Ecological Consultants
Environmental and Rural Chartered Surveyors

Ecological Appraisal

Land at Hoyland

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PROFESSIONAL RESPONSIBILITY

This report has been commissioned and the actions of the surveyor have been made in accordance with the Code of Professional Conduct for the Chartered Institute of Ecology and Environmental Management. (www.cieem.org.uk) and the Royal Institution of Chartered Surveyors (www.rics.org.uk)

ACCURACY OF REPORT

This report has been compiled based on the methodology as detailed and the professional experience of the surveyor. Whilst the report reflects the situation found as accurately as possible, all of the protected species this survey covers are wild and can move freely from site to site. Their presence or absence detailed in this report does not entirely preclude the possibility of a different past, current or future use of the site surveyed.

We would ask all clients acting upon the contents of this report to show due diligence when undertaking work on their site and/or in their interaction with protected species. If protected species are found during a work programme, and continuing the work programme could result in their disturbance, injury or death, either directly or indirectly an offence may be committed.
If in doubt, stop work and seek further professional advice.

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1. EXECUTIVE SUMMARY

1.1.1 Envirotech NW Ltd were commissioned in June 2016 by Kilmartin Plowman Partners to carry out an Ecological Appraisal of land at Hoyland. It is proposed that the site is to be redeveloped.

1.1.2 A data search and desk study of the site and an area within 2km of the site were undertaken to establish the presence of protected species and notable habitats.

1.1.3 The site was initially visited on the 30th June 2016 and a water sample collected from a nearby pond for eDNA analysis. This was returned negative for great crested newts.

1.1.4 The site was then visited by two licenced ecologists from Envirotech NW Ltd on the 21st July 2016 and 10th August 2016. A full botanical survey of the site was initially undertaken and this was followed by surveys to establish the presence or absence of bats, amphibians, nesting birds, brown hares and badgers at the site or in proximity such that they may be affected by the proposed development.

1.1.5 An extended area of survey was undertaken, referred to hereafter as the "wider site" to ensure that impacts of development on the "development site" could be related to the local area.

1.1.6 The plant species assemblages recorded over the wider site and development site are all common in the local area and of considered of low ecological value. Domestic gardens and/or sympathetically landscaped open space is considered to offer habitat of equal or greater ecological value.

1.1.7 All but one of the hedgerows around the wider site perimeter were not considered important under the Hedgerow Regulations (1997). The important hedgerow is not impacted by the proposed development. A single hedge to the boundary of the development site is species rich but recently planted.

1.1.8 Low numbers of common bat species were recorded foraging over the wider site. No bats were recorded roosting on or near the wider site. It is proposed that some roosting provision for bats will however be incorporated into the proposed development.

1.1.9 Birds are likely to utilise scrub, hedges and woodland across the wider site for nesting between March and September. Any vegetation clearance on the development site boundary should therefore be undertaken outside of this period.

1.1.10 No other notable or protected species were recorded on the wider site.

2. INTRODUCTION

2.1 Background

2.1.1 In June 2016 Envirotech NW Ltd were commissioned by Kilmartin Plowman Partners to carry out an Ecological Appraisal of land at Hoyland, central grid reference SE 36006 00777 (Figure 1). A field investigation was undertaken and a report compiled which includes recommendations for any future actions and or mitigation required.

2.1.2 The survey was requested in connection with construction of residential units.

Figure 1 *Site location at SE 36006 00777 circled red.*

2.2 Objectives

2.2.1 The main objectives of the study were:

- The completion of a Phase 1 Habitat Survey including the preparation of a vegetation and habitat map of the site and the immediate surrounding area.
- The survey and assessment of all habitats for statutorily protected species.
- An evaluation of the ecological significance of the site.
- The identification of any potential development constraints and the specification of the scope of mitigation and enhancement required in accordance with wildlife legislation, planning policy and other relevant guidance, and;
- The identification of any further surveys or precautionary assessments that may be required prior to the commencement of any development activities.

3. METHODOLOGY AND SOURCES OF INFORMATION

3.1 Data Search

3.1.1 Sheffield Biological Records Centre "SBRC", the Envirotech dataset, and the Multi-Agency Geographic Information for the Countryside (MAGIC) were searched to establish the presence of any records of statutorily protected, notable or rare species, and any designated sites of international, national, regional or local importance within a 2km radius of the site boundary.

3.1.2 The Envirotech dataset is compiled from extensive field surveys from the period 2004-present, as well as records obtained from third parties during this time.

3.1.3 Google Earth and Google Street View were consulted to establish the presence of any features of ecological importance within the local area.

3.2 Vegetation and Habitats

3.2.1 A vegetation and habitat map was produced for the development and wider site and. The mapping is based on the Joint Nature Conservation Committee Phase 1 Habitat Survey methodology (JNCC 2010)

3.2.2 Searches were made for uncommon, rare and statutorily protected plant species, those species listed as protected in the Wildlife and Countryside Act (1981) and indicators of important and uncommon plant communities. All plant nomenclature follows Stace (1991).

3.2.3 Searches were carried out for the presence of invasive species, including those listed on Schedule 9 of the Wildlife and Countryside Act (1981), namely Japanese knotweed (*Fallopia japonica*), Himalayan balsam (*Impatiens glandulifera*) and giant hogweed (*Heracleum mantegazzianum*) on terrestrial habitat and aquatic species such as floating pennywort (*Hydrocotyle ranunculoides*), water Hyacinth (*Eichhornia crassipes*) and New Zealand pygmyweed (*Crassula helmsii*).

3.2.4 The survey was also informed by questioning the landowner/ agent to ascertain the recent history of the site.

3.3 Timing and Personnel

3.3.1 The development and wider site was visited on the 30th June, 21st July 2016 and 10th August 2016.

3.3.2 During the visit, weather conditions were suitable for the survey types undertaken being warm and dry in mid autumn.

- (GB) Mr Grant Bramall BSc (Hons), MSc
  Natural England Bat Class Licence (Level 1)
  Natural England Great Crested Newt Licence (Level 1)

- (MT) Mr Matthew Thomas BSc (Hons), Grad CIEEM
  Natural England Bat Class Licence (Level 2)
  Natural England Barn Owl Licence
  Natural England Great Crested Newt Licence (Level 1)

- (JS) Mr Jack Sykes BSc (Hons), MCIEEM
  Natural England Bat Class Licence (Level 2)
  Natural England Barn Owl Licence
  Natural England Great Crested Newt Licence (Level 1)

- (AG) Mr Andrew Gardner BSc (Hons), MSc, MCIEEM, MRICS, CEnv
  Natural England Bat Class Licence (Level 2)
  Natural England Barn Owl Licence
  Natural England Great Crested Newt Licence (Level 1)

4. SPECIES SURVEY METHODOLOGY

4.1 Amphibian

4.1.1 Great crested newts (*Triturus cristatus*) are listed on Annexes II and IV of the EC Habitats Directive and Appendix II of the Bern Convention. It is protected under Schedule 2 of the Conservation (Natural Habitats) Regulations (2010) and Schedule 5 of the Wildlife & Countryside Act (1981).

4.1.2 The great crested newt baseline survey involved a pond screening assessment to determine the presence and suitability of ponds located within the study area using a Habitat Suitability Index.

4.1.3 Water-bodies located within or adjacent to the study area were identified and where access was possible were assessed for their potential to support great crested newts. The criteria used in the assessment are based on those contained in the Herpetofauna Workers Manual and Oldham et al, 2000, and in applying these criteria a precautionary approach was adopted. The pond assessment was undertaken in order to determine which water-bodies, based on their potential to support great crested newts, should be subject to presence/absence surveys.

4.1.4 Following the criteria developed by Oldham et al (2000), the HSI tool developed for use with great crested newts and forming part of Natural England's EPS Licensing process was used to determine the suitability of ponds for great crested newts. The HSI was developed as a tool to aid fieldworkers to give ponds and their surrounding habitat a numerical score in terms of their suitability for great crested newts.

4.1.5 A pond occurs 490m outside of the site boundary to the West. This pond was accessed on the 30th June 2016 and water samples sent off for eDNA analysis. With unseasonably cool temperatures during May 2016, Natural England stated that the survey season (15 April and 30 June) would be extended into early July for 2016. Both the pond and slow flowing stream feeding it from within the site boundary were sampled.

4.2 Badger

4.2.1 Badgers (*Meles meles*) and their setts are protected under the Protection of Badgers Act (1992). This legislation arises from animal welfare issues (rather than on the basis of nature conservation grounds) and protects badgers from being killed, injured or disturbed whilst occupying a sett. The main issue on proposed development sites tends to be the potential disturbance of badgers in their setts as a result of construction operations. Natural England recommends that the use of heavy machinery in proximity of a sett entrance should be avoided, with a 'disturbance free-zone' being established. The degree of disturbance attributed to construction activity is a function of the background level of activity badgers are accustomed to and that which will be attributed to a proposed activity. The "disturbance free zone" is therefore site specific.

4.2.2 The survey for badgers comprised an assessment of all suitable habitat within and outside the study area boundary (where this was possible) for indications of use by badgers.

4.2.3 Signs of badgers which were searched for included:

- Setts - 'D' shaped entrances at least 25cms wide and wider than they are high with large spoil mounds
- Discarded bedding at sett entrances (this includes grass and leaves)
- Scratching posts on shrubs and trees close to a sett entrance
- The presence of badger hairs which are coarse, up to 100mm long with a long black section and a white tip
- Dung pit latrines and footprints
- Habitual runs through vegetation and beneath fences
- Hedgehog carcases
- Surveys were also undertaken at night, during the bat surveys, by scanning the study area with a torch.

4.3 Bats

4.3.1 All British bat species are fully protected under Schedule 5 of the Wildlife and Countryside Act (1981), and are included on Schedule 2 of the Conservation (of Natural Habitats) Regulations (2010), as European Protected Species. Taken together, these pieces of legislation make it an offence to:

- Intentionally or recklessly kill, injure or capture bats;
- Deliberately or recklessly disturb bats (whether in a roost or not);
- Damage, destroy or obstruct access to bat roosts.

