



Leigh **Ecology** Ltd

Protected Species and Habitat Surveys

Land North of Gatewen Road,
New Broughton,
Wrexham

On behalf of Bellway Homes Ltd(North West)

Ecological Appraisal

Report number: Bell/21/010

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1. Executive summary

- 1.1 Leigh Ecology Ltd was commissioned by Bellway Homes Ltd (North West) to undertake an Ecological Appraisal of a parcel of land north of Gatewen Road, New Broughton, Wrexham.
- 1.2 The proposal is a development of up to 112 dwellings and associated infrastructure including open space, landscaping and sustainable drainage
- 1.3 The survey was completed on the 30th September 2021 the survey included the assessment of the site due to be developed, and the potential impact this may cause to protected species.
- 1.4 The assessment has taken account of previous surveys undertaken by RPS on bat activity and Great Crested Newts. These are summarised in this report. The full details are available in the RPS report reference ECO00246 January 2019.
- 1.5 The findings of this report are in line with the findings of the 2019 RPS report and mentioned above and complies with the recommendations set out in this report, which was agreed by Wrexham Council and NRW.
- 1.6 The site consists of a mosaic of predominantly poor semi-improved grassland, broad leaf copse, ruderal and scrub habitat types bounded by fences and hedgerows.
- 1.7 Some trees occur on the boundary of the site; the trees vary in health, with some offering bat foraging habitat.
- 1.8 There are three ponds within proximity, but only one of them is within 100m of the site boundary to the west. These were subjected to eDNA surveys in 2018 by RPS, all ponds returned a negative result.
- 1.9 No badger activity was noted on site; however, it is accepted that badgers are dynamic species, therefore preconstruction checks are suggested.
- 1.10 Any vegetation clearance and felling works should be undertaken outside of the bird-nesting season (April – August), to minimise any impact on nesting birds.
- 1.11 Recommendations for mitigation and compensation based on the protected species surveys are outlined below to negate or minimise potential ecological impacts:

Table 1: Summary of recommendations

Notable Ecological Feature	Consideration	Further Surveys Required	Mitigation, Compensation and Enhancement	Optimal Timings
Bats	The site is considered to provide 'Moderate' foraging habitat for bats	No	Avoid lighting impacts to features suitable for bats such as treelines and bat boxes. Include landscaping features and planting schemes to enhance the site for local bat species (will be detailed in LEMP for the site)	During and post construction During and Post construction
	A number of bat boxes were recorded along northern boundary of site	Emergence surveys of bat boxes if recommendations cannot be met	Avoid any adverse impacts to bats such as increased lighting levels or noise disturbance to bat boxes adjacent to the northern site boundary	Prior to works
Nesting birds	Potential for nesting birds to be present in areas of scrub and trees	No	Vegetation to be cleared outside of nesting season or any areas to be affected to be checked for active nests by the ecologist prior to removal	October – February
			Introduction of bird boxes and landscape features targeting birds of conservation concern to introduce biodiversity Enhancements	During works
Notable Ecological Feature	Consideration	Further Surveys Required ¹	Mitigation, Compensation and Enhancement	Optimal Timings
Badgers	Potential for badgers to excavate a sett within site	Yes, pre-commencement inspection	To be confirmed following results of survey	In the two months prior to work starting
	Potential for badgers to cross construction site	No	Best-practice working methodologies (i.e., mammalladders etc.)	During works

Reptiles	Potential for small numbers to be present in some locations across the site	No	Sympathetic vegetation clearance methods such as two-phase cut should be implemented at the site alongside supervision by an ecological clerk of works.	During works
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2. Introduction

2.1 Site Context and Location

2.1.1 The site comprises approximately 4.82ha of open pasture with tree lined boundaries and small copse to the northwest of Wrexham, central grid reference SJ 31259 51578. At the time of the survey, the site comprised a parcel of poor semi-improved grassland bound by tree lines. The adjacent land use is a mixture of residential development, pasture and woodland. The location in a local context is illustrated on Figure 1 below:

2.1.2 Outline planning permission P/2018/0674 was granted on the application site at Appeal (appeal ref. APP/H6955/A/19/3238474) on 15 February 2021 for residential development, up to 112 dwellings together with vehicular / pedestrian access from Gatewen Road, open space, landscaping, sustainable drainage and other related infrastructure. This report has been prepared to accompany an application for the approval of reserved matters to agree details relating to layout, appearance, scale and landscaping. Details of access were approved with the outline planning permission. Matters to be considered as part this application should not open up for consideration the principle of the development or those matters that were considered by the outline planning permission.

Figure 1: Site location plan (red line denotes site location and dotted blue line illustrates the zone of influence).



2.1.3 Aerial imaging was also reviewed to assess the site in relation to its context in the wider landscape.

Legislation and Planning Policy

2.1.4 General

Articles of British wildlife and countryside legislation, policy guidance and both Local and National Biodiversity Action Plans (BAPs) are referred to throughout this report. Their context and application are explained in the relevant sections of this report. The relevant articles of legislation are:

- Planning Policy Wales (8th Ed. January 2016)
- Technical Advice Note 5 (TAN5) Nature Conservation and Planning 2009
- Local planning policies (Wrexham City Council).
- The Conservation of Habitats and Species Regulations 2017.
- The Wildlife and Countryside Act 1981 (as amended).
- EC Council Directive on the Conservation of Wild Birds 79/409/EEC.
- National Parks and Access to the Countryside Act 1949.
- The Protection of Badgers Act 1992.
- The Countryside and Rights of Way Act 2000.
- The Hedgerow Regulations 1997.
- The Natural Environment and Rural Communities Act 2006; and
- Local Biodiversity Action Plan for Wrexham.

Sites of biodiversity conservation value, habitats and species in UK and Local Biodiversity Action Plans (BAPS) and protected species are material considerations in the planning process Habitat Regulations 2017 and the Environment (Wales) Act 2016.

Under the National Planning Policy Framework 2018 the presence of any protected species is a material planning consideration. The Framework states that impacts arising from development proposals must be avoided where possible or adequately mitigated/compensated for and that opportunities for ecological enhancement should be sought.

