

FRANCIS LANE, WREXHAM

Extended Phase 1 Habitat Survey

Client: TGC Renewables

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Date: June 2014

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NON-TECHNICAL SUMMARY

In May 2014, Ecosulis was commissioned by TGC Renewables to undertake an extended Phase 1 habitat survey and great crested newt habitat suitability assessment of land at Francis Lane, Cheshire. The purpose of this survey is to inform a planning application for a proposed solar farm at the site.

The site comprises an area of improved grassland and arable land. Also on the site are two ponds which have been assessed as providing good to average habitat suitability for great crested newts. The trees on site include a number of mature oaks which may provide opportunities for roosting bats. Hedgerows on the site are species poor. There is a small area of ruderal habitat which in conjunction with surrounding habitat may providing opportunities for reptile species.

No protected species were recorded on site but three of the five ponds in and close to the site were assessed as providing good or excellent habitat for great crested newts. The site also provides opportunities for foraging bats, badgers, small mammals, nesting birds, reptiles

Site name, location, grid reference and size	Francis Lane, Wrexham; 24.7ha ; SJ 386 514
Scope of Works	Extended Phase 1 habitat survey, web-based desktop study and local records centre request for species records and site designations Great crested newt habitat suitability index (HSI) assessment
Survey/evaluation methods	Extended Phase 1 habitat survey is carried out in accordance with JNCC (2010; Annex 1 gives full methodology) Plant names follow the nomenclature of Stace (2010) The evaluation section refers to IEEM (2006) and Ratcliffe (1977)
Purpose of Works	To accompany and inform a planning application.
Dates of site visits and names of surveyors	04 June 2014; Gail Quartly-Bishop
Overview	The site is divided up into six habitats: Arable Hedgerow Improved grassland Tall ruderal Standing water Standard Trees The site is split between arable land and improved grassland. The hedgerows on site have been assessed as species poor but provide opportunities for wildlife including nesting birds. Trees on site include mature oak trees that have been noted as having features that provide roosting opportunities for bats. Two ponds that are on site were assessed for their suitability to support great crested newts. These ponds were rated as good habitat for great crested newts. Additional ponds adjacent to the site were identified but not assessed. The site also provides opportunities for reptile species, small mammals and invertebrates particularly in the ruderal habitat on site and hedgerows.
Ecological receptors	Confirmed receptors: None Potential receptors: Great crested newts Bats Nesting birds

	Reptiles Invertebrates
Recommendations for further surveys	A great crested newt survey (survey season: mid-March to mid-June) A bat habitat suitability assessment of trees on the site A reptile survey (survey season: March to October) A nesting bird check (survey season: March to September) An invertebrate survey if pond 2 is affected by the proposals. For more information on survey periods, refer to Ecosulis online survey calendar http://www.ecosulis.co.uk/page/survey-calendar
Recommendations for protection of ecological receptors	A Precautionary Method of Working (PMW) document during construction for reptiles and nesting birds. Retention of hedgerows for foraging and commuting bats, small mammals and birds. Retention of ponds for aquatic invertebrates For more information on mitigation timings, refer to Ecosulis online mitigation calendar http://www.ecosulis.co.uk/page/mitigation-calendar
Recommendations for enhancement	Bat boxes on retained trees Nest boxes for birds on retained trees Refuge creation (log/rubble piles) for invertebrates

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SITE AND HABITAT DESCRIPTIONS

General Site Description

1. The site covers 24.7ha and is located to the North-East of an industrial area on the Eastern outskirts of Wrexham. It comprises predominantly improved grassland with generally species poor hedgerows which include trees such as mature oak. There are two ponds on the site with a further five within 250m of the site. The site is bounded by roads to the North and the South.

Component Habitats

2. Species lists are provided in Annex 1. The location and extent of habitats is shown on Figure 1.

Arable

3. Three fields on site currently support an arable grass crop.

Hedgerow

4. Hedgerows border the fields on site and are largely intact but generally species poor. Species include hawthorn, blackthorn, bramble and the occasional rose species. There are a number of broad leaved standard trees within the hedgerows that border the site and each field with the site. These include mature oaks, ash and bushy willows.

