

Land to the south of Water Lane

Angmering

Ecological Appraisal

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LIABILITIES:

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living animals and plants are capable of migration/establishing and whilst such species may not have been located during the survey duration, their presence may be found on a site at a later date.

This report provides a snap shot of the species that were present at the time of the survey only and does not consider seasonal variation. Furthermore, where access is limited or the site supports habitats which are densely vegetated only dominant species maybe recorded.

The recommendations contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

1.0 Introduction

Background

- 1.1 The Ecology Partnership was commissioned by Rydon Homes and Gleeson Developments to undertake a preliminary ecological appraisal, at land to the south of Water Lane, Angmering, West Sussex.
- 1.2 This report presents the results of The Ecology Partnership's surveys in and around the site, which aims specifically to assess the site's potential to support protected species and protected habitats that may be affected by the proposed development.
- 1.3 Section 2 of this report sets out the methodologies of the surveys. In section 3 the results of the surveys are presented. Discussions and implications for development are found in section 4, including general site enhancements. Conclusions drawn from the report are presented in section 5.

Site Context and Status

- 1.4 The site is located on Water Lane on the eastern edge of the town of Angmering in West Sussex. The immediate surroundings include the village to the west which consists of low-medium density housing; water lane to the north followed by nurseries and agricultural fields; further nurseries and pasture fields to the south; and finally the A280 borders the site to the east. Grazed grassland fields dominate the site itself.
- 1.5 The approximate survey area which has been included in this report is shown by the red line below in figure 1. The approximate location of the development area is shown by the green line boundary below in figure 1.



Figure 1: Approximate location of the survey area is shown by the green line.

The application area is shown as the red line

Description of Proposed Development

- 1.6 The proposed development is to include the construction of a new housing development within the red line boundary. The development includes up to 175 dwellings, open space, and associated infrastructure.

Planning Policies

- 1.7 National and local planning policies may have an effect on the proposed development. The following paragraphs identify relevant planning policies and discuss these in the context of the site.
- 1.8 Under the NERC Act (2006) *“Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity”*. In order to comply with this ‘Biodiversity Duty’, planning decisions must ensure that they adequately consider the potential ecological impacts of a proposed development.
- 1.9 In compliance with Section 41 of the NERC Act, the Secretary of State has published a list of species and habitats considered to be of principle importance for conserving biodiversity. These were known as BAP habitats and species. The UK BAP lists of priority species and habitats remain an important and valuable reference certainly at county levels. However, the UK Post 2010 Biodiversity Framework (published 2012) has succeeded BAP. It was produced by JNCC and Defra, on behalf of the Four Countries’ Biodiversity Group (4CBG), through which the environment departments of all four governments in the UK work together to achieve the ‘Aichi Biodiversity Targets’ and the aims of the EU biodiversity strategy.
- 1.10 National policy guidance is provided by National Planning Policy Framework (NPPF), which sets out the Government’s planning policies for England and how they should be applied. The following section is considered to be relevant;
- ‘In preparing plans to meet development needs, the aim should be to minimise pollution and other adverse effects on the local and natural environment. Plans should allocate land with the least environmental or amenity value, where consistent with other policies in this Framework.’*
- 1.11 The site falls under the jurisdiction of the Arun District Council. The Local Plan was adopted in 2003 and contains policies relating to nature conservation. Arun District Local Plan 2011-2031 is currently under consultation.

Policy GEN28 Trees and Woodlands

“Development will not be permitted if it would damage or destroy one or more trees protected by a tree preservation order, identified as ancient woodland or in a conservation area unless:

- The removal of one or more trees would be in the interests of good arboricultural practice;*
or
- The benefits of the proposed development outweigh the amenity value of the protected trees.*

Conditions may be used to ensure, for any trees which are removed as part of a development, an equivalent number are planted on the site.”

Policy GEN29 Nature conservation across the district

“Development will only be permitted on sites which contain semi-natural habitats, features of nature conservation interest, or within wildlife corridors, where these can be largely retained and sympathetically incorporated into the scheme. Legal agreements may be used to offset the loss of, or impact on, any nature conservation resource present on the site prior to development.”

Policy AREA13 Sites of International Importance for Nature Conservation

“Proposals for development in, or likely to affect (directly or indirectly) a site of international importance for nature conservation will be subject to the most rigorous examination. Development not directly connected with or necessary to the management of the site which is likely to have an adverse effect on the site, will not be permitted unless: there is no alternative solution, there are reasons of public health or public safety, or there are benefits of primary importance to the environment.

Where such sites do not host a priority habitat or species, development will not be permitted unless there are imperative reasons of overriding public interest.

Where development is permitted, the use of conditions or planning obligations will be considered in order to avoid and minimise harm to the site, to enhance the site’s nature conservation interest, and to secure any compensatory or mitigation measures and appropriate management that may be required.”

Policy AREA14 Sites of National Importance for Nature Conservation

“Proposals for development in, or likely to affect (directly or indirectly) Sites of Special Scientific Interest will be subject to special scrutiny. Where such development is likely to have an adverse effect, it will not be permitted unless the reasons for the development clearly outweigh the nature conservation value of the site itself and the national policy to safeguard the national network of such sites.

Where the site concerned is a National Nature Reserve, a site identified by the Nature Conservation Review or Geological Conservation Review, particular regard will be paid to the national importance of that site.

Where development is permitted, harm to the nature conservation interest must be minimised. The use of conditions or planning agreements will be considered to ensure the protection and enhancement of the nature conservation interest, and to provide appropriate compensatory or mitigation measures and site management.”

Policy AREA15 Sites of Local Importance for Nature Conservation

“Proposals for development in, or likely to have an adverse effect (directly or indirectly) on a Local Nature Reserve, Site of Nature Conservation Importance (including ancient woodlands or wildlife corridors) or Regionally Important Geological/Geomorphological Site will not be permitted unless it can be demonstrated that reasons for the proposal outweigh the need to safeguard the nature conservation value of the site/feature. Where development is permitted which would damage the nature conservation value of the site/feature, such damage should be kept to a minimum.

Conditions or planning obligations will be used to secure necessary compensatory or mitigation measures, enhancement and site management.

Where appropriate, the Authority will consider the use of legal agreements to provide appropriate compensatory measures, enhancement and site management.”

- 1.12 This report addresses the site in relation to nature conservation and wildlife and indeed to the local planning requirements as well as national planning and nature conservation legislation. The report has been produced with reference to current guidelines for preliminary ecological appraisal (CIEEM 2013) and in accordance with BS 42020:2013 Biodiversity – Code of Practice for Planning and Development.

2.0 Methodology

Desk Top Study

- 2.1 A desk top study search was completed using an internet-based mapping service (www.magic.gov.uk) for statutory designated sites and two internet-based aerial mapping services (www.multimap.com and maps.google.co.uk) were used to understand the habitats present in and around the survey area and habitat linkages and features (ponds, woodlands etc) within the wider landscape.
- 2.2 Biological records were purchased from Sussex Biodiversity Records Centre. A search of records in a 2km radius of the site was requested

Preliminary Ecological Appraisal

- 2.4 An extended preliminary ecological appraisal was undertaken on the 7th August 2015, with an additional PEA undertaken on the 19th February 2016. The surveyors identified the habitats present, following the standard 'Phase 1 habitat survey' auditing method developed by the Joint Nature Conservancy Council (JNCC). The site was surveyed on foot and the existing habitats and land uses were recorded on an appropriately scaled map (JNCC 2010). In addition, the dominant plant species in each habitat were recorded. The potential for the site to support protected species was also assessed.

Hedgerow Assessment

- 2.5 The hedgerows were assessed under the criteria of the Hedgerow Regulations 1997 (as amended 2002). Under the criteria, to be determined as '**important**', a hedgerow must be at least 30 years old and meet at least one of the additional criteria as summarised below:

-
- Marks a pre-1850 parish or township boundary
 - Incorporates an archaeological feature
 - Is part of, or associated with, an archaeological site
 - Marks the boundary of, or is associated with pre-1600 estate or manor.
 - Forms an integral part of a pre-Parliamentary enclosure field system.
 - Contains certain categories of species of birds, animals or plants listed in the Wildlife and Countryside Act or JNCC publications.

To be determined as '**species-rich**', the hedgerow must include:

- a) at least 7 woody species, on average, in a 30 metre length;
- b) at least 6 woody species, on average, in a 30 metre length and has at least 3 associated features;
- c) at least 6 woody species, on average, in a 30 metre length, including a black poplar tree, or large-leaved lime, or small-leaved lime, or wild service-tree; or
- d) at least 5 woody species, on average, in a 30 metre length and has at least 4 associated features.

The number of woody species is reduced by one in northern counties. The list of 56 woody species comprises mainly shrubs and trees. It generally excludes climbers (such as clematis, honeysuckle and bramble) but includes wild roses.

The hedgerow may also be considered as '**important**' if the hedgerow runs alongside a bridleway, footpath, road used as a public path, or a byway open to all traffic and includes at least 4 woody species, on average, in a 30 metre length and has at least 2 of the associated features listed at (i) to (vii) below:

- i) a bank or wall supporting the hedgerow;
- ii) less than 10% gaps;
- iii) on average, at least one tree per 50 metres;
- iv) at least 3 species from a list of 57 woodland plants;
- v) a ditch;
- vi) a number of connections with other hedgerows, ponds or woodland; and
- vii) a parallel hedge within 15 metres.

Badger Survey

- 2.6 A badger survey was undertaken at the site to assess if badgers were using the area and if any setts were located on the site and 30m away from the site that might constrain development. The evaluation of badger activity was based on methodology developed for the National Survey of Badgers (Creswell *et al.*, 1990) and includes searching for badger field signs such as setts, badger pathways, tracks (pawprints), dung piles with latrines, badger hairs and feeding signs such as snuffle holes.
- 2.7 During the survey, all habitats potentially suitable for badgers were systematically examined for evidence of badger activity including:
- Setts: several sett types may be present within a social group territory, ranging from a single hole to numerous interconnecting tunnels. Setts can be categorised into main, annexe, subsidiary and outlier (Wilson *et al.*, 1997).
 - Latrine sites: badgers characteristically deposit dung in pits, which may be located along the boundaries and within the social group territory. These sites serve as means of inter- and intra-group communication.
 - Paths and runs: well used routes between setts and/or foraging areas. Often used by generations of badgers.
 - Snuffle holes: areas of disturbed vegetation often formed by badgers foraging for ground dwelling invertebrates such as earthworms and larvae and the underground storage organs of plants.
 - Hair: often found among spoil and bedding outside entrances to setts or snagged on fences (such as barbwire) along well-used runs.
 - Footprints: easily distinguishable from other large mammal species. Often found along paths and runs or in spoil outside sett entrances.

Tree Assessment for Bats

- 2.8 Roosts of bats in trees may be identified from the following field signs:
- Black stains beneath cracks, splits and other features where bat droppings have fallen;

- Dark marks at entrance points where bats have rubbed against the wood and left natural body oils;
- Feeding remains beneath roosts, such as insect wings;
- Chattering of bats;
- Bat droppings under access points;
- Scratch marks around a feature (cavity or split) caused by bat claws;
- Urine stains below the entrance or end of split;
- Large roosts or regularly used sites may produce an odour;
- Flies around the entrance, attracted by the smell of guano.

