



FAUNA FOREST ECOLOGY

**Great Crested Newt Survey
& Updated Habitat Assessment Report**

Grange Farm, Netherseal

Prepared for JMI Planning by Fauna Forest Ecology Limited

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Methods used to prepare this report, including those carried out in the field, followed The Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct.

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1 INTRODUCTION

- 1.1 This report has been prepared by Fauna Forest Ecology Limited on behalf of JMI Planning who are acting architects for Paul Ryan. It provides the results of great crested newt (GCN) *Triturus cristatus* surveys undertaken at a single pond on private land less than 500m from Grange Farm in Netherseal (the development site). It also provides the results of an updated habitat assessment at the development site.
- 1.2 Historically, a Protected Species Survey was undertaken by Fauna Forest Ecology Limited at the development site on 30th August 2021. GCN surveys were undertaken between 23rd April and 28th May 2022. The updated habitat assessment was undertaken on 1st August 2022.
- 1.3 The purpose of the GCN surveys was to determine presence/likely absence of the species. The updated habitat assessment provides an accurate description of the development site since works have continued following the initial survey in August 2021.
- 1.4 The development site is a current working farm located at central Ordnance Survey grid reference SK 27389 13138. The pond was located at grid reference SK 27407 13064. At the closest point, the pond was approximately 15m from the development site.
- 1.5 A planning application has been submitted to South Derbyshire District Council under reference DMA/2021/0757. The proposals are described as follows: *Mixed use development to provide the conversion of agricultural buildings to create one dwelling with associated stables and store, the conversion to create attached garaging, and store; change of use of land to equestrian use through the formation of a manege, and the erection of a replacement agricultural building at Grange Farm.*
- 1.6 The development site was in a rural setting with surrounding arable fields that dominated much of the wider landscape. The pond was in a garden with both native and ornamental shrubs as well as mature trees.
- 1.7 The evaluation and findings in this report can be used by South Derbyshire District Council in their view of the planning application.
- 1.8 All survey and assessment work largely followed that recommended by the Chartered Institute for Ecology and Environmental Management (CIEEM) ¹ and follows the British Standard Code of Practice².

¹ CIEEM (2017) Guidelines for Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester.

² British Standards Institution (2013) BS 42020:2013. Biodiversity – Code of practice for planning and development. British Standards Institution, London.

2 METHODOLOGY

Desk Study

- 2.1 Using freely available resources such as the online MAGIC³ database, a desk study was undertaken to acquire data in relation to notable habitats such as ponds within 500m of the site, as well as any designated statutory and non-statutory sites within 2km of the site. DWT were asked to provide notable biological records from within a 1km radius of the site to include GCN records.

Field Visits

Surveyor Experience

- 2.2 All GCN aquatic surveys were undertaken by Eleanor Harrison BSc ARSB (Natural England GCN licence number CL29/00559), an experienced ecologist with six years experience working with GCN.

Habitat Suitability Index

- 2.3 The pond was initially assessed using the Habitat Suitability Index (HSI) scoring method on 23rd April 2022. HSI methodology was developed by Oldham et al. (2000)⁴. It is a scoring system of evaluating suitable great crested newt habitat quality with use of a numerical index between 0 and 1. A score of 0 indicates unsuitable habitat, whereas a score of 1 represents optimal habitat as shown below:

Table 1: HSI Scoring System

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

- 2.4 Factors which may affect GCN presence include:

- Geographic location
- Waterbody area
- Waterbody permanence
- Water quality
- Shading
- Presence of waterfowl
- Presence of fish

³ Multi-Agency Geographical Information for the Countryside (MAGIC). Crown Copyright and database rights (2022) 100022861. Available at: <http://www.magic.gov.uk>

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

- Waterbody density in area
- Terrestrial habitat quality
- Macrophyte cover in waterbody

- 2.5 There is a positive correlation between HSI scores and the number of GCNs found in waterbodies. Higher number of GCNs are generally associated with higher HSI scores, although the system is not sufficiently accurate enough to allow the conclusion that any particular waterbody with a high suitability score will support newts or that any waterbody with a low score will not do so.

Presence/likely absence aquatic surveys

- 2.6 Six aquatic surveys to determine the presence or likely absence of GCN in the pond were undertaken following Natural England's standard guidelines⁵. Survey dates are shown below in Table 2.