Improved grassland

5. The majority of the site is covered by improved grassland, split up into two separate fields.

Tall ruderal

6. There is an area of tall ruderal habitat at the western boundary of the site within one of the arable fields.

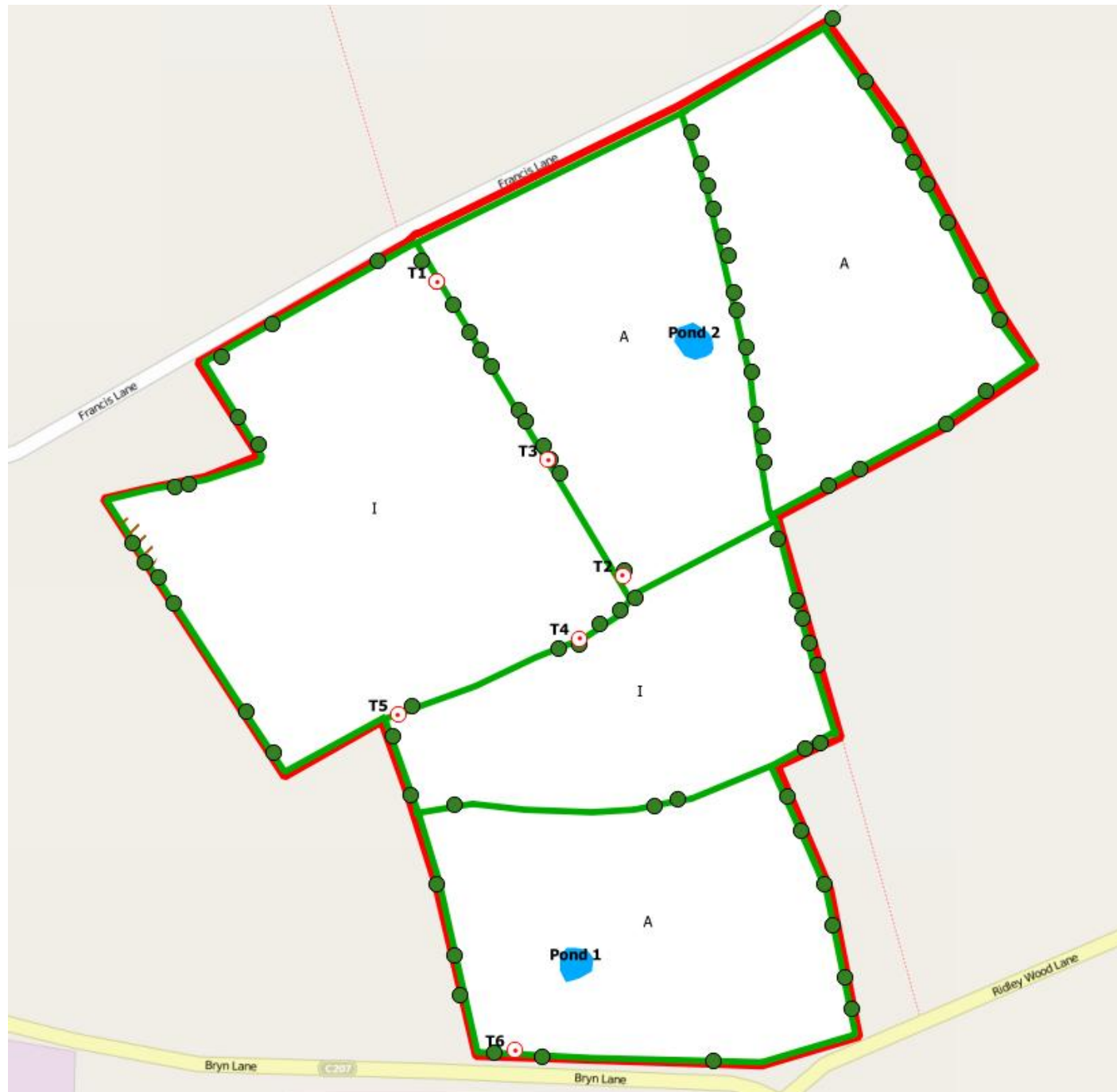
Standing water

7. Two ponds are present on the site with additional ponds within close proximity. Full descriptions of each of these ponds is included in the great crested newt habitat suitability assessment within this report.

Adjacent Habitats

8. The site is bordered by roads on the North and South with the rest of the site surrounded by arable fields. Further to the South is an area of industrial and business estates.