2.9 The trees on site were assessed for their potential to support roosting bats. The trees were assessed visually for evidence of bats as well as for features that increase the likelihood such as the following:

- Woodpecker holes, natural cracks and rot holes in trunks and branches;
- Frost cracks;
- Trunk and branch splits;
- Hollow sections of trunk and branches;
- Loose bark;
- Cavities beneath old root buttresses and coppice stools;
- Dense epicormic growth;
- Dense ivy cover.

2.10 Trees scheduled for arboricultural work should also be assessed, and may be categorised (Table 1) to relate the value of their features to recommended actions. This approach allows trees to be graded according to their potential to support bat roosts. Trees may be assessed as having the potential to support bats (from an individual to a larger roost) even if no bats have been found.

Table 1. Protocol for visual inspection of trees due to be affected by arboricultural work, to assess the value of the trees to bats. Taken from Table 4.1 within the 'Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn), 2016'.

Suitability	Description Roosting habitat
Negligible	Negligible habitat features on-site likely to be used by roosting bats.
Low	A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
High	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

Habitat Suitability for Reptiles

2.10 Habitat surveys were carried out to assess the potential of the site to hold populations of reptile species. This involved looking for the presence of factors that would increase the suitability of the site for reptiles such as:

- Scrub and grassland (long sward) mosaic across the site;
- Features that can be potential hibernation sites for common reptiles such as log piles;
- Grass tussocks within the grassland that can act as shelter and burrowing sites;
- Water bodies or damp places on site (grass snakes);
- Compost heaps or decaying vegetation (slow worms);
- Features that can act as refugia on the ground such as disused roofing felt.

Habitat Suitability for Great Crested Newts (GCN)

2.11 Habitat surveys were carried out to assess the potential of the site to hold great crested newts (*Triturus cristatus*). This involved looking at the wider landscape using Google Maps and OS maps to assess types of habitat in the wider landscape. This also involved

looking for the presence of factors that would increase the suitability of the site for GCN such as:

- The presence of suitable breeding places (water bodies) on site and within 500m of the site in the wider landscape;
- Habitat connectivity between ponds (if present) in the wider landscape and on site;
- The condition of the ponds and whether there were factors that would render them unsuitable for GCN such as fish;
- Land uses surrounding the site that may affect the potential of the site to hold GCN such as agriculture;
- Type of suitable habitat on site such as scrub/grassland mosaic;
- Patches of woodland in the wider landscape that can provide terrestrial habitat;
- Any barriers between known populations of GCN such as motorways and roads;
- Hibernation features on site for GCN such as log and rubble piles.

Limitations

2.12 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no single investigation could ensure the complete characterisation and prediction of the natural environment. The site was visited over the period of one site visit, as such seasonal variations cannot be observed and potentially only a selection of all species that potentially occur within the site have been recorded. Therefore, the survey provides a general assessment of potential nature conservation value of the site and does not include a definitive plant species list.

2.13 The protected species assessment provides a preliminary view of the likelihood of protected species occurring on site, based on the suitability of the habitat and any direct evidence on site. It should not be taken as providing a full and definitive survey of any protected species group. The assessment is only valid for the time when the survey was carried out. Additional surveys may be recommended if, on the basis of this assessment it is considered reasonably likely that protected species may be present.

3.0 Results

Desktop Study

- 3.1 The site is located on the eastern edge of the town of Angmering in West Sussex. The site is surrounded by medium-low density housing to the west and nursery sites and pasture fields to the south. The A280 runs along the eastern side of the site, and water land to the north, creating barriers to the movement of animals. Grazed pasture fields surrounded by hedgerows largely dominate the site.
- 3.2 The site is located on the southern boundary of the South Downs National Park but is not within the boundary, with no other designated sites within a 5km radius. There are two SNCI (Site of Nature Conservation Importance) within the 2km radius, which are Highdown Hill & the Miller's Tomb (a chalk grassland) and Titnore & Goring Woods Complex (semi-natural woodland). There are significant quantities of ancient woodland to the north of the site, within the South Down National Park; a large local area of which is made up from Angmering Park and surrounding copses, Clapham Wood, Wepham Wood and the Dover. OS maps reveal several waterbodies within a 300m radius of the site providing potential habitat for a range of species. There are a variety of habitats in the wider landscape as shown in Figure 2, however the majority of the wider landscape is dominated by agricultural fields, woodland blocks and low density housing.
- 3.3 The redevelopment is not thought to impact, directly or indirectly, any designated sites or areas of significant off site habitat. It is considered that the redevelopment of the site will impact only habitats within the redline boundary.



Figure 2: Habitats on and surrounding the survey area of the site (shown in red). Woodland is shown in green, with ancient woodland shown by orange hatching; pink indicates good quality semi-improved grassland.

- 3.4 A 2km data search was requested from the Sussex Biodiversity Record Centre. Records have been included from the last ten years, with the closest record and the most recent records included. Further information from the data request is included in appendix 3.

Table 2. Notable species records within 2km in the ten years.

	Species	Status	Closest record distance	Most recent record
Amphibians	Great Crested Newt (<i>Triturus cristatus</i>)	Bern Convention Appendix 2; European Protected Species; Habitats Directive Annex 2 - non-priority species; Habitats Directive Annex 4; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance	Approximately within 2km	2012

		in England; Sussex BAP species; Sussex Protected Species Register; UK BAP priority species; Wildlife and Countryside Act 1981 Schedule 5		
Mammals	Water Vole (<i>Arvicola amphibious</i>)	Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England; Sussex BAP species; Sussex Protected Species Register; Sussex Rare Species Inventory; UK BAP priority species; Wildlife and Countryside Act 1981 Schedule 5	780m west	2014
	Hazel Dormouse (<i>Muscardinus avellanarius</i>)	European Protected Species; Habitats Directive Annex 4; NERC Act 2006 - Species of Principal Importance in England; Sussex Biodiversity Action Plan; Sussex Protected Species Register; UK BAP priority species; Wildlife and Countryside Act 1981 Schedule 5	Approximately 2km northeast	2011
Reptiles	Slow Worm (<i>Anguis fragilis</i>)	Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England; Sussex BAP species; Sussex Protected Species Register; UK BAP priority species; Wildlife and Countryside Act 1981 Schedule 5 Section 9	Approximately 2km northeast	2013
Bats	Pipstrelle sp. (<i>Pipistrellus pipistrelles</i> / <i>Pipistrellus pygmaeus</i>)	UK BAP species, Annex IV of the Annex IV of the Habitats Directive, Priority Species listed under Section 41 of the Natural Environment and Rural Communities Act 2006, Wildlife and Countryside Act 1981 Schedule 5 Section 9; Schedule 2 of Conservation of Habitats and Species Regulations 2010 (European Protected Species animal)	380m west	2014
	Brown long-eared bat (<i>Plecotus auritus</i>)	See above	50m west feeding roost	2014

Birds	Red kite (<i>Milvus milvus</i>)	Schedule 1 Part 1 of the Wildlife and Countryside Act 1981 (as amended) IUCN Amber List	Approximately within 2km	2015
	Hobby (<i>Falco subbuteo</i>)	Schedule 1 Part 1 of the Wildlife and Countryside Act 1981 (as amended)	Approximately within 2km	2011
	Peregrine falcon (<i>Falco peregrinus</i>)	Schedule 1 Part 1 of the Wildlife and Countryside Act 1981 (as amended)	Approximately within 2km	2011
	Northern lapwing (<i>Vanellus vanellus</i>)	IUCN Red List UK BAP species	Approximately within 2km	2014
	Barn owl (<i>Tyto alba</i>)	Schedule 1 Part 1 of the Wildlife and Countryside Act 1981 (as amended) IUCN Amber List	Approximately within 2km	2013
	Kingfisher (<i>Alcedo atthis</i>)	Schedule 1 Part 1 of the Wildlife and Countryside Act 1981 (as amended) IUCN Amber List	Approximately within 2km	2012
	Firecrest (<i>Regulus ignicapilla</i>)	Schedule 1 Part 1 of the Wildlife and Countryside Act 1981 (as amended) IUCN Amber List	Approximately within 2km	2010
	Common crossbill (<i>Loxia curvirostra</i>)	Schedule 1 Part 1 of the Wildlife and Countryside Act 1981 (as amended)	Approximately within 2km	2005
	Corn bunting (<i>Emberiza calandra</i>)	IUCN Red List UK BAP species	Approximately within 2km	2006

Habitat Phase 1 Survey

- 3.5 The site consists primarily of grazed pasture fields. Figure 3 below has been labelled for ease of reference. Fields A and B were surveyed on the 7th August 2015, and areas C and D were surveyed on the 19th February 2016. Field A contained rough grassland and scrub with a narrow stream and was grazed by two horses at the time of the survey. Sheep intensively grazed Field B. Area C contained some stables and horse paddocks, whilst D was a semi-improved grassland field, un-grazed at the time of the survey.



Figure 3: The fields surveyed have been numbered for ease of reference.

The green area denotes the complete survey boundary, whilst the redline denotes the application area.

Field A

3.6 Field A was semi-improved grassland that was grazed by horses and rabbits and therefore had a short sward height. There was a stream flowing through this area with water flow in the western direction. Species contained within the grassland included: perennial ryegrass (*Lolium perenne*), white clover (*Trifolium repens*), silverweed (*Potentilla anserina*), broadleaved dock (*Rumex obtusifolius*), ragwort (*Senecio sp.*), sow thistle (*Sonchus arvensis*), red fescue (*Festuca rubra*), common fleabane (*Pulicaria dysenterica*), creeping cinquefoil (*Potentilla reptans*), selfheal (*Prunella vulgaris*), teasel (*Dipsacus fullonum*) and sedge species.

3.7 A row of scrub of varying heights, 5m at its tallest ran along the southern side of the stream, with some mature stands of tree within this habitat. This dense habitat was

approximately 8-10m wide and included species that were often associated with damp areas such as: elder (*Sambucus nigra*), willow (*Salix sp.*), nettle (*Urtica dioica*), creeping thistle (*Cirsium arvense*), water mint (*Mentha aquatica*), water forget-me-not (*Myosotis scorpioides*), blackthorn (*Prunus spinosa*), bramble (*Rubus fruticosus*) and gypsywort (*Lycopus europaeus*).

- 3.8 The hedgerow along the road was relatively thin, and around 4m tall and including: blackthorn, hawthorn (*Crataegus monogyna*), rose (*Rosa sp.*), elder, elm (*Ulmus agg*), ivy (*Hedera helix*) and bramble.

Field B

- 3.9 Field B supported improved grassland. Perennial rye is the main species in the field, also included are occasional cocksfoot (*Dactylis glomerata*), creeping bent (*Agrostis stolonifera*), bristly oxtongue (*Helminthotheca echioides*) and common sow thistle. Sheep intensively grazed the field at the time of the survey.

