Ben Jones
ECOLOGY

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The report should be read in its entirety. Questions arising from the survey report should be directed to the author of the report who will be pleased to clarify any technical issues raised.

Whilst surveyors make every reasonable effort, Ben Jones Ecology cannot guarantee that all protected species have been identified and survey results are definitive. Many species are cryptic and transitional in habit.

Reports are considered valid for two years for planning purposes, after which time further survey information may be required.

Ben Jones Ecology can provide advice and support for recommendations and planning conditions.

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Table of Contents

1 EXECUTIVE SUMMARY 1
1.1 Purpose of the Report 1
1.2 Methodology 1
1.3 Key Impacts and Mitigation Measures 1
1.4 Conclusion 1
2 INTRODUCTION 2
2.1 Project Background 2
2.2 Purpose of the Report 2
2.3 Site Context and Location 2
3 METHODOLOGY & CONSTRAINTS 3
3.1 Desk Study 3
3.2 Field Survey 3
3.3 Species Survey 3
4 BASELINE ECOLOGICAL CONDITIONS 5
4.1 Nearby Features of Importance 5
4.2 Habitats on Site 6
4.3 Bats 7
4.4 Other Mammals 7
4.5 Birds 7
4.6 Amphibians 7
4.7 Invasive Species 9
5 DESCRIPTION OF PROPOSED DEVELOPMENT 10
6 IMPACTS, ENHANCEMENTS AND MITIGATION 11
6.1 Nearby Features of Importance 11
6.2 Habitats on Site 11
6.3 Bats 12
6.4 Other Mammals 13
6.5 Birds 13
6.6 Amphibians 14
6.7 Invasive Species 15
7 CONCLUDING REMARKS 16
APPENDIX A – SURVEYOR DETAILS 17
APPENDIX B – METHODOLOGY 18
APPENDIX C – POLICY 20
APPENDIX D – HSI SCORES 23
APPENDIX A - BIBLIOGRAPHY 27

Table of Figures

Figure 4.1. Identifying any designated areas near site, a 1km buffer is shown 5
Figure 4.2. Site overview 6
Figure 4.3. Grassland field of no botanical interest 6
Figure 4.4. Timber fence around pasture 7
Figure 4.5. OS Map showing a 250m buffer around site, identifying ponds 8
Figure 4.6. Pond locations relative to site 8
Figure 6.1. Example woodcrete bat box: Schwegler 1FF & Beaumaris Bat Box Midi 12
Figure 6.2. Example external down light design 13
Figure 6.3. Bird boxes 13
Figure D.1. Pond 1 23
Figure D.2. Pond 2 24
Figure D.3. Pond 3 25
Figure D.4. Pond 4 26

Table of Tables

Table 3.1. Survey conditions 3
Table 6.1. Trees proposed for enhancement 11
Table A.1. Details of surveyors' experience and licences held 17
Table B.1. Data sources 18
Table B.2. Criteria of ecological values 18
Table D.1. HSI score and justification for Pond 1 23
Table D.2. HSI score and justification for Pond 2 24
Table D.3. HSI score and justification for Pond 3 25
Table D.4. HSI score and justification for Pond 4 26

1 Executive Summary

1.1 Purpose of the Report

Ben Jones Ecology was commissioned by Ms J Davies to undertake a preliminary ecological appraisal of land at Duke's View, Hanmer to provide supporting information for a planning application for a manège within a currently grazed pasture field.

The survey report has these principal aims:

- To provide an initial assessment of the ecological value of the site in local context.
- To provide details supporting further surveys that may be required.
- To identify potential ecological constraints relating to the development, and recommend measures to avoid, reduce or manage negative effects, and to provide a net ecological gain.

1.2 Methodology

The appraisal included a desktop study for nearby designated sites and previously recorded protected species and a site visit undertaken at the site, OS grid reference SJ43304023 on 5th November 2024 by Ben Jones.

1.3 Key Impacts and Mitigation Measures

The site comprises a well-grazed equine pasture to the north of the house and agricultural buildings at Duke's View. No species of principal importance were seen during the site walkover, and no evidence of protected species was found on the site or within the boundaries.

There are four bodies of water within 250m, all to the northwest. These were assessed alongside an assessment of suitable terrestrial habitat on site that might support amphibians. No negative impact is expected, and no further surveys of the ponds are required.

No potential habitat for any other protected species such as bats or nesting birds was present on site, though ample suitable habitat is present in close proximity in mature trees and nearby buildings. These will be retained and remain unaffected by proposed works.

The pasture is currently bound only by post and rail fences of negligible ecological value. There is opportunity to enhance the connectivity around site by planting trees on the boundaries of the field.

1.4 Conclusion

It is recommended that the biodiversity value of the site will be enhanced post-construction with the inclusion of bat and bird boxes on nearby trees and buildings. The landscaping will also be improved by planting new native species trees.

There are no ecological constraints to the development as currently proposed.

2 Introduction

This report has been compiled by Ben Jones BSc (hons) MSc who has 9 years' experience conducting ecological appraisals.

For full details of surveyors and licences please see Appendix A.

2.1 Project Background

Ben Jones Ecology was commissioned by Ms J Davies to conduct a survey to determine the presence of protected species and potential for the damage or destruction of habitats of value. This forms part of the planning application for the construction of a manège.

