

Cottage Green Farm, Worthenbury Supplementary Ecology Report

January 2023



Dunelm Ecology
consultant ecologists

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1 Introduction

1.1 Background

- 1.1.1 In April 2022, Dunelm Ecology Ltd was commissioned to undertake a preliminary ecological appraisal (PEA) at Cottage Green Farm, Worthenbury. The survey was carried out in support of a planning application to redevelop the site for residential use. This would include substantial refurbishment and some demolition of existing buildings along with associated landscaping and re-positioning the site access road.
- 1.1.2 In summary, the PEA identified the presence of three great crested newt (GCN) breeding ponds within 250 m of the site, potential bat roosting habitat within the site buildings, bird nesting within several buildings/likely nesting within scrub habitat and badgers commuting/foraging across the site. The PEA recommended that further surveys were undertaken for bats and GCN in order to accurately inform impacts and mitigation.
- 1.1.3 Following submission of the PEA report to the LPA, the council's ecologist requested additional ecological information, including:
- *A full bat activity survey and mitigation plan.*
 - *A great crested newt method statement and mitigation plan.*
 - *A method statement and mitigation plan in relation to nesting birds.*
 - *An ecological enhancement plan*
- 1.1.4 It was also confirmed by the LPA ecologist that no further GCN population estimate surveys of nearby ponds was required in support of the planning application or subsequent Natural Resources Wales licence application as this information could be inferred from existing GCN population data held by COFNOD (Emma Broad, LPA Ecologist, pers.comm).

1.2 Aims and Objectives

- 1.2.1 This report and accompanying figures provide the relevant information requested by the LPA although it should be noted that mitigation for breeding birds was presented in the PEA report so other than depicting bird box locations, no further details regarding bird mitigation are given within this document. The report provides survey approaches for bats and GCN while impacts on these ecological receptors are assessed, and proportionate mitigation measures provided. For context, the PEA report should also be consulted.

2 Methods and Approach

2.1 GCN

- 2.1.1 Information was sought on existing ecological records for GCN within a 2 km radius of the site. This involved consultation with COFNOD which acts as a repository for ecological information from many sources in the region.

2.2 Bats

- 2.2.1 In accordance with BCT survey guidelines (Collins 2016), buildings assessed as having low-moderate roost potential during the PEA were subject to two dusk emergence surveys on the 7 and 26 July 2022 (see Table 1). The surveys aimed to record bats exiting target buildings and started 15 minutes before sunset and ended 90 minutes after sunset. Trees were not subject to nocturnal surveys as no trees with moderate roost potential or above would be impacted.
- 2.2.2 The surveys were undertaken using full spectrum (Echometer Touch 2) detectors coupled with tablet devices to view real time bat call sonograms. The surveys were aided by the use of four Canon XA20/40 infrared cameras fitted with ancillary infrared torches. The time of exit and the number of bats and species (if identifiable) were recorded; whilst any bat activity in the general area was also noted.

Table 1 Summary of Bat Survey Times and Weather Conditions

Survey	Date	Timings	Weather
Daytime Inspection	22/04/2022	14:00 - 16:00	Dry
Dusk emergence	07/07/2022	21:23 – 23:08 (sunset: 21:38)	17-15°C, dry, calm, 0% cloud cover.
Dusk emergence	26/07/2022	21:02 – 22:47 (sunset: 21:17)	14-12°C, dry, light breeze, 0% cloud cover.

2.3 Personnel

- 2.3.1 Both nocturnal bat surveys were led by Jon Guarnaccio. Jon has 20 years experience as an ecological consultant and has held a bat survey licence since 2005. Jon was assisted by John Rowland, Helen Hamilton and Kath Smyki. John and Helen are both licensed bat ecologists while Kath has over 15 years experience of undertaking bat survey work.

