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# Ecological Appraisal

## Land to the West of Coleshill Lodge

Lichfield Road, Abbots Bromley, Staffordshire  
WS15 3DN



### Final Report

Please also refer to drawing 1100f - as proposed - site block plan  
supplied on a separate PDF.

Project no. P22.T28.14

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# Project

Ecological Appraisal  
Land to the West of Coleshill Lodge, Lichfield Road, Abbots Bromley  
Project no: P22.T28.14

Date: 2<sup>nd</sup> July 2014

## Description:

Ecological Appraisal to consider potential impacts to habitats and protected species in relation to development proposal with particular focus on great crested newts

## Client Details

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## Disclosure

*The information which I have prepared and provided is true, and has been prepared and given in accordance with the guidance of my professional institution's Code of Professional Conduct, and I confirm that the opinions expressed are my true and professional opinions.*



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# Non-Technical Summary

- On the 26<sup>th</sup> of February 2014, SES Ltd. conducted a Preliminary Ecological Appraisal (PEA) of an area of land west of Coleshill Lodge, off Lichfield Road, Abbots Bromley, which is proposed for residential development of 6 bungalows. The PEA also included a great crested newt Habitat Suitability Index assessment of 8 ponds within 250m.
- The site, which covers approx. 0.73ha, consists predominantly of a species poor semi-improved grassland paddock bordered on all sides by species poor, hawthorn dominated hedgerows (NERC Act habitats of principal importance). Those hedges on the southern and eastern boundaries are intact; those on the north and western boundaries are defunct.
- The site contains a very shallow pond in its south western corner. The pond dries out in summer and is heavily shaded by willow scrub. The pond is fed by a drainage ditch which runs down the western edge of the site.
- The site contains a mature standard ash tree, and a mature in hedge oak.
- There are two recent records for Great Crested Newt (GCN) taken approximately 500m north of the site.
- The application site was found to contain suitable terrestrial habitat for GCN in the hedgerows and tall ruderal vegetation. The grassland which makes up the majority of the site is considered sub-optimal for GCN as it is a very short, sheep grazed sward.
- Further to the PEA, great crested newt presence / absence surveys were carried out on the 2 ponds within 250m of the site that scored average or above on the HSI. The surveys incorporated bottle trapping, torching, egg searching and hand netting during mid April through May 2014.
- Despite it scoring 'poor' on the HSI, it was also considered prudent to carry out surveys on the pond on the application site as it would be directly affected by the development. As the pond was very shallow, all methods above apart from bottle trapping were used.
- Pond 3, approximately 150m to the west of the site, was found to contain a medium population of Great Crested Newts (peak count of 12 GCN on any one survey visit).
- The development works, as proposed, pose a risk of disturbance, harm or death to low numbers of terrestrial great crested newts and the loss of approximately 0.7ha of sub-optimal terrestrial grassland habitat.
- Great crested newts are a European Protected Species. Therefore, the proposed development works will require a Natural England derogation license with regard to great crested newts. Carrying out the works without securing a license may constitute an offence under the Habitats Regulations 2010.
- An outline mitigation strategy regarding great crested newts is included in this report (Appendix F). Briefly, the mitigation scheme includes excluding newts from the site prior to the start of works and providing compensatory habitat as part of the development scheme.
- Compensatory habitat will include the provision of a 3m extension of unmanaged spontaneous tall ruderal / rank grass habitat around the existing

pond and western hedge (total 0.1ha). The 125m long western hedgerow, which is currently defunct, will also be restored with infill planting. An additional 40m hedgerow will be planted in parallel to the defunct shared northern boundary hedge with a 3m gap between hedge centres. Two 2m by 2m hibernacula will be created along the western boundary. No drainage systems which may entrap and kill newts such as gully pots, sumps etc. are to be used.

- These measures should provide a net improvement in terrestrial newt habitat over that which currently exists at the site.
  - The proposed hedgerow restoration and new planting will also constitute a net increase of NERC act habitat of principal importance (hedgerow).
  - The site was found to contain suitable nesting habitat for breeding birds and reasonable avoidance measures are recommended when carrying out any works which may affect the hedgerows or trees (see section 5).
- 
- Further biodiversity enhancements include the restoration of the existing pond and the inclusion of a nest box scheme.
  - Overall, it is expected that when the above habitat creation and restoration measures present a net gain in biodiversity at the site.

Table S1: Mitigation Hierarchy

Ecological Receptor	Avoid	Mitigate	Compensate	Further survey needed?	Mitigation measures Summary (See section 5)
Designated sites	X			No	Pollution prevention measures (see Section 5)
NERC habitat (hedgerow)		X	X	No	Exclusion zone for root protection, habitat creation and restoration, use of no dig construction for footpath (see Section 5)
Great Crested Newt	X	X	X	No	Exclusion from site. Provision of enhanced terrestrial habitat (see Appendix F)
Common Reptiles & Amphibians	X	X	X	No	Included in advice on working methods. Will also benefit from enhancements for GCN (see Section 5)
Bats	X	X		No	Use of sympathetic lighting scheme
Nesting Birds	X		X	No	Appropriate timing of works which affect hedgerows. Habitat enhancement in the form of nest boxes (see Section 5)



Table S2: Net Loss/Gain

Ecological Receptor	Predicted net loss without compensation	Legal Implications?	Designing for net gain/enhancement i.e. net gain
Designated sites	No	No	N/A
NERC habitat	Loss & fragmentation of 25m of hedgerow	NERC Act	Infill of 10m of hedgerow  Creation of 40m of hedgerow.  Restoration of 125m of hedgerow.
Amphibians	Potential for disturbance, harm or death of low numbers of Great Crested Newts.  Loss of 0.7ha of sub-optimal terrestrial habitat .	Habitats Regulations 2010	0.1ha of good quality tall ruderal / rank grass habitat creation. Creation of 2 refugia. 125m of hedgerow restored, 40m of hedgerow created.
Bats	Not if sympathetic exterior lighting scheme used	No	Pond and hedgerow restoration likely to provide increase in foraging habitat.
Nesting Birds (individuals)	Loss of 25m of potential hedgerow nesting habitat	Not if avoidance measures implemented	Infill of 10m of hedgerow  Creation of 40m of hedgerow.  Restoration of 125m of hedgerow.  6 Bird boxes to be installed on new buildings.
Ephemeral pond choked with vegetation	No	No	Pond to be restored providing net biodiversity gain
Species poor semi-improved grassland	0.7ha	No	No like for like replacement recommended, as existing habitat of low quality.  Landscape planting to include species beneficial to wildlife, along with measures listed above expected to provide net biodiversity gain from development.

# 1 Introduction

## 1.1 Terms of Reference

Staffordshire Ecological Service (SES) Ltd. has been commissioned by Luke Gittens of Bidesign architecture, on behalf of their client Mr A. Fox, to undertake an Ecological Appraisal (EA) in support of a planning application for the construction of 6 residential bungalows at the Land to the West of Coleshill Lodge in Abbots Bromley (hereafter referred to as the site).

This EA report presents ecological information from the following:

- Desk study,
- Extended Phase 1 Habitat survey,
- Preliminary protected species survey
- Habitat Suitability Index (HSI) on ponds within 250m for great crested newts (GCN)
- Presence, absence and population size class assessment surveys for GCN.

The purpose of this report is to provide ecological information to support the planning proposal and thus survey objectives include: identifying ecological features onsite; subjecting them to evaluation and impact assessment; providing advice on the potential for contravention of legislation/policy; and providing recommendations on any further actions needed (licensing, mitigation, enhancement, etc.). A summary of main statutory provisions for biodiversity conservation relevant to this site is provided in Table 1.1 below.

*Table 1.1: Main legislation relevant to the site*

Biodiversity Legislation	Ecological Feature
Wildlife and Countryside Act 1981 (as amended)	GCN, Breeding Birds
Conservation of Habitats and Species Regulations 2010	GCN
Conservation of Habitats and Species (Amendment) Regulations 2012	Birds
Natural Environment and Rural Communities Act 2006 (NERC)	Hedgerows
Hedgerows Regulation 1997	Hedgerows

## 1.2 The Site

The application site is located off Lichfield Road to the south of abbots Bromley in Staffordshire at Ordnance Survey national grid reference SK 08429 23909. A location plan (to scale) is provided in Appendix A. The survey site, a gently sloping paddock of approximately 0.73ha, consists primarily of closely grazed species poor semi-improved grassland, with native mature hedgerows dominated by hawthorn. A drainage ditch runs along the western periphery flanked by a thin corridor of rank grassland and tall ruderal vegetation. Located within the south-western corner of the site is a pond, most likely a former marl pit. The pond is choked with vegetation and is dry through the summer months.



The surrounding landscape is primarily mixed agricultural which contains a network of field boundary hedgerows, brook courses and ditches, all of which provide connective habitat features which may be used by amphibians, reptiles, birds and bats. To the north, south and west the site is bordered by agricultural farmland, predominately pastoral with arable fields beyond. To its eastern periphery the site is bordered Lichfield Road, along which lies a number of residential properties with associated gardens and access drives. The landscape within 1km contains in excess of 30 ponds/open water bodies which offer potential habitat for amphibians, invertebrates and foraging areas for bats.

Site location and boundary plans are presented in Appendix A.

### 1.3 Proposed Works

The client intends to undertake the construction of 6 new residential bungalows with associated gardens, car parking and an access drive. A proposal plan is provided in Appendix A.

To accommodate the scheme the client proposes to:

- Re-locate 25m wide access and visibility splay through the eastern boundary hedgerow and in-fill existing gateway.
- Install 2m wide pedestrian roadside footpath along eastern boundary. This will utilise no-dig construction to ensure protection of adjacent hedgerow.
- Carry out ground works and construct 6 bungalow properties
- Restore defunct areas of the existing boundary hedges
- Restore a silted up and over grown pond in the south western corner of the site.

# 2 Methodology

## 2.1 Surveyor Experience

Table 2.1: Surveyor information

Ecologist	Position	Licences held	Relevant Experience (in yrs)
Richard Pearce BSc ACIEEM	Ecologist	Bat (Level 1) GCN (Level 1) Reg. CLS001514	6
Charlotte Eva BSc	Assistant Ecologist	Training toward licenses	5
Scott Petreck	Survey Assistant	Training Toward Licenses	4

## 2.2 Survey Methods & Design Criteria

Based on the type and scale of proposed works and the site location, the focus of the surveys was great crested newts, bats, ; and breeding birds although evidence of other protected species and their habitats would also be noted, if applicable. A summary of the survey methodology is provided in Table 2.2 below. The following criteria were used to determine the type and extent of the surveys carried out:

- Habitats present both on and immediately around the site,
- Semi-natural habitat connectivity between the site and the wider area (e.g. hedgerows, water courses, shelter belts etc.)
- The proximity and nature of local protected / notable species records and designated sites compiled in the pre-survey desk study
- The nature and extent of works

Table 2.2: Summary of PEA Survey Methodology

Survey details	Appropriateness of Methods	Geographical extent
<b>February 2014 Desk Study</b>	In accordance with Guidelines for Preliminary Ecological Appraisal (CIEEM, 2012) <b>Methods:</b> Queried Staffordshire Ecological Records (SER)	1km radius search for protected & BAP species and designated sites
<b>PEA - Extended Phase 1 Habitat Survey</b>	Timing: <b>Optimal</b> - (April to Sept) In accordance with established guidance [(CIEEM, 2012),(JNCC, 1990), (BSI, 2013)] <b>Methods:</b> Habitat types mapped & described, including representative species, invasive species and a record of habitat condition, where appropriate. Includes searches for field signs of, and/or habitat suitability for, protected and/or notable species.	Site (as defined by red boundary in Figure A3) and adjacent habitats, where accessible
<b>Initial Survey 26 February 2014</b>		
<b>Re-survey for 26<sup>th</sup> June 2014</b>		

<b>Preliminary Roost Assessment (PRA) – Bats</b>  26 February 2014	Timing: <b>Suitable</b> (Anytime) In accordance with established guidance [(BCT, 2012),(Mitchell-Jones et al, 2004)]	Trees on site.
	<b>Methods:</b> Daytime inspection of on-site trees in relation to bat roosts.	
	(Harris S. et al, 1989)	
	<b>Methods:</b> Visual inspection for field sign	
<b>PEA – Amphibians</b>  26 February 2014	Timing: <b>Sub-optimal, Optimal</b> (GCN HSI is March to Sept) See 2.3 Survey Constraints	Site, adjacent habitats and accessible ponds within 250m
	<b>Methods:</b> Habitat suitability assessment only; GCN Habitat Suitability Index (HSI) where ponds lie within survey scope	
<b>Great Crested New presence / absence and population surveys</b>  15 <sup>th</sup> April – 28 <sup>th</sup> May 2014	Timing: <b>Optimal</b> (Mid March – Mid June)	All ponds within 250m identified as having potential for great crested newts
	<b>Methods:</b> Bottle trapping, egg searching, netting, torching	
<b>PEA – Reptiles</b>	Timing (Habitat): <b>Suitable</b> (Anytime)	Site & adjacent habitats
	<b>Methods:</b> Habitat suitability assessment; casual refuge check where possible	
<b>PEA – Breeding birds</b>	Timing (Habitat): <b>Suitable</b> (Anytime)	Site & adjacent habitats
	<b>Methods:</b> Habitat suitability assessment and/or casual check for previous nesting activity	
Average weather conditions (PEA): <b>Temp 8<sup>o</sup>C, 60% cloud cover, some sunny spells, light breeze</b>		
PEA Standard Survey Equipment: <b>Binoculars, torch, compass, field guide(s), lens, maps &amp; plans, notepad</b>		
Other Species-Specific Equipment: <b>net</b>		

*NB: Suitable and optimal survey timings are based on Templates for Biodiversity and Geological Conservation Validation Checklists, Pilot draft, (ALGE, 2007)*

## 2.3 Survey Limitations

The survey methodologies used were deemed to be the most effective possible for this site at this time of year.

