Preliminary Ecological Appraisal & HSI

Former Keele Golf Course Ponds, Newcastle Under Lyme, Staffordshire, ST5 5AB

Silverdale Parish Council

Status	Issue	Name	Date
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Industry Guidelines and Standards

This report has been written with due consideration to:

- Chartered Institute of Ecology and Environmental Management (2017). Guidelines for Preliminary Ecological Appraisal. 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2017). Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2020). Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK. 2nd Edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- British Standard 42020 (2013). Biodiversity – Code of Practice for Planning and Development.
- British Standard 8683:2021 (2021). Process for Designing and Implementing Biodiversity Net Gain.

Proportionality

> The work involved in preparing and implementing all ecological surveys, impact assessments and measures for avoidance, mitigation, compensation, and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development. Consequently, the decision-maker should only request supporting information and conservation measures that are relevant, necessary, and material to the application in question. Similarly, the decision-maker and their consultees should ensure that any comments and advice made over an application are also proportionate.
>
> The desk studies and field surveys undertaken to provide a Preliminary Ecological Appraisal (PEA) might in some cases be all that is necessary.
>
> (BS 42020, 2013)

Executive Summary

Arbtech Consulting Limited was instructed by Silverdale Parish Council to undertake a Preliminary Ecological Appraisal (PEA) at Former Keele Golf Course Ponds, Newcastle Under Lyme, Staffordshire, ST5 5AB (hereafter referred to as “the site”). The survey was required to inform the local parish council of the baseline ecology of the site. There are no proposals for the land and therefore no impacts that can be assessed, but the report will detail notable, protected and/or invasive species and areas for enhancement of the site.

Contents

1.0 Introduction and Context

1.1 Background

Arbtech Consulting Limited was instructed by Silverdale Parish Council to undertake a Preliminary Ecological Appraisal (PEA) at Former Keele Golf Course Ponds, Newcastle Under Lyme, Staffordshire, ST5 5AB (hereafter referred to as "the site"). The survey was required to inform the local parish council of the baseline ecology of the site. There are no proposals for the land and therefore no impacts that can be assessed, but the report will detail notable, protected and/or invasive species and areas for enhancement of the site.

The aim of the PEA was to obtain data on existing ecological conditions, and to conduct a preliminary assessment of the ecological value of the site. No previous ecology reports have been produced for this site by Arbtech Consulting Ltd or, to the author's knowledge, by any other consultancy.

1.2 Site Location and Landscape Context

The site surveyed is located at National Grid Reference SJ 81887 45905 and is located within a wider golf course/local park area which has a much larger combined total area of over 90ha. An area of roughly 5.0ha was surveyed comprising of a large pond (Spring pool), scattered woodland coppices, scrub and ruderals and grassland areas. It is surrounded by further woodland coppices and areas of parkland within the golf course and woodland. The wider landscape comprises of further parkland areas, residential dwellings and developments and agricultural fields. A site location plan is provided in Appendix 1.

1.3 Scope of the Report

This report describes the baseline ecological conditions at the site, evaluates habitats within the survey area in the context of the wider environment and describes the suitability of those habitats for notable or protected species. To achieve this, the following steps have been taken:

- A desk study has been carried out.
- A field survey has been undertaken to record baseline information on the site and surrounding area including habitat types and their suitability for notable or protected species.
- Invasive plant and animal species (such as those listed on Schedule 9 of the Wildlife & Countryside Act) have been identified.
- Opportunities for the enhancement of the site for biodiversity have been set out.

There was no assessment of impacts as there are no proposed developments for the land, the report was to identify ecology on site.

2.0 Methodology

2.1 Desk Study

The desk study included a review of the magic.gov.uk database for statutory designated sites within a 2km radius of the site. Landscape value and the presence of notable habitats as well as granted European Protected Species Licence (EPSL) and notable species records held on magic.gov.uk database has also been considered where these are within influencing distance of the site.

2.2 Field Survey

The survey was undertaken by Katy Perry BSc (Hons) MCIEEM, Senior Consultant (Natural England Bat Licence Number: 2022-10404-CL18-BAT) on 16th February 2023.

An extended habitat survey was undertaken, following the methodology set out in *UK Habitat Classification User Manual* (UK Habitat Classification Working Group, 2018). All land parcels are described and mapped and, where appropriate, target notes provide supplementary information on habitat conditions, features too small to map to scale, species composition, structure, and management. Botanical species lists were compiled with reference to the DAFOR scale (D = Dominant; A = Abundant, F = Frequent, O = Occasional, R = Rare).

During the survey, habitats were assessed for their suitability to support protected species, and field signs indicating their presence recorded. The assessment takes into consideration the findings of the desk study, the habitat conditions on site and in the context of the surrounding landscape, and the ecology of the protected species.

Ponds on and adjacent to the site were assessed for their suitability to support great crested newts using the *Habitat Suitability Index (HSI) Assessment Methodology* (Oldham et al, 2000).

A visual inspection of the trees on the site was undertaken from ground level using binoculars and, where accessible and safe to do so, an internal inspection of any features which bats could use for roosting was completed using a torch. Trees were categorised according to the likelihood of bats being present and the types of roost that the identified features could support. This is summarised in Table 1 below. Roost suitability is classified as high, moderate, low, and negligible and dictates any further surveys required before works can proceed.

Table 1: Features of a tree that are correlated with use by bats.

Classification	Feature of tree and its context
Moderate to 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. Trees with high suitability could support roosts of high conservation value such as maternity or hibernation roosts.
Low	A tree of sufficient size and age to contain potential roosting features but with none seen from the ground or features seen with only very limited roosting potential to be used sporadically by individual or small numbers of bats. Potential roost features may be suboptimal for reasons such as shallow depth, poor thermal qualities, or upwards orientation with exposure to inclement weather or predators.
Negligible	Unsuitable for use by bats.

2.3 Limitations

It should be noted that whilst every effort has been made to describe the baseline conditions within the survey area, and evaluate these features, this report does not provide a complete characterisation of the site as only a small section of a much larger, connected park and golf course was surveyed. This assessment provides a preliminary view of the likelihood of protected species being present. This is based on suitability of the habitats on the site and in the wider landscape and the ecology and biology of species as currently understood.

The survey was completed outside of the optimal survey period (April to October) limiting the identification of ground flora species.

These limitations have been taken into account during the evaluation of the site.

3.0 Results and Evaluation

3.1 Designated Sites

Details of any statutory designated sites within a 2km radius of the site, including their reasons for notification, are provided in Table 2 below.

