

Appendix 11.6: Great Crested Newt Technical Appendix



THE
ENVIRONMENT
PARTNERSHIP



LAND NORTH OF BRYN LANE WREXHAM GREAT CRESTED NEWT TECHNICAL APPENDIX

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G9134.034 - Great Crested Newt Survey Results

Executive Summary

1. TEP was commissioned by Net World Sports in October 2021 to undertake eDNA surveys and Habitat Suitability Index (HSI) assessments at Land North of Bryn Lane, Wrexham (hereby referred to as "the site"). Ecological surveys are required to support an Environmental Statement that will inform proposals for a commercial development.

2. The proposed development is commercial in nature and encompasses:

Detailed Component:

- *Demolition of existing buildings, site clearance and preparation works, including removal of vegetation and reprofiling of topsoil, where necessary;*
- *Construction of a new warehouse unit, providing 33,595 sqm Gross External Area (GEA) for B1c (light industry appropriate in a residential area), B2 (general industrial) and B8 (storage & distribution) uses (Unit 2);*
- *Construction of 8 new smaller units (Units 3-7; 14-16), providing a total of 29,659 sqm GEA for B1c (light industry appropriate in a residential area), B2 (general industrial) and B8 (storage & distribution) uses;*

Outline Component:

- *Construction of up to 72,635 sqm GEA for employment uses (B1c (light industry appropriate in a residential area), B2 (general industrial) and B8 (storage & distribution) uses), ancillary retail/drive thru facilities and potential for a hotel and petrol filling station (A1, A3, C1 or sui generis). The overall quantum of A1, A3, C1 or sui generis use would not exceed 16,150 sqm GEA;*
- *The proposed buildings will be up to 28.5m in height above ground level;*

Site Wide

- *Access and parking provision, including new access junctions, internal roads, service yards and car and HGV parking. Two new junctions are proposed (in detail) providing vehicular access, as well as cycle and pedestrian access, from Bryn Lane/Industrial Estate Road with an additional access road for a substation. Car parking spaces, HGV trailer spaces and HGV lorry spaces are proposed across the application site;*
 - *Retention and enhancement of some existing on-site green spaces and provision of landscaping around the application site; and*
 - *Implementation of drainage/attenuation measures.*
3. eDNA surveys, to establish the presence or absence of great crested newts (GCN), and HSI assessments, to determine the suitability of waterbodies to support GCN, have been undertaken on 14 waterbodies within 500m of the site. Surveys were undertaken within the appropriate season and under the recommended conditions, so no survey limitations were encountered.

4. The surveys are required to establish whether GCN are present on or within influencing distance of the site.
5. Several historic records of GCN were found within 2 km of the site.
6. A HSI assessment was undertaken on all accessible ponds. The ponds ranged from having Poor to Excellent suitability to support GCN.
7. eDNA sampling was also undertaken on all ponds holding water, to assess whether GCN are present within any of the ponds. GCN presence was detected in two of the seven on-site ponds (ponds P1 and P2) and one of the seven off-site ponds (pond P9).
8. A licence from Natural Resources Wales will be required to facilitate any future development proposals. Following discussions with Natural Resources Wales it has been agreed that the use of eDNA and historic data will be acceptable to support the planning application.

2.0 Introduction

2.1 TEP was commissioned by Net World Sports in October 2021 to undertake eDNA and HSI surveys of waterbodies within 500 m of land known as the land north of Bryn Lane in Wrexham, North Wales (hereby referred to as "the site"). Ecological surveys are required to support an Environmental Statement that will inform proposals for a commercial development.