- 3.10 Field B was surrounded by managed thin hedge that was around 3m tall and this was dominated by blackthorn and hawthorn and included small amounts of ivy, elder, bramble, nettle and white bryony (*Bryonia dioica*). There were many rabbit warrens under the hedgerows, particularly on the western edge between the sheep grazed field and the horse paddocks in area C.

Area C

- 3.11 Only a small section of area C is to be set within the development boundary. However, this area was surveyed for completeness. The paddocks on the eastern side of this area were well grazed and had a short sward height at the time of the survey. Species found here are similar to those already mentioned and include perennial ryegrass, cocksfoot, dandelion (*Taraxacum agg*) and daisy (*Bellis perennis*).
- 3.12 The hedgerow on the eastern boundary between the paddocks and field B was bent over and laid in part. The hedge is well-managed and dominated by blackthorn and recently planted field maple (*Acer campestre*). Elder, hawthorn and dog rose (*Rosa canina*) can be

- found here in low numbers. The hedgerow along the northern section of this area is dominated by field maple and blackthorn but is much taller than the one to the east.
- 3.13 The section of the site between the paddocks and field D contained a stretch of amenity grassland with semi-mature trees as well as a gravelled pen and stable blocks. The amenity grassland was considered to be species poor. The scattered tree species include willow, cherry (*Prunus sp.*), birch (*Betula sp.*) and scots pine (*Pinus sylvestris*). This grassland is bordered to the north by a bay laurel (*Laurus nobilis*) hedge with barberry bushes (*Berberis vulgaris*) at the eastern end. The hardstanding and gravel present in this area were not considered to hold any ecological value.
- 3.14 To the north of the paddocks, by the centre entrance in the northwest corner, is an area of dense scrub, bare earth, a dilapidated caravan and shed, and a manure pile. This area is dominated by bramble growth, along with sycamore (*Acer pseudoplatanus*) and ash (*Fraxinus excelsior*) saplings. There are stands of buddleja (*Buddleja davidii*), common nettles, cypress species and cherry laurel (*Prunus laurocerasus*) as well as numerous ruderal species around the edge of the bare earth and manure piles.

Field D

- 3.15 This field contained tussocky semi-improved neutral grassland. This field may be grazed at times, however the height of the sward was approximately 6 inches at the time of the survey. Species found within the grassland include perennial ryegrass, Yorkshire fog (*Holcus lanatus*), red fescue (*Festuca rubra agg.*), creeping buttercup (*Ranunculus repens*), ragwort, dandelion, spear thistle, dead nettle (*Lamium sp.*), cleavers (*Galium aparine*), vetch species (*Vicia sp.*), yarrow (*Achillea millefolium*), common nettles, cocksfoot, cut-leaf cranesbill (*Geranium dissectum*) and what is considered most likely to be cow parsley (*Anthriscus sylvestris*).
- 3.16 There are four small-leaved lime (*Tilia cordata*) trees along the northern boundary of the field. In the northwestern corner of field D by the field entrance, is an area of tall ruderal species, low level scrub and scattered semi-mature trees. The trees found in this small scrubby area include oak (*Quercus sp.*), cherry, hawthorn and elder, along with some tall

ruderal species. The southern boundary of the field borders residential housing and has ornamental species from the gardens overgrowing the fenceline and encroaching into the field. This boundary contains some bramble and tall ruderal species such as cleavers, common nettles, dock and willowherb (*Epilobium sp.*), but the vegetation is defunct in places and is also created by a brick wall along the western half.

Hedgerow Assessment

3.17 There are a hedgerows and tree lines surrounding each field within the site. These have been assessed for their importance in terms of species present, associated features and potential for supporting protected species. The hedgerow characteristics and woody species, as listed in Schedule 1 of the Hedgerow Regulations, are displayed in table 3, below. For ease of reference, the qualifying features from subparagraph 4 in the Regulations have been listed here and just the numbers are referred to in the table.

- (a) a bank or wall which supports the hedgerow along at least one half of its length;
- (b) gaps which in aggregate do not exceed 10% of the length of the hedgerow;
- (c) where the length of the hedgerow does not exceed 50 metres, at least one standard tree;
- (d) where the length of the hedgerow exceeds 50 metres but does not exceed 100 metres, at least 2 standard trees;
- (e) where the length of the hedgerow exceeds 100 metres, such number of standard trees (within any part of its length) as would when averaged over its total length amount to at least one for each 50 metres;
- (f) at least 3 woodland species within one metre, in any direction, of the outermost edges of the hedgerow;
- (g) a ditch along at least one half of the length of the hedgerow;
- (h) connections scoring 4 points or more in accordance with sub-paragraph (5);
- (i) a parallel hedge within 15 metres of the hedgerow.



Figure 4: Numbered hedgerows assessed on site as per the Hedgerow Assessment Regulations

The green area denotes the complete survey boundary, whilst the redline denotes the application area.

Table 3. Hedgerow Assessment

Hedgerow	Woody species	Average number of species per 30m	Features listed under subparagraph 4 or additional qualifying criteria	Features / Notes	Important Hedgerow? Y/N
H1	Hawthorn Blackthorn Rose Elder	3	(b)	156m long	No

	Elm				
H2	Hawthorn Elder	2	(b)	425m long well- managed	No
H3	Blackthorn Elder Hawthorn Rose Field Maple	3	(b)	Connected to H4	No
H4	Blackthorn Field Maple Elder	3	(b) (f)	Connected to H3	No
H5	Hawthorn Blackthorn	2	(b)	Dense. 55m long	No

Tree and Building Assessment for Bats

- 3.18 There are several trees on site particularly along the boundaries. The trees vary in maturity, however the majority are considered to be semi-mature or immature. No trees found are considered to be large enough to support a bat roost. All tree within the redline boundary are considered to have low to negligible potential for supporting roosting bats.
- 3.19 All the mature trees and semi-mature trees on site, including the trees growing along the tree lines and the hedgerows provide good opportunities for foraging bats. Hedgerows and tree lines also help connect the site to the wider landscape ensuring that bats can move with ease across the area using these linear features for shelter and protection and opportunistic foraging. Tree lines and hedgerows should therefore be maintained or enhanced where possible.
- 3.20 The buildings that were present within the red line boundary, located on the edges of Field C, were all stable blocks. None of these buildings were considered to have any potential for roosting bats. The buildings did not support traditional features such as

enclosed roof voids, steep pitched roofs, hanging tiles, or lifted tiles. Furthermore, the stables were in use and therefore subject to disturbance, with open doors and high light levels. These buildings are outside the development area and as such are not to be affected by the works.

- 3.21 The site is considered likely to be used by foraging bats. As such several bat surveys were undertaken in 2015 on fields A and B. It must be demonstrated that significant commuting routes for bats between roost sites and foraging grounds are considered within the design of the scheme. The 2015 survey involved two transect routes, due to the simplistic nature of the habitats on site, which are shown in figure 5 below. All surveyors were equipped with Bat Box Duet heterodyne and frequency division detectors and hard disc recorders. In addition, a Wildlife Acoustics Echo Meter Touch was used.

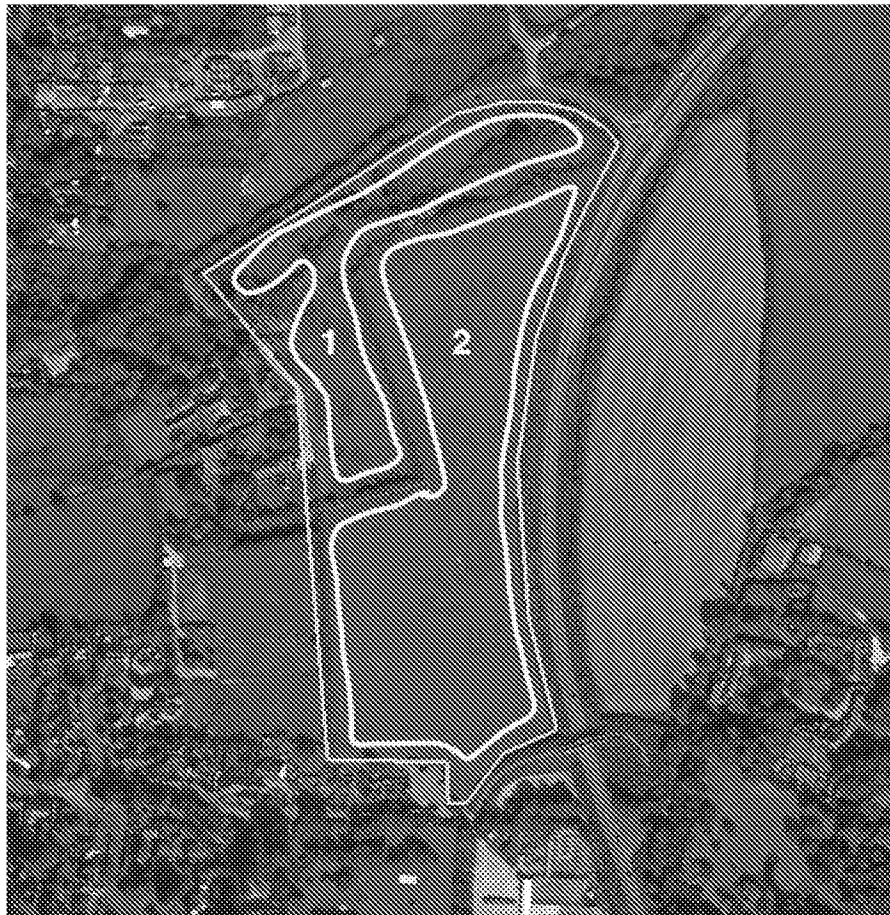


Figure 5: The transect route around site with the routes identified by numbers 1 and 2.

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- 3.22 The first survey was conducted at dusk on 26th August 2015. Sunset was at 20.01 and the temperature was 17 degrees with some slight breeze and 30% cloud cover. The first survey identified common pipistrelles using the northern part of the site, along the small stream habitats. The first bat was recorded at 20.15 with only several passes along this route. No bats were recorded along the transect 2 of the southern portion of the site.
- 3.23 The second survey was undertaken on the 22nd September 2015. The temperature was mild at 14 degrees and slightly overcast. Sunset was at 19.00. On the transect route 1 of the site, the first bat was a serotine and was recorded flying along the line of the small stream at 19.50 and was recorded making several passes along this route. A total of six passes by common pipistrelles were then recorded from 19.54 – 20.26 along the stream. One pass of a soprano pipistrelle (*Pipistrellus pygmaeus*). Was recorded at 20.05. No further passes recorded. On the transect route 2 of the site only one brief pass of a common pipistrelle was recorded throughout the whole of the survey. This was recorded along the northern edge of the site and was likely to be a call of one of the common pipistrelles using transect 1. No other bats were recorded along transect 2 throughout the whole of the survey period. This habitat was identified as being particularly poor during the phase 1 site survey.
- 3.24 The red line boundary of this southern section has since been altered and therefore no activity surveys of Fields C and D have been undertaken. However, it is not considered that these fields support complex habitats and as such it is likely that common species would be present.

