WEBSITE⁷

There are no internationally and nationally statutorily designated sites for bats within 2km. Longhorsley Moor Site of Special Scientific Interest (SSSI) lies approximately 1.3km away. Fieldhead is within the Impact Risk Zone (IRZ) of this SSSI however the terms for consultation with Natural England are not relevant to this site. No Natura 2000 sites lie within 10km.

There are no EPS bat licences or great crested newt licences or records shown on MAGIC within 2km.

LOCAL KNOWLEDGE

The owner is aware of badger in the wider area but not close to the farm, has seen barn owl in the past though not recently, and is not aware of bats or other species around the farm building.

D.1.2 CONSULTATION

LOCAL BAT GROUP

Consultation with the bat group has been undertaken and a response will be appended on receipt, should it affect the conclusions of this report.

Full data sets are available on request.

D.2 DAYTIME RISK ASSESSMENT

D.2.1 HABITATS

FORAGING HABITATS

Foraging in the wider area is limited to small pockets of woodland, trees/hedges along the road side and pasture and arable fields.



⁷ MAGIC Website: www.magic.gov.uk

COMMUTING ROUTES

Commuting routes are limited to roadside hedges and trees, and the small pockets of woodland surrounding the farm, including a small wooded copse immediately adjacent to the farmyard, within the garden of the neighbouring house.



SHELTERED FLIGHT AREAS

The sheds themselves will provide potential sheltered flight areas.

ALTERNATIVE ROOST LOCATIONS

There are numerous dwellings, including the farmhouse, converted farm buildings and new builds providing better roosting opportunities for bats.



D.2.2 BUILDINGS

The following text provides building descriptions and the location of each structure is illustrated within the figure below. Where recorded, field signs that confirm bat use are in bold.

Building 1

- Breezeblock walls to around 1.5m high, then corrugated asbestos sheeting above.
- Sheeting overlaps breezeblock for approximately 15cm; gaps are considered sub-optimal for bat use. These were inspected with no evidence of bat use recorded.
- Corrugated asbestos roof appeared tightly sealed with wide ridge covering.
- Roof supported on timber trusses which did not appear to provide any suitable crevices.
- Breezeblock walls sealed internally.
- Large double doors at either end, usually locked but gap present above western doors which may allow internal access.
- Half height wall between building 1 and 2.
- Regularly used as machinery and quad bike store.
- No field evidence of bats recorded
- Negligible suitability.

Building 2

- Construction similar to building 1.
- Roof is curved at ridge with no separate ridge tiles.
- Roof supported on concrete beams.
- Large double doors at either end, usually locked but gap present above western doors which may allow internal access.
- Internal walls rendered, wall tops sealed.
- In regular use as stables.
- No field evidence of bats recorded.
- Negligible suitability.



Building 1



Building 1 internal



Internal wall tops sealed (both buildings)



Gap above western door



Building 1 (distant) and 2



Building 1 internal



FIGURE 3: BUILDING LOCATIONS
(Reproduced under licence from Google Earth Pro.)

D.2.3 TREES

No trees will be affected by the proposed works.

D.3 OVERVIEW OF SITE SUITABILITY

TABLE 6: OVERVIEW OF SITE SUITABILITY FOR BATS				
HABITATS AND SETTING ⁸				
	NEGLECTIBLE	LOW	MODERATE	HIGH
HABITATS AND COVER WITHIN 200M	City Centre	Open, exposed arable, amenity grass or pasture	Hedges and trees linking site to wider countryside	Excellent cover with mature trees and/or good hedges
HABITATS WITHIN 1KM	City Centre	Little tree cover, few hedges, arable dominated	Semi-natural habitats e.g. trees, hedgerows	Good network of woods, wetland and hedges
ALTERNATIVE ROOSTS WITHIN 1KM	City centre	Numerous alternative roost sites of a similar nature	A number of similar buildings in the local area	Few alternative buildings and site of good quality for roosts
SETTING	Inner city	Urban with little green space	Built development with green-space, wetland, trees	Rural Lowland with woodland and trees.
DISTANCE TO	>1km	500m-1000m	200m-500m	<200m

⁸ Building and habitat risk assessment technique audited in a research project with York University which compared the risk assessment scoring with the results of detailed field assessment for over 100 sites. Statistically significant associations were found between habitat setting and building features and the presence or absence of different bat species. For example habitat connections and nearby woodland were significant for brown long-eared bats and the presence of species-rich grassland is important for many species.