FIGURE 1



Key

- Site Boundary
- Arable (A)
- Improved Grassland (I)
- Tall Ruderal
- Pond
- Intact species poor hedgerow
- Standard Tree
- ⊙ Target Note

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Client	TGC Renewables	
Project	Francis Lane	
Title	Phase 1 Habitat Survey Map	
Date	Scale	Figure
June 2014	SCHEMATIC ONLY	1

GREAT CRESTED NEWT HABITAT SUITABILITY INDEX ASSESSMENT

1. Each ponds was assessed to determine whether it provided suitable habitat for great crested newts. Summarised results of the great crested newt habitat suitability index assessment are below with full results reported in Annex 3.

Pond 1

2. The pond is situated in area of tall improved grassland on the site and is surrounded by a band of bulrushes. The pond covers approximately 200m² and is unlikely to dry. The pond has been assessed as providing good quality habitat for great crested newts with an HSI score of 0.79.

Pond 2

3. Pond 2 is approximated 200m² and located within improved grassland outside of the site boundary. The pond has been assessed as providing good quality habitat for great crested newts with a HSI score of 0.75.

Additional ponds

4. There are further ponds in the fields adjacent to the site. These were not assessed during this survey. There are also ponds in the fields which border the north east and south west of the site.

CONSIDERATION TO RECEPTORS

Designated Sites

Feature	Desk Study	Field Observations	Recommendations (Annex 3 details legislation and planning policy)
<u>Statutory Sites</u>			
Statutory designations site	No designations recorded on the site	None	None
Statutory designations within 2km	No designations recorded within 2km of the site	None	None
Statutory designations within 2.1km-5km	No designations for bats have been recorded within 5km of the site	None	None
<u>Non-statutory Sites</u>			
Non-statutory designations site	No designations recorded on the site	None	None
Non-statutory designations within 2km	Wrexham Industrial Estate Wildlife Site (960m from site) – Containing an important network of wildlife habitats that support a diverse range of wildlife. Important species include water vole, otter,	The opportunities on site and at the designated wildlife sites are not closely related. Whilst there are some opportunities for species such as Barn Owl and bats, it is not	None

Feature	Desk Study	Field Observations	Recommendations (Annex 3 details legislation and planning policy)
	bats, Grizzled Skipper and Dingy Skipper butterflies, Great Crested Newt, Barn Owl, Kingfisher and Lapwing. Borras Wood North (1981m from site)	considered the proposals for the site will directly impact the wildlife sites.	
Non-statutory designations within 2.1km-5km	No designations for bats have been recorded within 5km of the site	None	None

Protected/Notable Species

Species/species groups	Local Record Centre Search	Evidence of /suitability for	Recommendations (Annex 4 details legislation and planning policy)
Flora	No records of notable flora within 2km of the site.	No notable plant species were recorded on the site. Based on the current management regimes on site, it is considered unlikely that the habitats support notable species of flora.	The current proposals include the retention of hedgerows and trees within the margins of the site. Any required cable routes should be carefully considered, and any underground cables should avoid hedgerow and tree removal wherever possible. It is recommended that any security fencing leaves at least a 5m margin from hedgerows to protect the hedgerows and ensure that green corridors are retained across the site for wildlife where possible. Protective fencing should be erected for the duration of construction works to ensure that hedgerows and associated buffers (including root protection zones) are protected. Management regimes for hedgerows should encourage hedgerows to grow tall and wide. During decommissioning, care should be taken to sensitively dispose of the panels and associated materials to ensure that there is no contamination to retained habitat.
Badger	There are 8 records of badger within 2km of the site. There are no records from the site itself.	No evidence of badgers on site was recorded during the survey however the habitats on site provide suitable foraging opportunities for badgers in the local area.	It is recommended that any deep excavations are covered at the end of the working day, or include a means of escape for badgers (wooden plank or ladder) to prevent any foraging badgers from becoming trapped. Green corridors should be retained and enhanced around the site to provide suitable foraging and commuting opportunities for badgers in the local area.
Bats	A range of bat species have been recorded within 4km of	During the survey four trees were identified that may have	If trees are proposed for removal within the scheme, it is recommended that a bat Habitat

