A585 Windy Harbour to Skippool Improvement Scheme

TR010035

6.8.2 ES Appendix 8.2: Great Crested Newt Technical Appendix

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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Infrastructure Planning

Planning Act 2008

The Infrastructure Planning
(Applications: Prescribed Forms and
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A585 Windy Harbour to Skippool Improvement Scheme

Development Consent Order 201[ ]

ES APPENDIX 8.2: GREAT CRESTED NEWT TECHNICAL APPENDIX

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1 INTRODUCTION

1.1 Aims and Objectives

1.1.1 This report provides the findings of great crested newt surveys undertaken in support of Highways England's proposed development of the A585 between Windy Harbour and Skippool (hereafter referred to as 'the Scheme').

1.1.2 The aims and objectives of this assessment were to:

- Identify the presence of great crested newts *Triturus cristatus* (and other amphibians) using aquatic habitats, and assess the likelihood of presence within ponds where presence was not established but survey results were lacking or hindered by limitations
- Assess the likelihood of presence of amphibians within terrestrial habitats based on habitat suitability and potential connectivity
- Advise of any implications that presence would have on the Scheme

1.1.3 The need for mitigation or compensation, and the identification of potential opportunities to enhance the existing ecological baseline, are not included within this report, but are discussed in full in Chapter 8: Biodiversity (document reference TR010035/APP/6.8).

1.2 Report Structure

1.2.1 This report has been subdivided into the following chapters:

- Section 1 and 2: provide the aims and objectives with an overview of the assessment methodologies adopted
- Section 3: presents the results of the desk study and great crested newt surveys
- Section 4: summarises the results and provides a conclusion to the surveys.
- Section 5: references

2 METHODOLOGY

2.1 Personnel

2.1.1 All works were coordinated and undertaken by suitability licenced or experienced surveyors (led by Neil Madden; Natural England (NE) Licence Number: 2016-8355-CLS).

2.1.2 The desk study area (the 'Desk Study Area') and field survey area (the 'Survey Area'), (Figure 8.2.1 at Annex D) described herein, were determined during the options phase, at which time multiple Scheme options were under consideration. This report therefore, in some instances, contains information outside of the various study and survey areas discussed herein.

2.2 Desk Study

2.2.1 Table 2-1 summarises the sources of information utilised during the desk study and the information that was obtained.

Table 2-1: Desk Study Data Sources

Source	Information Obtained	Radius around Draft Order Limits (km)
Multi-Agency Geographic Information for the Countryside (MAGIC) – magic.defra.gov.uk	The location of international/national nature conservation designated sites, habitats registered on the Priority Habitat Inventory1 and registered European Protected Species Licence applications.	2
Ordnance Survey mapping and online aerial imagery	Location of ponds and other waterbodies	0.5
LERN; the Lancashire Environment Record Network.	Records of protected and notable species dating back to 2005 and locations of non-statutory designated sites.	1

2.3 Defining the Survey Area

2.3.1 All ponds identified within approximately 500m of the Draft Order Limits were subject to habitat suitability index (HSI) surveys, access permitting (see Section 2.4 for HSI description and method).

2.3.2 In line with Natural England's recommendations for the risk-based approach to surveys for great crested newts, results of the HSI were reviewed in conjunction with additional contextual information (habitat composition, potential impacts from development, etc.) to determine the area in which further surveys would be undertaken.

2.3.3 Informed by the HSI results; habitat composition of the area and potential impacts as a result of the Scheme, the radius around the Draft Order Limits in which environmental DNA (eDNA) surveys would be undertaken was determined to be approximately 250m. This was agreed with Natural England.

2.3.4 Ponds without terrestrial connectivity to the Scheme (45 in total) were removed from the study. The remaining 64 ponds were subject to eDNA survey, access permitting (Figure 8.2.2 at Annex D).

2.3.5 Based on the eDNA survey results, the presence and absence survey area was divided into 6 areas. The habitat composition of each area was assessed to determine the radius (250m or 500m) ((Figure 8.2.3 at Annex D) around the Scheme within which eDNA surveys would be considered.

2.3.6 Ponds 250–500m from the Scheme with terrestrial connectivity to a pond with confirmed great crested newt, as identified from ongoing surveys or the desk study, were also subject to presence/absence surveys.

2.3.7 Full details relating to defining the survey area and the selection of ponds on which surveys would be undertaken are provided in Annex C – Survey Area Selection.

2.4 Habitat Suitability Index

2.4.1 The great crested newt HSI, described in Advice note 5: Great crested newt habitat suitability index. Amphibian and Reptile Groups of the United Kingdom (ARG UK, 2010), is a quantitative measure of habitat quality.

2.4.2 Field scores for ten suitability indices (SI), including categorical, qualitative or numeric values, determined during site surveys and, where appropriate, the Desk Study are converted to numeric SI scores which are used to determine the HSI score.

2.4.3 The HSI score is a numerical index, between 0 and 1 which is used to assess a pond's suitability, as follows:

- <0.50 = poor
- 0.50–0.59 = below average
- 0.60–0.69 = average
- 0.70–0.79 = good
- > 0.80 = excellent

2.4.4 All ponds identified within the Survey Area were subject to a HSI survey, access permitting.

2.4.5 The majority of the HSI surveys were undertaken in May and June 2016. Due to access restrictions, outlined in Section 2.6, additional HSI surveys were undertaken between March and June 2017 as access to other ponds became available.