4.3.2 The Bat Conservation Trust (Hundt (2012)) and Collins, J. (ed) (2016) issued guidelines on bat survey methodology, a key feature of their recommendation is for the undertaking of a pre-survey assessment – an initial desk-study and a walkover assessment of the survey area and its surrounding area to identify the relative value of the habitats present for bats and likely commuting routes. This is to be followed by a survey program that is appropriate to the likely level of bat activity within the survey area to be determined by and based on the experience of the surveyor.

4.3.3 The potential value of the survey area for foraging bats was assessed through consideration of two main factors: professional knowledge of bat ecology and foraging behaviour in combination with the geographical location, topography and habitats present within the survey area and surrounds. This resulted in the production of a map showing habitat quality both on and adjacent to the site.

4.3.4 The survey area has species rich hedgerows within it and linear routes on its boundary. The main site however comprises an area which is open, exposed and structurally poor, it has a very low potential for use by bats.

4.3.5 As a result of the potential suitability of the hedgerows within the site and along its boundaries for foraging bats two bat activity surveys were deemed necessary. The surveys were based upon standard guidelines Hundt (2012), Collins, J. (ed) (2016) and NCC (1987) and Mitchell-Jones (2004) and were undertaken in suitable weather conditions by suitably qualified and experienced personnel.

4.3.6 Transects of the site were conducted across routes which took into account all the habitats on site.

4.3.7 Trees on and within the site boundary were assessed in accordance with Collins, J. (ed) (2016).

4.3.8 All buildings within the site boundary were subject to two bat emergence surveys. A separate bat report detailing the findings has been produced.

4.3.9 Two Anabat detectors were left on the site in hedgerows between the 21st July 2016 and 29th July 2016.

4.4 Birds

4.4.1 All breeding birds, other than pest species, are protected under the Wildlife and Countryside Act of 1981 when building a nest, rearing young or sitting on eggs. Some bird species, such as barn owl (*Tyto alba*), are protected when near an active nest site. Several birds are listed as UK and or County BAP species.

4.4.2 The poor quality habitat suggested a low potential for breeding bird species of interest.

4.4.3 Bird species and behaviour was noted during the other field surveys. All areas are covered equally, in order to avoid the subjective survey of better quality 'bird habitat'. All birds displaying breeding behaviour were recorded.

4.5 Brown Hare

4.5.1 The brown hare (*Lepus europaeus*) is a UK BAP species.

4.5.2 The survey method involved walking boundaries and surveying with binoculars. The survey was conducted at a suitable distance to ensure that the hares were not disturbed. Generally, surveys were undertaken throughout the early afternoon and evening when hares are thought to be most active and feeding.

4.5.3 There present the number of brown hares in each field or hedgerow was recorded, together with the nature and use of the field, climatic conditions and time of day. The presence of forms and faeces where present were also recorded.

4.6 Invertebrates

4.6.1 A general assessment was made of the study area's suitability for supporting invertebrates during the phase 1 survey. The study area's lack of habitat diversity, species-poor composition and uniformity of vegetation structure (i.e., lack of variation in height and microtopography) resulted in our belief that a low diversity of invertebrates would be likely to occur across the site.

4.6.2 The presence of invertebrates was noted during the other surveys which were undertaken. The extent of sampling was limited in that it could be confirmed that no priority or BAP species would be likely to be affected by the proposal.

4.7 Reptiles

4.7.1 All native reptiles are protected in Britain under the Wildlife and Countryside Act of 1981. It is an offence to intentionally kill, injure, sell or advertise to sell any of the six native species.

4.7.2 The survey for these species was based on assessing the habitat type and suitability of the site. This comprised an assessment of satellite imagery for the site and surrounding area as well as comparison of the results from the records searches with habitat types. The general habitat at the site was evaluated in terms of its suitability to reptiles for foraging or breeding.

4.7.3 Reptile surveys comprising visual encounter surveys were undertaken. Habitat at the site was not considered sufficiently suitable for a full presence/absence survey to be warranted.

4.8 Survey limitations

4.8.1 No significant survey limitations were encountered.

4.8.2 One anabat failed to record, likely due to livestock interference with the recorder.

5. RESULTS

5.1 Data Search

5.1.1 SBRC and Envirotech hold no records of protected or notable species for the wider site. There are however records of protected or notable species within 2km. These are discussed in the relevant sections below.

5.1.2 The nearest non-statutory site is 1km to the North-east of the site being Short Wood and Hay Green (Figure 3).

5.1.3 The nearest statutory protected site is Stairfoot Brickworks SSSI, SAC 4.5km to the North-east (Figure 4).

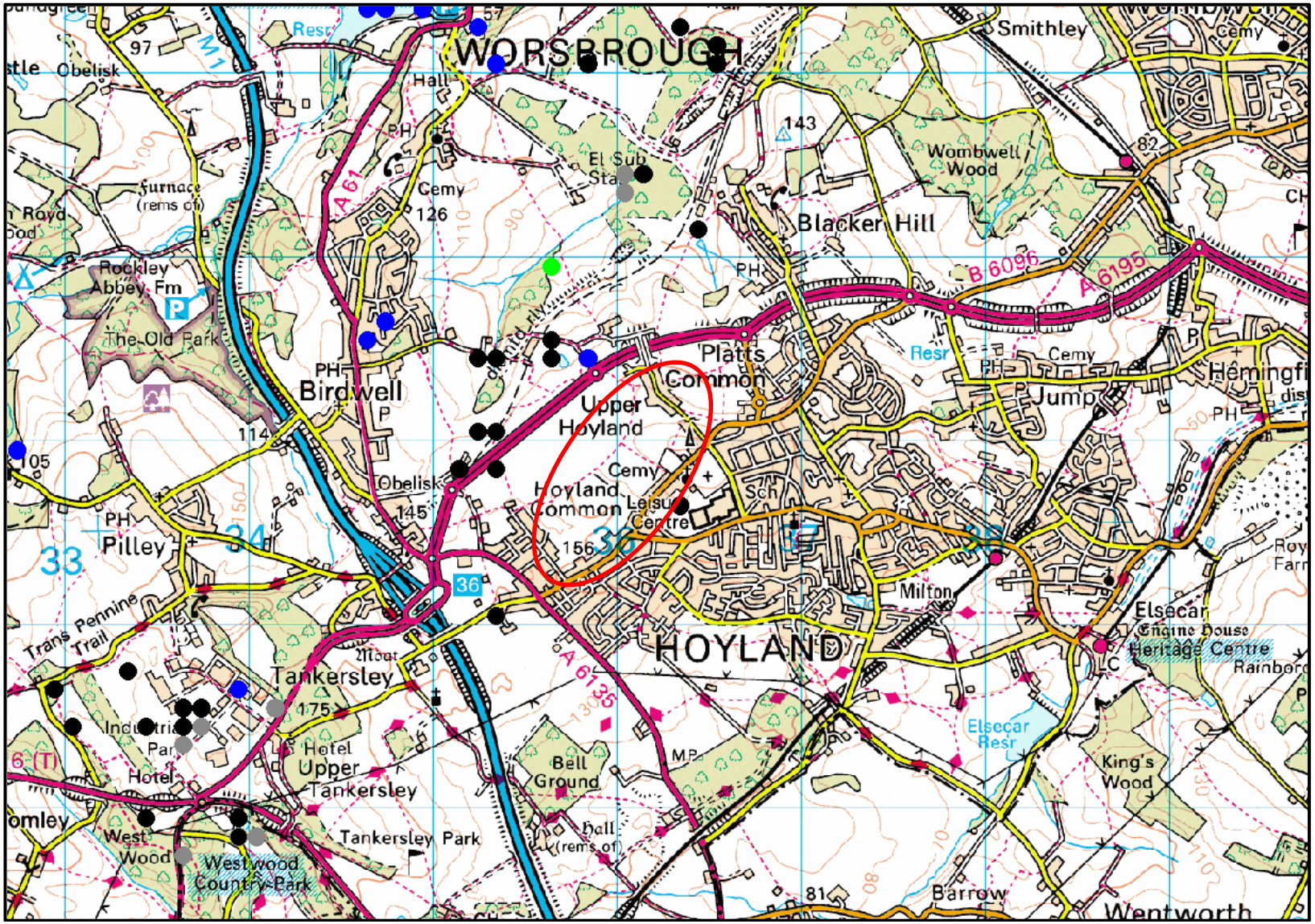


Figure 2a *Notable species records where blue indicates bats, green indicates badge, black indicates amphibians and grey indicates reptiles. The site location is circled red.*