Habitat Suitability for Protected Species

Badgers

- 3.25 No setts were located during the survey period. Some of the scrub areas and to the rear of the stables between fields C and D were dense with vegetation and as such not all of this habitat could be accessed. However, no obvious mammal paths were recorded on site, no latrines were recorded on site during the survey period. Several rabbit warrens were located on the field boundaries between fields B and C.

Dormice

- 3.26 Dormice are known to be present to the north of Water Lane within the ancient woodland, Groom's Copse, and within some of the hedgerows connected to the ancient woodland.
- 3.27 There is limited connectivity between the north of the site and the dormouse habitat, with Water Lane separating the habitats to the south. Furthermore, the A280, located on the eastern edge of the site, and residential development on the west, further fragment the landscape.
- 3.28 The hedgerows present on site did support species which are often associated with dormice, such as blackthorn and field maple, and bramble is also present on site. However, the hedgerows are themselves limited in extent, well managed (and as such support a thin base and shrubby layer), are not linked to any large area of woodland, and the smaller hedgerows are largely fragmented.
- 3.29 The grassland habitats and the grazed paddocks are all considered to be sub optimal in terms of dormice.

Great Crested Newts

- 3.30 A pond is present just outside the boundary of the site as shown below in Figure 6. This is located to the north east of the site, separated by Water Lane. A network of ditches and the stream are thought to provide the waterbody with water. At the time of survey, the pond could not be assessed using the HSI method. This is due to the heavy scrub growth around the pond and the amount of common reed (*Phragmites australis*) that was present. The survey was carried out in mid-August, which is a suboptimal time of year for assessing ponds in terms of newts. It is considered that the waterbody may be suitable for GCN during their aquatic phase (approximately February – June) and the possibility of the site supporting GCN cannot be ruled out at this stage.

- 3.31 The waterbody to the west, the fishing lake, is ornamental and contains a good population of carp and ducks. GCN are not commonly found alongside these species due to the general lack of vegetation associated with them and due to predation from the fish.

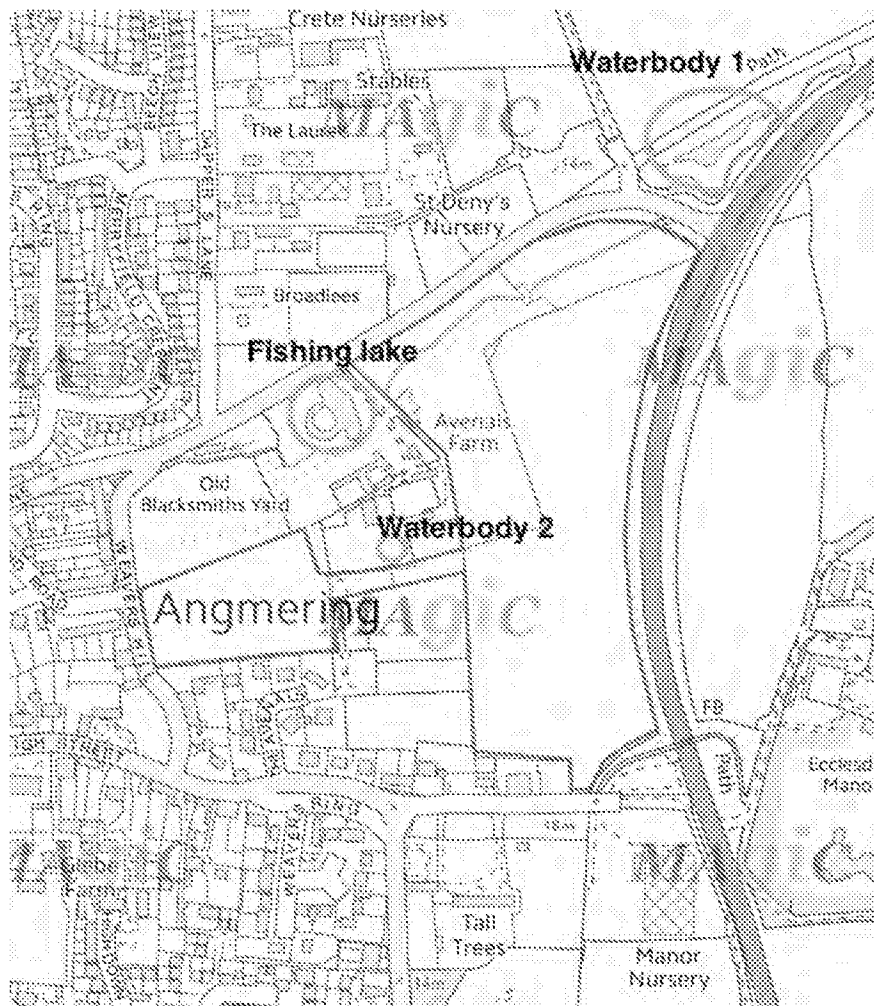


Figure 6: Ponds located in the wider landscape

- 3.32 Finally a further waterbody, waterbody 2 on the map above, was assessed using the HSI method. The suitability index is calculated for each of the 10 categories. These are then analysed using the equation below to obtain the geometric mean or HSI score of the ten suitability indices.

$$HSI = (SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \times SI_9 \times SI_{10})^{1/10}$$

The calculated score should be between 0 and 1 and will fall within one of several bands, which correspond to a given category for the pond.

Table 4: HSI Scores and Pond Suitability

HSI	Pond Suitability
< 0.5	Poor
0.5 - 0.59	Below Average
0.6 – 0.69	Average
0.7 – 0.79	Good
> 0.8	Excellent

Table 5. HSI score for waterbody 2

Suitability Indices No.	Feature	Pond Score
1.	Location	1
2.	Area	0.3
3.	Permanence	0.9
4.	Water quality	0.33
5.	Shading	0.5
6.	Presence of waterfowl	0.01
7.	Presence of fish	0.67
8.	Pond density	0.5
9.	Suitable newt habitat within 500m	0.67
10.	Macrophyte content	0.3
10 th root		0.35
Pond Suitability		Poor

3.33 The pond was considered to have ‘poor’ suitability for GCNs. This was largely due to the presence of geese and the impact that these species have on the water quality and lack of vegetation.

3.34 An update survey of waterbody 1 was undertaken in May 2016. The waterbody was sampled for eDNA with water samples taken by Emma Bagguley GCN Survey Level 1 license – REF: 2016 –23003 –CLS – CLS. All water samples were analysed by NatureMetrics in accordance with the protocol set out in Appendix 5 of Biggs *et al.* (2014). Full details can be found within appendix 4 of this report.

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- 3.35 The results from the samples taken from the pond to the north indicate GCN absence within the pond. All samples tested negative for any GCN DNA.

Reptiles

- 3.36 The semi-improved grassland and ruderal species around the scrub areas vary in sward height, however the overall habitat does provide significant areas of optimal habitat for common reptile species such as slow worm and common lizard and potentially for adder. There are recent records of common reptile species are found within 2km as detailed in table 2.
- 3.37 Further presence / likely absence reptile surveys were considered to be necessary and were set up on the same day as the preliminary ecological appraisal in August 2015. Reptile mats were laid along the edges of the fields, in strategic areas in the longer grassland and adjacent to the hedgerows as shown in blue below in Figure 7.
- 3.38 A terrestrial survey of the site for reptiles (presence or likely absence) was carried out at the site between the dates of 10th and 30th September 2015 inclusive. Prior to the commencement of the survey, the site was set up with artificial refugia (roofing-felt mats) for reptiles on 7th August 2015.
- 3.39 Refugia were placed around the site (in rough grassland or at the edges of scrub patches) and across the centre of the site and were left undisturbed for a 10-day period of bedding-in prior to the reptile survey (as recommended in the guidance from Natural England).

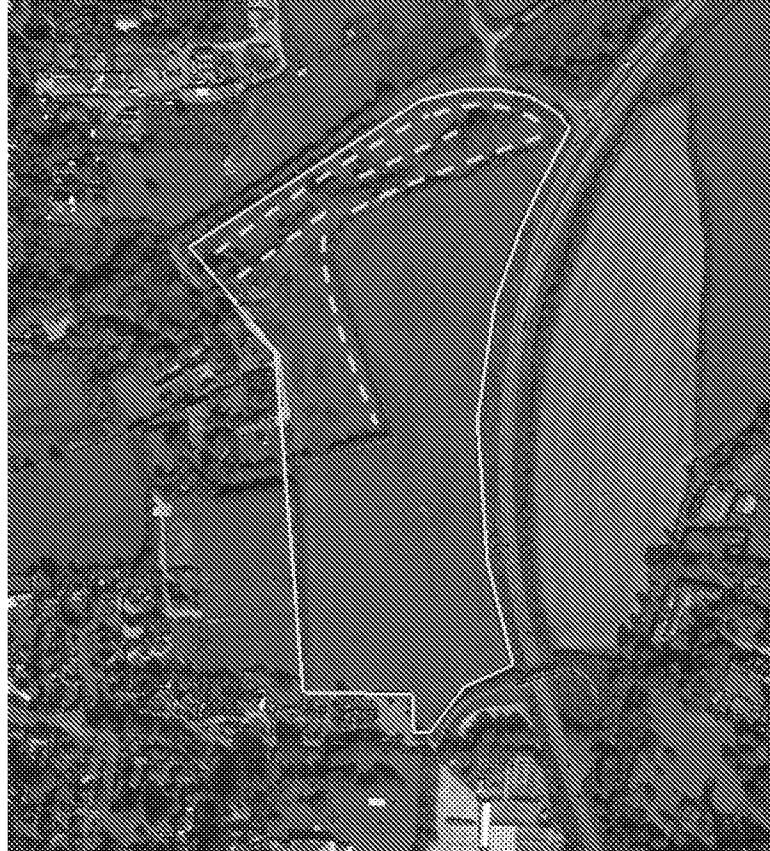


Figure 7: Locations of the reptile mats for the 2015 survey (indicative only)

3.40 The timing and number of survey visits completed were based on guidelines produced by Froglife (1999) and Gent and Gibson (1998). A total of seven survey visits were made to the site to check the refugia for the presence of reptiles and to carry out a visual transect. Visits were only carried out if the weather conditions were suitable for locating reptiles and took place at a variety of times of day (some in the morning and some in the afternoon/evening so that different mats would be exposed to the sun), in order to maximise the probability of finding reptiles if they were present. On each visit to the site, a minimum of one circuit to check all refugia was carried out.

3.41 Note that whilst checking the artificial refugia a visual check was also carried out of natural basking sites and refugia on the site. Other pre-existing refugia were also searched for evidence of reptiles, whilst the route chosen in moving between the artificial refugia allowed a thorough visual transect of the whole site to be carried out, again in accordance with Natural England guidelines.

Table 6: Results of the reptile survey conducted in field A in 2015

Date	Night temp	Max temp	Cloud cover (5)	Rain	Wind	Total
10/09/2015	9	21	0	None	SW light	0
14/09/2015	9	21	25	None	SW light	0
17/09/2015	6	23	0	None	SW light	0
20/09/2015	11	19	100	None	SW light	0
24/09/2015	7	22	50	Light shower	SW light	0
28/09/2015	6	19	50	Light Shower	SW light	0
30/09/2015	8	18	50	None	SW light	0

- 3.36 The red line has since been extended to include fields C and D. Fields C were horse grazed and poached fields which did not support the tussocky nature of grassland habitats which is often associated with common species of reptiles. However, field D supported grassland habitats which had been left ungrazed and unmanaged and as such had developed in to tussocks. This field was considered to have potential to support common reptile species.

