

United Environmental Services Ltd

1 Booths Park,
Chelford Road,
Knutsford,
Cheshire
WA16 8QZ



www.ues.org.uk

enquiries@ues.org.uk

01565 757788

GREAT CRESTED NEWT IMPACT ASSESSMENT

At

Cae'r Glaw Quarry – Proposed Extension Area

Holyhead Road

Gwalchmai

Anglesey

LL65 4PW

NGR: SH 38512 77319

Prepared for: Hogan Aggregates Ltd
Written by: Alasdair Grubb, UES Ecologist
Approved by: Toby Hart, UES Managing Director

Date: 26th November 2021
Updated: 1st November 2022
UES reference: UES02936/03



CONTENTS

EXECUTIVE SUMMARY	3
1 INTRODUCTION	5
1.1 Author, surveyors and qualifications	5
1.2 Survey objectives.....	5
1.3 Proposed development and previous survey information	5
1.4 Structure of the report	6
2 METHODOLOGY	7
2.1 Desk study	7
2.2 Field survey	7
2.3 Survey limitations.....	8
3 RESULTS.....	9
3.1 Desk Study	9
3.2 Terrestrial habitat assessment	9
3.3 Aquatic habitat assessment	10
4 IMPACT ASSESSMENT.....	13
4.1 HSI results	13
4.2 eDNA results.....	13
4.3 Impacts.....	14
5 RECOMMENDATIONS.....	15
6 CONCLUSION.....	16
7 REFERENCES	17
APPENDICES.....	18
Appendix 1 – Pond plan	18
Appendix 2 – Aerial photographs.....	19
Appendix 3 – Photographs	20
Appendix 4 – HSI results	21
Appendix 5 – eDNA results.....	22
Appendix 6 – Statutory and planning context.....	23



EXECUTIVE SUMMARY

This report is written by Alasdair Grubb BSc ACIEEM, Ecologist for United Environmental Services (UES) Ltd. It provides an assessment of the potential impacts on great crested newts (GCNs) *Triturus cristatus* as a result of a proposed extension of the area of extraction at the Cae'r Glaw Quarry, Gwalchmaii, the Isle of Anglesey. The existing quarry operates under a GCN European Protected Species (EPS) mitigation licence (reference S086502-2) due to the known presence of GCNs within the existing quarry site.

A GCN impact assessment was undertaken of the proposed extension area on 5th May 2021 and a secondary site visit was undertaken on 29th June 2021. The objectives of the survey were to establish the suitability of the proposed development site for GCNs, and to provide an assessment of the likely impacts of the development and how they can be mitigated. All ponds and aquatic features within 500m of the site boundary were assessed for their potential to support GCNs using the Habitat Suitability Index (HSI).

The application site footprint totals 6.89ha and is an extension to the existing quarry site. The habitats within the proposed development boundary comprise a mosaic of semi-improved acid grassland, continuous bracken, exposed rock, dense gorse *Ulex spp.* scrub and some areas of neutral acidic / flush. The bracken, scrub and acidic flush habitats offer high quality foraging opportunities for amphibians, whilst the scrub and drystone walls will offer suitable sheltering opportunities.

There is a single mapped pond within the site boundary (Pond 1), three unmapped ephemeral pools (Pools 1-3) and one mapped pond within 250m of the proposed site boundary (Pond 2) and an additional single mapped pond between 250m - 500m of the proposed site boundary (Pond 3), see Appendix 1 – Pond Plan.

All ponds within 500m of the development boundary were accessed and surveyed during the initial walkover survey on 5th May 2021. However, during the second walkover survey on 29th June 2021, Pools 1-3 were dry and were therefore considered to be ephemeral and unsuitable to support breeding GCNs, and were therefore discounted. Ponds 1 and 3 were subsequently subject to eDNA analysis to determine presence / absence of GCNs.

- **Pond 1** is located on site and GCN eDNA was returned from within Pond 1. However, the number of replicates returned from the analysis was low (3/12), indicating that GCNs are only present in very low numbers or transiently; for example, they are using the pond for foraging or commuting purposes rather than breeding. Furthermore, this pond had completely dried out by mid-July, rendering it unsuitable for breeding GCNs.
- **Pond 2** is located approximately 250m south-west of the proposed development boundary, within the basin of the existing quarry. As such, the pond is part of the existing GCN EPS mitigation licence and newt exclusion fencing has been installed around the working quarry site, and Pond 2 is located within the ring-fenced area. This pond is subject to annual GCN population size class assessment monitoring surveys as part of the EPSL licence, during which no GCNs have been recorded within the pond since the surveys started in 2020. Therefore, GCNs are not considered to be present in or around this pond.
- **Pond 3:** Pond 3 returned negative eDNA results, therefore GCNs are not considered to be present in this pond.



As part of the ecological survey work undertaken of the proposed extension site, 130 artificial refugia were searched 15 times each as part of reptile surveys. When amphibians (including GCNs) are present on a site, they are often found sheltering beneath these refugia. During the reptile surveys, low numbers of common toad *Bufo bufo*, common frog *Rana temporaria* and palmate newt *Lissotriton helveticus* were observed, however no GCNs were recorded, indicating that the site is used by a very low number of individuals.

GCNs are considered to be present on site in a terrestrial foraging / commuting capacity. Therefore, the proposed development is considered likely to cause minor disturbance and risk of harm to individual newts, in addition to the loss of terrestrial habitat. An EPS mitigation licence will be required in order for the development to proceed.

It is recommended that the existing GCN EPS mitigation licence for the wider quarry is amended to include the proposed extension area. Mitigation measures that will be implemented to protect GCNs and other amphibians during the works are detailed within the Ecological Design Strategy (EDS) which has been prepared for the site by UES (report reference UES02936/07) and include the installation of exclusion fencing and a period trapping and translocation of all amphibians to a suitable receptor area within the wider quarry. In addition, compensation measures for the loss of high-quality terrestrial habitat for GCNs is detailed within the associated Landscape and Ecology Management Plan (LEMP) (report reference UES02936/06).