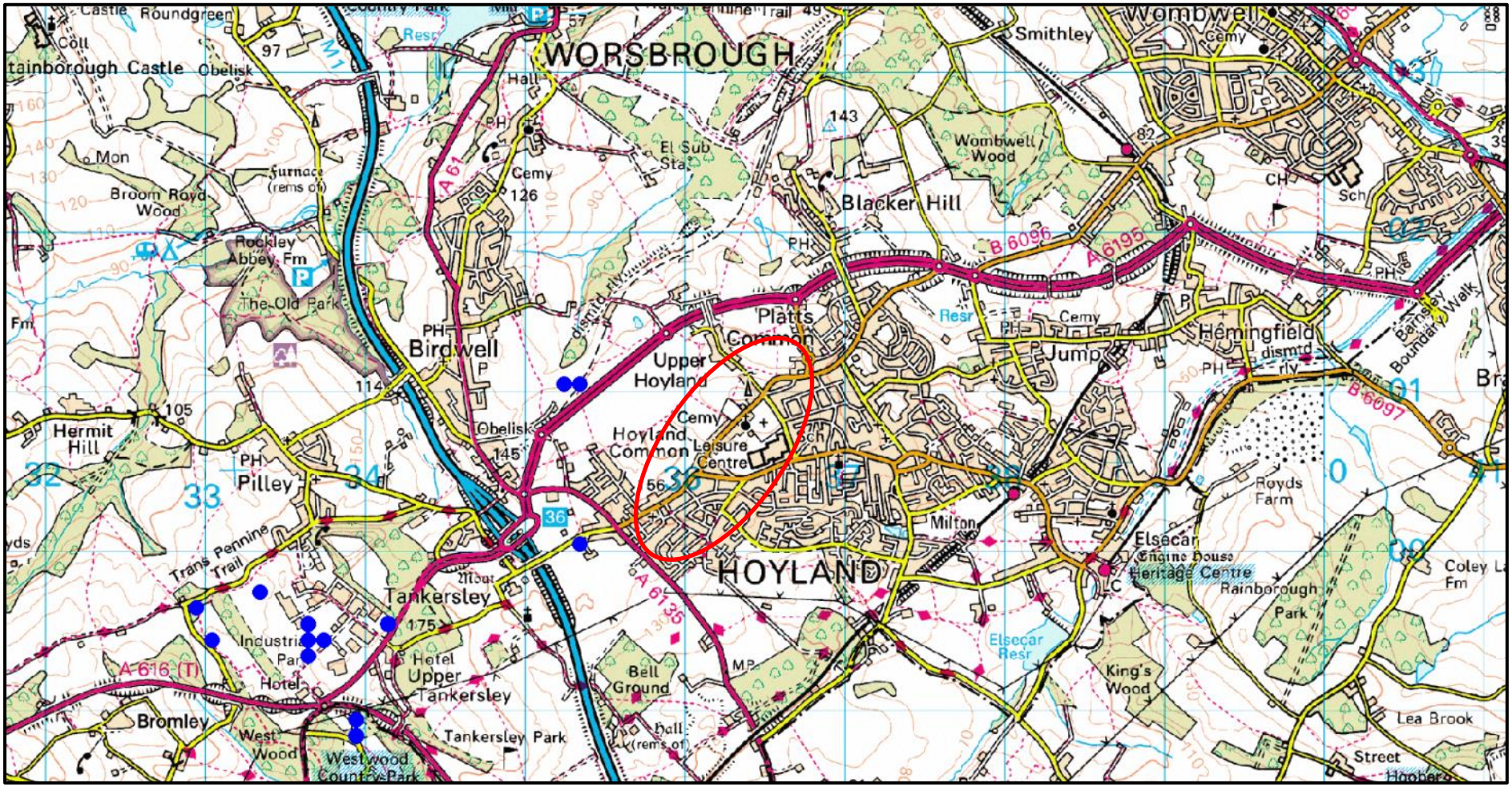


Figure 2b *Great crested newt records. The site location is circled red.*

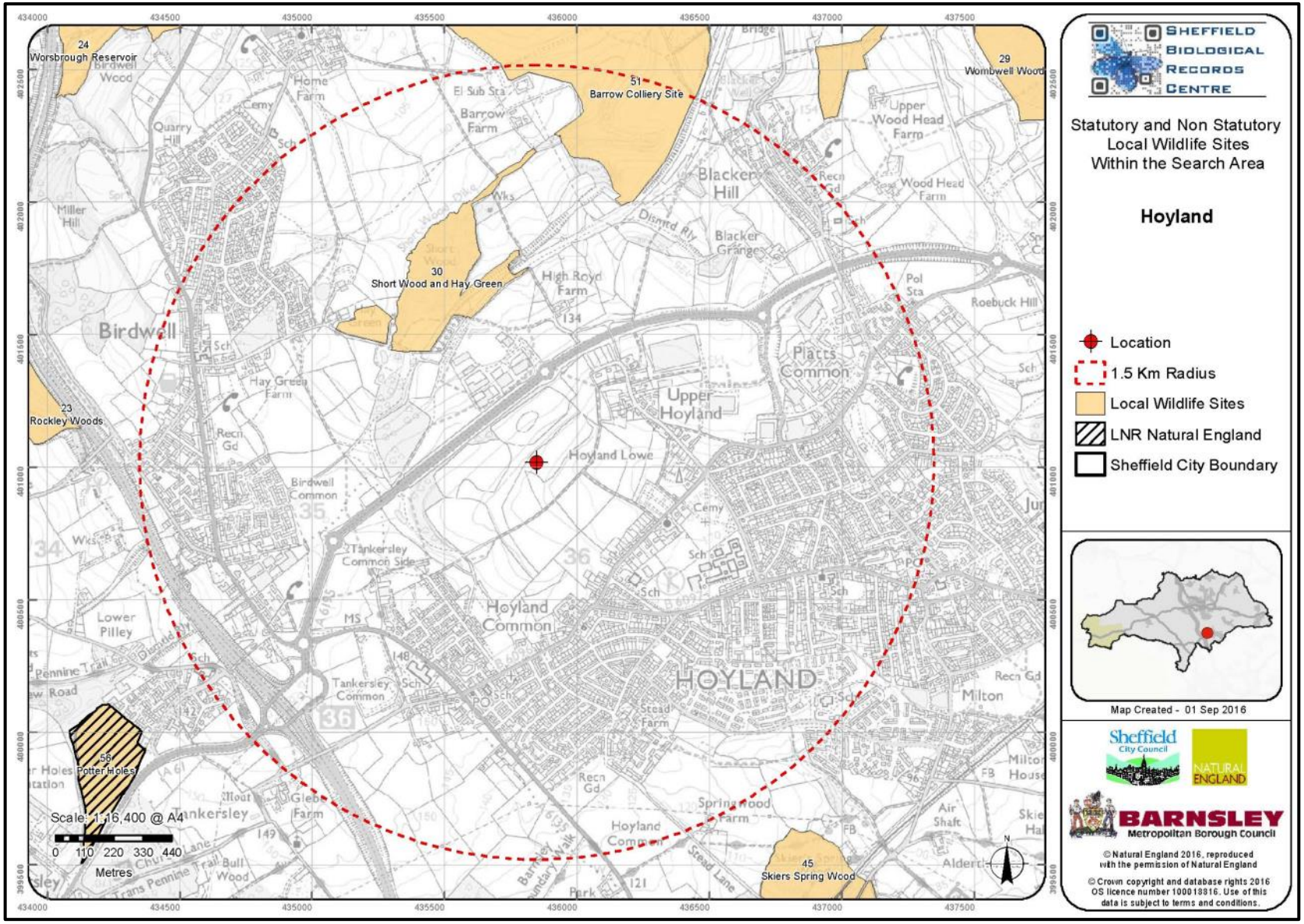


Figure 3 *Non-statutory sites 2km buffer*.

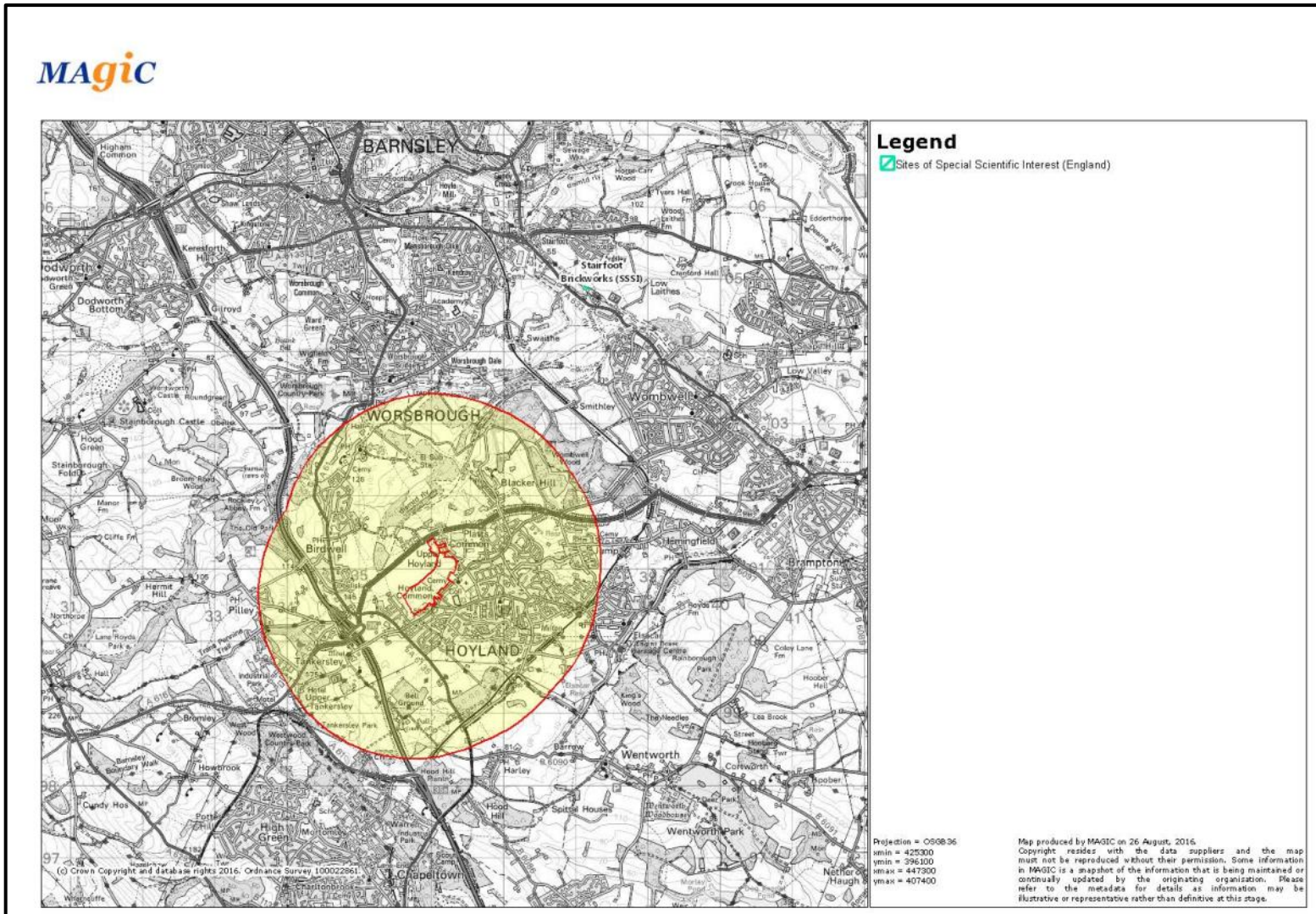


Figure 4 *Statutory designated sites 2km buffer.*

6. PHASE 1 SURVEY RESULTS

6.1 Habitat Results

6.1.1 The wider site comprises poor semi-improved grassland and improved grassland fields bounded by fences and hedges of recent planting. There are also areas of young broadleaf plantation woodland on the wider site. Included within the wider site is a farmyard consisting of buildings surrounded by bare ground.

