Simon Percy
Burhill Golf and Leisure Ltd.
Burhill Golf Club
Hersham
Walton-on-Thames
Surrey
KT12 4BX

DATE: 11th May 2021
SITE: Burhill Golf Club – Irrigation Lake, Hersham
REFERENCE: UES02258/04

Dear Mr Percy,

GREAT CRESTED NEWT (GCN) EDNA SURVEY

I am writing to provide a summary of the recent ecological survey work undertaken by United Environmental Services (UES) at Burhill Golf Club, Hersham, Surrey.

A preliminary ecological appraisal (PEA) has already been undertaken of the site by Ecology by Design Ltd, in January 2020 (report reference EBD01110), with regard to the proposed construction of a new irrigation reservoir at the golf club. The PEA report details that the terrestrial habitats and waterbodies, located within the immediate vicinity of the proposed development site, provide suitable habitat for great crested newts (GCNs) *Triturus cristatus*.

The recommendation of the PEA report, with regards to GCNs, was to undertake further GCN presence / absence surveys or GCN environmental DNA (eDNA) surveys to determine whether GCNs are present within all or any of the ponds or ditches within 250m of the proposed development site. The eDNA surveys were conducted on the 16th April 2021 by Tom Kenwright BSc MSc, UES Ecologist and myself, Alasdair Grubb BSc, UES Ecologist. Tom is licensed by Natural England to disturb, take and handle great crested newts under licence number 2019-43876-CLS-CLS (CL08).

The eDNA surveys were undertaken of all waterbodies within 250m of the proposed development site, comprising five ponds and a ditch (see Appendix 1, Pond Plan. Waterbodies are numbered as per the previous PEA report prepared by Ecology by Design Ltd.). eDNA testing provides a GCN presence / absence result from water samples taken from a waterbody, following specific protocols detailed in Biggs *et al.,* 2014. These protocols have been approved by Natural England as a method to determine GCN presence or absence in a waterbody, within the newt breeding season, from 15th April to 30th June.

Using the sterile kit provided from a laboratory, 20 water samples are taken from intervals around a waterbody and then mixed together. From there, a 15ml sample was transferred into

each of the 6 sample tubes and sent to the laboratory for analysis. This procedure was then repeated for each waterbody.

Part of the ditch system (Ditch 1) was dry during the survey (as shown in Appendix 1). This is not considered to be a significant limitation to the survey, as a sufficient proportion of the ditch was wet to sufficient depth, to permit suitable samples to be taken. Additionally, the tendency for the ditch to dry frequently, especially during the GCN breeding season, reduces its suitability to support breeding amphibians. The original PEA report prepared by Ecology by Design Ltd. shows the ditch system as two distinct ditches, however during the site visit undertaken by UES, it was found that the ditches comprise a single connected system.

The laboratory analysis of the eDNA samples returned negative results for all five ponds and the ditch (see Appendix 2, eDNA Results). It is therefore considered highly unlikely that GCNs are present on or within the immediate vicinity of the proposed development site. Using the Natural England rapid risk assessment tool, it is considered highly unlikely that GCNs will be impacted by the proposed development and hence further GCN surveys and a European protected species licence (EPSL) are not required for the development to proceed.

Component	**Likely effect** **(select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom)**	**Notional offence probability score**
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	No effect	0
Land 100-250m from any breeding pond(s)	No effect	0
Land >250m from any breeding pond(s)	1 - 5 ha lost or damaged	0.04
Individual great crested newts	No effect	0
	Maximum:	0.04
Rapid risk assessment result:	**GREEN: OFFENCE HIGHLY UNLIKELY**	

"Green: offence highly unlikely" indicates that the development activities are of such a type, scale and location that it is highly unlikely any offence would be committed should the development proceed. Therefore, no licence would be required. However, bearing in mind that this is a generic assessment, you should carefully examine your specific plans to ensure this is a sound conclusion, and take precautions (see **Non-licensed avoidance measures tool**) to avoid offences if appropriate. It is likely that any residual offences would have negligible impact on conservation status, and enforcement of such breaches is unlikely to be in the public interest.

However, during the survey common frogs *Rana temporaria* were observed within some of the ponds on site, and the terrestrial habitats on site are considered to provide moderate to high quality habitat for common amphibian species. Therefore, the following reasonable avoidance measures (RAMs) should be implemented to safeguard common amphibian species during the construction phase of the development:

- The areas of vegetation and grassland within the proposed working area are to be cut or mown to a sward height of less than 100m at least 48 hours prior to the start of any other works. This will give amphibians and other wildlife a chance to vacate the proposed working area of their own accord. The vegetation is then to be maintained

at a short sward height of less than 100mm until the works on site have been completed.

- Where possible potential refugia should not be created and left on site overnight. Any potential refugia created on site as part of the development works will be removed by hand or will be checked for sheltering amphibians and other wildlife prior to removal by mechanical means or burning. Potential refugia can include but isn't limited to piles of vegetation including grass cuttings, log piles and brash piles, individual logs and large pieces of rubble or other discarded materials e.g. sheets of plastic or metal.

- No excavations are to be left open overnight. If this is not possible, a plank or other means of escape for wildlife should be left within the excavation at an angle of 45°. Any open excavations should be checked for trapped amphibians and other wildlife prior to the start of works the following morning.

- Excavations should be checked for trapped amphibians and other wildlife prior to infilling.

- Where possible, materials will be stored on pallets off the ground, in order to reduce the risk of amphibians sheltering underneath them.