2.1.5 Great Crested Newt (GCN)

GCN are fully protected under Schedule 2 of the Conservation of Species and Habitats Regulations (2010) and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Combined, these acts make it an offence to:

- Kill, injure or take a great crested newt (or attempt to);
- Destroy any place where they live or breed;
- Damage any one of the above places (or any part of it);
- Obstruct access to these places;
- Disturb a great crested newt in any place it uses for shelter;
- Disturb the species such that it affects its ability to hibernate or migrate;
- Sell/exchange (or offer for sale/exchange) any part of a great crested newt, live or dead.

Offences can be deliberate, intentional or reckless and penalties for any of the above include fines of up to £5k and imprisonment of up to 6 months, per animal affected.

At the local level, the site falls within the area covered by the Wrexham Biodiversity Action Plan (WBAP), in which GCN are identified as a Priority Species. GCN are also listed in Section 41 of the NERC Act 2006 as Species of Principal Importance; national objectives and targets include the maintenance of the geographical range and viability of existing great crested newt populations to ensure that it remains in favourable conservation status.

Under the NPPF the presence of a protected species such as GCN is a material planning consideration. The Framework states that impacts on protected species arising from development proposals must be avoided where possible or adequately mitigated for and that opportunities for ecological enhancement should be sought.

2.1.6 Bats

All UK species of British bats are fully protected under The Conservation of Habitats and Species

Regulations 2017 (as amended). The Regulations prohibit:

- Intentionally, recklessly or deliberately kill, injure or take a bat;
- The deliberate disturbance of any bat species in such a way as to be significantly likely to affect:
 - Their ability of to survive, hibernate, migrate, breed, or rear or nurture their young; or;
 - The local distribution or abundance of that species.
- Damage or destruction of a breeding site or resting place (roost);
- The possession or transport of bats or any other part of.

Bats are also protected under the Wildlife and Countryside Act 1981 (as amended) through their inclusion in Schedule 5. Under the Act, they are protected from:

- Intentional or reckless disturbance (at any level);
- Obstruction of access to any place of shelter, breeding or rest;
- Selling, bartering or exchange of these species, or parts of.

Seven British bat species are listed as Species of Principal Importance (SPI) under the Natural Environment and Rural Communities (NERC) Act 2006. These are barbastelle *Barbastelle barbastellus*, Bechstein's *Myotis bechsteinii*, noctule **Nyctalus noctula**, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared *Plecotus auritus*, greater horseshoe *Rhinolophus ferrumequinum* and lesser horseshoe *Rhinolophus hipposideros*.

2.1.7 Badger

Badgers are protected under the Protection of Badgers Act 1992. This act is based on the need to protect badgers from baiting and deliberate harm or injury. The act makes it an offence to:

- Willfully kill, injure, take, possess or cruelly ill-treat a badger, or attempt to do so;
- Intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access routes.

A sett is defined as “any structure or place that displays signs indicating current use by a badger”.

2.1.8 Birds

The Wildlife & Countryside Act 1981 (as amended) protects wild birds, their nests and young. The Act makes it an offence to intentionally or recklessly kill, injure or take any wild bird, or damage or destroy the nest whilst being built or in use, or the eggs of breeding birds. Species listed on Schedule 1 of the Act, including barn owl, are further protected to include the intentional or reckless disturbance of birds

and their dependent young whilst at or near the nest as an

3. Methodology

3.1 Desk Based Assessment

Data regarding statutory and non-statutory designated sites, plus any records of protected or notable species and habitats was obtained from the local ecological records centre and online resources, details of which are provided in Table 2 below.

Table 2: Consulted resources

Consultee/resource	Data sought		Search radius from boundary
COFNOD – North Wales Environmental Information Service	Site designations, protected/notable species records		2km
www.magic.gov.uk ²	Statutory Site Designations	International	5km
		National	2km
	NERC 2006 Habitats of Principal Importance		1km

Phase 1 Habitat Survey

An extended Phase 1 Habitat survey of the site was carried out on 30th September 2021. Habitats were described and mapped following standard Phase 1 Habitat survey methodology (JNCC, 2010), which categorises habitat type through the identification of individual plant species, botanical community and habitat conditions.

Nomenclature follows Stace (Stace, 2010) for vascular plant species and uses the DAFOR scale for relative abundance (D = dominant, A = abundant, F = frequent, O = occasional and R = rare/infrequent).

3.1.1 Surveyor

The habitat survey and protected species assessment was carried out by Roy Leigh ACIEEM, who has been a professional ecologist for over twenty years and is appropriately experienced to carry out this type of survey.

3.1.2 Hedgerow Assessments

Hedgerows on site were assessed using the Hedgerow Evaluation and Grading System (HEGS) (Clements & Tofts, 1992). This method of assessment includes noting canopy species composition, associated ground flora and climbers, structure of the hedgerow, including height, width and gaps, associated features including number and species of mature trees, banks, ditches and grass verges.

Each hedgerow is given a grade using HEGS with the suffixes '+' and '-', representing the upper and lower limits of each grade respectively. These grades represent a continuum on a scale from 1+ (the highest score and denoting hedges of the greatest nature conservation priority) to 4- (representing the lowest score and hedges of the least nature conservation priority) as follows:

- Grade 1 – High to very high value
- Grade 2 – Moderately high to high value
- Grade 3 – Moderate value
- Grade 4 – Low value

Hedgerows graded 1 or 2 are considered to be a priority for nature conservation.

The hedgerows were also assessed against the Wildlife and Landscape criteria contained within The Hedgerow Regulations 1997 to determine whether they qualified as 'Important Hedgerows' under the Regulations. This was achieved using a methodology in accordance with both the Regulations and DEFRA guidance.

3.2 Protected / Notable Species Scoping

The habitats on site were assessed for their suitability to support any legally protected or notable species that may present constraints to the proposed development. This includes invasive non- native plant species such as Japanese knotweed *Fallopia japonica*, giant hogweed *Heracleum mantegazzianum* and Himalayan balsam *Impatiens glandulifera*.

Any incidental sightings of individual species or field signs such as footprints, latrines or feeding remains identified during the survey were noted.

3.2.1 GCN (Great Crested Newt)

Given no ponds occur on site, some potential terrestrial habitat and hibernacula were noted during the surveys. These occur in the scrub and woodland areas, additionally the brick walled tank will offer potential hibernaculum.

3.2.2 Bats

Tree assessments were undertaken from ground level, with the aid of a torch and binoculars (where appropriate). These surveys were undertaken on 30TH October 2021 by Roy Leigh ACEEM a NRW and Natural England licenced bat worker (Licence No: 2015/15883-CLS/CLS).