Table 2: Statutory designated sites within 2km radius of the site

Designated site name	***Distance from site (approx.)***	***Reasons for notification from Natural England***
Pool Dam Marshes Local Nature Reserve (LNR)	1.5km north-east	The reserve has streams, pools, and lowland wet wetland. Birds include skylark, snipe, and seed eating birds. Other animals to be seen include pipistrelle bat and water vole.

3.2 Field Survey Results

The results of the field survey are illustrated in Appendix 2. The weather conditions recorded at the time of the survey are shown in Table 3.

Table 3: Weather conditions during the survey

Date:	16/02/2023
Temperature	8°C
Humidity	62%
Cloud Cover	90%
Wind	1mph
Rain	None

Habitats and Flora

The following habitats are present within and adjacent to the site:

- Pond – r1a
- Ruderals – g3c 17 ruderal
- Woodland – w1c 11 scattered, 220 country park, 341 broadleaved woodland
- Other neutral grassland – g3c 64 mown, 310 grasslands, 540 golf course
- Bare earth - pathways u1c 115
- Scattered scrub – bramble – h3d
- Drainage ditch – r2

A description and photograph of each habitat is provided in Table 4.

Himalayan balsam was recorded on the site, with previous growing seasons decaying hollow stems present on the ground around the pond and fresh, new emergent growth was identified.

Table 4: Description and photographs of habitats within and adjacent to the site

Habitat type	Habitat description	Photograph
Pond – r1a Ruderals – g3c 17 ruderal Woodland – w1c 11 scattered, 220 country park, 341 broadleaved woodland Scattered scrub – bramble – h3d	The main focus of the survey was the pond, known as Spring Pool. This is a relatively large pool with some limited submergent vegetation within the pond, however the survey was undertaken outside of optimal botany season and therefore more vegetation may be present within the pond. A mallard was observed, but waterfowl were not observed to be present in high numbers during the survey. The perimeter of the pond comprises woodland with birch, beech, oak, and willow present. There is bracken and bramble around the perimeter, but also patches of bare earth where dogs are able to enter the pond. Around the edge of the pond within the embankment, burrow entrances were observed. One appeared to be quite large with a significant amount of spoil outside, which could belong to badger, but it was adjacent to several smaller burrows which were not the typical 'D' shaped hole and rabbit droppings were found around the pond perimeter.	
Pond – r1a Drainage ditch – r2	The pond itself had large pipes leading into and out of the waterbody. From the name and the evidence on site, it would appear that this may belong to a natural spring. The water in the pond was clear, with aquatic invertebrates observed indicating good quality water, with diving beetles and water boatmen. No midge or mosquito larvae was observed during the survey. It is possible a pool of this size could contain fish, but none were observed during the survey. There appears to be a network of drainage ditches and pools throughout the site.	

Woodland – w1c 11 scattered, 220 country park, 341 broadleaved woodland Bare earth - pathways u1c 115 Scattered scrub – bramble – h3d	Around the perimeter of the pond, present to the south of the waterbody, there were burrow entrances present in the soil. The majority of the burrows appeared to belong to rabbits with smaller entrances and rabbit droppings observed around the soil. However, there was one large burrow observed, a more typical D shape associated with badgers. With the habitats on site, it is likely badgers could be present within the site. There were no strong mammal paths observed around the pond within the vegetation, but it is subject to disturbance from walkers and dogs which would disturb the vegetation around the perimeter of the pond.	
Ruderals – g3c 17 ruderal Woodland – w1c 11 scattered, 220 country park, 341 broadleaved woodland Other neutral grassland – g3c 64 mown, 310 grasslands, 540 golf course Bare earth - pathways u1c 115 Scattered scrub – bramble – h3d Drainage ditch – r2	There are bare earth access tracks and pathways throughout the site between the strips of woodland which lie horizontally. Present adjacent to one of the footpaths is a drainage ditch. Though dry at the time of the survey and filled with willowherb, bramble, bracken, and desiccated vegetation, it is assumed these would hold water in times of inclement weather. The grass present across the site is managed to a relatively short sward length around the paths and the perimeters of the pathways where people would naturally cut through the site, and it is kept longer outside of those areas.	

Ruderals – g3c 17 ruderal Other neutral grassland – g3c 64 mown, 310 grasslands, 540 golf course	Adjacent to the pond was a large, flattened areas of vegetation. This was littered with the hollow stems associated with Himalayan balsam. This plant species dies back completely over the winter typically, which is an easily identifiable trait. Himalayan balsam is present along waterbodies and is an invasive non-native species (INNS) which has pink-purple flower heads which contain seeds that spread through the wind. Fresh emergent growth is present throughout the previous seasons vegetation dieback as shown in the image opposite.	
Ruderals – g3c 17 ruderal Other neutral grassland – g3c 64 mown, 310 grasslands, 540 golf course	This large expanse of hollow Himalayan balsam stems shows the extent to which the area next to the pond was covered within this INNS. It outcompetes other plants and colonises the area completely reducing biodiversity. However, it is a relatively easy species to eradicate over time in comparison to other known INNS.	

Pond – r1a Ruderals – g3c 17 ruderal Woodland – w1c 11 scattered, 220 country park, 341 broadleaved woodland	This image shows the mature trees within the woodland strips on site, which are designated as deciduous woodland on MAGIC, a priority habitat. The willow species, in particular the more mature species around the site have some old torn limbs and wounds which could support roosting bats. With waterbodies on site and linear dark corridors, the site has high habitat value for supporting bats in the landscape. This image also shows more of the pipework associated with the pool, in which it is likely the pool is fed continuously by a natural spring in the area.	
Other neutral grassland – g3c 64 mown, 310 grasslands, 540 golf course	Within the tussocky grass around the strips of woodland which had not been mown to a short sward length, evidence of small mammals was found with neatly chewed vegetation (lawns) around small mammal holes with a little latrine in the entrance – likely belonging to bank or field voles within the site. Small mammals are important within a landscape and are part of the wider food chain for birds of prey and snakes, if present.	

Other neutral grassland – g3c 64 mown, 310 grasslands, 540 golf course	In addition to evidence of very small mammals, possible presence of badgers, and confirmed presence of rabbit by droppings, there were small deer droppings observed on the site. These are likely to belong to muntjac.	

Fauna

An assessment of the suitability of the site for protected or notable species is provided in Table 5.