TABLE 6: OVERVIEW OF SITE SUITABILITY FOR BATS				
WATER/ MARSH				
DISTANCE TO WOODLAND/ SCRUB	>1km	500m-1000m	200m-500m	<200m
DISTANCE TO SPECIES-RICH GRASSLAND	>1km	500m-1000m	200m-500m	<200m
COMMUTING ROUTES	Isolated by development, major roads, large scale agriculture	No potential flyways linking site to wider countryside	Some potential commuting routes to and from site	Site is well connected to surrounding area with multiple flyways
BUILDINGS ²				
	NEGLECTIBLE	LOW	MODERATE	HIGH
AGE (APPROX.)	Modern	Post 1940's	1900-1940	Pre 20 th C
BUILDING/ COMPLEX TYPE	Industrial complex of modern design	Single, small building	Several buildings, large old single structure	Traditional farm buildings, country house, hospital
BUILDING - STOREYS	N/A	Single storey	Multiple storeys	Multiple storeys with large roof voids
STONE/BRICK WORK	No detectable crevices	Well pointed	Some cracks and crevices	Poor condition, many crevices, thick walls
FRAMEWORK – TIMBERS/STEEL	Modern frame with sheet cladding	Timber purlins, sheet asbestos	Timbers kingpost or similar	Large timbers traditional joints
ROOF COVERING	Modern sheet materials and tightly sealed	Good condition or very open not weatherproof modern sheet materials	Some potential access routes, slates, tiles	Uneven with gaps, not too open, stone slates
ADDITIONAL FEATURES	Very well maintained and tightly sealed	No features with potential access	Some features with potential access	Hanging tiles, cladding, barge boards, soffits with access gaps
EXTERNAL LIGHTING	Extensive security lights covering much of the site	Widespread areas above 2 lux at night	Intermittent lights of low intensity	Minimal
BUILDING USE	Very noisy, dusty	Regular use	Intermittent use	Disused

Overall, the buildings are considered of negligible suitability, in a low-moderate suitability setting.

D.4 ADDITIONAL SPECIES GROUPS

Habitats within the site and adjacent farmyard are considered of low value. Nesting birds may use the buildings, although no evidence was recorded at the time of survey. No field signs indicating the presence of barn owl were noted.

A pond is shown on aerial imagery and Ordnance Survey mapping approximately 350m to the south east. The site itself lacks suitable habitat for great crested newt and the site is separated from the pond by an arable field, of poor habitat for the species. Given the small size of the site (0.25ha including the farmyard), distance from the pond and poor quality habitat both on site and between the site and the pond, great crested newt are likely to be absent from the site, even if present in the pond. The risk of harm to great crested newts is considered negligible if works are undertaken to a precautionary amphibian method statement. This conclusion is supported by the Natural England Rapid Risk Assessment calculator which indicates that the development activities are of such a type, scale and location that it is highly unlikely any offence would be committed should the development proceed.

Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom)	Notional offence probability score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	No effect	0
Land 100-250m from any breeding pond(s)	No effect	0
Land >250m from any breeding pond(s)	0.1 - 0.5 ha lost or damaged	0.005
Individual great crested newts	No effect	0
Maximum:		0.005
Rapid risk assessment result:	GREEN: OFFENCE HIGHLY UNLIKELY	

There is a low risk that amphibians may be present on occasion. Badger and hedgehog may cross the site occasionally but there is little foraging habitat for either species within the farmyard. No other protected species is likely to be affected by proposed works.