Table 2.3: PEA limitations

Limitation	Overcoming limitations
Initial Phase 1 habitat survey conducted outside optimal survey season	Re-inspection of site conducted during optimal season (26 <sup>th</sup> June)
Lack of safe access to, and close inspection of, potential roost features within trees, which included crevices and cavities	Use of binoculars & high-powered torch. Development proposal altered to allow trees to remain unaffected.
No access granted to pond P4, see Appendix E, Figure E.1 for location.	The pond was surveyed previously by SES as part of an unrelated planning application in 2013. The results of the previous survey are in the public domain. The 2013 survey found the pond to be heavily stocked with ornamental fish and scored below average on the HSI.
Initial site survey was conducted outside of the main bird breeding season	Site was re-examined during main bird breeding season.

## 2.4 Evaluation Criteria

In accordance with *Guidelines for Ecological Impact Assessment in the United Kingdom* (IEEM, 2006), the following geographical frame of reference is used when ascribing a value or potential value to an ecological resource:

- **International importance** – e.g. Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites
- **National importance** – e.g. Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR)
- **Regional importance** – e.g. Environment Agency regional biodiversity indicators, important features in Natural England Natural Areas
- **County importance** – e.g. Local Nature Reserves (LNR), Site of Biological Interest (SBI), Site of Importance for Nature Conservation (SINC)
- **Local or parish importance** – e.g. Biodiversity Alert Site (BAS), Site of Local Importance for Nature Conservation (SLINC), ecological features or resources such as hedge rows, woodlands, ponds
- **Within the zone of influence** - e.g. Locally or regionally common habitats that provide ecological resources within the site and / or immediately surrounding area e.g. scrub, tall herbaceous vegetation
- **Secondary value** – e.g. Features that are of little ecological interest in themselves but perform an ecological function such as areas of scrub that that may buffer more sensitive habitats from the effects of development or intensive farming.

- **Negligible importance** – e.g. urban areas, hard standing, intensely farmed agricultural fields.

## 2.5 Impact Assessment Criteria

Negative and positive impacts on nature conservation features have been characterised based on predicted changes as a result of the proposed activities. In order to characterise the impacts on each feature, the following parameters are taken account of where appropriate:

- The magnitude of the impact
- The spatial extent over which the impact would occur
- The temporal duration of the impact
- Whether the impact is reversible and over what timeframe
- The timing and frequency of the impact.

# 3 Results

## 3.1 Desk Study Results

### 3.1.1 Protected & NERC Species Records

Staffordshire Ecological Record (SER) provided information relating to records of protected, notable and invasive species within 1km of the site. Relevant records are discussed in the sections below. A full list of records returned by the data search is available on request.

### 3.1.2 Designated Sites

A designated sites plan is provided in Figure C.1 in Appendix C.

There are no statutory designated nature conservation sites within 1km of the application site, although Blithfield Reservoir SSSI lies at just over 1km to the south west. There are two non-statutory locally-designated nature conservation sites within 1km, listed in table 3.1.

*Table 3.1: Designated Sites within 1 km*

Site Name	Designation	Distance from Site (in metres) approx.
Radmore Farm	SBI	600m NE
Ash Brook	SBI	900m SW

## 3.2 Extended Phase 1 Habitat Survey Results

The Extended Phase 1 Habitat Survey Plan is provided in Appendix B. Photographs are provided in Appendix D.

Habitats recorded on the site are described in Table 3.2 below.

*Table 3.2: Phase 1 habitat descriptions*

Phase 1 Habitats
<b>Poor semi-improved grassland (0.7ha – Not NERC Habitat)</b>
The grassland within the paddock is of low species diversity and dominated by perennial rye grass, with crested dogs tail abundant. Herbaceous species diversity is very low. Those herbs which are present include creeping buttercup, broad leaved dock, cow parsley and spear thistle.
The sward is sheep grazed with a relatively high grazing pressure and was very short throughout the entire survey period (February to end of June).



**Hedgerow 1 - Eastern Boundary (115m long)**  
**NERC Habitat of Principal Importance**

Phase 1 classification: Intact hedgerow (species poor)

The hedgerow along the eastern boundary extends approximately 115m and is an intact species poor hedge dominated by hawthorn with minor constituents of dog rose, hazel, elder and bramble. This hedgerow is divided centrally by gated access.

The ground flora includes species such as cleavers, common nettle, cow parsley, ivy, hedge garlic and lords and ladies.

**Hedgerow 2 - Southern Boundary (85m long)**  
**NERC Habitat of Principal Importance**

Phase 1 classification: Intact hedgerow with trees (species poor)

The hedgerow along the southern boundary has been previously laid and is of a similar species composition to that of the eastern hedgerow, dominated primarily by hawthorn. The hedge contains a mature oak at its junction with the eastern boundary hedge

**Hedgerow 3 - Western Boundary (125m long)**  
**NERC Habitat of Principal Importance**

Phase 1 classification: Defunct hedgerow (species poor)

The western boundary hedgerow is very gappy, particularly along its northern extent, where it is dominated by elder, other species present include bramble and honeysuckle. Along its southern extent it is more intact, and dominated by blackthorn with lesser constituents of elder and dog rose

The ground flora includes species such as cleavers, common nettle, cow parsley, ivy, hedge garlic and rank grass species in the gappier areas.

**Hedgerow 4 - Northern Boundary (40m long)**  
**NERC Habitat of Principal Importance**

Phase 1 classification: Defunct hedgerow (species poor)

The northern boundary the hedgerow is gappy, although previous signs of laying are evident. The laying appears to have taken place a considerable time ago and the hedge has since become somewhat outgrown. The dominant species is again hawthorn, with some elder, blackthorn, hazel and bramble in places.

The ground flora includes species such as cleavers, common nettle, cow parsley, ivy, hedge garlic and rank grass species in the gappier areas.

**Standing Open Water (Approx 150m<sup>2</sup>)**  
**Not NERC Habitat of Principal Importance**

To the south-western corner of the site is an old marl pit. The pond is heavily shaded by willow scrub. The pond was very shallow at the time of the initial survey (less than 10cm) and the water quality was found to be poor, with virtually no invertebrate life found. The poor water quality is likely to have resulted from large amounts of leaf input from the (mainly willow) trees which have colonised the pond. Those areas that have not been colonised by willow have been

colonised by reed mace.

During the later great crested newt survey visits in May, the pond was found to be completely dry.

**Tall herb / ruderal vegetation (Approx 0.018ha)  
Not NERC Habitat of Principal Importance**

The pond banks are predominantly colonised with tall herb / ruderal vegetation associated with enriched soils and disturbed land which include common nettle, bramble, rosebay willowherb, great willowherb, hog weed and hedge bindweed.

**Running Water (105m long)  
Not NERC Habitat of Principal Importance**

A drainage ditch runs along the western periphery of the survey site between the boundary hedgerow and a post and wire fence.

At the time of the initial survey there was less than 10cm of water present within the ditch. During later survey visits in May, the ditch was found to be dry and it is assumed that the ditch only carries water after periods of precipitation.

Tall rank grass (perennial rye grass dominant) and ruderal vegetation form a narrow vegetated corridor along the ditch approximately 2m wide. Species include rosebay willowherb, great willowherb, creeping thistle, bramble and hedge bindweed.

**Standard trees (not associated with hedgerow)  
Not NERC Habitat of Principal Importance**

A mature, stunted ash tree is situated just north of the existing pond. The base appears to show signs of rot and there are some shallow rot holes higher up, which do not appear deep enough to provide habitat for nesting birds or bats.

Also of significance is a large mature oak tree, situated adjacent to the site which has recently lost a large limb and appears to be in very poor condition. Although not within the site boundary, numerous features such as rot holes, cavities, cracks and fissures were noted that have potential to support both bats and breeding birds.

### 3.3 Protected Species Survey Results

#### 3.3.1 Great Crested Newt

Ponds within a 250m radius are shown in Figure 3.1 and are colour coded to show their potential to support great crested newts calculated using the Great Crested Newt Habitat Suitability Index (HSI). Table 3.3 gives a summary of the HSI categories for each pond.

The full HSI calculation for each pond is provided in Appendix E.

### ***Recorded status***

There are 2 records of great crested newt within 1km of the application site taken in 2007 and 2008 respectively. Both records are from a pond at Abbots Bromley Girls School approximately 500m north of the site.

### ***On site breeding habitat***

The pond on the site (Pond 1) is located within the south-western corner of the survey site and scored 'Poor' in the HSI assessment for its potential to support great crested newt. The pond is surrounded by good terrestrial habitat including tall ruderal vegetation and hedgerows. However, the pond itself is heavily shaded, shallow, dries annually and has poor water quality due to high levels of leaf input from the encroaching willow scrub and hedgerows, all factors which make this pond less suitable for great crested newt.

A drainage ditch which runs along the western boundary contained a small amount of flowing water at the time of the initial survey. The ditch carries the clean water outflow from a small sewage treatment plant up slope and it appears that rainwater also drains into it from the surrounding fields. The ditch was found to be virtually dry during several of the survey visits carried out in May / June, and it is thought likely that this ditch will be mostly dry or carry very low flows throughout the summer months. The ditch and its surrounding tall grass and ruderal vegetation would provide a good quality terrestrial habitat for amphibians, including great crested newt, although may present a barrier to newts during times of high flow.