Table 5: Assessment of the suitability of the site for protected or notable species

Species	Assessment of suitability
Amphibians	Excluding Spring Pool (pond 1), there are 6 other ponds within 500m of the site, with connectivity between with optimal habitats of longer tussocky grass, scrub, and woodlands for shelter. MAGIC returned 2 GCN EPSLs within 2km of the site, the closest of which was 1.3km north-west. There was also pond survey data returned within 2km with the presence of GCN confirmed, just 650m north of the site. Great crested newts exist in metapopulations and are known to utilise ponds and their connecting terrestrial habitat during their life cycle; great crested newts are typically found within terrestrial habitats up to 500m from breeding ponds (Langton *et al.* 2001). There are habitats for foraging, commuting, and sheltering within the landscape to support GCN and common amphibians. The pond, Spring Pool, was assessed for its suitability to support GCN using the Habitat Suitability Index – in which it returned a score of “excellent”.

<table>
<tr><td></td><td>

Table 5a: HSI calculation of ponds.

SI Description	SI Value P1
Geographic location	1
Pond Area	0.95
Pond Permanence	0.9
Water Quality	0.67
Shade	1
Waterfowl Effect	0.67
Fish Presence	0.7
Pond Density	1
Terrestrial Habitat	1
Macrophyte Cover	0.65
HSI Score	**0.83**
HSI Category	**Excellent**

</td></tr>
<tr><td>Reptiles</td><td>The site and the connectivity of the site between the rest of the golf course, an adjacent cemetery and woodlands adjacent provides suitable habitats for foraging and sheltering reptiles, if present. The drainage ditches and ponds could support foraging reptiles. No evidence of reptiles was observed during the survey, but it was undertaken during February, which likely still sheltering overwinter.</td></tr>
<tr><td>Badgers</td><td>One likely badger sett entrance was observed around the pond's perimeter. However, it was present within and among a rabbit warren and therefore likely that the soil was softer and had become subject to slippage with more spoil looking present. The site offers suitable habitat to support badgers, both foraging within the landscape and sheltering. No obvious mammal paths were observed due to the presence of existing worn bare paths, frequent walkers, and dogs within the site. The bare earth was searched for footprints, but it was quite dry during the survey and only dog, fox and rabbit prints were seen.</td></tr>
<tr><td>Bats</td><td>Four EPSLs for bats were returned within 2km of the site, with the closest being located 950m south. This EPSL was for the destruction of a resting place which included common pipistrelles, soprano pipistrelles, and brown long-eared bats.
The mature trees on site could support roosting bats with some of the large willows having torn limbs and suitable wounds present. There were no buildings present within the site. The long strips of woodland would provide good dark corridors for sheltered commuting routes within the landscape. The waterbodies will provide insects for foraging bats.</td></tr>
<tr><td>Hazel Dormouse</td><td>Though there are good levels of deciduous woodland, with varied species and a mixed understorey, this site is likely outside of the natural geographic range for dormice, being just outside Newcastle under Lyme, with limited connectivity to the wider landscape and larger woodland areas. Dormice are arboreal species and require connectivity within the canopies, which with the large gaps between the strips of woodland for the previous use on site as a golf course, it is unlikely to support dormice.</td></tr>
<tr><td>Hedgehog</td><td>The site has suitable habitats to support hedgehogs with scrub and woodland for sheltering hedgehogs. The grassland around the site offers suitable foraging opportunities.</td></tr>
</table>

Otter	There are no watercourses within 500m of the site which would be suitable to support otter. Lyme brook is to the east and a fishpond south of the Keele Road, but without rivers and connectivity to site and the lack of riparian habitat, it is unlikely to support otter, or they be present within the site.
Water Vole	The local nature reserve, located 1.5km north-east has a reported presence of water vole. There are drainage ditches present in the wider landscape and between the site and the LNR. The drainage ditches observed on site during the survey were dry, but the whole site was not subject to a survey and therefore any watercourses containing water permanently on site could support water vole.
Birds	A mallard was observed on the pond during the survey. There are large mature trees around the site and scrub which provide both suitable nesting places and foraging for berries within the bramble scrub. The size of the site means it is likely to support a number of different urban species such as blue tits, great tits, wrens, robins, blackbirds, and pigeons, but it could also support woodpeckers and other species.
Invertebrates	The woodland strips with fallen branches, brash piles and scrub would support invertebrates. Dead wood, when left in situ is particularly important for invertebrates as is fallen leaf litter. There was lots of leaf litter in situ throughout the site, which is important for many species, including hoverfly larvae. The pond appeared to be in good condition with several aquatic invertebrates observed from the surface.

4.0 Conclusions and Enhancement Recommendations

Taking the desk study and field survey results into account, Table 6 presents an evaluation of the ecological value of the site.

Table 6: Evaluation of the site and any ecological value

Feature	Survey Results Summary	Biodiversity Enhancement Opportunities[1]
Designated sites	There is one designated site within 2km of the site, which is Pool Dam Marshes LNR, 1.5km north-east. The presence of non-statutory designated sites within 2km of the site cannot be established without data from Staffordshire Ecological Record (SER).	None, there is no direct connectivity to the LNR.
Habitats and flora	The site contains deciduous woodland which is listed as a habitat of principal importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006). The strips of woodland within the former golf course, including that immediately adjacent to the pond is designated as a priority habitat. Further notable habitats are present within 2km, including ancient woodland. The site also contains ponds which are of good quality and could be of value to local wildlife populations (as detailed in subsequent sections of this table). The remaining habitats are common and widespread and have low ecological value. Himalayan balsam was identified on the site, which is listed as an invasive, non-native species under Schedule 9 of the Wildlife and Countryside Act 1981.	The following habitat creation and enhancement opportunities could be incorporated into the proposed development: • Regular habitat management, including coppicing practices in sections, replacement or introduction of more native species and retention of deadwood and brash in piles on site. Species-specific enhancement opportunities are detailed later in this table.
Amphibians	The pond on site was subject to a HSI assessment, which resulted in it being deemed "excellent" for supporting GCN. There are ponds containing GCN within 700m and EPSLs within 2km of the site. There is good connectivity in the landscape and suitable habitats on site for foraging, commuting, and sheltering, including ponds for breeding. GCN are likely to be present and the site is likely to support common amphibians.	The following habitat creation and enhancement opportunities could be incorporated into the proposed development which would be beneficial for amphibians: • Enhancement of existing ponds on site to encourage wildlife with planting of native species to encourage egg laying and prevent dogs from entering the waterbodies. • Retention of deadwood and brash in piles to create hibernacula for overwintering amphibians.
Reptiles	There are optimal habitats to support reptiles if they are present in the local landscape. There is tussocky grass and small mammals within for foraging, and woodland areas for sheltering overwinter.	The following habitat creation and enhancement opportunities could be incorporated into the proposed development which would be beneficial for reptiles: • Enhancement of existing ponds on site to encourage wildlife and prevent dogs from entering the waterbodies.

[1] The Local Planning Authority has a duty to ask for enhancements under the NPPF (2021).