2.2 Purpose of the Report

This report aims to:

- Identify the key ecological constraints to the proposed development relating to priority habitats and species and protected species (HMSO, 1981).
- Inform planning to allow significant ecological effects to be minimised or avoided where possible.
- Allow any necessary mitigation or compensation measures to be developed following the mitigation hierarchy.
- Identify any additional surveys that may be required to inform the assessment.
- Identify the opportunities offered by a project to deliver ecological enhancement (Ministry of Housing, Communities and Local Government, 2021).
- Provide information to assist landowners with avoiding committing legal offences in relation to wildlife (HMSO, 2000)

2.3 Site Context and Location

The site is located west of Hanmer, OS grid reference SJ43304023. It is set in a rural environment surrounded by open farmland on all sides, with scattered dwellings and farmsteads.

3 Methodology & Constraints

Broad methodologies for data collection and interpretation were informed by PEA guidance (CIEEM, 2017). Full details can be found in Appendix B.

3.1 Desk Study

The desk study provides contextual information such as the site's proximity to designated areas and previously granted licences (Natural England, 2018). Previously recorded species in the vicinity are obtained from local records centres (BiS, 2024).

3.2 Field Survey

3.2.1 Date and Survey Conditions

Table 3.1. Survey conditions

Date	Time	Study Area	Equipment Used	Weather
05/11/2024	11:00	Whole site	Camera, strong torch, DJI Mini 4 Pro Drone	Overcast, damp underfoot
Comments	One surveyor used. Constraints: None All undated photographs in this document were taken on this date by the author unless otherwise stated.			

3.2.2 Habitats

The habitats on site were assessed for their potential to support protected species and therefore assist in the determination of site value.

The site had not been subject to any form of non-standard management prior to this survey.

3.3 Species Survey

3.3.1 Bats

An assessment of the suitability of site to support roosting bats was conducted following best practice guidance looking for evidence of roosting or potential access points (Collins, J. BCT, 2023). There were no constraints to this methodology.

3.3.2 Other Mammals

An assessment of the suitability of site and its surrounds to support badgers was conducted following best practice guidance looking for tracks, signs or setts (Scottish Badgers, 2018). There were no constraints to this methodology.

An assessment of the suitability of site and its surrounds to support water vole, otter and dormouse were not conducted due to the lack of appropriate habitat nearby.

3.3.3 Birds

An assessment of the suitability of site and its surrounds to support nesting birds was conducted, looking for current/old nests and listening for bird calls. There were no constraints to this methodology.

3.3.4 Amphibians

An assessment of aquatic habitat for great crested newts is based on the Habitat Suitability Index (ARG UK, 2010). The HSI assessment is based on ponds as they would be during the aquatic phase of a great crested newt, between March and the end of September.

Some of the factors involved in the assessment cannot be accurately determined outside of this time period; such as macrophyte cover and water quality assessments. These values are given an educated guess based on the appearance of the pond in conjunction with any local knowledge.

An assessment of terrestrial habitats of site and its surrounds to support great crested newts was conducted by looking for potential shelter and commuting features (Langton, et al., 2001).

3.3.5 Invasive Species

Signs of invasive non-native plant species were searched for throughout the site.

4 Baseline Ecological Conditions

4.1 Nearby Features of Importance

The map from Natural England presented in Figure 4.1 indicated that the site is not within 1km of any designated site.