2.2 The proposed development is commercial in nature and encompasses:

Detailed Component:

- *Demolition of existing buildings, site clearance and preparation works, including removal of vegetation and reprofiling of topsoil, where necessary;*
- *Construction of a new warehouse unit, providing 33,595 sqm Gross External Area (GEA) for B1c (light industry appropriate in a residential area), B2 (general industrial) and B8 (storage & distribution) uses (Unit 2);*
- *Construction of 8 new smaller units (Units 3-7; 14-16), providing a total of 29,659 sqm GEA for B1c (light industry appropriate in a residential area), B2 (general industrial) and B8 (storage & distribution) uses;*

Outline Component:

- *Construction of up to 72,635 sqm GEA for employment uses (B1c (light industry appropriate in a residential area), B2 (general industrial) and B8 (storage & distribution) uses), ancillary retail/drive thru facilities and potential for a hotel and petrol filling station (A1, A3, C1 or sui generis). The overall quantum of A1, A3, C1 or sui generis use would not exceed 16,150 sqm GEA;*
- *The proposed buildings will be up to 28.5m in height above ground level;*

Site Wide

- *Access and parking provision, including new access junctions, internal roads, service yards and car and HGV parking. Two new junctions are proposed (in detail) providing vehicular access, as well as cycle and pedestrian access, from Bryn Lane/Industrial Estate Road with an additional access road for a substation. Car parking spaces, HGV trailer spaces and HGV lorry spaces are proposed across the application site;*
- *Retention and enhancement of some existing on-site green spaces and provision of landscaping around the application site; and*
- *Implementation of drainage/attenuation measures.*

Site Description

2.3 The site (central grid reference SJ 38614 51101) is approximately 37.21 ha in size and is located to the east of Wrexham in North Wales. There are seven ponds within the site boundary and seventeen ponds within 500m of the site that are not separated by any major barriers such as main roads and rivers etc.

- 2.4 A review of mapping and satellite imagery identified one A-road, the A534 Wrexham Road, acting as a barrier to amphibian dispersal. This road is located approximately 900m north of the site.
- 2.5 The site boundary is illustrated in Figure 1.