E. SITE ASSESSMENT

E.1 ASSESSMENT OF SURVEY FINDINGS

Overall the site is considered of low value to roosting bats, but the sheds may be used as a foul weather/early evening foraging resource for bats. It is also considered likely to be of low value to other protected or notable species.

E.2 LIMITATIONS AND CONSTRAINTS

Survey completed at the site will provide reasonably typical data for the spring/ summer/ autumn period, and internal field signs are likely to reflect activity over the preceding two or three months. Assessment of the bat use of the site at other times of year and the potential impacts of the proposed development is based on professional judgement. This is an approach supported by the Bat Conservation Trust Good Practice Guidelines⁹ where it is stated that 'If a site has very little or no potential for bats, this should be explained in the preliminary ecological appraisal and no further surveys should be proposed'.

⁹ Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust

F. IMPACT ASSESSMENT

Potential impacts of the development in order of conservation significance are:

- Harm to nesting birds should they be present at the time of works to the barns.
- Low risk of harm to mammals and amphibians during works.
- Very low residual risk of harm/disturbance to individual bats.

G. RECOMMENDATIONS

G.1 FURTHER SURVEY

For this site, as per the BCT guidelines, no activity surveys are considered to be required as the structures present are considered to have negligible suitability for use by roosting bats.

G.2 AVOIDANCE AND MITIGATION STRATEGY

G.2.1 SITE DESIGN

- External lighting that may reduce bat use of the wider area, particularly the small wooded areas, will be avoided. High intensity security lights will be avoided as far as practical. Light spillage to areas used by foraging or commuting bats should be less than 2 lux. Where security lights are required, these will be of minimum practicable brightness, be set on a short timer and will be motion sensitive only to larger objects.

G.2.2 TIMING OF WORKS

- Works to buildings 1 and 2 will commence outside of the bird nesting season (March to August inclusive) unless a checking survey by a suitably experienced ornithologist confirms the absence of active nests.

G.2.3 WORKING METHODS AND BEST PRACTICE

- Any excavations left open overnight will have a means of escape for mammals that may become trapped in the form of a ramp at least 300mm in width and angled no greater than 45°.
- Asbestos sheets will need to be carefully removed by hand, which is in line with good practice when working on sites where there is even a residual risk of bats being present. In the unlikely event that bats are found during works, works will stop in that area and the ecological consultant will be contacted immediately. If it is necessary to move the bats for their safety, this will be undertaken by a licensed bat handler.
- Works will be undertaken to a precautionary amphibian method statement.

The following measures should be included as general good working practice:

- Timber treatments that are toxic to mammals will be avoided. If required, timber treatment will be carried out in the spring or autumn. Both pre-treated timbers and timber treatments will use chemicals classed as safe for use where bats may be present (see http://www.jncc.gov.uk/pdf/batwork_manualpt4.pdf).

G.3 COMPENSATION STRATEGY

With the implementation of the above mitigation strategy it is not anticipated that there will be any significant adverse residual effects from the proposed development. As such, a compensation strategy is not required.

G.4 MONITORING

Given the nature of the proposed mitigation and/or compensation strategies, no monitoring is proposed.

G.5 ADDITIONAL ENHANCEMENT RECOMMENDATIONS

The following additional enhancement measures are recommended in order to further enhance the site for biodiversity:

- The landscape planting will be designed to enhance structural diversity, and will include plants bearing flowers, nectar and fruits which are attractive to invertebrates, thereby helping to maintain the food resource for bats and wildlife generally.
- Two bat boxes will be incorporated into the new housing.
- Two bird boxes will be incorporated onto the new housing.