The report should be read in conjunction with Appendices 1 to 6, which give visual representations of the survey results, and the following associated reports prepared for the site by UES:

- Preliminary Ecological Appraisal (UES02936/01)
- Reptile Population Size Class Assessment (UES02936/02)
- Landscape and Ecology Management Plan (UES02936/06)
- Ecological Design Strategy (UES02936/07)
- Ecological Impact Assessment (UES02936/08)



1 INTRODUCTION

1.1 Author, surveyors and qualifications

This report is compiled and written by Alasdair Grubb BSc ACIEEM, UES Ecologist. Alasdair is licensed by Natural England to disturb, take and handle great crested newts under licence number 2021-53835-CLS-CLS (CL08). Alasdair is also listed as an accredited agent on Toby Hart BSc MCIEEM PIEMA, UES Managing Director's great crested newt survey licence, issued by Natural Resources Wales (licence number S086784/1); this allows Alasdair to disturb, take and handle great crested newts in Wales, under Toby's licence. Other surveyors include:

- James Stubbs, UES Sub-contractor
- Sarah McLaren BSc, UES Sub-contractor

All surveyors have the knowledge, skills and experience identified within CIEEM's "Competencies for Species Survey: Great Crested Newt" (2013), or were under the supervision of a surveyor with the required competencies.

1.2 Survey objectives

UES was commissioned in April 2021 to conduct site surveys which include the following activities:

- To assess the potential of the proposed development area for use by GCNs
- Conduct an HSI assessment of ponds within 500m of site, where accessible
- Conduct an eDNA assessment of waterbodies within 500m of site, where accessible and appropriate
- Recommend further surveys, mitigation and compensation, where appropriate

1.3 Proposed development and previous survey information

The proposed development is for the extension of the existing granite quarry at Cae'r Glaw Quarry, together with the consolidation of this new extraction area with the extant mineral planning permission in force on the wider quarry area. The proposed extension has an area of approximately 6.89ha and will be undertaken in five phases.

This proposed extension is an alternative to an extension to the north-west of the quarry (see Appendix 3) which was granted by Anglesey Council in December 2019 (planning reference 48C79J). As part of the previously approved extension, a suite of ecology surveys was undertaken of the proposed extension area, including:

- PEA survey – January 2016
- GCN impact assessment and population size class assessment – March to June 2016
- NVC survey – July 2016
- Reptile presence / absence and population size class assessment survey – April to October 2016



- Bat activity survey – May to August 2016
- Invertebrate survey – August 2016

Additionally, due to the presence of GCNs within ponds within the wider quarry, ongoing works within the entire quarry have been registered under a GCN EPS mitigation licence. GCN monitoring surveys of these ponds are currently ongoing, with surveys having been completed in 2020, 2021 and 2022.

1.4 Structure of the report

This report sets out the methodology, results, and recommendations in relation to a specific GCN survey. Recommendations are in line with statutory legislation and planning policy objectives.

The report should be read in conjunction with Appendices 1 to 6, which give visual representations of the survey results, and the following associated reports prepared for the site by UES:

- Preliminary Ecological Appraisal (UES02936/01)
- Reptile Population Size Class Assessment (UES02936/02)
- Landscape and Ecology Management Plan (UES02936/06)
- Ecological Design Strategy (UES02936/07)
- Ecological Impact Assessment (UES02936/08)



2 METHODOLOGY

2.1 Desk study

Aerial photographs and Ordnance Survey maps were used to identify all waterbodies on site and within a 500m radius of the site boundary.

UES has not been commissioned to undertake a protected species records search at this point. However, UES have been conducting survey work on the existing quarry site since 2016. With specific regard to amphibians, annual GCN population size class assessment (PSCA) monitoring surveys have been conducted on six ponds since 2020 in accordance with the conditions of the GCN EPS mitigation licence, which the site is registered under (licence number S086502-2).

2.2 Field survey

An initial site walkover survey was undertaken on 5th May 2021 by Alasdair Grubb and James Stubbs and a secondary site visit was undertaken by Alasdair Grubb and Sarah McClaren on 29th June 2021. UES have conducted a suite of ecological surveys on the site throughout 2021, including vegetation and reptile surveys. The reptile surveys specifically comprised 15 survey visits, searching up to 130 artificial refugia for presence of reptiles. These refugia are also suitable for use by amphibians, so any records of amphibians have been included within this report.

2.2.1 Habitat suitability index (HSI)

All suitable ponds and aquatic features within 500m of the site boundary were assessed for their potential to support GCNs using the HSI. The HSI is a tool used to provide a numerical indication of the quality of a waterbody in terms of GCN breeding and associated habitat requirements on a scale of 0-1 (0 indicating unsuitable habitat, 1 representing optimal habitat).

HSI scores incorporate ten Suitability Indices (SIs), all of which are factors thought to affect GCNs, namely:

SI 1: Site location	SI 6: Waterfowl presence
SI 2: Size of pond	SI 7: Fish presence
SI 3: Pond permanence	SI 8: Number of ponds within 1km
SI 4: Water quality	SI 9: Terrestrial habitat
SI 5: Perimeter shading	SI 10: Macrophyte cover

In some cases, a net may be used to assess certain SIs, such as water quality. Once a measurement or category has been given for each SI this can then be converted to a figure between 0 and 1 for use in the HSI calculation. This figure is either translated from an assigned category or measurement or read from a graph in the case of a percentage or number.

The HSI is then calculated from the following formula:

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

This will give a final HSI result between 0 and 1, providing a measure of habitat suitability for GCN.



The information gathered from the survey was used to provide a likelihood of GCNs and other amphibians being present in the area, in both aquatic and terrestrial habitats.

The proposed development, based on the plans provided, was also assessed for the potential to cause harm to GCNs (if present) using the Natural England Rapid Risk Assessment Tool.