2.5 Occupancy Surveys

Environmental DNA Survey

2.5.1 Surveys for eDNA were undertaken in May–June 2016 and May 2017.

2.5.2 The eDNA survey was used to determine the presence, or potential absence, of great crested newts in waterbodies. Samples were analysed by Fera Science Limited

(hereafter referred to as the 'Laboratory') in accordance with the methodology provided in Biggs *et al*. (2014).

2.5.3 The eDNA method detects pond occupancy of great crested newts using traces of DNA shed into the pond environment. The method has been accepted by Natural England to run in conjunction with, or replace, where appropriate, traditional presence/absence surveys. In summary, field methodology was as follows:

- A total of 20 water samples were taken from the pond margin, without entering the water – to prevent disturbance of sediment. Water samples were collected from approximately equal intervals (where access was appropriate) around the edge of the pond
- Prior to a sample being taken, the pond water column was mixed without disturbing the sediment on the pond bed
- All 20 samples were combined into a "Whirl-Pak" bag and shaken for 10 seconds to mix across the whole sample any DNA present
- The content of the sample bag was then divided in to 6, sterile, conical sample tubes, with 15ml of water sample and 35ml of ethanol preservative. Each conical tube was then shaken to mix the contents

2.5.4 Test results provided by the Laboratory fall into 1 of 3 categories:

- Positive: A positive result means that great crested newts were present or have been present in the water in the recent past (eDNA degrades over approximately 7–21 days)
- Negative: A negative result means that great crested newt DNA was not detected in the water sample
- Inconclusive: Inconclusive results occur when controls indicate degradation or inhibition of the sample, therefore the lack of detection of great crested newt DNA is not conclusive evidence for determining the absence of the species in the sample provided. A re-test could be performed, but a fresh water sample would need to be obtained. If water chemistry was the cause of the indeterminate analysis, then a re-test would most likely also return an inconclusive result

Presence / Absence Surveys

2.5.5 Ponds were subject to presence/absence surveys under the following conditions:

- eDNA survey could not be undertaken
- eDNA analysis confirmed great crested newt presence or returned an inconclusive result
- A pond was in close proximity, with terrestrial connectivity, to a pond with great crested newt presence confirmed through eDNA analysis
- The desk study identified historical presence of great crested newts within a pond

2.5.6 Field survey protocols followed the Great Crested Newt Mitigation Guidelines, 2001 and Gent and Gibson, 2003. Where possible, 4 surveys were carried out during optimal weather conditions, i.e. no/little wind or rain, and at temperatures above 5°C.

The following survey methods were undertaken:

- Torchlight Survey – 1 million candlepower CluLite torches were used to scan the waterbodies after sunset. Accessible margins were walked slowly, and any amphibians were recorded
- Bottle Trap Survey – bottle trap construction and placement was undertaken using guidelines outlined by Gent and Gibson (2003) and following the protocol described by Griffiths *et al*. (1996). At each pond, a maximum of 30 sampling points was established at 2m intervals around accessible areas of shoreline. One trap was placed at each sampling point, enabling newt density to be calculated as the number of newts captured per 2m. Traps were left in place for a maximum of 12 hours and any captured newts were recorded and released where they were found
- Egg Searches – conducted during daytime visits to each of the ponds with the aim to confirm breeding. Searches were focused on macrophytes around the ponds margins. Egg searching is a destructive survey method; searches therefore ceased following the identification of 1 egg in each pond; thus, survey effort may range from 1 to 6 visits between ponds. Torchlight encounters with females in the act of egg laying was also noted and this is sufficient to confirm breeding status within the pond
- Netting – netting was conducted at night; as netting causes widespread disturbance of the pond. Where used in combination with a torchlight survey, it was only conducted following completion of torching. The nets used had a mesh size of 2–4mm

Population Surveys

2.5.7 If great crested newts were confirmed in a waterbody during either the eDNA survey or the presence/absence surveys then 2 additional surveys, required to enable a population size class to be calculated, were undertaken following the same methods used for the presence/absence surveys.

2.5.8 Presence/absence and population surveys were undertaken April–May 2017. Full details relating to survey dates and methods, and weather conditions are provided in ANNEX B – Presence/absence surveys and population size class assessment.

2.6 Survey Limitations

2.6.1 Access could not be obtained to 9 ponds for the full duration of the study; as a result, their suitability for supporting great crested newts could not be determined.

2.6.2 Seven of the 9 inaccessible ponds were, however, terrestrially isolated from the Draft Order Limits. Due to this isolation, it is unlikely that occupancy surveys would have been recommended. Although no surveys were undertaken on the 2 remaining ponds, due to the large scale of surveys undertaken in the local area, it is unlikely these ponds had potential to qualitatively affect any conclusions drawn with respect to baseline conditions.

2.6.3 The first presence/absence survey at P81 was undertaken, but the landowner subsequently withdrew access. This pond was situated approximately 400m from the nearest point of construction; thereby, placed outside of the 50m and 250m core habitat areas. Additionally, the A585 Mains Lane, situated approximately 100m south

of the pond, represents a barrier to great crested newt (GCN) dispersal. Although this barrier is not considered to be impermeable it is likely to markedly reduce the frequency with which GCN disperse in to the adjacent areas. Due to the combination of distance and terrestrial barriers, effects on this pond as a result of the Scheme are considered unlikely. The lack of presence/absence information from this pond is therefore highly unlikely to qualitatively affect any conclusions drawn with respect to baseline conditions or an assessment of effects.