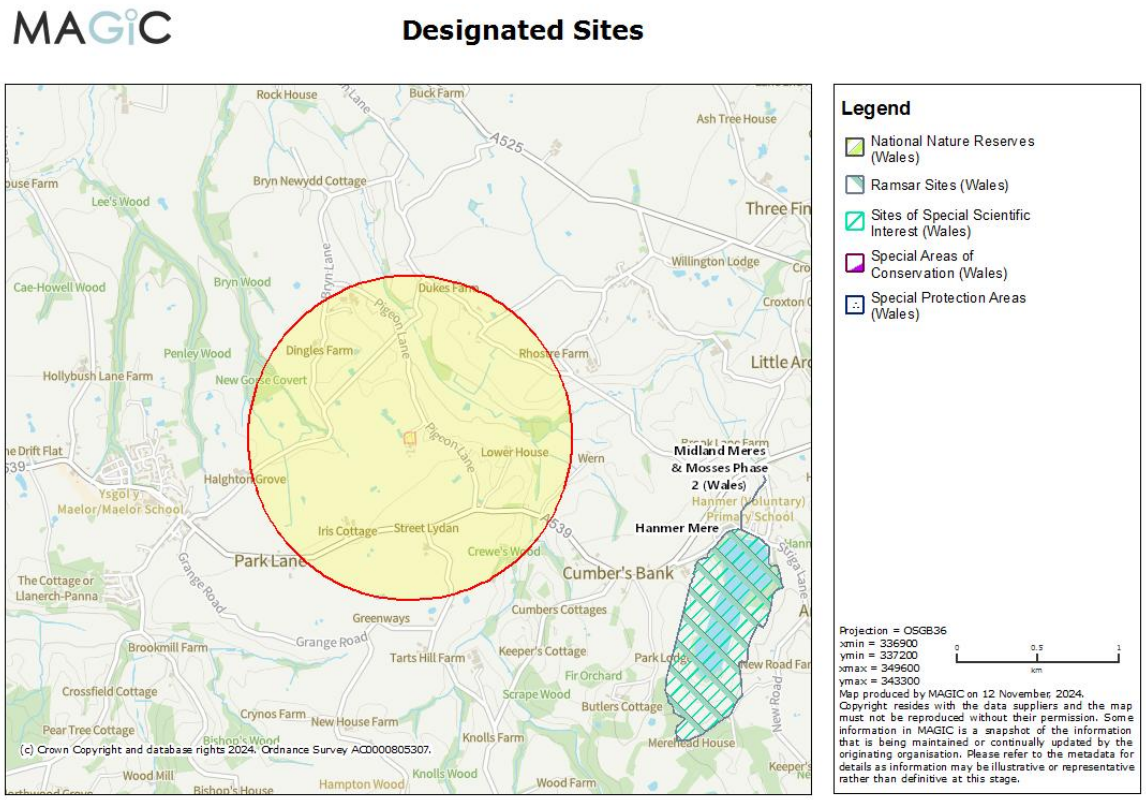


Figure 4.1. Identifying any designated areas near site, a 1km buffer is shown

4.2 Habitats on Site

The site comprises a grassland field grazed continually by horses. for both grazing and hay cut. Species found within the grassland include white clover, dandelion and meadow buttercup.



Figure 4.2. Site overview



Figure 4.3. Grassland field of no botanical interest

The pasture is surrounded on all sides by a timber post-and-rail fence which appears to have recently been reinforced with extra posts.



Figure 4.4. Timber fence around pasture

4.3 Bats

4.3.1 Records

Records of bats within 2km include common pipistrelle (*Pipistrellus pipistrellus*) from over 25 years ago. These records are provided by NRW North Wales Bat Roosts under OGL licence and are provided with only a 4 digit grid accuracy so specific location data is unavailable.

4.3.2 Field Observations

The site had no features of value for roosting bats. The field has no trees within itself or on the boundaries, and no buildings that might provide roosting shelter.

There are mature trees along the road to the north, and barns and buildings to the south, all of which may provide some suitable value, but all of which are beyond the red line of this development and were therefore not considered in any depth.

4.4 Other Mammals

The site had no signs of terrestrial mammals such as tracks, prints, pathways, feeding signs, latrines or sett/burrow entrances.

4.5 Birds

The site had no sign of nesting birds, and the grassland is of no value for ground-nesting species. The lack of trees or buildings on site further limit the value to nesting birds. There is ample opportunity for nesting birds within the immediate surrounds.

4.6 Amphibians

4.6.1 Records

There are numerous records of great crested newts (*Triturus cristatus*) within 2km, the vast majority of which are to the northeast around Horseman's Green. These are provided by NRW licence returns under OGL licence.

4.6.2 Field Observations

The site itself has very limited value for amphibians in their terrestrial phase, with no notable shelter features amongst the grassland. The boundaries are only wooden fence which also offers no potential shelter.

There are four ponds within 250m, shown on OS maps to the northeast of site.

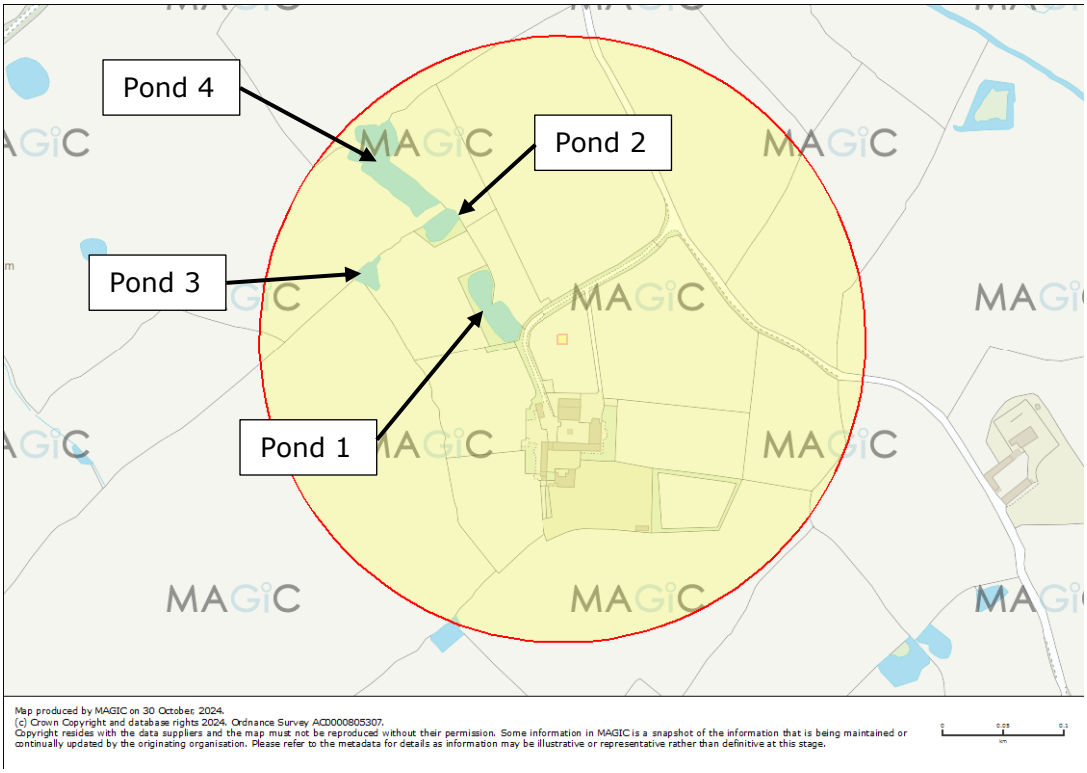


Figure 4.5. OS Map showing a 250m buffer around site, identifying ponds

Pond Number	Grid Reference	Distance to site	HSI Score
1	SJ43244026	10m	0.71 - Good
2	SJ43204033	105m	0.54 – Below Average
3	SJ43144029	130m	0.49 - Poor
4	SJ43164037	135m	