All ponds were noted on the pond plan (Appendix 1).

2.2.2 Environmental DNA (eDNA) testing

Ponds 1 and 3 were subject to eDNA testing as part of the assessment. eDNA testing provides a GCN presence / absence result from water samples taken from a pond, 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 were taken from intervals around the waterbody and then mixed together. From there, a 15ml sample was transferred into each of the 6 sample tubes, which contained a preserving fluid. The samples are kept refrigerated overnight, and sent to the laboratory for analysis. This process was repeated for each pond sampled.

2.3 Survey limitations

The survey was undertaken at an appropriate time of year and under appropriate weather conditions. All ponds within 500m of the proposed development boundary were accessed. As such, there are considered to be no limitations to the survey or the results of this assessment.



3 RESULTS

3.1 Desk Study

UES have been conducting survey work on the existing quarry site since 2016. With specific regard to amphibians, annual GCN PSCA monitoring surveys have been conducted on six ponds since 2020 in accordance with the conditions of the GCN EPS mitigation licence, which the site is registered under (licence number S086502-2). A medium population of GCNs is present across two ponds within the existing quarry site boundary (Ponds 4 and 6). Both of these ponds lie more than 500m from the proposed extension area.

3.2 Terrestrial habitat assessment

3.2.1 The proposed development site

The application site footprint totals 6.89ha and is an extension to the existing quarry site. The habitats within the development boundary comprise a mosaic of continuous bracken, semi-improved acid grassland, exposed rock, dense gorse scrub and some areas of neutral / acidic flush.

A detailed description of the habitats present on site is detailed in the PEA prepared for the site by UES (see report reference UES02936/01). With regard to amphibians, the habitats on site vary in suitability. The bracken, dense scrub and acidic / neutral flush habitats offer high quality foraging and sheltered commuting opportunities for amphibians. The western section of the site has a higher proportion of grazed semi-improved grassland, which offers lower suitability for foraging and commuting amphibians. There is a single area of standing water, associated with a neutral / acidic flush, within the proposed development boundary (Pond 1). There is a defunct drystone wall which bisects the survey site north-south, which has some small but mature hawthorn shrubs along it, particularly at the northern end; this may offer amphibians commuting and sheltering opportunities

In summary, the fen bracken, dense scrub and acidic / neutral flush habitats offer high quality foraging opportunities for amphibians, whilst the scrub and drystone wall will offer suitable sheltering opportunities.

3.2.2 Surrounding habitats

The surrounding habitats are dominated by farmland, the majority of which is used for sheep pasture. There are some areas of neutral / acid flush located approximately 200m to the west of the proposed development boundary and an area of valley more and mosaic of scrub, grassland and bracken lies immediately adjacent to the east, all of which will provide some foraging and commuting opportunities for amphibians. The existing quarry lies immediate south of the proposed development site; this has steep rock walls approximately 30m deep, the base is a mixture of graded aggregates, with little vegetation, and a drainage channel which runs off the site to the west. The boundaries of the quarry comprise dense scrub and bracken. There is also an area to the south of the western section of the survey boundary (approximately 4ha in area) which is a mosaic of heathland, bracken and scrub, which will offer suitable foraging, commuting, and sheltering opportunities for amphibians. The habitats surrounding the survey site to the west, north and east are dominated by grazed pastureland, which has some areas of exposed rock and isolated areas of bracken; these areas present fewer opportunities for amphibians due to the relative isolation of higher quality habitats.



In summary, the surrounding habitats are composed mostly of close-cropped pasture farmland, although there are some areas of neutral / acid flush, scrub and heathland mosaic located within 500m of the proposed development boundary. The existing quarry site lies immediately adjacent to the southern boundary of the proposed development site. The local terrestrial habitats are considered to be of moderate quality for GCNs.

3.3 Aquatic habitat assessment

There is a single mapped pond within the site boundary (Pond 1), three unmapped ephemeral pools (Pools 1-3) and one mapped pond within 250m of the proposed site boundary (Pond 2) and an additional single mapped pond between 250m - 500m of the proposed site boundary (Pond 3), see Appendix 1 – Pond Plan.

All waterbodies were accessed and surveyed during the initial walkover survey on 5th May 2021. However, during the second walkover survey on 29th June 2021, Pools 1-3 were dry and were therefore considered to be unsuitable to support breeding GCNs and were discounted. Therefore, the results of the aquatic assessment for the onsite pond (Pond 1) and Ponds 2 and 3 are detailed within in the below subsections.

3.2.1 Pond 1 – Grid reference: SH 38423 77331

Pond 1 is located within the proposed development boundary. This pond is located in a deeper section of neutral / acidic flush within the south-western section of the proposed development site. The pond had partially dried out during the second survey visit on 29th June, with a maximum depth of approximately 10cm, which was considered to still be sufficient to provide suitable breeding opportunities for GCNs.

The area comprises a floating mat of vegetation, which totals an area of approximately 130m². The species present include: Yorkshire fog *Holcus lanatus*, soft rush *Juncus effusus*, common bent *Agrostis capillaris*, creeping bent *Agrostis stolonifera*, lesser spearwort *Ranunculus flammula*, floating sweet-grass *Glyceria fluitans*, bogbean *Menyanthes trifoliata*, marsh bedstraw *Galium palustre*, marsh cinquefoil *Comarum palustre*, sweet vernal grass *Anthoxanthum odoratum*, red fescue *Festuca rubra*, sharp-flowered rush *Juncus acutiflorus*, greater bird's-foot trefoil *Lotus pedunculatus*, tormentil *Potentilla erecta*, marsh St. John's-wort *Hypericum elodes*, heath wood-rush *Luzula multiflora*, broadleaved pondweed *Potamogeton natans*, branched bur-reed *Sparganium erectum*, rough meadow-grass *Poa trivialis*, bog stitchwort *Stellaria alsine*, marsh thistle *Cirsium palustre*, meadow buttercup *Ranunculus acris*, ragged robin *Silene flos-cuculi*, flea sedge *Carex pulicaris*, tawny sedge *Carex hostiana*, glaucous sedge *Carex flacca*, marsh pennywort *Hydrocotyle vulgaris*, bulbous rush *Juncus bulbosus*, marsh willowherb, creeping forget-me-not *Myosotis secunda*, water mint *Mentha aquatica*, marsh speedwell *Veronica scutellata*, bog asphodel *Narthecium ossifragum*, bog pondweed *Potamogeton polygonifolius*, floating club-rush *Eleogiton fluitans* and common spike-rush *Eleocharis palustris*.