		• Retention of deadwood and brash in piles to create hibernacula for overwintering reptiles. • Grass cutting piles for grass snakes to egg-lay if present in the landscape. • Tall grass borders along open rides adjacent to scrub for basking areas.
Roosting bats	The trees on site were not assessed individually but several mature willow trees were observed to have torn limbs and wounds present which could support roosting bats. In addition, the strips of woodland provide suitable dark corridors for commuting and the ponds provide foraging opportunities.	The installation of bat boxes on mature trees at the site could provide additional roosting habitat for bats. Bat boxes should be positioned 3-5m above ground level facing in a south or south-westerly direction with a clear flight path to and from the entrance, away from artificial light. The bat boxes will be a specification suitable for crevice dwelling bats such as pipistrelles, as identified within the EPSLs within 2km of the site.
Badger	It is likely badgers are present on site, but no conclusive evidence of badgers was observed within the survey area. Mammal burrows were observed but only concluded the presence of rabbits on site.	Having areas of woodland fenced off from the general public and more fruit bearing trees and shrubs on site would be beneficial to numerous species, including badgers.
Hedgehog	The habitats on site are optimal for supporting hedgehogs with long grass for foraging and wooded areas and scrub for sheltering within.	The following habitat creation and enhancement opportunities could be incorporated into the proposed development which would be beneficial for hedgehogs: • Creation of brash piles for sheltering • Ensuring any perimeter fencing of the site has gaps to allow hedgehogs to commute through the landscape. • Shallow banks on pond edges to ensure animals can safely escape
Water vole	Though no evidence of water vole was observed on site and the drainage ditches within the surveyed area were dry, there is presence of water vole within 2km of the site.	The following habitat creation and enhancement opportunities could be incorporated into the proposed development which would be beneficial for water vole: • Reprofiling ditches to provide suitable banks for burrows, • Ensuring ditches hold water permanently and connect to other ditches/watercourses. • Planting of aquatic and bankside vegetation, minimising shading from scrub and trees
Birds	A mallard was observed on the pond in the site and small numbers of common species were heard and seen. There is excellent habitat for supporting birds with torn limbs and wounds on mature trees, trees present on site, scrub for foraging within and tussocky grass.	The installation of bird boxes on mature trees at the site could provide additional nesting habitat for birds. General purpose bird boxes should be positioned 3m above ground level where they will be sheltered from prevailing wind, rain, and strong sunlight. Species-specific bird boxes should be installed in line with manufacturers specifications.
Invertebrates	The site has varied habitats which are mosaic across the site and intermingle with mature trees, scrub, flowering ruderals, and the waterbodies which support varied invertebrate species.	The following habitat creation and enhancement opportunities could be incorporated into the proposed development which would be beneficial for invertebrates: • Deadwood should be retained on site within brash piles or retained as standing deadwood where possible. • Ponds should be maintained to good condition with pruning of overshadowing trees and planting of native plants within.

5.0 Bibliography

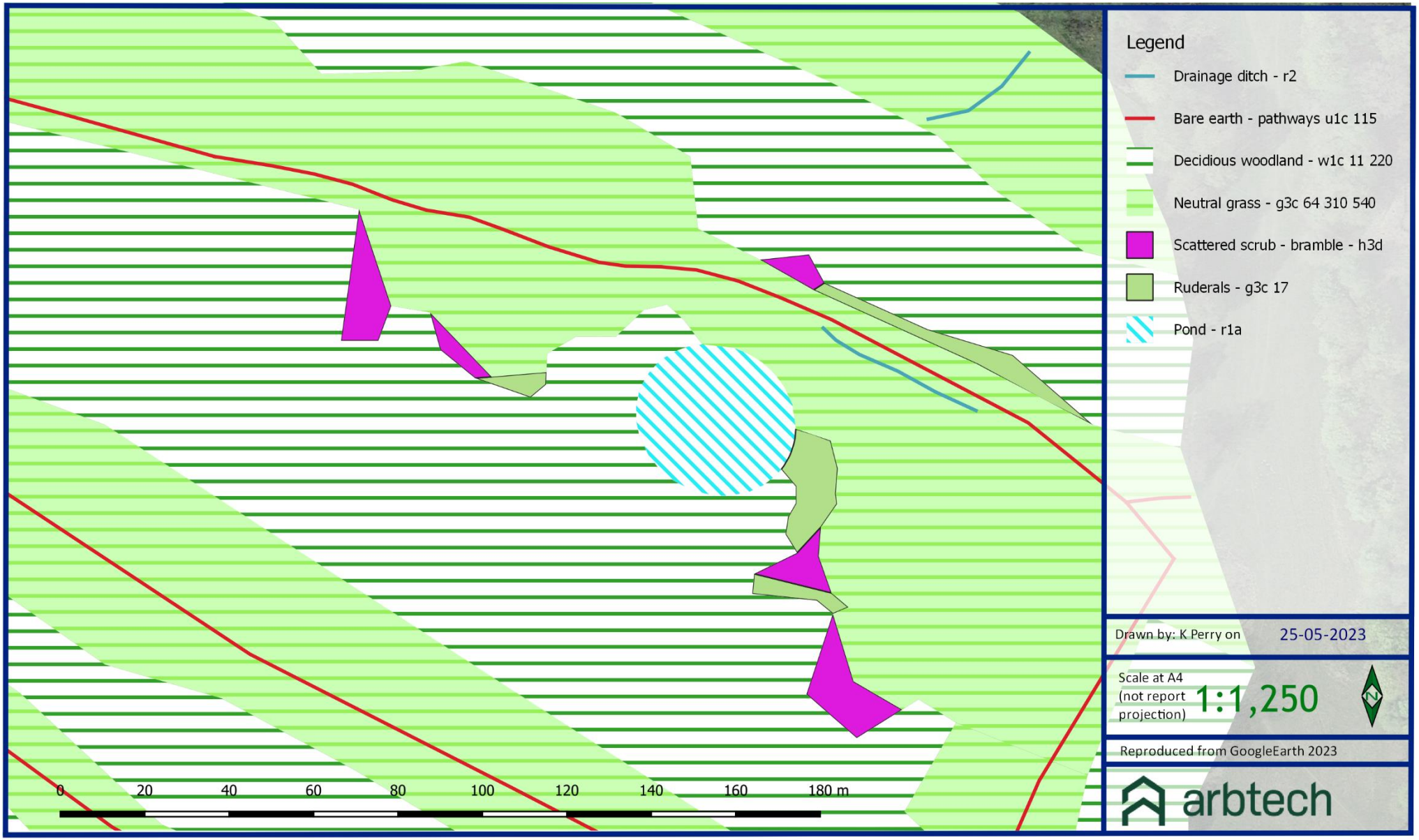
- Biggs, J., Ewald, N., Valentini, A., Gaboriaud, C., Dejean, T., Griffiths, R., Foster, J., Wilkinson, J., Arnell, A., Brotherton, P., Williams, P. and Dunn, F. (2014). Using eDNA to Develop a National Citizen Science-based Monitoring Programme for the Great Crested Newt (*Triturus cristatus*). Biological Conservation. 183. 10.1016/j.biocon.2014.11.029.
- Bright, P., Morris, P., Mitchell-Jones, T. and Wroot, S. (2006). The Dormouse Conservation Handbook Second Edition.
- British Standard 42020 (2013). Biodiversity – Code of Practice for Planning and Development.
- British Standard 8683:2021 (2021). Process for Designing and Implementing Biodiversity Net Gain.
- Chanin, P. (2003). Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No. 10. Natural England, Peterborough.
- Chartered Institute of Ecology and Environmental Management (2017). Guidelines for Preliminary Ecological Appraisal. 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2017). Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2020). Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK. 2nd Edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- Collins, J. (2016). Bat Surveys for Professional Ecologists —Good Practice Guidelines, 3rd edition, Bat Conservation Trust, London.
- Defra (2007). Hedgerow Survey Handbook. A Standard Procedure for Local Surveys in the UK. Defra, London.
- Edgar, P., Foster, J. and Baker, J (2010). Reptile Habitat Management Handbook. Amphibian and Reptile Conservation, Bournemouth http://downloads.gigl.org.uk/website/Reptile%20Habitat%20Management%20Handbook.pdf
- Garland, L. & Markham, S. (2008) Is Important Bat Foraging and Commuting Habitat Legally Protected? http://biodiversitybydesign.co.uk/cmsAdmin/uploads/protection-for-bat-habitat-sep-2007.pdf
- Gent, T. and Gibson, S. (2003). Herpetofauna Workers' Manual. JNCC, Peterborough.
- Gilbert, G., Gibbons, D.W., and Evans, J. (1998) Bird Monitoring Methods: A Manual of Techniques for UK Key Species. The Royal Society for the protection of Birds, Sandy, Bedfordshire, England.
- Google Earth. Accessed on 25/05/2023.
- Harris, S., Cresswell, P., and Jefferies, D.J. (1989). Surveying badgers. Mammal Society, London.