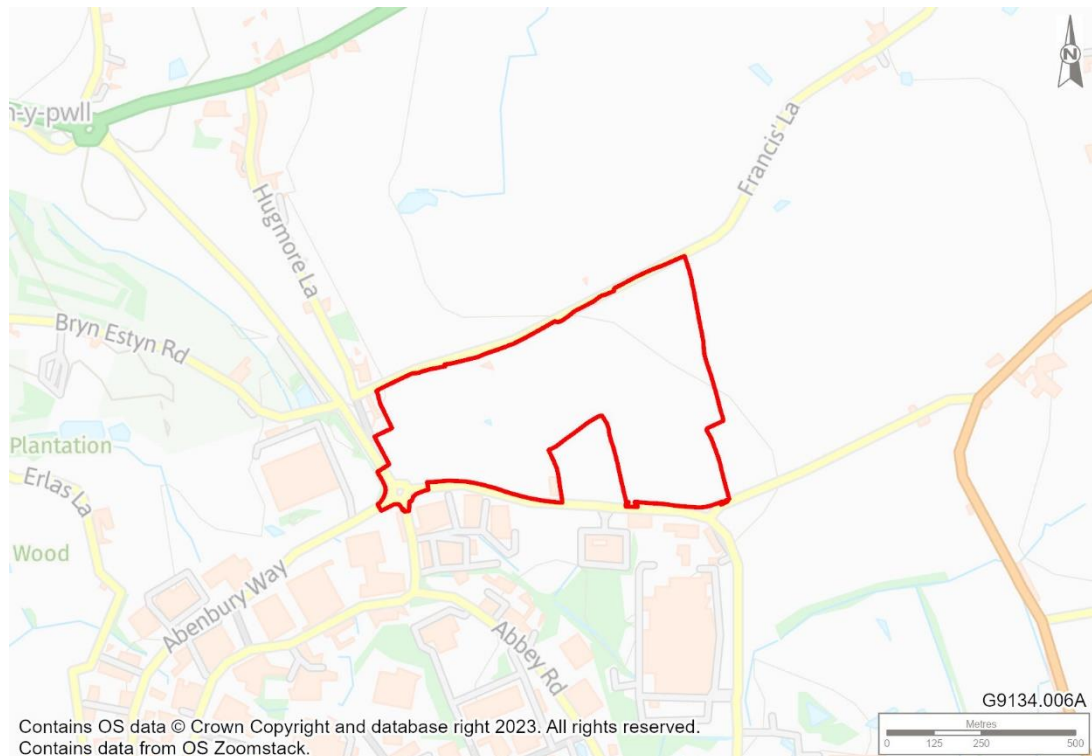


Figure 1: Site location within the context of the wider landscape

- 2.6 Environmental DNA (eDNA) sampling has been used to establish whether or not great crested newts *Triturus cristatus* are breeding within the site or in ponds within ranging distance of the site. Where GCN are present survey effort is designed to allow population size class to be assessed. This information is required to inform development proposals including the design of any mitigation and consideration of any relevant legislation and policies. Although surveys target GCN, any incidental records of other amphibian species, if encountered, will also be recorded and the results presented in this report.
- 2.7 All seven ponds within the site have been included in the field survey scope. Of these, all ponds were subject to HSI assessments, however four ponds (P3, P4a, P4b and P5a) were found to be dry and so were not subject to eDNA survey. Access was granted to all seven ponds on site.
- 2.8 A further seven ponds were identified within 500m of the site that are not separated by barriers to amphibian movement. Of these, one pond (P12) was found to no longer exist and could not be subject to any surveys. The remaining six ponds were all subject to HSI surveys, but one pond (P7) was found to be dry and so was not subject to eDNA survey. Access to survey these seven ponds was granted from third parties.

3.0 Method

Ecology Desk Study

- 3.1 Data requests were submitted to North Wales Environmental Information Service (COFNOD) in January 2022 to ascertain if any records of GCN are present within influencing distance of the site. The search zone included the site and within 2 km of the site boundaries.

Habitat Suitability Index (HSI) Assessments

- 3.2 A HSI assessment of seven ponds was undertaken by TEP Principal Ecologist Alun Evans on 3rd December 2021.
- 3.3 HSI is a standard measure of calculating the suitability of a pond to support breeding GCN, based on an assessment of ten characteristics (indices), including size, shading, depth and vegetation profile. The assessment generates a number between 0 and 1 for each of the indices which are combined to provide an overall assessment of a pond's suitability to support GCN on a categorical scale (Table 1). The assessment has not been designed for or tested on other waterbodies such as ditches.

Table 1: Pond habitat suitability index scoring

HSI Score	Suitability	Predicted GCN Occupancy of Ponds in each Category
< 0.5	Poor	3%
0.5 to 0.59	Below average	20%
0.6 to 0.69	Average	55%
0.7 to 0.79	Good	79%
> 0.8	Excellent	93%

eDNA

- 3.4 Environmental DNA (eDNA) sampling was undertaken at eight ponds (P1, P2, P5b, P6, P8, P9, P10 and P11) by licenced ecologists Angela McEwan (Licence No: 2015-16877-CLS-CLS) and Lee Greenhough (Licence No: 2015-18144-CLS-CLS).
- 3.5 Ponds P3, P4a, P4b, P5a and P7 were found to be dry and therefore were not suitable for this survey method. Furthermore, no evidence of pond P12 was found at the time of survey.

3.6 Sample collection was undertaken by TEP. Sample kits and analysis was provided by ADAS. Both organisations followed the relevant sections of the method set out in the DEFRA funded study endorsed by Natural England and Natural Resources Wales¹. In summary the sampling protocol is as follows:

- 20 samples were taken from around the entire perimeter of the waterbody.
- The surveyor stayed out of the water while taking the samples (extension poles were used in situations where open/sufficiently deep water was at a distance from the dry banks.
- Survey locations were distributed around the pond perimeter but micro-siting was used to select locations most likely to be used by GCN.
- At each sample location the water column was stirred prior to taking the sample but care was taken to avoid disturbing the sediment on the base of the pond.
- Once all 20 samples were taken, 15ml of the total sample were pipetted into each of the 6 sampling tubes, whilst ensuring that the water in the sample bag was mixed before taking each 15ml sample and that only one sample tube was opened at any one time.
- At all times the surveyor ensured that the risk of contaminating the sampling equipment was minimised by avoiding the placement of the ladle or pipette on the ground or on any otherwise potentially contaminated surfaces and by changing gloves between the initial sampling stage and the pipetting stages of the method.