There are some small patches of western gorse *Ulex gallii* and grey willow *Salix cinerea* on the north-eastern edge of the pond. There is a defunct dry-stone wall which runs north-south, close to the eastern edge of the pond, which may provide suitable sheltering opportunities for GCNs. The terrestrial habitats immediately adjacent to the pond include areas of dense bracken and semi-improved grassland with a diverse sward structure; it is considered to be of good quality with respect to GCNs.



During both survey visits, suitable vegetation and any potential refugia within or around the pond was searched for evidence of presence of GCNs (e.g. searching for eggs and individual newts): no evidence was found.

The pond had completely dried out by the middle of July (when other site surveys were conducted by UES with reference to the reptile surveys). July is the key period for newt eft development, and presence of standing water is essential for their survival. The pond is considered to dry between June – August annually, and is therefore considered to be unsuitable for breeding GCNs.

3.2.2 Pond 2 – Grid reference: SH 38201 77007

Pond 2 is located approximately 230m to the south-west of the proposed development boundary, within the basin of the existing quarry. It is a linear drainage ditch which flows east-west for approximately 300m: there is an open pool at each end, connected by a partially vegetated ditch. The pond westernmost pool flows out into a drainage ditch which flows south-west away from the site. The substrate is a mixture of fine silt and large rocks. Vegetation is limited in the pools at either end, but the drainage channel between the two is heavily choked in some areas by water horsetail *Equisetum fluviatile*, broadleaved and bog pondweed. The channel is shaded by goat willow *Salix caprea* scrub in parts, but the open pools are unshaded. The water level is influenced by rainfall and quality is heavily affected by run-off from the existing quarry workings. The terrestrial habitats surrounding the pond are poor with respect to GCNs; they are dominated by exposed rock and hardstanding as a result of the adjacent quarrying activities.

The pond is subjected to annual GCN population size class assessment surveys as a condition of the existing GCN EPS licence; palmate newts and common toads have been recorded using the waterbody in 2016 and in 2020, 2021 and 2022, however GCNs have never been recorded in this pond, likely due to the high number of sticklebacks *Gasterosteidae* sp. present.

As part of the existing GCN EPS mitigation licence, newt exclusion fencing has been installed around the working quarry site, and Pond 2 is located within the ring-fenced area. Therefore, GCNs are not considered to be present in or around this pond.

3.2.3 Pond 3 – Grid reference: SH 38642 78033

Pond 3 is located approximately 490m north of the proposed development boundary, in an area of farmland. The pond appears to have been man-made for shooting (wildfowling) purposes, however it is well established. It has an area of approximately 500m². The banks of the pond are heavily vegetated with grass species such as Yorkshire fog, rough meadow-grass, tufted hair-grass *Deschampsia flexuosa*, common and creeping bent and red fescue. There are dense clumps of sharp-flowered rush, soft rush and hard rush *Juncus inflexus* surrounding the pond too. The pond itself is densely vegetated by water horsetail, tawny sedge and glaucous sedge. There are some other aquatic plant species present such as water mint, water forget-me-not *Myosotis scorpioides* and water starwort *Callitriche* sp. There is a single goat willow tree present in the north-western corner of the pond.

The terrestrial habitats immediately adjacent to the pond include areas of dense bracken and un-grazed grassland, which is connected to areas of scrub; it is considered to be of good quality with respect to GCNs.



During the May survey visit, suitable vegetation and any potential refugia within or around the pond was searched for evidence of presence of GCNs (e.g. searching for eggs and individual newts): no evidence was found.



4 IMPACT ASSESSMENT

4.1 HSI results

Excluding the three ephemeral pools within areas of neutral / acidic flush (Pools 1-3), three mapped ponds are present on or within a 500m radius of the proposed development site which were initially considered to have some suitability to support breeding GCNs:

Pond 1 (on site) achieved an HSI score of 0.56, which indicates the pond is of **'below average'** suitability to support breeding GCNs. The main SI which particularly reduces the overall score is the high likelihood of annual drying of the pond through the summer months.

Pond 2 achieved an HSI score of 0.41, which indicates the pond is of **'poor'** suitability to support breeding GCNs. The main SIs which particularly reduce the overall score are the presence of fish in the pond, the poor water quality and poor terrestrial habitat associated with the pond.

Pond 3 achieved an HSI score of 0.80, which indicates the pond is of **'excellent'** suitability to support breeding GCNs. The main SIs which particularly increase the overall score are the size of the pond, terrestrial habitat and macrophyte cover within the pond.

The number of ponds within the local area (which are not isolated) particularly increase the overall SI score for all ponds.

Detailed scores and calculations are included in Appendix 4 – HSI results.

4.2 eDNA results

Ponds 1 and 3 were subjected to eDNA analysis. Pond 2 was not analysed as GCN absence has already been confirmed by annual monitoring surveys of the pond (associated with the existing GCN EPS licence) and Pools 1-3 were not analysed as they are ephemeral and sufficient water levels were not present at the time of the sampling.

Pond 1 tested positive for GCN eDNA. The analysis showed 3/12 positive replicates of GCN eDNA, indicating that GCN are present within the pond. The relative low number of replicates represents a weak score, indicating that GCNs are only present in very low numbers or transiently; for example, they are using the pond for foraging purposes rather than breeding. As described in Section 3.2, Pond 1 is an ephemeral pool which had partially dried out during the second survey visit at the end of June and completely dried out by mid-July, rendering the pond unsuitable for breeding GCNs.