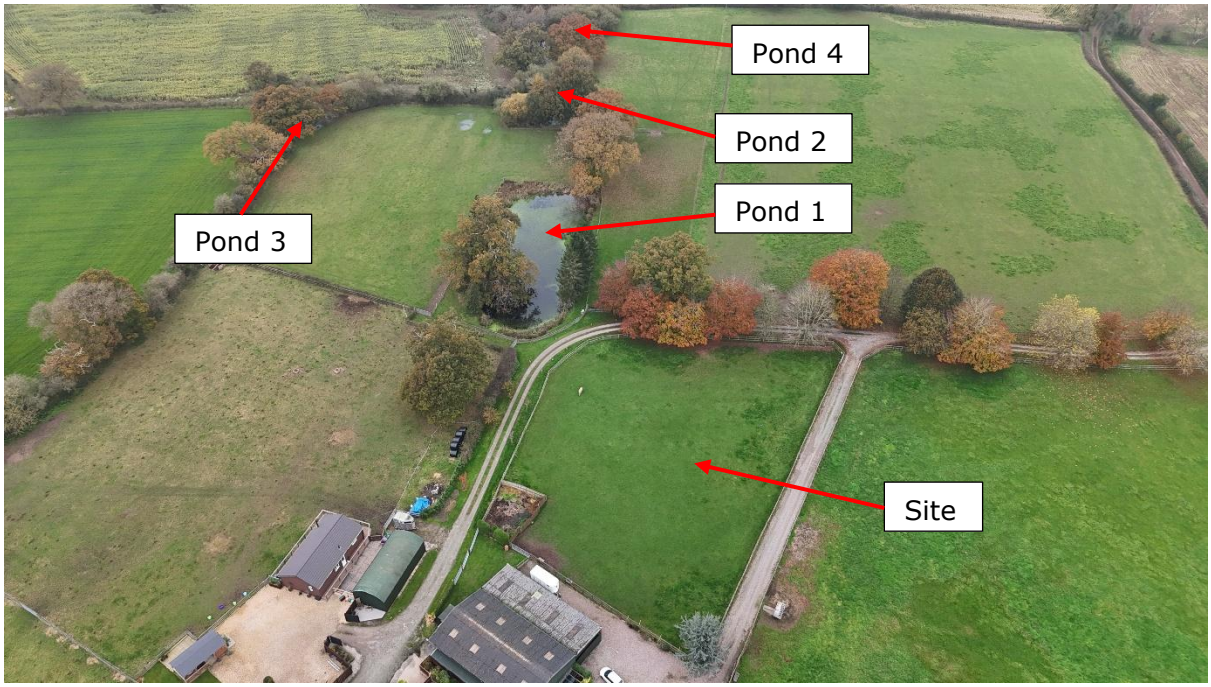


Figure 4.6. Pond locations relative to site

4.7 Invasive Species

4.7.1 Records

There are no records of invasive species within 2km of site.

4.7.2 Field Observations

No evidence of invasive species was found on or around the site.

5 Description of Proposed Development

The current plans are for a new manège within the existing pasture. No specific plans have been provided at the time of writing.

6 Impacts, Enhancements and Mitigation

6.1 Nearby Features of Importance

Figure 4.1 shows that there are no designated sites within an appreciable zone of influence around the proposed works. No negative impact could reasonably be expected on any sites beyond this and therefore no further consideration is required.

6.2 Habitats on Site

6.2.1 Impacts

The development as proposed will not result in the loss of any habitats of principal importance listed in Section 7 of the Environment (Wales) Act (HMSO, 2016), mitigation will therefore be delivered at a site and species level.

6.2.2 Enhancements

In order to obtain an ecological net gain for the site, the remaining green spaces and site boundaries will require enhancement for local wildlife.

It is recommended that the landscaping around site be enhanced by planting new native species trees along the field boundaries which are currently just fencing. This will extend the existing line of trees to the north, extending the connective value but also providing extra screening and a visually appealing avenue along the track.

Trees

Trees to be used should be from the list below. These should also be native species, locally sourced where possible. Oak should particularly be encouraged because it supports a large diversity of invertebrates.

Table 6.1. Trees proposed for enhancement

Common Name	*Latin Name*
English Oak	*Quercus robur*
Sessile Oak	*Quercus petrea*
Lime	*Tilia cordata*
Rowan	*Sorbus aucuparia*
Silver Birch	*Betula pendula*

6.2.3 Monitoring

All habitat enhancements will be monitored post-development and any failing plants or features will be addressed as appropriate to maintain the value of the enhancement.

6.3 Bats

6.3.1 Impacts

Even without consideration there is unlikely to be any loss or damage of roosts, nor the potential for death or damage of individual bats. Work can be conducted immediately once planning permission has been granted.

