

Trevor Basin Car Park

Herptile Technical Note

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Trevor Basin Car Park

Herptile Technical Note

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1 Introduction

1.1 Background

- 1.1.1 Arcadis Consulting (UK) Limited was commissioned by Wrexham County Borough Council to complete an Ecological Impact Assessment (EclA) to support a planning application which seeks consent for access improvements and a new visitor car park with associated vehicular access on the brownfield site locally recognised as the “Flexsys Site”. Following a successful joint County Borough application to the UK Government Levelling Up Fund, the project forms part of a programme of work to improve movement infrastructure at key destination sites in Wrexham County Borough and Denbighshire. This project is for a new arrival point and car park primarily for the Pontcysyllte Aqueduct & Canal World Heritage Site (WHS).

1.2 Site Location and Setting

- 1.2.1 The project is located on Queen Street, Cefn Mawr, Wrexham, LL14 3NP, centred at approximate grid reference SJ 27641 42599. The proposed boundary of the development is defined within the Figures in Annex A and is hereafter referred to as ‘the Site’.
- 1.2.2 The Site is situated on a slope (with a largely southwest-facing aspect) located on the edge of the village of Cefn Mawr. Residential housing is situated to the north and east and broadleaved woodland and grassland to the southwest. Part of the Site runs under and to the west of Queen Street, leading to an existing car park (used for the Pontcysyllte Aqueduct World Heritage Site) and Trevor Basin, from where the Pontcysyllte Aqueduct carries the Llangollen Canal across the River Dee to the southwest of the Site.

1.3 Scope of Work

- 1.3.1 This EclA is intended to meet the information requirements of national and local planning policy outlined in Section 3.
- 1.3.2 The scope of this report is to outline the results of the reptile and great crested newt (GCN; *Triturus cristatus*) surveys conducted across the Site. It also includes the results of a desk study to identify previously recorded reptiles and GCN.

1.4 Legislation

GCN Legislation

- 1.4.1 GCN qualify as a European Protected Species (EPS) protected under the Conservation of Habitats and Species Regulations (2017). They are also afforded full protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and on Schedule 2 of the Conservation of Habitats and Species Regulations (2017). Collectively, this legislation makes it an offence to:
- Capture, injure or kill GCN;
 - Damage or destroy a breeding or resting place;

- Obstruct access to their resting or sheltering places;
- Possess, transport, sell or exchange live or dead GCN; or
- Take GCN eggs.

Reptile Legislation

- 1.4.2 The UK supports four species of "common" reptiles: common lizard (*Zootoca vivipara*), slow worm (*Anguis fragilis*), grass snake (*Natrix Helvetica*) and adder (*Vipera berus*). All receive partial legal protection, arising from Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill or injure these species.
- 1.4.3 Two more threatened and rarer species, sand lizard (*Lacerta agilis*) and smooth snake (*Coronella austriaca*), are afforded greater protection in the UK; however, these species are highly restricted in the UK and the Site boundary is beyond their known range.

2 Methodology

2.1 Desk Study

2.1.1 The aim of the desktop study was to develop an understanding of the baseline conditions in relation to herptiles (amphibians and reptiles) and to highlight potential ecological constraints relating to these species. The study area for the desk study comprised the site boundary plus the following buffers:

- 2 km for statutory designated sites and species records, and
- 500 m for ponds.

2.1.2 Buffers were applied from the Site boundary, not a central reading. Table 1 summarises the various sources of information utilised for the desk study and the information that was obtained. The desk study was conducted by Arcadis in July 2024.

Table 1 – Sources of Information

Source	Information Obtained
Ordnance Survey mapping and online aerial imagery	Aerial photography published on commonly used websites was studied to identify ponds within 500m of the Site, place habitats present within the Site boundary in the wider context; identify potential ecological receptors that may not be evident on the ground during the field survey; identify potential barriers to animal movements (such as road networks, built development and major watercourses); and to assess changes to habitats since baseline information was recorded so that an assessment of reliability can be made. As some receptors are not always apparent on aerial photographs, relevant Ordnance Survey mapping (on MAGIC) was also studied to identify any additional ponds that are present within 500m of the Site. This approach can be useful in determining if such receptors are potentially a key part of a wider wildlife corridor or an important feature in an otherwise ecologically poor landscape. It can also identify potentially important habitats (in particular, ponds) which could have a bearing on the ecology of the area.
Multi-agency geographic information centre (MAGIC)	The location of statutory designated sites for GCN and European Protected Species Licence applications within 2km of the Site.
COFNOD (North Wales Environmental Information Service)	Records of herptiles (amphibians and reptiles) within 2km of the site. NB: any records older than 20 years have been omitted from the results unless specified for that species/species group.