Pond 3 returned 0/12 positive replicates of GCN DNA, indicating that GCN DNA was not present in the pond. It can therefore be considered reasonably likely that GCNs are absent from this pond, despite the "excellent" HSI score for this pond; suggesting that fish may be present within the pond, thus significantly reducing the suitability for GCNs.

Results are included in Appendix 5 – eDNA results.



4.3 Impacts

The proposed development will include the destruction of Pond 1 and the loss high-quality foraging habitat for GCNs. For the reasons outlined above, Pond 1 is not considered to be a GCN breeding pond, but GCN eDNA was found within the pond suggesting that it is used as a foraging resource for GCNs and highlighting the presence of GCNs on site. The GCNs present on site, are considered to be a metapopulation of the GCNs which are using the known breeding ponds associated with the existing GCN EPS licence (further than 500m to the south of the proposed development site).

A suite of other ecological surveys were conducted on the site throughout 2021, including reptile surveys; these surveys comprised 15 survey visits, searching up to 130 refugia for presence of reptiles. These refugia are also suitable for amphibians. Although low numbers of common toad, common frog and palmate newt, were recorded, no GCNs were recorded at all.

The following rapid risk assessment tool has been developed by Natural England in order to establish whether it is necessary to apply for a licence. Whilst the development site lies within Wales, a Natural Resources Wales equivalent is not available, and it is considered that the rapid risk assessment tool remains valid and provides an effective tool in determining the potential impacts of a development on GCNs.

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)	No effect	0
Individual great crested newts	Minor disturbance of newts	0.5
Maximum:		0.5
Rapid risk assessment result:	AMBER: OFFENCE LIKELY	

"Amber: offence likely" indicates that the development activities are of such a type, scale and location that an offence is likely. In this case, the best option is to redesign the development (location, layout, methods, duration or timing; see **Non-licensed avoidance measures tool**) so that the effects are minimised. You can do this and then re-run the risk assessment to test whether the result changes, or preferably run your own detailed site-specific assessment. Bear in mind that this generic risk assessment will over- or under-estimate some risks because it cannot take into account site-specific details, as mentioned in caveats above. In particular, the exact location of the development in relation to resting places, dispersal areas and barriers should be critically examined. Once you have amended the scheme you will need to decide if a licence is required; this should be done if on balance you believe an offence is reasonably likely.

The development is considered to present a minor disturbance to the low number of individual GCNs, which are considered to be using the terrestrial habitats on site.



5 RECOMMENDATIONS

Due to the presence of GCNs on site, the proposed development has the potential to cause minor disturbance or harm to a low number of newts and will result in the loss of some terrestrial habitat. Therefore, an EPS mitigation licence will be required in order for the development to proceed. No further population size class assessments are required to inform the licence, as there are no ponds present on site or within 500m of the site that are suitable to support breeding GCNs.

It is recommended that the existing GCN EPS mitigation licence for the wider quarry is amended to include the proposed extension area. Mitigation measures that will be implemented to protect GCNs and other amphibians during the works are detailed within the EDS which has been prepared for the site by UES (report reference UES02936/07) and include the installation of exclusion fencing and a period trapping and translocation of all amphibians to a suitable receptor area within the wider quarry. In addition, compensation measures for the loss of high-quality terrestrial habitat for GCNs is detailed within the associated LEMP (report reference UES02936/06).



6 CONCLUSION

The applicant seeks to secure planning permission to extend the area of extraction at the quarry. The application site footprint totals 6.89ha and is an extension to the existing quarry site.

The application site footprint totals 6.89ha and is an extension to the existing quarry site. The habitats within the proposed development boundary comprise a mosaic of semi-improved acid grassland, continuous bracken, exposed rock, dense gorse *Ulex spp.* scrub and some areas of neutral acidic / flush. The bracken, scrub and acidic flush habitats offer high quality foraging opportunities for amphibians, whilst the scrub and drystone walls will offer suitable sheltering opportunities.

GCN eDNA was returned from within an ephemeral pool associated with a neutral / acidic flush in the south-western section of the site (Pond 1). The number of replicates returned from the DNA analysis was low (3/12), indicating that GCNs are only present in very low numbers or transiently; for example, they are using the pond for foraging purposes rather than breeding. The ephemeral pool which had partially dried out during the second survey visit at the end of June had completely dried out by mid-July, which is a key month for newt eft development. Without standing water through July, the pond is unsuitable for use by breeding GCNs.

There are two other ponds located within 500m of the proposed development. Pond 2 has been surveyed as part of the GCN EPS mitigation licence associated with the existing quarrying works, adjacent to the proposed development site; no GCNs are present within this pond. Pond 3 returned negative eDNA results.

GCNs are considered to be present on site in a terrestrial foraging / commuting capacity. Therefore, the proposed development is considered likely to cause minor disturbance and risk of harm to individual newts, in addition to the loss of terrestrial habitat. An EPS mitigation licence will be required in order for the development to proceed. It is recommended that the existing GCN EPS mitigation licence for the wider quarry is amended to include the proposed extension area.

Mitigation measures, which are designed to protect GCNs and other amphibians throughout the development, are detailed within the EDS prepared for the site (report reference UES02936/07). Compensation measures for the loss of high-quality terrestrial habitat for GCNs is detailed within the associated LEMP (report reference UES02936/06).



7 REFERENCES

Anon. (2001). *Great Crested Newt Mitigation Guidelines*. English Nature.