6.3.2 Enhancements

Provision will be made for bat species in the area, local records of which show plenty nearby.

It is recommended that provision be made for roosting opportunities for bats with the erection of at least one woodcrete bat box in the nearby trees on or nearby buildings These will be erected at a height of 3-4 m and in a southerly, westerly or easterly facing direction.



Figure 6.1. Example woodcrete bat box: Schwegler 1FF & Beaumaris Bat Box Midi

Lighting

Lighting needs to be designed to have minimal impact on bats and their commuting and foraging areas. This results in the recommended use of downlights and the horizontal spread of lighting to be kept to a minimum.

Where it is not possible to reduce the horizontal spread of light, a 2700°K to 3000°K LED light bulb is recommended, which will provide a warm white light. This range has the least impact on bats and invertebrates.

1. A lighting scheme will be drawn up in line with best guidance (ILP, 2023).
2. All newly proposed external lighting will be directed away from any vegetated boundary features to retain dark corridors for commuting bats.
3. There will be no direct illumination of any enhancement features erected for bats.
4. All domestic lighting will be orientated towards the ground and controlled by PIR (Passive Infra-red), set on a short timer.



Figure 6.2. Example external down light design

6.3.3 Monitoring

Failing boxes or enhancements will be replaced at the cost of the developer if deterioration or damage is noted within five years post-development.

6.4 Other Mammals

Even without consideration there is unlikely to be any negative impact on local non-bat mammals.

6.5 Birds

6.5.1 Impacts

Work at this site will not include anything that might impact nesting birds. No further consideration is required and no negative impact can reasonably be expected.

6.5.2 Enhancements

It is recommended that a range of woodcrete boxes are erected around the site to provide an enhancement for passerine birds, and a selection of the following would be appropriate.

a. Sparrow Terraces should be erected under the eaves of a building at a minimum height of 3m, in a westerly, northerly or easterly aspect.

b. 26/32mm hole nest boxes (e.g. Schwegler 1b) should be installed at a minimum height of 3m in a westerly, northerly or easterly aspect.



Figure 6.3. Bird boxes

6.5.3 Monitoring

Failing boxes or enhancements will be replaced at the cost of the developer if deterioration or damage is noted within five years post-development.

6.6 Amphibians

6.6.1 Impacts

Potential impacts were ascertained in conjunction with chapter 6 of the mitigation guidelines (English Nature, 2001).

There are numerous records of great crested newts within 2km, and the nearest pond scored Good on the HSI assessment.

The land to be lost is of very low potential value for amphibians in their terrestrial phase due to the lack of suitable shelter on site. Because of this, there is no need for further surveys on the ponds and work can continue under a simple but strict method statement to ensure any amphibians in the area remain unaffected.

6.6.2 Mitigation

Appropriate mitigation for amphibians has been designed in line chapters 7 and 8 of the mitigation guidelines.

The manège development will need to a net loss of very low value terrestrial habitats for amphibians. The small loss is negligible and will not impact populations of amphibians in the vicinity, and so the risk to amphibians is considered temporary and the risk to individual newts will be mitigated for throughout the development.

Working Method Statement

The aim of the working method statement is to eliminate as far as possible, the risk of killing, injuring or disturbing amphibians, particularly GCN.

Pre-Construction

1. The site will be kept under current management prior to construction. This will keep the potential for newts to cross the land low, and minimise the risk of the terrestrial features improving. All plants will be kept short (<10cm) to ensure there is no shelter for great crested newts on the site.

Site Setup

2. Soil and vegetation will be stripped prior to setting up the site compound to ensure the compound contains no vegetation which could potentially attract great crested newts. Ideally this will be undertaken outside the period of November to March when newts are hibernating.
3. All cabins and equipment will be located on firm compacted ground, preferably a stone or concrete base.
4. Contractors are advised not to handle newts at any time.

Construction Phase

5. The site foreman will be responsible for ensuring all contractors are aware of the potential to find newts, and that they are familiar with the appearance of newts. If in doubt the ecologist will be contacted.
6. Contractors are advised to avoid handling newts at any time.
7. Stored subsoil must not be tipped onto any tall vegetation.

8. Any plants around the site will be kept short to stop the development of an area of terrestrial habitat more suitable for newts.
9. All groundwork will be conducted during daylight hours as newts are least likely to move during this time.
10. Trenches will be dug and filled in on the day created or will be covered over with close-fitting boards at the end of each working day.
11. If it is not possible to cover the trench, a ramp will be placed from the edge of the trench to the base to allow newts and small mammals to escape.
12. Open or covered trenches will be checked the following morning. This is particularly important when newts are most active, between March and November.
13. Pipes at ground level will be capped off if left open. This will prevent reptiles looking for refugia inside them. (e.g. sewerage pipes and water pipes and other conduits
14. If a newt is found, then work will stop immediately and the ecologist contacted for advice.
15. Any heavy machinery will be stored on an area of hardstanding to avoid refugia being created.
16. Stored material will be raised on pallets to reduce the potential they might act as a temporary resting place. This reduces the potential for damage or destruction of individual newts.
17. All waste will be placed straight into skips to reduce the potential of creating refugia.
18. Great crested newts will not be handled or moved without permission from Natural Resources Wales as this would constitute an offence.

6.7 Invasive Species

As there was no evidence of any invasive species on or around the site, there is no risk of the development causing the spread of such species to the wider landscape. No further consideration is required.