6.1.2 The development site comprises an open area of improved pasture with fences and a single recently planted hedge to its boundary.

6.1.3 See Figure 5 for the Phase 1 Habitat Plan and Table 1 for the descriptive Botanical and Faunal Target Notes, hereafter referred to as BTN and FTN.

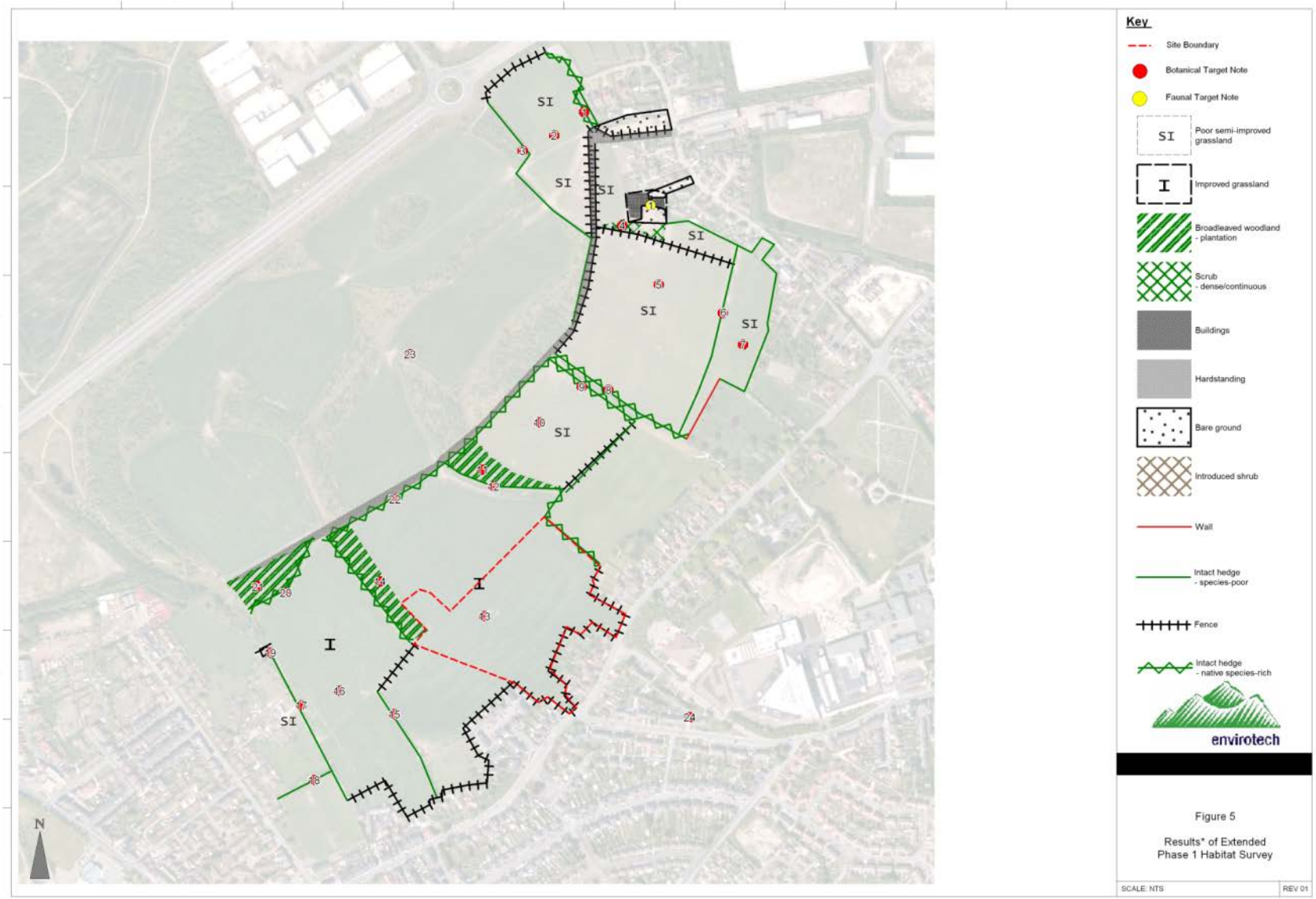
6.1.4 Hedges with more than 5 woody species present have been classified as species rich. JNCC (2010) do not define what threshold of species diversity a hedge must be to be classified species rich rather than species poor.

Target Note	Description	Comment
BTN1	Intact hedge – species rich	A young dense hedge of ash (*Fraxinus excelsior*), Elder (*Sambucus nigra*), Hawthorn (*Crataegus monogyna*), Hazel (*Corylus avelana*), Field maple (*Acer campestre*), English oak (*Quercus robur*), and dog rose (*Rosa canina*). The base of the hedge within the site boundary is overgrazed and only cirsium thistle (*Cirsium arvense*) and bramble (*Rubus fruticosus* agg.)
BTN2	Poor semi-improved grassland	A large open and very shortly grazed poor semi improved grassland field with large areas of bare ground where cattle have congregated. Perennial ryegrass (*Lolium perenne*) and crested dogs-tail (*Cynosurus cristatus*) are frequent however common bent (*Agrostis capillaris*), cocksfoot (*Dactylis glomerata*) and Timothy-grass (*Phleum pratense*) are also present. Broad leaved dock (*Rumex obtusifolius*), dandelion (*Taraxacum officianale*) and white clover (*Trifolium repens*) are also occasionally present.
BTN3	Intact hedge – species poor	A young dense hedge of ash, Elder, Hawthorn, Field maple (*Acer campestre*) and dog rose (*Rosa canina*).
BTN4	Scrub – dense/continuous	An area of dense scrub with hawthorn, elder, dog rose, bramble, nettle (Urtica dioica), rosebay willowherb (*Chamerion angustifolium*) partially covered with bindweed (*Convolvulus* sp.).
BTN5	Poor semi-improved grassland	An overgrazed poor semi-improved grassland field with species such as perennial ryegrass, crested dogs-tail, common bent and greater plantain (*Plantago major*) evident, whilst chickweed (*Stellaria media*) and ragwort (*Jacobaea vulgaris*) dominate large areas. Mugwort (*Artemisia vulgaris*), ragwort and nettle grow in a line under an electric fence separating off a small area to the North of the field.
BTN6	Intact hedge – species poor	A young, intact hedge of blackthorn (*Prunus spinosa*), elder, hawthorn and holly (*Ilex aquifolium*).

BTN7	Poor semi-improved grassland	An overgrazed poor semi improved grassland field of perennial ryegrass, common bent, annual meadow grass (*Poa annua*), white clover and greater plantain. Cirsium thistle, ragwort, nettle and broad leaved dock are frequent, occasionally forming dense stands across the site.
BTN8	Intact hedge – species rich	A tall hedge lining a footpath to the South-west. Species include elder, hawthorn, hazel, maple, oak and dog rose. Bramble and foxglove (*Digitalis purpurea*) occasionally protrude from the hedge.
BTN9	Intact hedge – species rich	A tall hedge lining a footpath to the North-east. Species include elder, hawthorn, holly, maple and dog rose.
BTN10	Poor semi-improved grassland	An overgrazed poor semi-improved grassland field with perennial ryegrass, crested dogs tail, greater plantain, broad leaved dock and white clover. Large areas of the field were bare ground at the time of the survey due to the presence of livestock.
BTN11	Broadleaf Woodland - Plantation	Young and dense strip of plantation woodland with a mix of silver birch (*Betula pendula*), goat willow (*Salix caprea*), hornbeam (*Carpinus betulus*), blackthorn, hazel, dog rose, oak, elm (*Ulmus glabra*), hawthorn and ash in equal quantities.
BTN12	Intact hedge – species poor	A hedge which is a meld of the woodland to the North also. Species include elm, hawthorn, hazel, maple, dog rose and willow.
BTN13	Improved grassland	Established improved grassland field. Dominated by perennial ryegrass, crested dogs tail, meadow buttercup (*Ranunculus acris*) and broad leaved dock.
BTN14	Intact hedge – species rich	A low hedge separate from the plantation woodland behind, with ash, hawthorn, hazel, maple, oak, dog rose and willow.
BTN15	Intact hedge – species poor	An older, species poor hedge with blackthorn, elder and hawthorn. Bramble and cleavers grow throughout.
BTN16	Improved grassland	This field appears to have recently been re-seeded and is predominantly perennial ryegrass and crested dogs tail. Broad leaved dock, meadow buttercup and white clover are also present. Species such as Yorkshire fog (*Holcus lanatus*), nettle, cleavers (*Galium aparime*) and cirsium thistle grow around the periphery of the field and at the base of the hedges.
BTN17	Intact hedge – species poor	A gappy and poorly maintained hedge with species including elder, hawthorn and holly. Bramble, nettle, cirsium and cleavers crow at the base.
BTN18	Intact hedge – species poor	An overgrown hedge of privet, elder and hawthorn.

