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## **ECOLOGICAL DESIGN STRATEGY (EDS)**

**At**

### **Cae'r Glaw Quarry – Proposed Extension Area**

Holyhead Road

Gwalchmai

Anglesey

LL65 4PW

**NGR: SH 38512 77319**

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# 1 INTRODUCTION

## 1.1 Author and qualifications

This report is compiled and written by Tom Kenwright BSc MSc, Senior Ecologist at United Environmental Services Ltd (UES).

It has been verified by Toby Hart BSc MCIEEM PIEMA, UES Managing Director.

## 1.2 Objectives and scope

This ecological design strategy (EDS) presents a scheme for protecting wildlife, providing methods to ensure that potential impacts on protected species are mitigated.

## 1.3 Proposed development and previous survey information

The proposals are for the extension of the existing granite quarry, to allow mineral extraction from an area to the north, 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 area is approximately 6.89ha in size, which will be quarried in six phases over a period of more than 10 years. The plan at Appendix 1 shows the location of the proposed extension area (Zone A) and all other areas of the wider quarry discussed within this document.

A suite of ecological surveys has been undertaken of the proposed extension area to inform the planning application. The proposed extension area boundary has been amended on a number of occasions, which has reduced the impacts on ecological receptors. The ecologically valuable valley mire and marshy grassland habitats are now being retained in their entirety, and the majority of the bracken and granite outcrops are being retained as a result of the reduced development area. As such, the area surveyed to inform this application covers a greater area than is to be quarried. Surveys undertaken by UES of the proposed extension include:

- Preliminary Ecological Appraisal (PEA) – June 2021
- Reptile population size class assessment – May to October 2021
- Great crested newt (GCN) *Triturus cristatus* impact assessment and eDNA survey – May & June 2021
- National vegetation classification (NVC) survey – June & July 2021
- Terrestrial invertebrate scoping survey – July 2021

The detailed habitat, botanical and protected species surveys required were informed by the initial PEA of the proposed extension area. In addition, baseline information from the wider quarry and surrounding areas was also already available following a full suite of surveys that UES undertook to inform a planning application for an alternative proposed extension area that lies immediately adjacent to the current proposed extension area (see Appendix 1 – Area B).

Ecological surveys undertaken of the previous ecological extension area by UES included:

- PEA – 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

In addition to the surveys of the proposed extension area, PEA surveys were undertaken of the proposed compensation (Area C) and restoration areas (Areas D – G) in December 2017. These surveys were undertaken to assess the baseline value of these areas and to identify opportunities for habitat creation and management works to compensate for the loss of habitats associated with the previous extension. Reptile population size class assessment surveys were also undertaken of the compensation and restoration areas to inform the suitability for the translocation of reptiles from the previous extension area. It is proposed that these restoration and compensation areas will now be used within the new application. Some habitat creation and compensation works have already been undertaken in advance of the application, as detailed within the landscape and ecology management plan (LEMP) that has been prepared for the scheme (report reference UES02936/06).

Due to the presence of GCNs within ponds within the quarry, ongoing works within the entire quarry have been registered under a GCN European Protected Species (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 baseline ecological information before detailing how the objectives of this EDS will be achieved during and after the development.

This report should be read in conjunction with Appendices 1 and 2, which include a site zonation plan and a specification for proposed reptile exclusion fencing. It should also be read in conjunction with the following supplementary reports:

- Preliminary Ecological Appraisal V2 (reference UES02936/01).
- Reptile Population Size Class Assessment (reference UES02936/02)
- Great Crested Newt Impact Assessment (reference UES02936/03)
- National Vegetation Classification Survey (reference UES02936/04)
- Landscape and Ecology Management Plan (reference UES02936/06)
- Ecological Impact Assessment (reference UES02936/08)
- Invertebrate Survey Report

## 2 BASELINE ECOLOGICAL INFORMATION

A PEA was undertaken of the proposed extension area by UES in June 2021 and an ecological impact assessment (EclA) has been undertaken of the proposed development (reference UES02936/08). The EclA has highlighted that the proposed development could have significant adverse impacts on the following species, requiring the implementation of mitigation measures to avoid or reduce these impacts:

- Badger *Meles meles*
- Breeding birds
- Amphibians including GCNs
- Reptiles
- Invasive species

### 2.1 Badgers

No records of badger were returned from within 2km of the proposed development site and no evidence of badger activity was observed during the ecological surveys of the previously consented extension area.

A single badger scatt was observed on site during the walkover surveys but was not associated with a dug latrine. No other evidence of badger activity and no evidence of any potential badger setts were observed on site or within the immediate vicinity of the site during the suite of ecological surveys undertaken to inform this application.

The habitats on site provide some suitable foraging and commuting habitat for badgers, however the site is considered to be broadly unsuitable to support sett building opportunities for badgers due to the shallow soils over granite rock and the lack of sheltered potential sett building locations.

