Elton Reservoir, Bury

GM Allocation 7

GREAT CRESTED NEWT SURVEYS 2017

March 2019

[ERAP (Consultant Ecologists) Ltd ref: 2017-001c]

ERAP (Consultant Ecologists) Ltd
49a Manor Lane
Penwortham
Preston
Lancashire
PR1 0TA

Tel: 01772 750502

mail@erap.co.uk
www.erap.co.uk

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Document Control

Reporting	Personnel	Date
Author	Chris Schofield B.Sc. (Hons) M.Sc. GradCIEEM Graduate Ecologist	1st August 2017
Signature(s)		
Checked by	Victoria Burrows B.Sc. (Hons) M.Sc. CEnv MCIEEM	27th August 2017
Revised and issued as a draft by	Victoria Burrows	29th August 2017
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SUMMARY

Introduction and Scope

i. The Elton Reservoir area (the 'site') covers an area of approximately 248 hectares. Examination of aerial imagery, OS maps and a site walkover has identified 56 ponds within a 500 metre (m) radius of the site.

ii. Comprehensive great crested newt (GCN) presence / absence surveys (and population size class assessment surveys, where necessary) were carried out at 47 ponds within the site and within an unobstructed 500m radius of the site between 2015 and 2017.

iii. The surveys were carried out by appropriately experienced and licensed surveyors and in accordance with the standard guidance presented in the *Great Crested Newt Mitigation Guidelines* (English Nature, 2001). The scope included the survey for great crested newt (*Triturus cristatus*) and other amphibian species (common toad (*Bufo bufo*), common frog (*Rana temporaria*), smooth newt (*Lissotriton vulgaris*) and palmate newt (*Lissotriton helveticus*)).

iv. No significant survey limitations occurred.

Results

v. GCN presence has been confirmed at eight ponds, within the site, namely Ponds 4, 18, 21, 22, 23, 24, 25a and 25b.

vi. Ponds 22 and 24, with peak counts of 20 and 42 respectively, support *Medium* populations of GCN. Ponds 22 and 24 are two of three ponds which were created as mitigation ponds during the construction of the East Lancashire Crematorium at the west of the site.

vii. Ponds 25a and 25b support *Medium* and *Small* populations of GCN, respectively.

viii. A *Small* population of GCN was detected at Pond 4, which lies over 900 metres north-east of Ponds 25a and 25b, and approximately 1.3km north-east of Pond 24. Considering this distance, it is likely that the population at Pond 4 is isolated from the metapopulation described above.

ix. Common toad (a Priority Species) was detected at Ponds 2 and 4 at the north of the site.

Assessment and Conclusion

x. The GCN survey data have been used to inform the working version of the Technical Masterplan, including the application of the following principles:

- Avoidance of the loss of any of the identified GCN breeding ponds;
- Avoidance of any built development, including roads, within 50 metres of a breeding pond;
- Avoidance of severance of habitats between pond clusters;
- Avoidance of fragmentation of terrestrial habitat (where feasible); and
- Identification of areas suitable for enhancement of habitats and long-term management to be secured by the development proposals.

xi. Provisional appropriate mitigation, compensation and enhancement opportunities have been outlined, which aim to inform the detailed site layout discussions and design. More detailed recommendations and specific mitigation measures appropriate to individual development parcels and in accordance with current Natural England guidance and policies will be prepared as the proposals evolve.

xii. In conclusion, the comprehensive GCN surveys and assessment indicate that, in the presence of appropriate mitigation, development at the site can be achieved in accordance with wildlife and planning legislation. The development proposals provide an opportunity to significantly enhance the habitats available for GCN, facilitate breeding and maintain the favourable conservation status of GCN at the site in the long-term.

1.0 INTRODUCTION

1.1 Introduction and Scope

1.1.1 ERAP (Consultant Ecologists) Ltd was commissioned by Peel Holdings (Land and Property) Limited to carry out great crested newt (GCN) presence/absence surveys, and where necessary population size class assessments, at ponds at Elton Reservoir area, Bury (hereafter referred to as the 'site').

1.1.2 The site covers an area of approximately 248 hectares and occupies land between Bury and Radcliffe, Greater Manchester. The site is bound by the A58 (Bury and Bolton Rd) to the north, the Metrolink line to the east and south and residential development to the west. The Ordnance Survey (OS) grid reference at the centre of the site is SD 786 089.

1.1.3 The surveys were requested in connection with proposals to promote the site for development within the Greater Manchester Spatial Framework (GMSF) and inform the preparation of a masterplan to progress to a future planning application.

1.2 Objectives

1.2.1 The objectives of the surveys and report are to:

a. Apply recognised survey methods to detect presence / absence of native amphibian species at the relevant ponds in the breeding season;

b. If present, determine the population size class of GCN and determine whether breeding has occurred;

c. Use the data to identify potential ecological constraints on the proposals and to inform the preparation of an ecology-led technical masterplan for the development of the site; and

d. Outline the scope and principles of mitigation and enhancements which may be necessary in accordance with wildlife legislation, planning policy and good practice.

2.0 METHOD OF SURVEY

2.1 Desktop Study

2.1.1 A desktop study was undertaken with the Greater Manchester Local Record Centre (GMLRC). Known records of GCN within the site and within a two kilometre radius of the site boundary were obtained.

2.1.2 Previous surveys conducted by ERAP (Consultant Ecologists) Ltd (and ERAP Ltd) in the area were also consulted for information; these surveys are reported at:

a. ERAP Ltd. 2012 (2012/021) *Proposed Residential Development at Spen Moor, Bury– Ecological Report to inform the Planning Application*, March 2012.

b. ERAP Ltd. 2015 (2014-299b) *Land at East of Warwick Road and Coventry Road, Radcliffe – Great Crested Newt Survey and Ecological Enhancement Strategy*, July 2015.

c. ERAP Ltd. 2016 (2014-069e) *Land at Spen Moor, Bury – 2016 Ecological Monitoring Surveys*, December 2016.

d. ERAP Ltd. 2016 (2014-069f) *Land at Spen Moor, Bury – 2016 Ecological Monitoring Surveys*, December 2016.

2.2 Identification of Ponds and Survey Area

2.2.1 In accordance with current Natural England guidance (Natural England, 2015) all ponds within an unobstructed 500 metres of a site should be considered for their suitability to support breeding GCN. The potential of the proposed development to impact on GCN population(s) whose breeding ponds are within 500 metres must be considered.

2.2.2 Examination of aerial imagery, OS maps and a site walkover have identified 32 ponds within the site boundary, a further 15 ponds within 250 metres of the site boundary and a further 9 ponds between 250 metres and 500 metres from the site; a total of 56 ponds.

2.2.3 The requirement for further survey at each pond was then assessed through consideration of the distance of the ponds from the site, the presence of dispersal barriers to GCN movements between ponds and the site, and the presence of other ponds which may form metapopulations and/or alter the influence of the proposed development on ponds at a greater distance.

2.2.4 **Table 2.1**, below, presents the details of the ponds within the site, and the ponds within a 500 metre radius which do not lie beyond significant dispersal barriers to GCN movements, such as major roads and extensive developed areas. This table includes ponds which appear on OS maps but were found to be dry upon surveying, and also ponds which do not appear on OS maps but were detected through aerial imagery and/or during a walkover of the site and the surrounds. Refer to **Figure 9.1** for all pond locations.

Table 2.1: Ponds Subject to Further Assessment

Pond Number	OS Grid Reference	Distance from Site Boundary	Location (refer to Figure 9.1)
1	SD 7919 0983	90m north-east	Hollow to the north-east of the site.
2	SD 7906 0986	Within site	Field at north of site adjacent to NHS hospital.
3	SD 7895 0987	Within site	Within area of scrub to the north of Elton reservoir.
4	SD 7882 0983	Within site	Within a field to the north of Elton reservoir.
5	SD 7921 0892	Within site	Within Elton Goyt at the east of the site.
6	SD 7919 0887	Within site	Within Elton Goyt at the east of the site.
7	SD 7918 0883	Within site	Within Elton Goyt at the east of the site.
8	SD 7901 0868	Within site	At the boundary of Elton Goyt at the east of the site.
9	SD 7923 0876	Within site	Field to the east of the Manchester, Bolton and Bury canal.
10	SD 7908 0817	Within site	To the east of the Manchester, Bolton and Bury canal.
11	SD 7893 0809	Within site	Field to the east of the Manchester, Bolton and Bury canal.
12	SD 7893 0797	Within site	Field to the east of the Manchester, Bolton and Bury canal.
13	SD 7879 0783	Within site	Within area of rushes at the south of the site.
14	SD 7870 0778	Within site	Within patch of scrub at the south of the site.
15	SD 7889 0813	Within site	Within a field at the south of the site.
16	SD 7870 0831	Within site	Within a field at the south of the site.
17	SD 7852 0832	Within site	Within a field at the south of the site.
18	SD 7837 0862	Within site	Field edge to the north of the crematorium at the west of the site.
19	SD 7829 0855	Within site	Field edge to the north of the crematorium at the west of the site.
20	SD 7827 0853	Within site	Field edge to the north of the crematorium at the west of the site.
21	SD 7816 0847	Within site	Within a field at the west of the site.
22	SD 7834 0853	Within site	Within the grounds of the crematorium at the west of the site.
23	SD 7839 0858	Within site	Within the grounds of the crematorium at the west of the site.
24	SD 7841 0860	Within site	Within the grounds of the crematorium at the west of the site.
25	SD 7869 0892	Within site	Within a marsh area at the southern tip of Elton reservoir.
26	SD 7860 0902	Within site	Within a field to the south-west of Elton reservoir.
27	SD 7865 0937	Within site	At a field edge to the west of Elton reservoir.
28	SD 7854 0936	Within site	At a field edge to the west of Elton reservoir.
29	SD 7839 0935	Within site	At a field edge to the west of Elton reservoir.
30	SD 7830 0924	Within site	Within a field to the west of Elton reservoir.
31	SD 7788 0941	Within site	Within a field at the north-west of the site.
32	SD 7789 0946	Within site	Within a field at the north-west of the site.
33	SD 7812 0954	50m north	Within the ongoing 'Tudor Grange' development to the north
34	SD 7800 0956	40m north	Within a field to the immediate north of the site.
35	SD 7799 0953	20m north	Within a field to the immediate north of the site.
36	SD 7802 0953	20m north	Within a field to the immediate north of the site.
37	SD 7813 0840	5m west	Within belt of scrub to the west of the site.
38	SD 7812 0838	20m west	Within belt of scrub to the west of the site.
39	SD 7802 0839	65m west	Within belt of scrub to the west of the site.
40	SD 7794 0841	175m west	Within belt of scrub to the west of the site.
41	SD 7790 0842	215m west	Within belt of scrub to the west of the site.
42	SD 7784 0844	260m west	Within belt of scrub to the west of the site.
43	SD 7788 0839	240m west	Within belt of scrub to the west of the site.
44	SD 7786 0837	260m west	Within belt of scrub to the west of the site.
45	SD 7812 0823	150m west	Within belt of scrub to the west of the site.
46	SD 7810 0822	175m west	Within belt of scrub to the west of the site.
47	SD 7845 0850	Within site	Within the grounds of the crematorium at the west of the site.

2.3 Habitat Suitability Index Assessment

2.3.1 All ponds identified at **Table 2.1** above were assessed using the Habitat Suitability Index (HSI) (Oldham, et al., 2000) during the walkover assessment by Chris Schofield B.Sc. (Hons) M.Sc. GradCIEEM on the 28th March 2017. The conditions on this date were clear, sunny and 4°C at 8am with a light breeze (Beaufort Scale 2), becoming overcast and rising to 8°C in the afternoon.

2.3.2 The ponds were examined with reference to the ten HSI scoring criteria, which are: **SI_1**: Geographical location; **SI_2**: Pond area; **SI_3**: Pond drying; **SI_4**: Water quality (as indicated by the diversity of aquatic plants and invertebrates); **SI_5**: Shade; **SI_6**: Waterfowl; **SI_7**: Fish; **SI_8**: Abundance of other ponds within a one kilometre radius; **SI_9**: Quality of terrestrial habitat; and **SI_{10}**: Macrophyte cover (i.e. aquatic and emergent plants). The survey was conducted in accordance with *ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index. Amphibian and Reptile Groups of the United Kingdom* (ARG UK, 2010).

2.3.3 The assessment followed guidance in relation to interpreting HSI scores, following the categorical scale shown at **Table 2.2**, below.

Table 2.2: Pond Habitat Suitability Index (HSI) Categories

HSI Score	Pond Suitability for GCN
<0.5	Poor
0.5 – 0.59	Below average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

2.4 Assessment of Terrestrial Habitat

2.4.1 During the walkover survey, an assessment of the terrestrial habitat within the site for GCN was conducted, as informed by the *Great Crested Newt Mitigation Guidelines* (GCNMG) (English Nature, 2001) and the *Great Crested Newt Conservation Handbook* (Langton, 2001).

2.4.2 Habitats present within the site were assessed for their value to support foraging, sheltering and hibernating GCN. Favourable habitats can comprise rough grassland, scrubland, woodland and sites with underground crevices or cracks, such as mammal holes, voids in tree stumps or banks, and refugia such as rock piles or dead wood.

2.5 GCN Presence/Absence Survey and Population Size Class Assessment

Introduction

2.5.1 Following the above assessments, it was considered that further surveys/assessment to determine the presence or absence of GCN at all ponds identified at **Table 2.1** was required to meet the survey objectives. The initial survey methods to be employed at each pond was determined through consideration of accessibility, availability of recent data and the condition of the pond (as identified during the walkover assessment in March 2017).

2.5.2 A flexible approach was required, particularly in respect of ponds drying throughout the survey season meaning bottle trapping (as described below) could no longer be undertaken as some ponds became too shallow. Where possible, survey methods were substituted and supplemented where required with additional methods to ensure compliance with the GCNMG (English Nature, 2001). In some instances, ponds dried out entirely meaning no further surveys could be undertaken.