2.4 Survey Constraints

- 2.4.1 Nocturnal bat surveys were undertaken at an optimal time of year while all potential roosting features could be clearly viewed. However, it should be noted that the behaviour of animals can be unpredictable and may not conform to standard patterns recorded in scientific literature. Therefore, this report cannot predict with absolute certainty that animal species will occur in apparently

suitable locations or habitats, or that they will not occur in locations or habitats that appear unsuitable.

3 Results

3.1 GCN

- 3.1.1 With the exception of the three GCN breeding ponds identified during the PEA survey, COFNOD provided only two records of GCN within the search area, both located c.2 km from the site. Population data was provided for only one of these ponds (max count of four GCN larvae) but based on the author's previous survey experience in the region, most ponds such as those identified during the PEA tend to support small – medium GCN population size classes (pers.obs).

3.2 Bats

- 3.2.1 During the first nocturnal survey, two common pipistrelle bats emerged from the former farmhouse (B1). The first bat emerged from under the eaves of a single storey extension on the north elevation at 22:14. The second bat emerged from a gap between a fascia board and verge adjacent a chimney stack on the north elevation at 22:20. Similar results were encountered during the second nocturnal survey when a single common pipistrelle bat emerged from a gable end apex on the north face of B1 at 21:48. No bats were recorded emerging from any of the other farm buildings.



- 3.2.2 During both nocturnal surveys, moderate levels of bat activity were observed. Most activity was attributable to common pipistrelle bats with up to four bats being recorded together at any one time, the bats foraging around the farm buildings and occasionally within them. Other species recorded included soprano pipistrelle, noctule and whiskered/Brandt's although these species accounted for only a relatively small proportion of the total recorded bat activity.

4 Discussion and Recommendations

4.1 Background

- 4.1.1 This section evaluates the results of the GCN desk study and bat surveys. It uses this information to assess the potential impacts of the planning proposals and to formulate appropriate conservation measures that would prevent, reduce or offset any significant adverse impacts. The GCN assessment has been undertaken following guidelines presented in *The Great Crested Newt Mitigation Guidelines* (English Nature 2001) while the bat assessment was guided by CIEEM's draft version of the *Bat Mitigation Guidelines* (2021) and English Nature's *Bat Mitigation Guidelines* (Mitchell-Jones 2004). In all instances the impacts have been assessed in the absence of mitigation, based on information collated during the desk study/surveys as well as in consideration of the current proposals.

4.2 Evaluation

GCN

- 4.2.1 It is likely that collectively, the three ponds within 250 m of the site support a 'medium' GCN population. Given the size of the GCN population, the fact that breeding takes place and that there are numerous other ponds in the wider landscape, the local GCN population is assessed as being of Local importance. The site is located outside the core areas for this species identified by the Wrexham GCN Spatial Strategy Plan (Russel *et al.* 2017).

Bats

- 4.2.2 Based on the relatively low numbers of pipistrelle bats recorded emerging from the former farmhouse (B1), it is concluded that the building is used as a summer day roost by low numbers (<5) of non-breeding bats. Bats are utilising gaps around verges and under the eaves and probably roosting between tiles and felt and wall cavities.
- 4.2.3 The survey findings are not consistent with those of a maternity roost site which typically display aggregations of droppings within/outside roosts/access points, while more bats would be expected to have been seen emerging during the nocturnal surveys.
- 4.2.4 Of the various types of bat roost, common pipistrelle non-breeding day roosts comprising low numbers of bats are of **local** ecological importance (CIEEM 2021).

4.3 Impact Assessment

- 4.3.1 Table 2 below details the impacts of the scheme on GCN and bats. In accordance with CIEEM impact assessment guidelines, impacts have been characterised (where appropriate) in terms of their extent, magnitude, duration, frequency, timing and reversibility. Overall, impacts have been qualified with reference to an appropriate geographic scale although the scale of significance

of an effect is not necessarily the same as the geographic context in which the receptor is considered important.