An external inspection of the site was undertaken; the primary objective of the survey was to locate any signs of bat activity such as the following were sought (Based on P16, British Standard 8596:2015 Surveying for bats in trees and woodland, October 2015):

- Natural holes (e.g., knot holes) arising from naturally shed branches or cavities created by branches tearing out from parent stems).
- Man-made holes (e.g., cavities that have developed from flush cuts or branches previously pruned back to a branch collar).
- Woodpecker holes.
- Cracks/splits in stems or branches (horizontal and vertical).

- Partially detached, loose or bark plates.
- Cankers (caused by localised bark death) in which cavities have developed.
- Other hollows or cavities, including butt rots.
- Compression of forks with occluded bark, forming potential cavities.
- Crossing stems or branches with suitable roosting space between.
- Ivy stems with diameters in excess of 50mm, with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk).
- Bat or bird boxes.

Breeding Birds

3.2.4 Breeding Bird habitat and activity was noted during the site survey.

Amphibians and Reptiles

3.2.5 This survey assessed habitat suitability for protected reptile and amphibian species, including great crested newts (GCN).

Protected Mammal Surveys

3.2.6 The site was checked for evidence of protected mammal species, including linear features, feeding signs, prints, trails, droppings, holes etc. for species including badger and water vole.

Survey limitations

3.2.7 All areas of the site were fully accessible, and best practice guidelines were adhered to; therefore, the survey was considered comprehensive.

4. Results

Desk Based Assessment

Two statutory designated sites were recorded within the search area identified in Section 3.1. Details of these are provided in Table 7 below.

Table 7: Statutory designated sites

Site name	Designation	Location	Brief description
Gatewen Marsh	SSSI ⁴	220m E	Significant example of the “southern mesotrophic mires” wetland type
Johnstown Newt Sites	SAC ⁵	4.1km S	Noted for its nationally significant Great Crested Newt (GCN) population

Five non-statutorily designated sites were also identified, details of which are provided in Table 8.

Table 8: Non-statutory designated sites

Site name	Designation	Location	Brief description
Moss Valley (site ref: W311)	LWS ⁶	50m to N	Well wooded valley slopes with adjoining grassland
New Broughton Meadow (site ref: W334)	LWS	280m to SW	Site with variety of semi-natural habitats, including pond and wet alder/willow carr
Berse Drelincourt (site ref: W335)	LWS	650m to S	Small site with mosaic of semi-natural habitats, including grassland and woodland with a stream
Higher Berse Marsh (site ref: W333)	LWS	680m to SW	Marsh and marshy grassland
Afon Gwenfro (site ref: W213)	LWS	1km to W	Reclaimed coal site with grassland and scrub

The closest NERC (2006) Habitat of Principal Importance is deciduous woodland, located c. 50m from the survey area.

Protected species records were received from COFNOD. A summary of the records considered most relevant to the site are provided in Table 9. A full species list is available on request.

Table 9: Summary of protected and notable species records

Species	Most Recent record	Closest Record to Site	Total Number of Records	Conservation Status
Amphibians				
Great crested newt	2017	270m to N	113	Fully protected EPS7, NERC2006
Palmate newt	2017	270m to N	2	Partially protected under WCA1981 ⁸

⁴ SSSI - Site of Special Scientific Interest

⁵ SAC - Special Area of Conservation

⁶ LWS - Local Wildlife Site

⁷ European Protected Species (EPS), protected by the Conservation of Habitats and Species Regulations 2010 (as amended) and the wildlife and countryside act 1981

⁸ Protected from sale and advertising for sale under the Wildlife and Countryside Act 1981 (as amended)

Species	Most Recent record	Closest Record to Site	Total Number of Records	Conservation Status
Smooth newt	2017	1.2km to NNE	47	Partially protected under WCA1981
Reptiles				
Common lizard	2010	1.6km to NE	1	Partially protected under WCA 1981 ⁹ , NERC 2006
Birds				
Bullfinch	2017	450m to ESE	6	Amber List (BoCC ¹⁰)
Mistle thrush	2015	480m to NW	6	Red List (BoCC)
Song thrush	2015	480m to NW	9	Red List (BoCC)
Starling	2015	480m to NW	7	Red List (BoCC)
Swift	2015	480m to NW	21	Amber List (BoCC)
Tree sparrow	2013	480m to NW	1	Red List (BoCC)
Duncock	2015	640m to SSW	10	Amber List (BoCC)
House sparrow	2016	640m to SSW	13	Red List (BoCC)
Kestrel	2016	640m to SSW	7	Amber List (BoCC)
Cuckoo	2013	1.8km to ENE	4	Red List (Birds of Conservation Concern – BoCC)
Mammals				
Soprano pipistrelle	2015	Adj. to site ¹¹	3	Fully protected EPS, NERC 2006
Common pipistrelle	2013	0.4km to NW	9	Fully protected EPS
Unknown bat species	2002	0.5km to NW	5	Fully protected EPS
Noctule	2015	0.6km to SSE	1	Fully protected EPS, NERC 2006
Badger	2017	Location confidential however, records were over 600m from site	8	PBA ¹²

⁹ Protected from killing and injury under the Wildlife and Countryside Act 1981 (as amended)

¹⁰ Birds of Conservation Concern

¹¹ A small soprano pipistrelle roost was recorded in a disused railway bridge adjacent to the site in 2007; this roost was subsequently dismantled

¹² Protection of Badgers Act 1992

4.1 Phase 1 Habitat Survey Results

The site was dominated by species-poor semi-improved grassland, also containing a narrow range of several different habitat types, as described under the individual sub-headings below. No protected, notable or invasive plant species were recorded.

4.1.1 Dense Scrub

Several patches of this habitat type were recorded around the boundaries of the site; most notably along the northern boundary where the marginal vegetation of the adjacent woodland had spilled over the fencing into the site. These areas were largely dominated by hawthorn *Crataegus monogyna* but with some occasional blackthorn *Prunus spinosa*. Other occasional species within this compartment were elder *Sambucus nigra*, bramble *Rubus fruticosus* agg., holly *Ilex aquifolium*, hazel *Corylus avellana* with some sycamore *Acer pseudoplatanus* and hornbeam *Carpinus betulus* trees. The ground flora in this area was noted to comprise Spanish or hybrid bluebells *Hyacinthoides* sp., wild mustard *Sinapis arvensis*, hedge bindweed *Calystegia sepium*, common hogweed *Heracleum sphondylium*, cleavers *Galium aparine* and dog's mercury *Mercurialis perennis*. The woodland adjacent to the site was outside of the site's boundaries so was not surveyed.