2.2 Great Crested Newt Survey Methodology

Habitat Suitability Index (HSI) Assessments

- 2.2.1 The desk study identified three waterbodies situated within 500m of the Site boundary; these were named Ponds 1, 2 and 3 and their location is illustrated in Annex A, Figure 1. GCN HSI assessments were undertaken of all ponds on 16 July 2024.
- 2.2.2 The HSI scoring system scores a waterbody against ten habitat suitability indices including, water quality, the likely presence/absence of fish and aquatic plant cover. From these ten suitability indices, a geometric mean is calculated which gives an overall numerical index ranging from between zero and one. A score of near zero indicates sub-optimal habitat whilst a score near one represents optimal habitat for use by breeding GCN.

eDNA Surveys

- 2.2.3 Environmental DNA (eDNA) surveys were undertaken on Ponds 1, 2 and 3 by a licensed Arcadis Ecologist on 24th May 2024. GCN release their DNA into waterbodies where it can remain for several weeks. The eDNA surveys were undertaken by obtaining water samples from the ponds (in accordance with guidance published by Biggs *et al.*, 2014) which were analysed in a laboratory by SureScreen Scientifics.
- 2.2.4 The possible results from eDNA testing are as follows:
- Positive – GCN eDNA detected in the waterbody and thus presence is confirmed;
 - Negative – GCN eDNA has not been detected within the waterbody and thus absence is assumed; or
 - Inconclusive results – GCN eDNA has not been detected but the sample may have been degraded (e.g. not stored correctly and/or at the correct temperature before testing) or the test inhibited (e.g. by an unexpected chemical identified within the sample).

Survey Limitations

- 2.2.5 No limitations were recorded.

2.3 Reptile Survey Methodology

Reptile Surveys

- 2.3.1 Reptile surveys were carried out following best practice guidance as detailed in Froglife (1999). 193 artificial cover objects (comprising roofing felt and corrugated onduline sheets measuring a minimum of 0.5 x 0.5m) were distributed evenly in areas of suitable habitat and left to 'bed in' for a minimum period of 1 week. The locations of these artificial cover objects are illustrated in Annex A, Figure 2.
- 2.3.2 Reptile surveys are planned between May and September 2024. To date, four have been completed during appropriate weather conditions (the remaining three surveys are planned for September 2024). Surveys included a walked transect through the Site and the wider area under the same land ownership, to check the artificial cover objects and to search for reptiles using existing natural and

anthropogenic materials within the Site. Number, species, sex, age class, and location of any reptiles found were recorded where possible.

Survey Limitations

2.3.3 No limitations were recorded.

3 Results

3.1 Desk Study

Statutory Designated Sites

- 3.1.1 The Site is situated approximately 500m north of the Afon Dyfrdwy (River Dee) Site of Special Scientific Interest (which is also part of the River Dee and Bala Lake Special Area of Conservation). While these sites may support reptiles and/or amphibians, these species are not designated features of these sites.

Amphibian and Reptile Species Records

- 3.1.2 Table 2 lists the amphibian and reptile species records identified during the desk study.

Table 2 – Amphibian and Reptile species records identified during the desk study

Species Name	Common Name	No. Records	Latest Record	Closest Record (km)
Triturus cristatus	Great crested newt	2	2015	Adjacent to the Site (within Pond 3)
Lissotriton helveticus	Palmate newt	5	2024	364m
Lissotriton vulgaris	Smooth newt	2	2021	1627m
Lissotriton sp.	Lissotriton sp.	1	2018	1624m
Rana temporaria	Common frog	2	2019	1632m
Bufo bufo	Common toad	4	2023	243m
Anguis fragilis	Slow worm	8	2022	273m
Natrix helvetica	Grass snake	5	2024	881m

3.2 Great Crested Newt Survey Results

- 3.2.1 There were 3 ponds identified within 500m of the Site boundary:
- Pond 1 – situated approximately 40m south;
 - Pond 2 – situated approximately 15m south; and,
 - Pond 3 – situated approximately 20m north.
- 3.2.2 All three ponds were subject to HSI assessments and eDNA surveys; the results of which are presented within Table 3. The GCN eDNA analysis results table is provided in Annex B.