2.5.3 The licensed GCN presence/absence survey of the ponds commenced in April 2017.

Traditional Survey Methods

2.5.4 Following consideration of accessibility, conditions of the ponds and recent data availability, surveys were carried out at **Ponds 2 to 38** following the guidelines within the *GCNMG* (English Nature, 2001) and comprised application of the following methods:

a. **Torchlight searches:** This involved shining a powerful torch (Clulite CB2 and Clulite CLU10, both 1,000,000 candle power) into pond margins at night during suitable weather conditions (above 5°C), identifying the amphibian species and counting the number of each species of amphibian;

b. **Egg Search**: Submerged, emergent and water-margin vegetation, including the leaves of terrestrial plants that had fallen into the water, was checked in daylight for the presence of GCN eggs. The egg searches were used to determine presence or absence only; eggs were not counted because opening the leaves enclosing the eggs can expose the eggs and developing newt larvae to predators and to other threats. Care was taken at all times to ensure that the eggs were not left exposed or damaged;

c. **Bottle Trap Surveys**: Bottle traps constructed from two litre plastic bottles were set around the ponds at a spacing of one trap every 2 metres. An air bubble was always provided to ensure that newts and other amphibians did not drown. The traps were set and left overnight during suitable weather (above 5°C). The traps were emptied the following morning and all captured amphibians were recorded and returned to the pond;

d. **Terrestrial Searches**: In addition to the surveys of the aquatic habitats suitable debris throughout the site and the surrounding area (particularly in close proximity to the pond) was lifted and searched for the presence of amphibians; and

e. **Netting**: Long handled pond nets (20 millimetre in diameter with a three millimetre mesh size) were used for sampling the pond margins for amphibians where access was possible.

2.5.5 GCN surveys were conducted during suitable weather conditions (refer to **Table 7.2** at **Appendix 1**). Detected amphibians were identified to species level and sexed.

2.5.6 Licensed GCN surveys were co-ordinated by Victoria Burrows, Principal Ecologist. The surveys were completed by Marie and Aidan Pickering. Marie Pickering has a Natural England Class Survey Licence (Level 2), Registration Number 2015-16481-CLS-CLS.

2.5.7 All surveyors have extensive experience of the appropriate survey methodology, the identification of all British amphibian species and the specifications in the *GCNMG.*

2.5.8 Population size classes were determined using the criteria presented at Page 28 of the GCNMG, and as detailed at **Table 2.3** below.

Table 2.3: GCN Population Size Classes

Population Size Class	Maximum Population Count
Small	Up to 10
Medium	Between 11 and 100
Large	Over 100

2.6 Environmental DNA (eDNA) Analysis

2.6.1 Due to health and safety concerns and difficulties in accessing **Pond 1**, and as **Pond 47** (within the East Lancashire Crematorium) has a plastic lining and therefore would be unsuitable to insert bottle traps it was considered appropriate to utilise environmental DNA (eDNA) analysis at these two ponds.

2.6.2 Environmental DNA (eDNA) analysis can detect the presence or absence of GCN from pond water samples. Pond water samples were collected at Ponds 1 and 47 on 6th May 2017 by Marie Pickering and Aidan Pickering. Both surveyors have extensive experience of the methods involved.

2.6.3 The surveys were carried out in accordance with the sampling protocol in Appendix 5: Technical Advice Note for field and laboratory sampling of Great Crested Newt (*Triturus cristatus*) environmental DNA (DEFRA, 2014) that accompanies Defra's research project and are outlined below:

a. Twenty 30ml samples were taken from around the entire perimeter of the pond and areas most likely to be used by GCN were targeted, where possible, without entering the water;

b. Prior to taking the sample the water column was gently mixed at each sampling location but care was taken to avoid disturbing the sediment on the base of the pond;

c. Once all 20 samples had been taken, 15ml of the total sample were pipetted into each of the six sampling tubes containing ethanol ensuring the water in the sample bag was mixed prior to and taking each of the 15ml samples; and

d. The six sampling tubes were shaken to mix the sample and preservative.

2.6.4 At all times the surveyor ensured the sampling equipment avoided risk of contamination by not placing the ladle or pipet on the ground or otherwise contaminated surfaces and by changing gloves between the initial sampling and the pipetting stages of the method.

2.6.5 The equipment was purchased from SureScreen Scientifics and the collected samples were returned to them for qPCR laboratory analysis. It is confirmed that SureScreen Scientifics is taking part in the Natural England eDNA proficiency Testing (PT).

2.7 Previous Recent Data

2.7.1 Access to **Ponds 39** to **46** is difficult and hazardous due to the location of the ponds within the belts of dense scrub to the west of the site boundary. With difficulty, these ponds were accessed in 2015 in order to collect eDNA samples. Through inspection of this area during the March 2017 walkover it was considered conditions at these ponds and the surrounding area had not changed significantly since the 2015 surveys and that, for the purposes of informing this assessment, the 2015 data remain valid and no further survey was undertaken in 2017.

2.8 Survey Limitations

2.8.1 No significant survey limitations were encountered. As described above, if pond drying or other conditions affected the ability to carry out bottle trapping, for example, then this method of detection was substituted with an alternative method, such as netting.

3.0 RESULTS

3.1 Desktop Study

Records within the Site

3.1.1 The data search reported that there are 38 positive records of GCN presence within the site boundary. The most recent records of great crested newt for the site held by GMLRC are dated 2012.

3.1.2 All historic records within the site boundary are solely associated with the ponds within the Spen Moor Ponds SBI (Ponds 26, 27 and 31) at the north of the site and Marl Pits at Black Lane SBI (Ponds 18 to 24) at the west of the site. There are no known records of GCN in southern or eastern areas of the site. It is noted that many of the records are historic, with two of the records from 1905 and only seven of the 38 records from more recently than 2010.

3.1.3 In addition, GMLRC hold records of *absence* of GCN at ponds within Spen Moor Ponds SBI from 2012 onwards (also refer to the summary of the previous surveys conducted by ERAP (Consultant Ecologists) Ltd at the site, presented below).

3.1.4 There are 24 records of common toad (*Bufo bufo*), a Priority Species, within the site. These records are localised in certain areas, namely the Spen Moor Ponds SBI (Ponds 25 to 32), Marl Pits at Black Lane SBI (Ponds 18 to 24) and associated with the Wetland Near Radcliffe SBI (Ponds 13 and 14) at the southern of the site, to the south of the Manchester, Bolton and Bury Canal.

Records in the Wider Area

3.1.5 The local records centre holds 198 records of GCN in the two kilometre radius surrounding the site. Concentrations of records are present for Pond 33 approximately 50 metres north of the site, at Barracks Lodge SBI 500 metres north of the site and land far to the west of the site including the Wetlands & Meadows Near Coggra Fold SBI approximately 750 metres west of the site.

3.1.6 The data search reported 157 records of common toad for the two kilometre radius surrounding the site, with a fairly even distribution and no significant concentrations of records.

Previous Surveys Conducted by ERAP (Consultant Ecologists) Ltd (and ERAP Ltd)

Surveys Associated with Spen Moor

3.1.7 ERAP (Consultant Ecologists) Ltd has conducted survey and assessment, including previous and ongoing GCN monitoring surveys, in association with the ongoing 'Tudor Grange' Bellway Homes development adjacent to the northern boundary of the site. This area has been referred to as 'Spen Moor' in previous reports.

3.1.8 The monitoring surveys at Ponds 28 to 32 and Ponds 33 to 36 are on-going and are being carried out to satisfy the requirements of the Habitat Management Plan prepared for the approved housing development. Ponds 28 to 32 which lie within the site, and Ponds 33 to 36 lie outside the site boundary (refer to **Figure 9.1**). In 2016, the surveys confirmed the continued absence of GCN at Ponds 28 to 36 (ERAP Ltd., 2016).

3.1.9 During 2012, the presence of a small population of GCN was found at Pond 26 (ERAP Ltd., 2012). This pond has not been subjected to any more recent survey by ERAP (Consultant Ecologists) Ltd (until 2017).

Surveys Associated with Brook Bottom Farm

3.1.10 ERAP (Consultant Ecologists) Ltd conducted GCN presence / absence surveys and population size class assessments of Ponds 18 to 24 and Ponds 37 to 47 in 2015 in association with a proposed development at land east of Coventry Road and Warwick Road, previously referred to as 'Brook Bottom Farm'.

3.1.11 As summarised in **Table 2.3**, the 2015 surveys detected at small population of GCN at Ponds 18 and 21, and confirmed the presence and breeding (through identification of GCN eggs) at Ponds 22 to 24.

3.1.12 In addition, the 2015 surveys did not detect GCN (or GCN eDNA, where relevant) at Ponds 19 and 20, or at Ponds 37 to 47 (ERAP Ltd., 2015).

3.2 Habitat Suitability Index (HSI) Assessment Results

3.2.1 The results of the March 2017 Habitat Suitability Index (HSI) assessments of Ponds 1 to 47 are summarised at **Table 3.1** below. The raw data from these assessments and photos of each pond are appended at **Table 7.1**.

Table 3.1: Habitat Suitability Index (HSI) Assessment Results

Pond Reference	HSI Score	Pond Suitability for Breeding GCN
Pond 1	0.81	Excellent
Pond 2	0.71	Good
Pond 3	0.68	Excellent
Pond 4	0.78	Good
Pond 5	0.59	Below Average
Pond 6	0.67	Average
Pond 7	0.81	Excellent
Pond 8	0.56	Below Average
Pond 9	0.49	Poor
Pond 10	0.71	Good
Pond 11	0.41	Poor
Pond 12	0.40	Poor
Pond 13	0.79	Good
Pond 14	0.57	Below Average
Pond 15	0.42	Poor
Pond 16	0.51	Below Average
Pond 17	0.69	Average
Pond 18	0.67	Average
Pond 19	0.75	Good
Pond 20	0.59	Below Average
Pond 21	0.58	Below Average
Pond 22	0.73	Good
Pond 23	0.80	Excellent
Pond 24	0.81	Excellent
Pond 25	0.78	Good
Pond 26	0.69	Average
Pond 27	0.67	Average
Pond 28	0.83	Excellent
Pond 29	0.51	Below Average
Pond 30	0.51	Below Average
Pond 31	0.85	Excellent
Pond 32	0.68	Average
Pond 33	0.92	Excellent
Pond 34	0.68	Average
Pond 35	0.60	Average
Pond 36	0.68	Average
Pond 37	0.40	Poor
Pond 38	0.44	Poor
Pond 39	0.65	Average
Pond 40	0.47	Poor
Pond 41	0.72	Good
Pond 42	0.62	Average
Pond 43	0.53	Below Average
Pond 44	0.50	Below Average
Pond 45	0.77	Good
Pond 46	0.70	Good
Pond 47	0.60	Average

3.2.2 This assessment has indicated that eight ponds (Ponds 1, 2, 7, 23, 24, 28, 31 and 33) have *Excellent* suitability for breeding GCN, with a further 10 ponds (Ponds 2, 4, 10, 13, 19, 22, 25, 41, 45 and 46) having *Good* suitability for breeding GCN.

3.2.3 Seven ponds (Ponds 9, 11, 12, 15, 37, 38 and 40) are assessed as having *Poor* suitability for breeding GCN. In general, the suitability of these ponds for breeding GCN is reduced by annual drying of the ponds in the summer months and, in some cases, the small area of the ponds and the presence of waterfowl.

3.3 2017 Presence / Absence Surveys and Population Size Class Assessments

Great Crested Newt

3.3.1 A summary of the results of the 2017 presence / absence surveys and population size class assessments are detailed in **Table 3.2** below. The raw data are appended at **Table 7.2**.

Table 3.2: Summary of Results 2015 and 2017 GCN Surveys

Pond Reference	2015		2017		Population Size Class Assessment
	GCN Presence / Absence	Peak Count (on one survey date)	GCN Presence / Absence	Peak Count (on one survey date)	
Pond 1	-	-	Absent	0	-
Pond 2	-	-	Absent	0	-
Pond 3	-	-	Absent	0	-
Pond 4	**-**	**-**	**Present**	**1**	**Small**
Pond 5	-	-	Absent	0	-
Pond 6	-	-	Absent	0	-
Pond 7	-	-	Absent	0	-
Pond 8	-	-	Absent	0	-
Pond 9	-	-	Absent	0	-
Pond 10	-	-	Absent	0	-
Pond 11	-	-	Absent	0	-
Pond 12	-	-	Absent	0	-
Pond 13	-	-	Absent	0	-
Pond 14	-	-	Absent	0	-
Pond 15	-	-	Absent	0	-
Pond 16	-	-	Absent	0	-
Pond 17	-	-	Absent	0	-
Pond 18	**Present**	**1**	**Present**	**3**	**Small**
Pond 19	Absent	0	Absent	0	-
Pond 20	Absent	0	Absent	0	-
Pond 21	**Present**	**7**	**Present**	**1**	**Small**
Pond 22	**Present**	**Egg only**	**Present**	**20**	**Medium**
Pond 23[1]	**Present**	**Egg only**	**Present**	0	Not possible to determine
Pond 24	**Present**	**Egg only**	**Present**	**42**	**Medium**
Pond 25a[2]	**-**	**-**	**Present**	**11**	**Medium**
Pond 25b[2]	**-**	**-**	**Present**	**5**	**Small**
Pond 26	-	-	Absent	0	-
Pond 27	-	-	Absent	0	-
Pond 28	-	-	Absent	0	-
Pond 29	-	-	Absent	0	-
Pond 30	-	-	Absent	0	-
Pond 31	-	-	Absent	0	-
Pond 32	-	-	Absent	0	-
Pond 33	-	-	Absent	0	-
Pond 34	-	-	Absent	0	-
Pond 35	-	-	Absent	0	-
Pond 36	-	-	Absent	0	-
Pond 37	Absent	0	Absent	0	-
Pond 38	Absent	0	Absent	0	-
Pond 39	Absent	0	-	-	-
Pond 40	Absent	0	-	-	-
Pond 41	Absent	0	-	-	-
Pond 42	Absent	0	-	-	-
Pond 43	Absent	0	-	-	-
Pond 44	Absent	0	-	-	-
Pond 45	Absent	0	-	-	-
Pond 46	Absent	0	-	-	-
Pond 47	Absent	0	Absent	0	-

[1] GCN eggs but no adults were detected at Pond 23.
[2] Pond 25 had dried into two separate distinct ponds by the time the surveys commenced in April 2017. The two ponds were referenced as Ponds 25a and 25b.