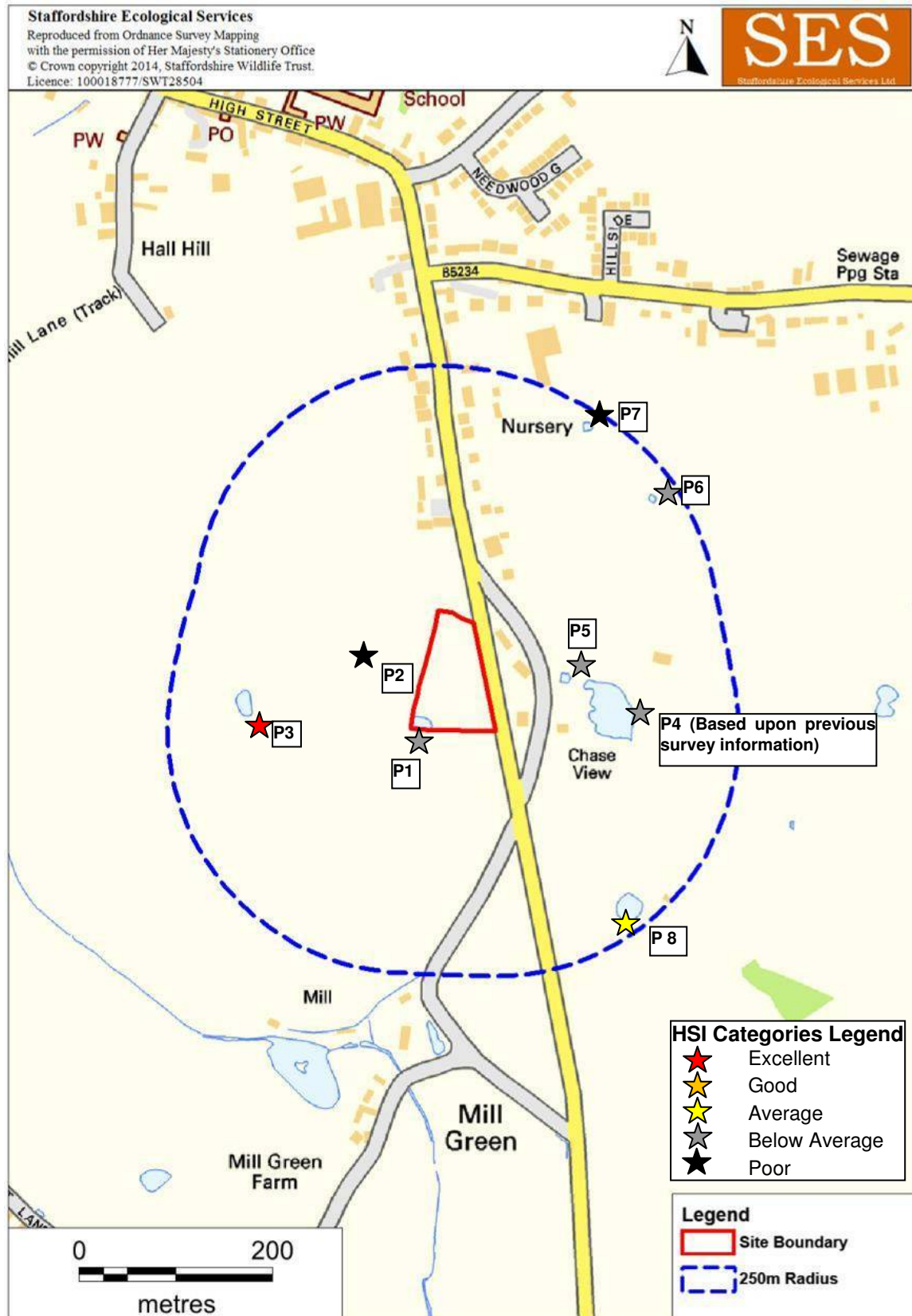
### ***On site terrestrial habitat***

The tall herb / ruderal habitat surrounding Pond 1, site boundary hedgerows and the drainage ditch and associated tall herb / rank grass habitat all provide excellent terrestrial habitat for great-crested newts and other amphibians. In addition, the hedgerows form terrestrial habitat corridors which link the site to the surrounding habitat, including nearby ponds.

The species poor semi-improved grassland, which is the main habitat type on the site and occupies the area of the proposed development, is considered suboptimal terrestrial habitat for great crested newts. This is due to its short sward structure and relatively heavy grazing pressure. However, should this habitat be left unmanaged for a year or more, it will form a ranker sward with much greater potential for terrestrial great crested newts.

The site is very 'tidy' and the lack of potential refugia (rubble, debris, log piles etc.) is notable.

Figure 3.1: Location of ponds within 250m radius of the survey site.



### **Off site breeding habitat**

Great crested newts are usually found within 250m of their breeding ponds with the majority of a population found within 100m of their breeding pond (Langton *et al.*, 2001). In addition to the pond on the site (Pond 1), there are a further 7 ponds within a 250m radius. The location of the ponds is shown in Figure 3.1

All ponds within 250m were assessed using the great crested newt HSI (Habitat Suitability Index) methodology.

Pond 2 was found to no longer hold water and is now essentially an area of marshy grassland. Therefore, no HSI assessment of this pond was carried out.

Pond 7, although represented on the OS map as a pond, was found to be an area marshy grassland. A HSI assessment was therefore not undertaken.

*Table 3.3 HSI Scores for ponds within 250m radius*

<b>Pond ID</b>	<b>HSI Categorisation</b>
1	Poor
2	None- no longer exists
3	Excellent
4	Below Average (based upon 2013 survey data)
5	Below Average
6	Below Average
7	None- no longer exists
8	Average

### **Off site breeding habitat – presence / absence**

Further to the habitat suitability survey, great crested newt presence / absence and population size class surveys were carried out on Pond 3 (Excellent suitability for GCN) and Pond 8 (Average suitability for GCN).

Although Pond 1 was categorised as having poor suitability, it was thought prudent to also survey this pond, as it will be directly impacted by the proposed works. Pond 1 was too shallow to bottle trap, so survey effort was limited to torching, hand netting and egg searching.

The trapping effort used in each pond is presented in Table 3.4, with the results of the presence / absence and population size class surveys are presented in Table 3.5.

Table 3.4 GCN Bottle trapping effort

Pond no	Approx Perimeter (m)	No of traps set	Notes
Pond 1	30	0	Pond initially too shallow to trap and then dried completely.
Pond 3	70	30	Trapping density very close to 1 trap per 2m of bank. Shortfall due to some areas of unsafe banks.
Pond 8	80	20	Much of pond too shallow to allow trapping. Trapping confined to western end of pond where depth sufficient.

Table 3.5 GCN Presence / absence and population size class surveys

<b>Key:</b> GCN = Great Crested Newt SN = Smooth Newt M=Male F = Female J =Juvenile U= Sex unknown					
Pond	Bottle Trap	Torch	Net	Egg Search	Notes
<b>Survey 1 – 15<sup>th</sup> April 2014 (Presence / Absence)</b> <b>Overnight low temp 6°C</b>					
Pond 1	N/A	None Found	None Found	None Found	
Pond 3	GNC: 0 SN: 1 (F 1)	GNC: 12 (M 8) ( F 4) SN: 2 (U)	None Found	None Found	
Pond 8	None Found	None Found	None Found	None Found	
<b>Survey 2 – 24<sup>th</sup> April 2014 (Presence / Absence)</b> <b>Overnight low temp 6°C</b>					
Pond 1	N/A	None Found	None Found	None Found	
Pond 3	GNC: 4 (M)	GNC: 5 (M 4) (F 1)	None Found	None Found	
Pond 8	None Found	None Found	None Found	None Found	
<b>Survey 3 – 30<sup>th</sup> April 2014 (Presence / Absence)</b> <b>Overnight low temp 9°C</b>					
Pond 1	N/A	None Found	None Found	None Found	
Pond 3	GNC: 7 (M 4) (F 3)	GNC: 11 (M 8) (F 1) (U 2)	None Found	None Found	
Pond 8	None Found	None Found	None Found	None Found	
<b>Survey 4 – 8<sup>th</sup> May 2014 (Presence / Absence)</b> <b>Overnight low temp 9°C</b>					
Pond 1	N/A	None Found	None Found	None Found	Completely dry
Pond 3	GNC: 2 (M)	GNC: 2 (1 M) (1 U)	None Found	None Found	
Pond 8	None Found	None Found	None Found	None Found	



<b>Survey 5 – 23<sup>rd</sup> May 2014 (Population size class)</b>					
<b>Overnight low temp 9°C</b>					
Pond 3	None Found	GCN: 5 (2M) (3U)	None Found	None Found	
<b>Survey 6 – 28th May 2014 (Population size class)</b>					
<b>Overnight low temp 10°C</b>					
Pond 3	GCN:1 (J)	GCN: 4 (1 M) 3 (U)	None Found	None Found	

### **Off site terrestrial habitat**

Terrestrial habitats within 250m of the site include tussocky grassland, marshy grassland tall ruderal vegetation, scrub and wooded areas, gardens and hedgerows. All of these provide potentially excellent foraging and commuting habitat for amphibians including Great Crested Newts.

### **Summary**

The survey results show that great crested newts are likely absent from pond on the application site. However, a population of great crested newts (GCN) was confirmed in Pond 3, approximately 150m from the site.

The peak count in Pond 3 was 12 GCN, observed during torching on 15th April 2014. This count correlates to a 'medium' population as stated in the Great Crested Newt Mitigation Guidelines (English Nature, 2001). The lack of egg laying evidence or larvae found when netting suggests that either the pond is not used for breeding, breeding has not occurred this year or the amount of breeding activity is very low.

The application site is approx 150m from the pond confirmed to contain great crested newts (Pond 3). The application site also contains optimal terrestrial amphibian habitat to its peripheries and is shares good terrestrial habitat connections with pond 3. It is therefore considered likely that terrestrial GCN will make use of the application site, albeit in very low numbers.

### 3.3.3 Bats

#### **Recorded status**

There are recent records for soprano pipistrelle, unidentified pipistrelle species bats and unidentified myotis species bats within 1km. All of these species forage over hedgerow and wetland habitat such as those found on the site and may also occupy tree roosts.

#### **Surrounding Habitat**

Surrounding habitats include arable fields, pockets of woodland, ponds, pasture and stream corridors-- all providing good opportunities for bats. The hedgerows bordering the site provide some element of connectivity between the survey site and foraging / roosting habitat further afield. Agricultural and residential buildings in the area also offer suitable roosting habitat.

#### **On site Foraging/Commuting potential**

The hedgerows, scrub, trees and pond on the site provide potential foraging areas for a number of bat species. The site's boundary hedgerows are likely provide connective corridors linking with other foraging habitat in the wider landscape.

#### **Preliminary Roost Survey**

The only habitat with any potential for roosting bats on the site is confined to two trees which include a standard mature ash tree and mature in-hedge oak tree. Results of the tree assessment are given in Table 3.6. Refer to the Phase 1 plan in Appendix B for tree locations.

*Table 3.6: Results of Tree Roost Assessment*

Target Note	Spp.	Description (Height, splay, coppice, pollard etc)	Bat Features	Tree Category
<b>Tn1</b>	Ash	Mature single stem tree, with stunted growth and rot to base	Small number of rot holes, although they appear too shallow to support bats	3
<b>Tn2</b>	Oak	Mature hedgerow tree in good condition	No obvious features, but hard to inspect canopy	2

<b>Tn3</b>	Oak (Off site)	Large mature tree in poor condition.	Cracks, holes, cavities	1
Trees Category Definitions (BCT, 2012)				
<b>Category 1*</b>	Trees with multiple, highly suitable features capable of supporting larger roosts			
<b>Category 1</b>	Trees with definite bat potential, supporting fewer suitable features than Category 1* or with potential for use by single bats			
<b>Category 2</b>	Trees with limited or no obvious potential to support bats, although the tree is of a size and age that elevated surveys may find suitable cracks/crevices			
<b>Category 3</b>	Trees with no potential to support bats			

### 3.3.4 *Nesting Birds*

#### *Surrounding Habitat*

The farmland and residential gardens surrounding the site includes hedgerows, grassland, arable land, scrub and shrub, small pockets of woodland, stream courses and a number of residential and agricultural buildings, all of which provide foraging and nesting opportunities for a range of common and farmland bird species.

#### *Evidence of presence on site*

A number of old nests associated with common species were identified within the boundary hedgerows.

Birds seen and heard onsite were woodpigeon, house sparrow, dunnock, blue tit and greenfinch. Foraging lapwing was also noted near to the site.

The hedgerows, scrub and trees onsite will provide foraging and nesting opportunities for a range of common and farmland bird species. The paddock was considered unsuitable for ground nesting birds such as skylark and meadow pipit due to its short sward structure and its relatively small area, with boundary features and trees that can be used by predators as viewpoints being in close proximity to all areas. The short sward structure of the grassland is less favourable for small mammals such as the short tailed field vole, which reduces the sites value as a foraging area for owl and raptor species including barn owl and kestrel.

### 3.3.5 *Other species*

No other species were noted, although the habitats present on site are suitable for a range of common amphibians and reptiles. .

### 3.3.6 *Invasive species*

No invasive botanical species were recorded on the site.

## 4 Evaluation and Impacts

The following section provides an indication of the ecological value of features present, outlines nature conservation legislation relevant to the features and assesses the level of impact from the proposal on the features. The valuation is based on the Guidelines for Ecological Impact Assessment (IEEM, 2006) – see section 3.3. Impacts relate to both construction and operational phases of the development unless stated otherwise.