It is considered that badgers are not using the site and immediately adjacent habitats for sett building and badger use of the site is considered to be limited to a single of low number of individuals foraging or commuting across the site in a transitory capacity. As such, the site is considered to be of site importance for badgers.

### 2.2 Breeding birds

Numerous species of birds were recorded using the proposed extension area during the ecological surveys undertaken across 2021. The habitats on site provide suitable foraging and nesting opportunities for a range of species.

### 2.3 Amphibians including great crested newts

The habitats on site vary in their suitability to support GCNs, with the areas of dense bracken *Pteridium aquilinum*, scrub and the neutral / acidic flushes offering 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. The drystone wall that bisects the survey site north-south also provides some commuting and potential hibernating opportunities.



There is a single area of standing water within the proposed development boundary (Pond 1), four areas of standing water within 250m of the proposed site boundary (Pond 2 and Pools 1-3) and one additional area of standing water within 250m - 500m of the proposed development boundary (Ponds 3).

As part of the GCN impact assessment, the ponds on site and within 500m of the site that were holding water at the time of the survey were assessed for their suitability to support GCNs. In addition, Ponds 1 and 3 were subject to an environmental DNA (eDNA) analysis to determine the presence / absence of GCNs and a search of marginal and aquatic vegetation was undertaken to search for GCN eggs. Pond 2 was not subject to eDNA analysis, as GCN absence has already been confirmed by monitoring surveys of the pond (associated with the existing GCN EPS mitigation licence). Pools 1 – 3 were not subject to eDNA analysis as they were dry at the time and are considered to be ephemeral pools that only hold standing water for small periods of the year and are unsuitable to support breeding GCNs.

Pond 1 returned 3/12 positive replicates of GCN eDNA, indicating that GCN DNA was 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 such as using the pond for foraging purposes rather than breeding. As detailed above, 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. As such, it is considered that a low number of GCNs are only using the site for foraging and commuting purposes.

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.

All ponds onsite and within 500m of the site returned negative results for GCNs (Ponds 2 and 3) or are ephemeral and are considered to be unsuitable to be used by breeding GCNs (Pond 1 and Pools 1-3). As such, it is considered that the individual or low number of GCNs present on site are part of the population known to be breeding within Ponds 4 and 6 that lie within the working quarry and are being monitored as part of the ongoing licence.

## 2.4 Reptiles

The habitats on site, particularly the areas of gorse *Ulex spp.*, bracken, granite outcrops and associated grassland, provide suitable foraging, commuting, basking and breeding opportunities for adder *Vipera berus*, slow worm *Anguis fragilis* and common lizard *Zootoca vivipara*. The large areas of sheep-grazed grassland on site are of limited value for reptiles.

Reptile surveys undertaken of the site by UES in 2021 found that the site supports 'good' populations of common lizard (max count of eight), and slow worm (max count of seven) and 'low' populations of adder (max count of one). Juveniles of all species were also recorded on site, indicating that the site is used for breeding. The site can be classified as important for reptiles as a result of its species assemblage and can qualify for the Key Reptile Site Register.

Common lizard, slow worm and adder are known to be present within the adjacent previously consented extension area (Zone B) which was found to support a 'good' population of slow worm (peak count of fifteen) and 'low' populations of common lizard (peak count of one) and adder (peak count of one) during the 2016 reptile surveys. This site can be classified as



important for reptiles as a result of its species assemblage and can qualify for the Key Reptile Site Register.

Reptile surveys of the proposed compensation area (Zone C) found the site to support a 'low' population of slow worms (peak count of four, including juveniles) and a 'low' population of common lizard (peak count of two). Due to the species and population sizes present, the compensation area does not meet the criteria to be classified as important for reptiles and does not qualify for the Key Reptile Site Register.

Reptile surveys of the proposed restoration area (Zones D and G) found the site to support a 'good' population of slow worms (peak count of eight, including juveniles). Due to the species and population sizes present, the restoration area does not meet the criteria to be classified as important for reptiles and does not qualify for the Key Reptile Site Register.

Both the compensation and restoration areas have the potential to provide excellent quality habitat for reptiles through management techniques such as scrub clearance and enhancement of refugia and hibernacula. At present, there are high proportions of dense scrub and bracken, which dominate large areas at the expense of heathland and grassland habitats.

## 2.5 Invasive

No invasive species were observed within the proposed extension area or within the immediate vicinity of the site during the suite of ecological surveys. As such, invasive species are not considered to be present on site or within the immediate vicinity of the site and are very unlikely to be spread as a result of the development proposals.