2.6.4 Eighteen ponds surveyed (Ponds P5, P104, P7A, P15, P12A, P64, P61, P110, P83, P68, P69, P71, P77, P96, P106B, P108A, P107, P108) for presence/absence had a low detectability warning, due to either vegetation or water turbidity. All of these ponds were subject to netting as a precautionary approach which is considered reasonable to offset the limitation of reduced visibility. Six ponds (P104, P83, P110, P77, P96, P106B) only had a low detectability warning on either 1 or 2 survey visits. Therefore, at least half of the surveys for these ponds were undertaken in suitable survey conditions.

2.6.5 Due to the positive eDNA result returned in 2016, ponds 59, 83, 68 and 77 were surveyed 6 times, even though no great crested newts were recorded on the first 4 visits.

2.6.6 Pond P7A was dry after the fourth survey visit. This pond had a positive eDNA result, but no great crested newts were recorded during the 4 presence/absence surveys Therefore, if present within this pond, great crested newts are anticipated to be of low numbers, only.

2.6.7 Pond P15 identified the presence of great crested newt on the first survey visit; however, only 4 surveys were undertaken due to the pond drying before the fifth visit. The peak count was recorded on the first visit and the pond condition was degrading throughout the surveys. Therefore, it is anticipated that the peak count was recorded when the pond was at its most suitable and significant increase in population size as a result of 2 additional surveys is not anticipated.

2.6.8 Pond P19 was dry when the second survey visit was to be undertaken and the water level was low during the first survey with bottle traps not installed.

3 RESULTS

3.1 Desk study

3.1.1 No statutory or non-statutory designated sites for great crested newts were identified. One great crested newt mitigation licence was located within the 2km search area, located approximately 1.3 km north west of the Scheme.

3.1.2 Records of Common Frog (*Rana temporaria*) and great crested newt were provided by LERN (Table 3-1).

Table 3-1: Summary of Amphibian Records

Species	No. of records	Year	Conservation status	Distance (m) and direction of nearest record from Scheme
Common Frog	6	2008	Local Biodiversity Action Plan species	685 SE
Great Crested Newt	3	2005	European Protected Species	110 N

3.1.3 One hundred and 28 potential waterbodies were identified within the Study Area (Figure 8.2.1 at Annex D). Waterbodies adjacent to each other were grouped and assessed collectively as a single entity. The number of waterbodies was thus reduced to 123.

3.2 Habitat Suitability Index

3.2.1 All ponds within 500m of the Scheme were subject to HSI survey, access permitting. Of the 123 ponds identified, access could not be obtained to 10 ponds, and 2 ponds were found to be defunct:

- Defunct or Dry at the time of the survey: P25 and P26A
- Access was denied by the landowner or unavailable: P1, P12C, P32, P33, P34, P35, P35A, P52, P109, P109A.

3.2.2 The remaining 111 ponds were subject to HSI survey: summary results are presented in Table 3-2 and detailed results are provided in **Error! Reference source not found.**

Table 3-2: HSI Summary Results

Rating	Count
Poor	30
Below Average	15
Average	26
Good	37
Excellent	3
Total	111

3.3 eDNA Sampling

3.3.1 Surveys for eDNA were undertaken in the area defined in Section 2.3, except for:

- P19 which was dry at the time of the survey
- P12, P20, P69, P71, P96, P106B, P107, P108, P108A, P109, P109A, P110; access to which could not be obtained

3.3.2 Summary results of the eDNA survey are presented in Figure 8.2.2 in Annex D and Table 3-3 below. Great crested newts were confirmed in ponds: P7A, P12A, P59, P68, P77 and P83. Inconclusive results were returned for P5 and P61.

Table 3-3: Environmental DNA Summary Results

Result	Count
Negative	57
Inconclusive	2
Positive	6
Total	65

3.4 Presence / Absence and Population Survey

3.4.1 Surveys were undertaken on 28 ponds (Figure 8.2.3 in Annex D), a summary of which is provided within Table 3-4 and detailed results are provided in ANNEX B – Presence/absence surveys and population size class assessment.

3.4.2 Great crested newts were recorded in 5 ponds: P15, P20, P12A, P14 and P110 (Figure 8.2.4 in Annex D). A medium population was recorded in P14; small populations were recorded in the remaining 4 ponds.

Table 3-4: Presence / Absence and Population Survey Summary Results

Pond reference	Area	Great crested newt detected	Peak adult count	Pop size class	Low detectability warning	No. surveys undertaken	Peak count visit number
P5	1	No	0	N/A	Caution	4	N/A
P104	1	No	0	N/A	Caution	4	N/A
P19	1	No	0	N/A	N/A	1	N/A
P7A	1	No	0	N/A	Caution	4	N/A
P15	2	Yes	1	Small	Caution	4	1
P20	2	Yes	3	Small	N/A	6	3
P12A	2	Yes	10	Small	Caution	6	2
P12C	2	No	0	N/A	N/A	4	N/A
P14	2	Yes	57	Medium	N/A	6	1
P63	3	No	0	N/A	N/A	4	N/A
P64	3	No	0	N/A	Caution	4	N/A
P62A	3	No	0	N/A	N/A	4	N/A
P62B	3	No	0	N/A	N/A	4	N/A

