absolute ecology LLP wildlife surveys

Preliminary Ecological Appraisal

Land adjacent to Bagnall Heights, Bagnall Road, Bagnall. Staffordshire

June 2016

Notice to readers

This report has been prepared by Absolute Ecology LLP with all reasonable skill, care and diligence, within the terms of the contract with the client. The actions of the surveyor on site and during the production of the report were undertaken in accordance with the Code of Professional Conduct for the Chartered Institute of Ecology and Environmental Management (www.cieem.org.uk).

Non-technical summary

Absolute Ecology LLP was commissioned to undertake a Preliminary Ecological Appraisal of land adjacent to Bagnall heights, Bagnall Road, Bagnall, Bagnall, ST9 9JL, Staffordshire Gird Reference SJ 92474 50576. The Preliminary Ecological Appraisal was undertaken on the 22nd June 2016 by an experienced and licensed ecologist who is a member of the Chartered Institute of Ecology & Environmental Management (CIEEM).

It is understood that the construction zone of the proposed development affects the improved grassland, Shrubbery, small log piles, brash pile and compost heap on site. On this basis, the proposed development poses a moderate risk of harm to protected species such as Great Crested Newts and Reptiles, therefore further survey effort is required.

- eDNA on Pond 1 This has been conducted and the results show Negative results that GCN are not present.
- Reptile Survey

Although no Badger activity was observed on the site at the time of the survey, activity patterns of this species can change over a short time. In the event that Badger activity is discovered on site prior to (or during) works, then all works must cease and the advice of a suitably qualified ecologist be sought.

Nesting birds may be present in the trees and shrubs during the bird breeding season (March to August inclusive). If vegetation removal is planned during these months, then a prior check for nesting birds should be undertaken by an ecologist. Any active nests that are found must not be moved until fledglings have dispersed.

It is not currently known whether the proposed development requires additional lighting. If so, then a lighting design around the new development should be considered at an early stage. Further details can be found in Section 5 of this report.

Contents

1.0 Introduction

Background

1.1 Absolute Ecology LLP was commissioned to undertake a Preliminary Ecological Assessment of a site known as land adjacent to Bagnall heights, Bagnall Road, Bagnall, Bagnall, ST9 9JL, Staffordshire Gird Reference SJ 92474 50576.

1.2 The assessment was undertaken on the 22nd June 2016 by Matthew James Haydock, who has been involved in many projects, including: designing and undertaking ecological habitat surveys and site nature conservation evaluations; writing and implementing site management plans; acting in an advisory capacity to provide recommendations for ecological protection, enhancement and mitigation measures; protected species surveys under Natural England licence for survey and development; and undertaking ecological impact assessment and appropriate assessment. Matthew has a National Diploma in Ecology and Landscape Studies and holds a higher National Diploma in Environmental Management. He is a full member of the Chartered Institute of Ecology & Environmental Management (CIEEM).

1.3 The objective of this report is to provide the client with information on any known or potential protected or rare species that may be using the site, and to outline recommendations on how to proceed with the works in a legal and ecologically sensitive manner.

1.4 It is proposed that the site will be used to provide additional residential units (Please see below)

Figure 1: Showing proposed new residential units

1.5 Unless the client indicates to the contrary, information on the species found to be present on the site will be passed to the county biological records centre to update records held for the area.

Site Description

The survey area is a semi improved grassland, situated in the grounds of Bagnall heights, just to the west of the village of Bagnall in Staffordshire. Wetley Moor SSSI is situated approximately 1.5 km to the south, with a further area of woodland known as Bagnall Wood (LNR) approximately 1.4 km to the west. The site is surrounded by Bagnall golf course, agricultural land (mainly pasture) and farm buildings in all directions.

2.0 Methodology

Desk Study

2.1 In order to compile background information on the site and immediate surroundings the Staffordshire Ecological Record (SER) was contacted.

2.2 Information requested was as follows:-

- Records of protected species within 2 km of the site.
- Records of rare or notable species within 2 km of the site.
- Non-statutory site designations on or within 2 km of the site.

2.3 Additionally, MAGIC (Multi-Agency Geographic Information for the Countryside, 2010) was used to establish whether any of the following were present:

- Statutory site designations on or within 2 km of the site.
- Statutory sites designated for bats within 5 km of the site.

Habitat Survey

2.4 The site was visited on the 22nd June 2016 and was surveyed in accordance with the Joint Nature Conservation Committee (JNCC) Phase I Habitat Survey methodology (JNCC, 2007). This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential that might warrant further study.

2.5 The observable higher plant species in each habitat type within the site, and their abundance, were recorded using the DAFOR scale:

D Dominant

A Abundant

F Frequent

O Occasional

R Rare

Fauna

2.6 Habitats present on the site were searched for obvious signs of faunal activity, *e.g.* presence of badger setts, mammal tracks or herpetofauna under refugia. Any buildings and mature trees on site were visually examined from the ground to identify features with the potential to support roosting bats.

Valuation of Ecological Features

2.7 The value of areas of habitat and plant communities has been measured against published criteria where available. Biodiversity Action Plans (BAPs) have been searched to identify

whether action has been taken to protect all areas of a particular habitat and to identify current factors causing loss and decline of particular habitats. The presence of injurious and legally controlled weeds has also been taken into account.

2.8 When assigning a level of value to a species, its distribution and status (including a consideration of trends based on available historic records) has been taken into account. Other factors influencing the value of a species are: legal protection, rarity and Species Action Plans (SAPs). Guidance, where it is available, for the identification of populations of sufficient size for them to be considered of national or international importance has also been taken into account.