Other Species

- 3.37 All mature trees and shrubs within the site boundary have potential to support nesting birds. Several common species were seen and heard at the time of the survey including green woodpecker, wren, pheasant, swallow and buzzards.
- 3.38 During the survey of waterbody 1 for eDNA in May 2016, evidence of water vole was found around the edges of this waterbody.

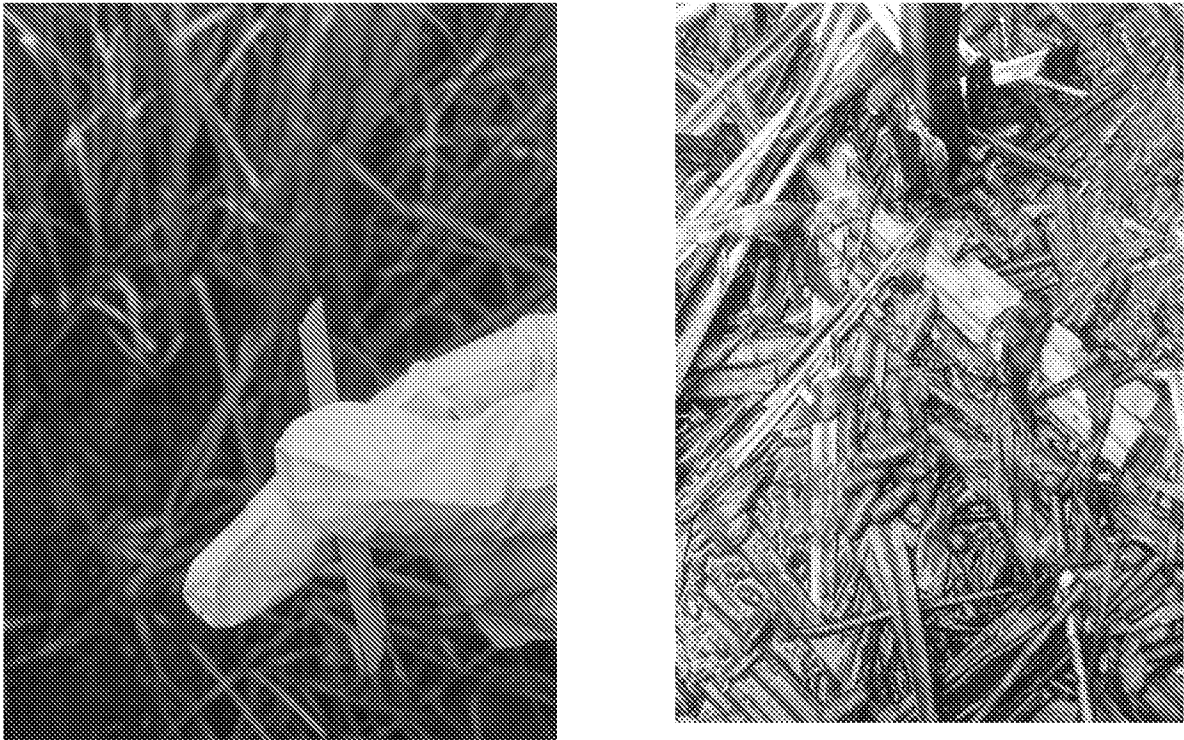


Figure 8: Evidence of water vole around the waterbody. The characteristic cut shape of the vegetation and the latrines are shown above.

3.39 The waterbody will not be impacted upon by the development of the land to the south of Water Lane. However, this water body is linked to the stream, by a culvert, to the land south of Water Lane. This stream did not support any evidence of water vole use or activity during the survey visits, and the banks were not considered to be suitable to support their burrows.

3.40 The water course present on the northern portion of the site is not considered to support water voles at this time. However, as this is connected, water voles would be able to move into the proposed development site. However, this field is not going to be developed and the water course is to be retained in situ. As such no suitable water vole habitat would be impacted upon by the proposals. Indeed it is recommended that the northern field is enhanced for water voles. This enhancement plan would include planting schemes and buffer areas across the edges of the water course.

4.0 Discussion

Site

- 4.1 The site is located in a semi-rural landscape off Water Lane, located on the southern boundary of the South Downs National Park. There are two SNCI within the 2km radius and several areas of ancient woodland. The A280 runs along the eastern side of the site, which is surrounded by pasture and agricultural fields on all other sides with some low density housing to the west.
- 4.2 The site does not fall within any statutory designated sites and the nearest SSSI is over 5km from the site. These designated sites will not be directly or indirectly affected by any development on the site as they are separated from the site by main roads and towns and connectivity to the nature reserves is therefore poor. As such local policies AREA 13, international sites of nature conservation, AREA 14 sites of national importance for nature conservation and, AREA 15 sites of local importance for nature conservation are not considered within this report as no impacts on such sites are predicted as a result of the proposals.
- 4.3 The tree lines and hedgerows surrounding the fields form an important feature of the wider landscape providing green links across the site and into the wider landscape. It is recommended that these features are maintained and improved where feasible. The retention of the trees and edges within the scheme has been recommend. Policy GEN 28 Trees and woodland seeks to protect ancient woodland, TPOs and trees in conservation areas. There is no ancient woodland on the site or adjacent to the site and understood that there are no TPOs present. As such policy GEN 28 is not considered to be relevant in terms of the habitats on site.
- 4.4 The trees and hedgerows are considered to be of local level interest. These features have potential to support protected species including roosting and foraging bats and nesting birds. It is recommended that these features are retained within any scheme, protecting the nature conservation interest of the site in line with policy GEN 29.

- 4.5 The loss of grazed pasture land is not considered to have a significant, ecological impact, however the hedgerows and treelines within the site all hold intrinsic value and the potential to support a range of protected species such as bats and reptiles.
- 4.6 The proposed development should retain as many of the trees and hedgerows on site as possible. If further surveys indicate the presence of protected species, suitable mitigation measures will ensure that the proposed development will not directly or indirectly impact on any protected sites or habitats.

Habitat

- 4.7 The habitats present on site are largely common and widespread. Grazed semi-improved grassland fields, largely supporting perennial ryegrass, dominate the site. There are connective hedgerows with ruderal understorey across the site, with trees of varying maturity scattered across the site and along the boundaries. There are areas of scrub in the northern boundary of the paddocks and tussocky grassland to the west that may provide opportunities for a range of wildlife.
- 4.8 The use of the habitats within the red line has been assessed for their potential to support a number of protected species. These are discussed individually below.

Protected Species

Bats

- 4.9 The trees on site vary in maturity and the majority are too immature and thin to support potential features associated with bat roosts. No trees have been identified on site as having medium or high potential for supporting bats and therefore none of them are considered to be constrained by the presence of bat roosts.
- 4.10 All the mature trees and semi-mature trees on site, including the trees growing along the tree lines and the hedgerows provide good opportunities for foraging bats. Hedgerows and tree lines also help connect the site to the wider landscape ensuring that bats can

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- move with ease across the area using these linear features for shelter and protection and opportunistic foraging. Tree lines and hedgerows should therefore be maintained or enhanced where possible.
- 4.11 The site is considered likely to be used by foraging bats. Surveys undertaken in 2015 on fields A and B did not show evidence that the site was used significantly either in numbers of individuals or indeed by different species. The activity levels were considered to be limited. As such it is considered that any development within the eastern aspect of the site would have negligible impact on areas of foraging habitat.
- 4.12 Much of the site is comprised of short semi-improved grassland, a habitat of low value to bats. As development is largely restricted to the grassland and the boundary features are retained and suitably buffered from direct lighting, it is considered that the impacts to foraging and commuting bats would be relatively low.
- 4.13 As the site has been recently extended it is considered that further bat transect surveys are carried out across the extended site to establish the most important areas of the site, that are used by bats for commuting. It must be demonstrated that significant commuting routes for bats between roost sites and foraging grounds are considered within the design of the scheme. It is considered that the site is unlikely to support significant population of bats due to the nature of the habitats present and the surveys which form a robust baseline conducted in 2015.
- 4.14 Using The Bat Conservation Trust's document Bat Surveys Good Practice Guidelines 2nd Edition, Table 7.2 'Minimum recommended visit frequency and timing for activity surveys' the recommended survey effort is as follows. The habitat quality for bats on site and adjacent to site was considered to be 'low' therefore it is recommended that transect surveys are carried out which will require one visit per season (April/May; June/July/August; and September/October). It is also recommended that automated surveys are carried out, one per season. This will require 1 location per transect. Data should be collected on 5 consecutive nights each season.

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- 4.15 The stable blocks surveyed on the edges of Field C, did not indicate any evidence of bat presence and were considered to have any potential for roosting bats. The buildings did not support traditional features such as enclosed roof voids, steep pitched roofs, hanging tiles, or lifted tiles. No further surveys for bats are recommended for these buildings and these buildings are not considered to be constrained by roosting bats.

Mitigation Measures for Bats

- 4.16 Any proposed lighting scheme as part of the development will have to take into account bats in the surrounding area as well as site. All bat species are nocturnal, resting in dark conditions in the day and emerging at night to feed. Bats are known to be affected by light levels which can affect both their roosting behaviour as well as their foraging behaviour. This needs to be taken into account, with a sympathetic lighting scheme for the development. Recommendations include:

- Lighting should only be installed if there is a significant need;
- Light levels should be kept low, the use of low pressure sodium lamps or high pressure sodium instead of mercury or metal halide lamps where glass glazing is preferred due to its UV filtration characteristics;
- Baffled lights should be used, where light is directed towards the ground;
- Lighting should be avoided near treelines or hedgerows, with light angled away from these areas, bats use linear features such as treelines to commute across the landscape to forage; and
- Lights should have focussed luminance on their target area, preventing light spill and pollution into other areas of the site and local area.

- 4.17 To provide new roosting opportunities for bats, it is recommended that boxes should be hung on retained mature trees and have clear flight paths. Recommended boxes include:

- Schwegler 2F Bat Box – these boxes are attractive to small bats and can be hung on trees around the building. One should be used on the mature trees along the site boundary.
- Schwegler 2FN Bat Box - It slightly larger then the 2F and provide opportunities for the larger bats. One should be used on the mature trees along the site boundary.

4.18 Incorporating specially designed bat boxes onto mature trees on site can enhance the habitat on site for bats. Bat boxes will be erected on the trees prior to works starting on site. Suitable bat boxes include a variety of wooden bat boxes such as; improved cavity box, double chamber bat box and other wood based varieties. Schwegler boxes have been recommended as these are long lasting and require no maintenance.

4.19 It is recommended that as many trees as possible be retained within the site, particularly on the site boundaries. Furthermore, it is recommended that buffer zones, tree planting and the use of green corridors are incorporated into the design of the master plan.