3.3.2 The 2017 surveys have confirmed the presence of breeding great crested newt at eight of the 47 ponds examined, namely Ponds 4, 18, 21, 22, 23, 24, 25a and 25b. In accordance with the *Great Crested Newt Mitigation Guidelines* (English Nature, 2001), Ponds 22, 24 and 25a support a *Medium* population, whereas Ponds 4, 18, 21 and 25b support a *Small* population.

3.3.3 Although no adult GCN were detected at Pond 23, GCN eggs were found confirming breeding at this pond; it is considered the population size is *Small* and that the actual numbers of newts at this pond falls below the threshold of detection by the traditional survey methods.

3.3.4 As illustrated at **Figure 7.2**, these results indicate the presence of GCN are restricted to:

a. Ponds associated with the Marl Pits at Black Lane SBI at the west of the site (ponds 18, 21,22, 23 and 24);

b. At Ponds 25a and 25b at the southern tip of Elton Reservoir (and south-east end of the Spen Moor Ponds SBI); and

c. To Pond 4 which is isolated within a field to the north-west of Elton Reservoir.

Other Amphibian Species

3.3.5 Although not the focus of the surveys, **Table 3.3** below details the incidental observation and/or trapping of other amphibian species during the surveys.

Table 3.3: Other Amphibian Species Detected

Amphibian Species	Number of Ponds Presence Confirmed	Pond References
Common toad (*Bufo bufo)*	2	Pond 2 and 4
Common frog (*Rana temporaria*)	7	Ponds 4, 15, 16, 26, 28, 33 and 36
Palmate newt (*Lissotriton helveticus*)	8	Ponds 2, 4, 10, 12, 13, 14, 15 and 33.
Smooth newt (*Lissotriton vulgaris*)	22	Ponds 2, 4, 6, 10, 12, 13, 14, 16, 21, 22, 23, 24, 25a, 25b, 26, 27, 28, 29, 31, 32, 33 and 36

3.3.6 Five amphibian species were not detected at any individual pond. Four species were detected at Pond 4.

3.4 Summary of Results

3.4.1 GCN presence has been confirmed at eight ponds, within the site, namely Ponds 4, 18, 21, 22, 23, 24, 25a and 25b.

3.4.2 The largest maximum counts were detected at Ponds 22 and 24, with peak counts of 20 and 42 respectively, which are *Medium* populations. Ponds 22 and 24 are two of three ponds which were created as mitigation ponds during the construction of the East Lancashire Crematorium at the west of the site. These mitigation ponds are likely significantly important to the maintenance of great crested newt at the site.

3.4.3 *Medium* and *Small* populations were detected at Ponds 25a and 25b, respectively, which lie between the southern tip of Elton Reservoir and the north of Withins Reservoir at the centre of the site. These ponds lie approximately 400 metres north-east of Pond 24, which is close enough that this population may be considered part of the same meta-population, although it is accepted Withins Reservoir lies directly between the ponds which newts would likely have to circumnavigate to disperse between Ponds 22 and 24 and Ponds 25a and 25b.

3.4.4 A *Small* population of GCN was detected at Pond 4, which lies over 900 metres north-east of Ponds 25a and 25b, and approximately 1.3km north-east of Pond 24. Considering this distance, it is likely that the population at Pond 4 is isolated from the metapopulation described above. An absence of GCN was confirmed at Ponds 1 to 3, which are the other ponds within the locality of Pond 4.

3.4.5 An absence of GCN was confirmed at the ponds at the east and south of the site (Ponds 5 to 17). An absence of GCN is also confirmed at the ponds at the north of the site (Ponds 26 to 36), at all ponds within the scrub corridors adjacent to the western boundary (Ponds 38 to 46), and at Ponds 19, 20, 23 and 47 associated with the East Lancashire Crematorium at the west of the site.

3.4.6 Common toad (a Priority Species) was detected at Ponds 2 and 4 at the north of the site.

4.0 IMPLICATIONS ON DEVELOPMENT AND RECOMMENDATIONS

4.1 Summary of Relevant Legislation

Protection of Species and Habitat

4.1.1 GCN is a European Protected Species listed on Annex IV of the *Habitats Directive* which means that member states are required to put into place a system of strict protection. Under Regulation 39 of Schedule 2 of the *Habitats Directive* it is an offence to:

- Deliberately capture or kill a GCN;
- Deliberately disturb a GCN;
- Deliberately take or destroy the eggs of a GCN; and
- To damage or destroy a breeding site or resting place of a GCN.

4.1.2 The GCN is also listed on Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) which makes it an offence to:

- Intentionally kill, injure or take a GCN;
- Possess or control any live or dead specimen or anything derived from a great crested newt;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by GCN, and
- To intentionally or recklessly disturb a GCN while it is occupying a structure or place which it uses for that purpose.

Licensing Procedure

4.1.3 If it is considered the proposed development activities would commit an offence in respect of the *Habitats Directive* and/or the *Wildlife and Countryside Act 1981* (as amended), the activities must only be carried out under a relevant Natural England derogation licence.

4.1.4 A Natural England EPSM licence can only be applied for once full planning permission has been obtained. The licence application must be accompanied by a method statement detailing the actions to be implemented to reduce the effect on great crested newt and their habitats.

4.1.5 In determining whether or not to grant a licence Natural England must apply the requirements of Regulation 55 of the Regulations and, in particular, the three tests set out in sub-paragraphs (2)(e), (9)(a) and (9)(b).

- ***Regulation 55(2)(e)*** *states:* a licence can be granted for the purposes of "*preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment*".
- ***Regulation 55(9)(a)*** *states:* the appropriate authority shall not grant a licence unless they are satisfied "*that there is no satisfactory alternative*".

- **Regulation 55(9)(b)** states: the appropriate authority shall not grant a licence unless they are satisfied "that the *action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range*."[1]

Priority Species

4.1.6 GCN, and common toad, are Priority Species as listed under Section 41 of the *Natural Environment and Rural Communities Act 2006* (Great Britain, 2006) which mean the species should be considered a material consideration by the local planning authority when determining a planning application.

4.2 Assessment of Impacts

Direct Impacts of Development Activities

Pre and Mid-development Impacts

4.2.1 Site preparation activities such as site investigation, site clearance, regrading and drainage works may impact on GCN and their habitats both before and during development

4.2.2 In the absence of mitigation, these works may lead to the destruction of habitats used by GCN and the injury and death of individual newts. These works may also create temporary habitats such as rubble piles or temporary pools which may attract newts to working areas of the site where they will be in danger of injury and/or death.

Long-term Habitat Loss

4.2.3 In the absence of mitigation measures, the proposed development activities may lead to loss of GCN aquatic and terrestrial habitat. Both aquatic and terrestrial habitat are essential to the long-term survival of a GCN population. Destruction of GCN habitat will lead to a reduction in opportunities for breeding, foraging and refuge and increase their exposure to predation and harsher environmental conditions, which will ultimately likely lead to reduce population sizes and potentially local extinction.

Long-term Isolation and Fragmentation

4.2.4 GCN often form a metapopulation, comprising a series of smaller sub-populations centred around clusters of ponds which are linked by dispersal of individuals, maintaining the genetic diversity and ultimately maintains the genetic fitness of the population in the area.

4.2.5 In the absence of an appropriately designed mitigation strategy, the development may cause fragmentation of habitats used by GCN, through creating barriers to their dispersal and lead to isolation of sub-populations of newts which currently form a linked meta-population. Over time this would lead to reduced genetic diversity and increased risk of localised extinction.

[1] As reproduced from *Natural England Guidance Note: European Protected Species and the Planning Process: Natural England's Application of the 'Three Tests' to Licence Applications* (Natural England, 2010).

Indirect Impacts of Development

Hydrological Impact

4.2.6 The proposed development may lead to indirect impacts on habitats which GCN are dependent on. For instance, an inappropriately designed scheme may lead to alterations in the hydrological system which maintains water-levels in the identified GCN breeding ponds.

4.2.7 For successful breeding, GCN rely on water in the ponds throughout the summer months providing newt larvae the chance to develop

Post-development Interference

4.2.8 Pressures from an increase in members of the public at the site as a result of the development may have an impact on the GCN populations. Fish introduction at ponds close to residential properties can have a significant negative impact on GCN as fish are predators of newts and their eggs, leading the reduction in population sizes and lack of population recruitment due to failure to successfully breed.

4.2.9 Additionally, an increase in local population may increase the risk of dumping of rubbish and introduction of invasive plant species which can reduce the suitability of ponds and surrounding habitats for GCN.

4.3 Provisional Recommendations for Mitigation, Compensation and Enhancement

4.3.1 As described at **Section 4.2** above, in the absence of mitigation, a likely adverse effect on GCN as a result of some development at the site may occur.

4.3.2 A detailed mitigation strategy will be necessary to reduce and/or offset the identified potential negative impacts of the proposed development and to maintain the favourable conservation status of GCN at the site.

4.3.3 The first stage in this strategy is the *avoidance* of an adverse effect by implementation of an appropriate site design / masterplan. The GCN data presented in this report have been submitted to the design team and this document sets out the ecological guidance provided to date.

Protection of Existing GCN Populations

4.3.4 The following principles have been provided to the design team:

a. Avoid the loss of any of the identified GCN breeding ponds;

b. Avoid any built development, including roads, within 50 metres of a breeding pond (the immediate 50 metres radius surrounding a breeding pond is known as the core habitat and provides the most important areas of terrestrial habitat for GCN);

c. Avoidance of severance of habitats between pond clusters;

d. Avoidance of fragmentation of terrestrial habitat (where feasible); and

e. Identification of areas suitable for enhancement of habitats and long-term management to be secured by the development proposals (see below).

Habitat Creation and Enhancement

Pond 4 and Surrounding Habitat

4.3.5 Pond 4 at the north of the site was found to support a *Small* population of GCN in 2017, with only one individual detected during the surveys. It is considered that a very small isolated population of newts is present at this pond, and that the proposed development presents the opportunity to undertake significant enhancement in this area to promote the future proliferation of this isolated population.

4.3.6 Through a combination of aquatic and terrestrial habitat creation, protection of Pond 4 and potential translocation of individual GCN from other areas of the site during the licensed trapping and translocation activities, it is considered likely the GCN population in this area will be augmented alongside the development proposals in other areas of the site. The development will secure the long-term enhancement of this area and associated habitats. This strategy would be in accordance with the new Natural England policies.

Pond 25 and Pond 26

4.3.7 Ponds 25a and 25b support a medium population of great crested newt, but this population appears to be largely isolated from surrounding populations, although some recruitment may be possible from what is considered a source population associated with the crematorium mitigation ponds. Pond 26 (nearest pond to Pond 25) has records of previous presence of GCN, however the 2017 surveys have confirmed they are now absent, which has likely occurred as the pond has succeeded and now completely dries early in the amphibian breeding season. This area presents a favourable location to undertake significant habitat enhancement in respect of GCN to 'rescue' the local population from extinction.

4.3.8 It is considered pond creation and terrestrial habitat enhancements in the area surrounding Ponds 25 and 26 will likely serve to facilitate a significant increase in population size of great crested newts in this area. Additionally, in the long-term and provided habitat connectivity is maintained, it is expected that a local population at Ponds 25 and 26 may contribute to the re-colonisation of GCN at the favourable ponds within the Spen Moor Ponds SBI at the north of the site; a site which holds its non-statutory designation for nature conservation due to the historic presence of GCN, although the 2017 surveys have confirmed the population is no longer present (in 2017).

Habitat Creation

4.3.9 To compensate for any loss of GCN habitat (both aquatic and terrestrial), it will be necessary to undertake appropriate habitat creation at the site. Suitable undeveloped areas will be identified which can accommodate pond creation, suitable planting, refuge creation and management in the long-term to be favourable to wildlife.

Pond Creation

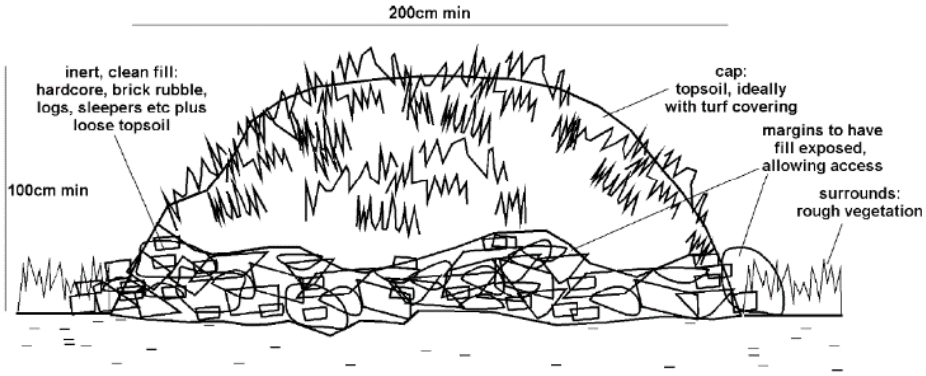
4.3.10 New ponds will be designed to provide optimal breeding habitat for GCN and other amphibian species. Detailed guidance on the design and creation of favourable amphibian breeding ponds is described at Pages 19 to 24 of the *Amphibian Habitat Management Handbook* (Baker, et al., 2011).

4.3.11 In brief, new ponds will support shallow margins to become colonising by wetland plants, with a deeper sump and areas of open water and with a clay-lined bed. Planting at the margins of the pond will comprise native species which are known to provide favourable egg-laying potential for newts and also provide protection from predators.