Japanese knotweed *Reynoutria japonica* however has been observed within Zone D, located adjacent to the north-western lobe of Pond 4. Japanese knotweed is highly invasive and can be detrimental by outcompeting native plant species and degrading habitats. Due to its invasive nature, this species is listed under Schedule 9 of the Wildlife & Countryside Act 1981 (as amended), making it an offence to cause or allow this species to spread into the wild. As such, this species will be eradicated from the site and this report includes details of the proposed methodology in addition to proposed monitoring and treatment of invasive species in the future.



### 3 ECOLOGICAL DESIGN STRATEGY

This section of the report details how impacts on the previously detailed ecological receptors will be avoided or mitigated. It has been split into subsections which address the mitigation and working methods that will be implemented to protect each ecological feature. The following receptors have been identified as being at risk of death, harm or disturbance as a result of the proposed quarry extension.

#### 3.1 Badgers

A licence from Natural Resources Wales (NRW) to disturb, damage or destroy a badger sett is not required for the proposed development to proceed as there are no active badger setts within or immediately adjacent to the proposed development boundary.

The following reasonable avoidance measures (RAMs) should be implemented during the development to protect any badgers which may be using the site in a transitory capacity for foraging or commuting:

- Prior to the commencement of vegetation removal or soil stripping within each phase of the extension, a pre-commencement badger survey will be undertaken by a suitability qualified ecologist to identify any potential new setts within or immediately adjacent to the working area.
- Any dense areas of vegetation due to be removed as part of the proposals should be removed by cutting / strimming prior to heavy plant accessing the site.
- Any pipes will be stored with caps on to prevent entry by badgers and materials such as barbed wire will be stored so that animals cannot become entangled in them.
- Any chemicals or harmful materials will be stored so that they cannot be accessed by badgers or other wildlife.

#### 3.2 Breeding birds

Without mitigation, the proposed development could contravene the legislation and policy which protects breeding birds. This is because the clearance of the vegetation and soils could result in harm to individual birds and the damage or destruction of nests and eggs. However, with appropriate measures it will be possible to avoid harm to individual birds, nests and eggs during the development process.

To reduce the potential for nesting birds to be present at the time of the works, each phase of the proposed extension area should be stripped of vegetation and soils in advance of quarrying works. This should be undertaken following the completion of the reptile and amphibian translocation programme as detailed in Sections 3.3 and 3.4 below.

Any vegetation clearance works, including the removal or cutting of dense scrub, scattered scrub, dense bracken and other tall-swarded vegetation e.g. grassland and the acidic / neutral flushes, will take place outside of the bird breeding season where possible, and will be avoided from March to August inclusive. If this is not possible and works need to take place during this period, a nesting bird check will be undertaken immediately prior to the works. This check will be undertaken by a suitability qualified ecologist, who will also remain to act as an ecological





clerk of works (ECoW) (unless this is not practicable) to oversee the removal of vegetation where considered necessary, e.g. for the removal of dense gorse or bracken that cannot confidently be inspected. All brush and stripped vegetation will be utilised in the progressive restoration to aid and assist natural regeneration on site.

If any active bird nests are observed, a minimum of a 5m buffer zone (potentially larger depending on the species and location of the nest) will be implemented around the nest and will be demarcated by posts and exclusion tape. All contractors on site will be made aware of the exclusion zone and the legal requirements for its implementation. No works (including vegetation clearance) will take place within the exclusion zone until a suitably qualified ecologist has confirmed that the nest is no longer active.

### 3.3 Reptiles

#### Translocation

The proposed quarrying of the extension area will be undertaken in six phases, staggered over a period of over ten years. The following measures are designed with the primary objective of safeguarding reptiles during the proposed quarry extension. They will ensure that the potential for adverse impacts on reptiles within proposed working areas is minimised:

1. A suitably qualified ecologist will deliver a toolbox talk to all contractors on site, prior to the commencement of any works. The talk will cover ecology and identification of all reptile species likely to be encountered on site, reptiles and the law, and what to do if reptiles are found during the works.
2. One-way amphibian / reptile exclusion fencing will be installed around the perimeter of the designated development area for each stage of the quarrying operation. Fencing will be one-way temporary fencing to enable reptiles and amphibian species to leave the area unaided but to prevent colonisation of the site by new individuals or following translocation from the site. Fencing will be installed following the specification provided at Appendix 2.

The optimal time for installing fencing is late March / early April, however it can be undertaken at anytime of year if necessary. All fence installation will be undertaken under the supervision of a suitably qualified ecologist, who will first undertake a hand-search of the proposed fence route. Any reptiles found will be captured and placed in a suitable, individual species carrier and immediately translocated to appropriate similar habitat in Zone C, which will act as the reptile receptor site.

3. Artificial refugia will be placed throughout the fenced area, at a density >100 sheets per hectare of suitable habitat. The refugia used will consist of a mix of both bitumen felt and corrugated metal sheets, measuring approximately 50cm x 50cm. Refugia will be laid and allowed to bed down for a period of at least 10 days prior to the start of the translocation exercise. Given that large areas of the site comprise short semi-improved grassland that is broadly unsuitable for use by reptiles, the refugia will be positioned to target areas of high-quality reptile habitat, to maximise capture probability.