Habitat Suitability Index Assessment

2.9 Three ponds was subject to the Habitat Suitability Index (HSI) Assessment and further two ponds could not be accessed due to access restrictions. The assessments were undertaken on the 22nd June 2016 by a licensed ecologist from Absolute Ecology, trained in the assessment of waterbodies for their potential to support populations of Great Crested Newts.

2.10 The HSI is a measure of habitat quality using a numerical index between 0 and 1 derived from an assessment of variables known to influence the presence of Great Crested Newts (Oldham *et al.*, 2000). It is used to assess whether a waterbody warrants detailed surveys to establish presence or absence of newts and aids in the assessment of impacts and the design of mitigation measures. Since January 2008 it has been a requirement to include the results of HSI assessments in European Protected Species (EPS) licence applications.

2.11 To calculate the HSI of the waterbody, ecologists first record the following variables before applying the HSI calculation to them: pond size; surface area; water depth; water quality; % shade, % macrophyte cover; presence of fish and waterfowl; number of waterbodies within 1 km of the survey water body; quality of terrestrial habitat surrounding the ponds; and type of marginal/aquatic vegetation (Oldham *et al*., 2000).

2.12 Once the HSI score is obtained it can be used to define waterbody suitability for Great Crested Newts in the following way (National Amphibian Recording Scheme, 2008):

Table 1: HSI Scores

<0.5	Poor
0.5–0.59	Below Average
0.6–0.69	Average
0.7–0.79	Good
>0.8	Excellent

2.13 Waterbodies scoring less than 0.5, those over 500 m away from the intended works or with significant barriers to dispersal both to and from the site of the intended works were deemed not to require further surveys.

eDNA Methodologies

The following methodologies were used:

eDNA: As outlined above eDNA surveys were undertaken for the one affected waterbodies. This new survey methodology is approved by Natural England; '*Defra has recently published the results of an investigation into the use of environmental DNA (eDNA) to detect the presence of Great crested newt (GCN) in water bodies together with a technical advice note setting out the field and laboratory methodology Defra Science and Research Project WC1067. On the basis of this study we will now accept eDNA test results as evidence of presence or absence of GCN for licence applications.'*4

eDNA Protocol

In accordance with the specified methodology,5 the field surveys followed a strict protocol to prevent contamination of the samples; this entailed:

1. Gloves were worn at all times during the sampling process, and gloves were replaced between sample collection from the waterbody and pipetting into the sterile sub-sample tubes.
2. Samples were collected without entering the water, i.e. the surveyor stood only on the waterbody bank or muddy waterbody edges. This prevented disturbance of the substrate to limit cross-contamination.

The field sampling protocol consisted of the following steps:

3. 20 samples were taken from single waterbody. The location of sub-samples were spaced as evenly as possible around the waterbody margin. Subsamples generally targeted areas with potential egg laying substrate (e.g. vegetation) and open water areas which newts may be using for displaying. Prior to sampling the water column was mixed by gently using a ladle to stir through the entire water column, whilst avoiding disturbing the sediment on the bed of the waterbody. Sampling of very shallow water was avoided where possible (less than 5-10 cm deep).
4. Once 20 samples had been taken, the sample bag was closed securely and

shaken for 10 seconds. This mixed any DNA across the whole water sample.

5. A new pair of gloves were put on to keep the next stage as uncontaminated as possible.

6. Using a clear plastic pipette c15mL of water was taken from the bag and pipetted into a sterile tube containing 35mL of ethanol to preserve the eDNA sample (i.e. the tube was filled to the 50 mL mark).

7. The tube was shaken vigorously for 10 seconds to mix the sample and preservative. This is essential to prevent DNA degradation and was also repeated for each of the six conical tubes. Before taking each sample, the water in the bag was shaken to homogenise the sample, as DNA material constantly sinks to the bottom.

8. The box of preserved sub-samples was then returned at ambient temperature immediately for analysis by Sure Screen.

The samples were then returned to the laboratory (Sure Screen) for the eDNA analysis to be completed.

Survey Constraints

2.14 Data Search

Desk study data provides information on recorded species in the area and can be helpful for targeting survey effort. However, it is possible that protected species that have not been identified within the data search may occur on or adjacent to the site.

2.15 Field survey

Habitats within 30 m of the site boundary were inspected as far as access allowed. Ponds up to 500 m from the site were viewed where there was public access.

Fauna species present may not always leave field signs and, in addition, species may take up residence on site subsequent to the survey. If no development takes place within 12 months of this survey report, the findings should be reviewed and may need updating, and a full survey should be repeated within three years

Nomenclature

2.16 The English name only of flora and fauna species is given in the main text of this report; however, scientific names are used for invertebrates where no English name is available. Vascular plants

and charophytes follow the nomenclature of The Botanical Society for the British Isles (BSBI) 2007 database (BSBI, 2011) with all other flora and fauna following the Nameserver facility of the National Biodiversity Network Species Dictionary (http://www.nhm.ac.uk/nbn/), which is managed by the Natural History Museum.

3.0 Legislation

3.1 The United Kingdom Biodiversity Action Plan (BAP) 1994 sets out a strategy for implementing the Convention on Biological Diversity, which was signed by the United Kingdom at the Rio de Janeiro Earth Summit in 1992. The published report contains action plans for the United Kingdom's most threatened species and habitat plans for the most vulnerable areas.

3.2 The Local BAP sets out the county's part in the UK biodiversity planning process, in the form of local habitat and species action plans. Local BAPs are intended to focus resources, to conserve and enhance biodiversity, by taking account of national and local priorities.