Table 2: Survey dates

Survey no.	Date	Evening/morning visit	Survey method
1	23/04/2022	Evening	Egg search, sweep bottle trap, torch light
1	24/04/2022	Morning	Egg search, sweep bottle trap, torch light
2	29/04/2022	Evening	Egg search, sweep bottle trap, torch light
2	30/04/2022	Morning	Egg search, sweep bottle trap, torch light
3	06/05/2022	Evening	Egg search, sweep bottle trap, torch light
3	07/05/2022	Morning	Egg search, sweep bottle trap, torch light
4	13/05/2022	Evening	Egg search, sweep bottle trap, torch light
4	14/05/2022	Morning	Egg search, sweep bottle trap, torch light
5	20/05/2022	Evening	Egg search, sweep bottle trap, torch light
5	21/05/2022	Morning	Egg search, sweep bottle trap, torch light
6	27/05/2022	Evening	Egg search, sweep bottle trap, torch light
6	28/05/2022	Morning	Egg search, sweep bottle trap, torch light

- 2.7 In accordance with standard guidelines, surveys were undertaken during the optimal survey period (between mid-March and mid-June with half of the surveys being undertaken between mid-April and mid-May) in suitable weather conditions (above 5 degrees C. if bottle trapping, and with no rain or heavy wind if torching). The standard minimum survey effort in order to determine presence or likely absence of GCN in a water body is typically four visits to include a minimum of three of the following survey methods for determining the presence of GCN:

- **Bottle trapping** – plastic bottle traps were placed around the edges of the pond (where access allowed) prior to sunset, at a spacing of approximately 2m. Traps were partially submerged in water with an air bubble inside and secured in place using a clearly marked cane. They were left overnight

⁵ English Nature (2001) GCN Mitigation Guidelines, English nature, Peterborough

and checked the following morning for the presence of GCN. Counts of species and sex were recorded, as well as any other animals that had entered.

- **Sweep netting** – during daylight hours, aquatic sampling nets were used to sample the pond margins for GCN presence. Netting was undertaken for a duration of 15 minutes per 50m of shoreline. Any GCN found were counted, their sex recorded and immediately released.
- **Torching** – after dusk, the lead surveyor searched the pond margins for the presence of GCN using high-powered (1,000,000 candlepower) torches. The surveyor walked the perimeter of the pond (where possible), scanning for GCN, with a focus on open areas where males may be displaying.
- **Egg searching** – during daylight hours, the lead surveyor examined submerged vegetation along the pond margins for presence of newt eggs. Based on the shape, size and colour of any eggs found, GCN eggs can be readily separated from those of other native species. Egg searching continued until either the perimeter of the pond had been surveyed and no GCN eggs found, or until a single egg was found, as presence (and breeding activity) has been determined.

Population size class assessment

- 2.8 As GCN were confirmed in the pond, a population size class assessment was completed in accordance with Natural England's standard guidance. The population size class is based on the highest number of GCN recorded during any one of the field survey visits. The population size class is calculated as shown in Table 3 below:

Table 3: HSI Scoring system

Population size class	Highest number of GCN recorded
Small population	0-10 GCN
Medium population	11-100 GCN
High population	>101 GCN

Updated habitat assessment

- 2.9 The updated habitat assessment was undertaken by ecological consultant David Nixon MCIEEM MRSB on 1st August 2022.

Limitations of surveys

- 2.10 Access to other ponds within a 500m radius of the site was not granted. The population size count is therefore based on the survey pond only. No significant limitations were however identified.

3 RESULTS

Desk Study Results

Designated sites within 1km of the development site provided by DWT

- 3.1 DWT provided details of a Local Wildlife Site (LWS) located within 1km of the development site. The site was known as Grange Wood and Potters Wood.

Designated sites within 2km of the development site

- 3.2 There were two statutory designated sites within 2km of the development site, which included River Mease SSSI, located approximately 1.2km southeast of the development site and River Mease Special Area of Conservation (SAC), located approximately 1km southeast of the site.

GCN records provided by DWT

- 3.3 DWT provided detail of a pond located approximately 353m southwest of the development site at grid reference SK2708712924. The pond was considered to provide good GCN suitability following HSI scoring. Additionally, evidence of the presence of GCN was found by use of eDNA testing. A number of other ponds existed within 500m of the development site according the records provided by DWT.

Field Visit Results

Overview

- 3.4 The development site was in a typical agricultural farm setting in rural Derbyshire. The surveyed pond was in the grounds of a neighbouring property within proximity to the development site (approximately 15m at the closest point).

Local habitats

- 3.5 Habitats local to the site largely comprised substantial fields, most of which were arable although some were used for grazing. Many of these fields were bound by mature hedgerow margins that included trees, all of which provided excellent connectivity for a host of wildlife including GCN between the site and the wider landscape.

