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Great Crested Newt Survey

PROJECT TITLE: Land off Readers Way, Rhoose.
SITE ADDRESS: Readers Way, Rhoose, Vale of Glamorgan, CF62 3HX
PLANNING REF:

DATE: 8th May 2024

An application is being made for the proposed development site to be included within Local Development Plan (LDP) for a future residential development. The proposed development site is currently a series of agricultural fields and is centred at approximately SS 97219 71535. Indicative development proposals involve the creation of a large multifunctional park and recreational area which includes housing. The site encompasses eight fields to the north-west of Readers Way, Rhoose. The fields are all connected via hedgerow and tree lines around their boundaries and open access gaps in the field corners.

Further agricultural fields are found to the north, with Cardiff Airport to the east and a large urban development which wraps around the southern and western boundaries. The wider area is largely rural, with a patchwork of agricultural land and broad-leaved woodland.

A data search for local species records was undertaken to inform the Preliminary Ecological Assessment (PEA) which was undertake in 2022. For full details of the survey methodology and findings please refer to the Preliminary Ecological Assessment Report dated 2nd September 2022 by Ecological Services Ltd. The data search returned results for Great crested newt (GCN), (*Triturus cristatus)* and other amphibians within 2 km of the site boundary (LERC reference: 0212-887). The nearest record for GCN was approximately 20 m south of the southern site boundary for Readers Way Pond. 14 historic records were returned between 1992 and 2002 of individuals being rescued from a gully pot and individuals seen on torching surveys.

Legislation

GCN are a European protected species and are protected under the Conservation of Habitats and Species Regulation 2017. In summary, they are protected from:

- Deliberate capture, killing and injuring,
- Deliberate disturbance of a breeding site or resting place,
- Deliberate taking or destroying of eggs,
- Damage or destruction of a breeding site or resting place.

GCN are listed on Schedule 5 of the Wildlife & Countryside Act 1981 which protects them from intentional or reckless disturbance or obstruction when using a structure or place for shelter and / or protection. It is also an offence to sell, offer or expose for sale a great crested newt. Great crested newt and common toad are listed in Section 7 of the Environment (Wales) Act 2016 which makes them key species to sustain and improve biodiversity.

Survey Methodology

Given the proximity of GCN records, the presence of a pond and the presence of ditches within the site boundary, further survey effort has been requested. A variety of survey methodologies can be used when undertaking survey work for GCN. Two methodologies have been used on this occasion, Habitat Suitability Index (HSI) and Environmental DNA Sampling (eDNA).

Three ditches (Ditch 1, Ditch 2, and Ditch 3) were noted as present on site within the PEA Report in 2022 by Ecological Services Ltd. Pond 1 (Readers Way Pond) was noted as being 50 m south of the site. (See Appendix 1 for waterbody locations). Ditch 3 and Pond 1 were not surveyed or sampled due to being dry and holding no water at the time of survey.

Ditch 1 and Ditch 2 were surveyed on 19th April 2024 by Aislinn Harris (NRW Licence S092754/1). A HSI assessment was carried out and water samples for eDNA analysis were collected. The water samples for eDNA analysis were collected following the instructions within the sample kit and then sent to SureScreen Scientifics for analysis. All water sample collection guidance provided by SureScreen Scientifics was followed and undertaken in suitable weather condition. All samples were stored in line with the SureScreen Scientifics guidance.

The weather during the eDNA sampling was sunny with a cool wind, there was also recent heavy rain during the week prior to surveying.

Habitat Suitability Index (HSI)

To assess a waterbody for its suitability to support GCN a Habitat Suitability Index (HSI) survey can be completed. A HSI survey of a waterbody aims to score the suitability of a

waterbody between 0 and 1 to give an indication of whether or not GCN may use the feature. HSI uses 10 different categories to score the suitability of a waterbody:

- Geographical Location
- Pond Area
- Pond Drying
- Water Quality
- Shade
- Presence of water fowl
- Presence of fish
- Proximity to other ponds
- Surrounding terrestrial habitat
- Macrophyte cover

Environmental DNA (eDNA)

Environmental DNA (eDNA) surveys involve taking samples from a waterbody and testing it for the DNA of GCN. When in a waterbody GCN can release DNA through shedding of skin cells, urine, faeces and saliva which can persist for a number of weeks. Samples need to be gathered from the water body and sent to a suitable laboratory for testing. Water samples should be collected between April and June to ensure the most reliable data and best chance of DNA still being present.