The translocation exercise will involve undertaking visual observations of suitable habitat and checking under all refugia for a period of 30 visits, with visits comprising at least one check of all refugia per day. All checks will be undertaken by a suitably qualified and experienced ecologist. The translocation exercise will continue until at



least 5 consecutive checks with no reptile activity is observed but must include the minimum of 30 checks. For example, if no reptiles are observed on checks 26-30, the exercise will conclude after the 30th check. If any reptiles are observed during the 30<sup>th</sup> check, a minimum of a further five checks (total of 35 checks) will be implemented until there are 5 consecutive checks of no reptile activity.

All checks undertaken as part of the reptile translocation exercise must be undertaken during the appropriate reptile survey period when reptiles are active and will only be undertaken during March to October inclusive, with at least 20 of the initial 30 checks undertaken during the optimal survey period of April-June and / or September.

Any reptiles found will be placed in a suitable individual species carrier and immediately translocated to an appropriate area of similar habitat in Zone C. Handling of animals will only be undertaken by a suitably experienced ecologist.

Following the completion of the translocation exercise, the artificial refugia will be removed from the working area and the drystone wall and any other potential refugia present on site will be subject to a destructive search and removed from the working area. This search will be undertaken by or under the direct supervision of a suitably qualified ecologist. Any reptiles found will be placed in a suitable individual species carrier and immediately translocated to an appropriate area of similar habitat in Zone C. Handling of animals will only be undertaken by a suitably experienced ecologist.

Potential refugia can include sheet materials, brash or stones. Items will be lifted vertically rather than dragged laterally to ensure potential harm to animals is minimised.

4. Following the translocation exercise, the one-way reptile exclusion fencing will be retained at the perimeter of the site until vegetation removal and soil stripping can commence.
5. The removal of vegetation and the stripping of soils will be undertaken under ecological supervision. Vegetation and soils will be stripped by an excavator with a toothed bucket and will be translocated to Zones A and H. Any reptiles found will be placed in a suitable individual species carrier and immediately translocated to appropriate similar habitat in Zone C. Handling of animals will only be undertaken by a suitably experienced ecologist.

**Steps 1 - 5 detailed above must be undertaken for each stage of the proposed excavations of the site.**

### Receptor site

At the time of the initial 2016 PEA and reptile surveys of the proposed compensation / receptor zone (Zone C), the area was found to consist of extensive areas of bramble *Rubus fruticosus* agg. scrub with willow *Salix spp.*, dense gorse and bracken. Small pockets of dry dwarf shrub heath were present on rocky outcrops. The area had previously been planted with trees, with rowan *Sorbus aucuparia*, pedunculate oak *Quercus robur* and Scots pine *Pinus sylvestris* present across the site. The site was found to contain a small population of slow worm (peak count of four individuals) and a small population of common lizard (peak count of two).

Through habitat creation / enhancement and positive management, it was considered that Zone C would act as a suitable receptor site for reptiles. Following the granting of the planning



permission for the previous extension area, significant habitat creation and enhancement works were undertaken.

It is considered that the habitat creation and enhancement work that have been undertaken have increased the suitability of the site and have likely increased the potential carrying capacity for reptiles. Given that the previously consented quarrying extension has not and will not take place (instead being replaced by this new application), these works are instead to be considered as compensation for the proposed quarrying extension and Zone C will continue to act as the proposed receptor site for the translocation exercise.

Given that the initial habitat creation and enhancement works have already been undertaken, the receptor site is currently ready for the translocation of individuals from the working area, meaning that the proposed translocation exercise can commence without delay following the approval of planning permission.

Habitat creation and enhancement measures already undertaken within Zone C include:

- Scattered trees and willow scrub have been selectively felled, with arisings stacked as habitat piles to act as refugia and hibernacula for reptile and amphibian species. Cut stumps were treated with a glyphosate-based herbicide via direct application (using paint brush or similar technique) to prevent regrowth. Stumps of Scots pine did not require herbicide application.
- Stands of gorse were reduced in size by removing the outer plants of each group, to reduce the ground cover by 50%.
- Areas of bramble and bracken were cut with a flail arm or mower. Cut material was then collected, stacked and retained on site as hibernacula and refugia for reptiles and amphibians.
- A section of woodland screen planting (planted in 1994-1995) present on the western perimeter of Zone C was subject to thinning to open the woodland structure by reducing competition for space and resources, and by encouraging growth of saplings to diversify the age structure. Willow scrub and alder *Alnus glutinosa* were retained in the damper areas of the woodland. Thinning was undertaken to remove 50% of trees, favouring retention of more successful specimens to maintain a diversity of woody species, but also to encourage a wetter habitat overall. All logs and brash were retained within the woodland and stacked as habitat piles.
- A new pond (Pond 8) measuring approximately 100m<sup>2</sup> was created by reprofiling the existing substrate. The pond was shaped to incorporate a shelf along the margins at a depth of 30cm to facilitate colonisation of emergent plant species, however some of the margins were profiled into shallow slopes to permit amphibians and other wildlife easy access into and out of the ponds. One of the lobes has a depth of 60cm, whereas the other lobe has two stepped depths of 60cm and 100cm in the centre of the lobe. The ponds perimeter is scalloped to provide smaller, shallow lobes which will be ideal for breeding amphibians. The pond was lined with puddling clay to ensure the capacity to retain water throughout the year and was allowed to fill naturally. No planting was undertaken, but a small amount of water and substrate from the pond in Zone D was applied to the new pond to expedite colonisation by flora and fauna.