Species/species groups	Local Record Centre Search	Evidence of/suitability for	Recommendations (Annex 4 details legislation and planning policy)
	the site, including pipistrelle species, brown long-eared, and whiskered There are no records from the site itself.	potential to support roosting bats including; mature oaks with significant amounts of deadwood in the canopy (Target Note 1), a mature oak with trunk rot and multiple holes (Target note 2), a mature oak with a hollow trunk (Target note 3) and a mature oak with trunk rot (Target note 4) Additionally habitats on site including improved grassland may provide foraging opportunities for bat species.	Suitability Assessment of trees is undertaken before felling to further assess their suitability to support roosting bats. Further to this a climb and inspect survey of any trees that are to be removed or impacted by the development may be recommended. If lighting is to be installed on the site, it should be kept to a minimum and should be directional away from retained features. No lighting is anticipated for the operations phase of development. Hedgerows and green corridors should be retained and enhanced within the scheme to maintain opportunities for foraging and commuting bats. Where not possible, bat activity surveys should be undertaken to assess the use of these features by bats (survey season: April to October). To enhance the site for bats consideration should be given to installing roosting features for bats, such as bat boxes on retained trees to increase nesting/roosting opportunities
Other small mammals	No records of small mammals within 2km of the site.	Mammal prints were found at two locations (Target Note 5 and 6) on the site which are thought to be of stoat and hedgehog. Hedgerows on site provide suitable habitat for these and other small mammal species.	Vegetation clearance works should follow a Precautionary Method of Working with consideration to small mammals, to include sensitive timings of works to avoid hibernation season (generally November to February). During construction it is recommended that any excavations are covered overnight or include a means of escape to prevent small mammals from becoming trapped Green corridors should be retained within the scheme, to include areas of dense vegetation and log piles to support small mammals.

Species/species groups	Local Record Centre Search	Evidence of/suitability for	Recommendations (Annex 4 details legislation and planning policy)
Birds	There are several records of barn owls within 2km of the site. There are no records from the site itself.	Whilst no evidence of notable bird species was found on the site it is considered likely that the site may be used by Barn Owls. Additionally the hedgerows and trees present on site would however provide plenty of opportunities for nesting birds	A precautionary method of working (PMW) should be put in place to include a pre-clearance nesting bird check prior to the removal of any of the hedgerows or trees on site if during the nesting periods (March to September inclusive) Consideration could be given to including built-in bird nesting features within development plans for the site to enhance opportunities for nesting birds. Foraging habitat for barn owls should be retained in the form of grassland and hedgerows at the boundaries.
Reptiles	No records of reptiles within 2km of the site.	Improved grassland and ruderal habitats on the site provide limited opportunities for reptiles	It is recommended the grassland continues to be well managed to limit the suitability for reptiles. A precautionary method of working (PMW) should be put in place to include a supervised vegetation clearance by an Ecological Clerk of Works in order to protect any reptiles on site.
Amphibians	There are several records of great crested newts within the area, the closest of which is 768m north of the site. The site has good connectivity to areas with records of great crested newts.	Ponds on site have been subject to great crested newt habitat suitability assessment and are considered as providing highly suitable habitat for great crested newts	It is recommended that a great crested newt survey is undertaken to determine presence or absence of Great Crested Newts (survey season: mid-march to mid-June). This survey should include all the ponds on and near the site, including those that were not accessed during this survey. Consideration should be given to creating piles of logs/rubble to provide areas of refuge for amphibians.
Invertebrates	No records of invertebrates within 2km of the site.	Pond 2 provides potential habitat for lesser silver water beetle.	The lesser silver water beetle is a protected species, therefore it is recommended that pond 2 is retained and protected within the scheme.

Species/species groups	Local Record Centre Search	Evidence of/suitability for	Recommendations (Annex 4 details legislation and planning policy)
			If pond 2 is to be affected an aquatic invertebrate survey is recommended to assess whether notable invertebrates are present. Consideration should be given to enhancing the habitat for invertebrates through appropriate native planting and the creation of deadwood piles.

EVALUATION

Component habitat	Ecological attributes (referring to Ratcliffe criteria, 1977; Annex 4 gives the criteria)	Status (UK BAP/LBAP, legal)	Associated receptors	Overall Value (CIEEM, 2006; Annex 5 gives the criteria)
Arable	None	None	None	Site
Hedgerows	Naturalness Position in ecological unit	UK BAP	Nesting birds, small mammals	Local
Improved grassland	Naturalness Position in ecological unit	None	Nesting birds, small mammals	Local
Tall ruderal	Naturalness	None	Reptiles, invertebrates	Site
Standing water	Naturalness Position in ecological unit	None	Amphibians	Local
Standard Trees	Diversity Naturalness	None	Roosting bats, nesting birds	Local
Standard Trees	Diversity Naturalness	None	Roosting bats, nesting birds	Local

REFERENCES / BIBLIOGRAPHY

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Chartered Institute of Ecology and Environmental Management (2006) Guidelines for Ecological Impact Assessment in the United Kingdom Website. Accessed at www.cieem.co.uk

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HMSO (1992) Protection of Badgers Act 1992HMSO

HMSO (1995) Biodiversity. The UK Steering Group Report

HMSO (2000) The Countryside and Rights of Way Act 2000HMSO

Joint Nature Conservation Committee (JNCC) (2010) Handbook for Phase I Habitat Survey – a Technique for Environmental Audit. JNCC Peterborough.