Table 4.1: Evaluation and Impacts

Ecological Feature	Relevant legislation	Evaluation	Mitigation Hierarchy	Impact Level
<b>Blithfield Reservoir SSSI</b>	HR	National	A	Negligible
	<p><b>Impacts:</b>  <u>Construction:</u>            Over 1km distant and so none expected as long as pollution control measures in place (see Section 5.0).   <u>Operational:</u>            No impact expected.</p>			
<b>Radmore Farm SBI</b>	HR	County	A	Negligible
	<p><b>Impacts:</b>  <u>Construction:</u>            Over 600m distant and so none expected as long as pollution control measures in place (see Section 5.0).   <u>Operational:</u>            No impact expected.</p>			
<b>Ash Brook SBI</b>	HR	County	A	Negligible
	<p><b>Impacts:</b>  <u>Construction:</u>            Over 900m distant and so none expected as long as pollution control measures in place (see Section 5.0).   <u>Operational:</u>            No impact expected.</p>			
<b>Hedgerows</b>	NERC Act	National	A, M, C	Low
	<p><b>Impacts:</b>  <u>Construction:</u>            Removal of approximately 25m of western boundary hedgerow to create new site entrance and visibility splay.             To be mitigated by gapping up redundant site entrance of approx. 10m, restoring 125m of defunct hedgerow on western boundary and planting 40m of new hedgerow on northern boundary (see Section 5).             No impact expected to remainder of hedges as long as protection zones are established around retained hedgerows during site works and no-dig construction used on proposed footpath along Lichfield Road (see Section 5.0).</p>			

	<u>Operational:</u> None expected			
<b>Standing Open Water (Pond 1)</b>	N/A	Secondary	C	Low
	<b>Impacts:</b> <u>Construction:</u> It is proposed that the pond will be restored, resulting in an overall positive impact on this habitat.  <u>Operational:</u> None expected as long as suitable sewage treatment / drainage scheme implemented.			
<b>Running Water (Drainage ditch)</b>	N/A	Secondary	A	Negligible
	<b>Impacts:</b> <u>Construction:</u> The drainage ditch is to be retained and no negative impact is expected  <u>Operational:</u> None expected as long as suitable sewage treatment / drainage scheme implemented.			
<b>Poor semi-improved grassland</b>	N/A	Secondary	C	Negligible
	<b>Impacts:</b> <u>Construction:</u> Total loss of approx 0.7ha of species poor semi-improved grassland of little nature conservation value. Compensation elsewhere on the site focussed on other habitats and appropriate landscape planting will ensure net bio-diversity gain (see Section 5).  <u>Operational:</u> Habitat will be lost to development.			
<b>Great Crested Newt</b>	WCA, NERC (in part)	Local or Parish	A, M, C	Low
	<b>Impacts:</b> <u>Construction:</u> Potential for disturbance, harm or killing of low numbers of Great Crested Newts. To be mitigated by exclusion of newts from the site under license prior to commencement of works.  Loss of 0.7ha of heavily grazed species poor semi-improved grassland considered to be sub-optimal habitat for terrestrial GCN. The partial destruction of intermediate terrestrial habitat (50 – 250m from breeding pond) is considered to be of low impact (English Nature, 2001).  This will be compensated by enhancement of terrestrial habitat features elsewhere on the site including the creation of approx 0.1ha of tall herb / rank grass habitat, restoring 125m of native hedgerow, planting 40m of new native hedgerow and creating 2 hibernacula (see Section 5.0).  <u>Operational:</u> None expected as long as suitable drainage scheme implemented i.e. no gully pots or sumps etc.			

<b>Amphibians (common)</b>	HR, WCA	International	A, M, C	Low
	<b>Impacts:</b> <u>Construction:</u> None as long as precautionary measures are followed (see Section 5.0).  <u>Operational:</u> Net gain. Terrestrial habitat enhancement for great crested newts likely to benefit all amphibians. Restoration of pond likely to benefit common amphibians.			
<b>Reptiles (common)</b>	WCA, NERC (in part)	Local or Parish	A, M	Low
	<b>Impacts:</b> <u>Construction:</u> None as long as precautionary measures are followed (see Section 5.0)  <u>Operational:</u> Net gain. Terrestrial habitat enhancement for great crested newts likely to also benefit for reptiles.			

<b>Bat Roosts</b>	HR, WCA	International	A	Negligible
	<b>Impacts:</b> <u>Construction:</u> Negligible – no potential roosts on site.  <u>Operational:</u> Impacts on roosts considered negligible. Impacts on foraging considered negligible as long as sympathetic lighting scheme employed (see Section 5).			
<b>Nesting Birds</b>	WCA	National	A, M, C	Low
	<b>Impacts:</b> <u>Construction:</u> Risk of injury/damage to birds, nests, etc. when carrying out hedgerow operations / scrub removal during pond restoration. Avoid through timing of works or mitigate as specified (see Section 5.0)  <u>Operational:</u> None expected, as replacement nesting habitat and opportunities will be provided (see Section 5.0)			
<b>Key to Legislation &amp; Mitigation Hierarchy</b> HR – Conservation of Habitats & Species Regulations 2010 <a href="http://www.legislation.gov.uk/ukxi/2010/490/contents/made">http://www.legislation.gov.uk/ukxi/2010/490/contents/made</a> WCA – Wildlife & Countryside Act 1981 (as amended) <a href="http://www.legislation.gov.uk/ukpga/1981/69">http://www.legislation.gov.uk/ukpga/1981/69</a> <a href="http://www.legislation.gov.uk/ukpga/1981/69/contents">http://www.legislation.gov.uk/ukpga/1981/69/contents</a> NERC - Natural Environment and Rural Communities Act 2006 (NERC) <a href="http://www.legislation.gov.uk/ukpga/2006/16/section/40">http://www.legislation.gov.uk/ukpga/2006/16/section/40</a> <b>A – Avoid, M – Mitigate, C - Compensate</b>				



# 5 Recommendations & Mitigation

It should be noted that all recommendations are provided as information only and specialist legal advice may be required. The conclusions of this report are based on current information. If works are delayed for more than one year, reassessment may be required.

Table 5.1: Further Survey & Licensing

Further Survey and Licensing
<b>Further Survey Required</b>
<u>No</u>
<u>Justification:</u> The current survey effort with regard to great crested newts is in compliance with the Great Crested Newt Mitigation Guidelines (English Nature, 2001) and allows a sound evaluation of the likely impact on the species and is considered sufficient to inform a relevant mitigation strategy.
<b>Licence required</b>
<u>Yes</u>
<u>Justification:</u> Great Crested Newts are a European Protected Species. As such, any works which may disturb or injure Great Crested Newts or damage their resting places would likely constitute an offence under the Habitats Regulations 2010.

Table 5.2: Mitigation Hierarchy: Further Actions

Avoidance (A), Mitigation (M), Compensation (C) & Enhancement	
<b>General</b>	
All staff and workers on site, including sub-contractors, should be made aware of species and habitat protection issues at site induction talks. <b>Work must stop immediately and Natural England contacted if any protected species are found onsite.</b> (Tel: 0300 0845 601 4523). Staffordshire Ecological Services (SES) can also be contacted at 01889 880125. If a bat is found and SES are not available, please phone the Batline on 0845 1300 228.	
<b>Designated sites and on site habitats</b>	
Trees (To be confirmed by arboricultural survey)	Trees should be retained following relevant guidance in accordance with BS 5837 (2005) – Trees in Relation to Construction. The protection of tree root systems also applies to hedgerows. Such guidance is outside the scope of this report, but can be provided by a certified arboriculturalist, if necessary.
Surrounding sites and other habitats  SSSI, SBI NERC, etc. (A, M)	All proposed work must strictly be in accordance with all relevant Pollution Prevention Guidelines (PPG) published by the Environment Agency which may include but is not limited to PPG1 (general), PPG5 (works in, near, or liable to affect watercourses) and PPG6 (work at construction & demolition sites). Contingency plans should be drawn up to address chemical spillage, collision, etc.

<p>Hedgerow (NERC Habitat) (M, C)</p> <p>See outline mitigation plan in Appendix G for further information.</p>	<p>Approximately 25m of intact species poor hedge on the eastern boundary will be lost to create an access and visibility splay. To compensate for the loss of hedgerow, an existing gateway on the eastern boundary (approximately 10m wide) will be in-filled with native hedgerow planting.</p> <p>In addition, a new native hedge will be planted in parallel with the northern boundary hedge, with the hedge centres 3m apart. This will provide an intact hedge in addition to the defunct shared boundary hedge along the northern boundary and create a wider and more sheltered corridor / refuge for wildlife.</p> <p>The defunct sections of the western boundary hedgerow will be in-filled with native species to create an intact hedge.</p> <p>The species planted should be of native origin and include berry bearing species and nectar rich species where possible, which will help to attract insects and improve the value of the hedgerows as a foraging resource. Suggested species are hawthorn, blackthorn, dog rose and honeysuckle.</p> <p>Protection zones should be established around retained hedgerows during site works, to avoid damage and root compaction from machinery. Following these recommendations will increase the total length of hedgerow (NERC Habitat) by 25m, with a further 125m being restored. This will result in a net improvement in species diversity and connectivity for wildlife.</p>
<p>Poor Semi-Improved Grassland (C)</p>	<p>The poor semi-improved grassland that is to be lost to accommodate the scheme is of very low conservation value and therefore 'like for like' replacement is not considered necessary.</p> <p>It is proposed that plants from the 'bat friendly' planting list supplied in Appendix G should be used where possible. Although referred to as 'bat friendly', this species list is designed to enhance the habitat for invertebrates, which are of benefit to amphibians, reptiles and birds as well as bats.</p>
<p>Trees (A)</p>	<p>The standard ash and in hedge oak are to be retained. As a result no mitigation or compensation is recommended.</p>
<p><b>Protected &amp; NERC Species</b></p>	
<p>Great Crested Newts (A,M,C)</p>	<p><b>The outline mitigation proposed is subject to agreement from the relevant licensing body, in this case Natural England, and may be amended.</b> The outline mitigation plan provided is considered proportional to the level of impact and status of the habitat with regard to great crested newts.</p> <p>It will also provide the enhancements that will help LPAs meet their responsibility under the National Planning Policy to conserve, enhance and encourage biodiversity in and around developments.</p>

The outline mitigation strategy is provided in Appendix F. It is comprised of measures to exclude newts from the development area using standard methodologies i.e. fencing off the site with amphibian proof fencing and pitfall trapping.

Once newts have been excluded from the site, development works may commence. As part of the re-development, several habitat features to enhance the site for terrestrial great crested newts will be provided.

Briefly these include:

- Planting a new 40m hedgerow parallel to the existing shared northern boundary hedge at 3m between hedgerow centres
- Restoring the defunct hedge row along the western boundary and providing a 3m buffer strip of unmanaged vegetation which will extend around the pond.
- Providing 2 hibernacula suitable for amphibians.
- No gully pot and sump drainage to be used anywhere on the site.

Although the pond restoration isn't specifically being carried out to provide newt breeding habitat (as none is to be lost to development), newts may breed in the pond. The likely increase in invertebrate prey as a result of the pond restoration will be of benefit to great crested newts in any case.

**Bats**  
(A, M)

The external lighting scheme for the proposed development should avoid impacting on foraging bats wherever possible.

Illumination of the hedgerows that surround the site should be avoided, and exterior lighting should be kept to a minimum in any case.

Where external lighting is used, down lights with motion sensors are preferable.

**Nesting Birds**  
(A, M)

Removal of the hedgerow to create the site access and visibility splay should ideally be timed to avoid impact on nesting birds.

The nesting season generally runs from March to August, but is species-dependent. Autumn through to very early spring

	<p>clearance is a well-established means of preventing this impact.</p> <p>If this is not possible, further advice from an ecologist should be sought and, a pre-works inspection by a suitably competent person should be carried out to confirm likely absence of nesting birds from the area of works.</p>
Common Amphibians and Reptiles (A, M)	<p>Site staff should be made aware that all snakes, slow worms and other common reptile species are protected from deliberate killing under the Wildlife and Countryside Act 1981 (as amended).</p> <p>Any common reptiles and amphibians should be carefully moved into similar habitat or dense vegetation in the vicinity but outside of the working area. Animals should be picked up by placing the fingers under the body and lifting, not by grasping any part of them. They can be held still by placing a thumb gently on top of them, if necessary. Handling should be kept to a minimum.</p> <p>The compensatory habitat provided for great crested newts will also be of benefit to common amphibians and reptiles.</p>
Various (A, M)	<p>Avoid burning or machine removal of any potential hibernacula (compost piles, wood piles, etc.) without a thorough hand search for amphibians, reptiles and mammals.</p>
<b>Habitat Enhancement</b>	
Nest Boxes	<p>It is suggested that a single nest box be incorporated onto each new build to increase nesting opportunities for common species such as blue tit, great tit, house sparrows and starlings. Ideally, nest boxes made from woodcrete should be used as these tend to last much longer than wooden boxes.</p> <p>They should be sited with a north westerly aspect and positioned to take advantage of shelter from the elements and linkage with natural features such as the hedgerows where possible.</p> <p>Nest boxes should be sited high enough to avoid potential predators such as cats.</p>
Pond restoration	<p>It is recommended that the pond on site be restored so that it provides open water habitat.</p> <p>This will require the removal of willow scrub and silt from the pond. It is recommended that the pond be excavated to a depth of 2m, but shallower shelves and ledges should be incorporated to provide a variance in water depth.</p> <p>The pond should be allowed to colonise naturally with fauna and flora and introduction of plants and other species is not recommended.</p>

It is envisaged that the restored pond will have a surface area of approximately 80m<sup>2</sup> and incorporate a buffer of naturalised vegetation 3m wide around its banks.