3.3 Schedule 1 Part 1 of The Wildlife and Countryside Act 1981 (and amendments) – this lists birds protected by special penalties at all times. It prohibits intentional killing/injuring, taking, possessing, disturbing and selling (including parts and derivatives, eggs, nests, *etc.* as applicable) as well as damaging, destroying or disturbing nests in current use or dependent young, *etc.*

3.4 Schedule 5 of The Wildlife and Countryside Act 1981 (and amendments) – this prohibits deliberate killing, injuring, taking, possessing, disturbing and selling (including parts and derivatives) as well as damaging, destroying or obstructing any structure or place of refuge of listed fauna, such as Dormouse, Otter and bat species.

3.5 The Conservation of Habitats and Species Regulations 2010, consolidate all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994, in respect of England and Wales. It is illegal to kill, disturb, destroy eggs, breeding sites or resting places, to pick, collect, take cuttings, uproot or destroy in the wild as well as keep, transport, sell/exchange and offer for sale/exchange species listed.

3.6 The Countryside and Rights of Way Act 2000 – this increases protection given by The Wildlife and Countryside Act 1981 (and amendments). The offence to intentionally damage any structure or place that a wild animal listed in Schedule 5 of the Act uses for shelter or protection or deliberately disturbing any such animal while in such a structure or place is extended so that the offence also covers reckless damage or disturbance. The CRoW Act also places a duty on Ministers and Government Departments to have regard for the purpose of conserving biological diversity in accordance with the Convention on Biological Diversity.

3.7 The Protection of Badgers Act 1992 - this Act makes it illegal to wilfully kill, injure or take any Badger, or attempt to do so and it is an offence to intentionally or recklessly damage, destroy or obstruct access to any part of a Badger sett.

3.8 The Natural Environment and Rural Communities Act, 2006 - as well as creating Natural England, this act gives all public authorities the duty to have regard for conserving biodiversity within the commission of their duties. This includes a duty to restore and enhance as well as maintain biodiversity. The act also strengthens protection for Sites of Special Scientific Interest (SSSI) and makes authorities liable for allowing damage to such sites or their features.

4.0 Results

Desk Study

4.1 There is one statutory and 18 non-statutory site within 2 km of the site.

Site Name	Status
Carmountside Wood	Local Wildlife Site
Carmountside Grassland	Local Wildlife Site
Upper Holehouse Wood	Local Wildlife Site
Holehouse (north-east of)	Local Wildlife Site
Heakley Marshes	Local Wildlife Site
Bagnall Road Wood	Local Wildlife Site
The Green, Baddeley	Local Wildlife Site
Baddeley Edge Ridge	Local Wildlife Site
Greenway Hall Golf Course	Local Wildlife Site
Houghwood	Local Wildlife Site
Windy Croft	Local Wildlife Site
Postbridge Farm (west of)	Local Wildlife Site
Bagnall Springs	Local Wildlife Site
Spring Bank	Biodiversity Alert Site
Lawn Farm Nursery (north-east	Local Wildlife Site
Moor Hall (west of)	Retained BAS
Stanley Pool	Retained BAS
Cliff Wood	Local Wildlife Site

4.2 There are two statutory designated sites within 2 km of the site.

Bagnall Road Wood	Local Nature Reserve
Wetley Moor	SSSI

4.3 SER provided the following records for protected and notable species within 2 km of the site boundary:

Amphibians: Great Crested Newt

Reptiles: Grass Snake, Slow Worm, Common Lizard

Birds: Common Kingfisher, Greylag Goose, Barnacle Goose, Little Plover, Whooper Swan, Little Egret, Peregrine Falcon, Eurasian Hobby, Brambling, Bar-tailed Godwit, Common Crossbill, Red Kite, Whimbrel, European Golden Plover, Common Tern, Green Sandpiper, Redwing, Fieldfare, Barn Owl.

Plants: Bluebell

Mammal: European Water Vole, Eurasian Badger, Polecat, Whiskered/Brandt's Bat, Common Pipistrelle, Brown Long-eared Bat.

Habitats

4.4 The following habitats or vegetation types were identified on the site during the course of the habitat survey:

- Improved grassland
- Trees
- Ornamental Shrubbery

Improved grassland

4.5 The site is a, the majority of which comprises short structured improved grassland that is regularly mowed with more unstructured grass within the shrubbery boarders. This is dominated by Perennial Ryegrass (*Lolium perenne*), with abundant Crested Dandelions *(Taraxacum Officinale)*, Butter cups *(Ranunculus repens),* Pampas Grass *(Cortaderia selloana),* Tufted hair grass *(Deschampsia cespitosa),* White Clover (*Trifolium repens*). Dandelion (*Taraxacum officinale*) and buttercups (*Ranunculus* sp.) are also frequent, with locally abundant stands of Broad-leaved Dock (*Rumex obtusifolius*).

Plate 1: Showing Improved grassland.

4.6 Trees

The south and western boundaries contained most of the trees with scattered individual tree through the remainder of the site, the trees varied from mature to early mature. The trees presents consisted of Acer pseudoplatanus (Sycamore), Ulmus glabra (Wych Elm), Salix fragilis (Crack Willow), Quercus robur (Common Oak), Aesculus hippocastanum (Horse Chestnut) and Fraxinus excelsior (Ash).

4.7 Shrubbery

The western area of the site consisted of a variety of ornamental shrubbery.

Plate 2: Showing shrubbery boarder

Fauna

Bats

4.8 SER provided records of bat species within 2 km of the site. There are no buildings on site, trees or other structures on site with features suitable for roosting bats.

4.9 The adjacent land provides good foraging habitat and the application site provides potential commuting linear features or foraging habitat for of bat species. The individual trees on site were also assed for their potential to support roosting bats such as woodpecker holes, rot holes, hazard beams, partially detached platey bark, vertical or horizontal cracks and splits all the trees were physically inspected all the trees stem diameter were between 390 and 480 with heights of 9 to 16 meters, the survey found the trees showed limiting potential for roosting bats due to lack of physical access points such as cracks and crevices and platey bark.