Table 2 Assessment of Potential Impacts

Ecological feature	Potential Effect	Possible causes	Details of ecological effect	Ecological Significance
Bats	Mortality and Disturbance	Demolition of B1	Low numbers of pipistrelle bats could be disturbed and/or possibly injured or killed during demolition. This action could, therefore, result in an offence under the legislation that protects bats and their roosts but no significant ecological impacts would arise.	Not significant beyond site level
	Habitat loss	Demolition of B1	Permanent irreversible loss of pipistrelle day roost within B1 which would constitute a legal offence. The roost site is of low importance and bats are likely to use numerous other roost sites in the locality meaning the ecological impact of roost loss is negligible. The scheme would not result in the loss of any significant bat foraging habitat or commuting routes.	Not significant beyond site level
	Post development interference	Artificial lighting	No lighting scheme is available, but inappropriate lighting could deter bats from roosting and foraging in and around the site.	Not significant beyond site level
GCN	Mortality and Disturbance	Removal of suitable terrestrial habitat including discrete refugia.	Significant numbers of GCN could be disturbed and/or possibly injured or killed during clearance of suitable terrestrial habitats. Given the size of GCN population, the magnitude of such impacts is medium negative (Foster 2001) while such actions would result in an offence that protects GCN and their resting places.	Adverse significant at local level
		Creation of suitable habitat during construction phase	During the construction phase, parts of the site may temporally become more attractive to GCN. For example, rubble piles and stockpiles of materials could provide sheltering places for amphibians. Thus, during this period, there is a risk that small numbers of GCN could enter these newly created features and be harmed during their removal.	Not significant beyond site level
	Habitat loss	Removal of suitable terrestrial habitat including refugia.	Permanent loss of approx. 0.5 ha of suitable terrestrial habitat in the form of tall grassland, tall ruderal and debris. Some of this represents core terrestrial habitat within 50 m of pond 1. However, this area represents a small fraction of the total habitat available to GCN within 250 m of the occupied ponds meaning no long term impacts are associated with this loss and the magnitude is assessed as low.	Not significant beyond site level

4.4 Mitigation and Recommendations

- 4.4.1 Under CIEEM 2019 Guidelines, a sequential process should be adopted to avoid, mitigate and compensate negative ecological impacts and effects; this is often referred to as the 'mitigation hierarchy' and are the key principles following the impact assessment stage. Such measures for bats and GCN are detailed in Table 3 along with the landscaping plan. The latter also shows generic habitat creation and enhancement measures that will be of benefit to a wide variety of species. These measures are detailed below along with supplementary information on their creation and management.

Wildflower Grassland

- 4.4.2 Approximately 0.35 ha of existing poor semi-improved areas of grassland will be ecologically enhanced through increasing botanical diversity and through implementation of a more sympathetic management regime than currently. This will be achieved by sowing a native wildflower seed mix (e.g. Emorsgate's general purpose meadow mix) in the spring or autumn at a rate of 1g/m². Establishment gaps would be created beforehand to maximise the success rate of new seed. The grassland will require cutting to 50 mm above ground level once a year in August/early September with all arisings removed. Alternatively, some light density grazing between autumn and spring may be feasible in the northern part of the site.

Hedges

- 4.4.3 Approximately 600 m of new native hedgerow will be planted throughout the site. Species will include hawthorn, blackthorn, holly, hazel, dog rose and bird cherry. In the first few years of their creation, hedges will require little in the way of management but once established will be allowed to grow thick and bushy with occasional light cuts in early winter to maintain hedges approx. 3 m tall x 2 m wide. Additionally, 145 m of existing hedgerow will be enhanced through planting up gaps with the species mentioned above.

Scrub

- 4.4.4 New areas of native shrubs totalling 0.08 ha will be planted. Species will include hawthorn, blackthorn, elder, hazel, holly, guelder rose, honeysuckle and bramble. Such areas will be allowed to grow thick and bushy with periodic cutting back around the edges in early winter.

Scattered trees

- 4.4.5 Forty-seven native trees will be planted including oak, field maple, birch spp., rowan and wild cherry. Additionally, a small orchard area comprising 14 fruit trees of several varieties will be planted within the site, with tall meadow grassland below the canopy.