BTN19	Introduced Shrub	Japanese knotweed grows out of a compound on the site boundary. The knotweed is only rooted inside the compound, however it does branch out into the site and may soon spread.
BTN20	Intact hedge – species rich	A tall hedge comprising part of the plantation woodland behind. Species include elder, hawthorn, hazel, maple, oak, rose and willow.
BTN21	Broadleaf Woodland - Plantation	Young and dense strip of plantation woodland with a mix of silver birch (*Betula pendula*), goat willow (*Salix caprea*), hornbeam (*Carpinus betulus*), blackthorn, hazel, dog rose, oak, elm (*Ulmus glabra*), hawthorn and ash in equal quantities.
BTN22	Intact hedge – species rich	A low and young hedge lining the farm track to its North. With species including apple, elder, hawthorn, hazel, maple, oak, and dog rose. Common vetch (*Vicia sativa*) was notable in the undergrowth of the hedge.
BTN23	Other Habitat	Similar habitats are present to the North-east of the site, with areas of improved pasture, plantation woodland and young, species rich hedges.
BTN24	Other habitat	Housing and industrial land surround the site to all other sides.
FTN1	Bats/Nesting Birds	Several stone buildings are included in the site boundary. These were assessed for their potential to support roosting bats and nesting birds. A full report detailing the findings is appended.

Table 1 *Details of Botanical and Faunal Target Notes.*


Key
Site Boundary
Botanical Target Note
Faunal Target Note
SI
Poor semi-improved grassland
I
Improved grassland
Broadleaved woodland - plantation
Scrub - dense/continuous
Buildings
Hardstanding
Bare ground
Introduced shrub
Wall
Intact hedge - species-poor
Fence
Intact hedge - native species-rich
envirotech
N
Figure 5
Results* of Extended Phase 1 Habitat Survey
SCALE: NTS
REV 01

BTN1

A footpath runs adjacent to the wider site boundary at the North of the survey area. There is a parallel hedge in this area.

BTN2 & BTN10

Large areas of this field were bare ground due to the presence of cattle.

BTN4

There is a small patch of scrub at the North of the wider site.

BTN5 & BTN7

The majority of the grassland on the wider site is overgrazed and has prolific ruderal growth.

	BTN16 **Improved grassland is present in several of the fields to the South of the wider site including the development site.**
	BTN19 **Japanese knotweed grows from inside a compound on the boundary of the wider site.**
	FTN1 **One of the buildings on wider site which was inspected for its potential to be used by nesting birds and roosting bats.**

Table 2 *Photographs of target noted and important features within the site boundary.*

6.2 Vegetation

6.2.1 Details of the plant species found on the wider and development site are included in the target notes. Species recorded are all commonly occurring and undoubtedly occur elsewhere in similar habitats in the local area.

6.2.2 The poor semi-improved grassland has a very low species diversity and ecological value. Whilst the assemblage of species within it is higher than improved pasture, the species are all indicative of regular grazing and disturbance, this habitat does not constitute a BAP habitat.

6.2.3 Eight of the intact hedges surveyed to the North and South are species rich and contain a moderate diversity of woody plant species. This included hedge 2 to the East of the development site. These hedges were all judged to be less than 30 years of age and as such were not classified as important under the Hedgerow Regulations (1997) (See Appendix 1). These hedges could be easily replaced if lost to development due to their recent establishment.

6.2.4 Five hedgerows in the wider area were classified as species poor, having a low diversity of woody species. These hedges could be easily replaced if lost to development due to their recent establishment but all of these hedgerows are outside the development site boundary.

6.2.5 There are no mature trees within the boundary of the development site. Trees within the wider site boundary are all recently planted and form small pockets of broadleaf plantation woodland.

6.2.6 Japanese knotweed is present within a compound on the West of the wider site. This may spread outside of the compound at anytime in the near future. Japanese knotweed does not occur anywhere else on the site or within the development site.

6.2.7 There is no evidence of giant hogweed or Himalayan balsam on the wider or development site. No other invasive or notable weed species listed on Schedule 9 (Section 14) of the Wildlife and Countryside Act (1981) (as amended) was identified within the site or adjacent land.

6.3 Amphibian

6.3.1 There are 72 records for four amphibian species within 2km of the wider site, including 5 records of great crested newts. The GCN records are for ponds on the opposite side of the A6194 (Figure 2b). We consider this to be a considerable barrier to the dispersal of amphibians.

6.3.2 There is no standing water on the wider or development site, though there is a pond 295m to the North-west of wider site, 490m from the development site.

6.3.3 Following the criteria developed by Oldham et al (2000), the HSI tool developed for use with great crested newts and forming part of Natural England's EPS Licensing process was used to determine the suitability of the pond for great crested newts. The HSI was

developed as a tool to aid fieldworkers to give ponds and their surrounding habitat a numerical score in terms of their suitability for great crested newts. See Table 3.

6.3.4 Within the Natural England Method Statement application form for great crested newt Licences, guidance states the following approach (Natural England, 2008):

6.3.5 'If a pond has a very low HSI score (say <0.5) then there would typically be a minimal chance of great crested newt presence. Hence, with due care and in limited circumstances, the HSI might be used in the absence of newt survey to help conclude that an offence is highly unlikely and therefore work could proceed in that area without a licence. This application of the HSI should only be used where the predicted impacts - were newts to be present - would be low (eg, development at least 100m from pond, permanent habitat loss <0.5ha or temporary habitat loss <5ha). The developer and consultant should realise that there would still be a risk of committing an offence, but it would typically be so low as to be negligible. Obviously, note that if HSI >0.5, this is not confirmation of newt presence; a newt survey would be required to confirm this'.

Index	Score
Location	1
Pond area	1
Pond drying	0.9
Water quality	0.67
Shade	1
Fowl	1
Fish	0.67
Ponds	0.1
Terrestrial habitat	0.67
Macrophytes	0.67
HSI	0.67

Table 3 *Results of Habitat Suitability Index*.

6.3.6 The HSI score of 0.67 is considered average for use by great crested newts. The pond is considerably isolated from other ponds in the area and may contain fish.

6.3.7 The pond is 490m from the nearest point of the development site. The area of the development site closest to the pond is improved grassland and of negligible value to foraging amphibians.

6.3.8 Water samples were collected from the pond and slow flowing stream feeding it on the 30th June 2016* following approved Natural England methods and sent to a laboratory for eDNA analysis to establish the presence/absence of great crested newts. A negative result was returned.

We consider great crested newts are absent from this pond. Other amphibian species, such as frog (*Rana temporaria*) which were recorded on site during the surveys, are likely to breed in the pond.

**With unseasonably cool temperatures during May 2016, Natural England stated that the survey season (15 April and 30 June) would be extended into early July for 2016.*

6.3.9 There are areas of the wider site, such as the hedgerows and plantation woodland that may offer foraging and commuting opportunities to amphibian species. The development site, which is open and exposed grassland offer a low potential for use.

6.3.10 There are no log, rock or refuse piles on the wider site which could be used by amphibians en masse for refuge or hibernacula.

6.3.11 The wider and development sites value for amphibians is therefore limited to the foraging opportunities that the hedgerows and woodland provide.

6.4 Badger

6.4.1 There are 3 records of badgers occur within 2km of the wider site.

6.4.2 Badger setts do no occur on wider or development site or within 30m of their boundaries.

6.4.3 There were no indications of badger activity, such as latrines, foraging activity or habitual runs found on the development or wider site.

6.4.4 We do not consider badgers to have a habitual presence in the local area.

6.5 Bats

6.5.1 There are 15 records of at least three bat species of bat within 2km of the wider site.

6.5.2 The foraging habitat at the development site is currently considered to be of low quality, primarily comprising poor semi-improved grassland (Figure 6).

6.5.3 There is currently little deadwood, no notable plant assemblages and no water bodies within the bounds of the development site which could give rise to significant invertebrate numbers.

6.5.4 The development site is not linked with or close to any areas of high quality foraging habitat

6.5.5 Despite being poor, the trees and hedgerows on the boundary of the development site offer the best foraging habitat for bats on the site as the remainder of it comprises open and exposed pasture. Whilst these areas of the site are the most structurally diverse but they are not considered exceptional in the local area. More extensive areas of medium and high quality habitat occur locally, including the gardens, woodland and existing residential dwellings adjacent (Figure 6).

6.5.6 The results of the activity survey (Figure 7 & 8) confirm our assessment of the potential for the habitat, trees and buildings across the wider site to support bats. Very low levels of bat foraging activity was recorded on the wider site during the two surveys undertaken. Common pipistrelles (*Pipistrellus pipistrellus*) were recorded foraging on the site during both surveys whilst noctule bats (*Nyctalus noctula*) were recorded commuting over the site during the first survey. No bats were recorded on or over the development site.

6.5.7 Results from the anabat detector, which was analysed using Kaleidoscope 3.1.8, Bats of Europe Classifiers 3.1.3 revealed low numbers of Common and Soprano Pipistrelle bats using the wider site (Table 4).

KALEIDOSCOPE 3.1.8			
Bats of Europe 3.1.3 S/A:+1		PIPI	PIPY
	Date/ Total	32	30
	20160622	4	2
	20160623	3	11
	20160624	7	6
	20160625	4	
	20160626	10	4
	20160627	1	4
	20160628	2	1
	20160629	1	2

Table 4 *Bat records from anabat.*

6.5.8 It is not considered there would be significant degradation of foraging habitat as a result of the proposal so long as the hedgerows and trees on the development site boundary are retained and or their loss is compensated for in any landscaping scheme.

6.5.9 Trees within the survey area were assessed in accordance with Collins ed. (2016) and assigned a risk category. All of the trees on site were category 3 (negligible) risk. No indications of roosting or highly suitable roost sites were located within the trees, there are no mature trees on the wider or development site. All of the trees could be adequately inspected. Risk categories from Hundt (2012) and the requirement for mitigation for each tree category are shown on Figure 8.