Badgers

4.20 No evidence of badgers using the site was found during the 2015 or 2016 surveys. Mammal paths are present within the red line boundary and survey area and a main badger sett is known to the north of Water Lane. However, foraging and commuting ground is not legally protected, albeit consideration for how such mammals use the local landscape should be included within the master plan. As such tree lines and hedgerows, landscape corridors and buffer zones, should all be included within the master plan and layout to allow a variety of species, including badgers, ease to move across the local landscape and to ensure connectivity.

4.21 Some areas of dense scrub were found to be inaccessible along the hedgerows of field C. If these are to be cleared and if any badger setts are located during development works, then works should be stopped immediately and an ecologist should be contacted. The development is not considered to be constrained by the presence of badgers at this stage and no further surveys are recommended.

Great Crested Newts

4.22 The waterbody located on Water Lane, to the north east of the site could not be assessed for its suitability for supporting GCN at the time of the survey due to heavy scrub growth. However, this pond was re surveyed in May 2016 and water samples taken for eDNA. The samples were negative in terms of GCN DNA and as such it is considered

that no further surveys are required as it is considered highly unlikely that GCNs are present.

- 4.23 The fishing lake to the north of the site is not considered to be suitable for supporting breeding GCN, and the ornamental pond in the residential garden (waterbody 2) is also given a 'poor' suitability rating due to the lack of vegetation for shelter and egg laying within the pond and the presence of geese. These ponds are not considered necessary to eDNA.

- 4.24 Due to the lack of eDNA in waterbody 1 and the low potential for the other off site ponds supporting GCNs, largely due to fish stocks, it is considered that the site is not constrained by the presence of GCNs and no further surveys for this species is required.

Dormice

- 4.25 Dormice are known to be present in Groom's Copse to the north of the site. There is limited connectivity between this woodland and the site, with Water Lane separating the habitats to the south. Furthermore, the A280, located on the eastern edge of the site, and residential development on the west, further fragment the landscape. The hedgerows around field B are well managed and flailed, reducing the foraging habitat for dormouse. The hedgerows around fields A, C and D are considered to be species-poor and defunct in places. There is little connectivity between the northern population and the southern hedgerows, therefore it is considered unlikely that a population of dormice could persist within the redline boundary. No further surveys are recommended.

Reptiles

- 4.26 The semi-improved grassland and ruderal species around the scrub areas vary in sward height, however the overall habitat does provide significant areas of optimal habitat for common reptile species such as slow worm and common lizard and potentially for adder. Further presence/absence surveys were undertaken in 2015 within suitable habitat within field A.

- 4.27 No reptiles were identified during the survey period, within Field A. It must be noted that the red line has since been extend to include fields C and D. Field D was considered

to provide suitable reptile habitat and as such it is recommended that this field is surveyed in a similar fashion to ascertain whether reptiles are present. Field C is well grazed and considered unlikely to support reptile.

- 4.28 Dependent on the results of the survey of Field D a suitable mitigation strategy would be required in order to ensure that no reptiles are harmed and that adequate mitigation is made. If reptiles are found then a mitigation strategy will be developed and involve translocation of reptiles and the use of reptile fence lines. The enhancement and creation of a mitigation area, especially designed for wildlife including reptiles, will also be created as part of the scheme.
- 4.29 Creation of log piles and brash piles within suitable areas of vegetation may be created for use by common reptile species as refugia, in place of the manure pile. Log piles should be located in a variety of locations, such as damp places, with some situated in more sunny locations. These should be stacked, and perhaps some amounts of leaf litter added. Planting around log piles with such species as honeysuckle or clematis (*Clematis* sp.) can also add value.

Breeding Birds

- 4.30 The UK breeding season for most bird species takes place between March and September. It is recommended that any works affecting trees or hedges on site be carried out outside of this period. Should this not be possible, it is further recommended that all vegetation suitable for breeding birds be checked for active nests no more than 48 hours prior to vegetation clearance. If active nests are identified, works in the vicinity of the nest must cease until the birds have fledged the nest.
- 4.31 The grazed fields in both Fields A, B and C are not considered suitable for specialist ground nesting birds, as the sward height is limited, the ground conditions are poached and there is limited cover. Field D does provide some habitat, albeit that this too is disturbed by dog walkers. It is not considered that due to the nature of the site and extent of any suitable habitat, that ground nesting birds are considered unlikely to be on site. As such no further surveys are considered to be necessary.

Other Species

- 4.32 Rabbit droppings, scrapings and holes were observed during the site visit. The Wild Mammals Protection Act 1996 states that it is an offence to crush or cause asphyxiation to mammals. Therefore, if any rabbit warrens are found which are to be disturbed or excavated, this should be done by hand rather than mechanical equipment.
- 4.33 Waterbody 1, located off site to the north, was found to support a population of water voles due to the presence of latrines along the edge of the waterbody and the identification of characteristic cut vegetation. As such it is considered that a population is present within this waterbody. The stream located within the northern field of the site does not support any evidence of water voles being present, with no latrines, burrows or evidence of feeding being found. As such it is considered unlikely that water voles are present within this stream area.
- 4.34 The stream however, is connected to the off site waterbody by a culvert which passes under Water Lane and as such it must be considered that water voles would be able to move into the proposed development site.
- 4.35 However, this field is not going to be developed and the water course is to be retained in situ. As such no suitable water vole habitat would be impacted upon by the proposals. Indeed it is recommended that the northern field is enhanced for water voles. This enhancement plan would include planting schemes and buffer areas across the edges of the water course. Currently the banks and the vegetation along this stream along the northern edge of the site is considered to be sub optimal for this species.

General Site Enhancements

- 4.36 All semi-mature trees and linear hedgerows should be maintained where possible to retain connectivity and foraging habitat for a range of species including bats, birds and small mammals.

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- 4.37 Any trees that are removed should be replaced elsewhere on the site or with native species such as: oak, ash, hazel, beech and cherry, this will mitigate against the loss of habitat that could be considered important under planning local policies.
- 4.38 The habitats on site have potential to support small mammals and common amphibians. To allow such species to successfully forage and move through the site, it is recommended that the boundary features of the separate plots are constructed from hedging as opposed to timber fencing. This will also enhance the biodiversity of the site, in particular if fruiting and flowering native species are used. If timber fencing nevertheless is to be used, it is recommended that either some panels are lifted from the ground, or that a number of holes are created at ground level.
- 4.39 It is always recommended that where possible, enhancements are made to incorporate features which are suitable for a range of species. Therefore planting shrubby species such as hazel and dogwoods on the edges of the site and within the gardens, would provide a good-layered habitat, which will attract a range of local wildlife. Maintaining the edges of the site will ensure that connectivity is retained with off site habitats. The use of wildflower mixes to increase the biodiversity of existing species poor grassland, will enhance the ecological value of the site for a range of important invertebrates.
- 4.40 The northern stream can be enhanced for a range of wildlife including water voles. The water's edge should be planted with tall wetland plants of local provenance, which are used for foraging and protection from predators. Species should include:
- Sedges (*Carex sp.*) e.g. Greater tussock sedge (*Carex paniculata*)
 - Branched bur-reed (*Sparganium erectum*)
 - Reed sweet-grass (*Glyceria maxima*)
 - Reed-canary grass (*Phalaris arundinacea*)
 - Yellow flag iris (*Iris pseudacorus*)
 - Meadowsweet (*Filipendula ulmaria*)
 - Willowherb (*Epilobium sp.*)
 - Soft rush (*Juncus effusus*)

4.41 Bird boxes may be hung on retained mature trees to increase the number of breeding opportunities throughout the site. Recommended boxes include:

- Schwegler 1N Deep Nest Box – give added nest protection from predators
- Schwegler 1B Bird Box – general purpose bird box, suitable for many species
- Schwegler Bird House – This is suitable for all common garden birds and may be attached to a building or wall so is suitable for siting behind climbing plant.

4.35 The site is to be developed into a residential development and fruit trees could be included within the garden areas. Species that could be planted include apples, pears, plums, gages and damsons. The site margins should be planted with additional species such as blackberry and hawthorn. Spring bulbs and wild flower seeds can also be sown into the borders. Log piles too can be incorporated in this area. Orchards are BAP habitats and are important for invertebrates and bird, lichens and fungi species alike. Fallen fruit provides good opportunities for badgers, hedgehogs (BAP species) and bats forage in areas of high insect diversity.

5.0 Conclusions

5.1 The site does not fall within any designated sites and as such it is considered that there would be no direct or indirect impacts predicted on designated sites within the wider landscape. The immediate surroundings of the site are largely pasture and nurseries to the south and medium-low density housing to the west with significant road networks surrounding the site.

5.2 The grazed grassland is not considered to be of significant ecological value. The scrub on site is considered to be of site value only. The hedgerows and trees present are largely species-poor and not valued as ‘important’ under the Hedgerow Regulations, however they provide connective habitat for a range of species.

5.3 No evidence of badgers using the site was found during either the 2015 and the 2016 surveys. They may use the site for foraging and commuting across, however this land is

-
- not protected. The development is not thought to be constrained by the presence of badgers and no further surveys are recommended.
- 5.4 The waterbody on Water Lane, on the northern boundary of the site was recommended for eDNA sampling to test for the presence of GCN DNA. The results of this survey confirm GCN DNA was absent from the samples. As such it is considered that the site is not constrained by the presence of this species.
- 5.5 The site supported low numbers of foraging bats recorded in the 2015 surveys, with the most common species being common pipistrelles. It is considered that the design should incorporate landscape linkages and green corridors to maintain and enhance foraging and commuting networks. Furthermore, lighting must be kept at low levels across the whole site, where possible. Enhancements for bats have been recommended within the report. It is considered that the redevelopment of the site will not result in the alteration of the favourable conservation status of bats in the local area.
- 5.6 No reptiles were identified during the survey period of 2015 within Field A. Field B and C are well grazed and considered unlikely to support reptiles. Field D was considered to provide suitable reptile habitat and as such it is recommended that presence/likely absence surveys are conducted across this site.
- 5.7 Despite the known presence of dormice to the north of the site, the hedgerow and tree habitat on site is considered to be species-poor and too fragmented and isolated from optimal woodland areas to support a population of dormice. The road between the site and the woodland is considered to be a significant barrier to dormouse dispersal therefore no further surveys are recommended.
- 5.8 The site is considered to have potential for breeding birds and as such, should vegetation require removal as part of the scheme, it is recommended that this is undertaken outside of the bird nesting season, as detailed in this report. Should this not be possible, it is further recommended that the buildings and vegetation be checked for active nests prior to clearance.

-
- 5.9 The waterbody to the north of Water Lane, waterbody 1, was found to support water voles. Whilst no water voles have been recorded within the red line boundary there is some connectivity and as such consideration for this species is recommended.
- 5.10 It is considered that the master plan would include enhancing the northern aspect of the site adjacent to the stream and maintain habitat linkages to the wider landscape through the enhancing and maintaining trees and hedgerows.

6.0 References

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Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001) *Great Crested Newt Conservation Handbook*. Froglife, Halesworth.