Management of the pond should focus on the removal of vegetation on a 5 yearly basis in order to avoid its succession to scrub.

A significant proportion of ponds have been lost from the landscape in recent history and the restoration of the pond on the site will result in a net biodiversity gain for the development.

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# Appendix A: Site Plan(s)

Figure A.1: Location Plan

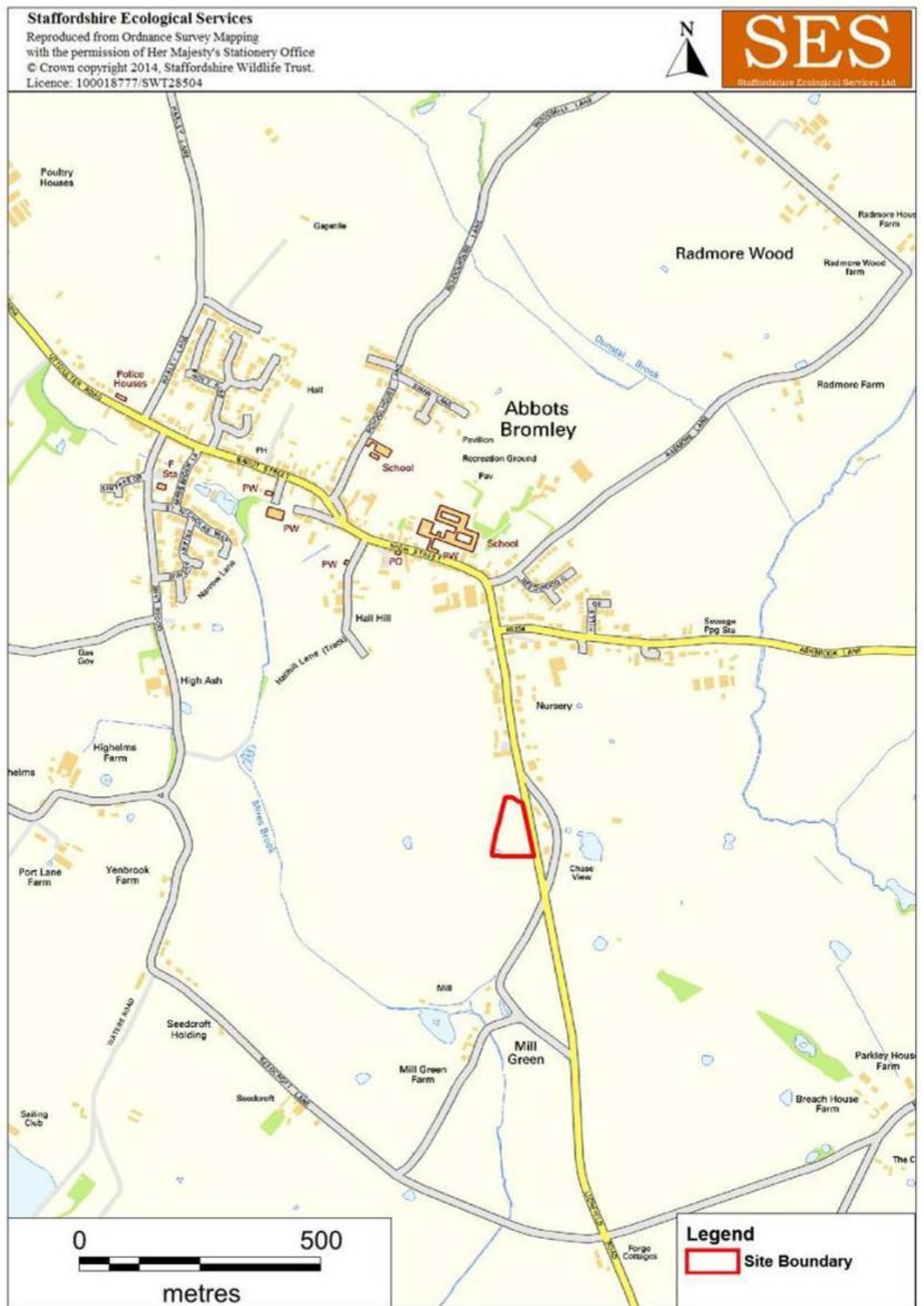
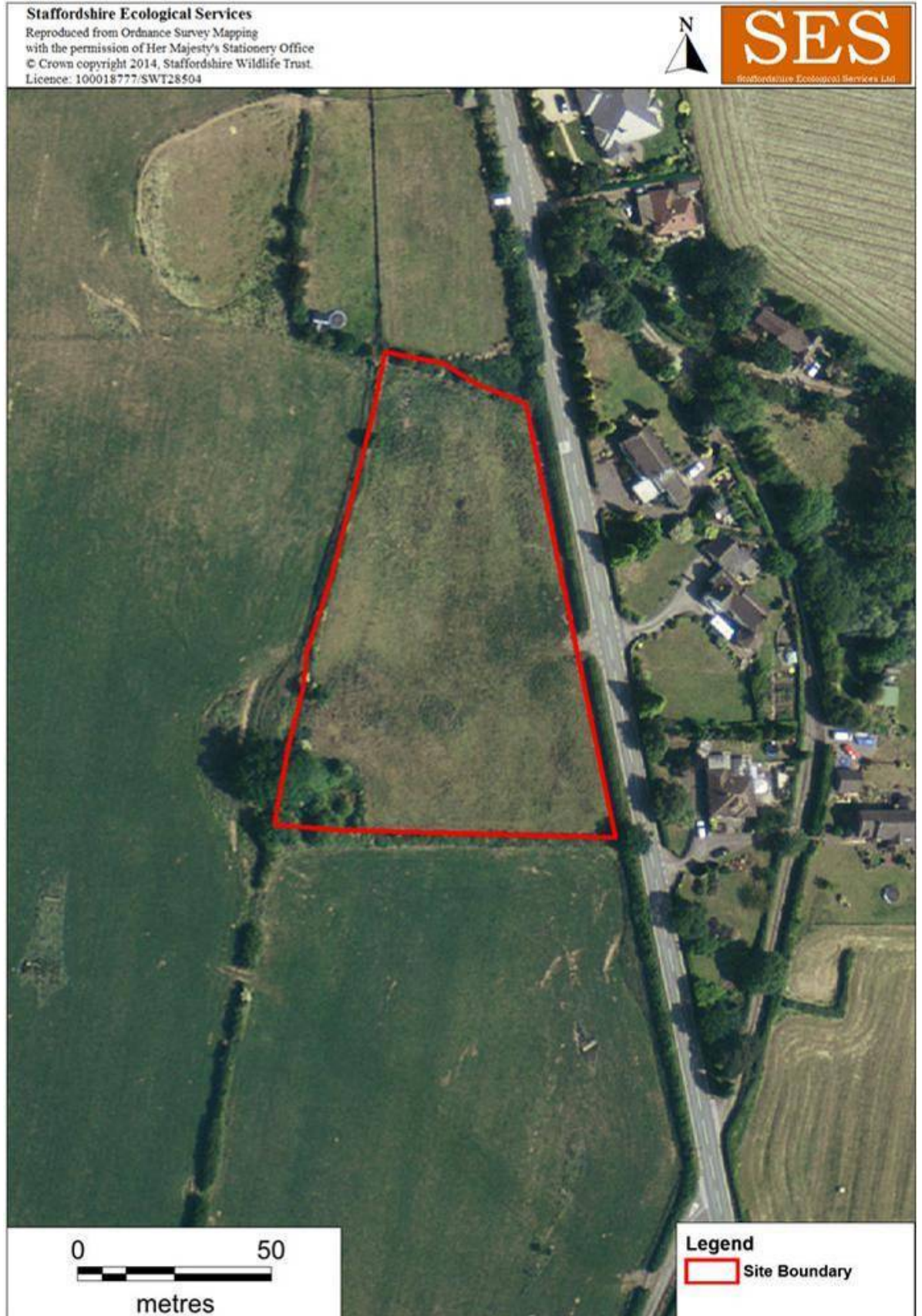


Figure A.2: Proposal Plan



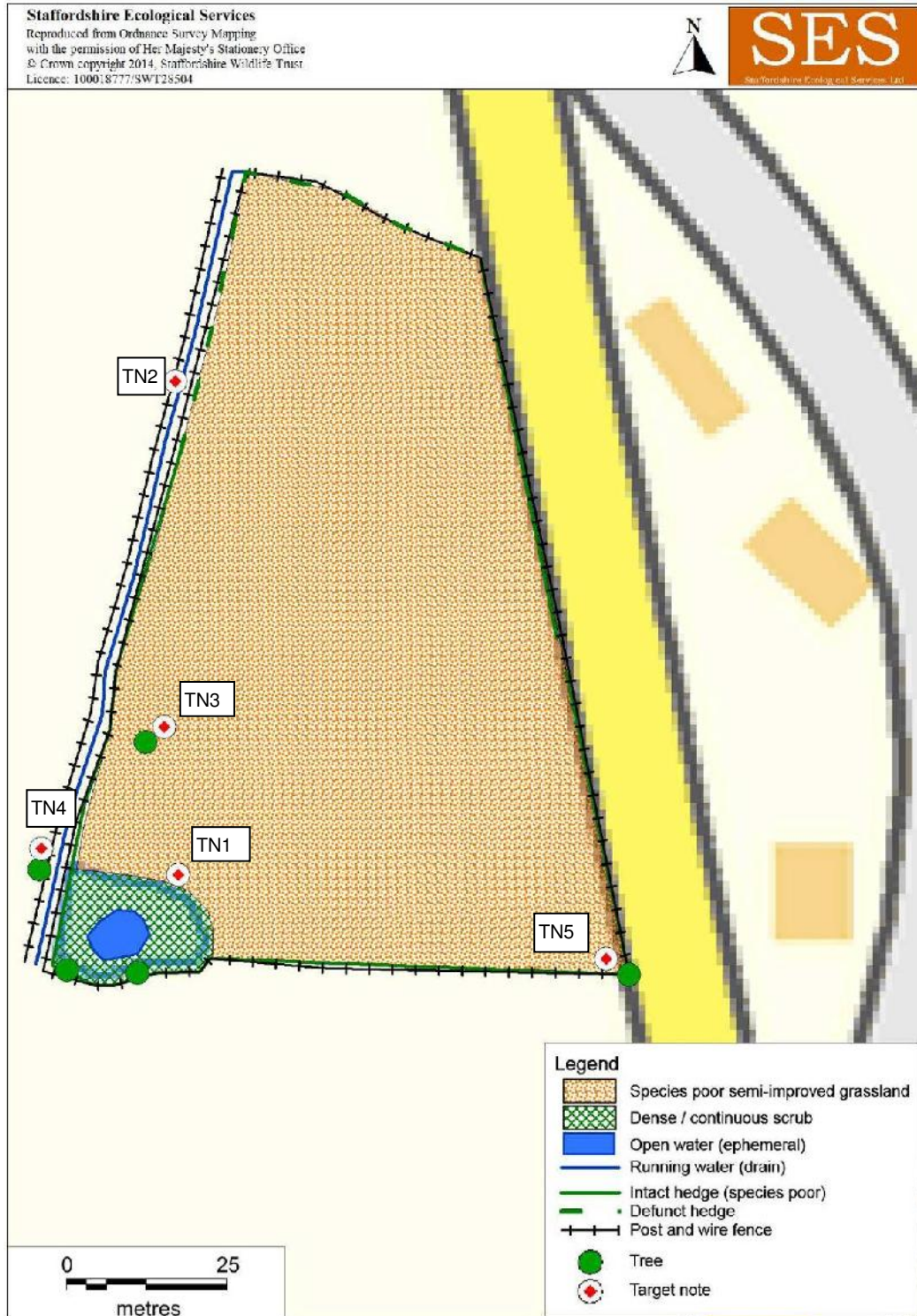


Figure A.3: Site Boundary



# Appendix B: Phase 1 Plan & Target Notes

Figure B.1: Extended Phase 1 Habitat Survey Plan



Target Notes:	
TN1: Tall herb / ruderal vegetation around pond	TN2: Wet Ditch
TN3: Stunted mature ash tree	TN4: Mature oak tree off site, bat potential
TN5 – In hedge mature oak – low bat potential	