4.3.12 Spoil arising from pond excavation will be used to create bunds in the habitat surrounding the ponds, creating a varied topography and increasing the biodiversity value of the area.

Hibernacula Creation

4.3.13 Amphibian hibernacula will be created in retained areas of habitat, particularly in locations within the core (50 metre) habitat of retained and new ponds. These hibernacula will be created in accordance with the guidance and Figure 3 in the *Great Crested Newt Mitigation Guidelines* (English Nature, 2001). These hibernacula provide significant potential for sheltering and hibernating GCN, other amphibian species, and other wildlife such as small mammals. **Insert 1**, below, shows an extract from the *Great Crested Newt Mitigation Guidelines* (English Nature, 2001) which illustrates an appropriate design for the hibernacula.



Insert 1: Example of a hibernacula

Scrub Planting and Grassland Creation

4.3.14 Native scrub planting and tall unmanaged tussocky grassland provides favourable terrestrial habitat for GCN. These habitats provide a combination of shelter from predations and harsh environment conditions, an abundance of refuge sites such as small mammal holes and gaps beneath tree roots, and will support a range and diversity of invertebrate prey.

4.3.15 The final Technical Masterplan will identify areas which can accommodate seeding of species-rich wildflower grassland and native tree and shrub planting. These areas will provide enhanced opportunities for amphibians at the site compared to the current generally short-grazed pasture habitats which dominant the site.

Maintaining and Enhancing Connectivity

4.3.16 It is essential that the connectivity between ponds and between groups of ponds is maintained through the design of the Technical Masterplan in order to avoid/reduce any negative fragmentation and isolation impacts which may be caused.

4.3.17 Corridors of habitat will be identified, such as existing hedgerows and new habitat creation, which can be managed in the long-term to provide favourable habitat for newts allowing continued dispersal of the newt population between ponds and across the site.

4.3.18 Where it is unavoidable to sever an identified corridor, for example to construct an access road, amphibian tunnels, such as the *ACO Climate Amphibian Tunnel KT500* and associated guide walls shown in **Insert 2** below, can be utilised which allow newts and other wildlife to pass safely beneath the road.

Insert 2: ACO Climate Amphibian Tunnel KT500

4.3.19 At the individual development parcel level, locations will be identified where dropped kerbs would be appropriate to help minimise the risk of road fatalities.

4.3.20 Wildlife friendly kerbstones such as the *Aco Wildlife Kerb* shown in **Insert 3** below, can be used to encourage the safe passage of amphibians around drainage openings / gully pots in the roadway.

Insert 3: ACO Wildlife Kerb

Protection of Individual Amphibians

4.3.21 Where development parcels are considered likely to lead to an offence in respect of the relevant wildlife legislation, it will be necessary to apply for a Natural England European Protected Species licence(s).

4.3.22 In accordance with the *Great Crested Newt Mitigation Guidelines* (English Nature, 2001), this may entail using amphibian fencing and pitfall traps to capture newts. The newts are then translocated to an identified receptor site. It will be necessary to confirm that the identified receptor site is capable of supporting the influx of GCN from the trapped area, either through the location not currently supporting newts but is capable of, or through habitat enhancement resulting in the area being able to support a larger population.

4.3.23 Since the completion of the GCN surveys in 2017 Natural England has issued four policies relating to the protected species. The appropriate use of the policies at this site will be reviewed at the appropriate time.

4.3.24 It is considered implementation of appropriate mitigation schemes at the site is entirely feasible with an abundance of habitat available for habitat enhancement, and also areas which have been shown to not currently support GCN but are suitable and therefore represent suitable receptor site locations.

5.0 CONCLUSION

5.1 The GCN survey data have been used to inform the site masterplan.

5.2 Provisional appropriate mitigation, compensation and enhancement opportunities have been outlined, which aim to inform the detailed site layout discussions and design. More detailed recommendations and specific mitigation measures appropriate to individual development parcels will be prepared as the proposals evolve.

5.3 In conclusion, the comprehensive GCN surveys and assessment indicate that, in the presence of appropriate mitigation, development at the site can be achieved in accordance with wildlife and planning legislation. The development proposals provide an opportunity to significantly enhance the habitats available for GCN, facilitate breeding and maintain the favourable conservation status of GCN at the site.

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7.0 APPENDIX 1: TABLES

Table 7.1: Habitat Suitability Index (HSI) Assessment Results

	Pond 1		Pond 2		Pond 3	
Photo:						
OS Grid Reference:	SD 7919 0983		SD 7906 0986		SD 7896 0988	
Suitability Index Criteria	**Description**	**Score**	**Description**	**Score**	**Description**	**Score**
SI_1: Geographic Location	Zone A	1.0	Zone A	1.0	Zone A	1.0
SI_2: Pond Area	1400m²	0.9	240m²	0.5	300m²	0.6
SI_3: Pond Drying	Never	0.9	Never	0.9	Annually	0.1
SI_4: Water Quality	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI_5: Shade	10%	1.0	40%	1.0	80%	0.6
SI_6: Waterfowl	Minor	0.67	Minor	0.67	None	1.0
SI_7: Fish	Possible	0.67	Possible	0.67	None	1.0
SI_8: Pond Count[2]	10	0.95	9	0.9	9	0.9
SI_9: Terrestrial Habitat	Good	1.0	Moderate	0.67	Good	1.0
SI_{10}: Macrophyte Cover	25%	0.55	10%	0.4	80%	1.0
Total[1]:	**Excellent**	**0.81**	**Good**	**0.71**	**Average**	**0.68**

[1]Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \text{ s } SI_9 \times SI_{10})^{1/10}$
[2]Ponds within an unobstructed one kilometre radius

	Pond 4		Pond 5		Pond 6	
Photo:						
OS Grid Reference:	SD 7882 0984		SD 7921 0892		SD 7920 0887	
Suitability Index Criteria	**Description**	**Score**	**Description**	**Score**	**Description**	**Score**
SI_1: Geographic Location	Zone A	1.0	Zone A	1.0	Zone A	1.0
SI_2: Pond Area	400m²	0.8	225m²	0.45	300m²	0.6
SI_3: Pond Drying	Never	0.9	Annually	0.1	Annually	0.1
SI_4: Water Quality	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI_5: Shade	<1%	1.0	0%	1.0	0%	1.0
SI_6: Waterfowl	Minor	0.67	Minor	0.67	Minor	0.67
SI_7: Fish	Possible	0.67	None	1.0	None	1.0
SI_8: Pond Count[2]	14	1.0	20	1.0	20	1.0
SI_9: Terrestrial Habitat	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI_{10}: Macrophyte Cover	25%	0.55	5%	0.35	75%	1.0
Total[1]:	**Good**	**0.78**	**Below Average**	**0.59**	**Average**	**0.67**

[1]Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \text{ s } SI_9 \times SI_{10})^{1/10}$
[2]Ponds within an unobstructed one kilometre radius

	Pond 7		Pond 8		Pond 9	
Photo:						
OS Grid Reference:	SD 7919 0883		SD 7902 0869		SD 7923 0877	
Suitability Index Criteria	**Description**	**Score**	**Description**	**Score**	**Description**	**Score**
SI_1: Geographic Location	Zone A	1.0	Zone A	1.0	Zone A	1.0
SI_2: Pond Area	1200m²	0.9	100m²	0.2	750m²	1.0
SI_3: Pond Drying	Sometimes	0.5	Annually	0.1	Sometimes	0.5
SI_4: Water Quality	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI_5: Shade	0%	1.0	0%	1.0	10%	1.0
SI_6: Waterfowl	Minor	0.67	Minor	0.67	Major	0.01
SI_7: Fish	None	1.0	None	1.0	None	1.0
SI_8: Pond Count[2]	20	1.0	20	1.0	20	1.0
SI_9: Terrestrial Habitat	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI_{10}: Macrophyte Cover	90%	0.9	25%	0.55	5%	0.35
Total[1]:	**Excellent**	**0.81**	**Below Average**	**0.56**	**Poor**	**0.49**

[1]Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \text{ s } SI_9 \times SI_{10})^{1/10}$
[2]Ponds within an unobstructed one kilometre radius

	Pond 10		Pond 11		Pond 12	
Photo:						
OS Grid Reference:	SD 7908 0817		SD 7893 0809		SD 7891 0796	
Suitability Index Criteria	**Description**	**Score**	**Description**	**Score**	**Description**	**Score**
SI_1: Geographic Location	Zone A	1.0	Zone A	1.0	Zone A	1.0
SI_2: Pond Area	375m²	0.75	900m²	0.95	2000m²	0.8
SI_3: Pond Drying	Never	0.9	Annually	0.1	Annually	0.1
SI_4: Water Quality	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI_5: Shade	25%	1.0	0%	1.0	50%	1.0
SI_6: Waterfowl	Minor	0.67	Major	0.01	Major	0.01
SI_7: Fish	Minor	0.33	None	1.0	None	1.0
SI_8: Pond Count[2]	18	1.0	22	1.0	22	1.0
SI_9: Terrestrial Habitat	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI_{10}: Macrophyte Cover	20%	0.5	5%	0.35	<1%	0.3
Total[1]:	**Good**	**0.71**	**Poor**	**0.41**	**Poor**	**0.40**

[1]Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \text{ s } SI_9 \times SI_{10})^{1/10}$
[2]Ponds within an unobstructed one kilometre radius

	Pond 13		Pond 14		Pond 15	
Photo:						
OS Grid Reference:	SD 7879 0783		SD 7870 0778		SD 7889 0813	
Suitability Index Criteria	**Description**	**Score**	**Description**	**Score**	**Description**	**Score**
SI_1: Geographic Location	Zone A	1.0	Zone A	1.0	Zone A	1.0
SI_2: Pond Area	800m²	1.0	100m²	0.2	1500m²	0.9
SI_3: Pond Drying	Never	0.9	Sometimes	0.5	Annually	0.1
SI_4: Water Quality	Moderate	0.67	Poor	0.33	Moderate	0.67
SI_5: Shade	50%	1.0	100%	0.2	0%	1.0
SI_6: Waterfowl	Minor	0.67	None	1.0	Major	0.01
SI_7: Fish	Possible	0.67	None	1.0	None	1.0
SI_8: Pond Count[2]	17	1.0	18	1.0	22	1.0
SI_9: Terrestrial Habitat	Moderate	0.67	Good	1.0	Moderate	0.67
SI_{10}: Macrophyte Cover	25%	0.55	25%	0.55	10%	0.4
Total[1]:	**Good**	**0.79**	**Below Average**	**0.57**	**Poor**	**0.42**

[1]Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \text{ s } SI_9 \times SI_{10})^{1/10}$
[2]Ponds within an unobstructed one kilometre radius

	Pond 16		Pond 17		Pond 18	
Photo:						
OS Grid Reference:	SD 7870 0831		SD 7852 0832		SD 7837 0862	
Suitability Index Criteria	**Description**	**Score**	**Description**	**Score**	**Description**	**Score**
SI_1: Geographic Location	Zone A	1.0	Zone A	1.0	Zone A	1.0
SI_2: Pond Area	40m²	0.05	225m²	0.45	64m²	0.1
SI_3: Pond Drying	Annually	0.1	Sometimes	0.5	Sometimes	0.5
SI_4: Water Quality	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI_5: Shade	0%	1.0	0%	1.0	50%	1.0
SI_6: Waterfowl	None	1.0	Minor	0.67	None	1.0
SI_7: Fish	None	1.0	None	1.0	None	1.0
SI_8: Pond Count[2]	24	1.0	25	1.0	32	1.0
SI_9: Terrestrial Habitat	Poor	0.33	Moderate	0.67	Moderate	0.67
SI_{10}: Macrophyte Cover	80%	1.0	5%	0.35	100%	0.8
Total[1]:	**Below Average**	**0.51**	**Average**	**0.69**	**Average**	**0.67**

[1]Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \text{ s } SI_9 \times SI_{10})^{1/10}$
[2]Ponds within an unobstructed one kilometre radius

	Pond 19		Pond 20		Pond 21	
Photo:						
OS Grid Reference:	SD 7829 0855		SD 7827 0853		SD 7816 0847	
Suitability Index Criteria	**Description**	**Score**	**Description**	**Score**	**Description**	**Score**
SI_1: Geographic Location	Zone A	1.0	Zone A	1.0	Zone A	1.0
SI_2: Pond Area	160m²	0.3	80m²	0.15	60m²	0.05
SI_3: Pond Drying	Sometimes	0.5	Annually	0.1	Never	0.9
SI_4: Water Quality	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI_5: Shade	40%	1.0	30%	1.0	5%	1.0
SI_6: Waterfowl	None	1.0	None	1.0	Minor	0.67
SI_7: Fish	None	1.0	None	1.0	Possible	0.67
SI_8: Pond Count[2]	29	1.0	29	1.0	25	1.0
SI_9: Terrestrial Habitat	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI_{10}: Macrophyte Cover	100%	0.8	100%	0.8	20%	0.5
Total[1]:	**Good**	**0.75**	**Below Average**	**0.59**	**Below Average**	**0.58**

[1]Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \text{ s } SI_9 \times SI_{10})^{1/10}$
[2]Ponds within an unobstructed one kilometre radius

	Pond 22		Pond 23		Pond 24	
Photo:						
OS Grid Reference:	SD 7834 0853		SD 7839 0858		SD 7841 0860	
Suitability Index Criteria	**Description**	**Score**	**Description**	**Score**	**Description**	**Score**
SI_1: Geographic Location	Zone A	1.0	Zone A	1.0	Zone A	1.0
SI_2: Pond Area	150m²	0.3	450m²	0.9	540m²	1.0
SI_3: Pond Drying	Sometimes	0.5	Never	0.9	Never	0.9
SI_4: Water Quality	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI_5: Shade	50%	1.0	40%	1.0	5%	1.0
SI_6: Waterfowl	Minor	0.67	Minor	0.67	Minor	0.67
SI_7: Fish	None	1.0	Possible	0.67	Possible	0.67
SI_8: Pond Count[2]	29	1.0	32	1.0	32	1.0
SI_9: Terrestrial Habitat	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI_{10}: Macrophyte Cover	90%	0.9	40%	0.7	40%	0.7
Total[1]:	**Good**	**0.73**	**Excellent**	**0.80**	**Excellent**	**0.81**