Ponds

- 4.4.6 Two new ponds will be created in the northern part of the site, these being dug in autumn and allowed to fill naturally with water during the winter. Although primarily of benefit to GCN populations, the ponds will also attract other species

of amphibians as well as birds and insects. Each pond will have a surface area of approx. 200 m² with a range of depths. This will include shallow margins (<100 mm deep) extending 1 m into the ponds which will seasonally dry up resulting in a wider variety of habitat niches within the ponds. The ponds will gently slope towards their centre to a maximum depth of approximately 1.5 m, therefore ensuring the ponds hold water throughout the year. Note these ponds will provide a slightly different type of habitat to the three ponds that currently exist as the latter are much deeper. With the exception of a few scattered birch trees and occasional shrubs the ponds will be largely unshaded. The land surrounding the ponds will be seeded with a wildflower seed mix suited to the conditions (e.g. dry and marshy grassland mixes) while some marginal and aquatic plants should be planted to ensure that vegetative cover is established relatively quickly and a source of food is available for invertebrates and the animals that feed on them. Only native species of local origin should be planted and at the correct depths and spacing to allow growth and spread. As a rough guide, two-three plants should be planted per linear/square metre.

Table 3 Mitigation Measures

Ecological feature	Measures Proposed	Mechanism to secure delivery	Residual Impact
Bats	Avoid death/injury of bats during demolition of B1 Compensate for loss of roosting habitat in B1	Carryout demolition of B1 under licence from Natural Resources Wales (NRW). Licensed ecologist to supervise removal of roosting features such as tiles, felt, weatherboarding, timbers and some blockwork. Any bats found to be transported to two pre-installed bat boxes located on trees within the site. Five roosting units (Habibat 001/003 or similar) to be incorporated within the outer walls of the converted buildings. These will be installed high on gable end walls just below the apexes. No artificial lighting should be installed within these features so that light levels do not exceed 3 lux.	Neutral
GCN	Avoid death/injury of GCN during site clearance activities and throughout construction phase. Compensate for loss of suitable GCN habitat	Undertake all works under licence from NRW. Temporary amphibian fencing (TAF) will be installed (under the supervision of the licensed ecologist/their accredited agent) around the perimeter of the red line area several months in advance of works commencing. The interior of the site will also be compartmentalised with TAF and pitfall traps installed at 10 m intervals (minimum trap density of 80 traps/ha) along the inside of the fence line. The site will then be trapped out for a period of at least 60 days with captured GCN and other amphibians being relocated to surrounding tall grassland and hedgerow habitat adjacent pond P1 (within the same ownership). Trapping will only take place during suitable conditions in the active season (typically March to November) when night air temperatures are above 5°C and rain has recently occurred. Small rubble piles and sheets of corrugated iron would be dismantled/lifted by hand under the ecologist's supervision with any amphibians found relocated to the receptor area. The landscape scheme (see above) has been designed to provide suitable terrestrial and aquatic habitat for GCN. Additionally, six rubble pile hibernacula will be created adjacent to P1 and the two new ponds as per	Slight positive at Local level

Ecological feature	Measures Proposed	Mechanism to secure delivery	Residual Impact
		the specification given in the GCN Mitigation Guidelines (Foster 2001).	

5 References

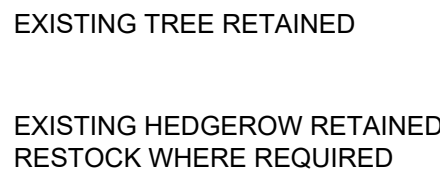
CIEEM (2021). *Bat Mitigation Guidelines: A guide to impact assessment, mitigation and compensation for developments affecting bats. Beta version 1.0.* CIEEM, Winchester.

Collins J (2016). *Bat Surveys Good Practice Guidelines.* Third Edition. BCT, London.