Natural England (2011) *Badgers and Development: A guide to best practice and licensing*. Natural England, Bristol

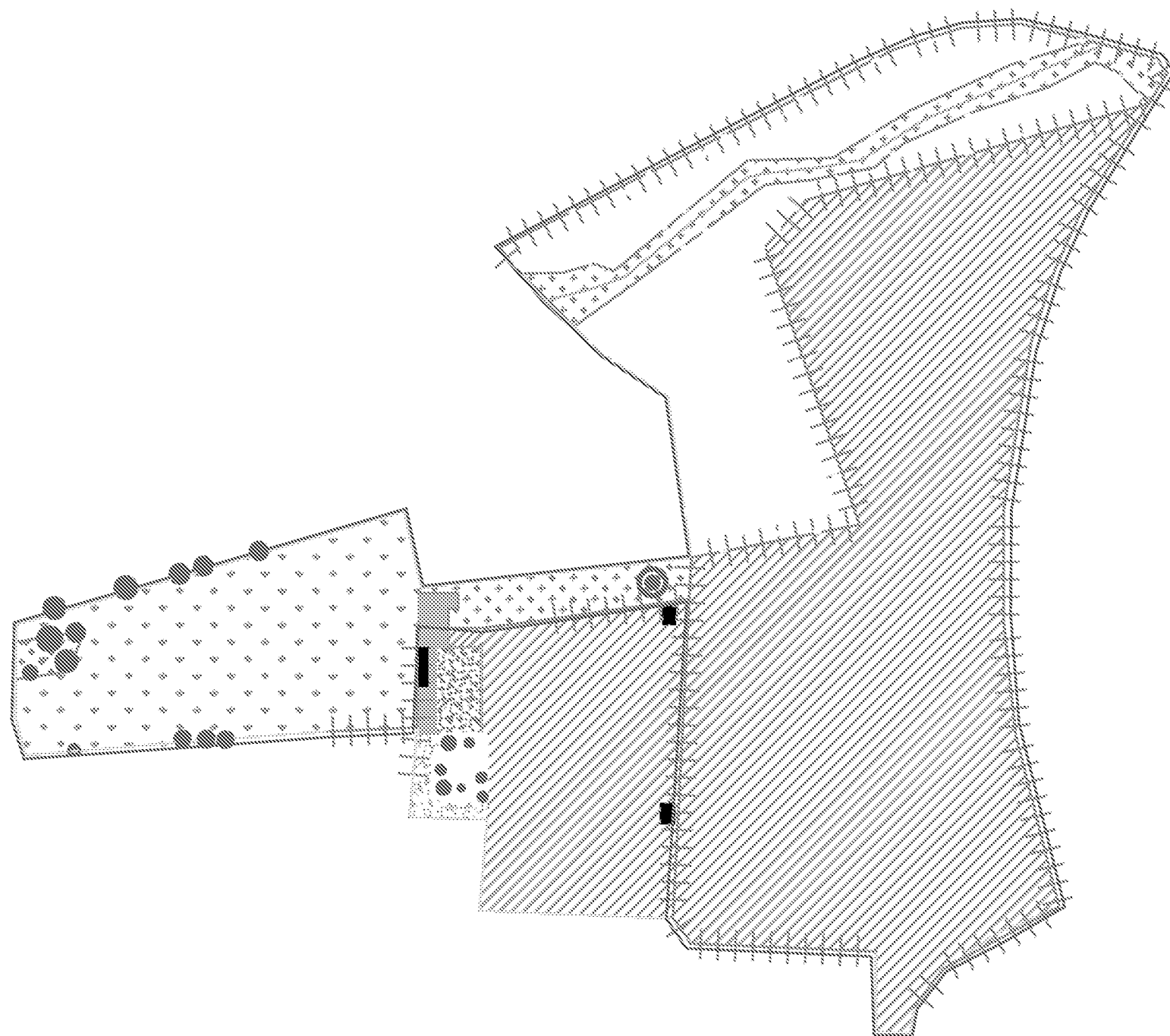
Neal, E. and Cheeseman, C. (1996) *Badgers*. T & A D Poyser Ltd. London.

Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). *Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus)*. *Herpetological Journal* 10 (4), 143-155

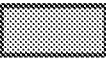
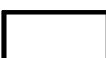
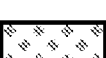
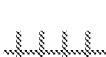
Magic Interactive Map: www.magic.gov.uk

Multimap: www.multimap.com

Appendix 1. Phase 1 Habitat Map



Key

-  Buildings
-  Hardstanding
-  Grazed improved grassland
-  Amenity grassland
-  Tussocky semi-improved grassland
-  Rough grazed semi-improved grassland
-  Scrub
-  Gravel
-  Horse Menage
-  Hedgerow
-  Scattered trees
-  Target Note: Manure Pile
-  Stream
-  Survey boundary
-  Application boundary

Site: Land south of Water Lane

Client: Rydon Homes & Gleeson

Surveyor: E.B and A.T

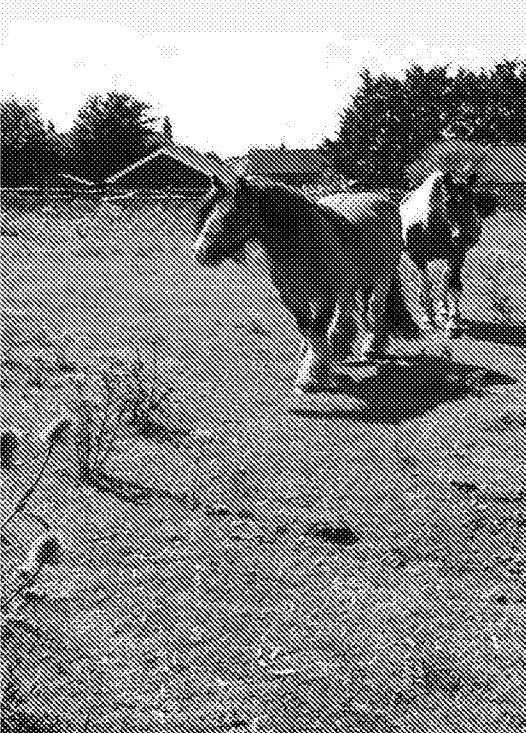
Survey Date: 19th February 2016

Drawing Title: Habitat Map

the
ecology
partnership

The Ecology Partnership Ltd
Dorset House, 297 Kingston Road, Leatherhead,
Surrey, KT22 7DL

Appendix 2: Photo Document

Photograph 1: Field A, scrub and ruderal species with well grazed grassland.	
Photograph 2: Field A, scrub and ruderal species with well grazed grassland.	
Photograph 3: Horse grazed field A	

Photograph 4:

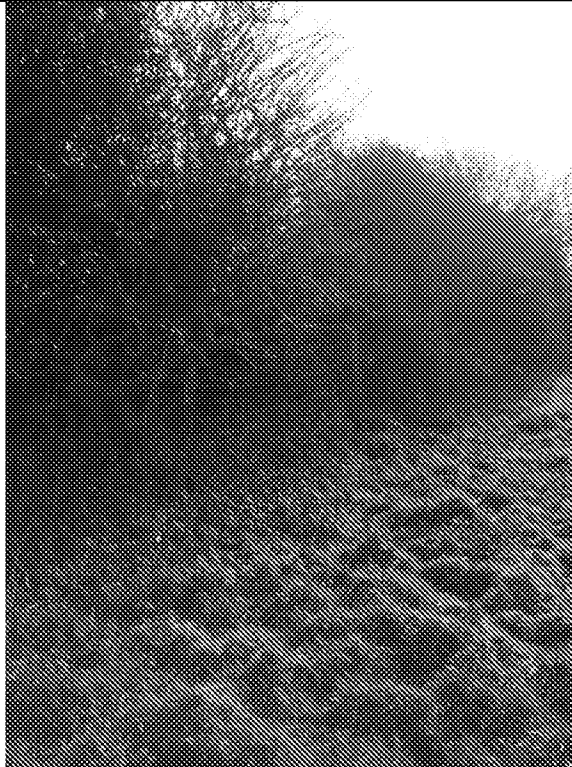
Field D dominated by tussocky semi-improved grassland

**Photograph 5:**

Taller grassland and ruderal species with scattered trees in the north western corner of field D



Photograph 6:
Field D, eastern hedgerow
between D and C



Photograph 7:
Field D, southern boundary
with residential housing



Photograph 8:

Scrubland with manure pile adjacent to a dilapidated caravan on the northern edge of the grazed paddocks



Photograph 9:

Grazed paddock in area C



Photograph 10:

Horse manage in area C



Photograph 11:
Stable blocks adjacent to the
paddocks in area C



Photograph 12:
Amenity grassland with
scattered trees adjacent to the
paddocks



Photograph 13:
Horse grazed paddocks in
area C



Photograph 14:

Hedgerow between field fields B and C, from the side of C. Newly planted field maple.

**Photograph 15:**

Extensive rabbit warrens found along the hedgerow between fields C and B

**Photograph 16:**

Ornamental pond in a residential garden with geese, waterbody 2.



Appendix 3: Biological Records

Habitat & Natural Features Map (ESD/15/549)

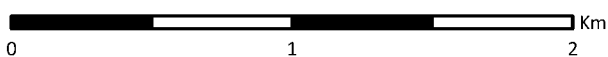
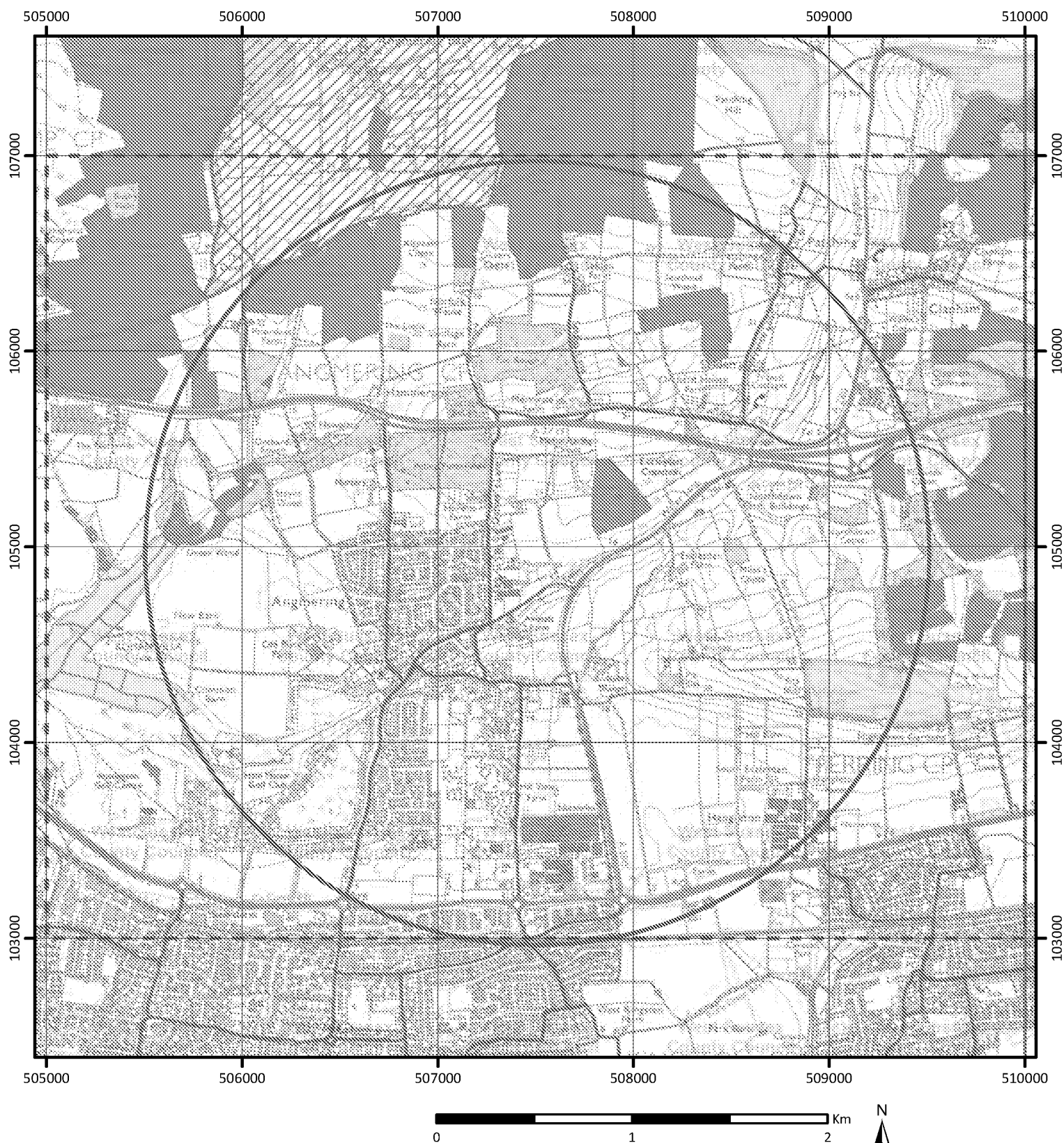
Land at Water Lane, Angmering + 2km radius