[1]Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \text{ s } SI_9 \times SI_{10})^{1/10}$
[2]Ponds within an unobstructed one kilometre radius

	Pond 25		Pond 26		Pond 27	
Photo:						
OS Grid Reference:	SD 7869 0892		SD 7860 0902		SD 7865 0937	
Suitability Index Criteria	**Description**	**Score**	**Description**	**Score**	**Description**	**Score**
SI_1: Geographic Location	Zone A	1.0	Zone A	1.0	Zone A	1.0
SI_2: Pond Area	300m"	0.6	300m^2	0.6	150m^2	0.3
SI_3: Pond Drying	Never	0.9	Annually	0.1	Never	0.9
SI_4: Water Quality	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI_5: Shade	0%	1.0	10%	1.0	60%	1.0
SI_6: Waterfowl	Minor	0.67	None	1.0	Minor	0.67
SI_7: Fish	Possible	0.67	None	1.0	Possible	0.67
SI_8: Pond Count[2]	31	1.0	33	1.0	21	1.0
SI_9: Terrestrial Habitat	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI_{10}: Macrophyte Cover	50%	0.8	90%	0.9	5%	0.35
Total[1]:	**Good**	**0.78**	**Average**	**0.69**	**Average**	**0.67**

[1]Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \text{ s } SI_9 \times SI_{10})^{1/10}$
[2]Ponds within an unobstructed one kilometre radius

	Pond 28		Pond 29		Pond 30	
Photo:						
OS Grid Reference:	SD 7854 0936		SD 7839 0935		SD 7830 0924	
Suitability Index Criteria	**Description**	**Score**	**Description**	**Score**	**Description**	**Score**
SI_1: Geographic Location	Zone A	1.0	Zone A	1.0	Zone A	1.0
SI_2: Pond Area	550m^2	1.0	1500m^2	0.9	695m^2	1.0
SI_3: Pond Drying	Never Dries	0.9	Never Dries	0.9	Never Dries	0.9
SI_4: Water Quality	Good	1.0	Moderate	0.67	Bad	0.01
SI_5: Shade	5%	1.0	40%	1.0	10%	1.0
SI_6: Waterfowl	Minor	0.67	Minor	0.67	Minor	0.67
SI_7: Fish	Absent	1.0	Major	0.01	Absent	1.0
SI_8: Pond Count[2]	17	1.0	17	1.0	17	1.0
SI_9: Terrestrial Habitat	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI_{10}: Macrophyte Cover	10%	0.4	15%	0.45	2%	0.3
Total[1]:	**Excellent**	**0.83**	**Below Average**	**0.51**	**Below Average**	**0.51**

[1]Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \text{ s } SI_9 \times SI_{10})^{1/10}$
[2]Ponds within an unobstructed one kilometre radius

	Pond 31		Pond 32		Pond 33	
Photo:						
OS Grid Reference:	SD 7788 0941		SD 7789 0946		SD 7812 0954	
Suitability Index Criteria	**Description**	**Score**	**Description**	**Score**	**Description**	**Score**
SI_1: Geographic Location	Zone A	1.0	Zone A	1.0	Zone A	1.0
SI_2: Pond Area	460m²	0.9	75m²	0.15	1050m²	0.95
SI_3: Pond Drying	Never Dries	0.9	Never Dries	0.9	Never	0.9
SI_4: Water Quality	Good	1.0	Moderate	0.67	Good	1.0
SI_5: Shade	40%	1.0	0%	1.0	30%	1.0
SI_6: Waterfowl	Minor	0.67	Absent	1.0	Minor	0.67
SI_7: Fish	Absent	1.0	Absent	1.0	None	1.0
SI_8: Pond Count[2]	17	1.0	17	1.0	17	1.0
SI_9: Terrestrial Habitat	Moderate	0.67	Moderate	0.67	Good	1.0
SI_{10}: Macrophyte Cover	25%	0.55	5%	0.35	45%	0.75
Total[1]:	**Excellent**	**0.85**	**Average**	**0.68**	**Excellent**	**0.92**

[1]Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \text{ s } SI_9 \times SI_{10})^{1/10}$
[2]Ponds within an unobstructed one kilometre radius

	Pond 34		Pond 35		Pond 36	
Photo:						
OS Grid Reference:	SD 7800 0956		SD 7799 0953		SD 7802 0953	
Suitability Index Criteria	**Description**	**Score**	**Description**	**Score**	**Description**	**Score**
SI_1: Geographic Location	Zone A	1.0	Zone A	1.0	Zone A	1.0
SI_2: Pond Area	175m²	0.35	56m²	0.1	160m²	0.35
SI_3: Pond Drying	Never	0.9	Never	0.9	Never	0.9
SI_4: Water Quality	Poor	0.33	Poor	0.33	Poor	0.33
SI_5: Shade	0%	1.0	0%	1.0	0%	1.0
SI_6: Waterfowl	None	1.0	None	1.0	None	1.0
SI_7: Fish	None	1.0	None	1.0	None	1.0
SI_8: Pond Count[2]	17	1.0	17	1.0	17	1.0
SI_9: Terrestrial Habitat	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI_{10}: Macrophyte Cover	<1%	0.3	<1%	0.3	<1%	0.3
Total[1]:	***Average***	**0.68**	***Average***	**0.60**	***Average***	**0.68**

[1]Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \text{ s } SI_9 \times SI_{10})^{1/10}$
[2]Ponds within an unobstructed one kilometre radius

	Pond 37		Pond 38		Pond 39	
Photo:						
OS Grid Reference:	SD 7813 0840		SD 7812 0838		SD 7802 0839	
Suitability Index Criteria	**Description**	**Score**	**Description**	**Score**	**Description**	**Score**
SI_1: Geographic Location	Zone A	1.0	Zone A	1.0	Zone A	1.0
SI_2: Pond Area	20m²	0.05	60m²	0.1	2000m²	0.8
SI_3: Pond Drying	Annually	0.1	Annually	0.1	Never	0.9
SI_4: Water Quality	Poor	0.33	Poor	0.33	Poor	0.33
SI_5: Shade	100%	0.2	100%	0.2	95%	0.3
SI_6: Waterfowl	None	1.0	None	1.0	Minor	0.67
SI_7: Fish	None	1.0	None	1.0	Possible	0.67
SI_8: Pond Count[2]	20	1.0	20	1.0	20	1.0
SI_9: Terrestrial Habitat	Good	1.0	Good	1.0	Good	1.0
SI_{10}: Macrophyte Cover	<1%	0.3	10%	0.4	10%	0.4
Total[1]:	**Poor**	**0.40**	**Poor**	**0.44**	***Average***	**0.65**

[1]Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \text{ s } SI_9 \times SI_{10})^{1/10}$
[2]Ponds within an unobstructed one kilometre radius

	Pond 40		Pond 41		Pond 42	
Photo:						
OS Grid Reference:	SD 7794 0841		SD 7790 0842		SD 7784 0844	
Suitability Index Criteria	**Description**	**Score**	**Description**	**Score**	**Description**	**Score**
SI_1: Geographic Location	Zone A	1.0	Zone A	1.0	Zone A	1.0
SI_2: Pond Area	40m²	0.05	600m²	1.0	400m²	0.8
SI_3: Pond Drying	Sometimes	0.5	Never	0.9	Annually	0.1
SI_4: Water Quality	Poor	0.33	Moderate	0.67	Poor	0.33
SI_5: Shade	100%	0.2	90%	0.4	80%	0.5
SI_6: Waterfowl	None	1.0	Minor	0.67	Minor	0.67
SI_7: Fish	None	1.0	Possible	0.67	None	1.0
SI_8: Pond Count[2]	20	1.0	20	1.0	20	1.0
SI_9: Terrestrial Habitat	Good	1.0	Good	1.0	Good	1.0
SI_{10}: Macrophyte Cover	<1%	0.3	5%	0.35	70%	1.0
Total[1]:	**Poor**	**0.47**	**Good**	**0.72**	***Average***	**0.62**

[1]Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \text{ s } SI_9 \times SI_{10})^{1/10}$
[2]Ponds within an unobstructed one kilometre radius

	Pond 43		Pond 44		Pond 45	
Photo:						
OS Grid Reference:	SD 7788 0839		SD 7786 0837		SD 7812 0823	
Suitability Index Criteria	**Description**	**Score**	**Description**	**Score**	**Description**	**Score**
SI_1: Geographic Location	Zone A	1.0	Zone A	1.0	Zone A	1.0
SI_2: Pond Area	350m^2	0.7	180m^2	0.4	1200m^2	0.9
SI_3: Pond Drying	Annually	0.1	Annually	0.1	Never	0.9
SI_4: Water Quality	Poor	0.33	Poor	0.33	Moderate	0.67
SI_5: Shade	95%	0.3	90%	0.4	40%	1.0
SI_6: Waterfowl	Minor	0.67	Minor	0.67	Minor	0.67
SI_7: Fish	None	1.0	None	1.0	Possible	0.67
SI_8: Pond Count[2]	20	1.0	20	1.0	20	1.0
SI_9: Terrestrial Habitat	Good	1.0	Good	1.0	Good	1.0
SI_{10}: Macrophyte Cover	5%	0.35	0%	0.3	1%	0.3
Total[1]:	**Below Average**	**0.53**	**Below Average**	**0.5**	***Good***	**0.77**

[1]Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \text{ s } SI_9 \times SI_{10})^{1/10}$
[2]Ponds within an unobstructed one kilometre radius

	Pond 46		Pond 47	
Photo:				
OS Grid Reference:	SD 7810 0822		SD 7845 0850	
Suitability Index Criteria	**Description**	**Score**	**Description**	**Score**
SI_1: Geographic Location	Zone A	1.0	Zone A	1.0
SI_2: Pond Area	75m^2	0.15	63m^2	0.1
SI_3: Pond Drying	Never	0.9	Never	0.9
SI_4: Water Quality	Moderate	0.67	Moderate	0.67
SI_5: Shade	50%	1.0	0%	1.0
SI_6: Waterfowl	Minor	0.67	Minor	0.67
SI_7: Fish	Possible	0.67	Possible	0.67
SI_8: Pond Count[2]	20	1.0	30	1.0
SI_9: Terrestrial Habitat	Good	1.0	Moderate	0.67
SI_{10}: Macrophyte Cover	40%	0.7	5%	0.35
Total[1]:	**Good**	**0.70**	**Average**	**0.60**

[1]Calculated by $(SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \text{ s } SI_9 \times SI_{10})^{1/10}$
[2]Ponds within an unobstructed one kilometre radius

Tables 7.2 to 7.40: 2017 Great Crested Newt Presence / Absence and Population Size Class Assessment Data

Table 7.2: Elton Pond 1

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Egg Search	1	22/04/17	7	2/3	1	0			0						0	0	0	0	-

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

Limited egg search carried out floating vegetation along 3 margins whilst undertaking DNA survey

Table 7.3: Elton Pond 2

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	22/04/17	8	2	1	0	0	0	15	16	1	8	20	0	0	0	0	***	0
	2	01/05/17	7	2	2	0	0	0	35	31	0	9	10	0	0	0	0	***	0
	3	25/05/17	15	2	3	0	0	0	22	10	0	12	13	0	0	0	0	***	0
	4	07/06/17	9	2	2	0	0	0	5	11	2	3	5	0	0	0	0	***	0
Torchlight	1	22/04/17	8	2	1	0	0	0	3	2	0	0	0	0	0	0	0	***	0
	2	05/05/17	8	2	1	0	0	0	2	2	0	0	0	0	0	0	0	***	0
	3	07/06/17	12	2	1	0	0	0	2	1	0	0	0	0	0	0	0	***	0
	4	11/06/18	13	2	1	0	0	0	1	1	0	0	0	0	0	0	0	***	0
Egg Search	1	11/04/17	8	2	1	0			0						0	0	0	0	0
	2	01/05/17	7	2	2	0			Present						0	0	0	0	0
	3	25/05/17	15	2	3	0			Present						0	0	0	0	0
	4	07/06/17	9	2	2	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature. Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*
Surveys 1 and 2 - 22 traps
Surveys 3 and 4 – 26 traps
Water level variable across surveys, pond takes water from adjacent hospital roof

Table 7.4: Elton Pond 3

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Netting	1	22/04/17	8	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	02/05/17	7	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	25/05/17	15	5	Pond completely dry														
	4	07/06/17	9	5															
Torchlight	1	22/04/17	8	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	05/05/17	8	5	Pond completely dry														
	3	25/05/17	15	5															
	4	07/06/17	9	5															
Egg Search	1	22/04/17	8	5	1	0			0						0	0	0	0	0
	2	02/05/17	7	5	1	0			0						0	0	0	0	0
	3	25/05/17	15	5	Pond completely dry - no stranded eggs														
	4	07/06/17	9	5															

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

Ephemeral, too shallow to trap. Netting on surveys 1 and 2.

Table 7.5: Elton Pond 4

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	22/04/17	8	3	1	0	0	0	13	6	0	12	4	0	0	0	0	10	4*
	2	02/05/17	7	3	1	0	0	0	29	2	0	5	2	0	5	0	0	***	2
	3	06/05/17	6	3	1	0	0	0	14	1	0	0	3	0	0	0	0	***	5
	4	25/05/17	15	3	1	1	0	0	16	5	0	9	2	0	0	1	0	2	54
	5	07/06/17	9	3	1	0	0	0	5	4	0	5	2	0	0	0	0	50	12
	6	11/06/17	12	3	1	0	0	0	2	6	0	2	0	0	0	1	0	0	16
Torchlight	1	22/04/17	8	3	2	0	0	0	0	2	0	0	0	0	0	0	0	***	0
	2	05/05/17	8	3	2	0	0	0	0	2	0	0	0	0	0	0	0	***	0
	3	14/05/17	13	3	2	0	0	0	0	0	0	0	0	0	0	0	0	***	2
	4	24/05/17	16	3	2	0	0	0	0	0	0	0	0	0	0	0	0	**	0
	5	07/06/17	12	3	2	0	0	0	0	0	0	0	0	0	0	0	0	**	3
	6	11/06/18	13	3	2	0	0	0	0	0	0	0	0	0	0	0	0	**	0
Egg Search	1	22/04/17	8	3	1	Present			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

26 traps - Coarse fish = Carp there are fishing stations around this pond.