Badgers

4.10 SER provided records of Badger within 2 km of the site. The majority of the site provides optimal foraging habitat for Badgers in the form of improved grassland. No evidence of Badger activity, such as setts, hairs, dung pits, latrines or snuffle marks, was discovered during the survey.

Dormice

4.11 There are no records of Dormice occurring within 2 km of the site. The potential for the site to support Dormice is low. There is no hedgerow on site provides no habitat and for Dormouse habitat. It is considered that Dormice are likely to be absent from the site.

Water Voles and Otters

4.12 There are records of Water Voles occurring within 2 km of the site. There was no water on site at the time of survey, and the site is some distance from the nearest watercourse. It is considered that Water Voles and Otters are likely to be absent from the site.

Other mammals

4.13 Records of Polecat were provided by SER at 2 km from the site. With regard to other mammals, the site comprises habitat with limited cover, and as such is not expected to support populations of small mammals.

Birds

4.14 Records of a wide range of bird species were provided by SER within 2 km of the site. No birds were species were observed during the survey.

4.15 The site as a whole provides potential nesting and foraging for bird species.

Reptiles

4.16 There are records of Grass Snake, Slow Worm and Common Lizard occurring within 2 km of the site. Semi-improved grassland on site provide potential cover and foraging habitat. Brash and log piles within the introduced shrubbery provide potential Refugia and/or hibernacula. The site also connects to potential reptile habitats on the adjacent golf course.

Plate 3: Reptile & Amphibian Refugia.

Amphibians

4.17 There are records of Great Crested Newt (GCN) occurring within 2 km of the site, at Jackhays Pool, 790 m away There was no water on site at the time of survey, but there are five waterbodies identified within 500 m of the site: Pond 1, 10 m; Pond 2, 227 m; Pond 3, 257 m, Pond 4, 227 m; and Pond 5,318 m. Pond 1, 3, 4, 5 was subjected to a Habitat Suitability index assessment, and the overall score showed that pond 1 was low potential and pond 5 moderate potential to support GCN. Ponds 3, 4 and 5 show poor connectivity to the application site due to a limited number of linear features such as hedgerows, which amphibians could use to commute, and the

dividing Bagnall Road also pond 3 and 4 had dried up and was heavily vegetated. Pond 2 is 227 m from the site and is separated by arable and grazed fields, no access was able to be obtained. Pond 5 had GCN commuting constraints such the Bagnall road could carrier as migratory barrier, arable land (ploughed) and grazing pasture which lie between this pond and the site, the connecting terrestrial habitat is considered to be of poor quality. It is therefore considered to be unlikely that any populations of GCN would reside in range as far as the terrestrial habitats found within the site. Pond 1 which located under 10 meter from the proposed site which did show a low score on the HSI and predatory fish was identified, but did show aquatic plants such as flag iris and reeds for egg laying though fish were present a eDNA was conducted due to the closeness to the site and habitat that the site provides it was considered necessary to conduct the eDNA. The results from Sure Screen show that GCN are not present within pond 1 (Please See Appendix 9) for full results.

Table 2: HSI Assessment of Waterbodies

Pond	Description	HSI	Rating
1	pond, 10 meter from application site.	0.38	Poor
2	Pond 227-meter access was unable to be made via the landowner.	-	_
3	Pond 57 meter Highly vegetated and dry	_	_
4	Pond 227 meter Highly vegetated and dry	_	_
5	Pond 318-meter Poor habitat for newts around the pond and in areas leading to the application site. due to short grassland which regularly grazed, no wildlife corridor and Bagnall road which moderately used road.	0.66	Average

In terms of terrestrial habitat, the development site primarily short grazed improved grassland which provides no suitable features such as scrub, hedgerow or brash/log piles or rubble piles associated to amphibian habitat.

Figure 2: Showing ponds within 500 meters of the proposed development site.