A small strip of dense bramble scrub was also noted along the southern boundary of the site adjacent to Gatewen Road.



Plate 1 Dense scrub area in the interior of the site

4.1.1 Scattered Scrub

Small patches of loose hawthorn scrub were noted along the western boundary of the site adjacent to the fence line. Another patch of scattered scrub was noted in the centre of the site, growing on a west-facing bank. The species present in this area were hawthorn, elder, immature ash *Fraxinus excelsior*, sycamore trees, saplings and some blackthorn. The ground cover in this area varied between bare earth and grassland, but with some dense patches of wild garlic *Allium ursinum* and native bluebells *Hyacinthoides non-scripta*; see Plate 4 below for an overview of this area.



Plate 2 The scrubby Hawthorn trees just outside the southern boundary.

4.1.2 Scattered Broad-leaved Trees

A small copse of broad-leaved trees was recorded along the eastern boundary of the site and was an extension of the woodland which ran along the entirety of the eastern boundary. The species present within the copse were sycamore, ash and oak *Quercus sp.*, with a ground cover of sparse elder and hawthorn. The remnants of an old red brick circular structure were also recorded in this area; see plates 4 and 10.



Plate 3 Scrubby Copse with scattered trees, located just within the north eastern boundary.



Plate 4 A brick semi-circle structure within the copse.



Plate 5 Dense scrub and ruderal vegetation within the eastern boundary.



Plate 6 The Eastern boundary – a fence line with broadleaf trees.

4.1.3 Poor Semi Improved Grassland

This habitat type dominated the coverage of the site and the structure of the grassland was predominantly short sward but with some unmanaged areas that had a richer diversity of species. The field had been subject to regular horse grazing, though no grazing had occurred for the last two years, therefore increasing the sward height and the composition.

The species composition was dominated by meadow foxtail *Alopecurus pratensis* with frequent cocksfoot *Dactylis glomerata*, creeping buttercup *Ranunculus repens*, ribwort plantain *Plantago lanceolata* (locally abundant), greater plantain *Plantago major*, ragwort *Jacobaea vulgaris*, daisy *Bellis perennis*, redclover *Trifolium pratense* (locally abundant), common sorrel *Rumex acetosa*, Yorkshire fog *Holcus lanatus*, sweet vernal grass *Anthoxanthum odoratum* (locally abundant, most notably in the northwest), common mouse-ear *Cerastium fontanum*, chickweed *Stellaria media*, dandelion *Taraxacum officinale* sp., yarrow *Achillea millefolium*, forget-me-not *Myosotis* sp., speedwell *Veronica* sp., and some cow parsley *Anthriscus sylvestris* around the margins.



Plate 7 Vista across the eastern section of the site.



Plate 8 Vista of the poor semi-improved grassland on site.

4.1.4 Tall Ruderal Vegetation

Narrow strips of this habitat type were noted along the southern boundary of the site and also around the perimeter of the scattered scrub in the centre of the site. The species present were common nettle *Urtica dioica*, broad-leaved dock *Rumex obtusifolius*, meadow buttercup, creeping thistle *Cirsium arvense* and common hogweed.

4.1.5 Site Boundaries Wall / Fence

A combination of post-and-wire and post-and-rail fencing comprised the boundaries of the site.



Plate 9 Tall ruderal in the interior of the site.

The locations of the micro habitats within the survey area are shown in Appendix 1, and in photographs within the text noted below. Habitat descriptions are also provided below; plant species are referred to using their English and Latin names.

Site Boundaries and surrounding habitat

4.1.6 The boundaries are mostly comprised of post and wire fences with mature hedgerows which are located just out with the western border, with hawthorn *Crataegus monogyna*, immature ash *Fraxinus excelsior*, blackberry *Rubus fruticosus*, raspberry *Rubus idaeus* hedge bindweed *Calystegia sepium*. Bordering the hedgerows are nettle *Urtica dioica* and bramble *Rubus*.

4.1.7 The survey site covers the full extent of the land shown in Fig 1 and further details of the ecological appraisal habitat survey land uses can be seen in Appendix 1.



Plate 10 The brick structure was checked for bat roost potential during the survey.



Plate 11 The trees out with the eastern boundary offer good bat commuting and foraging habitat.



Plate 12 The ruderal growth within the eastern boundary.

4.2 Protected / Notable Species Results

4.2.1 White-clawed Crayfish, Water Vole and Otter

No aquatic habitat with the potential to support white-clawed crayfish, water vole and otter was recorded either within or adjacent to the site and the likelihood of the presence of these species within the site is, therefore, considered to be negligible. There would be no adverse impacts on these species as a result of any development within the site and there is no recommendation for further survey, mitigation or licensing. These species will not be considered further in this report.

4.2.2 Great Crested Newt (GCN) Terrestrial Habitat Assessment

The grassland across the site was considered to be of little value to GCN due to the short-sward and open nature, but the areas of dense scrub and woodland along the northern boundaries of the site were considered to provide suitable commuting corridors and foraging habitat. In addition, the rubble piles and brick foundations associated with the brick structures within the site were also considered to provide suitable refugia and hibernacula sites.

Presence / Absence and eDNA

During the presence/absence surveys, no GCN were recorded within any of the ponds identified within 500m of the proposed development. In conjunction, the results of the eDNA testing for all four ponds was negative. Results of the eDNA testing can be found in Appendix 3.

4.2.3 Bats

Buildings and Trees

None of the built structures or trees within the site boundary contained any features with the potential to support roosting bats and they were, therefore, considered to provide Negligible roosting potential. The mature trees outside of the southern and northern boundaries of the site were not fully inspected to ascertain their potential to support roosting bats so the presence of roosting bats within these trees cannot be ruled out.

A number of bat boxes (both summer roost and hibernation roost boxes) were recorded on trees adjacent to the northern boundary of the site; see Figure 10 below (for approximate location see TN01 in Appendix A). Some of these boxes are likely to have been installed in association with the mitigation package for the licence associated with the adjacent development site.