Table 7.6: Elton Pond 5

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Netting	1	21/04/17	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	02/05/17	8	0	Pond completely dry.														
	3	24/05/17	14	0															
	4	04/06/17	12	0															
Torchlight	1	22/04/17	8	0	1	0	0	0	0	0		0	0	0	0	0	0	0	0
	2	05/05/17	8	0	Pond completely dry														
	3	24/05/17	16	0															
	4	11/06/17	13	0															
Egg Search	1	21/04/17	8	0	1	0			0						0	0	0	0	0
	2	02/05/17	8	0	Pond completely dry														
	3	24/05/17	14	0															
	4	04/06/17	12	0															

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

Ephemeral - to shallow to bottle

Table 7.7: Elton Pond 6

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap /Netting	1	21/04/17	8	4	3	0	0	0	4	1	0	0	0	0	0	0	0	0	6*
	2	02/05/17	8	4	3	0	0	0	2	1	0	0	0	0	0	0	0	0	2
	3	24/05/17	14	4	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	4	04/06/17	12	4	3	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Torchlight	1	22/04/17	8	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	05/05/17	8	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	24/05/17	14	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	04/06/17	12	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	21/04/17	8	4	3	0			0						0	0	0	0	0
	2	02/05/17	8	4	3	0			0						0	0	0	0	0
	3	24/05/17	14	4	3	0			0						0	0	0	0	0
	4	04/06/17	12	4	3	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

Surveys 1 and 2 - 11 traps
Surveys 3 and 4 – netting as too shallow to bottle trap

Table 7.8: Elton Pond 7

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Netting	1	21/04/17	8	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	*2
	2	02/05/17	8	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	24/05/17	14	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	4	04/06/17	12	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Torchlight	1	22/04/17	8	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	05/05/17	8	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	24/05/17	14	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	Present
	4	04/06/17	12	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	21/04/17	8	5	1	0			0						0	0	0	0	0
	2	02/05/17	8	5	1	0			0						0	0	0	0	0
	3	24/05/17	14	5	1	0			0						0	0	0	0	0
	4	04/06/17	12	5	1	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature. Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

Very dangerous pond with thick mud floating vegetation – netted instead of bottle trapping

Limited torchlight survey, used egg tree used to augment survey. Some areas of open water but very difficult access.

*Stickleback present

Table 7.9: Elton Pond 8

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Netting	1	21/04/17	8	0	Pond completely dry.														
	2	02/05/17	8	0															
	3	24/05/17	14	0															
	4	04/06/17	12	0															
Torchlight	1	22/04/17	8	0	Pond completely dry														
	2	05/05/17	8	0															
	3	24/05/17	16	0															
	4	11/06/17	13	0															
Egg Search	1	21/04/17	8	0	Pond completely dry														
	2	02/05/17	8	0															
	3	24/05/17	14	0															
	4	04/06/17	12	0															

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

Completely dry on all visits

Table 7.10: Elton Pond 9

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Netting	1	20/04/17	7	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	30/04/17	9	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	24/05/17	14	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	04/06/17	12	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Torchlight	1	23/04/17	8	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	24/05/17	14	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	04/06/17	12	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	20/04/17	7	1	3	0			0						0	0	0	0	0
	2	30/04/17	9	0	4	0			0						0	0	0	0	0
	3	24/05/17	14	0	4	0			0						0	0	0	0	0
	4	04/06/17	12	0	5	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

This pond appears to be ephemeral, too shallow to insert bottle traps.
Pond very turbid with horses walking through it.
All egg laying vegetation stranded with margins. Drying up survey repetitions 2, 3, 4

Table 7.11: Elton Pond 10

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	21/04/17	8	1	2	0	0	0	20	2	0	3	2	0	0	0	0	0	0
	2	01/05/17	8	1	3	0	0	0	23	9	0	2	1	0	0	0	0	0	0
	3	24/05/17	14	2	3	0	0	0	33	8	0	0	0	0	0	0	0	0	0
	4	05/06/17	12	2	3	0	0	0	5	3	0	1	0	0	0	0	0	0	0
Torchlight	1	23/04/17	8	1	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	1	3	0	0	0	0	2	0	0	0	0	0	0	0	0	0
	3	24/05/17	14	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	04/06/17	12	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	21/04/17	8	1	2	0			0						0	0	0	0	0
	2	01/05/17	8	1	3	0			0						0	0	0	0	0
	3	24/05/17	14	1	3	0			0						0	0	0	0	0
	4	05/06/17	12	1	3	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

15 traps - 70% of pond accessed.

Table 7.12: Elton Pond 11

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Netting	1	20/04/17	7	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	01/05/17	8	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	24/05/17	14	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	04/06/17	12	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Torchlight	1	23/04/17	8	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	24/05/17	14	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	04/06/17	12	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	20/04/17	7	1	2	0			0						0	0	0	0	0
	2	01/05/17	8	1	2	0			0						0	0	0	0	0
	3	24/05/17	14	1	2	0			0						0	0	0	0	0
	4	04/06/17	12	0	5	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc*

Too shallow to trap, netted
Poached by horses

Table 7.13: Elton Pond 12

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap / Netting	1	20/04/17	7	1	4	0	0	0	6	3	0	6	1	0	0	0	0	0	0
	2	01/05/17	8	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	3^	24/05/17	14	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4^	04/06/17	12	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Torchlight	1	23/04/17	8	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	24/05/17	14	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	04/06/17	12	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	20/04/17	7	1	4	0			0						0	0	0	0	0
	2	01/05/17	8	0	4	0			0						0	0	0	0	0
	3	24/05/17	14	0	5	0			0						0	0	0	0	0
	4	04/06/17	12	0	5	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

Survey 1 - 45 traps, mainly ephemeral, but one small sump with pond vegetation.
Survey 2 - 22 traps, pond had reduced significantly, thick mud all marginal vegetation stranded.
^Survey 3 - Pond significantly reduced in area unable to trap so netted. All marginal vegetation stranded - no stranded eggs,
^Survey 4 - Pond reduced even further – netted

Table 7.14: Elton Pond 13

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	20/04/17	7	4	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	2	01/05/17	8	4	2	0	0	0	0	0	0	3	2	0	0	0	0	0	0
	3	24/05/17	14	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	05/06/17	12	4	2	0	0	0	1	0	0	0	1	0	0	0	0	0	0
Torchlight	1	23/04/17	8	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	24/05/17	14	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	04/06/17	12	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	20/04/17	7	4	2	0			0						0	0	0	0	0
	2	01/05/17	8	4	2	0			0						0	0	0	0	0
	3	24/05/17	14	4	2	0			0						0	0	0	0	0
	4	05/06/17	12	4	2	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

60 traps. 70% of pond margins trapped.

Table 7.15: Elton Pond 14

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle / Netting / trapping	1	20/04/17	7	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	01/05/17	8	5	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0
	^2b	02/05/17	8	5	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	3	24/05/17	14	5	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0
	4	05/06/17	12	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Torchlight	1	23/04/17	8	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	24/05/17	14	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	04/06/17	12	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	20/04/17	7	5	2	0			0						0	0	0	0	0
	2	01/05/17	8	5	2	0			0						0	0	0	0	0
	3	24/05/17	14	5	2	0			0						0	0	0	0	0
	4	05/06/17	12	5	2	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc..*

^Survey 1 - initially appeared ephemeral and unable to set traps – netted.
Survey 2 - reassessed this pond and observed small trappable area on torch light survey. Set 10 traps and netted. Conducted extra repetition (survey 2b) to catch up.
Survey 3 – 10 traps and netting
Survey 4 - pond reduced further, 8 traps and netting
Brick rubble and duck weed cover - Leaf litter in most areas combination of netting and bottle trapping.

Table 7.16: Elton Pond 15

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap / Netting	1	20/04/17	7	1	4	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	2	30/04/17	9	1	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	3	24/05/17	14	0	5	0	0	0	0	0	0	0	0	0	0	3	0	0	0
	4	04/06/17	12	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Torchlight	1	23/04/17	8	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	24/05/17	14	14	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	04/06/17	12	12	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	20/04/17	7	1	2	0			0						0	0	0	0	0
	2	30/04/17	9	1	2	0			0						0	0	0	0	0
	3	24/05/17	14	0	5	0			0						0	0	0	0	0
	4	04/06/17	12	0	5	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

Survey 1 – 33 traps, observed 25 Canada geese on pond
Survey 2 - 18 traps, pond area reduced
Survey 3 – 8 traps, pond reduced further
Survey 4 – 0 traps too shallow, netted. Clear high impact by geese.

Table 7.17: Elton Pond 16

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	16/04/17	6	3/4	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	2	30/04/17	8	3/4	2	0	0	0	0	1	0	0	0	0	0	4	0	0	0
	3	23/05/17	9	4	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	4	05/06/17	12	4	2	0	0	0	0	1	0	0	0	0	0	1	0	0	0
Torchlight	1	23/04/17	8	3/4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	3/4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	07/06/17	12	3/4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	11/06/18	13	3/4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	16/04/17	6	3/4	2	0			0						0	0	0	0	0
	2	30/04/17	8	3/4	2	0			0						0	0	0	0	0
	3	23/04/17	9	4	2	0			0						0	0	0	0	0
	4	05/06/17	12	4	2	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

Survey 1 - 9 traps
Survey 2 - 7 traps
Survey 3 - 5 traps
Survey 4 - 4 traps

Table 7.18: Elton Pond 17

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Netting	1	16/04/17	6	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	30/04/17	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	23/05/17	9	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	04/06/17	12	0	Pond completely dry														
Torchlight	1	23/04/17	8	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	23/05/17	9	0	0	Pond completely dry													
	4	04/06/17	12	0	0														
Egg Search	1	16/04/17	6	1	2	0			0						0	0	0	0	0
	2	30/04/17	8	0	1	0			0						0	0	0	0	0
	3	23/05/17	9	0	5	Pond margin receded by 4m no marginal vegetation in water, no stranded eggs.													
	4	04/06/17	12	0	Pond completely dry														

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

Pond too shallow to trap - netting limited as very muddy. Very little marginal vegetation. All marginal vegetation stranded on survey 2.

Table 7.19: Elton Pond 18

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	16/04/17	6	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	30/04/17	9	5	5	3	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	06/04/17	7	5	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	23/05/17	9	5	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	08/06/17	12	5	5	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	6	12/06/17	12	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Torchlight	1	23/04/17	8	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	14/05/17	12	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	24/05/17	16	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	05/06/17	12	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	12/06/17	13	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	16/04/17	6	5	5	0			0						0	0	0	0	0
	2	30/04/17	9	5	5	Present			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

Pond almost completely vegetated, floating vegetation and very dangerous. Surveys 1 to 4 – 6 traps, Surveys 5 and 6 – 4 traps
Torch difficult with only a small area examined

Table 7.20: Elton Pond 19

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	16/04/17	6	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	30/04/17	9	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	06/05/17	5	Almost dry no open water															
	4	22/05/17	9	Marshy under foot no open water.															
	5	08/06/17	12																
	6	12/06/17	12																
Torchlight	1	23/04/17	8	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	14/05/17	12	No open water to torchlight															
	4	24/05/17	16																
	5	05/06/17	12																
	6	12/06/17	13																
Egg Search	1	16/04/17	6	5	4	0			0						0	0	0	0	0
	2	30/04/17	9	5	4	0			0						0	0	0	0	0
	3	06/05/17	5	5	4	0			0						0	0	0	0	0
	4	22/05/17	9	5	4	0			0						0	0	0	0	0
	5	08/06/17	12	5	4	0			0						0	0	0	0	0
	6	12/06/17	12	5	4	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*
Pond highly vegetated, small area of open water under the trees . 5 traps set surveys 1 and 2.

Table 7.21: Elton Pond 20

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Netting	1	16/04/17	6	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	30/04/17	9	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	06/05/17	5	5	1	Almost dry insufficient water to net													
	4	22/05/17	9	5	1	No open water marshy under foot.													
	5	08/06/17	12	5	1														
	6	12/06/17	12	5	1														
Torchlight	1	23/04/17	8	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/5/17	8	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	14/5/17	12	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	24/5/17	16	5	No open water to torchlight														
	5	05/06/17	12	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	12/06/17	13	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	16/04/17	6	5	1	0			0						0	0	0	0	0
	2	30/04/17	9	5	1	0			0						0	0	0	0	0
	3	06/05/17	5	5	1	0			0						0	0	0	0	0
	4	22/05/17	9	5	1	0			0						0	0	0	0	0
	5	08/06/17	12	5	1	0			0						0	0	0	0	0
	6	12/06/17	12	5	1	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.* Attempted to net on survey 1 but very little water. Good for torch light and egg search.

