



Vaynor Quarry

Great Crested Newt Report

Hanson

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Basis of Report

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1.0 Introduction

This report has been prepared by SLR Consulting Limited (SLR) on behalf of Hanson UK (Hanson) and summarises the findings of a great crested newt (GCN) (*Triturus cristatus*) survey undertaken at Vaynor Quarry in Merthyr Tydfil, hereafter referred to as the 'Site'.

The Site is located immediately north of Trefechan and is centred on the National Grid Reference (NGR) SO 035 103 due to its extent it occurs within both the Merthyr Tydfil County Borough Council (MTCBC) and Brecon Beacons National Park Authority (BBNPA) administrative areas.

1.1 Background

In March 2018, an initial habitat survey was undertaken to review the baseline ecological conditions at the Site and help inform the requirement and scope of any follow-on surveys needed to complete an Ecological Impact Assessment (EclA). This identified habitats with the potential to support GCN and GCN surveys were conducted that year, these identified the presence of a 'large' population.

Due to the time that has elapsed, to ensure data remains current for any future European Protected Species Licence (EPSL) application, a repeat survey has been undertaken in 2023, the results of which are set out in this report.

1.2 Legislative Text

GCN is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species EU Exit Regulations 2019 (The Habitats Regulations). In combination, these pieces of legislation fully protect this species and their habitat against:

- a) deliberately capture, injure or kill a great crested newt;
- b) deliberately disturb great created newts, including any disturbance which is likely to:
 - i. impair their ability to survive, breed, or rear or nurture their young;
 - ii. impair their ability to hibernate or migrate; or
 - iii. affect significantly the local distribution or abundance of the species;
- c) deliberately take or destroy the eggs of a great crested newt;
- d) damage or destroy a breeding site or resting place of a great created newt; and
- e) intentionally or recklessly:
 - i. damaging or destroying any structure or place which great crested newt uses for shelter or protection;
 - ii. disturbing great crested newt while occupying a structure or place which is used for shelter or protection; or
 - iii. obstructing access to any structure or place which great crested newt uses for shelter or protection.

The more common British amphibians, i.e. common frog (*Rana temporaria*), common toad (*Bufo bufo*), smooth newt (*Lissotriton vulgaris*) and palmate newt (*Lissotriton helveticus*), are protected under the Wildlife & Countryside Act 1981 (as amended) from sale, barter, exchange, transporting for sale and advertising to sell or to buy.

1.3 Study Aims and Objectives

The aims of the survey were to



- establish the presence/ likely absence of GCN within the Site and describe their distribution and abundance; and
- evaluate the population(s) in the local, regional, and national context.



2.0 Methodology

2.1 Desk-based Study

In 2018, as part of the EclA, a background search for records of protected and notable species (including amphibians) was undertaken.

The Southeast Wales Biodiversity Records Centre (SEWBRc) was contacted for information on pre-existing biological records within 2km.

This has not been reviewed as part of the survey given the known presence of GCN at the Site.

2.2 Field Survey

2.2.1 Habitat Suitability Index Survey

A Habitat Suitability Index (HSI) survey was undertaken on all waterbodies (where accessible) within the Site and a 500m buffer to assess suitability for GCN.

The HSI assessment is a numerical index, between 0 and 1, where 0 indicates unsuitable habitat and 1 represents optimal habitat. The HSI for the GCN uses ten factors (suitability indices (SI) 1 to 10), which are thought to affect GCN as follows:

- geographic location (SI 1);
- pond area (SI 2);
- frequency of pond drying (SI 3);
- water quality (SI 4);
- shade (SI 5);
- presence of Waterfowl (SI 6);
- presence of Fish (SI 7);
- number of ponds within 1km (SI 8);
- terrestrial habitat quality (SI 9); and
- aquatic macrophyte cover (SI 10).