- A large dry scrape with encroaching scrub and trees was cleared and excavated to create a large shallow flooded depression (Pond 7). This has since naturally flooded and holds standing water for most of the year and has been colonised by numerous marginal and aquatic species, which includes but is not limited to lesser marshwort *Apium inundatum*, marsh cinquefoil *Comarum palustre*, bulbous rush *Juncus bulbosus*, floating club-rush *Eleogiton fluitans* and soft rush *Juncus effusus*.

In order to ensure that the site continues to be suitable and ready for the translocation of reptiles, an updated walkover and habitat suitability assessment survey was undertaken in October 2022. The survey has found that many of the cleared areas are being encroached by bramble, bracken and gorse and willow scrub. Additionally, some areas of the large marshy area (Pond 7) have become dominated by tall *Juncus* species, at the detriment of uncommon forbs and general biodiversity.

Based on the findings, the following management measures will be implemented prior to the commencement of the translocation exercise:

- Additional scrub removal will be undertaken sensitively due to the potential presence of reptiles and amphibians. To reduce the risk of harm, bramble, willow and gorse scrub to be removed will be identified by an ECoW and then removed through the use of hand tools if undertaken during March to October inclusive. If works are undertaken outside of this period when reptiles and amphibians are least likely to be active (November to February inclusive), the scrub control can be undertaken using excavator-mounted flails, under the supervision of an ECoW. Any significant scrub stumps that remain will be treated with a glyphosate-based herbicide application to prevent re-growth. To reduce the potential for herbicide drift and impacts on non-target habitats, herbicides should be applied using a weed-wiper or paint brush and should not be sprayed. All herbicide application must be undertaken by a trained and competent contractor and the manufacturer's information must be consulted to determine the application rate.
- Bracken re-growth will also be controlled through foliar application of Asulox herbicide. All herbicide application must be undertaken by a trained and competent contractor and the manufacturer's information must be consulted to determine the application rate.

In addition to the enhancement of Zone C for reptiles, additional habitat creation and enhancement works have already been undertaken within Zones D and G and ongoing management of these areas is proposed to compensate for the loss of suitable habitat as a result of the proposed development, in addition to providing net gains in habitat suitability. Full details of the habitat creation and enhancement works that have already been undertaken and are proposed as part of this application are detailed within the LEMP report that has been prepared for the scheme (see report reference UES02396/06).

### 3.4 Amphibians

A GCN EPS mitigation licence is currently in place for the ongoing quarrying works.

Once planning permission has been secured for the extension of the quarry, the existing EPS mitigation licence will be modified to include the extension area. This approach was previously agreed with Matthew Ellis of NRW and David Cowley of Isle of Anglesey County Council for

the previously consented extension application. As such, this same approach is proposed for the newly proposed quarry extension.

The measures detailed above to protect and translocate reptiles will serve to ensure that the potential for harm or killing of GCNs is minimised. No GCNs have ever been observed within the proposed development site and the only evidence of GCN activity within 500m of the site is from 3/12 positive eDNA replicants from the onsite ephemeral pond (Pond 1). As such, it is considered that the site is used on a transient basis by a very low number of GCNs for foraging or commuting, likely at the edge of the range of the known population within the wider quarry to the south. As such, it is considered that the pitfall trapping is not considered necessary and any GCNs present on site would likely be detected and captured during the checks of the artificial refugia, as has been observed by UES on other development sites that support both reptiles and GCNs. To further increase the capture rate, carpet tiles or artificial refugia will also be placed every 5m along the inner perimeter of the exclusion fencing. This is a technique often used in combination with pitfall traps for GCN translocation and often is as effective if not more so than pitfall traps, as observed when utilised by UES in other translocation schemes. Furthermore, the use of pitfall traps is unlikely to be feasible along much of the perimeter fence due to the ground conditions, with large sections of the site having very little substrate within which to dig, layered on top of granite.

The above measures will be fully detailed within the EPS mitigation licence amendment application and will need to be subject to agreement with NRW.