- HMSO: Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 https://www.legislation.gov.uk/uksi/2019/579/contents/made
- HMSO: Countryside & Rights of Way Act (2000) http://jncc.defra.gov.uk/page-1378
- HMSO: Natural Environmental and Rural Communities Act (2006) http://www.legislation.gov.uk/ukpga/2006/16/contents
- HMSO: The Protection of Badgers Act 1992 (as amended) http://www.legislation.gov.uk/ukpga/1992/51/contents
- HMSO: Wildlife and Countryside Act 1981 (as amended 01.04.1996) http://jncc.defra.gov.uk/page-1377
- Institution of Lighting Professionals (2018). Guidance Note 08/18 Bats and Artificial Lighting in the UK. Bats and the Built Environment Series Publication: http://www.bats.org.uk/news.php/406/new_guidance_on_bats_and_lighting.
- JNCC (2004). Bat Workers Manual, 3rd Edition. http://jncc.defra.gov.uk/page-2861
- Joint Nature Conservation Committee (2010). Handbook for Phase 1 habitat survey a technique for environmental audit. http://jncc.defra.gov.uk/PDF/pub10_handbookforphase1habitatsurvey.pdf
- Langton, T., Beckett, C. and Foster, J (2001). Great Crested Newt Conservation Handbook. Froglife. Suffolk. http://www.froglife.org/wp-content/uploads/2013/06/GCN-Conservation-Handbook_compressed.pdf
- Magic Database. http://www.magic.gov.uk/MagicMap.aspx Accessed on 25/05/2023.
- Mitchell-Jones, A.J. (2004). Bat Mitigation Guidelines. English Nature, Peterborough.
- National Planning Policy Framework (2021). https://www.gov.uk/government/publications/national-planning-policy-framework--2
- Natural England Designated Sites View. https://designatedsites.naturalengland.org.uk/SiteSearch.aspx Accessed on 25/05/2023.
- Natural England (2005). Organising Surveys to Determine Site Quality for Invertebrates: A Framework Guide for Ecologists. Natural England, Peterborough.
- Natural England (2007). Badgers and Development a Guide to Best Practice and Licensing. Natural England. Bristol. http://www.wildlifeco.co.uk/wp-content/uploads/2014/03/badgers-and-development.pdf
- Oldham R.S., Keeble J., Swan M.J.S. and Jeffcote M. (2000). Evaluating the Suitability of Habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10(4), 143-155. https://www.thebhs.org/publications/the-herpetological-journal/volume-10-number-4-october-2000/1617-03-evaluating-the-suitability-of-habitat-for-the-great-crested-newt-triturus-cristatus/file
- Panks, S., White., N., Newsome, A., Potter, J., Heydon, M., Mayhew, E., Alvarez, M., Russell, T., Scott, S.J., Heaver, M., Scott, S.H., Treweek, J., Butcher, B. and Stone, D. (2021). Biodiversity Metric 3.0: Auditing and Accounting for Biodiversity – Technical Supplement. Natural England.
- Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. 2021. The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands, and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747.
- Strachan, R., Moorhouse, T. and Gelling, M. (2011). Water Vole Conservation Handbook. Third Edition. Wildlife Conservation Research Unit, Oxford.

- UK Habitat Classification Working Group (2018). UK Habitat Classification User Manual at http://ecountability.co.uk/ukhabworkinggroup-ukhab
- Wray, S., Wells, D., Long, E. and Mitchell-Jones, T (2010). Valuing Bats in Ecological Impact Assessment. IEEM In-Practice. Number 70 (December 2010). Pp. 23-25.

Appendix 1 : Site Location Plan

Appendix 2 : Habitat Survey Plan



Appendix 3: Legislation and Planning Policy

LEGAL PROTECTION

National and European Legislation Afforded to Habitats

International Statutory Designations

Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are sites of European importance and are designated under the EC Habitats Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (the Habitats Directive) and the EC Birds Directive 2009/147/EC on the conservation of wild birds (the Wild Birds Directive) respectively. Both form part of the wider Natura 2000 network across Europe.

Under the Habitats Directive Article 3 requires the establishment of a network of important conservation sites (SACs) across Europe. Over 1000 animal and plant species, as well as 200 habitat types, listed in the directive's annexes are protected in various ways:

Annex II species (about 900): core areas of their habitat are designated as Sites of Community importance (SCIs) and included in the Natura 2000 network. These sites must be managed in accordance with the ecological needs of the species.