- UES will remain on-call throughout the development, and if any suspected GCNs are encountered, work on site is to stop immediately and ecological advice must be sought. **UES can be reached on 01565 757788.**

In addition, New Zealand pigmyweed *Crassula helmsii* was observed growing around the margins of Pond 1. This aquatic plant species is listed under Schedule 9 of the Wildlife and Countryside Act 1981. As such, it is an offence to plant or otherwise cause this species to grow in the wild.

The construction activities associated with the proposed development are not anticipated to encroach upon the immediate vicinity of Pond 1, and therefore, are not expected come into contact with the New Zealand pigmyweed. However, site staff and contractors should be made aware of the presence of this highly invasive species so that its spread can be noticed and prevented.

The species can be spread though tiny fragments of plant matter on vehicle tracks, machinery or soles of footwear. Recommended treatment is by mechanical removal and / or application of herbicide. Any arisings and contaminated soil should be disposed of as controlled waste at a licenced waste site or should be buried and covered over. Any herbicide application should be conducted by a qualified and competent professional.

Himalayan balsam *Impatiens glandulifera* was also observed growing within the off-site woodland, to the east of the proposed development site. This plant is also a non-native invasive species, and is listed on Schedule 2 of the Invasive Alien Species (Enforcement and Permitting) Order 2019. Although no Himalayan balsam was recorded on-site, site staff should remain vigilant for spread of this species onto site (particularly along watercourses), as allowing its spread would become an offence.

If you require any further details or wish to discuss, please do not hesitate to get in contact with myself or another member of staff at UES.

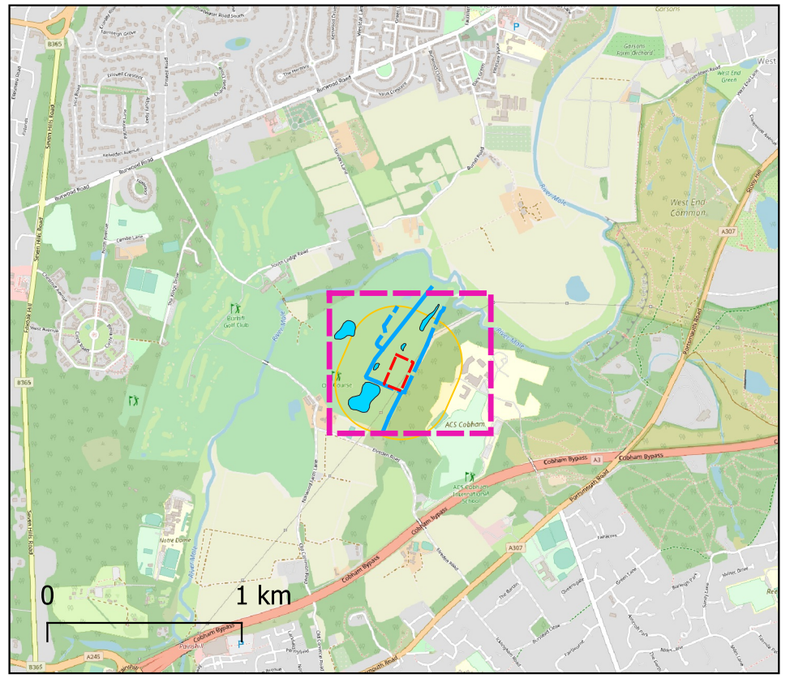
Yours sincerely,

Alasdair Grubb BSc
Ecologist
United Environmental Services Ltd

Appendix 1 – Pond Plan

Pond Plan

Site: Burhill Golf Club
NGR: (TQ) 510961 162276
Author: Alasdair Grubb
Date: 26/04/2021



KEY:

- Site Boundary
- 250m Buffer
- Ponds
- Ditch
- Ditch (dry)

Appendix 2 – eDNA Results

SureScreen Scientifics

Folio No: E9301
Report No: 1
Purchase Order: UE502258
Client: UNITED ENVIRONMENTAL SERVICES LTD
Contact: Alasdair Grubb

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (TRITURUS CRISTATUS)

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 analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 19/04/2021
Date Reported: 22/04/2021
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1820	Burhill Golf Course, Pond 2	TQ 11018 62420	Pass	Pass	Pass	Negative	0
1826	Burhill Golf Club, Pond 5	TQ 10664 62480	Pass	Pass	Pass	Negative	0
1950	Burhill Golf Course, Pond 1	TQ 10886 62325	Pass	Pass	Pass	Negative	0
1953	Burhill Golf Course, Pond 3	TQ 11136 62498	Pass	Pass	Pass	Negative	0
1955	Burhill Golf Course, Ditch 1	TQ 11220 62622	Pass	Pass	Pass	Negative	0
1956	Burhill Golf	TQ 10834	Pass	Pass	Pass	Negative	0

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

Reported by: Chris Troth **Approved by:** Chris Troth

METHODOLOGY

The samples detailed above have been analysed 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 which then undergoes DNA extraction. The extracted sample is then analysed 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 scrupulous attention to detail to prevent 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 security.

SureScreen Scientifics Ltd is ISO9001 accredited and participate in Natural England's proficiency testing scheme for GCN eDNA testing. We also carry out regular inter-laboratory checks on accuracy of results as part of our quality control procedures.

INTERPRETATION OF RESULTS

SIC: **Sample Integrity Check** [Pass/Fail]
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.

DC: **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 indicate a risk of false negative results.

IC: **Inhibition Check** [Pass/Fail]
The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. 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 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.

Appendix 3 – References

Anon (2001) *Natural England Great crested newt mitigation guidelines*

Chartered Institute of Ecology and Environmental Management (2013). *Competencies for Species Survey: Great Crested Newts*.

MHCLG (2019). National Planning Policy Framework (NPPF).

Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA. Freshwater Habitats Trust, Oxford.