Key

Site Boundary

High Quality Foraging

Moderate Quality Foraging

Low Quality Foraging

N

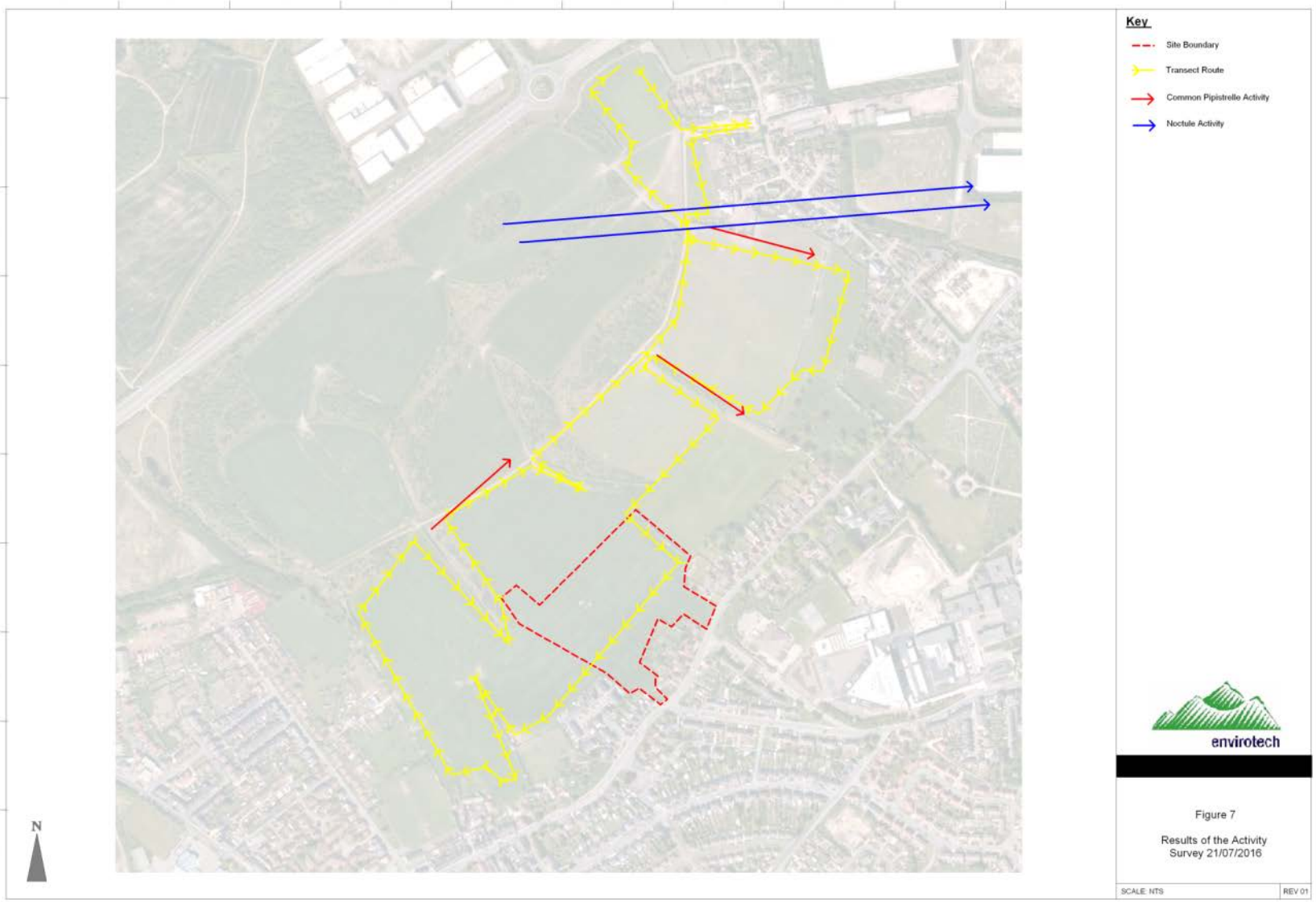
envirotech

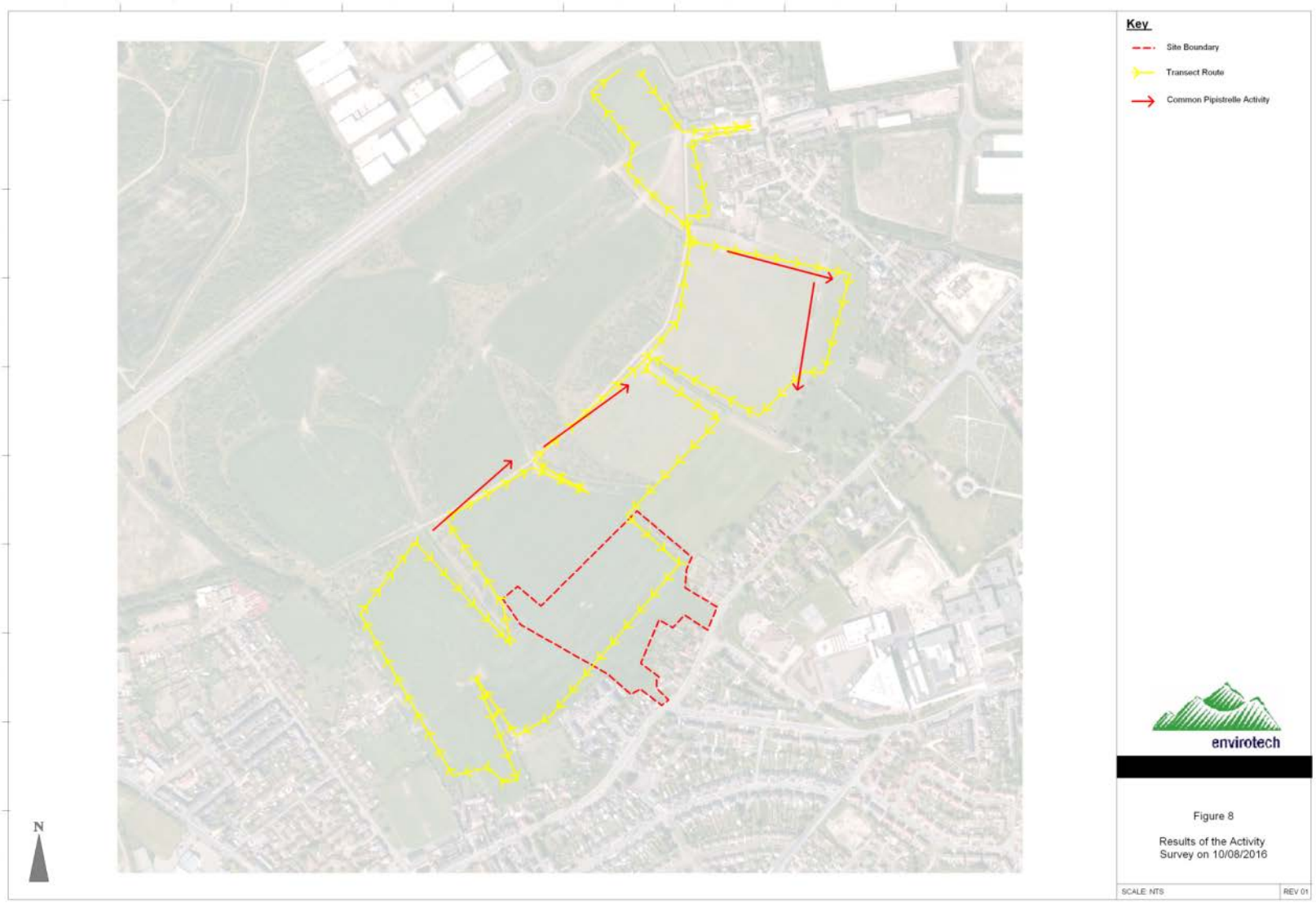
Figure 6

Assessment of Potential Foraging Habitat* in The Locality

SCALE: NTS | REV 01

*Habitats outside the site boundary are indicative only and have been mapped from within the site boundary or from publicly accessible land


Key
Site Boundary
Transect Route
Common Pipistrelle Activity
Noctule Activity
N
envirotech
Figure 7
Results of the Activity Survey 21/07/2016
SCALE: NTS
REV 01


Key
Site Boundary
Transect Route
Common Pipistrelle Activity
N
envirotech
Figure 8
Results of the Activity
Survey on 10/08/2016
SCALE: NTS
REV 01

Tree category and description	Stage 1 Initial survey requirements	Stage 2 Further measures to inform proposed mitigation	Stage 3 Likely mitigation
Known or confirmed roost	Follow SNCO guidance and these guidelines wherever possible, to establish the extent to which bats use the site. This is particularly important for roosts of high risk species and/or roosts of district or higher importance and above		The tree can be felled only under EPS licence following the installation of equivalent habitats as a replacement.
Category 1* Trees with multiple, highly suitable features capable of supporting larger roosts	Tree identified on a map and on the ground. Further assessment to provide a best expert judgement on the likely use of the roost, numbers and species of bat, by analysis of droppings or other field evidence. ***A consultant ecologist is required***	Avoid disturbance to trees, where possible. Further dusk and pre-dawn survey to establish more accurately the presence, species, numbers of bats present and the type of roost, and to inform the requirements for mitigation if felling is required.	Felling would be undertaken taking reasonable avoidance measures[3] such as 'soft felling' to minimise the risk of harm to individual bats.
Category 1 Trees with definite bat potential, supporting fewer suitable features that category 1* trees or with potential for use by single bats	Tree identified on a map and on the ground. Further assessed to provide a best expert judgement on the potential use of suitable cavities, based on the habitat preferences of bats. ***A consultant ecologist required***	Avoid disturbance to trees, where possible. More detailed, off the ground visual assessment. Further dusk and pre-dawn survey to establish the presence of bats, and if present, the species and numbers of bats and type of roost, to inform the requirements for mitigation if felling is required.	Trees with confirmed roosts following further survey are upgraded to Category 1* and felled under licence as above. Trees with no confirmed roosts may be downgraded to Category 2 dependent on survey findings
Category 2 Trees with no obvious potential, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found; or the tree supports some features which may have limited potential to support bats.	None. ***A consultant ecologist is unlikely to be required***	Avoid disturbance to trees, where possible. No further surveys.	Trees may be felled taking reasonable avoidance measures. Stop works and seek advice in the event bats are found, in order to comply with relevant legislation.
Category 3 Trees with no potential to support bats	None. ***A consultant ecologist is not required unless new evidence is found***	None.	No mitigation for bats required.