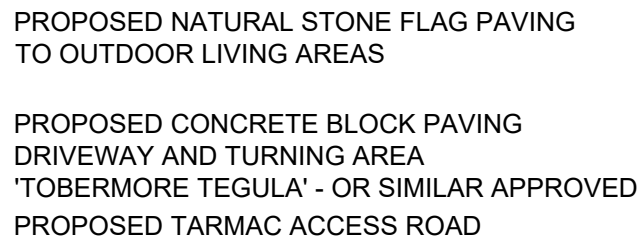
Foster J (2001). *Great Crested Newt Mitigation Guidelines.* English Nature, Peterborough.

Mitchell-Jones AJ (2004). *Bat Mitigation Guidelines.* English Nature, Peterborough.

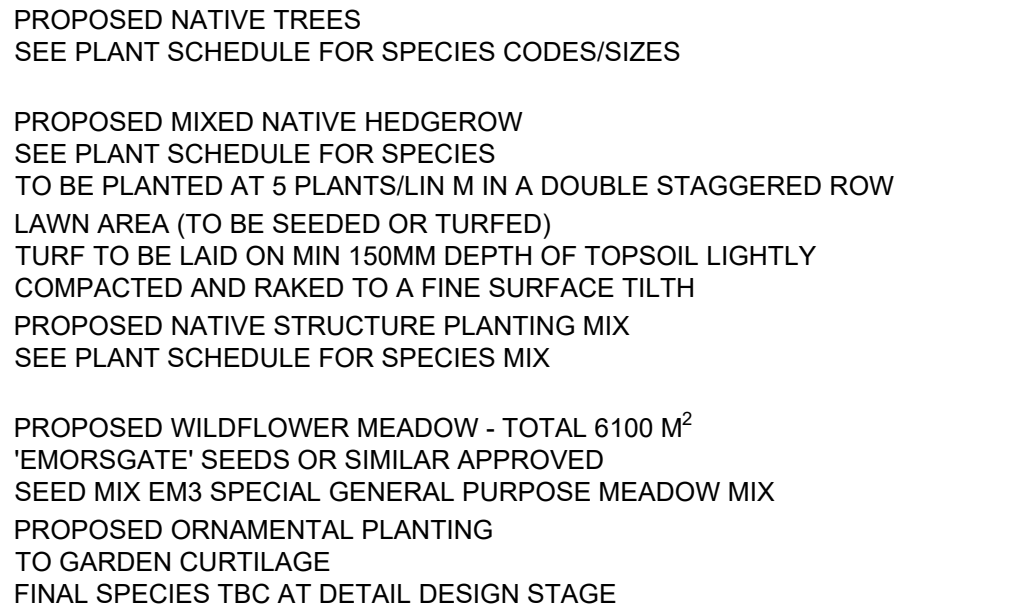
Russell L, Starnes T and Wilkinson J (2017). *Spatial Action Plan for Great Crested Newts in Wrexham: A Manual for Achieving Favourable Conservation Status.* Natural Resources Wales.



HARD LANDSCAPE:



SOFT LANDSCAPE:



SOFT LANDSCAPE SPECIFICATION NOTES:

- ALL PLANTING/TURF AREAS TO BE PREPARED BY REMOVING ANY DETRITUS/CONSTRUCTION MATERIALS AND STONE/ROCK/BRICK GREATER THAN 40MM DIAM. AREA SHALL BE CLEARED OF WEEDS USING A TRANSCULCATED HERBICIDE AND CULTIVATED TO A DEPTH OF 300MM. WHERE EXISTING SOIL IS POOR QUALITY TOPSOIL SHALL BE IMPORTED.
- ALL PLANTS SUPPLIED SHALL COMPLY WITH BS3936: PARTS 1 TO 10 AS RELEVANT, BS 4043 AND THE NATIONAL PLANT SPECIFICATION, PUBLISHED BY THE HORTICULTURAL TRADES ASSOCIATION.
- ALL LAWN AREAS TO BE CULTIVATED TO A DEPTH OF 150MM PRIOR TO LAYING OF TURF. IF THE EXISTING SOIL IS POOR QUALITY - TOPSOIL SHOULD BE IMPORTED.
- ALL SHRUB PLANTING AREAS TO RECEIVE A 50MM LAYER OF ORGANIC SOIL CONDITIONER (GRO CHAR OR SIMILAR APPROVED) AND BE CULTIVATED TO A DEPTH OF 300MM PRIOR TO PLANTING.
- ALL IMPORTED TOPSOIL MUST COMPLY WITH BS 3882:2015
- ALL PLANTS ARE TO RECEIVE SLOW RELEASE FERTILISER TO THE PITS. SIDES OF PITS TO BE LOOSENED PRIOR TO PLANTING.
- ALL PLANTS TO BE WELL WATERED IN AT PLANTING.
- ALL PLANTING AREAS TO BE MULCHED WITH 75MM TO 100MM DEPTH OF BARK CHIP.