Mitchell-Jones A.J. & McLeish A.P. (3rd Edition, 2004) The Bat Workers' Manual

Multi-Agency Geographical Information for the Countryside (MAGIC) Website Accessed at www.magic.gov.uk

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Stace, C. (2010) New Flora of the British Isles 3rd Edition. Cambridge University Press

TSO (2006) Natural Environment and Rural Communities Act TSO

TSO (2010) The Conservation of Habitats and Species Regulations 2010 (as amended) TSO

ANNEX 1: EXTENDED PHASE 1 HABITAT SURVEY METHODOLOGY

Extended Phase 1 Habitat Survey, Web-based Desktop Study and Local Records Centre Request for Species Records and Site Designations

Extended Phase 1 Habitat Survey

Survey undertaken according to Joint Nature Conservation Committee (JNCC) (2010) Handbook for Phase I Habitat Survey – a Technique for Environmental Audit. JNCC Peterborough.

The site, as defined by the client, is systematically walked and all habitats present along with their dominant flora are recorded and mapped. Where appropriate, target notes are used to highlight potential features of interest, such as provisional signs of protected or notable species, or habitat features of note. The survey considers the suitability of the habitats on site and within the accessible surroundings to support such species. Habitats are mapped using standard colour codes allowing rapid visual assessment of the extent and distribution of different habitat types.

Limitations of the Phase 1 Habitat Survey:

The survey will not record any plants or animals that may appear at other times of the year and were therefore not evident at the time of visit. Some species that might use the site or be apparent at other times of year, or only in certain years, would not have been detected.

Web-based Desktop Study

The Bing Maps website was accessed for aerial views of the site and used as a visual aid to help put the site into context with its surroundings and to identify any potential features of interest in the surrounding land.

The Multi-Agency Geographical Information for the Countryside (MAGIC) website was consulted for information on statutory site designations in the area.

The National Biodiversity Network (NBN) website was also consulted for information on records of protected and notable species in the area.

Limitations of desktop study:

The desktop study can only provide information on species already recorded and cannot be taken to represent a complete overview of all species present within the search area.

References:

Bing Maps website accessed at <http://www.bing.com/maps/>

MAGIC website accessed at www.magic.gov.uk

NBN Website Accessed at www.nbn.org.uk

Species Records and Site Designations Information Request to the Local Records Centre

The North Wales Environmental Information Service was asked to provide information on species records within 2km of the site (4km for bats) and site designations within 2km of the site (within 4km for bats).

Extended Phase 1 Habitat Survey

Survey undertaken according to Joint Nature Conservation Committee (JNCC) (2010) Handbook for Phase I Habitat Survey – a Technique for Environmental Audit. JNCC Peterborough.

The site, as defined by the client, is systematically walked and all habitats present along with their dominant flora are recorded and mapped. Where appropriate, target notes are used to highlight potential features of interest, such as provisional signs of protected or notable species, or habitat features of note. The survey considers the suitability of the habitats on site and within the accessible surroundings to support such species. Habitats are mapped using standard colour codes allowing rapid visual assessment of the extent and distribution of different habitat types.

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Great Crested Newt Habitat Suitability Index Assessment

The Habitat Suitability Index (HSI) for the great crested newt was developed by Oldham et al. (2000) and was applied according to guidance set out by the National Amphibian and Reptile Recording Scheme (NARRS 2007). The HSI is a numerical index, for which scores between 0 and 1.0 indicate the suitability of the habitat. The scoring system is shown in Table 1 below.

Table 1: HSI scores summary

HSI score	Pond suitability
<0.5	Poor
0.5 – 0.59	Below average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

The final HSI score gained for each accessible water body can be used to predict the suitability of the habitat to support great crested newt. The HSI for the great crested newt incorporates ten suitability indices, all of which are factors thought to affect great crested newts and these were recorded for two ponds on site and one off-site pond within 500m. These include the location of the water bodies, water body area, water body drying and water quality and the presence of macrophytes. Other factors include shade, presence of water fowl, fish, nearby water bodies and adjacent terrestrial habitat.