Figure 9 *Tree risk categories from Hundt (2012).*

6.7 Birds

6.7.1 There are numerous records of birds within 2km of the site.

6.7.2 It is noteworthy that very low numbers of birds were recorded across the survey area, these were woodpigeon (*Columba palumbus*) and magpie (*Pica pica*).

6.7.3 The hedgerows on the wider site offer potential habitat for feeding and nesting birds, however these opportunities are poor. The poor semi-improved grassland has a low potential for use by nesting birds as the grassland is grazed and as such is usually short.

6.7.4 Trampling risks are very high within the grassland areas of the wider site including the development site and ground nesting birds such as lapwing (*Vanellus vanellus*) are unlikely to breed on the site.

6.7.5 There were no rot holes or cracks in the trees within the wider site boundary which would support tree hole nesting species such as woodpeckers or owls.

6.7.6 A risk assessment of the wider and development site in respect of their future potential for and value to nesting birds could be adequately made. It is considered that the development site is currently of low significance to breeding and foraging birds and could easily be improved.

6.8 Brown Hare

6.8.1 SBRC returned a single record of a brown hare within 2km of the wider site.

6.8.2 No indication of brown hares was recorded on the wider or development site.

6.8.3 The development site boundaries have limited potential for brown hares to create forms due to the lack of a significant understorey to the hedge.

6.8.4 A risk assessment of the development site in respect of its future potential for and value to brown hares could be adequately made. We consider the risk to brown hares is very low. We consider this species to be absent from the development site.

6.9 Invertebrates

6.9.1 Numerous notable invertebrates have been recorded within 2km of the wider site.

6.9.2 No deadwood was recorded on the development site which would provide an important resource for invertebrates in the local area.

6.9.3 No vegetation was recorded on the development site which would provide an important resource for invertebrates in the local area. The plant species assemblages are locally and nationally common.

6.9.4 Given the poor quality habitats contained within the development site in comparison to the wider area, it is not considered that this site is of any local significance for invertebrates.

6.9.5 The development site could easily be improved upon in terms of its potential for use by invertebrates.

6.10 Reptiles

6.10.1 SBRC provided 5 records of reptiles within 2km of the wider site. These include records of adder (*Vipera berus*) and grass snake (*Natrix natrix*).

6.10.2 No reptiles or signs of their presence were recorded on the wider or development site.

6.10.3 The development site is unlikely to be suitable for use by grass snake or adder due to a lack of suitable complex habitats and the associated prey these habitats provide.

6.10.4 The development site is not connected with or between any habitats likely to contain significant populations of reptiles.

6.10.5 There are no features on the development site such as rock or log piles which these species could use as refuge or hibernacula

6.10.6 We do not consider these species to be present on the development site. It is unlikely the development site currently has significant value to any reptile species.

6.11 Other

6.11.1 The boundary hedgerow is species poor and provides little potential for use by hedgehog (*Erinaceus europaeus*). Fragmentation of habitat locally and existing land use do not provide optimal conditions for the free passage of this species across the development site and slugs and snails are likely to occur only at very low numbers.

6.11.2 The wider and development site may be crossed by fox (*Vulpes vulpes*) and occasionally deer.

6.11.3 Rabbit (*Oryctolagus cuniculus*) were recorded on the wider site in low numbers.

6.11.4 The boundary hedgerow may provide suitable habitat for small mammals such as field vole (*Microtus agrestis*) but these areas are of low quality and little evidence of this species was recorded.

6.12 Statutory and Non-Statutory Sites

Direct Impacts:

6.12.1 There are no statutory or non-statutory sites which are connected to the development site such that site development would directly affect the dispersal of species between them or directly impact upon their integrity.

6.12.2 The habitats on the development site do not represent or are linked to those found in any of the statutory or non-statutory sites locally.

Indirect Impacts:

6.12.3 There are no statutory or non-statutory sites which are connected to the development site such that site development would indirectly affect the dispersal of species between them or indirectly impact upon their integrity.

7. MITIGATION/RECOMMENDATIONS

7.1 Compensatory planting and habitat enhancement

7.1.1 The roots of trees on the development site and its boundaries should be adequately protected during work in accordance with industry standards. Trees should as far as possible be retained in the scheme, the plantation woodland may in time mature to offer significant opportunities to wildlife.

7.1.2 The landscaping scheme should utilise plants which are native and wildlife friendly. In particular night flowering species would be beneficial to bats.

7.1.3 Wildflower seed, which is low cost and low maintenance, could be used to plant verges and to enhance the ecological value of the site and continuity between the site and the wider area.

7.1.4 The hedgerow to the development site boundary should be retained or improved where possible. Any lengths of intact hedgerow to be removed to facilitate development should be transplanted and or replanted in order that there is no net negative impact on this BAP habitat due to development. The roots of hedgerow plants/trees should be adequately protected during development from compaction/ground disturbance.

7.1.5 Wood and chippings from cut trees or hedgerows should be stacked or piled around the site periphery, under hedges or in woodland where it can provide a resource for invertebrates and other species.

7.1.6 Japanese knotweed should be removed from adjoining land or prevented from entering the site.

7.2 Amphibians

7.2.1 There is no requirement for specific mitigation for these species. There are currently no suitable breeding sites on or near the site. However, as a precautionary measure, in the unlikely event that any signs of any amphibian activity is subsequently found, all site works should cease and further ecological advice should be sought with a view to a detailed method statement and programme of mitigation measures being prepared and implemented.

7.2.2 Consider the use of SUDS on site to provide new aquatic habitat during development. Such areas would be best placed in public open space where connectivity to the development site boundaries and wider area is improved.

7.2.3 In order to further minimise impacts on amphibians the following points should also be followed.

- All work must take place during daylight hours as amphibians are more likely to be commuting over night and this will ensure the risk to any amphibians commuting through the site will be minimised.

- During the development, measures should be put in place to discourage amphibians from using the development area, the creation of any piles of earth, materials and rubble which could form potential artificial hibernacula and refuge should be avoided at all times. It is recommended that any spoil or rubble will be removed immediately to skips, or on hard standing or short grass. This will ensure that no potential amphibian hibernation or resting sites are created.

- The storage of all loose materials must be palletised or similar so they are off the ground whenever possible.

- Should any trenches and excavations be required, an escape route for animals that enter the trench must be provided, especially if left open overnight. Ramps should be no greater than of 45 degrees in angle. Ideally, any holes should be securely covered. This will ensure amphibians are not trapped during work.

- All excavations left open overnight or longer should be checked for animals prior to the continuation of works or infilling. Back filling should be completed immediately after any excavations, ideally back filling as an on-going process to the work in hand.

7.3 Badger

7.3.1 Badger setts are known to occur within 2km of the development site. These setts will be undisturbed by work but in order to minimise impacts on badgers passing over the development site the following points should also be followed.

- All work must take place during daylight hours as badgers are more likely to be commuting over the site at night and this will ensure the risk to any badgers passing through the site will be minimised.

- Should any trenches and excavations be required, an escape route for animals that enter the trench must be provided, especially if left open overnight. Ramps should be no greater than of 45 degrees in angle. Ideally, any holes should be securely covered. This will ensure badgers are not trapped during work.

- All excavations left open overnight or longer should be checked for animals prior to the continuation of works or infilling. Back filling should be completed immediately after any excavations, ideally back filling as an on-going process to the work in hand.

- Boundary fences/walls should incorporate gaps at their base to facilitate the passage of badgers across the site.

7.4 Bats

7.4.1 Work at night should be restricted, new planting within the site should enhance structural diversity and light spill onto hedges and trees should be minimised.

7.4.2 New roosting provision for crevice dwelling bats could be incorporated into the buildings on site or bat boxes could be erected in retained trees.

7.4.3 Landscaping of the site, including wildflower seeding and possibly the inclusion of a SUDS scheme will provide greater opportunities for these species than occur on site already.

7.4.4 Due to the presence of young hedges and young plantation woodland; it is considered that the development site boundaries could mature and present higher quality foraging habitat in time with little effort.

7.4.5 Overall it is considered there is more than sufficient scope for mitigation and compensation at the site such that there will be no adverse impact on the favourable conservation status of bats affected by the proposal.

7.5 Birds

7.5.1 Nesting by birds within the development site is considered likely to occur but at low densities. Birds may nest within hedges, scrub and plantation woodland.

7.5.2 Any vegetation to be trimmed or cleared should be checked for nesting birds before it is removed. Ideally this should occur outside the bird nesting period March-September. If vegetation clearance is to occur in the March-September period a check for nesting birds should be conducted first by a suitably qualified individual.

7.5.3 New planting and the retention of trees and shrubs on the site boundary will maintain the ecological functionality of the development site for breeding birds.

7.5.4 A variety of bird nest boxes could be erected on trees across the wider site.

7.5.5 If nesting birds are found during work all site works shall cease and further ecological advice shall be sought with a view to a detailed method statement and programme of mitigation measures being prepared and implemented.

7.6 Brown Hares

7.6.1 There is no requirement for specific mitigation for this species. However, as a precautionary measure, in the unlikely event that any signs of any brown hare activity is subsequently found, all site works should cease and further ecological advice should be sought with a view to a detailed method statement and programme of mitigation measures being prepared and implemented.

7.6.2 The points in respect of not working at night and leaving open trenches with means of escape detailed for badgers are also applicable to this species.

7.7 Invertebrates

7.7.1 Landscaping should include native or wildlife friendly species including night flowering plants.

7.7.2 Contaminants should not be allowed to enter the soils on site during work. To this effect, spill kits should be provided on site. Re-fuelling of all plant and machinery

should be undertaken away from open drains and water courses. Drip trays should be used under static machinery.