7 Concluding Remarks

The survey has focussed on the potential habitats or protected species to be damaged or destroyed as part of this development.

There was no evidence of protected species on or around the site.

A simple method statement will be followed to minimise to individual newts in the area.

There is opportunity to enhance the biodiversity value of site by planting new trees along site boundaries and installing artificial roost boxes for bats and nest boxes for birds in the nearby trees and buildings.

The development can proceed without the loss of habitat of significant value, and without the loss of the favourable conservation status of any protected species. As there is no evidence of protected species within and around the development site, there is no requirement to address the three tests under Regulation 55 of The Conservation of Habitats and Species (HMSO, 2019).

The method statements provided in this report will be followed and works will be done at a suitable time of year. Other than those listed above, there are no ecological constraints to the development as currently proposed.

Appendix A – Surveyor Details

Table A.1. Details of surveyors' experience and licences held

Name	Membership of associations/ experience	Licenses
Ben Jones BSc(hons) MSc	Senior Consultant MCIEEM Ben has a degree in Marine and Freshwater biology and a Master's degree in "Managing the Environment". He has 9 years' experience conducting environmental appraisals and phase 2 surveys for bats and newts in England and Wales. As a member of the CIEEM he is bound by professional conduct.	Holder of survey licenses for bats and newts in England and Wales. <u>England:</u> Bats - 2017-29112-CLS-CLS GCN - 2016-25209-CLS-CLS <u>Wales:</u> Bats – S091847/1 GCN – S094375/1

Appendix B – Methodology

Desk Study

Table B.1. Data sources

Organisation/Resource	Information Assessed
Freely available data – NBN Atlas	Protected/Priority Species records (2km)
MAGIC website	International statutory designations (1km) • Special Protection areas (SPA) • Special Areas of Conservation (SAC) • RAMSAR sites National statutory designations (1km) • Sites of Special Scientific Interest (SSSI) • National Nature Reserves (NNR)

As the development is a small-scale application on land of limited value, a full data search is not considered proportionate to the risk. As such, a search was conducted on NBN for commercially available records.

A search on Multi Agency Geographic Information for the Countryside (Magic Maps) determined nearby designated areas. The map is presented in Section 4.1.

Field Survey

The level of survey is aimed to identify field signs of or habitats with the potential to support protected species and therefore assist in the determination for detailed phase 2 surveys.

Determination of Ecological Value is based on the general criteria provided by CIEEM (2017).

Table B.2. Criteria of ecological values

Ecological Value	Description and Examples
High	Habitats or features that have high importance for nature conservation, such as statutory designated nature conservation sites of international or national importance or sites maintaining viable populations of species of international or national importance (e.g. Red Data Book species; European protected species).
Medium	Sites designated at a county or district level, e.g. Local Wildlife Site (LWS), ancient woodland site, ecologically 'important' hedgerows or ecological features that are notable within the context of a region, county or district (e.g. a viable area of a Priority Habitat or a site that supports a viable population of a priority species).
Low	Sites of nature conservation value within the context of a parish or neighbourhood, low-grade common habitats, such as arable fields and improved grasslands and sites supporting common, widespread species.

Species Surveys

Bats

Features on site were assessed for potential for bat roosts, foraging and commuting.

Daytime surveys were conducted.

Evidence for the presence of bats includes:

- Holes, cracks and rot holes used as roosts, marked by streaks of urine and faeces.
- Smoothed, darkened edges where bats have rubbed and left natural body oils when entering and exiting a space.
- Faeces under a well-used feeding point or a resting spot.
- Feeding signs such as discarded insect wings under a feeding point.
- Presence of roosting or dead bats in or behind any object.

Badgers

Surveys were conducted in line with Harris, S., Cresswell, P. and Jefferies, D. (1989) Surveying Badgers. Mammal Society - No9.

Daytime surveys for badgers involved looking for:

- Scrapings where badgers have dug for food or used as latrines.
- Signs of a sett, including signs of use such as presence of badger hair.
- Tracks and prints.

Birds

Searching for evidence of nesting birds, including barn owls, involved looking for:

- Presence of nests
- Collections of droppings and/or feathers
- Highly distinctive droppings or splats under roosting points.
- Presence of owl pellets/feathers
- Listening for bird song
- Recording bird activity

Amphibians

The assessment of aquatic habitat is based on the Habitat Suitability Index (HSI) and is applied according to guidance set out by the Oldham 2000, superseded by ARG in 2010, ARG UK Advice note 5. The HSI is a quantitative method of assessing the potential quality of a body of water in terms of its ability to sustain a population of great crested newts.

The terrestrial habitats at the application site were surveyed and assessed for their suitability and potential value for the support of GCN. The general topography, ground conditions and presence or absence of vegetation were recorded. A refugia search was conducted for amphibians and reptiles by looking under any logs, large stones and other debris.