The HSI for great crested newts is not a substitute for newt surveys. In general, water bodies with high HSI scores are more likely to support great crested newts than those with low scores; however, the calculation is not precise enough to allow

the conclusion that any water body with a high score will support newts, or that any pond with a low score will not.

ANNEX 2: SPECIES LIST (SPECIES RECORDED ON SITE)

Nomenclature according to Stace, C. (2010) New Flora of the British Isles 3rd Edition. Cambridge University Press.

Flora	
<u>Common name</u>	<u>Scientific name</u>
Blackthorn	Prunus spinosa
Hawthorn	Crataegus monogyna
Willow	Salix species

ANNEX 3: GREAT CRESTED NEWT HABITAT SUITABILITY INDEX ASSESSMENT

Habitat suitability criteria	Pond 1	Pond 2
Location	1	1
Pond area	0.4	0.4
Drought	0.9	0.5
Water quality	0.67	0.67
Shade	1	1
Waterfowl	1	1
Fish	0.67	0.67
Pond Count	1	1
Terrestrial Map	0.67	0.67
Macrophyte Score	0.9	0.5
HSI Scores	0.79	0.75
Pond suitability	Good	Good

ANNEX 4: LEGISLATION AND NATIONAL PLANNING POLICY

Bats

All British species of bat and their places of breeding and shelter are protected under the Wildlife & Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2010 (as amended) from deliberate capture, injury and killing; intentional or reckless disturbance; intentional or reckless obstruction of access to any structure or place which any such animal uses for shelter or protection; and deliberate damage or destruction of a breeding site or resting place. This includes buildings and trees and applies throughout the year whether bats are present or not at the time of survey or work being carried out.

Although foraging areas and commuting routes are not afforded direct legal protection, the effects of development proposals on these are a material consideration in planning (NPPF and TAN5) and should be considered when assessing the impact of the proposal on the maintenance of favourable conservation status of bat species.

As protected species, bats are covered by NPPF, which states that the presence of a protected species is a material consideration when considering a planning application.

All bat species (except *Pipistrellus pipistrellus*) are listed on both the Habitats Directive 1992 (transposed by The Conservation of Habitats and Species Regulations 2010 (as amended)) and The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention). The principal aims of the Convention are to ensure conservation and protection of wild plant and animal species and their natural habitats, to increase cooperation between contracting parties, and to regulate the exploitation of those species (including migratory species). The Convention imposes legal obligations on contracting parties, protecting over 500 wild plant species and more than 1000 wild animal species.

There are 18 species of bat found in the UK (17 species are known to breed here) and all are included in the UK BAP. Seven species are listed as priority species; priority species are those that have been identified as being most threatened and in need of conservation. It should be noted that the identification of these seven bat species as priority species does not extend throughout Britain (seven are priority species in England and three are priority species in Wales).

Of the seven species identified as priority species, five also have specific SAPs, which aim to further encourage and help population numbers.

Abbreviations: BAP – Biodiversity Action Plan; SAP – Species Action Plan; NPPF – National Planning Policy Framework; TAN – Technical Advice Note.

Badgers

Badgers and their setts are protected under the Protection of Badgers Act 1992, which makes it illegal to kill, injure or take badgers or to interfere with a badger sett in any way. The Act defines a sett as 'any structure or place which displays signs indicating current use by a badger'.

As a protected species the badger is covered by NPPF, which states that the presence of a protected species is a material consideration when considering a planning application.

Badgers are included in the UK BAP. They are not listed as a priority species and are not afforded any specific SAP.

Abbreviations: BAP – Biodiversity Action Plan; SAP – Species Action Plan; NPPF – National Planning Policy Framework.

Birds

In Britain all wild birds are granted legal protection under the Wildlife & Countryside Act 1981 (as amended). This legislation protects birds, their eggs, dependant young, and nests while being built or whilst in use.

Reptiles

All British reptiles are partially protected under the Wildlife & Countryside Act 1981 (as amended), under which it is an offence to intentionally kill or injure a reptile.