7.7.3 Solitary bee and wasp nest boxes could be erected in suitable places across the wider site.

7.7.4 A SUDS scheme would result in a wider variety of invertebrate species using the wider site than already do so.

7.8 Reptiles

7.8.1 There is no requirement for specific mitigation for these species. However, as a precautionary measure, in the unlikely event that any signs of any reptile activity is subsequently found, all site works should cease and further ecological advice should be sought with a view to a detailed method statement and programme of mitigation measures being prepared and implemented.

7.8.2 Dense scrub and woodland on the edge of the development site should be retained such that it is in proximity to open areas of ground which will also be suitable for basking.

7.8.3 A SUDS scheme would also provide opportunities for these species.

7.8.4 The points in respect of not leaving open trenches without means of escape detailed for badgers are also applicable to these species.

8. CONCLUSION

8.1.1 Ecological surveys, site appraisals and impact assessments were carried out with respect to land at Hoyland. It is proposed an improved pasture field will be redeveloped.

8.1.2 Bats, badgers, amphibians and nesting birds are known to occur in the local area, there was however no conclusive evidence of any specifically protected species regularly occurring on the development site or the wider site which would be negatively affected by site development following the mitigation proposed.

8.1.3 The vegetation to be cleared has a low ecological significance in the local area; the trees and hedges within or on the development site boundary are all young and of low quality.

8.1.4 The protection of these trees and further landscaping will promote structural diversity in both the canopy and at ground level and will encourage a wider variety of wildlife to use the wider site than already occurs.

8.1.5 A SUDS scheme could provide a range of opportunities for a range of species on the development site and in the wider area.

8.1.6 Contractors will be observant for protected species and all nesting birds. Should any species be found during construction, all site works should cease and further ecological advice should be sought with a view to a detailed method statement and programme of mitigation measures being prepared and implemented.

8.1.7 I certify this report has been compiled in accordance with the code of professional conduct for the Chartered Institute of Ecology and Environmental Management and The Royal Institute of Chartered Surveyors and reflects my objective opinion of the facts found in relation to the instruction received and information available based upon the methodology, assumptions and constraints detailed within this report.

8 REFERENCES

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9 APPENDIX

SureScreen Scientifics

Technical Report
Confidential

Folio No: D2075
Report No: 1
Client: Envirotech
Order No: 3437
Attn: Andrew Gardener

Date: 14th July 2016

TECHNICAL REPORT

EXAMINATION OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS

T. Wood

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SureScreen Scientifics

Technical Report
Confidential

SUMMARY

When Great Crested Newts (GCN) inhabit a pond, they deposit traces of their DNA in the water as evidence of their presence. By sampling the water, we can analyse these small environmental DNA (e-DNA) traces to confirm GCN inhabitation, or prove absence of presence.

The following samples were submitted for e-DNA analysis to the protocol stated in DEFRA WC1067 (Latest Amendments). Details on the sample submission form were used as the unique sample identity.

Date received at Laboratory: 4th July 2016
Date DNA extracted started: 4th July 2016
Date of analysis: 7th July 2016
Matters Affecting Results: None

RESULTS

Laboratory Reference	Sample Detail	Co-Ordinates	Inhibition Check	Sample integrity	Result / Score
eDNA23316	Riverside Industrial estate	-	Acceptable	Acceptable	**Negative 0/12**
eDNA23317	**Heyland Birdwell**	-	Acceptable	Acceptable	**Negative 0/12**

METHODS AND INFORMATION.

In the above table, **NEGATIVE** means that GCN DNA was not detected or is below the threshold detection level and the test result should be considered as no evidence of GCN presence.

POSITIVE means that GCN DNA was found at or above the threshold level and the presence of GCN at this location at the time of sampling or in the recent past is confirmed.

Inhibition check refers to a laboratory evaluation of the sample tested by adding a known amount of an artificial gene to the sample and running the qPCR analysis in duplicate. Variation in the point at which qPCR amplification starts indicates inhibition, which requires the sample to be diluted and retested.

Sample integrity refers to quality of packaging, absence of tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to results errors. PCR inhibitors can cause false results. Every effort is made to clean the sample pre-analysis however some inhibitors cannot be extracted. An unacceptable inhibition check will

cause an indeterminate sample and must be sampled again. In that case the result will be reported as inconclusive.

To generate the results all of the tubes from each pond are combined to produce one e-DNA extract. Then twelve separate analyses are undertaken. If one or more of these analyses are positive the pond is declared positive for the presence of GCN. It may be assumed that small fractions of positive analyses suggest low level presence but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive.

A positive result may be a true positive but there is also a possibility that it is due to contamination of the sample from another pond, or improper sampling technique. Please ensure traditional surveys are performed on positive ponds and care is taken to avoid spreading GCN DNA from one site to another. The optimum accuracy of the method depends on careful sampling methodology alongside our forensic standards of laboratory analysis.

We provide training sheets and can offer formalised training in collection, even though certified training of collectors is not currently a Natural England requirement when sampling for GCN.

Kits are manufactured by Scientifics to strict quality procedures adopting best practice from WC1067 and WC1067 Appendix 5. Kits contain a 'spiked' DNA marker used as a quality control tracer (SureScreen patent pending) to ensure any DNA contained in the sampled water has not deteriorated in transit.

LABORATORY ANALYSIS

The laboratory testing adheres to strict guidelines laid down in WC1067 Analytical and Methodological Development for Improved Surveillance of The Great Crested Newt, Version 1.1

The analysis. is conducted in two phases. The sample first goes through an extraction process where all six tubes are pooled together to acquire as much eDNA as possible. The pooled sample is then tested via real time PCR (also called q-PCR). This process amplifies select part of DNA allowing it to be detected and measured in 'real time'.

qPCR combines PCR amplification and detection into a single step. This eliminates the need to detect products using gel electrophoresis. With qPCR, fluorescent dyes specific to the target sequence are used to label PCR products during thermal cycling. The accumulation of fluorescent signals during the exponential phase of the reaction is measured for fast and objective data analysis. The point at which amplification begins (the Ct value) is an indicator of the quality of the sample. True positive controls, negatives and blanks are included in every analysis and these have to be correct before any result is declared so they act as additional quality control measures.

The primers used in this process are specific to a part of mitochondrial DNA only found in GCN ensuring no DNA from other species present in the water is amplified. The unique sequence appropriate for GCN analysis is quoted in DEFRA WC 1067 as follows:

Primer	Sequence	Fragment	Gene
TCCBL	CGTAAACTACGGCTGACTAGTACGAA	81	Cyt-b
TCCBR	CCGATGTGTATGTAGATGCAAACA	81	Cyt-b
Probe			
TCCB	CATCCACGCTAACGGAGCCTCGC	81	Cyt-b

Using this protocol, there should be no detection of closely related species. In the case of the great crested newt in the UK, the risk is mainly of detecting the Italian crested newt (*Triturus carnifex*) which is present at a few locations. The primers and probe were also tested on tissue samples of marbled newt (*Triturus marmoratus*). None of these samples were amplified, confirming the suitability of the primer pair and probe for the great crested newt. The primers and probe also did not bind with the DNA of other UK native newts (smooth and palmate newt) which are in the genus *Lissotriton*.

Reported By: **Sam Humphrey**

Analysed By: **Thomas Wood**

Verified by: **Derry Hickman**

Key

Site Boundary

envirotech

Hedgerow Regulations Assessment

SCALE: NTS | REV 01

Feature / Hedge	Length 20m +	Hedge is not bounding the curtilage of dwelling	Hedge established more than 30years	Hedge boundary of protected or common land or land used for agriculture or forestry	ARCHAEOLOGY AND HISTORY	Archaeological feature which is included in the schedule of monuments	Situated wholly or partly within an archaeological site	Boundary of a pre-1600 AD estate	Integral part of a field system	Protected species records	FEATURES	Bank or wall	Gaps less than 10%	Standard trees	Ditch	Parallel hedge	Footpath/ Bridleway	Connection points	Woody species	Average ground flora species	HEDGE CLASSIFIED AS IMPORTANT
1	Yes	Yes	**No**	Yes		No*	No*	No*	No*	No		No	Yes	No	No	Yes	No	2	3	0	**No**
2	Yes	Yes	**No**	Yes		No*	No*	No*	No*	No		No	Yes	No	No	No	No	2	6	0	**No**
3	Yes	Yes	**No**	Yes		No*	No*	No*	No*	No		No	No	No	No	No	No	2	3	0	**No**
4	Yes	Yes	**No**	Yes		No*	No*	No*	No*	No		No	Yes	No	No	No	No	1	2	0	**No**
5	Yes	Yes	**No**	Yes		No*	No*	No*	No*	No		No	No	No	No	No	No	2	2	0	**No**
6	Yes	Yes	**No**	Yes		No*	No*	No*	No*	No		No	Yes	No	No	No	No	2	7	0	**No**
7	Yes	Yes	**No**	Yes		No*	No*	No*	No*	No		No	Yes	No	No	No	No	1	7	0	**No**
8	Yes	Yes	**No**	Yes		No*	No*	No*	No*	No		No	Yes	No	No	No	Yes	4	6	0	**No**
9	Yes	Yes	**No**	Yes		No*	No*	No*	No*	No		No	Yes	No	No	No	No	3	6	0	**No**
10	Yes	Yes	**Yes**	Yes		No*	No*	No*	No*	No		No	Yes	No	No	Yes	Yes	2	5	0	**No**
11	Yes	Yes	**Yes**	Yes		No*	No*	No*	No*	No		No	Yes	No	No	Yes	Yes	2	5	0	**No**
12	Yes	Yes	**No**	Yes		No*	No*	No*	No*	No		No	Yes	No	No	No	Yes	1	4	0	**No**
13	Yes	Yes	**Yes**	No		No*	No*	No*	No*	No		No	Yes	No	No	Yes	Yes	0	6	0	**Yes**
	No = Automatic failure					Yes = Automatic pass						7 woody species or 6 woody species + 3 features or 5 woody species + 4 features or highway + 4 woody species and 2 features									

* Historic and archaeological records have not been checked for this site.