Annex IV species (over 400, including many Annex II species): a strict protection regime must be applied across their entire natural range, both within and outside Natura 2000 sites.

Annex V species (over 90): their exploitation and taking in the wild is compatible with maintaining them in a favourable conservation status.

SPAs are classified under Article 2 of the Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds both for rare bird species (as listed on Annex I) and for important migratory species.

The Conservation of Habitats and Species Regulations 2017 (as amended) form the legal basis for the implementation of the Habitats and Birds Directives in terrestrial areas and territorial waters out to 12 nautical miles in England and Wales (including the inshore marine area) and to a limited extent in Scotland and Northern Ireland.

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. The Convention covers all aspects of wetland conservation and recognises the importance of wetland ecosystems in relation to global biodiversity conservation. The Convention refers to wetlands as "*areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres*". However, they may also include riparian and coastal zones. Ramsar sites are statutorily protected under the Wildlife & Countryside Act 1981 (as amended 01.04.1996) with further protection provided by the Countryside and Rights of Way (CRoW) Act 2000. Policy statements have been issued by the Government in England and Wales highlighting the special status of Ramsar sites. The Government in England and Wales has issued policy statements which ensure that Ramsar sites are afforded the same protection as areas designated under the EC Birds and Habitats Directives as part of the Natura 2000 network (e.g., SACs & SPAs). Further provisions for the protection and management of SSSIs have been introduced by the Nature Conservation (Scotland) Act 2004.

National Statutory Designations

Sites of Special Scientific Interest (SSSI) are designated by nature conservation agencies in order to conserve key flora, fauna, geological or physio-geographical features within the UK. The original designations were under the National Parks and Access to the Countryside Act 1949 but SSSIs were then re-designated under the Wildlife & Countryside Act 1981 (as amended). As well as reinforcing other national designations (including National Nature Reserves), the system also provides statutory protection for terrestrial and coastal sites which are important within the European Natura 2000 network and globally.

Local Statutory Designations

Local authorities in consultation with the relevant nature conservation agency can declare Local Nature Reserves (LNRs) under the National Parks and Access to the Countryside Act 1949. LNRs are designated for flora, fauna or geological interest and are managed locally to retain these features and provide research, education, and recreational opportunities.

Non- Statutory Designations

All non-statutorily designated sites are referred to as Local Wildlife Sites (LWS) and can be designated by the local authority for supporting local conservation interest. Combined with statutory designation, these sites are considered within Local Development Frameworks under the Town and Country Planning system and are a material consideration during the determination of planning applications. The protection afforded to these sites varies depending on the local authority involved.

Regionally Important Geological Sites (RIGs) are the most important geological and geomorphological areas outside of statutory designations. These sites are also a material consideration during the determination of planning applications.

The Hedgerow Regulations 1997

The Hedgerow Regulations 1997 are designed to protect 'important' countryside hedgerows. Importance is defined by whether the hedgerow (a) has existed for 30 years or more; or (b) satisfies at least one of the criteria listed in Part II of Schedule 1 of the Regulations.

Under the Regulations, it is against the law to remove or destroy hedgerows on or adjacent to common land, village greens, SSSIs (including all terrestrial SACs, NNRs and SPAs), LNRs, land used for agriculture or forestry and land used for the keeping or breeding of horses, ponies, or donkeys without the permission of the local authority. Hedgerows 'within or marking the boundary of the curtilage of a dwelling-house' are excluded.

National and European Legislation Afforded to Species

The Conservation of Habitats and Species Regulations 2017 (as amended)

The Conservation of Habitats and Species Regulations 2017 (as amended) aims to promote the maintenance of biodiversity by requiring the Secretary of State to take measures to maintain or restore wild species listed within the Regulations at a favourable conservation status.

The Regulations make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4. However, these actions can be made lawful through the granting of licenses by the appropriate authorities. Licenses may be granted for a number of purposes (such as science and education, conservation, preserving public health and safety), but only after the appropriate authority is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on wild population of the species concerned.

The Wildlife and Countryside Act (WCA) 1981 (as amended)

The Wildlife and Countryside Act (WCA) 1981 (as amended) implements the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1979, implemented 1982) and implements the species protection requirements of EC Birds Directive 2009/147/EC on the conservation of wild birds in Great Britain (the birds Directive). The WCA 1981 has been subject to a number of amendments, the most important of which are through the Countryside and Rights of Way (CRoW) Act (2000).

Other legislative Acts affording protection to wildlife and their habitats include:

- Deer Act 1991
- Natural Environment & Rural Communities (NERC) Act 2006
- Protection of Badgers Act 1992
- Wild Mammals (Protection) Act 1996

Badgers

Badgers *Meles meles* are protected under The Protection of Badgers Act 1992 which makes it an offence to:

- Wilfully kill, injure, take, or attempt to kill, injure, or take a badger.
- Cruelly ill-treat a badger, including use of tongs and digging
- Possess or control a dead badger or any part thereof.
- Intentionally or recklessly damage, destroy or obstruct access to a badger sett or any part thereof.
- Intentionally or recklessly disturb a badger when it is occupying a badger sett.
- Intentionally or recklessly cause a dog to enter a badger sett.
- Sell or offers for sale, possesses, or has under his control, a live badger.

EFFECT OF LEGISLATION AND POLICY ON DEVELOPMENT WORKS

A development licence will be required from the relevant countryside agency (i.e., Natural England) for any development works likely to affect an active badger sett, or to disturb badgers whilst they occupy a sett. Guidance has been issued by the countryside agencies to define what would constitute a licensable activity. It is no possible to obtain a licence to translocate badgers.

Birds

With certain exceptions, all birds, their nests, and eggs are protected under Sections 1-8 of the WCA. Among other things, this makes it an offence to:

- Intentionally kill, injure, or take any wild bird.
- Intentionally take, damage, or destroy the nest of any wild bird while it is in use or being built.
- Intentionally take or destroy an egg of any wild bird.
- Sell, offer, or expose for sale, have in his possession or transport for the purpose of sale any wild bird (dead or alive) or bird egg or part thereof.

Certain species of bird, for example the barn owl, bittern and kingfisher receive additional protection under Schedule 1 of the WCA and are commonly referred to as “Schedule 1” birds. This affords them protection against:

- Intentional or reckless disturbance while it is building a nest or is in, on or near a nest containing eggs or young.
- Intentional or reckless disturbance of dependent young of such a bird

EFFECT OF LEGISLATION AND POLICY ON DEVELOPMENT WORKS

Works should be planned to avoid the possibility of killing or injuring any wild bird or damaging or destroying their nests. The most effective way to reduce the likelihood of nest destruction in particular is to undertake work outside the main bird nesting season which typically runs from March to August. Where this is not feasible, it will be necessary to have any areas of suitable habitat thoroughly checked for nests prior to vegetation clearance.