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

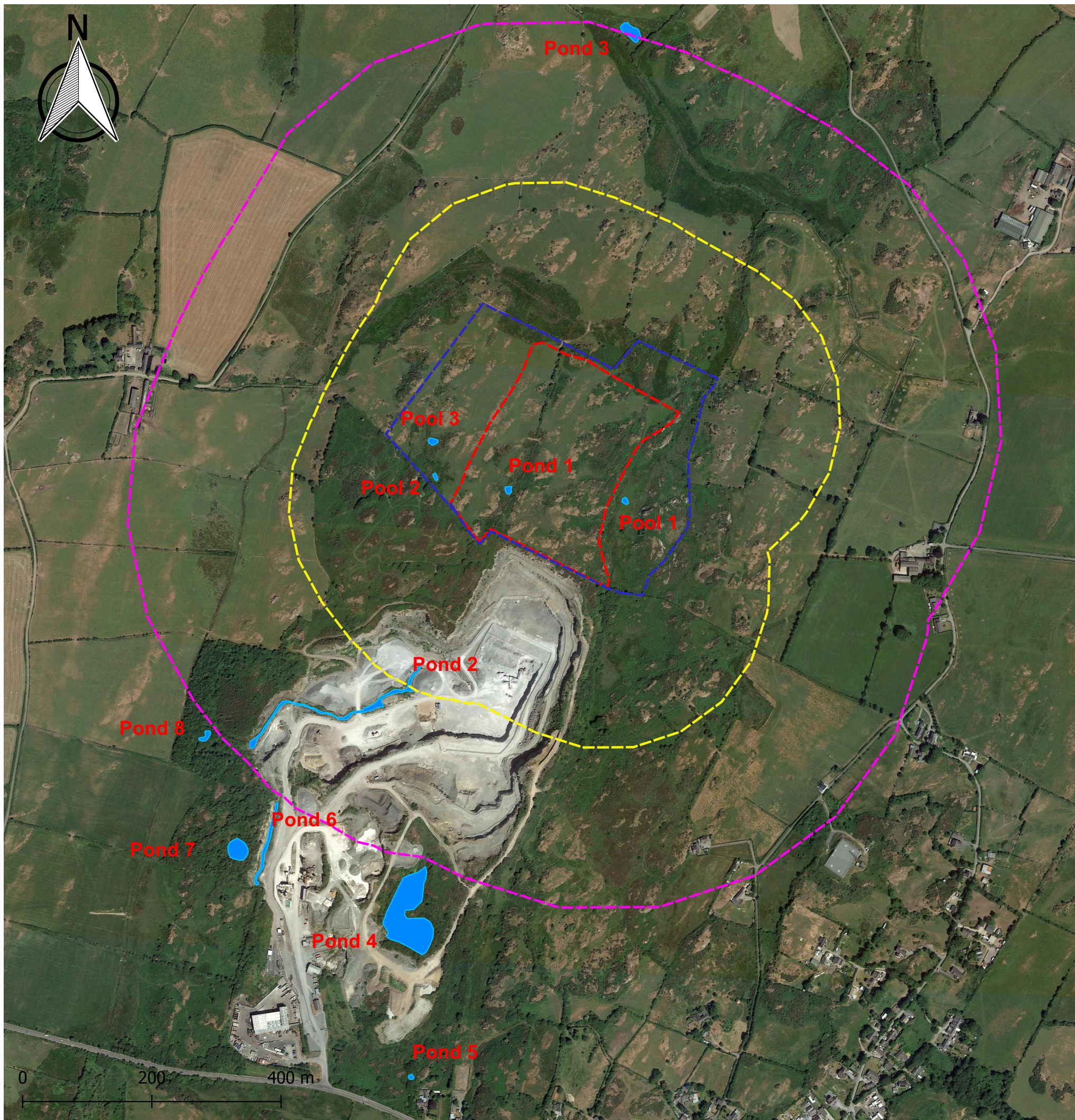
Welsh Government (2018). *Planning Policy Wales, Edition 10*

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.



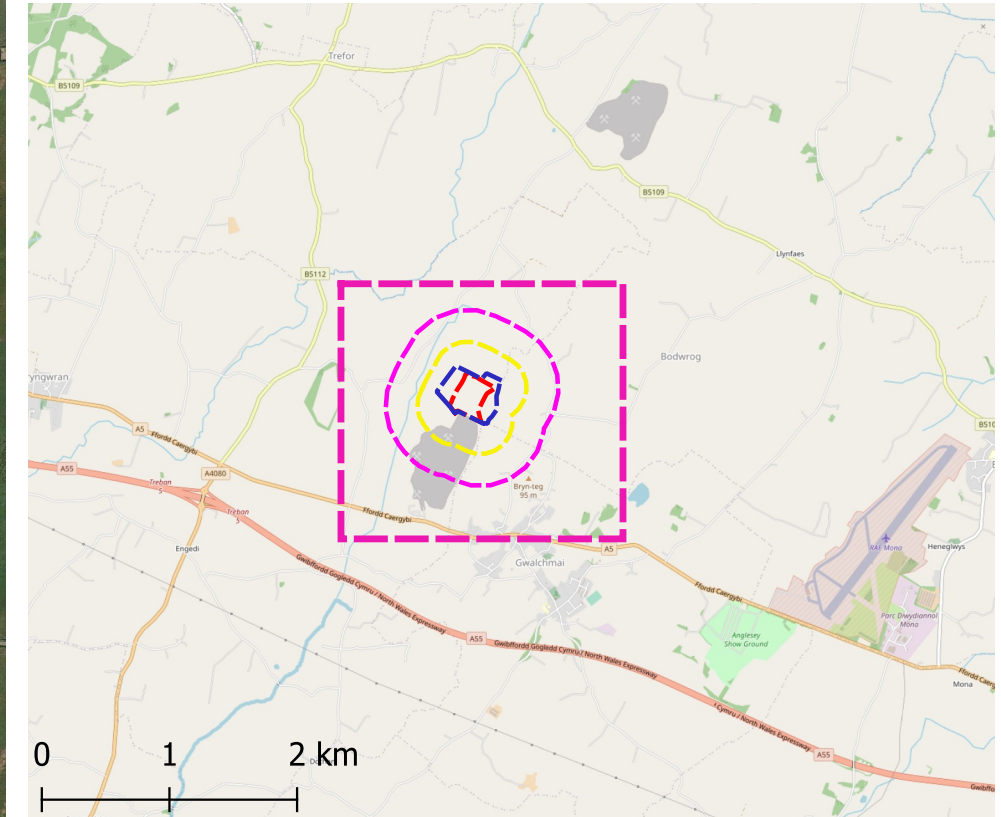
APPENDICES

Appendix 1 – Pond plan



Pond Plan

**Site: Cae'r Glaw Quarry -
Proposed Extension Area**
NGR: SH 38512 77319
Author: Tom Kenwright
Date: 01/11/2022



KEY:

- Development boundary
- Survey boundary
- 250m buffer zone
- 500m buffer zone
- Pond / pool

THIS PLAN IS BASED UPON MAP DATA © 2021 Google, Imagery © 2021 Google

THIS PLAN IS BASED UPON OpenStreetMap® AND IS OPEN DATA, LICENSED UNDER THE OPEN DATA COMMONS OPEN DATABASE LICENCE (ODbL) BY THE OpenStreetMap FOUNDATION.

THIS PLAN IS ISSUED BY UNITED ENVIRONMENTAL SERVICES LTD SUBJECT TO THE CONDITION THAT IT IS NOT COPIED EITHER IN WHOLE OR IN PART OR DISCLOSED TO THIRD PARTIES UNLESS PRIOR WRITTEN AUTHORISATION IS GIVEN.



Appendix 2 – Aerial photographs

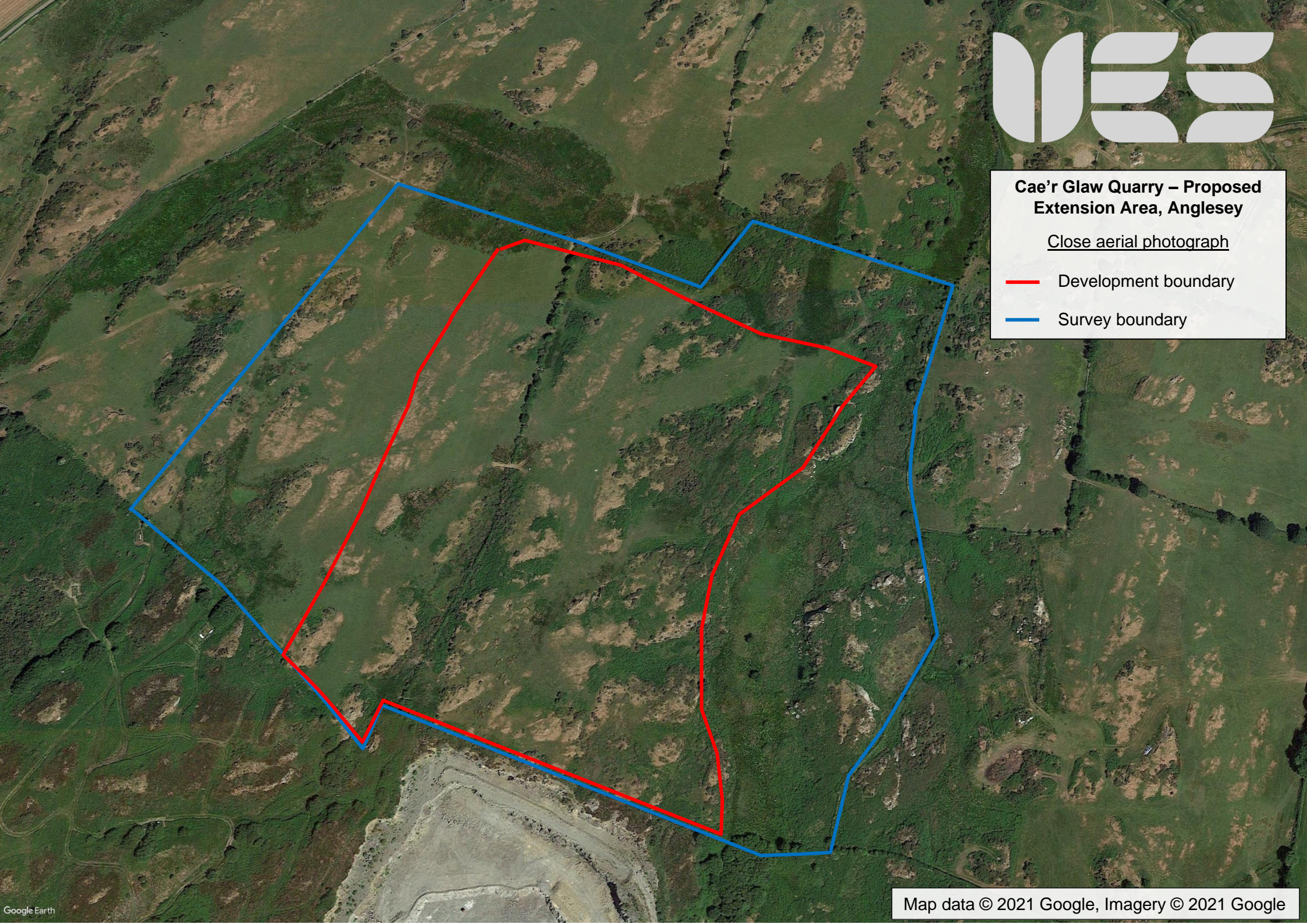


**Cae'r Glaw Quarry – Proposed
Extension Area, Anglesey**

Close aerial photograph

— Development boundary

— Survey boundary





**Cae'r Glaw Quarry – Proposed
Extension Area, Anglesey**

Wide aerial photograph

 Site location





Appendix 3 – Photographs



Photo 1. Facing north across Pond 1.



Photo 2. Showing a close up of the vegetation in Pond 1.



Photo 3. Facing east across part of Pond 2.



Photo 4. Facing west across Pond 3.