Table 7.22: Elton Pond 21

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	16/04/17	6	3	4	0	0	0	2	2	0	0	0	0	0	0	0	0	1*
	2	30/04/17	9	3	4	1	0	0	11	1	0	0	0	0	0	0	0	0	5
	3	06/05/17	5	3	4	0	0	0	3	2	0	0	0	0	0	0	0	0	2
	4	22/05/17	9	3	4	1	0	0	1	0	0	0	0	0	0	0	0	0	1
	5	08/06/17	12	3	4	0	1	0	0	1	0	0	0	0	0	0	0	0	0
	6	12/06/17	12	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Torchlight	1	23/04/17	8	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	14/5/17	12	3	4	0	0	0	2	0	0	0	0	0	0	0	0	0	0
	4	24/05/17	16	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	05/06/17	12	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	12/06/17	13	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	16/04/17	6	3	4	0			0						0	0	0	0	0
	2	30/04/17	9	3	4	0			0						0	0	0	0	0
	3	06/05/17	5	3	4	0			0						0	0	0	0	0
	4	22/05/17	9	3	4	0			0						0	0	0	0	0
	5	08/06/17	12	3	4	0			0						0	0	0	0	0
	6	12/06/17	12	3	4	0			0							0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.* 15 traps - Coarse fish carp present

Table 7.23: Elton Pond 22

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	16/04/17	6	3/4	2	2	12	0	1	1	0	0	0	0	0	0	0	0	0
	2	30/04/17	9	3/4	2	14	6	0	5	5	0	0	0	0	0	0	0	0	0
	3	06/05/17	5	3/4	2	5	6	0	3	3	0	0	0	0	0	0	0	0	0
	4	22/05/17	9	4	2	4	7	0	1	0	0	0	0	0	0	0	0	0	0
	5	08/06/17	12	4	2	^5	0	0	1	0	0	0	0	0	0	0	0	0	0
	6	12/06/17	12	4	2	^6	0	0	0	0	0	0	0	0	0	0	0	0	0
Torchlight	1	23/04/17	8	3/4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	3/4	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	3	14/05/17	12	4	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0
	4	24/05/17	16	4	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	5	05/06/17	12	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	12/06/17	13	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	16/04/17	6	3/4	2	Present			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

15 traps
^Crests down on male GCN.

Table 7.24: Elton Pond 23

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	16/04/17	6	3	2	0	0	0	1	7	0	0	0	0	0	0	0	0	0
	2	30/04/17	9	3	2	0	0	0	0	4	0	0	0	0	0	0	0	0	0
	3	06/05/17	5	3	5	0	0	0	1	1	0	0	0	0	0	0	0	0	0
	4	22/05/17	9	3	5	0	0	0	1	2	0	0	0	0	0	0	0	0	0
	5	08/06/17	12	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	12/06/17	12	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Torchlight	1	23/04/17	8	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	14/05/17	12	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	24/05/17	16	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	05/06/17	12	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	12/06/17	13	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	16/04/17	6	3	1	Present			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

24 traps, Geese nesting on the pond, stand off for traps. Bulrush treated in pond with weedkiller.
Note : **GCN eggs but no adults detected by bottle traps or torchlight surveys**

Table 7.25: Elton Pond 24

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	16/04/17	6	3	2	2	1	0	1	5	0	0	0	0	0	0	0	0	0
	2	30/04/17	9	3	3	4	0	0	0	10	0	0	0	0	0	0	0	0	0
	3	06/05/17	5	3	3	16	26	0	2	0	0	0	0	0	0	0	0	0	0
	4	22/05/17	9	3	3	14	13	0	1	5	0	0	0	0	0	0	0	0	0
	5	08/06/17	12	3	3	^2	2	0	0	0	0	0	0	0	0	0	0	0	0
	6	12/06/17	12	3	3	^3	1	0	0	0	0	0	0	0	0	0	0	0	0
Torchlight	1	23/04/17	8	3	2	1	0	0	0	2	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	3	3	0	2	0	0	0	0	0	0	0	0	0	0	0	0
	3	14/05/17	12	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	24/05/17	16	3	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	5	05/06/17	12	3	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	6	12/06/17	13	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	16/04/17	6	3	2	present			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

32 traps
^crests down on male GCN

Table 7.26: Elton Pond 25a

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	13/04/17	6	4	2	1	0	0	1	4	0	0	0	0	0	0	0	0	0
	2	24/04/17	8	4	2	1	4	0	0	5	0	0	0	0	0	0	0	0	0
	3	06/05/17	7	4	4	2	1	0	0	2	0	0	0	0	0	0	0	0	0
	4	15/05/17	10	4	5	2	1	0	1	0	0	0	0	0	0	0	0	0	0
	5	08/06/17	12	4	5	6	5	0	0	1	0	0	0	0	0	0	0	0	0
	6	12/06/17	12	4	5	5	4	0	0	0	0	0	0	0	0	0	0	0	0
Torchlight	1	23/04/17	8	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	13/05/17	12	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	24/05/17	16	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	05/06/17	12	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	12/06/17	13	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	13/04/17	6	4	2	present			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc*

Surveys 1 to 4 - 30 traps
Surveys 5 and 6 – increased to 40 traps after heavy rain

Table 7.27: Elton Pond 25b

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	13/04/17	6	4	2	1	4	0	0	0	0	0	0	0	0	0	0	0	0
	2	24/04/17	8	4	2	0	1	0	1	0	0	0	0	0	0	0	0	0	0
	3	06/05/17	7	4	5	0	0	0	0	2	0	0	0	0	0	0	0	0	0
	4	15/05/17	10	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	08/06/17	12	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	12/06/17	12	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Torchlight	1	23/04/17	8	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	13/05/17	12	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	24/05/17	16	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	05/06/17	12	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	12/06/17	13	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	13/04/17	6	4	2	0			0						0	0	0	0	0
	2	24/04/17	8	4	2	0			0						0	0	0	0	0
	3	06/05/17	6	4	5	0			0						0	0	0	0	0
	4	15/05/17	10	4	5	0			0						0	0	0	0	0
	5	08/06/17	12	4	5	0			0						0	0	0	0	0
	6	12/06/17	12	4	5	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.* Surveys 1, 5 and 6- 16 traps Surveys 2, 3, and 4 – 11 traps

Table 7.28: Elton Pond 26

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	13/14/17	6	5	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0
	2	24/04/17	8	5	1	0	0	0	0	5	0	0	0	0	0	1	0	0	0
	3	06/05/17	7	5	1	Pond too dry to trap or net													
	4	15/05/17	10	5	1														
	5	08/06/17	12	5	1														
	6	12/06/17	12	5	1														
Torchlight	1	23/04/17	8	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	13/05/17	12	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	24/05/17	16	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5	05/06/17	12	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	12/06/17	13	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	13/14/17	6	5	1	0			present						0	0	0	0	0
	2	24/04/17	8	5	1	0			present						0	0	0	0	0
	3	06/05/17	7	5	1	0			stranded eggs						0	0	0	0	0
	4	15/05/17	10	5	1	0									0	0	0	0	0
	5	08/06/17	12	5	1	0			stranded eggs						0	0	0	0	0
	6	12/06/17	12	5	1	0			stranded eggs						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.* Surveys 1 and 2 – 6 traps. Completely dry on further visits.

Table 7.29: Elton Pond 27

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	13/04/17	6	3/4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	24/04/17	8	3/4	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	3	15/05/17	10	4	5	Almost dry, very muddy													
	4	04/06/17	12	4	Completely dry														
Torchlight	1	23/04/17	8	3/4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	3/4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	07/06/17	12	Pond completely dry															
	4	12/06/17	13																
Egg Search	1	13/04/17	6	3/4	2	0			0						0	0	0	0	0
	2	24/04/17	8	3/4	2	0			0						0	0	0	0	0
	3	15/05/17	10	4	5	No stranded eggs													
	4	04/06/17	12	4	Completely dry														

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

Surveys 1 and 2 – 18 traps. Too shallow on further visits

Table 7.30: Elton Pond 28

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	13/04/17	6	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	24/04/17	8	2	2	0	0	0	0	2	0	0	0	0	0	1	0	0	0
	3	15/05/17	10	2	2	0	0	0	1	5	0	0	0	0	0	0	0	0	0
	4	06/06/17	10	2	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Torchlight	1	23/04/17	8	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	07/06/17	12	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	11/06/17	13	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	13/04/17	6	2	2	0			0						0	0	0	0	0
	2	24/04/17	8	2	2	0			0						0	0	0	0	0
	3	15/05/17	10	2	2	0			Present						0	0	0	0	0
	4	06/06/17	10	2	4	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

37 traps
Indian balsam growing extensively on the banks

Table 7.31: Elton Pond 29

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	13/04/17	6	2	2	0	0	0	1	1	0	0	0	0	0	0	0	0	2^
	2	24/04/17	8	2	2	0	0	0	3	2	0	0	0	0	0	0	0	0	0
	3	15/05/17	10	2	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3
	4	06/06/17	10	2	2	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Torchlight	1	23/04/17	8	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	04/05/17	8	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	07/06/17	12	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	11/06/17	13	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	13/04/17	6	2	2	0			0						0	0	0	0	0
	2	24/04/17	8	2	2	0			0						0	0	0	0	0
	3	15/05/17	10	2	2	0			0						0	0	0	0	0
	4	06/06/17	10	2	2	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*
29 trap
^coarse fish

Table 7.32: Elton Pond 30

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	11/04/17	7	0	2	Pond takes slurry run off from cattle shed. Very high BOD thick slurry on the surface, unable to trap or net													
Torchlight	1	22/04/17	8	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	05/05/17	8	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	07/06/17	12	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	11/06/17	13	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	11/04/17	7	0	2	0			0						0	0	0	0	0
	2	29/04/17	5	0	2	0			0						0	0	0	0	0
	3	15/05/17	10	0	2	0			0						0	0	0	0	0
	4	06/06/17	10	0	2	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

This pond takes the slurry run off from the cattle shed, very high potential BOD. The slurry is to the surface of the water not suitable for trapping or netting; egg search and torchlight only.

Table 7.33: Elton Pond 31

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	11/04/17	7	4	3	0	0	0	2	0	0	0	0	0	0	0	0	0	47
	2	29/04/17	8	4	3	0	0	0	1	1	0	0	0	0	0	0	0	0	54
	3	12/05/17	11	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	20
	4	13/06/17	11	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	32
Torchlight	1	22/04/17	8	4	3	0	0	0	1	0	0	0	0	0	0	0	0	0	3
	2	05/05/17	8	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	07/06/17	12	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	11/06/17	13	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	11/04/17	7	4	3	0			0						0	0	0	0	0
	2	29/04/17	8	4	3	0			0						0	0	0	0	0
	3	12/05/17	11	4	3	0			0						0	0	0	0	
	4	13/06/17	11	4	3	0			0						0	0	0	0	

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*
32 traps
Stickleback fish.
Access difficult from banks as overgrown with bramble and trees down one margin

Table 7.34: Elton Pond 32

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	11/04/17	7	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	29/04/17	8	3	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	3	12/05/17	11	3	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	4	13/06/17	11	3	2	0	0	0	0		0	0	0	0	0	0	0	0	0
Torchlight	1	22/04/17	8	3	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	2	05/05/17	8	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	07/06/17	12	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	11/06/17	13	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	11/04/17	7	3	2	0			0						0	0	0	0	0
	2	29/04/17	8	3	2	0			0						0	0	0	0	0
	3	12/05/17	11	3	2	0			0						0	0	0	0	0
	4	13/06/17	11	3	2	0			0						0	0	0	0	

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*
11 traps

Table 7.35: Elton Pond 33

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	11/04/17	7	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	29/04/17	8	2	2	0	0	0	6	0	0	0	0	0	0	1	0	0	0
	3	12/05/17	11	2/3	2	0	0	0	1	3	0	1	0	0	1	2	0	0	0
	4	13/06/17	10	3	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Torchlight	1	22/04/17	8	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	05/05/17	8	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	07/06/17	12	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	11/06/17	13	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	11/04/17	7	2	2	0			0						0	0	0	0	0
	2	29/04/17	8	2	2	0			0						0	0	0	0	0
	3	12/05/17	11	2/3	2	0			0						0	0	0	0	0
	4	13/06/17	10	3	2	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*
27 trap

Table 7.36: Elton Pond 34

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	11/04/17	7	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	29/04/17	8	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	12/05/17	11	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	13/06/17	10	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Torchlight	1	22/04/17	8	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	05/05/17	8	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	07/06/17	12	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	11/06/17	13	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	11/04/17	7	1	5	0			0						0	0	0	0	0
	2	29/04/17	8	1	5	0			0						0	0	0	0	0
	3	12/05/17	11	1	5	0			0						0	0	0	0	0
	4	13/06/17	10	1	4	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*
15 traps

Table 7.37: Elton Pond 35

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	11/04/17	7	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	29/04/17	8	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	12/05/17	11	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	13/06/17	10	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Torchlight	1	22/04/17	8	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	05/05/17	8	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	07/06/17	12	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	11/06/17	13	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	11/04/17	7	1	5	0			0						0	0	0	0	0
	2	29/04/17	8	1	5	0			0						0	0	0	0	0
	3	12/05/17	11	1	5	0			0						0	0	0	0	0
	4	13/06/17	10	1	4	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*
14 traps

Table 7.38: Elton Pond 36

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap	1	11/04/17	7	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	29/04/17	8	0	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	3	12/05/17	11	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	13/06/17	10	0	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Torchlight	1	22/04/17	8	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	05/05/17	8	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	07/06/17	12	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	11/06/17	13	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Egg Search	1	11/04/17	7	0	5	0			0						0	0	0	0	0
	2	29/04/17	8	0	5	0			0						0	0	0	0	0
	3	12/05/17	11	0	5	0			0						0	0	0	0	0
	4	13/06/17	10	0	4	0			0						0	0	0	0	0

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*
14 traps

Table 7.39: Elton Pond 37

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Netting	1	13/04/17	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	06/05/17	5	0	Pond completely dry														
	3	22/05/17	9	0															
	4	06/05/17	5	0															
Torchlight	1	22/04/17	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	05/05/17	8	0	Pond completely dry														
	3	07/06/17	12	0															
	4	11/06/17	13	0															
Egg Search	1	13/04/17	7	0	0	0			0						0	0	0	0	0
	2	06/05/17	5	0	Pond completely dry														
	3	22/05/17	9	0															
	4	06/05/17	5	0															

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

Survey 1 - Too shallow to trap netted instead
Surveys 2 to 4 – Completely dry

Table 7.40: Elton Pond 38

Survey Method	Rep. No.	Date of Result	Min. Overnight Air Temp. (°C)	Vegetation Cover (0 – 5)	Turbidity (0 – 5)	GCN			SN			PN			CF	CFT	CT	CTT	Fish
						M	F	Im	M	F	Im	M	F	Im					
Bottle Trap / Netting	1	13/04/17	7	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	30/04/17	9	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	12/05/17	11	5	Insufficient water to net or trap – egg search only														
	4	04/06/17	12	5	Completely dry														
Torchlight	1	22/04/17	8	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	05/05/17	8	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	07/06/17	12	5	Completely dry														
	4	11/06/17	13	5															
Egg Search	1	13/04/17	7	5	2	0			0						0	0	0	0	0
	2	30/04/17	9	5	2	0			0						0	0	0	0	0
	3	12/05/17	11	5	2	0			0						0	0	0	0	0
	4	04/06/17	12	5	Completely dry														

KEY: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, M = Male, F = Female, Im = Immature.
Fish and Tadpoles: * = 1 – 10, ** = 11 – 100 and *** = 100+ – 1000's
Vegetation Cover and Turbidity: 0 = low, i.e. good visibility and 5 = high, i.e. very poor visibility.