Table 3 – Results of HSI and eDNA Surveys

Pond Reference:	Pond 1	Pond 2	Pond 3
SI1 – Location	A: 1	A: 1	A: 1
SI2 - Pond area	550m2: 1	350m2: 0.7	1250m2: 0.92
SI3 - Pond drying	Rarely: 1	Rarely: 1	Never: 0.9
SI4 - Water quality	Moderate: 0.67	Moderate: 0.67	Poor: 0.33
SI5 - Shade	30%: 1	40%: 1	80%: 0.6
SI6 - Fowl	Minor: 0.67	Minor: 0.67	Minor: 0.67
SI7 - Fish	Absent: 1	Absent: 1	Absent: 1
SI8 - Ponds	2: 0.55	2: 0.55	2: 0.55
SI9 - Terrial habitat	Moderate: 0.67	Moderate: 0.67	Poor: 0.33
SI10 - Macrophytes	40%: 0.7	95%: 0.85	30%: 0.6
HSI Score	Excellent (0.81)	Good (0.79)	Average (0.64)
eDNA Result	Positive	Positive	Positive

3.3 Reptile Survey Results

3.3.1 The reptile surveys identified the presence of grass snake and slow worm within the Site as follows:

- Grass snake:
- Total observations: 8
- Maximum adult count during any survey: 1
- Slow worm:
- Total observations: 1
- Maximum adult count during any survey: 1

3.3.2 Full reptile survey results are presented in Annex B and the locations of all reptiles recorded during surveys can be seen in Annex A, Figure 2.

Incidental Sightings

3.3.3 Incidental sightings of GCN or reptiles were recorded if they were seen while conducting other ecological surveys on Site. Two adult GCN, a juvenile grass snake and an adult female slow worm were recorded incidentally; the locations of these incidental sightings are illustrated in Annex A, Figures 1 and 2.

4 Conclusion

- 4.1.1 Three ponds were identified within 500m of the Site and eDNA surveys confirmed the presence of GCN within all of them. Terrestrial habitats within the Site vary in suitability for GCN from areas of hard-standing tarmac that provide no value to GCN to rubble piles and areas of scrub that provide foraging, resting and overwintering opportunities; one of the incidental GCN records confirmed that GCN do utilise the terrestrial opportunities provided by the Site.
- 4.1.2 Grass snake and slow worm were recorded within the Site. Based on Froglife (1999) the Site supports a “low” population of both species. It should be noted that surveys are ongoing; three additional surveys are planned for September 2024.

5 References

- Anon (2000). Countryside and Rights of Way Act. HMSO, London, [online] (<http://www.legislation.gov.uk/ukpga/2000/37/introduction>)
- Anon (2017). The Conservation of Habitats and Species Regulations. HMSO, London, [online] (<http://www.legislation.gov.uk/ukxi/2017/1012/contents/made>).
- Anon (2013). Third Report by the United Kingdom under Article 17 on the implementation of the Directive: S1166 - Great crested newt (*Triturus cristatus*). European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora, UK.
- Anon (Accessed 2017) Great crested newts: surveys and mitigation for development projects. Natural England, London, [online] (<https://www.gov.uk/guidance/great-crested-newts-surveys-and-mitigation-for-development-projects>)
- Biggs, J., Ewald, N., Valentini, A., Gaboriaud, C., Griffiths, R.A., Foster, J., Wilkinson, J., Arnett, A., Williams, P., and Dunn, F. (2014). Analytical and methodological development for improved surveillance of Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA. Freshwater Habitats Trust, Oxford.
- Froglife (1999). Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10. Froglife, Halesworth.
- Wildlife and Countryside Act 1981 (as amended). HMSO [Online] Available: <http://www.legislation.gov.uk/ukpga/1981/69/contents> [24/05/2016]