Pond reference	Area	Great crested newt detected	Peak adult count	Pop size class	Low detectability warning	No. surveys undertaken	Peak count visit number
P61	3	No	0	N/A	Caution	4	N/A
P59	3	No	0	N/A	N/A	6	N/A
P110	4	Yes	1	Small	Caution	6	2
P83	4	No	0	N/A	Caution	6	N/A
P68	4	No	0	N/A	Caution	6	N/A
P69	4	No	0	N/A	Caution	4	N/A
P71	4	No	0	N/A	Caution	4	N/A
P77	5	No	0	N/A	Caution	6	N/A
P81	5	No	0	N/A	N/A	1	N/A
P96	5	No	0	N/A	Caution	4	N/A
P106B	5	No	0	N/A	Caution	4	N/A
P80	5	No	0	N/A	N/A	4	N/A
P108A	6	No	0	N/A	Caution	4	N/A
P107	6	No	0	N/A	Caution	4	N/A
P108	6	No	0	N/A	Caution	4	N/A

3.5 Additional Observations

3.5.1 Other amphibians and fish were observed within some ponds during the surveys Table 3-5.

Table 3-5: Other Amphibian and Fish Species Recorded

Species	Pond reference
Common Toad *Bufo bufo*	P20, P14, P63, P59, P110, P68, P108A
Common Frog *Rana temporaria*	P104, P15, P20, P12A, P14, P63, P62A, P61, P59, P68, P77, P81, P96, P106B, P108A
Smooth Newt *Lissotriton vulgaris*	P20, P12A, P14, P63, P62B, P110, P83, P96, P106B
Fish	P5, P63, P59, P68, P107, P108

4 CONCLUSIONS

4.1.1 Great crested newts were confirmed either through eDNA or presence/absence surveys in 10 ponds: P7A, P12A, P14, P15, P20, P59, P68, P77, P83 and P110 (Figure 8.2.5 in Annex D).

4.1.2 A medium population was identified in 1 pond: P14. Small population were identified in the remaining 9 ponds either through eDNA or presence/absence surveys. Additionally, great created newt presence was precautionarily assumed in P109 and P109A, to which access could not be obtained.

4.1.3 Six ponds are understood to form 1 metapopulation: P77, P68, P83, P109, P109A and P110 (metapopulation 1). Four ponds are understood for form a second metapopulation: P12A, P14, P15 and P20 (metapopulation 2).

4.1.4 Pond P7A is likely to be associated with metapopulation 2; however, this waterbody is located to the north of the existing A585 and located beyond 500m from metapopulation 2, although a native, species-poor intact hedgerow does provide a landscape feature which could be used for dispersal, providing habitat linkages.

4.1.5 Pond P59 is located between the 2 metapopulations and therefore could be used by newts from either metapopulation. Direct loss of habitats associated with this receptor would therefore occur.

4.1.6 All great crested newt populations were over 250m from one another; as such, the 4 populations are described as separate metapopulations between which low levels of immigration and emigration may be expected; as opposed to a single population subject to regular, frequent movement of individuals between ponds.

4.1.7 Multiple barriers that would influence the distributions of great crested newts were present along the length of the Scheme. These barriers included the existing A585 and A586 which is likely to result in a north/south divide of newt populations. Other barriers include minor B roads, and the residential areas of Little Singleton, Poulton-le-Fylde and Skippool. However, roads cannot completely hinder movements of newts between ponds, particularly at night when amphibian activity is higher and traffic volume is lower. Additionally, the majority of the road network in this area comprises only 1 lane in each direction and there are a few areas where amphibian dispersal could be facilitated, such as low-kerbed entrances to agricultural fields with boundary hedgerows. Although these barriers would reduce dispersal of great crested newts they are not considered to be impermeable barriers that would entirely preclude movement of great crested newts between ponds. Terrestrial habitat connectivity was typically or poor quality (i.e. agricultural) for great crested newts with poor connectivity between habitats of higher value, such as hedgerows scrub and woodland.

4.1.8 Based on the currently available information, it is considered that there are 2 metapopulations of confirmed great crested newt, centred around 2 pond areas: Area 2 and Area 4.

5 REFERENCES

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6 ABBREVIATIONS

Term	Meaning
ARG UK	Amphibian and Reptile Groups of the United Kingdom
eDNA	Environmental DNA
GCN	Great crested newt
HSI	Habitat Suitability Index
LERN	Lancashire Environment Record Network
MAGIC	Multi-Agency Geographic Information for the Countryside
NE	Natural England
PCF	Project Control Framework
SI	Suitability indices