Plate 13 Bat roost boxes on the trees just outside the eastern boundary



Plate 14 Bat Hibernation boxes erected on the trees out with the eastern boundary.

4.2.4 Bat Foraging Habitat

The majority of the site was open, short-sward grassland which was considered to provide very low value for foraging and commuting bats. The northern and part of the southern boundary of the site was tree-lined and connected to the adjacent woodland, providing suitable bat foraging corridors. The areas of trees and scrub within the site were also noted for their suitability for foraging/commuting bats.

Based on the presence of suitable foraging habitat within the site and connectivity to adjacent land through strong linear features, the site was assessed as providing Moderate value for foraging bats and as such, monitoring surveys were undertaken by RPS in the previous site study, these are summarised below.

4.2.5 Transect Survey Results

A total of four bat species were recorded during the transect surveys. These species comprised common pipistrelle *Pipistrellus pipistrellus*, Soprano pipistrelle *Pipistrellus pygmaeus*, Noctule *Nyctalus noctula* and *Myotis* sp.

During the transect surveys a total of 78 bat calls were detected. Of the calls recorded, the majority of bat activity within the site to date can be attributed to common pipistrelle (38 calls) with Soprano pipistrelle being the second highest call rate at 32 calls over the three transects. Noctule were recorded 7 times during the transect surveys with a single call attributed to *Myotis* sp.

The results of the activity surveys and monitoring suggest that common pipistrelle comprised the largest percentage of bat activity (86%) recorded within the site, with soprano pipistrelle, noctule and *Myotis* collectively comprising less than 15% of the activity recorded during the surveys. In order to assess bat activity at the site, the total number of bat calls was divided by the total number of survey hours. The resulting figure can be used to assess the bat activity per species within the site. The results suggest that the bat activity and utilisation of the site by soprano pipistrelle, noctule and *Myotis* populations are low (14), whilst common pipistrelle activity at the site was considered to be moderate.

14 Based on criteria outlined in a report by Enzygo Environmental Consultants, 2016.

The results of the activity surveys were then used to calculate the value of the foraging and commuting routes the site provided for the bat species recorded using criteria set out by Wray et al. (2010). The results suggested the site was of value on a district, local or parish scale, as opposed to being of regional or national importance.

Invertebrates

- 4.2.6 A number of notable invertebrate species were recorded during the survey. Particularly within the area in which the ruderal and scrub growth occurs. The occurrence of invertebrates is determined by the availability of preferred habitats.
- 4.2.7 Due to the site being partially managed, containing several flowering plant species and grasses, it is likely that butterflies, moths and bumblebees will frequent the available habitat and flowers occurring in the ruderal vegetation.

Reptiles

- 4.2.8 The site survey undertaken recorded no reptiles and the site was deemed unsuitable due to its lack of reptile friendly features.
- 4.2.9 Some glade features located on the scattered trees, just outside the site boundary, may offer some reptile basking areas, therefore, reptiles may commute and forage within the site area.

Birds

- 4.2.10 The site provides suitable nesting and foraging habitat (e.g., hedgerows, mature tree growth and surrounding broadleaved trees) for a range of bird species, including UK BAP and LBAP species such as, song thrush and starling, which in general are categorised as garden, built habitat type species.

- 4.1.11 In addition, other species such as thrush *Turdus philomelos*, jay *Garrulus Glandarius*, wood pigeon *Columba palumbus*, buzzard *Buteo buteo* and green woodpecker *Picus viridis* were either seen or heard within the surrounding area during the survey.

Badgers

- 4.1.12 No badger setts were found within the site, and no signs of activity was found.

Other mammals

- 4.1.13 The proposed site provides low potential for hedgehog *Erinaceus europaeus*, some potential for fox *Vulpes Vulpes* and grey squirrel *Sciurus carolinensis*.

5. Evaluation

5.1 Designated Conservation Sites (Statutory)

The closest statutorily designated site is Gatewen Marsh SSSI located approximately 220m to the east of the proposed development. It is considered that the housing development to the north of the site provides a suitable buffer between the development and the SSSI so as to avoid any negative impacts on the marsh.

Measures by which to reduce noise and dust pollution as a result of the development should be implemented at the site as good practice. The site lies within the Impact Risk Zone for the SSSI. Natural England define impact risk zones (IRZ) around each SSSI which reflect the sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts. It should be noted that the site does not fall into the criteria for developments which would require further consideration.

The SAC Johnstown Newt Site, noted for its populations of GCN, was identified over 4km from the site. Given the distance and intervening habitats it is considered the development does not pose a negative impact to the SAC nor the newt populations present.

5.2 Designated Conservation Sites (Non-Statutory)

The closest non-statutory site is Moss Valley LWS located approximately 50m north west from the site boundary. The housing estate to the north of the site provides a buffer between the proposed development and the LWS, therefore it is considered the LWS will not be impacted by the development. As above, measures by which to reduce noise and dust pollution as a result of the development should be implemented at the site as good practice.

5.3 Semi-natural Broad-leaved Woodland

Semi-natural broad-leaved woodland was recorded outside of the site's boundary, therefore there would be no direct impacts on the habitat as a result of the development. The lighting design for the construction and operational phase of the development must however avoid any direct light spillage onto this habitat given its value for nocturnal species such as bats.

5.4 Scattered Trees

Although afforded no specific protection, the trees within the site provide an important habitat structure for wildlife and should be retained where possible, as is currently proposed. Where this is not possible, it would be best-practice to replace any tree loss on a like-for-like basis to ensure there is no net loss in the biodiversity value of the site as a result of the proposed development.

5.1. Protected and Notable Species

5.1.1 Great Crested Newts

During surveys conducted in 2007, a small population of GCN was confirmed present in WB02 located approximately 260m to the north of the proposed site. The habitats on site are considered to offer some limited terrestrial habitat for GCN. As such, eDNA testing and two initial presence/absence surveys were conducted in 2018 on the three ponds identified in 2017, plus an additional pond identified in 2018.

The results of the eDNA testing were negative for all of the ponds surveyed, with no instances of GCN being recorded in the two presence/absence surveys conducted. As such, it is considered that GCN are not breeding in the ponds within 500m of the site and therefore it is considered unlikely GCN be present within the proposed development or negatively impacted as a result of the development.

No further investigation for GCN is considered necessary at this time.