Figures

Annex A



- Legend
- Site Boundary
 - Incidental Records
 - GCN waterbodies

Notes
Service Layer Credits: World Imagery: Maxar, Microsoft
World Topographic Map: Esri UK, Esri, TomTom, Garmin, Foursquare,
GeoTechnologies, Inc, MET/NASA, USGS



01	22/08/24	INITIAL ISSUE	MB	NM	SJ
Rev	Date	Description	Drawn	Check	Approv

Client:



PROJECT:
TREVOR BASIN CAR
PARKING AND ACCESS

Site
Pontcysyllte, Wales

Client
Wrexham County Borough Council



Registered office:
80 Fenchurch Street
London
EC3M 4BY

Coordinating Office:
2 Glass Wharf
Temple Quay
Bristol
BS2 0FR

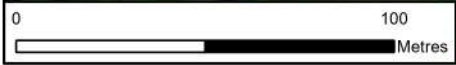
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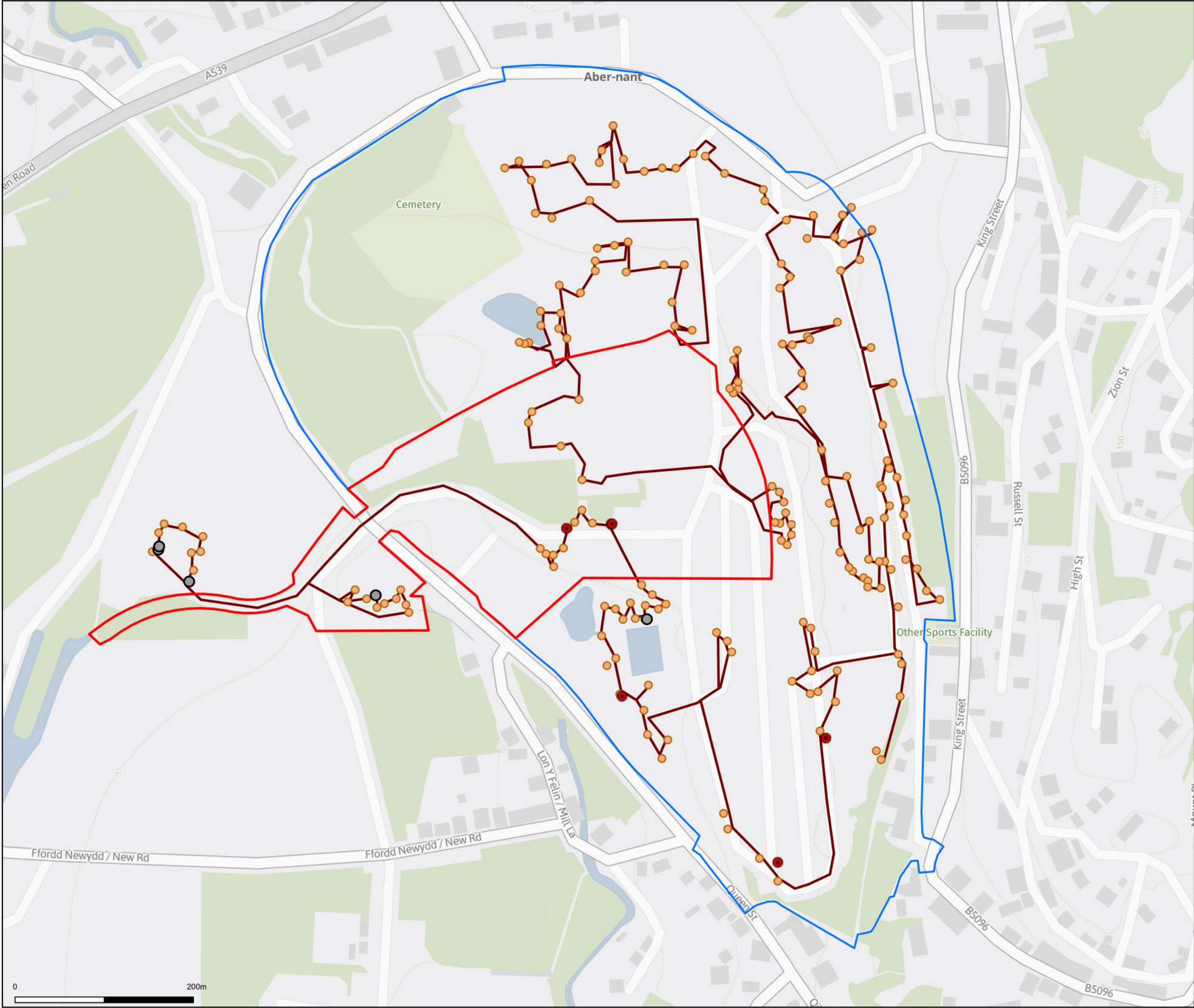
Title:

**Trevor Basin -
GCN Habitat Location Plan - Baseline**

Designed	D Macaulay	Date	22 AUG 24	Signed	
Drawn	M. Bargal	Date	22 AUG 24	Signed	
Checked	N. Madden	Date	22 AUG 24	Signed	
Approved	S.Jones	Date	22 AUG 24	Signed	
Scale:	1:2,000	Datum:	AOD		
Original Size:	A3	Grid:	OS		
Suitability Code:	S2	Project Number:	10054502		

Suitability Description:		For Information	
Drawing Number:	10054502 -ARC-XX-XX-DR-GCN-???	Revision:	P01





Legend

Survey Area

Site Boundary

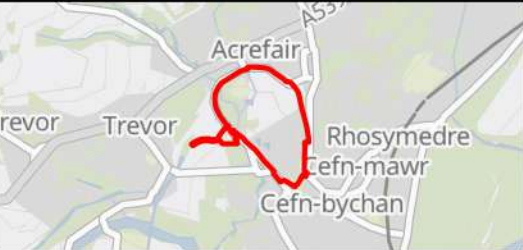
Reptile Transect Route

Reptile Tin Location

Reptile Survey Results

Incidental Records

Notes:
Service Layer Credits: GB Background: Contains OS data © Crown Copyright and database right 2023
Contains data from OS Zoomstack



01	22/08/24	INITIAL ISSUE	SM	NM	SJ
Rev	Date	Description	Drawn	Check	Approv

Client:



PROJECT:
TREVOR BASIN WORLD
HERITAGE SITE ARRIVAL

Site

Portcysyllte, Wales

Client

Wrexham County Borough Council



Registered office:
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Title:

Figure 2 -
Reptile Survey Results

Designed	C. Moores	Date	22 AUG 24	Signed	
Drawn	S. Mukherjee	Date	22 AUG 24	Signed	
Checked	N. Madden	Date	22 AUG 24	Signed	
Approved	S. Jones	Date	22 AUG 24	Signed	
Scale:	1:2500	Datum:	AOD		
Original Size:	A3	Grid:	OS		
Suitability Code:	S2	Project Number:	10054502		

Suitability Description:

For Information

Drawing Number:	TBC	Revision:	P01
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Annex B

GCN eDNA Analysis Results Certificate

Lab ID	Site Name	OS Reference	Degradation Check	Inhibition Check	Result	Positive Replicates
4605	Trevor Basin, TB03		Pass	Pass	Positive	12/12
4606	Trevor Basin, TB01		Pass	Pass	Positive	6/12
4607	Trevor Basin, TB02		Pass	Pass	Positive	12/12

Matters affecting result: none

Reported by: Chelsea Warner

Approved by: Lauryn Jewkes

Reptile Survey Results

Reptile Survey Results

Visit	1	2	3	4	5	6	7
Date	30/05/24	06/06/24	12/06/24	19/06/24	Surveys planned for September 2024		
Surveyor(s)	Rory Murphy Callum Moores	Rachel Sore Tyler Meaden	Rachel Sore Tyler Meaden	Duncan Macauley Tyler Meaden			
Start time	12:10	10:05	10:30	10:30			
End time	2:10	11:05	13:00	13:00			
Temperature & weather conditions	Start temp: 14 Finish temp: 16 Dry Oktas: 3/8 Wind speed: fresh breeze Wind direction: south-east	Start temp: 13 Finish temp: 13 Dry Oktas: 5/8 Wind speed: gentle breeze Wind direction: west	Start temp:12 Finish temp: 13 Dry Oktas 7/8 Wind speed: light breeze Wind direction: west	Start temp:15 Finish temp: 18 Dry Oktas 6/8 Wind speed: light air			
Survey Results	2x grass snake (1x juvenile, 1x adult)	0	2x grass snake (1x juvenile, 1x adult)	1x adult female grass snake			

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