Each factor is scored using field and desk-based survey data. These ten scores are then converted to SI scores using a scale from 0.01 to 1 from graphs given in Oldham et al. (2000)¹ and an HSI result is calculated using the following formula:

$$\text{HSI} = (\text{SI1} \times \text{SI2} \times \text{SI3} \times \text{SI4} \times \text{SI5} \times \text{SI6} \times \text{SI7} \times \text{SI8} \times \text{SI9} \times \text{SI10})^{1/10}$$

The results of the HSI assessment are then applied to the following categorical scale to determine the overall suitability of the waterbody following research by Brady (unpublished):

¹ 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: 143-155.



Table 2-1 Habitat Index Suitability Scoring

HIS Score	Pond Suitability for GCN
<0.5	Poor
0.5-0.59	Below average
0.6-0.69	Average
0.7-0.79	Good
>0.8	Excellent

There is a positive correlation between HSI scores and presence and abundance of GCN in ponds. Generally, ponds with high HSI scores are likely to support larger populations. However, the relationship is not sufficiently precise to conclude that any pond with a high HSI will support newts in high populations, or that any pond with a low score will support low numbers of newts or no newts at all.

2.1.1 Population Size Class Assessment

Surveys to assess population size were carried out on all suitable ponds, in accordance with English Nature Survey Guidelines which are outlined below:

- a total of six survey visits between mid-March and mid-June (four to determine presence / likely absence and an additional two to estimate the population);
- three of the six survey visits between mid-April and mid-May;
- surveys using three of four methods – egg searching, netting, torching and bottle trapping and;
- surveys completed in suitable weather conditions.

Both live and dead submerged vegetation was searched for GCN eggs. Surveyors looked for folded leaves which contain large, yellow/white eggs, characteristic of GCN. Any eggs found were unwrapped from folded leaves to confirm identification, and the developmental stage of the egg was noted. Once a GCN egg had been identified, the search was terminated because this method does not give any meaningful quantitative information on population size and can harm the eggs. Other evidence of breeding activity, e.g., courtship, gravid females and egg-laying were also recorded where observed.

Torching was carried out following sunset when there was:

- a night-time air temperature of more than 5°C;
- little or no wind, and;
- no rain.

The surveys involved walking slowly around the edge of the pond (where accessible) and scanning the water with a torch (Clulite, 1,000,000 candle power) to look for newts.

2.4 Survey Personnel

The surveys in 2023 were led by experienced and appropriately licenced ecologists including Amy Gill (Agent on Natural Resources Wales Licence number S090015/2) and Robert Williams (Natural Resources Wales Licence number S091367-1), with support from SLR ecologists.

Reporting has been completed by Gemma Hill, a Project Ecologist at SLR. Gemma is a Qualifying member of The Chartered Institute for Ecology and Environmental Management (CIEEM). The report has been subject to quality assurance review by Chris Mitchell. Chris is a Technical Director at SLR



and Chartered Ecologist (CEcol), Chartered Environmentalist (CEnv) and Full member of CIEEM (MCIEEM).

2.5 Survey Limitations

Ponds 2, 3, 4, 6 and 7 were unsuitable for bottle trapping due to being ephemeral and either holding very little water or having solid rock substrates which prevented the use of bottle traps. It was not necessary or appropriate to bottle trap Pond 5 as the presence of a large population had already been confirmed. However, due to the small size of the waterbodies and the lack of macrophyte surface cover, it was considered that the methods of torching, netting and egg searches were sufficient in identifying any amphibians present. Pond 2 had dried during the survey period.

Approximately 50% of Pond 5 could not be surveyed due to the fact the waterbody occurs alongside a vertical quarry face of 10-15m in height with unprotected edges. The survey results obtained are therefore likely an underestimate of actual numbers of great crested newt present.

This is not considered a limitation as the initial visit recorded a peak count of 180 great crested newt and numbers declined thereafter. As the site evidently supports the highest population size class, undertaking further survey visits would not influence the population size class assessment and only increase the level of disturbance to the population during the breeding season.