5.1.2 Bats Roosting

No features with the potential to support roosting bats would be directly impacted as a result of the proposed development and there would be no constraints to this regard for any removal of trees or brick structures within the site.

It is considered the bat boxes adjacent to the northern site boundary have the potential to support roosting bats. As such impacts to these boxes such as illumination or disturbance through increased noise levels/vibration should be avoided as to cause a disturbance to or negatively impact roosting bats would constitute an offence under current legislation. If impacts to these bat boxes cannot be avoided, further surveys may be required.

Foraging

The site was assessed as offering Moderate foraging habitat for bats. As such, activity surveys were undertaken. The results of the activity surveys and monitoring surveys suggested that the site supported Low populations of foraging and commuting soprano pipistrelle, noctule and Myotis and a Moderate population of foraging and commuting common pipistrelles. The foraging and commuting routes within the site were assessed as being of district, local or parish value. As such, it is considered that the value of the existing foraging and commuting habitat be retained as part of the development.

Given the key tree lines will be retained as part of the proposed layout and given that if the development can implement a sympathetic lighting design whereby there is no increased illumination of the treeline, the development will not negatively impact local bat populations.

5.1.3 Nesting Birds

The vast majority of the site comprises medium length-sward grassland which offers some potential for nesting bird habitat. The bramble scrub occurring on the site also offers some potential nesting habitat. The hedgerows occurring along the southern boundary occur out with the boundary fence.

The proposals supplied indicate the retention of the boundary features (i.e., dense scrub/ trees) and habitats within the site (i.e., scattered scrub/trees) which offer suitable nesting habitat for a wide range of birds.

It is therefore considered the development does not pose adverse impacts to nesting birds.

Where any vegetation clearance is required during the nesting bird season (March – August inclusively) mitigation measures should be put in place to ensure no nesting birds are impacted.

It is considered the proposed development provides an opportunity to enhance the site

for nesting birds through the introduction of nest boxes targeting species of conservation concern, which would otherwise not nest within the site. Similarly, the implementation of a sympathetic landscape scheme for the site would also enhance the value of the site to nesting birds.

The introduction of rear gardens would also inevitably increase the value of the site to foraging birds through the introduction of insect-attracting plants and bird feeders; enhancement measures have also been recommended in Section 6 to further increase the value of the site to foraging birds wherever possible.

If the mitigation and enhancement measures outlined in this report can be implemented in full, it is considered that there would be a net gain in the value of the site to both nesting and foraging birds.

5.1.4 Badgers

Although no evidence of badger activity was recorded during the survey, suitable sett excavation habitat was recorded within and adjacent to the site. Given the transient nature of this species it is considered badgers could move into or adjacent to the site at any time prior to development. As such, a pre-commencement survey for badgers is considered necessary before works on site are undertaken. In the event that a sett is found on site or within 30m of the proposed development, further mitigation will be required.

It is considered that badger may utilise the site for commuting purposes. As such, mitigation for the protection of badgers and other mammals, such as hedgehogs should be implemented during the construction phase.

5.1.5 Reptiles

The majority of the site was considered sub-optimal for reptiles given the nature of the grassland habitat (short sward) however, some limited suitable habitat for reptiles was present on site, notably along the tree line and within rubble piles. As such, any vegetation clearance or removal of brick/rubble piles within the site should be conducted in a manner so as to eliminate the potential of killing or injuring any reptiles, which would be an

offence under the Wildlife and Countryside Act 1981 (as amended).

Under current proposals the majority of the suitable habitat is to be retained as part of the development, with the treeline to the north of the site being retained in such a manner as to maintain the connectivity of the site to the wider landscape. If the mitigation measures outlined in Section 6 can be implemented in full, it is considered that there would be no overall adverse impacts on local reptile populations, if present. Where the mitigation cannot be adhered to, further investigation for reptiles may be required.

6. Recommendation and Mitigation

6.1 Further Investigations Required

6.1.1 Roosting Bats

If the impacts outlined in Section 5.1.2 cannot be implemented, bat boxes should be subject to endoscope inspection by a licensed ecologist. Where inspection via endoscope is not feasible, nocturnal surveys may be required. The results of these surveys would inform any further mitigation requirements.

6.1.2 Badger

Due to the transient nature of badgers and potential time delays associated with the commencement of works on site, a pre-commencement badger check should be conducted prior to the start of works. In the event badgers are found within the site or within 30m of the development, further mitigation will apply.

6.1.3 Mitigation

The final layout has been developed, following the recommendations in the RPS report reference ECO00246 January 2019, previously agreed with the LPA and NRW, therefore it is planned that no residual adverse impacts on any species or species groups as a whole.

Some bat boxes will be provided in order to enhance the site for bats, these are shown on Appendix 4.

6.1.4 Herptile

Construction Phase

Sympathetic vegetation and rubble clearance methods such as two-phase cutting should be implemented and supervised by an ecological clerk of works during the construction phase of the proposed works within the site to protect any reptiles or amphibians which may be present.

Operational Phase

Consideration should also be given to the replacement of any thick scrub/shrub habitat to offset the loss of the suitable foraging/refugia habitat currently present.

Modified kerbs around gully pots should also be installed throughout the developed site to prevent the risk of herptiles (amphibians and reptiles) becoming trapped. The ACO Wildlife Kerb is a suitable example of such a kerb.

The retention of the treeline along the northern boundary will maintain the existing commuting corridor around the site and to the wider landscape, reducing the potential for habitat fragmentation and species isolation. Where the recommended enhancements can be implemented within the treeline i.e., additional planting of appropriate native shrubs and ground flora, this would be considered a net gain for herptiles.

6.1.5 Roosting Bats

It is likely that roosting bats are present within the bat boxes along the northern boundary of the site. Where impacts to these bat boxes cannot be avoided, the boxes should be checked by a licensed ecologist, or where this is not practicable, emergence surveys will be required.

6.1.6 Foraging Bats

Bats are adept to foraging in low light intensities, therefore it is considered the following guidance for the reduction of impacts caused by the lighting of bat roost/foraging/commuting features, in line with the Bat Conservation Trust (BCT 200916) should be adhered to during the construction phase:

- No direct illumination of any new or existing roost entrances, whether bat boxes or features on trees;
- Individual lamps should be hooded and directed where needed to avoid unnecessary light spillage – luminaires have been chosen to minimise light spillage and direct light onto the playing surface;
- The area affected by light spill should be considered, taking into account height of lighting columns and lighting angle – the impacts of light spillage modelled at 1.8m height has been considered;
- The use of asymmetric beam floodlights to reduce horizontal spill – as second point above; and
- Low level lighting such as LED's are preferable as they reduce the levels of light spillage (Stone, 2013).