Appendix C – Policy

The following areas of policy and legislation are of relevance to ecology and provide context to the surveys conducted. Findings presented in this report are in line with the following:

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 – as listed in:

- Schedule 2. European protected species of animals
- Schedule 5. European protected species of plants

The Wildlife and Countryside Act (1981) – as listed in:

- Schedule 1. Birds protected by special penalties at all times
- Schedule 5. Protected animals
- Schedule 8. Protected plants

Countryside and Rights of Way Act (2000)

The Protection of Badgers Act (1992)

Planning Policy Wales 12th edition, updated Feb 2024
Section 6.2 – Green Infrastructure
Section 6.4 – Biodiversity and Ecological Networks

The Nature Recovery Plan for Wales – Setting the course for 2020 and beyond (2015)

Environment Act (Wales) (2016)
Section 6 – Enhancement for biodiversity requirement
Section 7 – Lists of priority species and habitats

Powys Local Development Plan: Policy DM2 – The Natural Environment

Bats

All bat species are protected under The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 which implements the EC Directive 92/43/EEC in the United Kingdom. It is an offence, with certain exceptions, to:

- Deliberately capture or kill any wild animal of a European Protected Species.
- Deliberately disturb any such animal.
- Damage or destroy a breeding site or resting place of such a wild animal.
- Keep (possess), transport, sell or exchange, or offer for sale or exchange, any live or dead wild animal or plant of a European Protected Species, or any part of, or anything derived from such a wild animal or plant.

A person found guilty of an offence is liable on summary conviction to imprisonment for a term not exceeding six months or to an unlimited fine or to both.

Badgers

Badgers and their setts are specifically protected (HMSO, 1992). The act was primarily bought into force to prevent the deliberate injury to or death of badgers. Some aspects of the act affect developers. It is important that developers are aware of any badger setts located on the land they intend to develop.

All personnel working on sites where there are badgers should be aware of the Protection of Badgers Act 1992. Under this legislation it is an offence to:

- Damage a badger sett or any part of it.
- Destroy a badger sett.
- Obstruct access to, or any entrance of a badger sett.
- Causing a dog to enter a badger sett.
- Disturbing a badger when it is occupying a badger sett.

Birds

Under Section 1 of the Wildlife and Countryside Act 1981 (as amended), birds, their nests and young are all protected from damage, particularly during the breeding season. The Act allows for fines or prison sentences for every bird, egg or nest destroyed. It makes it an offence to:

- Intentionally kill, injure or take any wild bird.
- Take, damage or destroy the nest of any wild bird whilst it is in use or being built.
- Take damage or destroy the egg of any wild bird.
- To have in one's possession or control any wild bird, dead or alive or egg or any part of a wild bird or egg.

Some bird species are included in the UK and local BAPS and are recognised as species of principal importance for nature conservation in accordance with section 41 of the NERC Act 2006. Such species and their habitats receive protection through the provisions of the NPPF.

Amphibians

All species of amphibians receive a measure of protection under legislation.

The Wildlife and Countryside Act 1981 has been amended by the Countryside and Rights of Way Act (CRoW) 2000. This applies to England and Wales only. The key relevant fact is:

- Section 9(4) is amended to create and additional offence of reckless damage to, destruction of, or obstruction of access to, any structure or place used for shelter or protection; and reckless disturbance while occupying such a structure or place.

Great Crested Newts

Great crested newts are protected under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 which implements the EC Directed 92/43/EEC in the United Kingdom. It is an offence, with certain exceptions, to:

- Deliberately capture or kill any wild animal of a European Protected Species.
- Deliberately disturb any such animal.
- Deliberately take or destroy eggs of any such wild animal.
- Damage or destroy a breeding site or resting place of such a wild animal.
- Keep (possess), transport, sell or exchange, or offer for sale or exchange, any live or dead wild animal or plant of a European Protected Species, or any part of, or anything derived from such a wild animal or plant.

Great crested newts are listed as a priority species on the UK BAP and Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. The National Planning Policy Framework (NPPF) states that to minimise impacts on biodiversity and geodiversity, "*planning policies should... promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations*".

A person found guilty of an offence is liable on summary conviction to imprisonment for a term not exceeding six months or to an unlimited fine, or to both.

Appendix D – HSI Scores

Table D.1. HSI score and justification for Pond 1

Pond 1		
Geographic Location	0.5	Zone B
Pond Area	0.955	The pond is approximately 1,000m^2
Permanence	0.9	Never dries
Water Quality	0.67	Moderate invertebrate diversity assumed
Shade	1	There was estimated to be ~30% shading of the area within 1m of the perimeter based on large trees on the perimeter
Waterfowl	0.67	Waterfowl present but little indication of impact on pond vegetation. Pond still supports submerged plants and banks are not denuded of vegetation
Fish	0.67	No evidence of fish but local conditions suggest they may be present
Pond Count	1	There are over 12 ponds within a 1km radius not separated by significant barriers
Terrestrial Habitat	0.33	Habitat with poor structure (e.g. improved pasture and arable) that offers limited opportunities for foraging and shelter (<25% of 250m^2)
Macrophytes	0.8	This value was estimated due to the time of year in which the survey was undertaken. Cover was estimated to be 50%
HSI Score	**0.71 – Good**	



Figure D.1. Pond 1

Table D.2. HSI score and justification for Pond 2

Pond 2		
Geographic Location	0.5	Zone B
Pond Area	0.9	The pond is approximately 450m^2
Permanence	0.9	Never dries
Water Quality	0.33	Poor invertebrate diversity assumed
Shade	0.3	There is >90% shading of the area within 1m of the perimeter based on large trees on the perimeter
Waterfowl	0.67	Waterfowl present but little indication of impact on pond vegetation.
Fish	0.67	No evidence of fish but local conditions suggest they may be present
Pond Count	1	There are over 12 ponds within a 1km radius not separated by significant barriers
Terrestrial Habitat	0.33	Habitat with poor structure (e.g. improved pasture and arable) that offers limited opportunities for foraging and shelter (<25% of 250m^2)
Macrophytes	0.35	This value was estimated due to the time of year in which the survey was undertaken. Cover was estimated to be <10%
HSI Score	**0.54 – Below Average**	