ANNEX A – HABITAT SUITABILITY INDEX RESULTS

Pond Reference and Location	P2 (337947,439705)		P3 (337971,439702)		P4 (337998,439690)		P5 (338021,439726)	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	550m^2	1	200m^2	0.40	300m^2	0.60	400m^2	0.80
SI3 – Pond drying	Never	0.90	Never	0.90	Never	0.90	Never	0.90
SI4 – Water quality	Good	1	Good	1	Moderate	0.67	Moderate	0.67
SI4 – Shade	5%	1	0%	1	0%	1	0%	1
SI6 – Fowl	Minor	0.67	Minor	0.67	Minor	0.67	Major	0.01
SI7 – Fish	Possible	0.67	Possible	0.67	Possible	0.67	Possible	0.67
SI8 – Ponds	18	1	15	1	17	1	18	1
SI9 – Terr. habitat	Poor	0.33	Poor	0.33	Poor	0.33	Poor	0.33
SI10 – Macrophytes	40%	0.70	50%	0.80	10%	0.40	0%	0.30
HSI Score	**Good**	**0.79**	**Good**	**0.73**	**Average**	**0.68**	**Poor**	**0.45**
Pond Reference and Location	**P6 (338162,439726)**		**P7 (338468,439644)**		**P7A (338609,439835)**		**P8 (338382,439534)**	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	4,600m^2	0.5	3,300m^2	0.60	50m^2	0.05	250m^2	0.50
SI3 – Pond drying	Never	0.9	Never	0.90	Sometimes	0.50	Never	0.90
SI4 – Water quality	Good	1	Moderate	0.67	Poor	0.33	Moderate	0.67
SI4 – Shade	40%	1	0%	1	40%	1	80%	0.60
SI6 – Fowl	Major	0.01	Minor	0.67	Absent	1	Absent	1
SI7 – Fish	Minor	0.33	Major	0.01	Absent	1	Possible	0.67
SI8 – Ponds	18	1	18	1	18	1	16	1
SI9 – Terr. habitat	Moderate	0.33	Good	1	Good	1	Good	1
SI10 – Macrophytes	40%	0.7	40%	0.70	60%	0.9	0%	0.30
HSI Score	**Poor**	**0.46**	**Below Average**	**0.53**	**Below Average**	**0.52**	**Good**	**0.72**

Pond Reference and Location	P9 & 10 (338355, 439522)		P11 (338194, 439432)	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1
SI2 – Pond area	300m^2	0.6	550m^2	1
SI3 – Pond drying	Never	0.9	Never	0.9
SI4 – Water quality	Moderate	0.67	Moderate	0.67
SI4 – Shade	90%	0.4	10%	1
SI6 – Fowl	Minor	0.67	Absent	1
SI7 – Fish	Possible	0.67	Possible	0.67
SI8 – Ponds	17	1	18	1
SI9 – Terr. habitat	Good	1	Poor	0.33
SI10 – Macrophytes	0%	0.3	30%	0.6
HSI Score	**Average**	**0.67**	**Good**	**0.78**

Pond Reference and Location	P11A (337882, 439283)		P12 (337947, 439111)		P12A (337648, 438997)		P12B (337863, 439152)	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	1,800m^2	0.85	925m^2	0.95	330m^2	0.6	110m^2	0.2
SI3 – Pond drying	Annually	0.1	Sometimes	0.5	Never	0.9	Never	0.9
SI4 – Water quality	Moderate	0.67	Poor	0.33	Good	1	Moderate	0.67
SI4 – Shade	0%	1	80%	0.6	20%	1	0%	1
SI6 – Fowl	Absent	1	Absent	1	Absent	1	Major	0.01
SI7 – Fish	Possible	0.67	Absent	1	Possible	0.67	Possible	0.67
SI8 – Ponds	18	1	9	0.85	17	1	21	1
SI9 – Terr. habitat	Moderate	0.67	Good	1	Good	1	Good	1
SI10 – Macrophytes	100%	0.8	0%	0.3	60%	0.9	0%	0.3
HSI Score	**Average**	**0.68**	**Average**	**0.69**	**Excellent**	**0.89**	**Poor**	**0.43**

Pond Reference and Location	P13 (337654, 438995)		P14 (338011, 438922)		P15 (338295, 439016)		P16 (338508, 438872)	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	400m^2	0.8	400m^2	0.8	1000m^2	0.95	110m^2	0.2
SI3 – Pond drying	Never	0.9	Never	0.9	Some	0.5	Never	0.9
SI4 – Water quality	Moderate	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI4 – Shade	40%	1	60%	1	40%	1	0%	1
SI6 – Fowl	Absent	1	Minor	0.67	Minor	0.67	Major	0.01
SI7 – Fish	Major	0.01	Major	0.01	Possible	0.67	Possible	0.67
SI8 – Ponds	19	1	19	1	23	1	21	1
SI9 – Terr. habitat	Good	1	Good	1	Poor	0.33	Good	1
SI10 – Macrophytes	50%	0.8	50%	0.8	30%	0.6	0%	0.3
HSI Score	**Below Average**	**0.57**	**Below Average**	**0.55**	**Good**	**0.70**	**Good**	**0.78**
Pond Reference and Location	**P17 (338579, 439084)**		**P18 (338667, 439112)**		**P19 (338588, 439364)**		**P20 (337982, 438743)**	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	630m^2	1	925m^2	0.95	40m^2	0.05	1,000m^2	0.95
SI3 – Pond drying	Never	0.9	Sometimes	0.5	Annually	0.01	Rarely	1
SI4 – Water quality	Moderate	0.67	Poor	0.33	Moderate	0.67	Moderate	0.67
SI4 – Shade	30%	1	80%	0.6	0%	1	0%	1
SI6 – Fowl	Minor	0.67	Absent	1	Absent	1	Minor	0.67
SI7 – Fish	Possible	0.67	Absent	1	Absent	1	Possible	0.67
SI8 – Ponds	23	1	9	0.85	23	1	23	1
SI9 – Terr. habitat	Poor	0.33	Good	1	Poor	0.33	Poor	0.33
SI10 – Macrophytes	30%	0.6	0%	0.3	60%	0.9	30%	0.6
HSI Score	**Average**	**0.68**	**Average**	**0.69**	**Poor**	**0.40**	**Good**	**0.75**