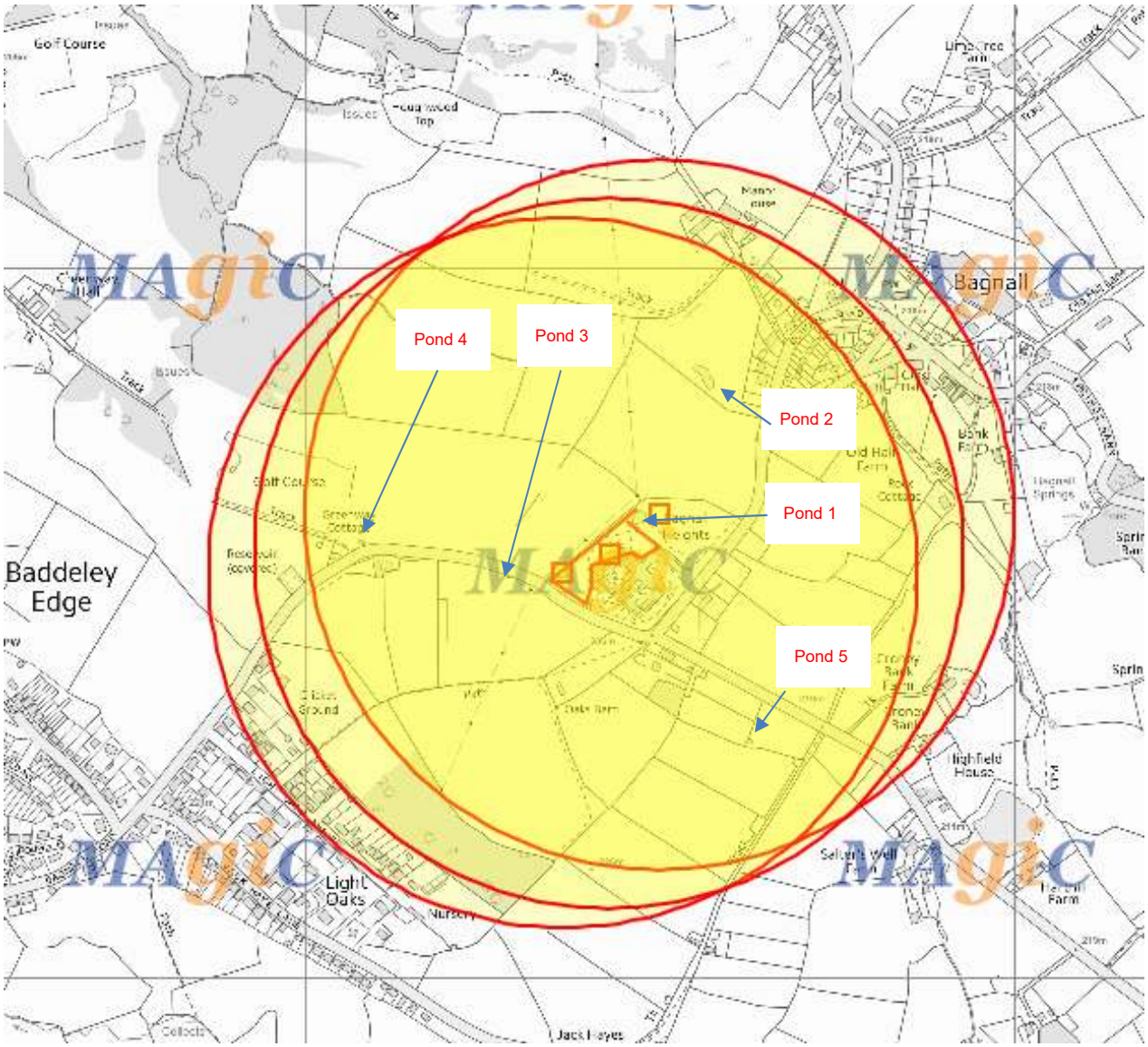

Plate 4: Showing shrubbery boarder but cover and shelter for Amphibian & Reptiles

Plate 5: Showing dries up pond 3.

Plate 6: Showing pond 4 dry and vegated

Invertebrates

4.18 SER did not provide any records of protected or notable invertebrate species. The habitats on site are generally common and do not provide much potential for rare invertebrate species. although they are expected to support a number of more common species.

5.0 Development Constraints and Recommendations

5.1 The site is the subject of a possible planning application for a ménage. Ecological constraints and recommendations with regard to any development are discussed below.

Designated Sites

5.2 There is two statutory and eighteen non-statutory designated site within 2 km of the site. Given the physical distance it is unlikely that the proposed development would have any adverse effects on the protected sites.

Habitats

5.3 Botanically, the site itself does not appear to have any rare species and it is not particularly diverse.

Potential Impacts of Works

5.4 If development is undertaken, then potential impacts are likely to include the following.

5.5 Potential to cause harm and habitat loss if reptiles or Great Crested Newts are to be present.

5.6 Potential impact on nesting birds.

5.7 Although no Badger setts were observed on site, Badger activity can change over a short time. If any setts are created on site prior to works, tunnels could be affected by ground works and vegetation removal, and Badgers could be harmed.

Recommendations

5.8 The following are general recommendations that are likely to be a minimum requirement for any future development of the site. To prevent potential delays, it would be prudent to undertake the recommended surveys well in advance of any master-planning and certainly before any planning application is made.

Bats

5.9 The habitats for foraging bats within the site, and loss of grassland is unlikely to significantly impact local bat populations. If the tree line is to be affected by an increase in light spill, there may be significant impacts on commuting routes, a lighting design around the site should be considered at an early stage. Light spill can affect the foraging and commuting strategy of many species and thus should be avoided on nearby trees and hedges/shrubs and should not exceed 200 lumens (150 watts). Any security lighting should be on a timer setting and faced downwards to prevent spillage onto nearby habitats. The height of any lighting columns around the development should not exceed 8m to further reduce any ecological impact of light pollution. Low-pressure sodium lamps (SOX) fitted with hoods are recommended to direct light below the horizontal plane to minimize upward light spill. It is recommended that the use of artificial lighting follows the protocols outlined in the Institute for Lighting Engineers document “Guidance for the Reduction of Obtrusive Lighting” (2005) and BCT’s “Artificial Lighting and Wildlife Interim

Guidance: Recommendations to Help Minimise the Impact of Artificial Lighting" (2014) to minimise disturbance and sky-glow across the site.

5.1 Though If there is due to be any loss or major severance of tree-lines (or a significant increase in light spill), then it is recommended that bat transects are undertaken to check whether any important commuting routes are present. Following Good Practice Guidelines for sites of relatively low suitability for bats, one survey visit should be conducted per season (spring – April/May, summer –June/July/Aug, autumn –Sept/Oct) in appropriate weather conditions for bats. These survey visits should comprise of transect surveys, in conjunction with deployment of a static bat detector (data to be collected on five consecutive nights per season). Further surveys may be required if these survey visits reveal higher levels of bat activity than predicted by habitat alone.

Badgers

5.2 Although no Badger activity was observed on the site at the time of the survey, activity patterns of this species can change over a short time. In the event that Badger activity is discovered on site prior to (or during) works, then all works must cease and the advice of a suitably qualified ecologist be sought.

Reptiles

5.3 Brash and log piles within the introduced shrub (Target Notes) provide potential refugia and/or hibernacula.

5.4 A reptile survey of the areas of shrubbery and margin grassland should be undertaken prior to any planning application being made. Reptile surveys can be carried out between April and September (April, May and September are the optimal survey months). Standard survey methodology involves installing artificial refugia (0.5 m squares of roofing felt) throughout the habitat, which are used by basking reptiles if they are present. Seven checks of the refugia are carried out to confirm presence or absence.