Photo 5. Showing a close up of the vegetation in Pond 3.



Appendix 4 – HSI results

GCN HSI Calculations

	Pond number	P1	P2	P3
	Grid reference	SH3840977315	SH3820177007	SH3864278033
SI number	SI description	SI values		
1	Geographic location	0.5	0.5	0.5
2	Pond area	0.2	0.85	1
3	Pond permanence	0.1	0.9	0.9
4	Water quality	0.67	0.33	0.67
5	Shade	1	1	1
6	Water fowl	0.67	0.67	0.67
7	Fish	1	0.01	0.67
8	Pond density	0.9	0.9	0.9
9	Terrestrial habitat	1	0.33	1
10	Macrophyte cover	0.8	0.5	0.9
HSI score:		0.56	0.41	0.80
Pond suitability:		Below average	Poor	Excellent

HSI Score	Pond Suitability
< 0.50	Poor
0.50 - 0.59	Below average
0.60 - 0.69	Average
0.70 - 0.79	Good
> 0.80	Excellent



Appendix 5 – eDNA results

The eDNA sample for Pond 3 has been labelled in the below report as 'Offsite Pond 1'

Folio No: E11380
Report No: 1
Purchase Order: UES02936
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: 01/07/2021
Date Reported: 13/07/2021
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1824	Pond 1 Cae'r Glaw Extension	SH 38420 77328	Pass	Pass	Pass	Positive	3

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.



Folio No: E10117
Report No: 1
Purchase Order: UESO2936
Client: UNITED ENVIRONMENTAL
SERVICES LTD
Contact: Jenny Gibbs

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: 09/05/2021
Date Reported: 20/05/2021
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1954	OFFSITE POND 1	SH 384773	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 6 – Statutory and planning context

STATUTORY AND PLANNING CONTEXT

Ecological assessments

Ecological assessments play an important part within the planning context; they include an initial assessment which highlights any specific interests of a site. From the initial site assessment, the surveyor assesses the suitability of habitats within the site to support protected species and makes recommendations for further survey works if required. The following paragraphs provide a brief interpretation of the legislative protection that is relevant to the findings of this report.

Habitats

Section 7 of the Environment Act (Wales) places a duty on Welsh Ministers to publish, review and revise lists of types of habitats and species in Wales which they consider are of key significance to sustain and improve biodiversity. The Welsh Ministers must also take all reasonable steps to maintain and enhance the habitats published in these lists, and encourage others to take such steps.

Amphibians

Great crested newts

Great crested newts (GCN) *Triturus cristatus* and their habitat (aquatic and terrestrial) are afforded full protection by the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017. If both national and international legislation are taken together, it is an offence to:

- Deliberately, intentionally or recklessly kill, injure or capture GCN
- Deliberately, intentionally or recklessly disturb GCN in such a way to be likely to significantly affect:
 - their ability to survive, breed, reproduce, rear or nurture their young
 - their ability to hibernate or migrate
 - their local distribution or abundance
- Deliberately, intentionally or recklessly take or destroy the eggs of GCN
- Damage or destroy breeding sites or resting places of GCN
- Intentionally or recklessly disturb sheltering GCN, or obstruct access to their resting place
- Keep, transport, sell or exchange, or offer for sale or exchange any live or dead GCN, any part of GCN or anything derived from GCN

Penalties for offences include fines of up to £5000, plus up to six months imprisonment, for each offence committed.

GCN are also protected by the Protection of Animals Act 1911, which prohibits cruelty and mistreatment. Releasing a GCN in such a way as to cause undue suffering may be an offence under the Abandonment of Animals Act 1960.

In addition to the above, there are various statutory provisions relating to the transport of animals, designed to ensure their welfare. GCN are also listed under Section 7 of the Environment (Wales) Act 2016.

It is important to identify the presence of GCN individuals and also to identify suitable habitat on sites so that legal obligations regarding this species can be observed. If a survey identifies the presence of GCN on the site, an assessment of the population size class is required. This can then inform a mitigation scheme, which would need to be developed in liaison with the local Natural Resources Wales (NRW) team, and which minimises direct threats to newts and compensates for any loss of habitat. A licence issued by NRW is required for the legal implementation of a mitigation scheme.

An NRW mitigation licence application requires a Mitigation Method Statement and a Reasoned Statement of Application. The Mitigation Method Statement contains details of the proposed mitigation works. The Reasoned Statement needs to provide a rational and reasoned justification as to why the proposed development meets the requirements of the Conservation (National Habitats & c.) regulations 1994, namely Regulations 44(2)(e), (f) or (g), and 44(3)(a).

Other amphibians

More common British amphibians, such as common frog *Rana temporaria*, common toad *Bufo bufo*, smooth newt *Triturus vulgaris* and palmate newt *Triturus helveticus* are protected only by Section 9(5) of the Wildlife and Countryside Act 1981 (as amended). This section prohibits sale, barter, exchange, transporting for sale and advertising to sell or to buy.

The above named species are also listed as UK Species of Conservation Concern. Due to general declines in most British amphibian species in recent years, many local authorities require amphibian surveys as a planning condition, or as part of environmental information submitted as part of a planning application, even where the presence of GCN is ruled out.

Natterjack toad *Bufo calamita* and pool frog *Pelophylax lessonae* are also offered the same level of protection as GCN, through the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017.

Natterjack and common toad are also listed under Section 7 of the Environment (Wales) Act 2016.

Water bodies that support all five (more common) species of British amphibians in high numbers, may be afforded protection in local plans, as Sites of Importance for Nature Conservation (SINC), or a similar equivalent, for sites of local importance. A site may require statutory protection as a Site of Special Scientific Interest (SSSI).

Planning Policy

National planning guidance is issued in the form of Planning Policy Wales (PPW - 2018). The most relevant sections are included in Chapter 6: Distinctive and Natural Places. This chapter details the policies on issues such as the protection of trees, woodlands, species, and designated sites. The document is free and available to view online