Pond Reference and Location	P21 (338786, 438941)		P22 (339037, 439083)		P23 (338391, 439276)		P24 (338390, 439277)	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	1,500m^2	0.9	1,250m^2	0.9	450m^2	1	500m^2	1
SI3 – Pond drying	Never	0.9	Never	0.9	Never	0.9	Rarely	1
SI4 – Water quality	Moderate	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI4 – Shade	40%	1	80%	0.6	80%	0.6	80%	0.6
SI6 – Fowl	Major	0.01	Major	0.01	Minor	0.67	Absent	1
SI7 – Fish	Possible	0.67	Possible	0.67	Possible	0.67	Possible	0.67
SI8 – Ponds	19	1	19	1	19	1	18	1
SI9 – Terr. habitat	Poor	0.33	Poor	0.33	Poor	0.33	Moderate	0.67
SI10 – Macrophytes	5%	0.35	5%	0.35	5%	0.35	5%	0.35
HSI Score	**Poor**	**0.46**	**Poor**	**0.44**	**Average**	**0.67**	**Good**	**0.76**
Pond Reference and Location	**P26 (339165, 439401)**		**P26B (338958, 439479)**		**P27 (338588, 439364)**		**P28-30 (339156, 439668)**	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	400m^2	0.81	400m^2	0.8	250m^2	0.5	400m^2	0.8
SI3 – Pond drying	Never	0.9	Never	0.9	Rarely	1	Rarely	1
SI4 – Water quality	Poor	0.33	Moderate	0.67	Poor	0.33	Moderate	0.67
SI4 – Shade	40%	1	90%	0.4	80%	0.6	90%	0.4
SI6 – Fowl	Absent	1	Absent	1	Absent	1	Absent	1
SI7 – Fish	Major	0.01	Possible	0.67	Absent	1	Absent	1
SI8 – Ponds	17	1	17	1	16	1	13	1
SI9 – Terr. habitat	Moderate	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI10 – Macrophytes	30%	0.6	20%	0.5	5%	0.35	5%	0.35
HSI Score	**Poor**	**0.50**	**Good**	**0.73**	**Average**	**0.69**	**Good**	**0.74**

Pond Reference and Location	P31 (339147, 439702)		P36 (339568, 440075)		P37 (339586, 439927)		P38 (339429, 439823)	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	800m^2	0.98	510m^2	1	550m^2	1	1,100m^2	0.95
SI3 – Pond drying	Never	0.9	Never	0.9	Never	0.9	Never	0.9
SI4 – Water quality	Poor	0.33	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI4 – Shade	80%	0.6	0%	1	10%	1	50%	1
SI6 – Fowl	Absent	1	Minor	0.67	Minor	0.67	Minor	0.67
SI7 – Fish	Absent	1	Possible	0.67	Possible	0.67	Possible	0.67
SI8 – Ponds	13	1	24	1	22	1	21	1
SI9 – Terr. habitat	Moderate	0.67	Poor	0.33	Poor	0.33	Poor	0.33
SI10 – Macrophytes	30%	0.6	40%	0.7	40%	0.7	30%	0.6
HSI Score	**Good**	**0.77**	**Good**	**0.76**	**Good**	**0.76**	**Good**	**0.74**
Pond Reference and Location	**P39 (339165, 439401)**		**P40 (339571, 439491)**		**P41 (339401, 439520)**		**P42 (339345, 439505)**	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	1,200m^2	0.9	350m^2	0.9	800m^2	0.98	850m^2	0.95
SI3 – Pond drying	Never	0.9	Rarely	1	Never	0.9	Never	0.9
SI4 – Water quality	Moderate	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI4 – Shade	30%	1	80%	0.6	0%	1	0%	1
SI6 – Fowl	Minor	0.67	Minor	0.67	Minor	0.67	Minor	0.67
SI7 – Fish	Possible	0.67	Possible	0.67	Major	0.01	Major	0.01
SI8 – Ponds	21	1	21	1	29	1	29	1
SI9 – Terr. habitat	Poor	0.33	Poor	0.33	Poor	0.33	Poor	0.33
SI10 – Macrophytes	40%	0.7	30%	0.6	0%	0.3	0%	0.3
HSI Score	**Good**	**0.75**	**Good**	**0.71**	**Poor**	**0.46**	**Poor**	**0.45**

Pond Reference and Location	P43 (339161, 439403)		P44 (339175, 439374)		P45 (339372, 439210)		P46 (339531, 439069)	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	680m^2	1	550m^2	1	450m^2	1	550m^2	1
SI3 – Pond drying	Never	0.9	Never	0.9	Never	0.9	Never	0.9
SI4 – Water quality	Moderate	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI4 – Shade	80%	0.6	80%	0.6	80%	0.6	80%	0.6
SI6 – Fowl	Minor	0.67	Minor	0.67	Minor	0.67	Minor	0.67
SI7 – Fish	Possible	0.67	Possible	0.67	Possible	0.67	Possible	0.67
SI8 – Ponds	19	1	19	1	19	1	19	1
SI9 – Terr. habitat	Poor	0.33	Poor	0.33	Poor	0.33	Poor	0.33
SI10 – Macrophytes	5%	0.35	5%	0.35	5%	0.35	5%	0.35
HSI Score	**Average**	**0.67**	**Average**	**0.67**	**Average**	**0.67**	**Average**	**0.67**
Pond Reference and Location	**P47 (339520, 439036)**		**P48 (339722, 439143)**		**P49 (339785, 439074)**		**P50 (339901, 439417)**	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	450m^2	1	550m^2	1	450m^2	1	450m^2	1
SI3 – Pond drying	Never	0.9	Never	0.9	Never	0.9	Never	0.9
SI4 – Water quality	Moderate	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI4 – Shade	80%	0.6	80%	0.6	80%	0.6	80%	0.6
SI6 – Fowl	Minor	0.67	Minor	0.67	Minor	0.67	Minor	0.67
SI7 – Fish	Possible	0.67	Possible	0.67	Possible	0.67	Possible	0.67
SI8 – Ponds	19	1	19	1	19	1	19	1
SI9 – Terr. habitat	Poor	0.33	Poor	0.33	Poor	0.33	Poor	0.33
SI10 – Macrophytes	5%	0.35	5%	0.35	5%	0.35	5%	0.35
HSI Score	**Average**	**0.67**	**Average**	**0.67**	**Average**	**0.67**	**Average**	**0.67**