5.5 If reptiles are present, mitigation will involve protecting individuals from harm during the development. Depending on the size of the population present, this may require catching and relocating reptiles prior to ground works and/or destructive searches during ground works.

Great Crested Newts

5.6 The site contains habitat suitable for Great Crested Newt in the terrestrial phase of their life cycle, as well as pond under 10 meters from site. The probability of their presence or absence on site is determined by whether or not they are present in these pools, or within the one other suitable pond identified within 500m of site.

5.7 A eDNA could be conducted prior between Mid-April to 30th June on pond 1, if this is not possible then a Full Great Crested Newt surveys (4 dusk and dawn surveys) should be conducted on the pond 1, between March and June with two surveys between Mid-April to Mid-May inclusive. A further two surveys may be required if GCN are found, in order to provide a population size estimate. The eDNA has now been conducted and the results show a negative results showing no GCN presence.

Birds

5.8 Where possible, habitats suitable for nesting and foraging birds should be retained, enhanced or created within any new development. The trees within the site are likely to be the most valuable to nesting birds, and should be retained as far as possible.

5.9 Nesting birds may be present in the trees and shrubs during the bird breeding season (March to August inclusive). If vegetation removal is planned during these months, then a prior check for nesting birds should be undertaken by an ecologist. Any active nests that are found must not be moved until fledglings have dispersed.

5.10 It would be of conservation benefit to install a variety of nesting boxes for different bird species within the site in future (buildings and trees where suitable) to enhance the site for nesting birds and encourage bird diversity. Information on bird nesting boxes can be found at http://www.rspb.org.uk/advice/helpingbirds/nestboxes/. Enhancing existing hedgerows or planting new hedgerows and shrubs within any new development can benefit birds if a wide range of native species are used.

Biodiversity Enhancements

5.11 The boundary to the site could have a new hedgerow incorporated to create a wildlife habitat

5.12 Any landscaping relating to the proposed development should also take into consideration bats and other wildlife, and it is recommended that only native tree and shrub species are planted. In particular, no plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 should be planted during the landscaping of this development. For further details of Schedule 9 plants, visit the Defra website: www.defra.gov.uk/wildlife-pets/non-native.

5.13 Standing trees should be retained where possible, and any new planting should contain native species of trees.

Table 1: List of native tree species

	Species	Planting Time
Native Tree Species	Ash (*Fraxinus excelsior)*	January/February
	Aspen (*Populus tremula)*	January/February
	Field maple (*Acer campestre*)	January/February
	Bird Cherry (*Prunus padus*)	January/February
	English Elm(*Ulmus minor* var *vulgaris*)	January/February
	Oak (*Quercus robur*)	January/February

5.14 Smaller scale plantings that will be included within the landscape planting design should endeavour to resemble niche habitats. For example, native ferns and other plants that thrive in low light (e.g. Ivy, Holly, and a variety of grasses and mosses) can be used. Species should be chosen according to moisture and sunlight availability, but also with regard to their wildlife value. Many grasses will offer cover and breeding places for invertebrates as well as food for some birds. More open but sheltered areas within the development site are particularly suitable for colourful plants that thrive in full sun. These can function as bee and butterfly gardens, supplying a rich source of nectar from spring to autumn. Shrubs such as Buddleia,

Broom Cytisus scoparius, Lavender Lavendula sp. and Gorse Ulex europaeus, and herbs such as Willowherb Epiloobium sp., Michaelmas Daisy Aster sp., Soapwort, Mullein Verbascum sp. and Thyme Thymus vulgaris all enjoy a sunny position and provide significant nectaring resources for invertebrates.

5.15 The use of climbing plants to enhance the design and aesthetic elements is generally an accepted practice. The process of allowing and encouraging plants to grow on and up walls allows the natural environment to be extended within the site. From an ecological perspective, green walls will provide resting and feeding places for birds, invertebrates and small mammals. Climbers provide nesting habitats for birds such as Wrens, Blackbirds, Song Thrushes and House Sparrows. Species such as Cotoneaster, Ivy, Climbing Roses and Honeysuckles are all important fruit resources for birds. Equally, climbing plants such as Virginia Creeper and Ivy form important habitats for invertebrates. Although native species are more likely to attract wildlife, some exotic species are also effective in this respect. Within the site grounds it may be more productive to use a combination of native and exotic species to maximise the range of annual and perennial, deciduous and evergreen foliage, and flowering, climbing and creeping species. This latter plant type provides a selection of plants suitable for green walls. The aspect of a climbing plant on a wall can have significant ancillary effects, such as insulation and moisture retention. For example, north-facing walls are more suitable for supporting native herbs and a wider range of plants. This is due to the higher moisture regime. Further structural benefits of the space between the wall and the climbing plants include pockets to collect leaf litter and provision of nesting sites, as well as baffles to trap rising warm air.

5.16 Where existing hedgerows are gappy, these should be maintained and augmented by planting native species. Hedgelaying can increase the vigour and longevity of hedgerows, but is a costly management technique and may not be appropriate in highly visible amenity areas. The sensitive use of hand tools can often achieve the same results as hedgelaying. Flailing of hedgerows by tractor-driven machinery is a more cost effective option; however, this can affect both fruiting and flowering of hedges and may affect the long-term vigour of the hedgerow.

Table 2: List of species for two types of hedgerow deemed suitable for these areas, which can be planted for conservation or to provide a thorn-less barrier.