Pond site habitats and flora

- 3.6 The pond was positioned in the northern corner of a wooded garden area within the curtilage of a residential property. The pond was oval-shaped, covering an area of approximately 380m² and was surrounded by a mix of mature trees. The pond was primarily dominated by bogbean *Menyanthes trifoliata*, with yellow flag iris *Iris pseudacorus* and water mint *Mentha aquatica* found around the edges. The western and northern sides of the pond were shaded by overhanging trees and the eastern side was edged by amenity grass, which was bounded by a small track leading to the house.
- 3.7 Information relating to the pond location as well as the HSI scores is shown below in Table 4:

Table 4: HSI scores

Approx. Grid Ref.	HSI score	Suitability
SK 27407 13064	0.76	Good

Aquatic survey results

- 3.8 A GCN population was discovered during aquatic surveys. Evidence included GCN eggs found between folded vegetation and actual GCNs, which were observed while torching, and also when checking bottle traps.
- 3.9 A summary of the aquatic survey (adult) GCN peak count results is provided below in Table 5. A full results table is shown in Appendix 3 (Table 6).

Table 5: GCN peak counts

Survey no.	Peak count of GCN
1	20
2	16
3	13
4	12
5	5
6	3

Population size class assessment results

- 3.10 A peak count of 10 GCNs was recorded during the first survey on 23rd April 2022, indicating the population is medium-sized.

Updated habitat assessment

- 3.11 Since the initial Protected Species Survey was undertaken on 30st August 2021, the site has been transformed due to works being undertaken by the developer. At the time of the site visit on 1st August 2022, all original buildings with exception to B6 had been demolished and new buildings had either been constructed or were under construction, and much of the existing semi-natural vegetation had since been cleared, leaving only small isolated pockets of unmanaged grass, scrub and tall ruderal along the eastern edge of the development site, much of which was being used to store timber and wire fencing on pallets. These remaining vegetative patches were surrounded by substantial areas of compacted hardcore and gravel which dominated the site. Some of the scrub thickets along the far southern extent of the site had been thinned as well, although the base layer remained along the northern side aspect of a single storey brick building that belonged to the neighbouring property. This building defined part of the southern boundary line of the development site. Additionally, one ash tree remained at the northeast corner of the site.

4 DISCUSSION & RECOMMENDATIONS

- 4.1 The proposed development is a small-scale project that is unlikely to impact any nearby known designated sites.
- 4.2 Most ecological data remain valid for only short periods of time due to the inherently transient nature of many protected fauna species, in this instance GCN for example. Where the species or group being surveyed for is present within a particular site, data are typically considered accurate for 12-18 months⁶. In view of this, it is recommended that follow-up GCN surveys are carried out if works have not commenced by the start of the 2023 GCN breeding season.
- 4.3 GCN surveys of the pond were recommended by DWT, largely because presence of GCN has been detected using eDNA analysis methods at a pond located approximately 353m from the development site, and because anecdotal GCN records existed at the survey pond adjacent to the development site.
- 4.4 Other ponds existed further beyond the site boundaries within 500m of the development site, many of which were connected well to the wider landscape by a network of hedgerow systems and tree lines. It is therefore possible that other local ponds support breeding GCN populations.
- 4.5 Habitats within the boundaries of the development site were once suitable for use by commuting and sheltering GCN, although since much of the scrub and ruderal has been cleared along the eastern edges of the site to facilitate the development, leaving small, isolated pockets, much of the suitable habitat no longer remains. At the pond site however, the mature trees coupled with a dense understorey of shrubs, tall herb and scrub, located within near proximity of the pond, continued to provide GCNs with excellent commuting and sheltering habitat. Of particular note was the hedgerow line leading from the pond area in a southerly direction down to and alongside Clifton Road, then in a northeasterly direction alongside Lullington Road.
- 4.6 Based on the population size class assessment originally defined by English Nature (currently Natural England), the pond was found to support a medium GCN population during the initial aquatic survey in April 2022. Given the distance between the survey pond and other known ponds is less than 500m, it is possible that a medium metapopulation exists between them because GCNs are known to commute within terrestrial habitats for up to 500m from a breeding pond⁷. Populations that emigrate/migrate between ponds are typically considered more stable than those restricted to a single pond because they are more likely susceptible to impacts caused to damaged habitats.