3.0 Results

3.1 Field Survey

The HSI assessments of the eight ponds present within the Site indicates a varying suitability of habitat for GCN, the habitat description and results are set out in Table 3-1 below.

Table 3-1 Habitat Suitability Index (HSI) Assessment Results 2023

Pond no.	Pond Photo	Description	HSI Score	GCN Suitability
2		A scrape with depth of approx. 20cm. Pond size c. 13m x 4m. Vegetation cover= 80% Turbidity= 2	0.5	Poor
3		Very shallow, surrounded by gravel. Turbidity level 0.	0.47	Below Average
4		Small pools separated by a pile of boulders but considered as one pool. Depth approx. 30cm. Pond size c. 20m x 5m. Vegetation cover= 20% Turbidity= 1	0.58	Below Average



Pond no.	Pond Photo	Description	HSI Score	GCN Suitability
5		Large watercourse next to rockface therefore resulting in only 45% of the pond being accessible. Dominated by vegetation with a turbidity score of 1.	0.85	Excellent
6A-C	  	Pools along the course of the quarry floor, interlinking by flow of water from the quarry face. Limited vegetation cover at southern extent (Typha). Turbidity = 0.	0.56	Below Average



Pond no.	Pond Photo	Description	HSI Score	GCN Suitability
7		Stream running through marshy vegetation with a vegetation cover of 4 and a turbidity score of 1.	0.61	Average

Table 3-2 summarises survey timings and conditions.

Table 3-2 Weather Conditions

Visit No	Date	Weather Conditions (Wind-Beaufort scale, cloud cover and rain)
1	04/04/23	3BF, 8/8, no rain
2	19/04/23	3BF, 8/8, no rain
3	24/04/23	2BF, 8/8, no rain
4	11/05/23	2BF, 3/8, no rain
5	17/05/23	1BF, 3/8, no rain
6	24/05/23	2BF, 1/8, no rain

The 2023 surveys recorded the presence of GCN in four of the eight waterbodies as summarised in Table 3 - 3 below.

Table 3-3 Summary of Results 2023

Pond	Number of Surveys	GCN Present/Absent	Peak GCN Count	GCN Population Size Class
2	6	Absent	N/A	N/A
3	6	Absent	N/A	N/A
4	6	Present	2	Small
5	6	Present	127	Large
6A	6	Present	5	Small
6B	6	Present	1	Small
6C	6	Absent	N/A	N/A
7	6	Absent	N/A	N/A



In 2023, a large population of GCN with signs of breeding was recorded in Pond 5 within the eastern void, and a small population of GCN recorded in Pond 4, 6A and 6B.



4.0 Discussion

During the most recent surveys in 2023, a large population of GCN has been recorded at the Site, comprising a peak count of 127 GCN in Pond 5 equating to a 'large population', two at Pond 4, five at 6A and one at 6B giving the Site a maximum overall peak count of 135 individuals. During the 2018 surveys, Pond 5 had a peak count of 180 individuals which also equals a 'large' population. The presence of common frog, common toad and palmate newt was also recorded during the surveys.

Given full survey of Pond 5 was not possible due to restricted safe access and certain elements of the survey were constrained as a result of the nature of the waterbodies present, it is considered overall that the actual numbers of great crested newt within Pond 5 would have been greater. The remaining ponds were all very shallow and clear with unrestricted access and so it is considered the other pond survey results are reflective of the distribution of the population being heavily focussed on Pond 5. This would also correspond to the location of accessible suitable terrestrial habitat being heavily focussed towards the south-eastern and eastern fringes of the site.

The assemblage present could meet the criteria for selecting Wildlife Sites in South Wales² on the basis of four amphibian species being present and a large population of great crested newt.

Based on knowledge of other GCN in South Wales, this is considered likely to represent one of the larger known populations.

The value of the site, in terms of amphibians, is therefore assessed as being of at least Regional (South Wales) importance.

² <http://www.sewbrec.org.uk/content/attachments/SouthWalesWildlifeSitesCompleteDoc.pdf>





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