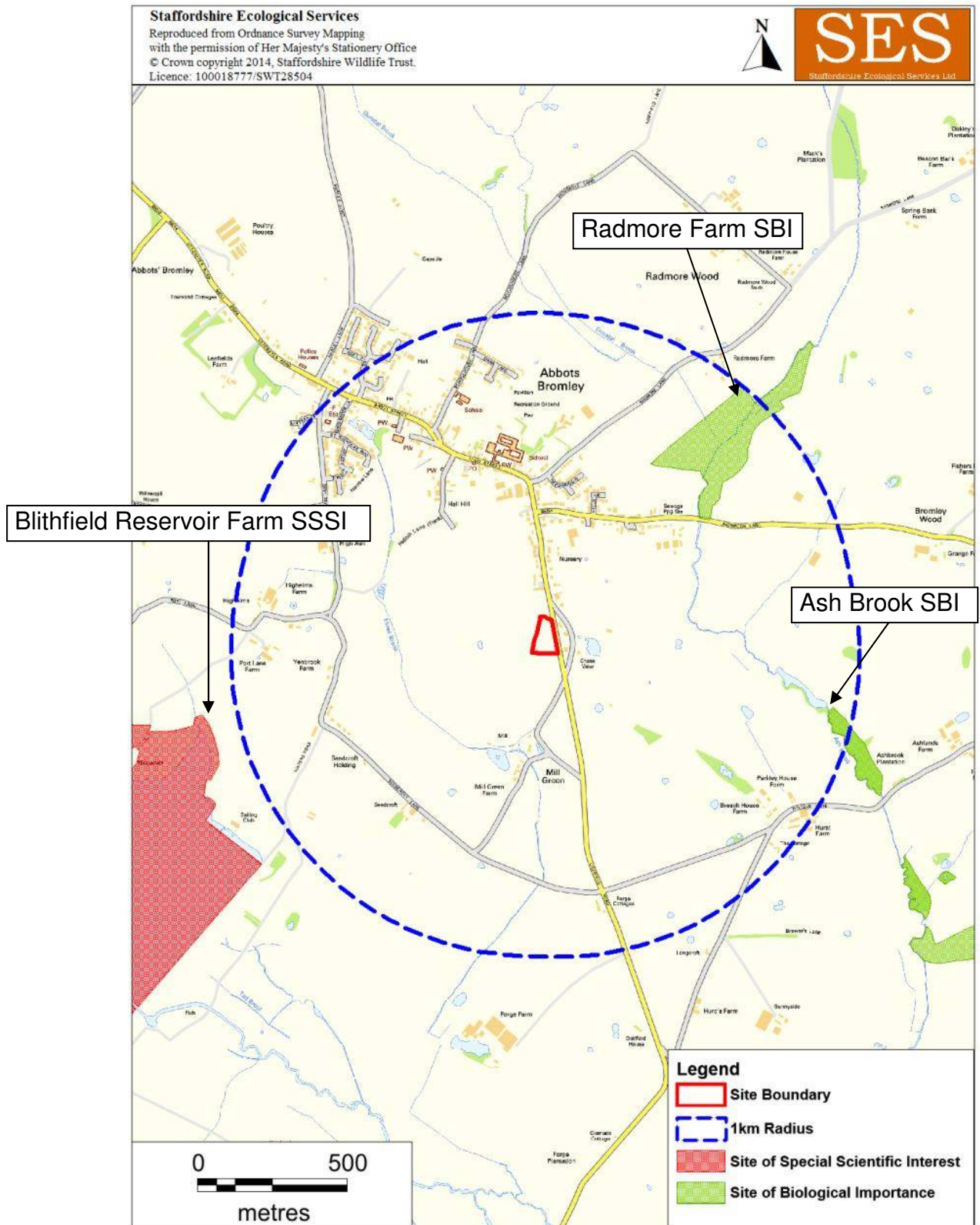


# Appendix C: Results of Desk Study

*Table C.1: Protected Species Records within 1km of site*

Protected Species Common Name	Scientific name	Year	Distance	Record Type
Great Crested Newt	Triturus cristatus	2007	496.652	1 Count Adult Female & Adult Male
Great Crested Newt	Triturus cristatus	2008	496.652	1 Count Adult Female & Adult Male
Barn Owl	Tyto alba	1998	1402.88	Field Observation
Barn Owl	Tyto alba	2008	1145.91	2 Count
Common Quail	Coturnix coturnix	2011	603.302	1 Count
Common Quail	Coturnix coturnix	2011	603.302	1 Count
Common Quail	Coturnix coturnix	2011	603.302	2 Count
Common Quail	Coturnix coturnix	2011	603.302	2 Count
Fieldfare	Turdus pilaris	2003	603.302	100 Count
Fieldfare	Turdus pilaris	2003	603.302	1000 Count
Fieldfare	Turdus pilaris	1990	603.302	300 Count
Fieldfare	Turdus pilaris	2003	603.302	50 Count
Fieldfare	Turdus pilaris	2005	603.302	20 Count
Fieldfare	Turdus pilaris	2003	603.302	50 Count
Fieldfare	Turdus pilaris	2003	603.302	150 Count
Firecrest	Regulus ignicapilla	1990	603.302	1 Count
Green Sandpiper	Tringa ochropus	2003	603.302	1 Count
Greylag Goose	Anser anser	2006	1004.65	Field Observation
Little Egret	Egretta garzetta	2009	603.302	1 Count
Little Egret	Egretta garzetta	2009	603.302	1 Count
Osprey	Pandion haliaetus	2013	603.302	1 Count
Red Kite	Milvus milvus	2011	603.302	1 Count
Redwing	Turdus iliacus	2003	1676.58	3 Count
Redwing	Turdus iliacus	2008	603.302	50 Count
Wood Lark	Lullula arborea	1905	603.302	1 Count
a bat	Chiroptera	2007	963.073	Droppings
a bat	Chiroptera	1988	603.302	1 Count of in flight
Myotis Bat species	Myotis	2010	713.939	Anabat
Myotis Bat species	Myotis	2010	713.939	Anabat
Myotis Bat species	Myotis	2010	713.939	Anabat
Pipistrelle	Pipistrellus pipistrellus sens. lat.	2010	747.945	1 Count
Pipistrelle	Pipistrellus pipistrellus sens. lat.	2010	713.939	Anabat
Pipistrelle	Pipistrellus pipistrellus sens. lat.	2010	713.939	Anabat
Pipistrelle	Pipistrellus pipistrellus sens. lat.	2010	713.939	Anabat
Pipistrelle	Pipistrellus pipistrellus sens. lat.	1989	660.618	1 Count of roosting
Pipistrelle	Pipistrellus pipistrellus sens. lat.	1988	891.513	1 Count of roosting; 20 Count of colony
Soprano Pipistrelle	Pipistrellus pygmaeus	2010	713.939	Anabat
Soprano Pipistrelle	Pipistrellus pygmaeus	2010	713.939	Anabat
Soprano Pipistrelle	Pipistrellus pygmaeus	2010	713.939	Anabat
Polecat	Mustela putorius	2005	1228.98	1 Count of Adult, RTA

Figure C.1: Designated Sites Plan



## Appendix D: Photographs

*Plate D.1: Survey site – species poor semi-improved grassland*



*Plate D.2: Southern boundary hedgerow (intact)*





*Plate D.3: Southern boundary hedgerow and pond to south west corner*



*Plate D.4: Eastern boundary hedgerow (intact)*





*Plate D.5: Northern boundary hedgerow (defunct)*





*Plate D.6: Western boundary hedgerow (defunct)*





*Plate D.7: Drainage ditch with tall ruderal vegetation*



*Plate D.8: Mammal pathways through boundary hedges*



*Plate D.9: On-site stunted ash tree*





*Plate D.10: Off-site oak tree, bat roost potential*





*Plate D.11: Pond 1 (on site)*



*Plate D.12 :Pond 2, no longer holds water, marshy grassland*

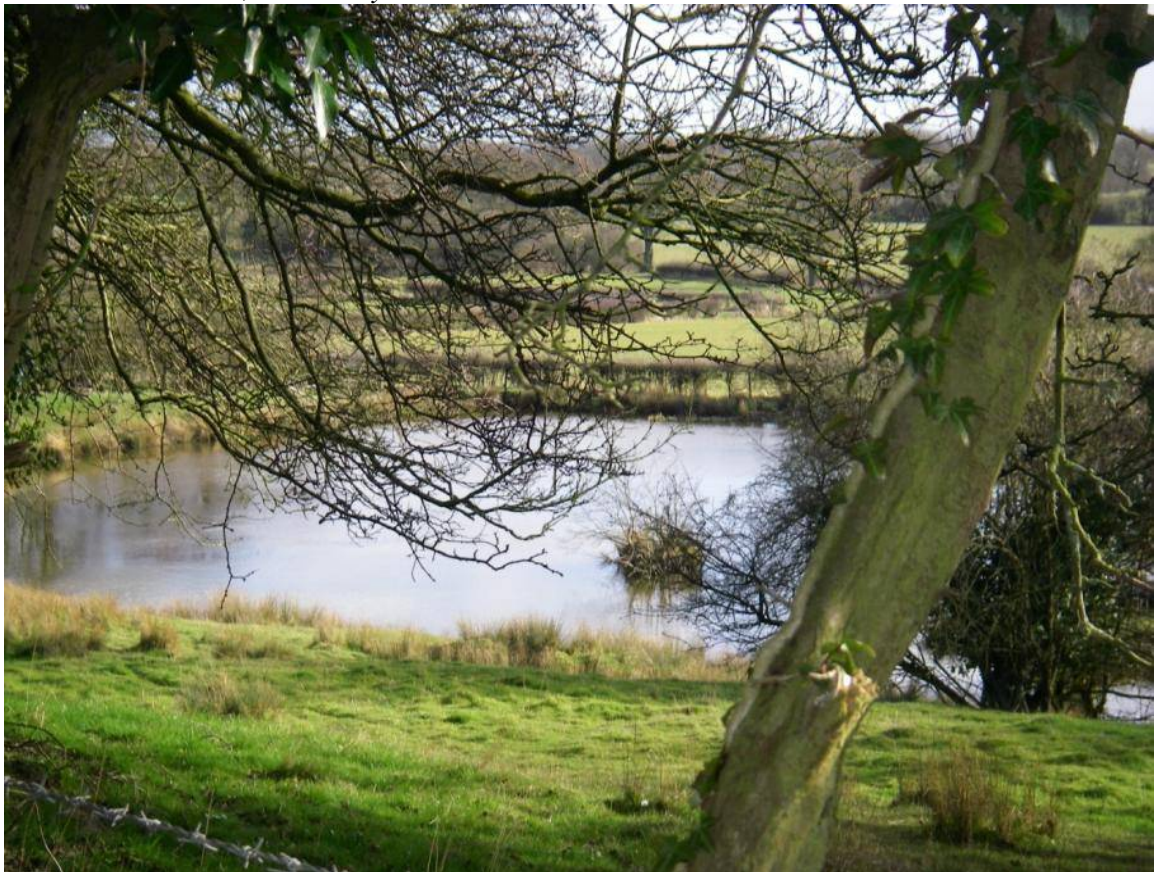




*Plate D.13: Pond 3, excellent HSI score*



*Plate D.14: Pond 4, not surveyed*





*Plate D.14: Pond 5, choked with vegetation*



*Plate D.15: Pond 6, completely shaded by scrub*





*Plate D.16: Pond 7, no longer exists*



*Plate D.17: Pond 8, heavily vegetated by scrub, mostly very shallow*





*Plate D.18: 2 x Great crested newts caught in bottle trap in Pond 3 on survey visit 2*