APPENDIX 1. LEGISLATION

NATIONAL PLANNING POLICY

The table below details the key paragraphs from the National Planning Policy Framework (NPPF)¹⁰ relating to the natural environment:

TABLE 7: NATIONAL PLANNING POLICY FRAMEWORK: CONSERVING AND ENHANCING THE NATURAL ENVIRONMENT	
Statement	Paragraph
<p>Planning policies and decisions should contribute to and enhance the natural and local environment by:</p> <ul style="list-style-type: none"> a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan); b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland; c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate; d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures; e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate. 	170
Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework ¹¹ ; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.	171
<p>Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas, and should be given great weight in National Parks and the Broads¹². The scale and extent of development within these designated areas should be limited. Planning permission should be refused for major development¹³ other than in exceptional circumstances, and where it can be demonstrated that the development is in the public interest. Consideration of such applications should include an assessment of:</p> <ul style="list-style-type: none"> a) the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy; b) the cost of, and scope for, developing outside the designated area, or meeting the need for it in some other way; and c) any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated. 	172
Within areas defined as Heritage Coast (and that do not already fall within one of the designated areas mentioned in paragraph 172), planning policies and decisions should be consistent with the special character of the area and the importance of its conservation. Major development within a Heritage Coast is unlikely to be appropriate, unless it is compatible with its special character.	173
<p>To protect and enhance biodiversity and geodiversity, plans should:</p> <ul style="list-style-type: none"> a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological 	174

¹⁰ National Planning Policy Framework (February 2019), Department for Communities and Local Government,

¹¹ Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality.

¹² English National Parks and the Broads: UK Government Vision and Circular 2010 provides further guidance and information about their statutory purposes, management and other matters.

¹³ For the purposes of paragraphs 172 and 173, whether a proposal is 'major development' is a matter for the decision maker, taking into account its nature, scale and setting, and whether it could have a significant adverse impact on the purposes for which the area has been designated or defined.

TABLE 7: NATIONAL PLANNING POLICY FRAMEWORK: CONSERVING AND ENHANCING THE NATURAL ENVIRONMENT	
Statement	Paragraph
<p>networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity¹⁴; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation¹⁵; and</p> <p>b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.</p>	
<p>When determining planning applications, local planning authorities should apply the following principles:</p> <p>a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;</p> <p>b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;</p> <p>c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons¹⁶ and a suitable compensation strategy exists; and</p> <p>d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.</p>	175
<p>The following should be given the same protection as habitats sites:</p> <p>a) potential Special Protection Areas and possible Special Areas of Conservation;</p> <p>b) listed or proposed Ramsar sites¹⁷; and</p> <p>c) sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.</p>	176
<p>The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.</p>	177

Section 40 of the Natural Environment and Rural Communities Act 2006, places a duty on all public authorities in England and Wales to have regard, in the exercise of their functions, to the purpose of conserving biodiversity.

Planning Practice Guidance¹⁸ states:

- Planning authorities need to consider the potential impacts of development on protected and priority species, and the scope to avoid or mitigate any impacts when considering site allocations or planning applications. (para. 016)
- Information on biodiversity and geodiversity impacts and opportunities needs to inform all stages of development (including site selection and design, pre-application

¹⁴ Circular 06/2005 provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system.

¹⁵ Where areas that are part of the Nature Recovery Network are identified in plans, it may be appropriate to specify the types of development that may be suitable within them.

¹⁶ For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat.

¹⁷ Potential Special Protection Areas, possible Special Areas of Conservation and proposed Ramsar sites are sites on which Government has initiated public consultation on the scientific case for designation as a Special Protection Area, candidate Special Area of Conservation or Ramsar site.