Schedule 1 birds are additionally protected against disturbance during the nesting season. Thus, it will be necessary to ensure that no potentially disturbing works are undertaken in the vicinity of the nest. The most effective way to avoid disturbance is to postpone works until the young have fledged. If this is not feasible, it may be possible to maintain an appropriate buffer zone or standoff around the nest.

Amphibians and Reptiles

The sand lizard *Lacerta agilis*, smooth snake *Coronella austriaca*, natterjack toad *Epidalea calamita*, pool frog *Pelophylax lessonae* and great crested newt *Triturus cristatus* receive full protection under Habitats Regulations through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring, or capturing of Schedule 2 species.
- Deliberate disturbance of species in such a way as:
- To impair their ability to survive, breed, or reproduce, or to rear or nurture young;
- To impair their ability to hibernate or migrate.
- To affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place

With the exception of the pool frog, these species are also listed on Schedule 5 of the WCA, and they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection
- Selling, offering, or exposing for sale, possession or transporting for purpose of sale.

Other native species of reptiles are protected solely under Schedule 5, Section 9(1) & (5) of the WCA, i.e., the adder *Vipera berus*, grass snake *Natrix natrix*, common lizard *Zootoca vivipara* and slow-worm *Anguis fragilis*. It is prohibited to:

- Intentionally or recklessly kill or injure these species.

EFFECT OF LEGISLATION AND POLICY ON DEVELOPMENT WORKS

A European Protected Species Licence (EPSL) issued by the relevant countryside agency (i.e., Natural England) will be required for works likely to affect the breeding sites or resting places amphibian and reptile species protected under Habitats Regulations. A licence will also be required for operations liable to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g., survive, breed, rear young and hibernate). The licences are to allow derogation from the relevant legislation, but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

Although not licensable, appropriate mitigation measures may also be required to prevent the intentional killing or injury of adder, grass snake, common lizard, and slow worm, thus avoiding contravention of the WCA.

Water Voles

The water vole *Arvicola terrestris* is fully protected under Schedule 5 of the WCA. This makes it an offence to:

- Intentionally kill, injure, or take (capture) water voles.
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection.
- Intentionally or recklessly disturb water voles while they are occupying a structure or place used for shelter or protection.

EFFECT OF LEGISLATION AND POLICY ON DEVELOPMENT WORKS

If development works are likely to affect habitats known to support water voles, the relevant countryside agency (i.e., Natural England) must be consulted. It must be shown that means by which the proposal can be re-designed to avoid contravening the legislation have been fully explored e.g., the use of alternative sites, appropriate timing of works to avoid times of the year in which water voles are most vulnerable, and measures to ensure minimal habitat loss. Conservation licences for the capture and translocation of water voles may be issued by the relevant countryside agency for the purpose of development activities if it can be shown that the activity has been properly planned and executed and thereby contributes to the conservation of the population. The licence will then only be granted to a suitably experienced person if it can be shown that adequate surveys have been undertaken to inform appropriate mitigation measures. Identification and preparation of a suitable receptor site will be necessary prior to the commencement of works.

Otters

Otters *Lutra lutra* are fully protected under the Conservation Regulations through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring, or capturing of Schedule 2 species.
- Deliberate disturbance of species in such a way as:
- To impair their ability to survive, breed, or reproduce, or to rear or nurture young;
- To impair their ability to hibernate or migrate.
- To affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place

Otters are also currently protected under the WCA through their inclusion on Schedule 5. Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection

EFFECT OF LEGISLATION AND POLICY ON DEVELOPMENT WORKS

A European Protected Species Licence (EPSL) issued by the relevant countryside agency (i.e., Natural England) will be required for works likely to affect otter breeding or resting places (often referred to as holts, couches, or dens) or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g., survive, breed, and rear young). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

Bats

All species are fully protected by Habitats Regulations 2010 as they are listed on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring, or capturing of Schedule 2 species (e.g., All bats)
- Deliberate disturbance of bat species in such a way as:
- To impair their ability to survive, breed, or reproduce, or to rear or nurture young;
- To impair their ability to hibernate or migrate.
- To affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place

Bats are afforded the following additional protection through the WCA as they are included on Schedule 5:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection

EFFECT OF LEGISLATION AND POLICY ON DEVELOPMENT WORKS

A European Protected Species Licence (EPSL) issued by the relevant countryside agency (i.e., Natural England) will be required for works are likely to affect a bat roost or an operation which are likely to result in an illegal level of disturbance to the species will require an EPSL. The licence is to allow derogation from the legislation through the application of appropriate mitigation measures and monitoring.

Hazel Dormice

Hazel dormice *Muscardinus avellanarius* are fully protected under Habitats Regulations through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring, or capturing of Schedule 2 species.
- Deliberate disturbance of species in such a way as:
- To impair their ability to survive, breed, or reproduce, or to rear or nurture young;
- To impair their ability to hibernate or migrate.

- To affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place

Dormice are also protected under the WCA through their inclusion on Schedule 5. Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection

EFFECT OF LEGISLATION AND POLICY ON DEVELOPMENT WORKS

Works which are liable to affect a dormice habitat or an operation which are likely to result in an illegal level of disturbance to the species will require a European Protected Species Licence (EPSL) issued by the relevant countryside agency (i.e., Natural England). The licence is to allow derogation from the legislation through the application of appropriate mitigation measures and monitoring.

White Clawed Crayfish

There is a considerable amount of legislation in place in an attempt to protect the White-clawed crayfish *Austropotamobius pallipes*. This species is listed under the European Union's (EU) Habitat and Species Directive and is listed under Schedule 5 of the Wildlife and Countryside Act (1981). This makes it an offence to:

- Protected against intentional or reckless taking.
- Protected against selling, offering, or advertising for sale, possessing or transporting for the purpose of sale.

EFFECT OF LEGISLATION AND POLICY ON DEVELOPMENT WORKS

The relevant countryside agency (i.e., Natural England) will need to be consulted about development which could impact on a watercourse or wetland known to support white clawed crayfish. Conservation licences for the capture and translocation of crayfish can be issued if it can be shown that the activity has been properly planned and executed and thereby contributes to the conservation of the population. The licence will only be granted to a suitably experienced person if it can be shown that adequate surveys have been undertaken to inform appropriate mitigation measures. Identification and preparation of a suitable receptor site will be necessary prior to the commencement of the works.