⁶ <https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf>

⁷ English Nature (2001) GCN Mitigation Guidelines, English Nature, Peterborough

- 4.7 It is understood works associated with the development site will not involve removal of any habitats located within the grounds of the pond site which belongs to a neighbouring property and does not fall within the boundary of the development site.
- 4.8 During the terrestrial phase of their life cycle, is likely the majority of GCN local to the area utilise the longer unmanaged vegetation associated with the pond site, although some may still use any remaining vegetation within the development site itself. A metapopulation is likely to exist given other ponds are present within 500m of the site. In light of the above, the possibility of individuals occurring within the development site should not be disregarded. This assumption can also be supported based on a study carried out in association with Natural England, which found that GCN numbers are far lower in habitats further than 100m from a breeding pond. Following the study, it was suggested that GCN populations were in fact far denser within a 50m radius of the breeding pond⁸.
- 4.9 Taking the current state of the development site into consideration, if GCN are using it, they will likely favour remaining vegetative habitats edging the site which could still provide some level of shelter and protection (albeit low). It is therefore advised that an appropriate mitigation licence is secured ahead of further works commencing. This is provided a mitigation licence can be issued retrospective to works that have already been undertaken. In this instance, a cost-effective approach would be for the developer to register the site under the District Level Licensing (DLL) scheme, which in comparison to a traditional mitigation licence, is likely to be a simpler and quicker option for applying for a GCN mitigation licence. Further information relating to this licence can be obtained by clicking on the following web link: <https://www.southderbyshire.gov.uk/our-services/planning-and-building-control/planning/licensing-for-great-crested-newt>
- 4.10 In addition to the mitigation licence, regardless of which licence is used in support of GCN constraints at the development site, the developer should adopt general good practice mitigation measures at all times to safeguard GCNs at site and local level as described below. *Note* a detailed mitigation and compensation strategy may need to be produced in the event the developer chooses to apply to Natural England for a traditional GCN European Protected Species Licence (EPSL).*

General good practice mitigation measures

- 4.11 Where possible, any remaining vegetative habitats such as scrub and tall ruderal should be retained to provide continued use by GCN. This is because loss of such terrestrial habitats could lead to significant impacts to commuting and sheltering individuals.
- 4.12 Once an appropriate mitigation licence has been secured for the development site, an ecologist should undertake a site inspection to search for presence of GCN. Depending on the licence terms, any GCN discovered by the ecologist may need to be removed from the area of impact to a safe location. The ecologist may need to be present for more than one day. This decision should be made by the ecologist

⁸ Jehle, R. (2000). The terrestrial summer habitat radio tracked GCNs (*Triturus cristatus* and marbled newts (*Triturus marmoratus*)). The Herpetological Journal 10:137-143

at the time. The ecologist will not need to be present once it is considered there is no threat to the wellbeing of GCN.

- 4.13 If any of the remaining vegetation must be cleared during the construction phase, it will ideally be positioned in locations within near proximity to the site boundaries with a view to create additional refuge habitat for GCN. This could be further enhanced by stacking deadwood or log piles along the boundaries.
- 4.14 Cleared vegetation and materials should not be left in areas of the development site that will later be disturbed, as GCN may use them for refuge, which could lead to individuals being disturbed, injured or killed.
- 4.15 It is advised that only building products to be used on the day are brought and stored on the development site. If building products need to be stored at the site (e.g. overnight or for more than one day), they will be stored on pallets or retained in bags on pallets to ensure that refuges are not created that may attract GCN. Building products should be placed on existing hard standing if possible.
- 4.16 All holes created during the construction period (e.g. to lay a concrete pad) will be filled in and finalised on the same day so as not to leave any pitfall traps. If this is unavoidable, they should be left with a sloping end or ramp to allow animals that may fall in to escape.
- 4.17 It is understood the developer seeks to incorporate a hedgerow and tree planting scheme within the project scope. By planting a hedgerow in (in addition to log pile/deadwood creation), GCN, will be provided with additional commuting, sheltering and foraging habitat within near proximity of the site. Hedgerow planting should be carefully considered. For example, it would be prudent to plant the hedgerow once all development has been completed to reduce the risk of it becoming damaged during the construction phase. Additionally, it will ideally be planted in a location where it can be joined to existing habitat suitable for use by GCN, such as the substantial scrub thicket located between the development site and the neighbouring property. Finally, good practice would be to carefully consider hedgerow species, as species rich hedgerows are far more ecologically valuable than those that either lack diversity or native species. Our recommendations for hedgerow planting are listed below:

Hedgerow Planting

- 4.18 It is recommended that hedge plants should be approximately 0.5m transplants of locally common native species and of British provenance (preferably local) and should comply to British Standard 3936⁹. A diverse mixture of species is recommended to enhance the wildlife value of the hedgerow and provide a good feeding resource for both pollinating insects and birds. The composition of species should ideally

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<https://apps2.staffordshire.gov.uk/SCC/TrimDocProvider/?ID=003/07/06/04/1039>

include 10% hazel *Corylus avellana*, 60% hawthorn *Crataegus monogyna*, 10% field maple *Acer campestre*, 5% holly *Ilex aquifolium*, 10% blackthorn *Prunus spinosa*, 5% dog rose *Rosa canina* with the addition of wayfaring tree *Viburnum lantana* and/or guelder rose *Viburnum opulus* with no less than six species in total. It is also advised that trees are planted amongst the hedgerow. Ideal species could include cherry *Prunus avium*, oak *Quercus robur*, hornbeam *Carpinus betulus*, alder *Alnus glutinosa* and rowan *Sorbus aucuparia*. It will be necessary for a hedgerow protection, management and aftercare plan to be derived to ensure the future success of the new hedge.

APPENDIX A: SURVEY DATA

Table 6: Aquatic GCN survey data

Date	Temp.	Cloud cover	Sunset	Survey no.	% pond covered with traps	Pond vegetation cover	Turbidity	GCN		Smooth newt		Notes
								Male	Female	Male	Female	
23/04/2022	10	100	20:18	1	80	30	1	12	8	0	0	GCN Eggs found on water mint
24/04/2022	6	40	05:49	1	80	30	1	2	0	7	3	
29/04/2022	9	20	20:30	2	75	30	2	13	3	1	0	
30/04/2022	8	30	05:37	2	75	30	2	9	4	0	0	
06/05/2022	12	100	20:42	3	75	30	3	11	2	0	0	
07/05/2022	9	0	05:23	3	75	30	2	10	2	4	1	
13/05/2022	12	30	20:54	4	75	30	3	8	4	1	0	One toad found
14/05/2022	10	0	05:11	4	75	30	3	10	11	3	2	
20/05/2022	13	0	21:05	5	75	40	2	3	2	0	0	
21/05/2022	7	30	05:01	5	75	40	3	11	10	6	2	
27/05/2022	10	20	21:14	6	75	40	3	2	1	0	0	1 GCN eft found
28/05/2022	9	0	04:52	6	75	40	3	3	7	5	0	

APPENDIX B: LEGISLATION SUMMARY

The great crested newt is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of The Conservation of Habitats and Species Regulations 2017 (as amended) making it a European Protected Species. GCN are also a Species of Principal Importance in England under Section 41 NERC Act. In addition, GCN is a Priority Species within the Kent BAP. The lifecycle of GCN means they spend a considerable amount of their time on land foraging, commuting, and hibernating. it is an offence to:

- Intentionally or recklessly kill, injure or capture a great crested newt;
- Possess or control any live or dead specimen or anything derived from a great crested newt;
- Intentionally or recklessly* damage, destroy or obstruct access to any structure or place used for shelter or protection by a great crested newt; and
- Intentionally or recklessly* disturb a great crested newt while it is occupying a structure or place which it uses for that purpose.
- Damage or destroy a breeding site or resting place.
- Sell, barter, exchange or transport or offer for sale great crested newts or parts of them.

*Reckless offences were added by the Countryside and Rights of Way Act 2000, which applies only to England and Wales.

APPENDIX C: MAPS & SITE PLANS

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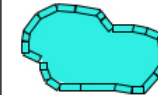


Fauna Forest Ecology Limited
 South View Bungalow, Cheadle Road, Oakamoor, ST10 3AN

Site Map



Approx. area of
 impact within
 development site



Surveyed pond

August 2022

Grange Farm, Netherseal



FAUNA FOREST ECOLOGY

Figure 1: Map of pond site and development site.
Note red line boundary is approximate and may not be drawn to scale*

APPENDIX D: IMAGES



Image 1: B6 left in-situ at left corner of the image. New building under construction in main frame of image



Image 2: Recent building constructions along southern boundary



Image 3: Hard compacted habitat at southern boundary, looking in a south-west direction



Image 4: Hard compacted habitat at southern boundary, looking in a westerly direction



Image 5: New buildings under construction, looking in a north-easterly direction



Image 6: Recent building construction positioned beyond existing red line boundary marked in previous reports. Looking in an easterly direction



Image 7: Remaining unmanaged grass, scrub and tall ruderal vegetation