Prior to undertaking the habitat enhancement and creation works within Zone C that are detailed above in Section 3.3, including the creation of two new waterbodies, this zone was considered to be on the edge of the GCN populations territorial range, with no established breeding habitats present. As a result of the habitat creation and enhancement works already undertaken, Zone C is now of a much higher suitability for GCNs, providing higher quality terrestrial habitat for foraging, commuting and hibernation, in addition to the provision of potential breeding habitat.

In addition to the enhancement of Zone C for GCNs and other amphibians, additional habitat creation and enhancement works have already been undertaken within Zones D and G and ongoing management of these areas is proposed to compensate for the loss of suitable habitat as a result of the proposed development, in addition to providing net gains in habitat suitability. Full details of the habitat creation and enhancement works that have already been undertaken and are proposed as part of this application are detailed within the LEMP report that has been prepared for the scheme (see report reference UES02396/06).

Following the completion of the proposed development and the associated habitat creation and enhancement works, it is considered that the proposed development will result in an increase in the favourable conservation status of the GCN population using the wider quarry. As such, the proposed development is considered to be compliant with Section 6 of the Environment Wales Act 2016 and Article 2 of the Habitats Directive 1992.

### **3.5 Invasive species**

The stand of Japanese knotweed present within Zone D will be subject to herbicide application to eradicate and remove it from site. Prior to the implementation of eradication measures, a suitability qualified ecologist will undertake a search for additional stands of Japanese knotweed, or any other invasive species across Zone D. Following identification, a minimum



2m buffer zone will be implemented around all stands, which will be demarcated with posts and exclusion tape.

To reduce the potential for herbicide drift and impacts on non-target habitats, herbicide application should be applied using a stem injection technique and should not be sprayed. All herbicide application must be undertaken by a trained and competent contractor and the manufacturer's information must be consulted to determine the application rate. Due to the close proximity to a waterbody (Pond 4), a glyphosate-based herbicide will be used.

This survey and the subsequent herbicide application will be undertaken during the growing season of July to September inclusive and will commence in 2023, with subsequent annual herbicide annual application until all stands have been eradicated.



## 4 MONITORING AND ONGOING MANAGEMENT

### 4.1 Reptiles

Following the completion of the translocation exercise, reptile monitoring surveys will be undertaken of the receptor zone (Zone C). Monitoring surveys will be undertaken biennially (every two years) for a period of 10 years, starting the year after the completion of the translocation exercise. These surveys will follow the methodology detailed in Froglife Advice Sheet 10: Reptile Survey (1999), which is used as a standard technique for reptile surveys across the UK. Thereafter surveys will be undertaken at year 15 and year 20.

Surveys will be spread across the reptile survey period of March to October inclusive, with at least half of the surveys undertaken during the optimal survey periods of April to mid-June inclusive and / or September. Three standard survey techniques will be employed in the search for reptiles: a walkover survey, *in situ* refugia and artificial refugia, with 15 surveys / checks undertaken each survey year.

#### Walkover survey

Surveyors will slowly walk between refugia locations, examining suitable basking places to record any incidental sightings of reptiles.

#### In situ refugia

Where present, log piles and discarded potential refugia, such as corrugated sheet materials, will be carefully examined during site visits. Log piles will then be returned to their original state once the search is complete.

#### Artificial refugia

Artificial refugia will be laid throughout the suitable reptile habitats on site and examined on each site visit.

Refugia will consist of a mix of bitumen coated corrugated sheets and felt and metal corrugated sheets, all of which will measure approximately 0.5m<sup>2</sup>. A combination of materials will be used as each material has different thermal properties. Metal sheets gain and lose heat quicker than bitumen coated sheets, and therefore each can be more suitable to different reptiles in different situations. The refugia will be collected upon completion of the survey work each year.

As per Froglife (1999) guidance a density of at least 10 artificial refugia per hectare of suitable habitat will be deployed. Zone C has an area of approximately 5.2ha and so a minimum of total 52 artificial refugia will be deployed on site.

The refugia will be left to bed down for at least 14 days prior to the first checks. During this time, they develop favourable conditions, such as suitable humidity and temperature gradients, and the reptiles become more familiar with them.

#### Habitat assessment and management

In addition to the population size class assessment surveys, Zone C will also be subject to a habitat condition assessment as part of the biennial reptile population size class assessment surveys. This assessment will assess the suitability of the site for reptiles and coupled with



the data from the population size class assessments, will highlight any remedial habitat creation or management measures e.g. scrub or bracken control. If management works are required, they are to be undertaken the following year (between years with reptile monitoring surveys) to reduce the disturbance works influencing the results of the ongoing monitoring surveys.