Sand lizard and smooth snake and their breeding and resting places are fully protected by both the Wildlife & Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2010 (as amended). It is an offence to deliberately capture, injure or kill them or damage, destroy or obstruct their resting or breeding places. It is also an offence to disturb sand lizard or smooth snake in their resting or breeding places. This applies throughout the year whether sand lizard or smooth snake are present or not at the time of survey or work being carried out. As protected species all British reptiles are covered by NPPF, which states that the presence of a protected species is a material consideration when considering a planning application.

All six species of British reptiles are included in the UK BAP. All six of these species are included as priority species in England, though not necessarily throughout the UK. Just one of the six species, the sand lizard, is subject to a SAP.

Abbreviations: NPPF – National Planning Policy Framework; BAP – Biodiversity Action Plan; SAP – Species Action Plan.

Amphibians

There is no special protection afforded to the four commoner species of amphibian; common frog, smooth (or common) newt, palmate newt and common toad.

The natterjack toad and great crested newt and their breeding and resting places are fully protected by both the Wildlife & Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2010 (as amended). It is an offence to deliberately capture, injure or kill them or damage, destroy or obstruct their resting or breeding places. It is also an offence to disturb natterjack toad and great crested newt in their resting or breeding places. This applies throughout the year whether natterjack toad or great crested newt are present or not at the time of survey or work being carried out.

Four species of amphibian are included on the UK BAP: great crested newt, pool frog, natterjack toad and common toad. All are priority species but just three are subject to SAPs.

Abbreviations: BAP – Biodiversity Action Plan; SAP – Species Action Plan.

Great Crested Newt

The great crested newt is protected under the Wildlife & Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2010 (as amended) from deliberate capture, injury and killing, intentional or reckless disturbance, intentional or reckless obstruction of access to any structure or place which any such animal uses for shelter or protection, and deliberate damage or destruction of a breeding site or resting place. This applies throughout the year whether great crested newts are present or not at the time of survey or work being carried out.

As a protected species, the great crested newt is covered by the National Planning Policy Framework (NPPF), which states that the presence of a protected species is a material consideration when considering a planning application.

The great crested newt is listed as a priority species in the UK BAP and has a SAP.

Abbreviations: NPPF – National Planning Policy Framework; BAP – Biodiversity Action Plan; SAP – Species Action Plan.

National Planning Policy References

Reference should be made to the following documents:

England

Department for Communities and Local Government (2012) National Planning Policy Framework Department for Communities and Local Government

ODPM (2005) Circular 06/05: Biodiversity and Geological Conservation – Statutory Obligations and Their Impact within the Planning System TSO

ANNEX 5: OVERALL SITE EVALUATION – RATCLIFFE CRITERIA (1977)

Ratcliffe, D. (1977) A Nature Conservation Review. Volume 1. CUP.

The criteria for evaluation have been adopted from the widely used set developed by Ratcliffe (1977). These were originally conceived to provide a systematic framework for the selection of Sites of Special Scientific Interest (SSSI) by the Nature Conservancy Council (NCC), but have since been adopted and adapted widely by ecologists, for example in Local Authorities and Wildlife Trusts.

These criteria provide a useful basis against which to evaluate the intrinsic ecological quality of a site, but in an urban area it is also important to consider the value of an area to the local people (GLC 1985). Thus the appeal of a site, its educational and amenity value, as well as its accessibility as a wildlife area, need to be included in the evaluation.

Survey results are assessed and evaluated using these criteria as a guide. They are:

Size

In general, larger sites are more highly valued than smaller ones, all else being equal. However, relative size to similar sites and other local sites should be considered. The area of a site is also important in management terms, i.e. whether short-term neglect/disturbance or any small changes would lead to the loss of a site's interest.

Diversity

One of the most important site attributes is the variety of communities and species which is largely dependent on diversity of habitats. Large numbers of species, particularly when represented by large populations, are to be valued. Diversity can also be related to habitat instability that may affect management prescriptions.

Naturalness

Ecosystems least modified by man tend to be rated more highly. However, most sites are influenced by man, the degree and nature of which is important.

Fragility

This reflects the degree of sensitivity of habitats, communities and species to environmental change. Fragile sites often represent ecosystems that are highly fragmented, dwindling or difficult to re-create.

Typicalness

Sites/habitats that are unusual within the wider ecological unit are may be of value, similarly sites/habitats that are typical and commonplace within a field of ecological variation may also be of value.

Recorded History

The existence of a scientific record of long-standing adds considerably to the value of a site.

Permanence

A site that has been occupied by a semi-natural habitat for a long time is usually more valuable than one that has only recently arisen. This is because they have had time to acquire rich assemblages of plants and animals.