Results

Pond 1

Pond 1 is centred at ST 05862 66606. The pond was dry with no water suitable for sample collection present. Some areas within the pond had muddy ground and the pond was dominated by tall, dry vegetation (See Appendix 2, Photographs 1, 2, 3 and 4). The pond is heavily vegetated and does not appear to have been managed for some time. Photographs of the pond are provided in Appendix 2.

Water samples for eDNA testing could not be collected. Due to the overgrown nature of the pond a HSI Assessment was not undertaken.

Ditch 1

Ditch 1 is centred around grid reference: ST 05470 66889. Ditch 1 was present along the western side of the hedgerow (See Appendix 2, Photographs 5, 6 and 7). Ditch 1 flowed southwards and connected to Ditch 2 via the southeast corner of the field through the fields grassy vegetation (See Appendix 2, photograph 8). This was suspected to only connect after heavy rain as this area was not well defined and the water level was very shallow (See Appendix 2. Photographs 9, 10 and 11).

Ditch 1 had an approximate length of 120 m. 50% of the ditch was dry with no water present and much of the bankings were overgrown with vegetation along the northern half of the ditch. Approximately 60 m of the water course was able to be accessed and water samples taken. Much of the ditch had emergent vegetation or was shaded by the hedgerow vegetation.

Ditch 1 was given a Habitat Suitability Index Score (HSI) of **POOR** (0.49). See Table 1 below for full HSI scoring.

Table 1. Habitat Suitability Index Table- Ditch 1

SI number	SI description	comment	SI score
factor 1	geographic location	ZONE B	0.5
factor 2	pond area	<50 m2	0.05
factor 3	permenence	sometimes dries	0.5
factor 4	water quality	poor	0.33
factor 5	shade	60%	1
factor 6	waterfowl	absent	1
factor 7	fish	absent	1
factor 8	pond count	2	0.55
factor 9	terrestrial habitat	poor	0.33
factor 10	macrophytes	70%	1
		HSI score	**0.49**
		Pond suitability	**Poor**

Ditch 1 returned a **NEGATIVE** result for GCN eDNA.

GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection. (See Appendix 3 for SureScreen Scientifics GCN eDNA Technical Report).

Ditch 2

Ditch 2 is centered around grid reference: ST 05384 66842. Ditch 1 flowed southwards and connected to Ditch 2 as explained above (See Appendix 2, photograph 8).

Approximately 90% of this waterbody was accessible with water present along the majority of the ditch length. Ditch 2 had an approximate length of 160 m and was present along the southern side of the hedgerow. (See Appendix 2, photographs 9, 10 and 11).

Ditch 2 was given a Habitat Suitability Index Score (HSI) of **POOR** (0.48). See Table 2 below for full HSI scoring.

Table 2. Habitat Suitability Index Table- Ditch 2

SI number	SI description	comment	SI score
factor 1	geographic location	ZONE B	0.5
factor 2	pond area	<50 m2	0.05
factor 3	permenence	sometimes dries	0.5
factor 4	water quality	poor	0.33
factor 5	shade	60%	1
factor 6	waterfowl	absent	1
factor 7	fish	absent	1
factor 8	pond count	2	0.55
factor 9	terrestrial habitat	poor	0.33
factor 10	macrophytes	60%	0.9
		HSI score	**0.48**
		Pond suitability	**Poor**

Ditch 2 returned a **NEGATIVE** result for GCN eDNA.

GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection. (See Appendix 3 for SureScreen Scientifics GCN eDNA Technical Report).

Ditch 3

Ditch 3 is centred at ST 05561 66999. Ditch 3 was dry with no water present. Ditch 3 was a small gully running parallel to the field and was not as prominent as Ditch 1 and Ditch 2. (See Appendix 2, Photograph 12).

Water samples for eDNA testing could not be collected. A HSI Assessment of the ditch was not undertaken.