Wild Mammals (Protection Act) 1996

All wild mammals are protected against intentional acts of cruelty under the above legislation. This makes it an offence to mutilate, kick, beat, nail, or otherwise impale, stab, burn, stone, crush, drown, drag, or asphyxiate any wild mammal with intent to inflict unnecessary suffering.

To avoid possible contravention, due care and attention should be taken when carrying out works (for example operations near burrows or nests) with the potential to affect any wild mammal in this way, regardless of whether they are legally protected through other conservation legislation or not.

Legislation Afforded to Plants

With certain exceptions, all wild plants are protected under the WCA. This makes it an offence for an 'unauthorised' person to intentionally (or recklessly in Scotland) uproot wild plants. An authorised person can be the owner of the land on which the action is taken, or anybody authorised by them.

Certain rare species of plant, for example some species of orchid, are also fully protected under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended). This prohibits any person from:

- Intentionally picking, uprooting or destruction of any wild Schedule 8 species
- Selling, offering, or exposing for sale, or possessing or transporting for the purpose of sale, any wild live or dead Schedule 8 plant species or part thereof
- In addition to the UK legislation outlined above, several plant species are fully protected under Schedule 5 of The Conservation of Habitats and Species Regulations 2010. These are species of European importance. Regulation 45 makes it an offence to:
- Deliberately pick, collect, cut, uproot, or destroy a wild Schedule 5 species.
- Be in possession of, or control, transport, sell or exchange, or offer for sale or exchange any wild live or dead Schedule 5 species or anything derived from such a plant.

EFFECT OF LEGISLATION AND POLICY ON DEVELOPMENT WORKS

A European Protected Species Licence (EPSL) will be required from the relevant countryside agency (i.e., Natural England) for works which are likely to affect species of planted listed on Schedule 5 of the Conservation or Habitats and Species Regulations 2010. The licence is to allow derogation from the legislation through the application of appropriate mitigation measures and monitoring.

Invasive Species

Part II of Schedule 9 of the WCA lists non-native invasive plant species for which it is a criminal offence in England to plant or cause to grow in the wild due to their impact on native wildlife. Species included (but not limited to):

- Japanese knotweed *Fallopia japonica*
- Giant hogweed *Heracleum mantegazzianum*
- Himalayan balsam *Impatiens glandulifera*

EFFECT OF LEGISLATION AND POLICY ON DEVELOPMENT WORKS

It is not an offence for plants listed in Part II of Schedule 9 of the WCA 1981 to be present on the development site, however, it is an offence to cause them to spread. Therefore, if any of the species are present on site and construction activities may result in further spread (e.g., earthworks, vehicle movements) then it will be necessary to design and implement appropriate mitigation prior to construction commencing.

Injurious weeds

Under the Weeds Act 1959 any landowner or occupier may be required prevent the spread of certain 'injurious weeds' including (but not limited to):

- Spear thistle *Cirsium vulgare*
- Creeping thistle *Cirsium arvense*
- Curled dock *Rumex crispus*
- Broad-leaved dock *Rumex obtusifolius*
- Common ragwort *Senecio jacobaea*

EFFECT OF LEGISLATION AND POLICY ON DEVELOPMENT WORKS

It is a criminal offence to fail to comply with a notice requiring such action to be taken. The Ragwort Control Act 2003 establishes a ragwort control code of practice as common ragwort is poisonous to horses and other livestock. This code provides best practice guidelines and is not legally binding.

NATIONAL PLANNING POLICY

Environment Act 2021

The Environment Act 2021 (EA 2021) received Royal Assent on 9 November 2021 and is expected to become fully mandated within the next couple of years. The Act principally creates a post Brexit framework to protect and enhance the natural environment. Through amendments to the Town and Country Planning Act 1990, the Act will require all planning permissions in England (subject to exemptions which is likely to include householder applications) to be granted subject to a new general pre-commencement condition that requires approval of a biodiversity net gain plan. This will ensure the delivery of a minimum of 10% measurable biodiversity net gain. The principal tool to calculate this will be the Defra Biodiversity 3.0 Metric. Works to enhance habitats can be carried out either onsite or offsite or through the purchase of 'biodiversity credits' from the Secretary of State. However, this flexibility may be removed (subject to regulations) if the onsite habitat is 'irreplaceable'. Both onsite and offsite enhancements must be maintained for at least 30 years after completion of a development (which period may be amended).

National Planning Policy Framework 2021

The National Planning Policy Framework promotes sustainable development. The Framework specifies the need for protection of designated sites and priority habitats and species. An emphasis is also made on the need for ecological infrastructure through protection, restoration, and re-creation. The protection and recovery of priority species (considered likely to be those listed as species of principal importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006) is also listed as a requirement of planning policy.

In determining a planning application, planning authorities should aim to conserve and enhance biodiversity by ensuring that: designated sites are protected from harm; there is appropriate mitigation or compensation where significant harm cannot be avoided; measurable gains in biodiversity in and around developments are incorporated; and planning permission is refused for development resulting in the loss or deterioration of irreplaceable habitats including aged or veteran trees and also ancient woodland.

The Natural Environment and Rural Communities Act 2006 and the Biodiversity Duty

Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006, requires all public bodies to have regard to biodiversity conservation when carrying out their functions. This is commonly referred to as the 'biodiversity duty'.

Section 41 of the Act requires the Secretary of State to publish a list of habitats and species which are of 'principal importance for the conservation of biodiversity'. This list is intended to assist decision makers such as public bodies in implementing their duty under Section 40 of the Act. Under the Act these habitats and species are regarded as a material consideration in determining planning applications. A developer must show that their protection has been adequately addressed within a development proposal.

EUROPEAN PROTECTED SPECIES POLICIES

In December 2016 Natural England officially introduced the four licensing policies throughout England. The four policies seek to achieve better outcomes for European Protected Species (EPS) and reduce unnecessary costs, delays and uncertainty that can be inherent in the current standard EPS licensing system. The policies are summarised as follows:

- Policy 1; provides greater flexibility in exclusion and relocation activities, where there is investment in habitat provision;
- Policy 2; provides greater flexibility in the location of compensatory habitat;
- Policy 3; provides greater flexibility on exclusion measures where this will allow EPS to use temporary habitat; and,
- Policy 4; provides a reduced survey effort in circumstances where the impacts of development can be confidently predicted.

The four policies have been designed to have a net benefit for EPS by improving populations overall and not just protecting individuals within development sites. Most notably Natural England now recognises that the Habitats Regulations legal framework now applies to 'local populations' of EPS and not individuals/site populations.