Design recommendations for wildlife friendly lighting is included in the Statement on the impact and design of artificial light on bats produced by the Bat Conservation Trust (BCT) in 2011. This includes:

- Do not "over" light. This is a major cause of obtrusive light and is a waste of energy. Use only the minimum amount of light needed for safety. There are published standards for most lighting tasks, adherence to which will help minimise upward reflected light.
- Eliminate any bare bulbs and any light pointing upwards. The spread of light should be kept near to or below the horizontal.
- Use narrow spectrum bulbs to lower the range of species affected by lighting.
- Use light sources that emit minimal ultra-violet light. Insects are attracted to light sources that emit ultra-violet radiation.
- Reduce light-spill so that light reaches only areas needing illumination. Shielding or cutting light can be achieved through the design of the luminaire or with accessories, such as hoods, cowls, louvers and shields to direct the light.
- Reduce the height of lighting columns. Light at a low level reduces ecological impact. However, higher mounting heights allow lower main beam angles,

which can assist in reducing glare.

- For pedestrian lighting, use low level lighting that is directional as possible and below 3 lux at ground level.
- Use embedded road lights to illuminate the roadway and light only high-risk stretches of roads, such as crossings and merges, allowing headlights to take up the slack at other times.
- Limit the times that lights are on to provide some dark periods for wildlife.
- Use lighting design computer programs and professional lighting designers to predict where light spill will occur.

Given the numbers of common pipistrelle (medium population) utilising the site and presence of a low population of light adverse bat species (*Myotis*), it is considered that the lighting plan required for the development should be designed in such a way as to limit impacts to existing foraging and commuting habitat.

As such, it is considered that light spillage should not reach the treeline along the back of the residential gardens and should endeavour to maintain a 5m 'dark corridor' in order to retain the features for local bats. As it is considered difficult to demonstrate complete darkness, it would be considered this be achieved where luminance is below 0.2lux on the horizontal plane and below 0.4lux on the vertical plane. Lighting at these levels is considered to be lower than those on a moonlit night and have been shown to be acceptable for light adverse bat species such as *Myotis* (BCT 2018).

Currently, no lighting plan for the proposed development has been submitted for review. As such it is recommended that any proposed lighting plan for the development be reviewed by an ecologist prior to implementation.

6.1.7 Nesting Birds

The trees and scrub present on site is considered to provide suitable habitat for nesting birds. As such, any vegetation removal should be conducted outside of the nesting bird season (March- August inclusively) to avoid disturbance to nesting birds which would constitute an offence under the Wildlife and Countryside Act 1981 (as amended). Where this is not possible, any clearance of suitable vegetation should be preceded by a nesting bird check conducted by a suitably qualified ecologist.

Bird boxes will be provided within the proposed development as shown in Appendix 4.

6.1.8 Badgers

It is considered that badgers and other mammals may use the site for commuting purposes. It is therefore recommended that the following precautions are observed during construction:

- Mammal ladders (such as a plank) or earth ramps to be placed in any open excavations at the end of each day;
- Any open pipework to be capped overnight to prevent larger mammals such as badger from accessing the pipe work and becoming stuck;
- Night work should be avoided where possible, and any flood lighting should face away from the site boundaries; and
- Any chemicals or machinery are to be stored in a secure compound.

6.1.9 General Recommendations for Enhancement

Planning Policy Wales (and local development plan encourages ecological enhancement of sites subject to development proposals. Where new landscape planting is proposed species commonly occurring locally such as sycamore, horse chestnut *Aesculus hippocastanum* and oak *Quercus* spp. could be used. Other species such as silver birch *Betula pendula*, rowan *Sorbus aucuparia* and whitebeam *Sorbus aria* would make attractive additions to the site. In particular rowan will provide a valuable source of berries late into the winter months and provide an important food source for native and migratory bird species. Ash and elm should currently be avoided due to the prevalence of ‘Ash die-back’ and ‘Dutch elm disease’, as stocks of these species cannot be guaranteed to be free from these afflictions.

Additional enhancements that could easily be met within the development scope include the incorporation of bat and bird nest boxes, hedgehog-friendly fencing and hedgehog boxes. Bird boxes could be placed on the retained trees within the site boundaries and hedgehog boxes could be placed within any ornamental planting and compost piles. Bat boxes should be placed on new buildings or retained trees, facing south or south-west at heights >2m. They should be away from direct light overspill from street or security lighting and preferably be adjacent to green areas and wildlife corridors.

- 6.20 Given the proposal has been designed to the recommendations set out within the in the RPS report reference ECO00246 January 2019, previously agreed with the LPA and NRW it is suggested that the pre construction, construction and mitigation proposal can be secured within planning conditions.

7. References

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8. Appendices

Appendix 1 – Ecological Appraisal Plan

Appendix 2 – Target Notes

Appendix 3 – eDNA Results

Appendix 4 – Bat and Bird Box Plan

Appendix 1 – Ecological Appraisal Plan

Land off Gatewen Road



Legend:

Site boundary

Habitats

A2.2 - Scrub, scattered

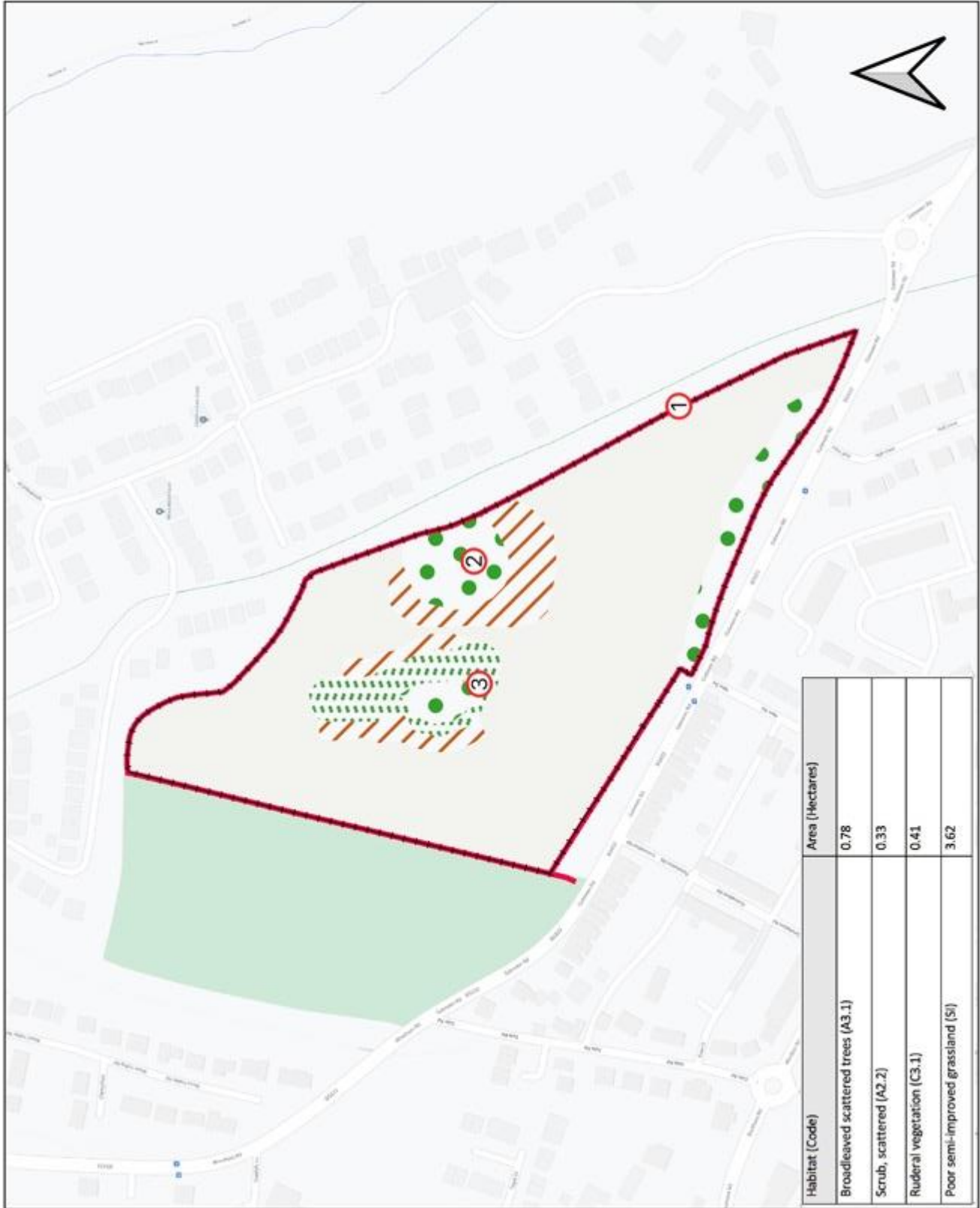
A3.1 - Broadleaved scattered trees

C3.1 - Tall ruderal vegetation

B6 - Poor semi-improved grassland

Fence

Target Notes



Habitat (Code)	Area (Hectares)
Broadleaved scattered trees (A3.1)	0.78
Scrub, scattered (A2.2)	0.33
Ruderal vegetation (C3.1)	0.41
Poor semi-improved grassland (B6)	3.62

Appendix 2 – Target Notes

Target Note	Description
1	Location of Bat Boxes
2	Broadleaf Copse
3	Bramble Scrub

Appendix 3 – eDNA Results

Folio No: E3095
Report No:



Order No:0308525

Client: RPS GROUP
Contact: Phillipa Mudd
Contact Details: phillipa.mudd@rpsgroup.com
Date: 06/06/2018

TECHNICAL REPORT

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

Date sample received at Laboratory: 30/05/2018 **Date**

Reported: 06/06/2018

Matters Affecting Results:

RESULTS

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
2797	Gatewen Road, Pond 3	-	Pass	Pass	Pass	Negative	0
2798	Gatewen Road, Pond 2	-	Pass	Pass	Pass	Negative	0
2799	Gatewen Road, Pond 1	-	Pass	Pass	Pass	Negative	0

SUMMARY

When Great Crested Newts (GCN); *Triturus cristatus* 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 (eDNA) traces to confirm GCN habitation or establish GCN absence. The water samples detailed above were submitted for eDNA analysis to the protocol stated in DEFRA

WC1067 (Latest Amendments). Details on the sample submission form were used as the unique sample identity.

RESULTS INTERPRETATION

Lab Sample No.- When a kit is made it is given a unique sample number. When the pond samples have been taken and the kit has been received back into the laboratory, this sample number is tracked throughout the laboratory.

Site Name- Information on the pond.

O/S Reference – Location/co-ordinates of pond.

SIC- Sample Integrity Check. 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. Inspection upon receipt of sample at the laboratory. To check if the Sample is of adequate integrity when received. Pass or Fail.

DC- Degradation Check. Analysis of the spiked DNA marker to see if there has been degradation of the kit since made in the laboratory to sampling to analysis. Pass or Fail.

IC- Inhibition Check- PCR inhibitors can cause false results. Inhibitors are analysed to check the quality of the result. 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.

Result- NEGATIVE means that GCN eDNA 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 eDNA 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. Positive or Negative.

Positive Replicates- To generate the results all of the tubes from each pond are combined to produce one eDNA 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.

METHODOLOGY

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' as the analytical process develops. 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 as well as spiked synthetic DNA 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 and means there should be no detection of closely related species. We have tested our system exhaustively to ensure this is the case in



our laboratory. We can offer eDNA analysis for most other species including other newts.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. Kits are manufactured by Sure Screen Scientifics to strict quality procedures in a separate building and with separate staff, 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. Stages of the DNA analysis are also conducted in different buildings at our premises for added

SureScreen Scientifics Ltd also participate in Natural England's proficiency testing scheme and we also carry out inter-laboratory checks on accuracy of results as part of our quality procedures.

Reported by: Sam Humphrey

Approved by: Derry Hickman

Appendix 4 – eDNA Results

End of Report

Bird and Bat Box Provision



Ibstock Bat Bricks -



Schwegler 1b Nestbox -

Locations provided on plan are indicative and will be confirmed on the ground during the works

Bird and Bat Box Provision



Ibstock Bat Bricks -



Schwegler 1b Nestbox -

Locations provided on plan are indicative and will be confirmed on the ground during the works