Conclusions

It is thought highly unlikely that GCN currently utilise Ditch 1, Ditch 2, Ditch 3 or Pond 1 for breeding purposes. It is also considered unlikely that GCN are present within the terrestrial habitat of the site. No further surveys in relation to GCN are recommended. However, the recommendation within section 4 of the Preliminary Ecological Assessment report by Ecological Services Ltd dated 2nd September 2022 must be adhered to as a precautionary approach. If GCN are found to be present during site clearance works all works must stop and advice sought from Natural Resources Wales.

The Readers Way Pond SINC (Pond 1), approximately 50 m south of the site, is known to historically support GCN. Given the currently silted condition of the pond it is not likely to sustain a breeding population of GCN. Enhancements could be made to this pond to improve its suitability for amphibians. Enhancements, such a dredging out the pond to create more open water, could be secured as part of any future planning conditions.

SINCs are non-statutory designated sites protected via the planning process. Policy MG 23 of the Vale of Glamorgan Local Development Plan detail that impacts to protected and priority habitats must be avoided. Given the nature of the development proposals, as an overall enhancement to the biodiversity of the site, there is scope to create further biodiversity features within the development area which should benefit local wildlife populations.

Best Wishes

Beth Lewis
Ecologist
Ecological Services Ltd

Signed: *Beth Lewis* ***Date: May 2024***

Appendix 1 - Pond Locations

Appendix 2 - Pond Photographs

Photograph 1. Pond 1

Photograph 2. Pond 1

Photograph 3. Pond 1 view of pond base

Photograph 4. Pond 1 view of vegetation within pond

Photograph 5. Ditch 1

Photograph 6. Ditch 1

Photograph 7. Ditch 1

Photograph 8. Ditch 1 running into Ditch 2 through grass vegetation in southeast corner of field.

Photograph 9. Ditch 2

Photograph 10. Ditch 2

Photograph 11. Ditch 2

Photograph 12. Ditch 3. Dry with no water present

Appendix 3 - SureScreen Scientifics GCN eDNA Report

Folio No: 574-2024
Purchase Order: 24-07-24
On behalf: Ecological Services Ltd
Issue Date: 07.08.2024

SureScreen Scientifics

GCN eDNA Analysis

Summary

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analyzing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

Results

Lab ID	Site Name	OS Reference	Degradation Check	Inhibition Check	Result	Positive Replicates
GCNC474	Readers Way, Rhoose Ditch 2	ST 05584 66842	Pass	Pass	Negative	0/12
GCN475	Readers Way, Rhoose - Ditch 1	ST 05470 66883	Pass	Pass	Negative	0/12

Matters affecting result none

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Folio No:	574-2024
Purchase Order:	24-01/24
Contact:	Ecologica Services Ltd
Issue Date:	07.05.2024

SureScreen Scientifics

Methodology

The samples detailed above have been analyzed for the presence of GCN eDNA following the protocol stated in DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5' (Biggs et al. 2014). Each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample tube which then undergoes DNA extraction. The extracted sample is then analyzed using real-time PCR (qPCR), which uses species specific molecular markers to amplify GCN DNA within a sample. These markers are unique to GCN DNA, meaning that there should be no detection of closely related species.

If GCN DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If GCN DNA is not present then amplification does not occur, and a negative result is recorded. Analysis of eDNA requires attention to detail to prevent the risk of contamination. True positive controls, negative controls, and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added analytical security.

SureScreen Scientifics Ltd is ISO9001 accredited and participates in Natural England's proficiency testing scheme for GCN eDNA testing.

Interpretation of Results

Sample Integrity Check: When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results. Any samples which fail this test are rejected and eliminated before analysis.

Degradation Check: **Pass/Fail.** Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may lead to indicate a risk of false negative results.

Inhibition Check: **Pass/Fail.** The presence of inhibitors within a sample is assessed using a DNA marker. If inhibition is detected, samples are purified and re-analyzed. Inhibitors cannot always be removed. If the inhibition check fails, the sample should be re-collected.

Result: **Presence of GCN eDNA (Positive/Negative/Inconclusive)**
Positive: GCN DNA was identified within the sample, indicative of GCN presence within the sampling location at the time the sample was taken or within the recent past at the sampling location.
Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for GCN presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with the WC1067 Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative GCN presence.
Negative: GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection.
Inconclusive: Controls indicate inhibition or degradation of the sample, resulting in the inability to provide conclusive evidence for GCN presence or absence.