¹⁸ Planning Practice Guidance: Natural Environment (www.planningguidance.communities.gov) Updated July 2019

consultation and the application itself). An ecological survey will be necessary in advance of a planning application if the type and location of development could have a significant impact on biodiversity and existing information is lacking or inadequate. (para. 018)

- Even where an Environmental Impact Assessment is not needed, it might still be appropriate to undertake an ecological survey, for example, where protected species may be present or where biodiverse habitats may be lost. (para. 018)
- As with other supporting information, local planning authorities should require ecological surveys only where clearly justified. Assessments should be proportionate to the nature and scale of development proposed and the likely impact on biodiversity. (para. 018)
- The National Planning Policy Framework encourages net gains for biodiversity to be sought through planning policies and decisions. Biodiversity net gain delivers measurable improvements for biodiversity by creating or enhancing habitats in association with development. Biodiversity net gain can be achieved on-site, off-site or through a combination of on-site and off-site measures. (para. 022)

RELEVANT LEGISLATION

Within England all bat species are specially protected under the Conservation of Habitats and Species Regulations 2017 (as amended).

As a result there is a requirement to consult with Natural England before undertaking any works that may disturb bats or their roost, and under the Conservation of Habitats and Species Regulations it is illegal to.

- Deliberately kill, injure or capture bats.
- Deliberately obstruct access to a bat roost.
- Damage or destroy a bat roost.
- Deliberately disturb bats; in particular any disturbance which is likely to impair their ability:
 - (i) to survive, to breed or reproduce, or to rear or nurture their young; or
 - (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
 - (iii) to affect significantly the local distribution or abundance of the species to which they belong.

Under the Wildlife and Countryside Act (1981) the above offence of disturbing bats includes low level disturbance and as such under this act it is also an offence to:

- Intentionally or recklessly disturb a bat while it is occupying a roost.
- Intentionally or recklessly obstruct access to a roost.

Under the above legal protection, only the offences under the Conservation of Habitats and Species Regulations 2017 (as amended) are strict liability offences; the remaining offences, under the Wildlife and Countryside Act (1981), are offences only where they are carried out "intentionally or recklessly".

Under the Countryside and Rights of Way Act 2000 (CROW Act) the offence in section 9(4) of the Wildlife and Countryside Act 1981 of disturbing bats is extended to cover reckless damage or disturbance.

The Hedgerow Regulations 1997 provide for the conservation of important hedgerows and their constituent trees. The presence of a protected species such as bats is a relevant consideration

when assessing whether a hedgerow is important and may influence a local planning authority's decision on whether to approve removal of such hedges.

PRIORITY SPECIES

Although not afforded any legal protection, national priority species (species of principal importance, as listed in Section 41 of the NERC Act (2006)), and local and regional priority species, as detailed within the relevant biodiversity action plans, are material considerations in the planning process and as such have been assessed accordingly within this report.

The following bat species are listed as national priority species: Barbastelle bat, Bechstein's bat, noctule, soprano pipistrelle, brown long-eared bat, greater horseshoe bat and lesser horseshoe bat. 'Bats' as a species group is also listed on the relevant local biodiversity action plan for this site.

APPENDIX 2. BAT ECOLOGY

BAT LIFECYCLE

Bat survey timings are based on the lifecycle of bats which varies through the calendar year. The table below illustrates recommended survey timings and how they relate to the bat lifecycle:

BAT LIFECYCLE AS IT RELATES TO SURVEY TIMING ¹⁹																								
SURVEY TYPE	J	F	M	A	M	J	J	A	S	O	N	D												
Roost Inspection																								
Mating/Swarming Survey																								
Hibernation Survey																								
Tree survey from the ground																								
Tree roost activity survey																								
Building roost activity survey																								
Dark grey are optimal timings, light grey suboptimal.																								
BAT ROOST USE THROUGH THE YEAR																								
Day Roost																								
Night Roost																								
Feeding Roost																								
Transitional/Occasional Roost																								
Swarming Site																								
Mating Site																								
Maternity Roost																								
Hibernation Roost																								
Satellite Roost																								

¹⁹ Based on information provided within Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust

BAT ROOST TYPES

Bat Roost Types	
Roost Type	Definition
Day Roost	A place where individual bats or small groups of males, rest or shelter in the day but are rarely found by night in the summer.
Night Roost	A place where bats rest or shelter in the night but are rarely found in the day. May be used by a single individual on occasion or could be used regularly by the whole colony.
Feeding Roost	A place where individual bats or a few individuals rest or feed during the night but are rarely present by day.
Transitional/Occasional Roost	Used by a few individuals or occasionally small groups for generally short periods of time on waking from hibernation or in the period prior to hibernation.
Swarming Site	Where large numbers of males and females gather during late summer to autumn. Appear to be important mating sites.
Mating Site	Sites where mating takes place from late summer and can continue through winter.
Maternity Roost	Where female bats give birth and raise their young to independence. Females typically give birth to a single pup per year, therefore these roosts are critical to the long-term survival of a colony. Disturbance of maternity roosts can lead to abandonment and death of young.
Hibernation Roost	Where bats may be found individually or together during winter. They have a constant cool temperature and high humidity. Bats are particularly vulnerable to disturbance during the hibernation period as, once roused, they may be unable to replace energy lost due to a lack of sufficient available insect prey at this time.
Satellite Roost	An alternative roost found in close proximity to the main nursery colony used by a few individual breeding females to small groups of breeding females throughout the breeding season.

SPECIES SPECIFIC ECOLOGY

Pipistrelle maternity colonies generally consist of 25 to 100 individuals, but colonies numbering up to 1000 are not uncommon²⁰. Adult females often form large maternity roosts, occupied between May and August, and frequently number around 300 individuals. Males are often solitary or in small groups during the summer, later congregating with the females at winter hibernation roosts²¹.

Maternity colonies of brown long-eared bats are generally small, consisting of 10 to 20 adults^{22,23} (although numbers are likely to be underestimated, due to presence in inaccessible areas of the roost). In exceptional circumstances, colonies can reach 200+ bats.

Natterer's bats roost within crevices and cavities, typically within hollow trees, old buildings, caves and tunnels²⁴. Maternity colonies comprising up to 200 adult females can be found in buildings during the summer months while bachelor roosts comprising up to 28 males have been recorded during the summer months in Scotland²⁵. Maternity roosts are not exclusively female, with both adult and immature males comprising up to 25% of the colony. Male only colonies have been found with up to 30 bats²⁶. Foraging individuals will perch during the night at roosts near to foraging areas, not used as day roosts. Mostly these roosts are trees or shrubs but barns will also be used²⁷.

²⁰ Roberts, G.M. & Hutson, A.M. 2000. *Pipistrelle*. British Bats No. 6. The Bat Conservation Trust, London

²¹ Corbet, G.B & Southern, H.N., 1964. The handbook of British Mammals).

²² Speakman, J. R. *et al.*, 1991. Minimum summer populations and densities of bats in NE Scotland, near the northern borders of their distributions. *J. Appl. Ecol.*, 225: 327-345

²³ Entwistle, A.C., 1994. Roost ecology of the brown long-eared bat *Plecotus auritus* in north-east Scotland. Unpublished PhD thesis, University of Aberdeen, UK

²⁴ Stebbings, R.E. 1991. Natterer's bat *Myotis nattereri*. In The handbook of British Mammals. 3rd Edition Corbet, G.B. & Harris, S. (Eds) Oxford: Blackwell Scientific.

²⁵ Swift, S. M. 1997 Roosting and foraging behaviour of Natterer's bats (*Myotis Nattereri*) close to the northern border of their distribution. *J. Zool. (Lond)* **242**: 375-384.

²⁶ Altringham, J.D. 2003. British Bats. The New Naturalist. Pub. Harper Collins.

²⁷ Smith, P.G. & Racey, P.A. 2005. The itinerant Natterer: physical and thermal characteristics of summer roosts of *Myotis nattereri* (Mammalia: Chiroptera) *J. Zool. Lond.* 266: 171-180.

Whiskered bats roost in trees and buildings. Nursery roosts can number over 100 bats, and are almost exclusively female bats. This species hibernates singly in caves, hanging on the open wall or in crevices²⁶.