Lack of Modification

Adverse influences from humans, such as inappropriate management regimes and pollution, will reduce the quality of an area.

Rarity

Rarity is concerned with communities and habitats as well as species. The presence of rare species adds to overall ecological value especially when a habitat also ranks highly on other criteria. The habitat type too may also be nationally or regionally rare.

Position in an Ecological Unit

In the event of two sites being of equivalent intrinsic value, the close proximity of one site to a highly rated example of another type increases the value of the site. The presence of other areas of semi-natural habitat adjacent or close to a site enhances the value of both habitats.

Potential Value

Certain sites could, through appropriate management or even natural change, eventually develop a nature conservation interest substantially greater than that existing at present.

Intrinsic Appeal

While science may view all creatures as equal, pragmatism dictates that in nature conservation it is realistic to give more weight to the more popular appeal of some species, groups or habitats than others.

ANNEX 6: DEFINING ECOLOGICAL VALUES FOR COMPONENT HABITATS – IEEM (2006)

The examples contained in the table below are only for general guidance and other considerations may apply, e.g. features of low value in isolation but which are subject to cumulative national decline may be afforded higher values in certain circumstances.

Level of Ecological Value	Examples of Criteria
International	- An internationally designated site or candidate site (SPA, pSPA, SAC, cSAC, Ramsar site, Biogenetic Reserve) - A sustainable area of a habitat listed in Annex I of the Habitats Directive, or smaller areas of such habitat that are essential to maintain the viability of a larger whole - A sustainable population of an internationally important species, e.g. a UK Red Data Book species, species listed under categories 1 or 2 of the UK BAP, or listed under Annex IV of the Habitats Directive - Sites supporting a breeding population of internationally important species or supplying a critical element of their habitat requirements
National	- A nationally designated site (SSSI, ASSI, NNR, MNR) or a discrete area that meets the selection criteria for national designation (e.g. SSSI selection guidelines) - A sustainable area of a priority habitat identified in the UK BAP, or smaller areas of such habitat that are essential to maintain the viability of a larger whole - A sustainable population of a nationally important species or a site supporting such a species, i.e. a species listed on Schedules 5 and 8 of the W&CA (as amended) which is a UK Red Data Book species that is not listed as being of unfavourable conservation status in Europe, of uncertain conservation status or of global concern in the UK BAP - A non-Red Data Book species that is listed as occurring in 15 or fewer 10km squares in the UK (categories 1 and 2 of the UK BAP). Also sites supporting a breeding population of such a species or supplying a critical element of their habitat requirements
Regional	- Sustainable areas of key habitat identified in the relevant Regional BAP or smaller areas of such habitat that are essential to maintain the viability of a larger whole - Sustainable areas of key habitat identified as being of Regional Value in the appropriate Natural Areas profile

Level of Ecological Value	Examples of Criteria
	- A population of a species listed as being nationally scarce (i.e. occurring in 16 - 100 10km squares in the UK, or in a Regional BAP or relevant Natural Area on account of its regional rarity or localisation. Sites supporting a breeding population of such a species or supplying a critical element of their habitat requirements - Sites, which exceed the County-level designations but fall short of SSSI selection guidelines, where these occur
County/ Metropolitan	- Semi-natural ancient woodland greater than 0.25 ha - County/Metropolitan sites and other sites which meet the ecological selection criteria for designation - A sustainable area of habitat identified in a county BAP - A population of a species that is listed in a county/metropolitan 'red data book' or BAP on account of its regional rarity or localisation. Also sites supporting a breeding population of such a species or supplying a critical element of their habitat requirements
District	- Semi-natural ancient woodland smaller than 0.25 ha - Sustainable areas of habitat identified in a sub-county (district/borough) BAP or in the relevant Natural Area profile - Sites/features that are scarce within the district/borough or which appreciably enrich the district/borough habitat resource - A diverse and/or ecologically valuable hedgerow network - A population of a species that is listed in a district/borough BAP because of its rarity in the locality or in the relevant Natural Area profile because of its regional rarity or localisation. Also sites supporting a breeding population of such a species or supplying a critical element of their requirements
Local	Areas of habitat considered to appreciably enrich the habitat resource within the context of the Parish or local neighbourhood, e.g. isolated species-rich hedgerows
Site	Small patches of poor semi-improved grassland, amenity grassland not used by badgers
Negligible	Areas of little current or potential ecological value