Figure D.2. Pond 2

Table D.3. HSI score and justification for Pond 3

Pond 3		
Geographic Location	0.5	Zone B
Pond Area	0.6	The pond is approximately 300m^2
Permanence	0.9	Never dries
Water Quality	0.33	Poor invertebrate diversity assumed
Shade	0.2	The entire area within 1m of the perimeter is shaded
Waterfowl	0.67	Waterfowl present but little indication of impact on pond vegetation.
Fish	0.67	No evidence of fish but local conditions suggest they may be present
Pond Count	1	There are over 12 ponds within a 1km radius not separated by significant barriers
Terrestrial Habitat	0.33	Habitat with poor structure (e.g. improved pasture and arable) that offers limited opportunities for foraging and shelter (<25% of 250m^2)
Macrophytes	0.3	This value was estimated due to the time of year in which the survey was undertaken. It is unlikely that this pond contains emergent vegetation due to dense overshading
HSI Score	**0.49 – Poor**	



Figure D.3. Pond 3

Table D.4. HSI score and justification for Pond 4

Pond 4		
Geographic Location	0.5	Zone B
Pond Area	--	The pond is over 2,000m^2 and so this factor is removed from the calculation
Permanence	0.9	Never dries
Water Quality	0.67	Moderate invertebrate diversity assumed
Shade	0.6	There was estimated to be ~80% shading of the area within 1m of the perimeter based on large trees on the perimeter
Waterfowl	0.67	Waterfowl present but little indication of impact on pond vegetation. Pond still supports submerged plants and banks are not denuded of vegetation
Fish	0.67	No evidence of fish but local conditions suggest they may be present
Pond Count	1	There are over 12 ponds within a 1km radius not separated by significant barriers
Terrestrial Habitat	0.33	Habitat with poor structure (e.g. improved pasture and arable) that offers limited opportunities for foraging and shelter (<25% of 250m^2)
Macrophytes	0.5	This value was estimated due to the time of year in which the survey was undertaken. Cover was estimated to be 20%
HSI Score	**0.62 – Average**	

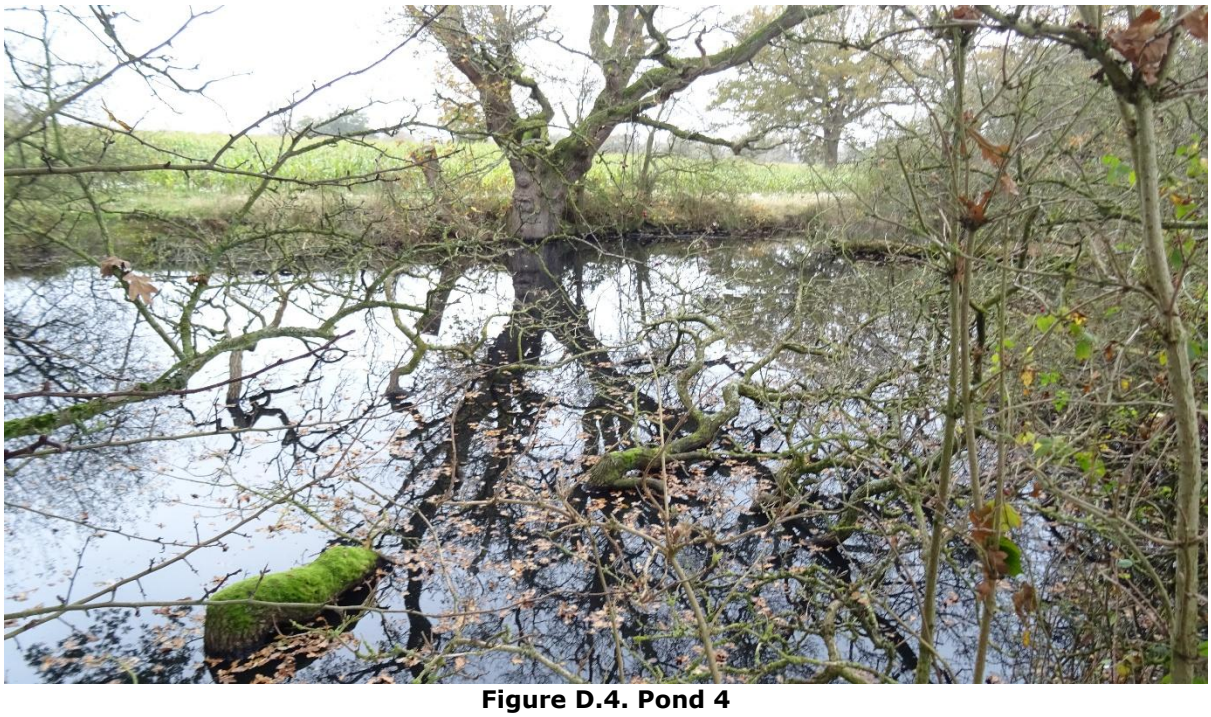


Figure D.4. Pond 4

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