Brandt's bat is thought to have similar roosting behaviour and foraging ecology to the whiskered bat, however, further research is needed to clarify this²⁶.

A third small *Myotis* species, the Alcahoe's bat has recently been confirmed within the UK.

APPENDIX 3. BATS AND DEVELOPMENT

A summary of the likely scale of impact at a site level in relation to various bat features and development effects is provided below.

SUMMARY OF MAIN IMPACTS AT SITE LEVEL				
Habitat Feature	Development Effect	Scale of impact		
		Low	Medium	High
Maternity Roost	Destruction			✓
	Isolation caused by fragmentation			✓
	Partial destruction; modification		✓	
	Temporary disturbance outside breeding season	✓		
	Post-development interference			✓
Major Hibernation	Destruction			✓
	Isolation caused by fragmentation			✓
	Partial destruction; modification		✓	
	Temporary disturbance outside hibernation season	✓		
	Post-development interference			✓
Minor Hibernation	Destruction			✓
	Isolation caused by fragmentation			✓
	Partial destruction; modification		✓	
	Modified management		✓	
	Temporary disturbance outside hibernation season	✓		
	Post-development interference		✓	
	Temporary destruction then reinstatement	✓		
Mating	Destruction		✓	
	Isolation caused by fragmentation		✓	
	Partial destruction; modification	✓		
	Modified management	✓		
	Temporary disturbance outside hibernation season	✓		
	Post-development interference	✓		
	Temporary destruction then reinstatement	✓		
Night Roost	Destruction	✓		
	Isolation caused by fragmentation	✓		
	Partial destruction; modification	✓		
	Modified management	✓		
	Temporary disturbance outside hibernation season	✓		
	Post-development interference	✓		
	Temporary destruction then reinstatement	✓		
N.B. This is a general guide only and does not take into account species differences. Medium impacts in particular depend on the care with which any mitigation is designed and implemented and could range between high and low.				

APPENDIX 4. AMPHIBIAN METHOD STATEMENT

This statement must be copied to the site owner, designer, clerk of works, and to those contractors whose work may affect amphibians including those involved in all elements of the work detailed above. A signed copy should be kept at the site offices.

This method statement contains information regarding:

- Species identification ecology
- Working methods.

We have read and fully understood this method statement and this has been explained to the site operatives:

	Print Name	Signature	Date
Supervisor:			
Operative:			
Operative:			
Operative:			
Operative:			

GREAT CRESTED NEWTS

Relevant Legislation

Great crested newts are protected under the Wildlife and Countryside Act 1981 (as amended), and the *Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019*. As a result it is illegal to kill, injure or disturb a great crested newt or damage, destroy or obstruct access to its place of rest or shelter. **Prosecution could result in imprisonment, fines of £5000 per animal affected and confiscation of vehicles and equipment used.**

Ecology

Adult great crested newts are present in ponds during the spring period, generally February to June, where they lay their eggs. Larvae hatch out and emerge as small newts in the summer. Most of the year is spent on the land, generally in areas that provide good cover and an invertebrate food source such as woodland, hedges, marshy grassland and coarse grassland. The majority of newts will stay within 150m of the breeding pond, but some may be present up to 500m from a pond and can certainly move over greater distances than this.



Great crested newts (see photographs above) are up to 170mm long, larger than smooth or palmate newts, which are rarely longer than 100mm and have a coarse, dark (almost black) granular skin with very fine white spots on the lower flank and a brightly coloured orange-yellow belly, with dark spots.

Smooth newts are delicate, often yellow-brown in colour and significantly smaller than great crested newts being up to around 100mm in size. They have smoother skin and are much lighter in colour than the great crested newts. During the breeding season, males develop a crest, which is absent in palmate newts. Both males and females generally have spots under their chins (see photo above left).



Palmate newts are slightly smaller than smooth newts, and are generally less spotty on the belly and under the chin. Males develop a widened tale during the breeding season and have black, webbed hind feet.