Chain of custody

3.7 On receipt from ADAS the sampling kits were registered on a central database using the unique bar codes. Immediately prior to survey, sampling kits were issued to surveyors with individual Sample Forms using the unique bar code as identification. The site name and date of issue was also recorded on this form (and on the central database). Once in the field and at the ponds, the surveyor confirmed that the appropriate field survey sheet was being completed by checking the bar code on the box and double checking the corresponding bar codes on the sample tubes. The surveyor then filled in the date of survey and the pond ID number (as well as other information relating to survey conditions) on the Sample Form.

3.8 On returning to the office the Sample Forms were signed to confirm for each sample who received the samples and checked them into the fridge and the temperature of the fridge. The pond IDs on each form were checked against a site map confirming which ponds had been sampled and this map was stored with the Sample Forms. All this information was also recorded on the central database. The sample preserving tubes were stored in a fridge until the morning of collection by the courier. The Sample Forms and the central database were updated to confirm the date of collection by the courier.

¹: Biggs et al 2014. Analytical and methodological development for improved surveillance of the Great Crested Newt. Defra Project WC1067. Freshwater Habitats Trust: Oxford

- 3.9 The unique bar codes were used by ADAS to report results. All results were recorded in the central database by one member of staff and cross checked by a second member of staff before issuing to the project leader for review.

Qualifications

- 3.10 TEP Associate Director (Ecology) Elizabeth Seal underwent training on the eDNA sampling method with Dr Jeremy Biggs of the Freshwater Habitats Trust² on 11th April 2014. A copy of the certificate of this training can be provided on request. Following this Elizabeth devised a TEP internal training course covering theoretical and field based modules on eDNA sampling method, biosecurity measures and record keeping procedures. Only those TEP ecologists with GCN survey licences who have successfully undertaken this course are tasked with eDNA sampling.

Summary

- 3.11 An overview of the survey methods employed at each pond is presented in Table 2.

Table 2: Summary of field survey methods

Pond ID	Survey method used at pond	
	HSI Assessment	eDNA Survey
P1	Yes	Yes
P2	Yes	Yes
P3	Yes	No (Dry)
P4a	Yes	No (Dry)
P4b	Yes	No (Dry)
P5a	Yes	No (Dry)
P5b	Yes	Yes
P6	Yes	Yes
P7	Yes	No (Dry)
P8	Yes	Yes
P9	Yes	Yes
P10	Yes	Yes
P11	Yes	Yes
P12	No evidence of pond	

² Dr Briggs authored the 2014 DEFRA funded report on the eDNA survey method for great crested newts.

4.0 Results

Ecology Desk Study

- 4.1 The data search found 161 GCN records and 19 common toad records within 2km of the site. GCN records were identified within the site boundaries, and the closest record of common toad was recorded approximately 530m southeast of the site. Further details are available in the Ecology Desk Study (TEP Report Ref: 9134.002).

Habitat Suitability Index (HSI) Assessments

- 4.2 Pond descriptions and photographs are provided in Table 3 and the results of the HSI assessment surveys are presented in Table 4.
- 4.3 The suitability of ponds within the site to support GCN ranged from Poor to Excellent.

Table 3: Pond descriptions and photos

Pond Ref	Description and grid reference	Photograph
P1	SJ 38734 50924 A circular pond within an agricultural improved pasture. Willows and reed mace are present within the pond margins.	
P2	SJ 38821 51373 A circular pond in the centre of an agricultural grassland/pasture. Willows are growing along one edge and sedges are present in the margins.	

Pond Ref	Description and grid reference	Photograph
P3	SJ 38111 51119 A dry pond	
P4a	SJ 38300 51070 A dry pond, next to P4b, in a willow copse at the edge of an agricultural pasture. A hedgerow runs adjacent.	
P4b	SJ 38310 51090 A dry pond, next to P4a, in a willow copse at the edge of an agricultural pasture. A hedgerow runs adjacent.	
P5a	SJ 38470 51140 A dry pond in a woodland copse within an agricultural improved pasture. A hedgerow runs adjacent to the pond.	