Additional reptile population size class assessment surveys with the same methodology and timing will also be undertaken of Zones D, G and H. However, this monitoring is not directly related to the proposed translocation scheme and instead is being undertaken to monitor the success of habitat creation and enhancement works within the proposed restoration area. As such, the timings are dependent on the implementation of the initial habitat creation and enhancement works within these areas and are detailed fully in the LEMP report.

The responsibility for commissioning ecological monitoring lies with the site management / ownership, and must be undertaken by suitably qualified and experienced individuals.

Reports of the monitoring results should be provided to the Local Planning Authority and Cofnod for their records.

## **4.2 Amphibians**

A period of 21 years of GCN population size class assessment surveys of all ponds within Zones C, D and G are currently being undertaken in compliance with the existing EPS mitigation licence that has been granted for the existing quarry works. These surveys commenced in 2020 and were subsequently undertaken in 2021 and 2022.

The responsibility for commissioning ecological monitoring lies with the site management / ownership, and must be undertaken by suitably qualified and experienced individuals.

Reports of the monitoring results will continue to be provided to the Local Planning Authority and Cofnod for their records, as well as to NRW as part of the EPS mitigation licence requirements.

## **4.3 Invasive species**

An invasive species walkover survey will be undertaken of Zones C, D, G and H biennially by a suitably qualified ecologist for the first ten years. This survey can be undertaken concurrently with the reptile habitat condition assessment surveys. If any invasive species are observed, a buffer zone will be demarcated as detailed in Section 3.5 and all invasives will be subject to mechanical or herbicide eradication measures as deemed necessary by the ecologist.





## **5 CONCLUSION**

Once implemented, the ecological measures set out in this document will ensure that the potential of harm and killing of protected species is minimised.

The proposed monitoring surveys and the implementation of remedial habitat management works and invasive species treatment will ensure that Zones C, D G and H are managed in the long-term to maximise their suitability for amphibians, reptiles and other protected or notable species.