Prepared for Emma Bagguley (PJC Ecology) - 14/08/2015



**Sussex
Biodiversity
Record Centre**

Woods Mill, Henfield,
West Sussex BN5 9SD
sxbrc@sussexwt.org.uk
01273 497 558
www.sxbrc.org.uk



Key to Map:

- Enquiry area
- Species search area
- Ancient/veteran tree
- Open Water
- Traditional orchard
- Wood-pasture & parkland
- Ancient woodland
- Lowland calcareous grassland
- Coastal & floodplain grazing marsh

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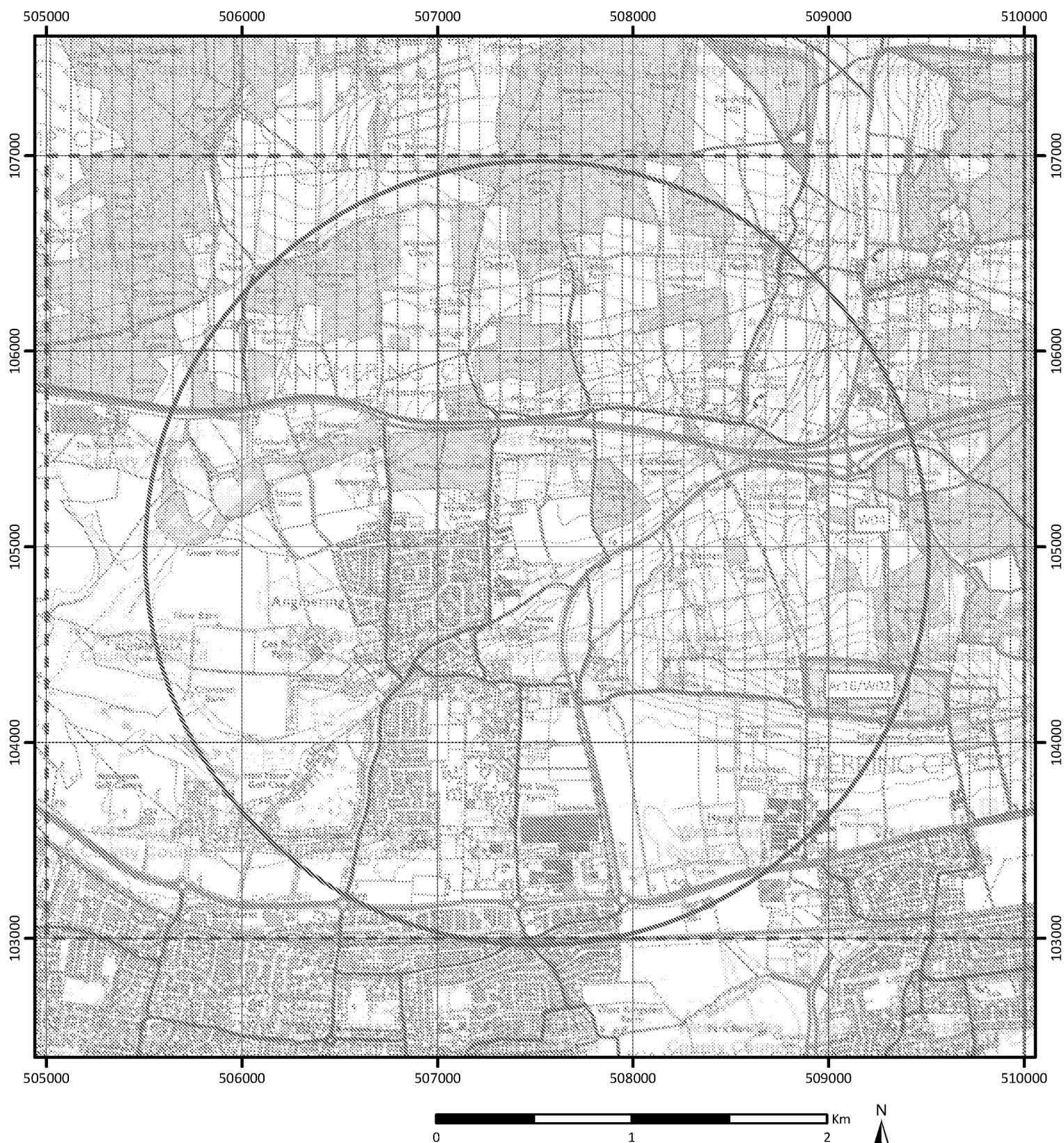
Ancient woodland, traditional orchards, woodpasture and parkland, vegetated shingle and saline lagoon data reproduced with permission of Natural England. Revised coastal and floodplain grazing marsh data remains provisional and is also reproduced with permission of Natural England. Chalk grassland data supplied by Natural England and South Downs Conservation Board. Black Poplar data supplied by Sussex Wetland Landscapes Project. Ghyll woodland data supplied by Dr Francis Rose. Reedbed data funded by Environment Agency and West Sussex County Council is provided by Sussex Biodiversity Record Centre and maintained by RSPB. Heathland data funded by West Sussex County Council, RSPB and High Weald AONB Unit. Ancient/veteran tree data derived from results of the Ancient Tree Hunt Project and the Tree Register of the British Isles (TROBI). South East Coastal Habitat Mapping data reproduced with permission of Environment Agency. © Crown Copyright. All rights reserved 2015.

Habitat data held by Sussex Biodiversity Record Centre (SxBRC) are created in-house or obtained from a variety of dataset providers. SxBRC continually strive to further improve and update these data wherever possible. However, this map should be treated as indicative rather than definitive: data may be generated from a range of field survey and/or predictive methods, each of which may have its own inherent limitations. In some situations a recent ground survey may be required to establish definitively the current status of a particular habitat at a specific location.

Designated Site Map (ESD/15/549)

Land at Water Lane, Angmering + 2km radius

Prepared for Emma Bagguley (PJC Ecology) - 14/08/2015

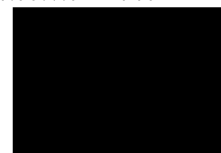


Key to Map:

-  Enquiry area
-  Species search area
-  SNCI
-  National Park

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RAMSAR, Special Area of Conservation (SAC), Special Protection Area (SPA), National Park, Area of Outstanding Natural Beauty (AONB), National Nature Reserve (NNR), Site of Special Scientific Interest (SSSI), Local Nature Reserve (LNR) and Country Park data reproduced with permission of Natural England. Site of Nature Conservation Importance (SNCI) data provided by East and West Sussex County Councils, and Brighton & Hove City Council. Notable Road Verge data supplied by East and West Sussex County Councils. Local Geological Site (LGS) data created by SxBRc in partnership with Sussex Geodiversity Group. © Crown Copyright. All rights reserved 2015.



SUMMARY REPORT

Land at Water Lane, Angmering + 2km radius

14 August 2015 ESD/15/549 Search Area: TQ0503 to TQ0906
Emma Bagguley (PJC Ecology)

Protected Species Register (not including bats, badgers, otters or birds)

Number of species recorded	7
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European Protected Species

Number of species recorded	10
----------------------------	----

Bats

Number of species recorded	8
----------------------------	---

Birds

Number of species recorded	146
Number of BoCC Red list species recorded	27
Number of BoCC Amber list species recorded	52
Number of W&CA Schedule 1 species recorded	25
Number of significant breeding bird records	53

BAP species (not including bats or birds)

Number of species recorded	35
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Rare Species (not including bats, birds or otters)

Number of species recorded	43
----------------------------	----

Invasive Alien Species

Number of species recorded	13
----------------------------	----

Appendix 4: eDNA letter

Great Crested Newt eDNA Results

Company: The Ecology Partnership

Address: Dorset House, 297 Kingston Road, Leatherhead, Surrey, KT22 7PL

Contact: Emma Bagguley

Date of Report: 3rd June 2016

Number of samples: 10

Thank you for sending your samples for analysis by NatureMetrics. Your samples have been processed in accordance with the protocol set out in Appendix 5 of Biggs *et al.* (2014).

DNA was precipitated via centrifugation at 14,000g and then extracted using Qiagen Blood and Tissue extraction kits.

qPCR amplification was carried out in 12 replicates per sample using the primers and probe described by Biggs *et al.* (2014) in the presence of both positive and negative controls.

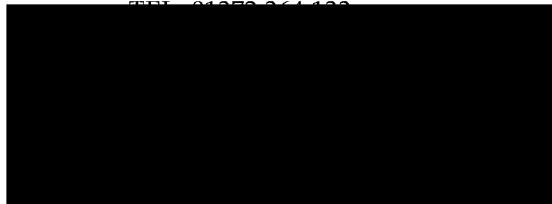
Results indicate GCN presence in one sample (GCN001288 – Barn Pond) and GCN absence in all other ponds. No DNA degradation or PCR inhibition was detected in any sample.

Note that a negative result does not preclude the presence of Great Crested Newts at a level below the limits of detection.

[illegible]

The Ecology Partnership Ltd
Thorncroft Manor,
Thorncroft Drive,
Leatherhead,
Surrey
KT22 8JB

TEL: 01878 261133



Approved: Alexia Tamblyn MA (Oxon) MSc CEnv MCIEEM FRGS

Date: 24th February 2016

Reissue: 3rd May 2017