Pond Reference and Location	P51 (339982, 439703)		P53 (337420, 439834)		P54 (337296, 439979)		P55 (337274, 439961)	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	680m^2	1	250m^2	0.5	650m^2	1	300m^2	0.6
SI3 – Pond drying	Never	0.9	Sometimes	0.5	Never	0.9	Never	0.9
SI4 – Water quality	Moderate	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI4 – Shade	80%	0.6	90%	0.4	40%	1	90%	0.4
SI6 – Fowl	Minor	0.67	Absent	1	Major	0.01	Absent	1
SI7 – Fish	Possible	0.67	Absent	1	Minor	0.33	Possible	0.67
SI8 – Ponds	19	1	24	1	25	1	25	1
SI9 – Terr. habitat	Poor	0.33	Poor	0.33	Poor	0.33	Poor	0.33
SI10 – Macrophytes	5%	0.35	5%	0.35	5%	0.35	0%	0.3
HSI Score	**Average**	**0.67**	**Average**	**0.61**	**Poor**	**0.43**	**Average**	**0.63**
Pond Reference and Location	**P56 (337216, 439842)**		**P57 (337163, 439743)**		**P58 (337238, 439557)**		**P58A (339901, 439417)**	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	850m^2	0.95	600m^2	1	250m^2	0.5	470m^2	0.5
SI3 – Pond drying	Never`	0.9	Never	0.9	Never	0.9	Never	0.9
SI4 – Water quality	Poor	0.33	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI4 – Shade	60%	1	40%	1	40%	1	25%	1
SI6 – Fowl	Minor	0.67	Minor	0.67	Absent	1	Absent	1
SI7 – Fish	Possible	0.67	Possible	0.67	Possible	0.67	Major	0.01
SI8 – Ponds	24	1	20	1	24	1	11	0.95
SI9 – Terr. habitat	Poor	0.33	Poor	0.33	Moderate	0.67	Moderate	0.67
SI10 – Macrophytes	50%	0.8	65%	0.95	20%	0.5	5%	0.35
HSI Score	**Good**	**0.71**	**Good**	**0.78**	**Good**	**0.76**	**Poor**	**0.48**

Pond Reference and Location	P59 (337448, 439444)		P60 (337380, 439312)		P60A (337397, 439423)		P61 (337352, 439194)	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	550m^2	1	800m^2	0.98	150m^2	0.3	1,000m^2	0.95
SI3 – Pond drying	Never	0.9	Never	0.9	Never	0.9	Never	0.9
SI4 – Water quality	Good	1	Poor	0.33	Poor	0.33	Moderate	0.67
SI4 – Shade	20%	1	45%	1	0%	1	40%	1
SI6 – Fowl	Minor	0.67	Major	0.01	Major	0.01	Minor	0.67
SI7 – Fish	Major	0.01	Possible	0.67	Possible	0.67	Major	0.01
SI8 – Ponds	6	0.8	23	1	23	1	23	1
SI9 – Terr. habitat	Poor	0.33	Poor	0.33	Poor	0.33	Moderate	0.67
SI10 – Macrophytes	5%	0.35	5%	0.35	20%	0.5	30%	0.6
HSI Score	**Poor**	**0.47**	**Poor**	**0.43**	**Poor**	**0.40**	**Below Average**	**0.52**
Pond Reference and Location	**P62A (337277, 439305)**		**P62B (337260, 439321)**		**P63 (337222, 438895)**		**P64 (337242, 438780)**	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	600m^2	1	200m^2	0.4	1,467m^2	0.9	650m^2	1
SI3 – Pond drying	Never	0.9	Never	0.9	Never	0.9	Never	0.9
SI4 – Water quality	Moderate	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI4 – Shade	60%	1	60%	1	60%	1	60%	1
SI6 – Fowl	Minor	0.67	Minor	0.67	Absent	1	Absent	1
SI7 – Fish	Major	0.01	Possible	0.67	Major	0.01	Possible	0.67
SI8 – Ponds	22	1	22	1	17	1	17	1
SI9 – Terr. habitat	Moderate	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI10 – Macrophytes	30%	0.55	50%	0.75	20%	0.35	20%	0.35
HSI Score	**Below Average**	**0.52**	**Good**	**0.75**	**Below Average**	**0.51**	**Good**	**0.79**