## 6 REFERENCES

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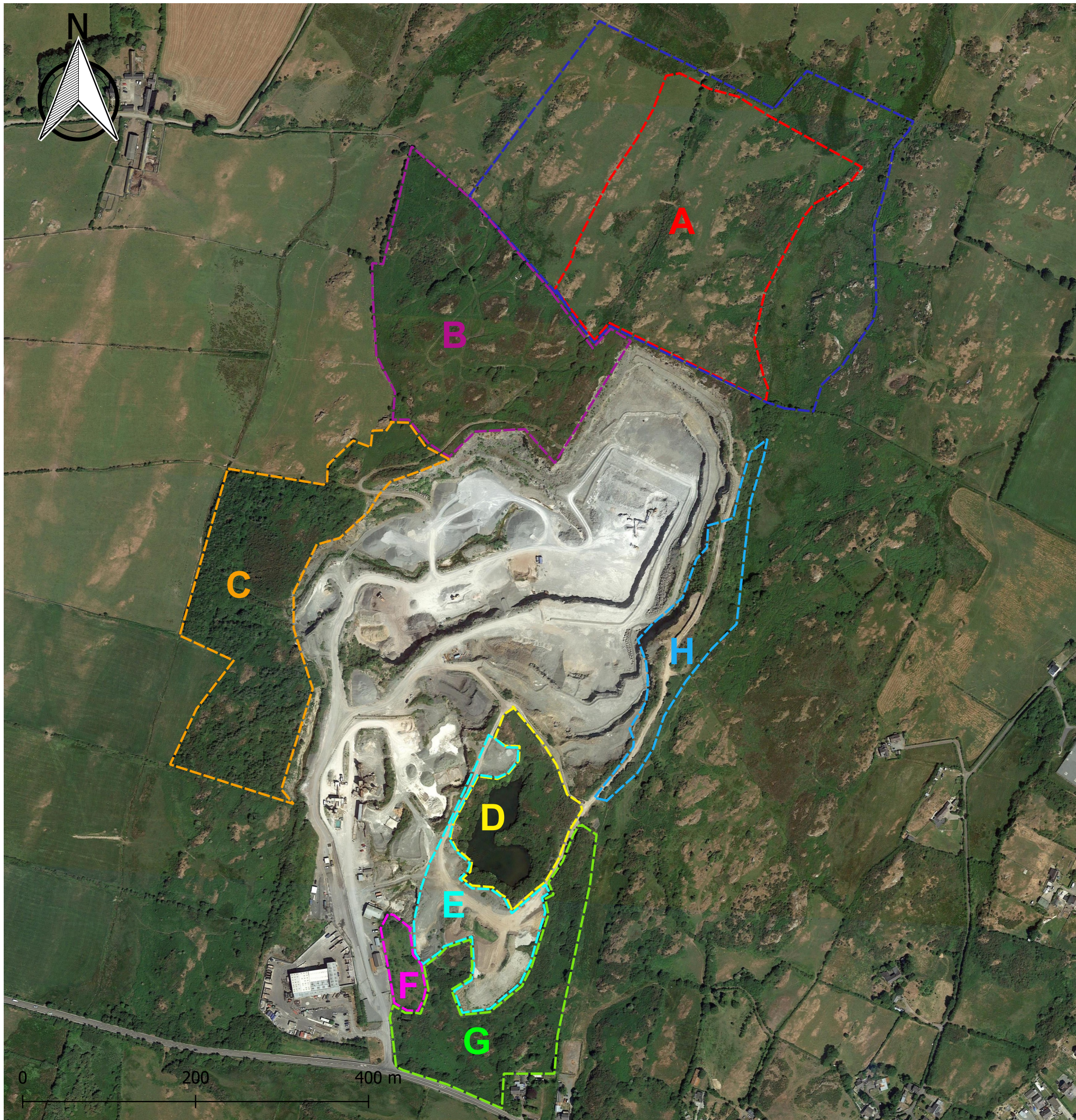
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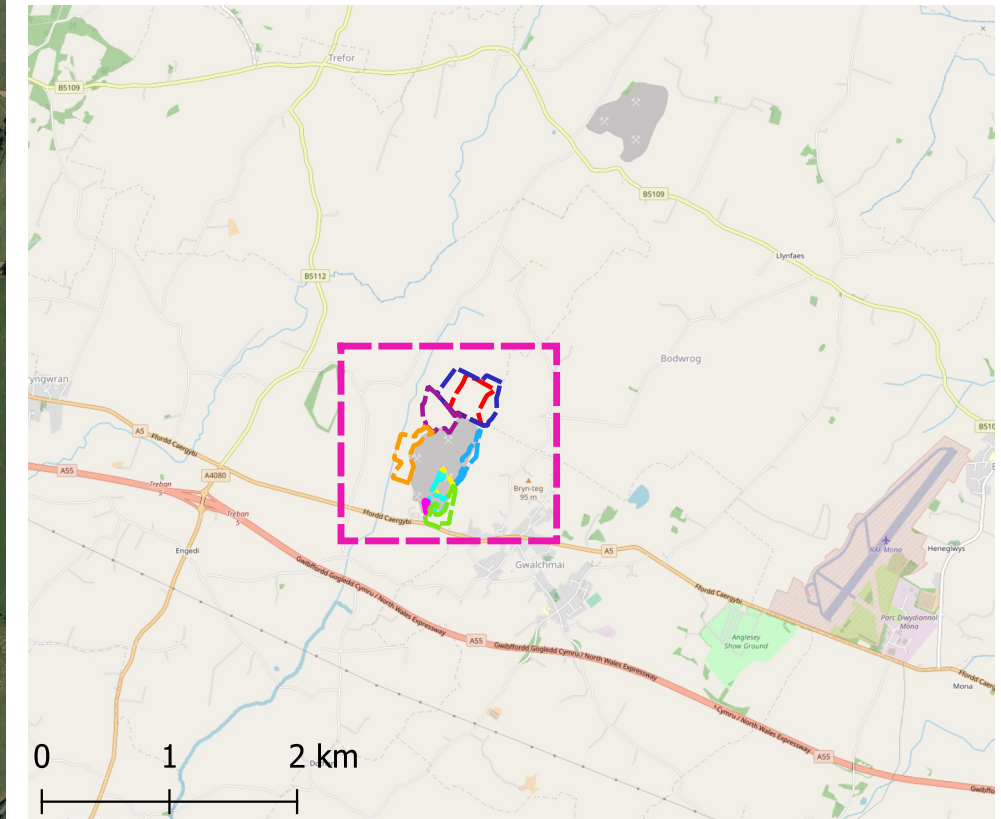
## **APPENDICES**

### **Appendix 1 – Site zonation plan**



# Site Zonation Plan

**Site: Cae'r Glaw Quarry -  
 Proposed Extension Area**  
**NGR: SH 38512 77319**  
**Author: Tom Kenwright**  
**Date: 24/11/2022**



**KEY:**

- Zone A - Development boundary
- Survey boundary
- Zone B
- Zone C
- Zone D
- Zone E
- Zone F
- Zone G
- Zone H

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## **Appendix 2 – Exclusion fence specification**

Heavy duty plastic membrane to take weight of backfill without tearing or stretching. (Minimum roll width: 1200 mm.)

19x38x500 mm rough sawn (RS) softwood batten; attached to post with 50 mm nails, sandwiching the membrane.

50x50x1200 mm RS softwood post set approximately 30° from vertical, so that reptiles cannot climb the fence. Post spacing at 1 m intervals.

Light, unconsolidated backfill and additional material piled up on membrane to allow reptiles to climb and cross the fence from this direction. Care should be taken to ensure the membrane is not torn or overloaded with material.

Membrane placed in trench and backfilled to provide an underground 'return'.