	Species	Planting Time
Conservation Hedgerow	Hawthorn (*Corylus avellana*)	January/February
	Blackthorn (*Prunus spinosa*)	January/February
	Field maple (*Acer campestre*)	January/February
	Spindle (*Euonymus europaeus*)	January/February
	Hazel (*Corylus avellana*)	January/February
	Dog rose (*Rosa canina* agg.)	January/February
	Wayfaring tree (*Viburnun lantana*)	January/February
	Oak (*Quercus robur*)	January/February
Thorn-less Hedgerow	Field maple (*Acer campestre*)	January/February
	Common dogwood (*Cornus sanguinea*)	January/February
	Guelder rose (*Viburnum opulus*)	January/February
	Wild privet (*Ligustrum vulgare*)	January/February
	Hornbeam (*Carpinus betulus)*	January/February

6.0 References

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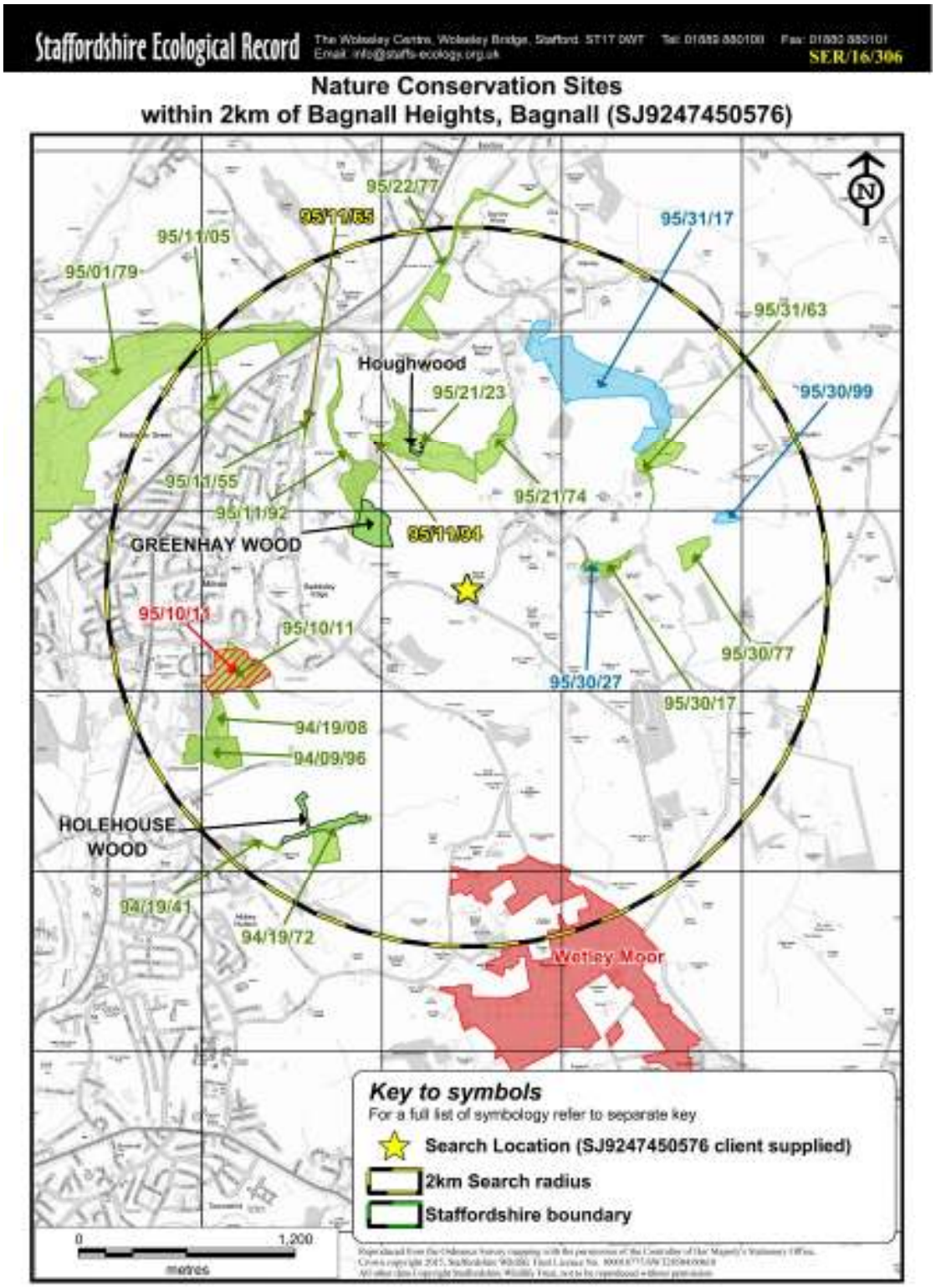
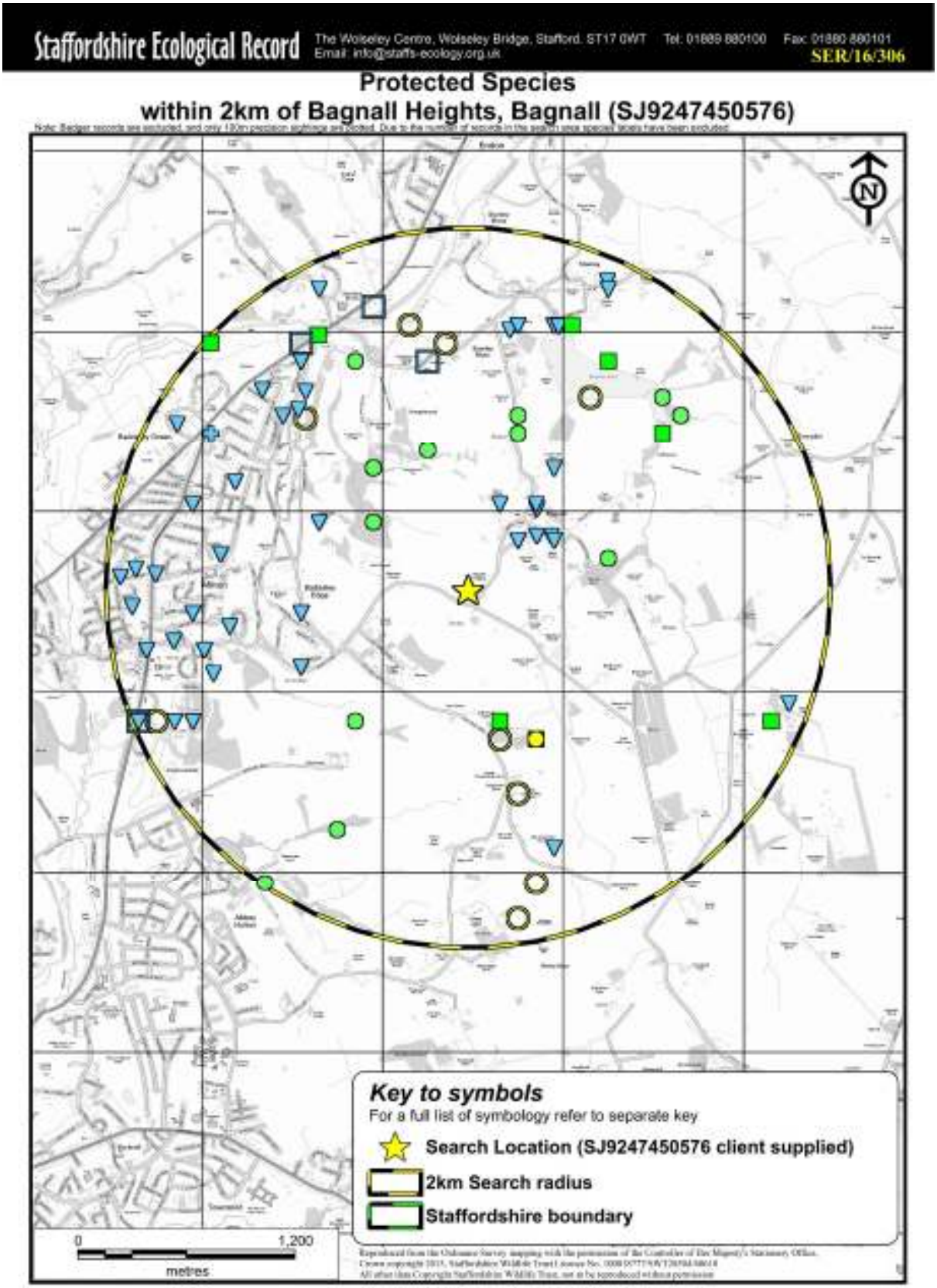
7.0 Plans