# Appendix E: Great Crested Newt HSI Calculation

Table E.1: Great Crested Newt HSI calculation Ponds 1 - 4

HSI Indices	Pond 1		Pond 2		Pond 3		Pond 4	
	Attribute	Score	Attribute	Score	Attribute	Score	Attribute	Score
Notes	Pond On Site		No longer present		Field pond surrounded by scrub		Results from previous 2013 survey	
SI1 - Geographic location	A	1			A	1	A	1
SI2 – Pond area to nearest 50m <sup>2</sup> (m <sup>2</sup> )	50	0.1			350	0.7	2350	0.8
SI3 - Pond drying (frequency)	Annually	0.1			Never	0.9	Never	0.9
SI4 – Water quality	Poor	0.33			Moderate	0.67	Moderate	0.67
SI5 – Pond shading (%)	100%	0.2			50%	1	0%	1
SI6 – Water Fowl	Absent	1			Minor	0.67	Minor	0.67
SI7 - Fish	Absent	1			Possible	0.67	Major	0.01
SI8 – Pond density	35	1			35	1	13	1
SI9 – Surrounding terrestrial habitat	Good	1			Good	1	Poor	0.33
SI10 – Macrophyte (aquatic plant) density(%)	0%	0.3			60%	0.9	70%	1
<b>HSI SCORE</b>	0.42625				0.837878		0.50443	
<b>CATEGORY</b>	Poor		N/A		Excellent		Below Average	

Table E.2: Great Crested Newt HSI calculation Ponds 5 - 8

HSI Indices	Pond 5		Pond 6		Pond 7		Pond 8	
	Attribute	Score	Attribute	Score	Attribute	Score	Attribute	Score
	No open water, choked by vegetation		Totally shaded by scrub		No longer present		Lots of slurry run off, poor water quality	
SI1 - Geographic location	A	1	A	1			A	1
SI2 – Pond area to nearest 50m <sup>2</sup> (m <sup>2</sup> )	100	0.2	50	0.1			500	1
SI3 - Pond drying (frequency)	Annually	0.1	Sometimes	0.5			Sometimes	0.5
SI4 – Water quality	Moderate	0.67	Poor	0.33			Poor	0.33
SI5 – Pond shading (%)	100%	0.2	100%	0.2			100%	0.2
SI6 – Water Fowl	Absent	1	Absent	1			Absent	1
SI7 - Fish	Absent	1	Absent	1			Absent	1
SI8 – Pond density	35	1	35	1			35	1
SI9 – Surrounding terrestrial habitat	Good	1	Good	1			Moderate	0.67
SI10 – Macrophyte (aquatic plant) density(%)	100%	0.8	0%	0.3			0%	0.3
<b>HSI SCORE</b>	0.540907		0.500684				0.605579	
<b>CATEGORY</b>	Below Average		Below Average		N/A		Average	

# Appendix F: Outline Mitigation Strategy

**The following mitigation strategy is an outline only and is subject to approval by the licensing authority, in this case Natural England.**

## Habitat creation

Figure G.1 shows the location and extent of the following habitat creation / enhancement with regard to Great Crested Newts. A larger version of the proposal map which includes the habitat enhancements is supplied on a separate PDF:

- Retain tall herb / ruderal bank side vegetation around retained and restored pond and extend it by inclusion of additional 3m buffer strip of similar vegetation allowed to generate spontaneously.
- Increase hedgerow connectivity and terrestrial habitat quality and extent along western boundary by restoring the 125m defunct western boundary hedgerow. In addition, a 3m buffer strip of tall ruderal vegetation and rank grass will be created to provide an increase in good quality terrestrial habitat. Buffer strip to be created by leaving the area un-mown.
- Increase in hedgerow connectivity and terrestrial habitat quality by planting a new 40m hedgerow in parallel with shared northern boundary hedgerow at a 3m spacing between hedgerow centres.
- Creation of two 2m x 2m hibernacula suitable for great crested newts in the north-west and south-west corners of the site. See Figure G.2 for further details.
- No gullypots, drains with sumps or any other drainage systems which may trap and / or kill amphibians are to be used on the site.

## Capture, exclusion and translocation

- Trapping of terrestrial newts from the site to be undertaken between February and June. This is to be completed prior to the commencement of development works.
- Trapping to be completed by erecting amphibian proof fencing around the site and installing 'drift' fencing close to terrestrial habitat features such as the tall ruderal habitat surrounding the pond. Pitfall traps will be installed along the fencing. As a guide, approximately 56 pitfall traps will be required (based upon 80 traps per hectare for medium population).
- The guidelines state that the traps should be operated for a period of 60 days for a medium population. However, this period is subject to confirmation under the terms of the license and may be extended or reduced. Pitfall traps will be augmented by the used of artificial refugia (carpet tiles). Any newts captured will be translocated to scrub / rank grass terrestrial habitat off site to the west.

- Pitfall traps will be spaced at 10m centres along the boundary and drift fencing. Carpet tiles will also be placed at 10m centres.

### **Post development habitat management**

- On a 3 yearly rotation, remove scrub encroachment from buffer strips by cutting back saplings in late autumn through to early spring. To coincide with 3 yearly hedgerow management.
- Any maintenance to the pond on site (suggested vegetation removal every 5 years) should take place between October – January in order to avoid potential disturbance or harm to aquatic great crested newts.

### **Work Schedule**

#### *February – April: Install amphibian proof fencing and drift fencing*

Install amphibian proof boundary fence and drift fencing under supervision of licensed ecologist.

#### *April – June: Capture, exclusion and translocation*

Once fencing installed, carry out capture and exclusion of GCN for a period of 30 days. Trapping period will require 5 days clear from newt capture at the end. If this is not the case, the trapping period will have to be extended until 5 days clear is achieved. Any captured newts are to be translocated to hedgerow / scrub / rank grassland habitat that surrounds the pond of origin 150 m to the west. This will be subject to the agreement of the land owner, as it is outside the client's ownership. If the agreement of the landowner cannot be secured, there is an option to bring the boundary newt fence inside the application site so that it runs along the inner edge of the western buffer strip. Any newts caught may then be translocated into the buffer strip, which is within the client's ownership.

#### *June onwards: Commencement of development works*

Internal drift fencing to be removed. Site induction to be completed by ecologist, then development works can commence.

#### *Completion of development*

Development to be completed in accordance with time scales as agreed under the terms of the license (yet to be confirmed). Completion of development to include provision of all habitat creation specified (subject to approval by Natural England).

Once development is complete, amphibian proof boundary fence to be removed.



Figure G.1: Enhancement proposals to terrestrial habitat

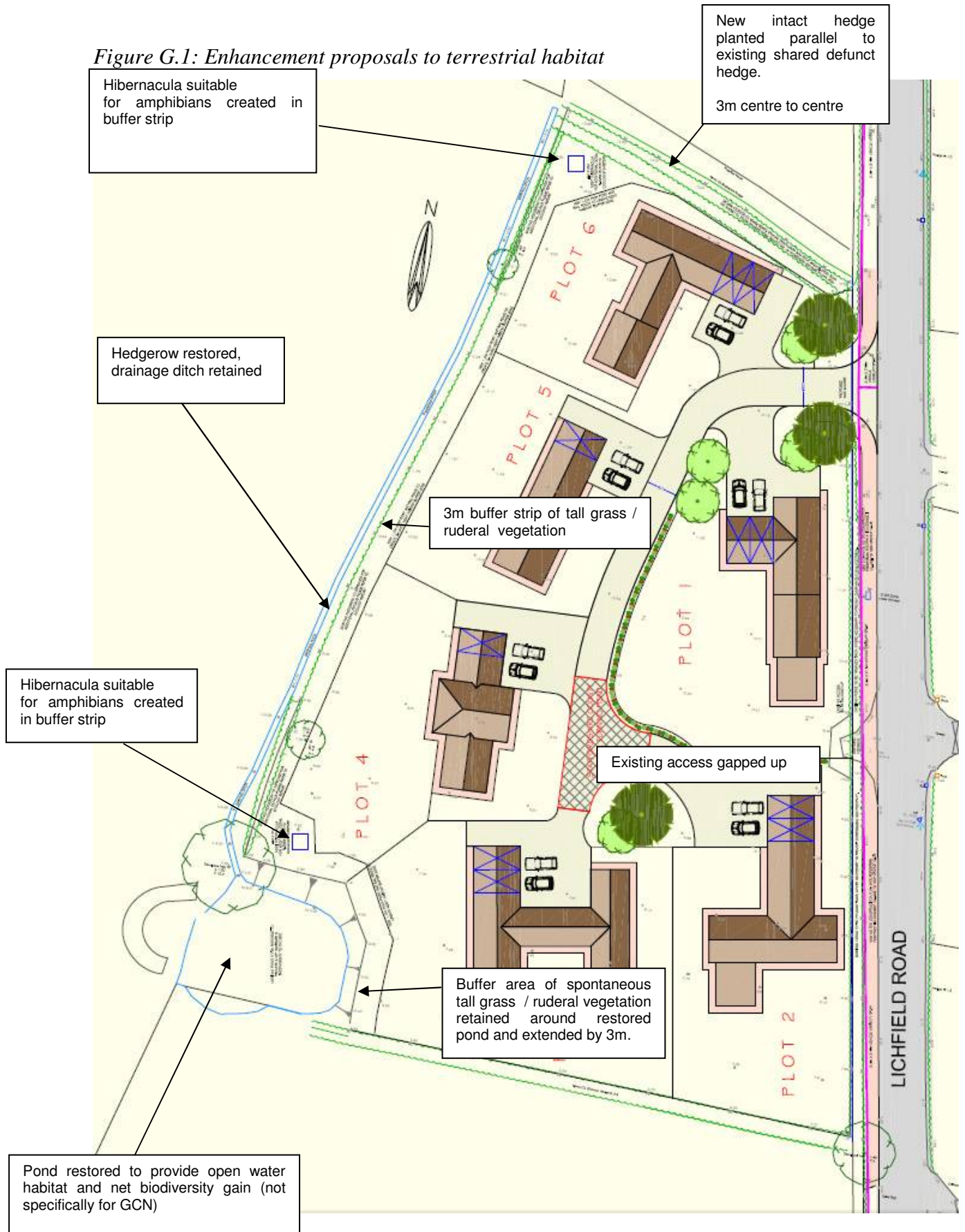




Figure G.2: Enhancement proposals to terrestrial habitat

**Figure 3: Suggested hibernaculum design**

This design mimics artificial and natural conditions in which great crested newts have frequently been found over-wintering. Dimensions should not be below 2m length x 1m width x 1m height. The illustrated design would be suitable for locating on an impermeable substrate. On free-draining substrates, the design is largely similar but the bulk of the fill is sited in an excavated depression in the ground. Hibernacula should ideally be positioned across a site, both close to and distant from breeding ponds, always in suitable terrestrial habitat and above the flood-line.