LARGE NATIVE TREES						
CODE	SPECIES	GRADE	GIRTH	HEIGHT	SPECIFICATION	TOTAL
AC	Acer campestre	EHS	18-20CM	450/650CM	2.1 CLEAR STEM MIN 5 BREAKS	3
BP	Betula pendula	EHS	18-20CM	450/650CM	2.1 CLEAR STEM MIN 5 BREAKS	19
CB	Carpinus betulus	EHS	18-20CM	450/650CM	2.1 CLEAR STEM MIN 5 BREAKS	3
PA	Prunus avium	EHS	18-20CM	450/650CM	2.1 CLEAR STEM MIN 5 BREAKS	12
QR	Quercus robur	EHS	18-20CM	450/650CM	2.1 CLEAR STEM MIN 5 BREAKS	3
SA	Sorbus aucuparia	EHS	18-20CM	450/650CM	2.1 CLEAR STEM MIN 5 BREAKS	7

NATIVE UNDERSTOREY MIX					
TOTAL AREA ONSITE	1245				
SPECIES	MIX %	DENSITY	ROOT	SPECIFICATION	NUMBER
Corylus avellana	20	1/M ²	BR	1+1 TRANSPLANTED	249
Crataegus monogyna	20	1/M ²	BR	1+1 TRANSPLANTED	249
Prunus spinosa	15	1/M ²	BR	1+1 TRANSPLANTED	187
Ilex aquifolium	5	1/M ²	POT	2L CONTAINER GROWN	62
Sambucus nigra	20	1/M ²	BR	1+1 TRANSPLANTED	249
Viburnum opulus	15	1/M ²	BR	1+1 TRANSPLANTED	187
Lonicera periclymenum	2.5	1/M ²	POT	2L CONTAINER GROWN	31
Rubus fruticosus	2.5	1/M ²	POT	2L CONTAINER GROWN	31

GENERAL NOTES:

1. DO NOT SCALE FROM THIS DRAWING
2. DIMENSIONS GOVERN
3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE ON THE DRAWINGS
4. ALL DIMENSIONS SHALL BE VERIFIED ON SITE PRIOR TO ANY CONSTRUCTION
5. YD2 SHALL BE NOTIFIED OF ANY DISCREPANCIES

DRAWING NOTES:

(-)	FIRST ISSUE - ISSUED FOR PLANNING APPLICATION	MG	AV	14/12/2022
REV	DESCRIPTION	DRAWN	CHECKED	DATE

PROJECT TITLE

GORSE FARM
WORTHENBURY
LL13 0AL

DRAWING TITLE

LANDSCAPE MASTERPLAN

SITEWIDE

PROJECT NUMBER	DRAWING No.
YD2_22_28	YD2_GOR_LP001

SCALE @ A1

1:500

DATE
NOV 22

REVISION

(-)

- Swallow nesting cup
- Integral bat roosting unit
- Integral general bird nesting unit



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Bat and Bird Features

Project Name: Cottage Green Farm		
Drawing No: Figure 1		
Drawing JG	Originator: JG	Date: 11/1/23
		Revision: A