Pond Ref	Description and grid reference	Photograph
P5b	SJ 38480 51130 A near-dry pond in a woodland copse within an agricultural improved pasture. A hedgerow runs adjacent to the pond.	
P6	SJ 38588 50936 A large pond within an area of agricultural grassland. Surrounded by tall ruderal and occasional willows.	
P7	SJ 38561 51412 A dry pond that likely holds water over winter, within a managed lawn area adjacent to Francis' Lane. A ditch and hedgerow run adjacent.	
P8	SJ 38514 51561 A circular pond underneath a hedgerow. Willow is present along one side and the other is disturbed by grazing.	

Pond Ref	Description and grid reference	Photograph
P9	SJ 38726 51620 A circular pond within the corner of an agricultural field, adjacent to the hedgerow. The pond is completely surrounded by willows, with some growing within the pond.	
P10	SJ 39037 51485 A circular pond within the middle of a field. The pond is disturbed by cattle and there is no vegetation in or around the margins, however a single willow is present in the centre.	
P11	SJ 39054 51243 A circular pond in a woodland copse in the middle of an agricultural pasture grazed by cattle.	
P12	No evidence of pond	

Table 4: HSI assessment result

Pond Ref	SI1 Location		SI2 Pond Area		SI3 Permanence		SI4 Water Quality		SI5 Shade		SI6 Waterfowl		SI7 Fish		SI8 Pond Density		SI9 Terrestrial Habitat		SI10 Macrophyte Cover		Overall HSI	
	Measure	Score	Measure	Score	Measure	Score	Measure	Score	Measure	Score	Measure	Score	Measure	Score	Measure	Score	Measure	Score	Measure	Score	HSI	Suitability
P1	A	1	550	1	Never	0.9	Moderate	0.67	30	1	Absent	1	Possible	0.67	30	1	Poor	0.33	50	0.8	0.80	Excellent
P2	A	1	350	0.7	Never	0.9	Moderate	0.67	5	1	Absent	1	Absent	1	38	1	Poor	0.33	20	0.5	0.77	Good
P3	A	1	250	0.5	Sometimes	0.5	Moderate	0.67	10	1	Absent	1	Absent	1	18	1	Poor	0.33	70	1	0.75	Good
P4a	A	1	50	0.1	Annually	0.1	Poor	0.33	100	0.2	Absent	1	Absent	1	21	1	Moderate	0.67	0	0.3	0.41	Poor
P4b	A	1	50	0.1	Annually	0.1	Poor	0.33	100	0.2	Absent	1	Absent	1	21	1	Moderate	0.67	0	0.3	0.41	Poor
P5a	A	1	50	0.1	Annually	0.1	Poor	0.33	50	1	Absent	1	Absent	1	29	1	Moderate	0.67	0	0.3	0.48	Poor
P5b	A	1	100	0.2	Annually	0.1	Poor	0.33	80	0.6	Absent	1	Absent	1	29	1	Moderate	0.67	0	0.3	0.49	Poor
P6	A	1	600	1	Never	0.9	Poor	0.33	15	1	Minor	0.67	Possible	0.67	61	1	Poor	0.33	25	0.55	0.69	Average
P7	A	1	50	0.1	Annually	0.1	Poor	0.33	90	0.4	Absent	1	Absent	1	37	1	Moderate	0.67	0	0.3	0.44	Poor
P8	A	1	50	0.1	Sometimes	0.5	Moderate	0.67	80	0.6	Minor	0.67	Possible	0.67	34	1	Moderate	0.67	10	0.4	0.55	Below average



Pond Ref	SI1 Location		SI2 Pond Area		SI3 Permanence		SI4 Water Quality		SI5 Shade		SI6 Waterfowl		SI7 Fish		SI8 Pond Density		SI9 Terrestrial Habitat		SI10 Macrophyte Cover		Overall HSI	
P9	A	1	50	0.1	Annually	0.1	Bad	0.01	100	0.2	Minor	0.67	Possible	0.67	37	1	Moderate	0.67	0	0.3	0.27	Poor
P10	A	1	400	0.8	Annually	0.1	Bad	0.01	15	1	Minor	0.67	Absent	1	38	1	Poor	0.33	0	0.3	0.37	Poor
P11	A	1	50	0.1	Sometimes	0.5	Poor	0.33	100	0.2	Minor	0.67	Possible	0.67	38	1	Poor	0.33	0	0.3	0.41	Poor

eDNA

- 4.4 The results of the eDNA surveys are presented in Table 5. GCN eDNA was identified in the on-site ponds P1 and P2, and the off-site pond P9. Ponds P5b and P10 returned indeterminate results for GCN eDNA. No GCN eDNA was identified in any of the other ponds during these surveys.