Extended Phase I Habitat Survey Map

8.0 Biological Data Search




Staffordshire Ecological Record
The Wolseley Centre, Wolseley Bridge, Stafford. ST17 0WT Tel: 01889 880100 Fax: 01889 880101
Email: info@staffs-ecology.org.uk
SER/16/306
Protected Species
within 2km of Bagnall Heights, Bagnall (SJ9247450576)
N
Key to symbols
For a full list of symbology refer to separate key
Search Location (SJ9247450576 client supplied)
2km Search radius
Staffordshire boundary
0
1,200
metres

Staffordshire Ecological Record
The Wolseley Centre, Wolseley Bridge,
Stafford. ST17 0WT
Tel. 01889 880100 Fax: 01889 880101
Email: info@staffs-ecology.org.uk

A legend to the map showing Nature Conservation Sites and Species

Introduction

These colours are used on the site alert mapping within the SWT GIS, but SER cannot guarantee the same colours are used in any other mapping system, particularly those based on ArcView.

Statutory Designations from Natural England's web-site

- National Nature Reserves — NNR (boundary not available owing to OS restrictions)
- Sites of Special Scientific Interest — SSSI (boundary not available owing to OS restrictions)
- Local Nature Reserves — LNR (boundary not available owing to OS restrictions)

Non-statutory Designations from the Staffordshire Grading System (1995 onwards)

- Site of Biological Importance (ex Grade 1 SBI) equivalent to "Local Wildlife Site"
- Biodiversity Alert Site (ex Grade 2 SBI)
- Proposed/potential Site of Biological Importance

Geological Sites

- Regionally Important Geological/geomorphological Site (= Local Geological Site)

Staffordshire Wildlife Trust Sites

- SWT Nature Reserves

Other Nature Reserves

- Royal Society for the Protection of Birds

Ancient Woodland Inventory

- Ancient & Semi-natural Woodland
- Ancient Replanted Woodland

Species Information

- Mammals excluding those listed below
- Otter (Lutra lutra)
- Badger (Meles meles) - not normally supplied
- Water Vole (Arvicola terrestris)
- All bat species
- All bird species
- Any other protected species (precise to 100m)
- All Protected Species Records (precise to 1km)
- Amphibians and reptiles excluding those below
- Great Crested Newt (Triturus cristatus)
- Native Crayfish (Austropotamobius pallipes)
- Flowering plants except those below
- Bluebell (Hyacinthoides non-scripta)
- Butterflies and Moths
- BAP Species Records (precise to 100m)
- BAP Species Records (precise to 1km)

Notes:

The Local Nature Reserve and other nature reserve boundaries can overlay the current grading when both layers are actively visible

Where there are multiple species records for the same grid reference the dot for one species may obscure the dots for other species - all species records will be displayed in the accompanying spreadsheet

Not all the above categories may be present on the accompanying map

Version 2.0 July 2011

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9.0 eDNA Result