Notes: *e.g. Number of traps used on each date, access restrictions, observations, weather conditions etc.*

Survey 1 – 7 traps (thick mud made access difficult)
Survey 2 – Too shallow, netted
Surveys 3 and 4 - Too dry to bottle or net

8.0 APPENDIX 2: ENVIRONMENTAL EDNA RESULTS

Table 8.1: Ponds 1 and 47 eDNA Survey Results (2017)

SureScreen Scientifics

Folio No: E0714
Report No: 1
Order No: 2017-001c
Client: ERAP LTD
Contact: Chris Schofield
Contact Details: chris.schofield@erap.co.uk
Date: 05/06/2017

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS

Date sample received at Laboratory: 15/05/2017
Date Reported: 05/06/2017
Matters Affecting Results: None

RESULTS

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
32020	Pond 47, Elton	SD 7845 0850	Pass	Pass	Pass	Negative	0
32021	Pond 1, Elton	SD7919 0984	Pass	Pass	Pass	Negative	0

SUMMARY

When Great Crested Newts (GCN); Triturus cristatus inhabit a pond, they deposit traces of their DNA in the water as evidence of their presence. By sampling the water, we can analyse these small environmental DNA (eDNA) traces to confirm GCN habitation, or establish GCN absence.

The water samples detailed below were submitted for eDNA analysis to the protocol stated in DEFRA WC1067 (Latest Amendments). Details on the sample submission form were used as the unique sample identity.

RESULTS INTERPRETATION

Forensic Scientists and Consultant Engineers
SureScreen Scientifics Division Ltd, Morley Retreat, Church Lane, Morley, Derbyshire, DE7 6DE
UK Tel: +44 (0)1332 292003 Email: scientifics@surescreen.com
Company Registration No. 08950940

SureScreen Scientifics

Lab Sample No.- When a kit is made it is given a unique sample number. When the pond samples have been taken and the kit has been received back in to the laboratory, this sample number is tracked throughout the laboratory.

Site Name- Information on the pond.

O/S Reference – Location/co-ordinates of pond.

SIC- Sample Integrity Check. Refers to quality of packaging, absence of tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to results errors. Inspection upon receipt of sample at the laboratory. To check if the Sample is of adequate integrity when received. Pass or Fail.

DC- Degradation Check. Analysis of the spiked DNA marker to see if there has been degradation of the kit since made in the laboratory to sampling to analysis. Pass or Fail.

IC- Inhibition Check- PCR inhibitors can cause false results. Inhibitors are analysed to check the quality of the result. Every effort is made to clean the sample pre-analysis however some inhibitors cannot be extracted. An unacceptable inhibition check will cause an indeterminate sample and must be sampled again.

Result- NEGATIVE means that GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as no evidence of GCN presence. POSITIVE means that GCN eDNA was found at or above the threshold level and the presence of GCN at this location at the time of sampling or in the recent past is confirmed. Positive or Negative.

Positive Replicates- To generate the results all of the tubes from each pond are combined to produce one eDNA extract. Then twelve separate analyses are undertaken. If one or more of these analyses are positive the pond is declared positive for the presence of GCN. 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.

METHODOLOGY

The laboratory testing adheres to strict guidelines laid down in WC1067 Analytical and Methodological Development for Improved Surveillance of The Great Crested Newt, Version 1.1

The analysis is conducted in two phases. The sample first goes through an extraction process where all six tubes are pooled together to acquire as much eDNA as possible. The pooled sample is then tested via real time PCR (also called q-PCR). This process amplifies select part of DNA allowing it to be detected and measured in 'real time' as the analytical process develops. qPCR combines PCR amplification and detection into a single step. This eliminates the need to detect products using gel electrophoresis. With qPCR, fluorescent dyes specific to the target sequence are used to label PCR products during thermal cycling. The accumulation of fluorescent signals during the exponential phase of the reaction is measured for fast and objective data analysis. The point at which amplification begins (the Ct value) is an indicator of the quality of the sample. True positive controls, negatives and blanks as well as spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared so they act as additional quality control measures.

The primers used in this process are specific to a part of mitochondrial DNA only found in GCN ensuring no DNA from other species present in the water is amplified. The unique sequence appropriate for GCN analysis is quoted in DEFRA WC 1067 and means there should be no detection of closely related species. We have tested our system exhaustively to ensure this is the case in our laboratory. We can offer eDNA analysis for most other species including other newts.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. Kits are manufactured by SureScreen Scientifics to strict quality procedures in a separate building and with separate staff, adopting best practice from WC1067 and WC1067 Appendix 5. Kits contain a 'spiked' DNA marker used as a quality control tracer (SureScreen patent pending) to ensure any DNA contained in the sampled water has not deteriorated in transit. Stages of the DNA analysis are also conducted in

Forensic Scientists and Consultant Engineers
SureScreen Scientifics Division Ltd, Morley Retreat, Church Lane, Morley, Derbyshire, DE7 6DE
UK Tel: +44 (0)1332 292003 Email: scientifics@surescreen.com
Company Registration No. 08950940

SureScreen Scientifics

different buildings at our premises for added

SureScreen Scientifics Ltd also participate in Natural England's proficiency testing scheme and we also carry out inter-laboratory checks on accuracy of results as part of our quality procedures.

Reported by: Harry Neal **Approved by:** Derry Hickman

End Of Report

Forensic Scientists and Consultant Engineers
SureScreen Scientifics Division Ltd, Morley Retreat, Church Lane, Morley, Derbyshire, DE7 6DE
UK Tel: +44 (0)1332 292003 Email: scientifics@surescreen.com
Company Registration No. 08950940

Table 8.2: Ponds 39 to 46 Environmental DNA Survey Results (2015)

DNA ANALYSIS REPORT Commercial in Confidence

Customer:	Erap Ltd
Address:	49a Manor Lane Penwortham Preston PR1 0TA
Contact:	**Chris Schofield**
Email:	chris.schofield@erap.co.uk
Tel:	01772 750502
Report date:	14 May 2015
Order Number:	GCN045
Samples:	Pond Water
Analysis Requested:	Detection of Great Crested Newt eDNA from pond water.

Thank you for submitting your samples for analysis with the Fera eDNA testing service. The details of the analysis are as follows:

Method:
The method detects pond occupancy from great crested newts (GCN) using traces of DNA shed into the pond environment (eDNA). The detection of GCN eDNA is carried out using real time PCR to amplify part of the cytochrome 1 gene found in mitochondrial DNA. The method followed is detailed in Biggs J., *et al*, (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA. Freshwater Habitats Trust, Oxford.

The limits of this method are as follows: 1) the results are based on analyses of the samples supplied by the client and as received by the laboratory, 2) any variation between the characteristics of this sample and a batch will depend on the sampling procedure used. 3) the method is qualitative and therefore the levels given in the score are for information only, they do not constitute the quantification of GCN DNA against a calibration curve, 4) a 'not detected' result does not exclude presence at levels below the limit of detection.

The results are defined as follows:
Positive: DNA from the species was detected.
eDNA Score: Number of positive replicates from a series of twelve.
Negative: DNA from the species was not detected; in the case of negative samples the DNA extract is further tested for PCR inhibitors and degradation of the sample.
Inconclusive: Controls indicate degradation or inhibition of the sample, therefore the lack of detection of GCN DNA is not conclusive evidence for determining the absence of the species in the sample provided.

DNA ANALYSIS REPORT
Commercial in Confidence

Results:

Customer Reference	Fera Sample Ref.	GCN Detection	GCN Score	Inhibition	Degradation
Pond 1	S15-050000	Negative	0	No	No
Pond 1a	S15-050005	Negative	0	No	No
Pond 1b	S15-050001	Negative	0	No	No
Pond 2 /3	S15-050004	Negative	0	No	No
Pond 3a	S15-050027	Negative	0	No	No
Pond 3b	S15-050029	Negative	0	No	No
Pond 3c	S15-050030	Negative	0	No	No
Pond 11	S15-050002	Negative	0	No	No
Pond 12	S15-050003	Negative	0	No	No

The results indicate that eDNA for great crested newts was detected in one (S15-050032) of the nine samples submitted and in the remaining samples eDNA was not detected. However with sample S15-050024 we detected degradation of the internal control therefore issued an inconclusive result. Analysis was conducted in the presence of the following controls: 1) Extraction blank, 2) appropriate positive and negative PCR controls for each of the TaqMan assays (GCN, Inhibition, and Degradation). All controls performed as expected.

This test procedure was developed using research funded by the Department of Environment, Food and Rural Affairs, and was performed under the conditions of licensing arrangements with Applied Biosystems and patent rights owned by F. Hoffman-La Roche Ltd.

Issuing officer: Steven Bryce
Tel: 01904 462 324
Email: e-dna@fera.co.uk

9.0 APPENDIX 3: FIGURES

Figure 9.1: Plan to Show Pond Locations

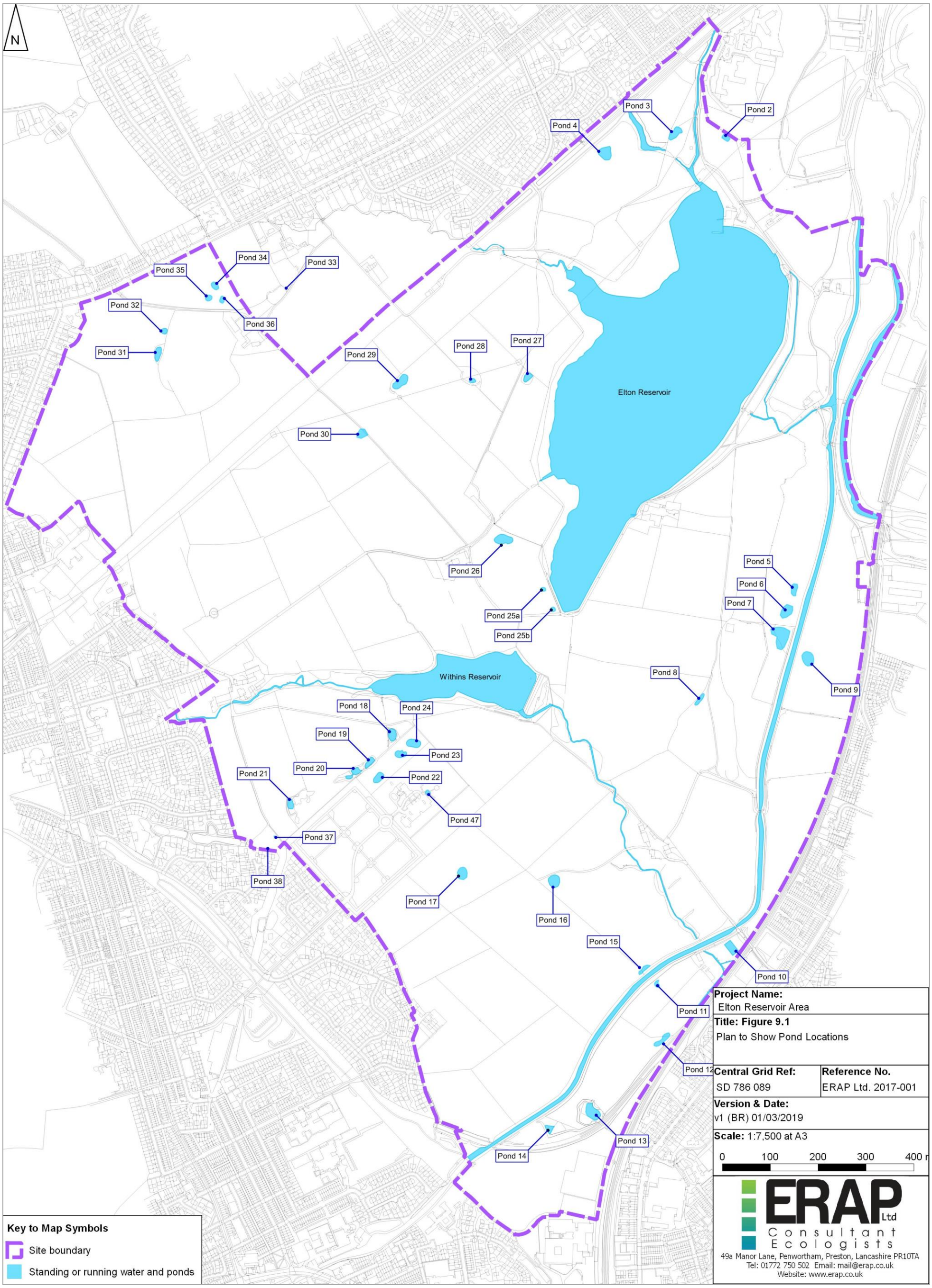

Figure 9.2: Plan to Show Ponds and GCN Presence / Absence 2017