Table 5: eDNA survey results

Pond Ref	Survey Date	Surveyors	Score	GCN Present? (Y/N)
P1	20/06/2022	A McEwan	3 / 12	Y
P2	21/06/2022	A McEwan	2 / 12	Y
P3	Not surveyed – dry			
P4a	Not surveyed – dry			
P4b	Not surveyed – dry			
P5a	Not surveyed – dry			
P5b	20/06/2022	A McEwan	Indeterminate	
P6	20/06/2022	A McEwan	0 / 12	N
P7	Not surveyed – dry			
P8	21/06/2022	A McEwan	0 / 12	N
P9	21/06/2022	A McEwan	2 / 12	Y
P10	21/06/2022	A McEwan	Indeterminate	
P11	20/06/2022	A McEwan	0 / 12	N
P12	Not surveyed – no evidence of pond			

Results Summary

- 4.5 Table 6 and Drawing G9134.034 summarises the amphibian survey results.
- 4.6 No incidental evidence of common amphibian species such as common toad was found during the HSI or eDNA surveys.

Table 6: Summary of pond survey results

TEP Pond Ref	HSI Category	eDNA Survey
P1	Excellent	Present

TEP Pond Ref	HSI Category	eDNA Survey
P2	Good	Present
P3	Good	Not surveyed - dry
P4a	Poor	Not surveyed - dry
P4b	Poor	Not surveyed - dry
P5a	Poor	Not surveyed - dry
P5b	Poor	Indeterminate
P6	Average	Absent
P7	Poor	Not surveyed - dry
P8	Below average	Absent
P9	Poor	Present
P10	Poor	Indeterminate
P11	Poor	Absent
P12	Not surveyed – no evidence of pond	

5.0 Further Requirements

- 5.1 Ponds P5b and P10 returned indeterminate results for GCN eDNA, therefore the presence of GCN in these ponds cannot be ruled out. Indeterminate results can be caused by a variety of factors, including the water chemistry or the presence of high levels of sediment in samples, both of which can interfere with the DNA extraction process. Additional sampling of these ponds could be undertaken to determine the presence/absence of GCN. However, it has already been established that GCN are present in onsite and offsite ponds and Natural Resources Wales have agreed to the assumption that a large GCN population is present within the site, therefore additional surveys are not required.
- 5.2 As ponds P1, P2 and P9 tested positive for GCN eDNA, a licence from Natural Resources Wales will be required to facilitate any future development proposals. Following discussions with Natural Resources Wales it has been agreed that the use of eDNA and historic data will be acceptable to support the planning application.
- 5.3 GCN surveys are valid for at least 2 survey seasons and potentially 4 years or more depending on the specific use of the data, local conditions and the potential impact predicted on GCN. When data is greater than 2 years old advice should be sought from an appropriately experienced ecologist.

Licensing

- 5.4 GCN have been recorded at ponds P1, P2 and P9 and are therefore likely to be affected by development proposals at the site. A Natural Resources Wales license will be required to legally permit works on site.
- 5.5 Traditional EPS licencing will be required. Under a traditional EPS licence, mitigation for impacts on GCN will be required. The impacts of the proposed development and proposed mitigation are assessed in the accompanying ES Chapter (TEP Report Ref: 9134.011).

DRAWINGS

G9134.034 - Great Crested Newt Survey Results



KEY

- Site boundary
- Great Crested Newt Survey Results**
- Pond with negative eDNA result
- Pond with positive eDNA result
- Pond with indeterminate eDNA result
- Dry pond
- Pond no longer in situ

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Site Map

Rev	Description	Drawn	Approved	Date



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Project
Land North of Bryn Lane, Wrexham

Title
Great Crested Newt Survey Results

Drawing Number
G9134.034

Drawn	Checked	Approved	Scale	Date
SP	BJ	PP	1:4,054 @ A3	25/04/2023



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