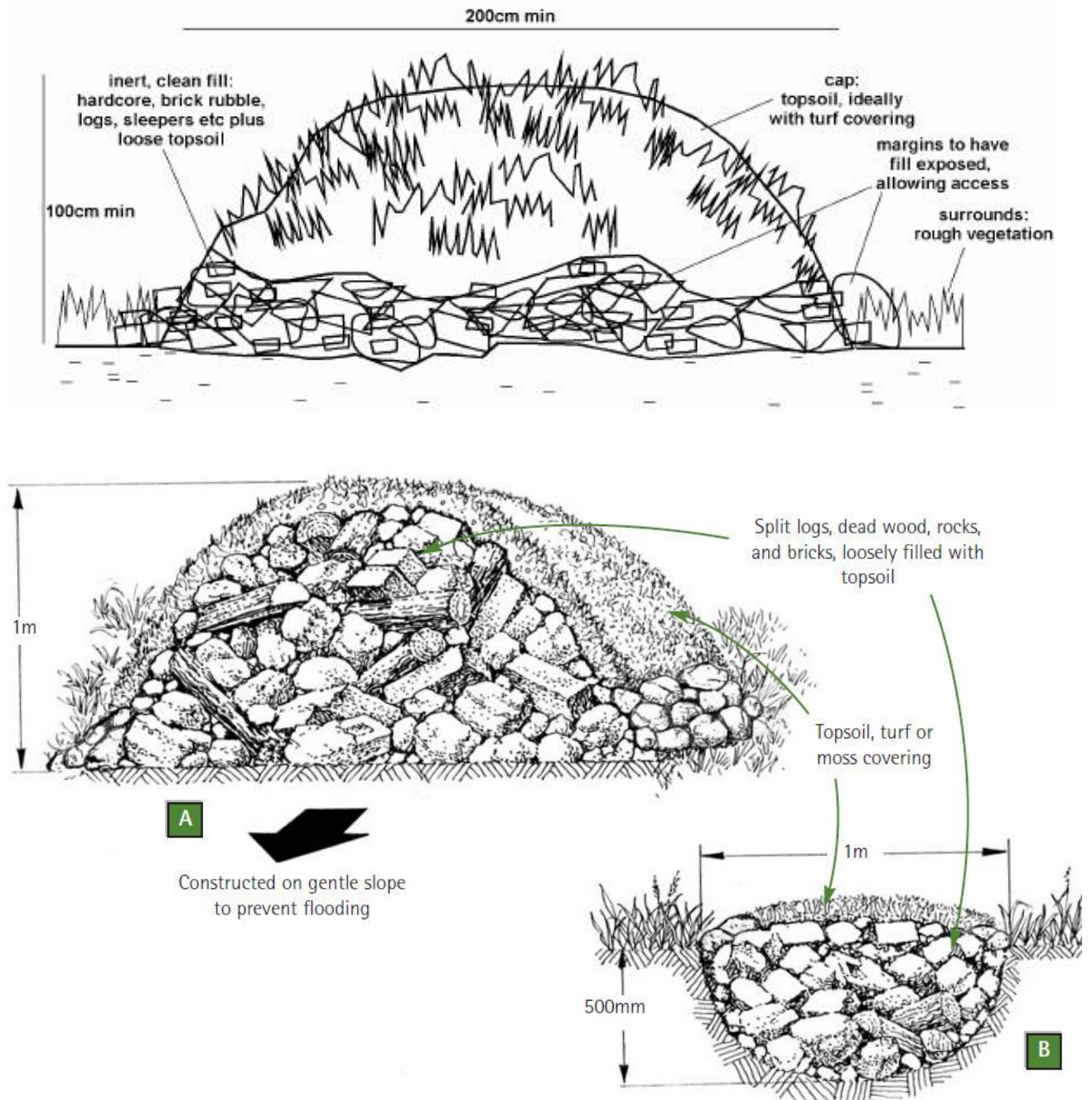


Figure G.3: Location of pitfall traps and drift fencing

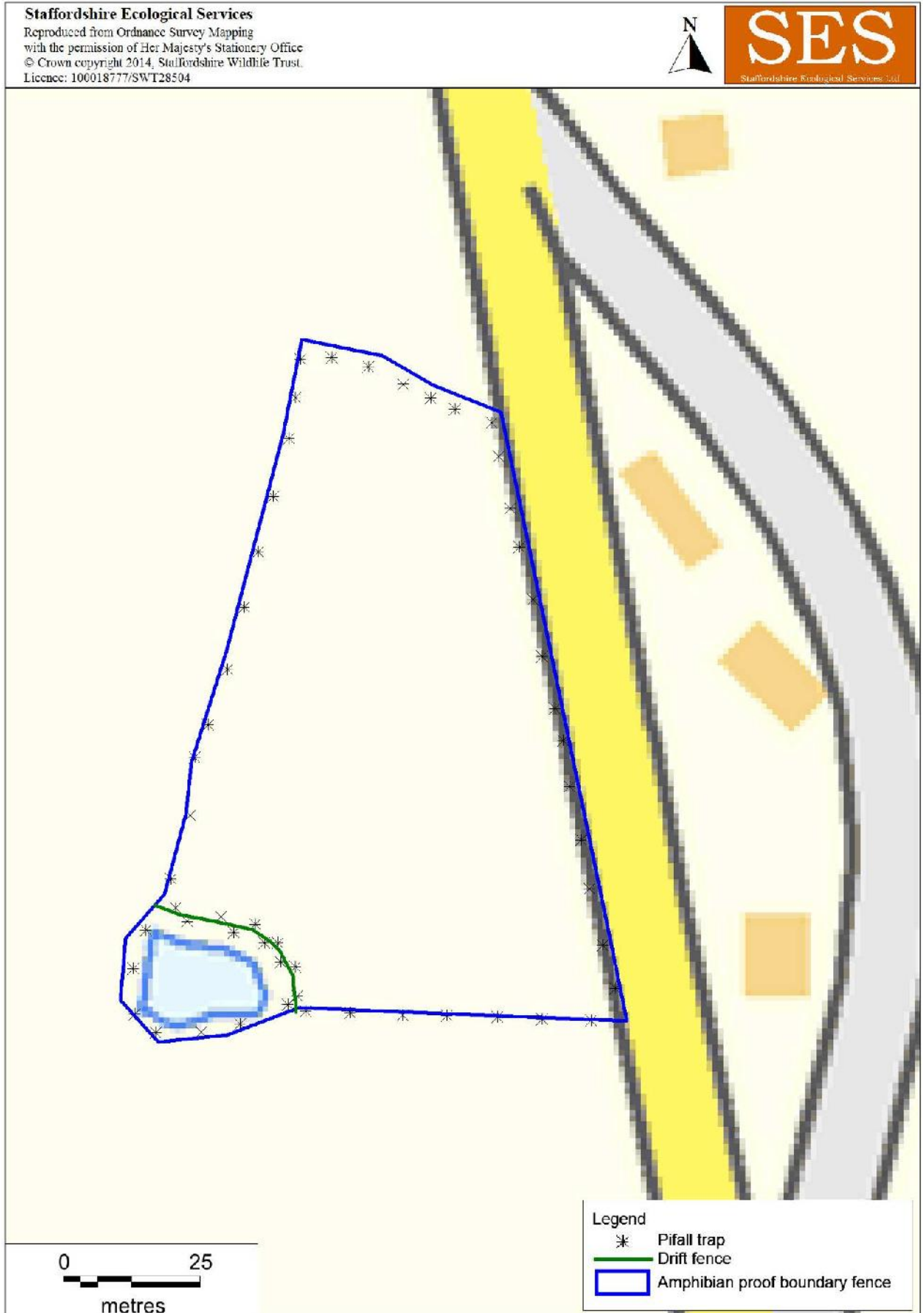
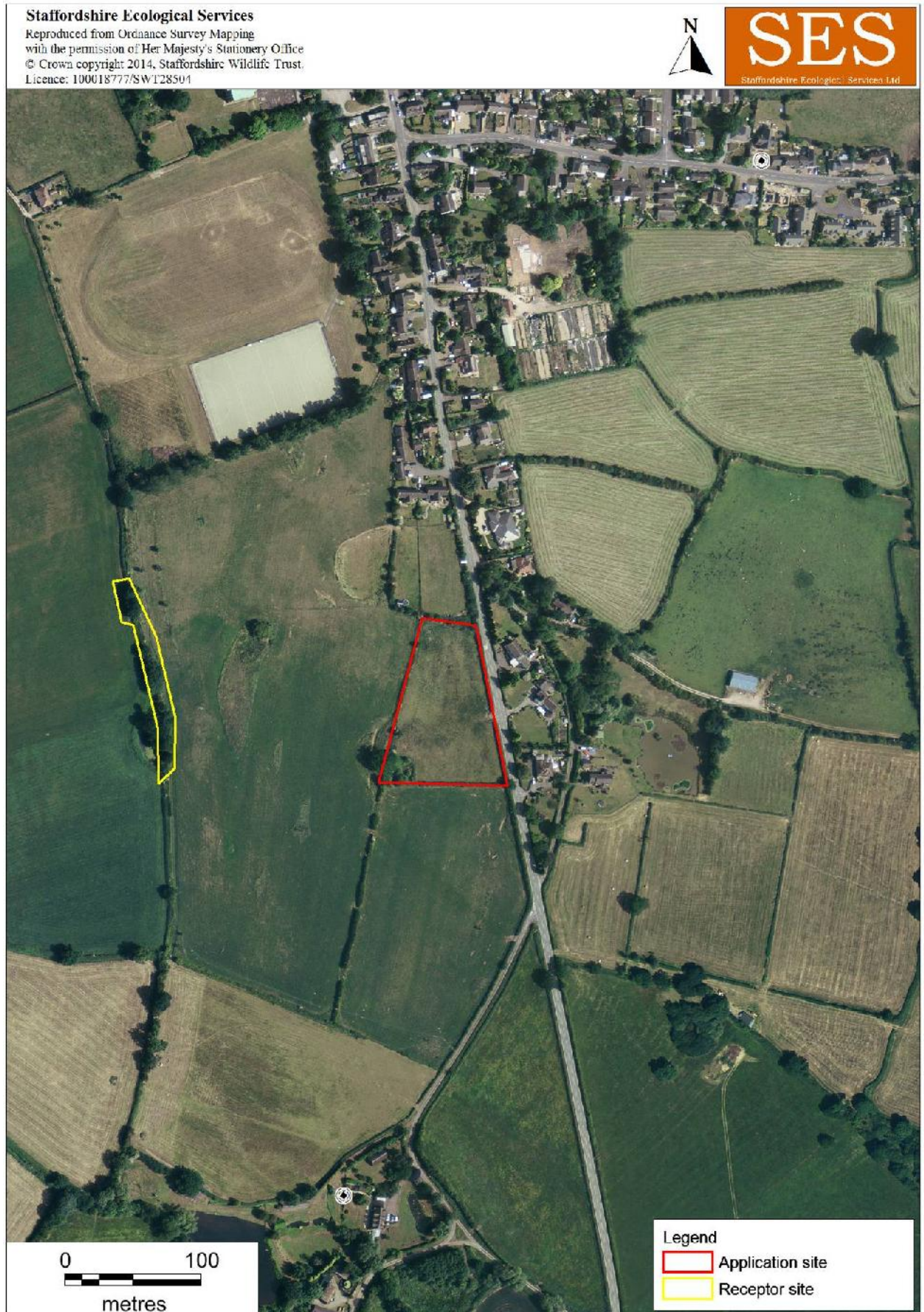




Figure G.4: Proposed receptor site in relation to application site



# Appendix G: Wildlife Friendly Planting

## Bat Friendly planting

List of species taken from the Bat Conservation Trust Leaflet: “*Encouraging Bats. A Guide for Bat Friendly Gardening and Living*” (BCT, Unknown)

*Plants marked \* are hybrids or exotics that may be useful in the garden*

### Flowers For Borders

*Aubretia (spring to early summer)	*Michaelmas daisy (summer to autumn)
Bluebell (spring)	*Night-scented stock (summer)
*Candytuft (summer to autumn)	Ox-eye daisy (summer)
*Cherry pie (summer to autumn)	*Phacelia (summer to autumn)
Corncockle	*Poached egg plant (summer)
Cornflower	Primrose (spring)
Corn marigold	Red campion (spring)
Corn poppy	*Red valerian (summer to autumn)
*Echinacea	Scabious (summer)
*Evening primrose (summer to autumn)	St John's wort (spring)
Field poppies (summer)	*Sweet William (summer)
*Honesty (spring)	*Tobacco plant
*Ice plant 'Pink lady' (early autumn)	*Verbena (summer to autumn)
Knapweed (summer to autumn)	*Wallflowers (spring to early summer)
Mallow (summer to autumn)	Wood forget-me-not (spring)
*Mexican aster (summer to autumn)	Yarrow (early summer)

### Herbs

Angelica	Hyssop (summer to early autumn)
Bergamot (summer to early autumn)	Lavenders
Borage (spring to early autumn)	Lemon balm
Coriander (summer)	Marjoram (summer)
Fennel (summer to early autumn)	Rosemary (spring)
Feverfew (summer to autumn)	Sweet Cicely (spring to early summer)
English marigolds	Thyme (summer)

### Trees, shrubs and climbers

*Bramble (climber)	Hazel (suitable for coppicing)
Buddleia (shrub)	Honeysuckle (native honeysuckle)
Common alder (suitable for coppicing)	Hornbeam
Dog rose (climber)	Ivy (climber)
Elder (small)	*Jasmine (night-scented)
English oak (large gardens only)	Pussy willow (suitable for coppicing)
Gorse (shrub)	Rowan
Guelder rose (shrub)	Silver birch
Hawthorn (suitable for coppicing)	

### Wild flowers for pond edges and marshy areas

Bog bean	Marsh marigold (spring)
Bugle	Marsh woundwort
Creeping Jenny (spring to summer)	Meadowsweet (summer to early autumn)
Flag iris	Purple loosestrife (summer)
Hemp agrimony (summer)	Water avens
Lady's smock (spring to summer)	Water forget-me-not (summer to autumn)
Marsh mallow	Water mint (summer to autumn)