Newts are mainly active at night, particularly in warm and wet conditions, and are most likely to be found under stones and logs, discarded rubbish or within piles of rock, bricks and the like.

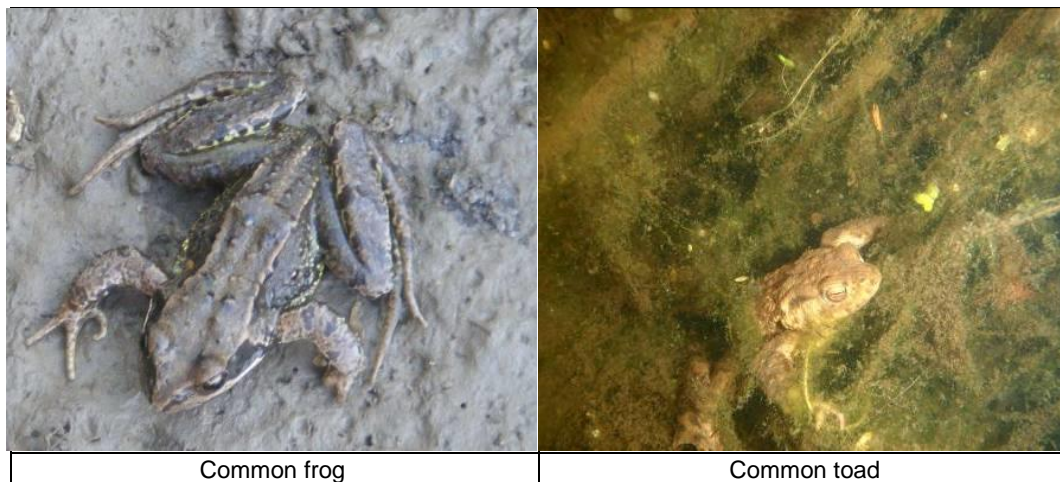
TOADS

The Common Toad is a UK Priority species.

The Common Toad is a widespread amphibian found throughout Britain although absent from Ireland. The Common Toad can be found in almost any habitat and is common in gardens. It prefers larger water bodies in which to breed and because toxins are also present in the skin of the tadpoles, they are able to breed in ponds and lakes containing fish which learn to avoid them. Common Toads congregate at breeding ponds in early April but for the rest of the year will move well away from water as they are far more tolerant of dry conditions than the Common Frog.

Common Toads feed on any moving prey small enough for them to swallow. They are most active at night when they search for food. If they find a good source of food they can become

quite sedentary. Their life cycle is similar to that of the Common Frog, spawn is laid in strings (see picture) and the tadpoles are black and often move about in shoals. The toadlets emerge in August usually after heavy rain and in huge numbers. At this stage of their lives they are extremely small and speckled with gold.



Working Methods

Standard working methods, to minimise the risk of harming or killing amphibians should include the following:

- Any areas of rocks, brick rubble, rubbish or fallen timber that have been present within the area to be cleared for over 3 months are to be searched by hand before the start of works in that area
- Vegetation should be cleared progressively using hand tools to provide animals with an opportunity to move out of the area. Areas of tall grassland should be strimmed, and scrub cut down to ground level and removed.
- Following vegetation clearance the area should be left for several days to allow any animals to move out of the area before any excavation commences.
- Areas of standing water will not be allowed to persist for more than a week during the construction period.
- If amphibians (other than great crested newts) are found during the clearance operations they should be moved to adjacent areas of suitable habitat that are not affected by development.
- No insecticides/herbicides in areas where amphibians may be present will be used.
- If great crested newts are found at any time during the works, works will stop in that area immediately and the ecological consultant for this project (E3 Ecology Ltd. 01434 230982) will be contacted. If newts are likely to be harmed without immediate action handle them with care, place in a cool, humid and shaded receptacle and release them in tall grassland/scrub outside of the construction area in a location that will not be disturbed in the future.

In case of queries please contact the project ecologists E3 Ecology Ltd 01434 230982.