Pond Reference and Location	P65 (336979, 439386)		P66 (337129, 439481)		P67 (336999, 439724)		P68 (336816, 439865)	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	800m^2	0.98	1,050m^2	0.95	550m^2	1	750m^2	1
SI3 – Pond drying	Never	0.9	Never	0.9	Never	0.9	Never	0.9
SI4 – Water quality	Bad	0.01	Poor	0.33	Bad	0.01	Moderate	0.67
SI4 – Shade	5%	1	10%	1	60%	1	35%	1
SI6 – Fowl	Minor	0.67	Major	0.01	Absent	1	Minor	0.67
SI7 – Fish	Possible	0.67	Possible	0.67	Possible	0.67	Possible	0.67
SI8 – Ponds	21	1	21	1	21	1	20	1
SI9 – Terr. habitat	Poor	0.33	Poor	0.33	Poor	0.33	Poor	0.33
SI10 – Macrophytes	30%	0.6	40%	0.7	60%	0.9	20%	0.5
HSI Score	**Poor**	**0.49**	**Poor**	**0.46**	**Poor**	**0.40**	**Good**	**0.73**
Pond Reference and Location	**P69 (336853, 439904)**		**P70 (336946, 439935)**		**P70A (337039, 439979)**		**P71 (336870, 439998)**	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	133m^2	0.2	182m^2	0.35	62m^2	0.1	130m^2	0.2
SI3 – Pond drying	Never	0.9	Never	0.9	Annually	0.1	Never	0.9
SI4 – Water quality	Poor	0.33	Moderate	0.67	Poor	0.33	Poor	0.33
SI4 – Shade	0%	1	20%	1	100%	0.2	0%	1
SI6 – Fowl	Major	0.01	Minor	0.67	Absent	1	Major	0.01
SI7 – Fish	Possible	0.67	Possible	0.67	Absent	1	0.67	0.67
SI8 – Ponds	20	1	17	1	29	1	23	1
SI9 – Terr. habitat	Poor	0.33	Poor	0.33	Poor	0.33	Poor	0.33
SI10 – Macrophytes	0%	0.3	5%	0.35	0%	0.3	0%	0.3
HSI Score	**Poor**	**0.36**	**Average**	**0.64**	**Poor**	**0.38**	**Poor**	**0.36**

Pond Reference and Location	P72 (337096, 440108)		P73 (337114, 440202)		P74 (337003, 440205)		P75 (336849, 440195)	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	500m^2	1	550m^2	1	900m^2	0.97	1,700m^2	0.85
SI3 – Pond drying	Never	0.9	Never	0.9	Never	0.9	Never	0.9
SI4 – Water quality	Poor	0.33	poor	0.33	Poor	0.33	Poor	0.33
SI4 – Shade	20%	1	20%	1	70%	0.8	60%	1
SI6 – Fowl	Minor	0.67	Minor	0.67	Minor	0.67	Minor	0.67
SI7 – Fish	Possible	0.67	Possible	0.67	Possible	0.67	Minor	0.33
SI8 – Ponds	23	1	22	1	18	1	19	1
SI9 – Terr. habitat	Poor	0.33	Poor	0.33	Poor	0.33	Poor	0.33
SI10 – Macrophytes	0%	0.3	0%	0.3	0%	0.3	10%	0.4
HSI Score	**Average**	**0.65**	**Average**	**0.65**	**Average**	**0.63**	**Average**	**0.61**
Pond Reference and Location	**P76 (336946, 440446)**		**P77 (336776, 440412)**		**P78 (336664, 440369)**		**P79 (336561, 440359)**	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	370m^2	0.75	900m^2	0.98	350m^2	0.7	450m^2	1
SI3 – Pond drying	Never	0.9	Never	0.9	Occasional	0.5	Never	0.9
SI4 – Water quality	Moderate	0.67	Moderate	0.67	Poor	0.33	Moderate	0.67
SI4 – Shade	50%	1	0%	1	90%	0.4	60%	1
SI6 – Fowl	Absent	1	Major	0.01	Absent	1	Minor	0.67
SI7 – Fish	Absent	1	Minor	0.33	Absent	1	Possible	0.67
SI8 – Ponds	17	1	20	1	18	1	17	1
SI9 – Terr. habitat	Poor	0.33	Poor	0.33	Poor	0.33	Poor	0.33
SI10 – Macrophytes	20%	0.5	10%	0.4	10%	0.4	30%	0.5
HSI Score	**Good**	**0.77**	**Poor**	**0.44**	**Average**	**0.60**	**Good**	**0.73**

Pond Reference and Location	P80 (336884, 440675)		P81 (336584, 440210)		P82 (336609, 440146)		P83 (336779, 439597)	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	500m^2	1	700m^2	0.99	850m^2	0.95	250m^2	0.5
SI3 – Pond drying	Never	0.9	Never	0.9	Never	0.9	Never	0.9
SI4 – Water quality	Moderate	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI4 – Shade	60%	1	50%	1	50%	1	60%	1
SI6 – Fowl	Minor	0.67	Absent	1	Minor	0.67	Minor	0.67
SI7 – Fish	Possible	0.67	Absent	1	Major	0.01	Absent	1
SI8 – Ponds	19	1	18	1	18	1	12	0.95
SI9 – Terr. habitat	Poor	0.33	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI10 – Macrophytes	30%	0.5	10%	0.4	20%	0.5	20%	0.5
HSI Score	**Good**	**0.73**	**Excellent**	**0.83**	**Below Average**	**0.51**	**Good**	**0.76**
Pond Reference and Location	**P84 (336375, 439481)**		**P85 (336073, 439590)**		**P86 (336131, 439403)**		**P87 (336033, 439415)**	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	800m^2	0.98	150m^2	0.3	2,000m^2	0.8	1,500m^2	0.88
SI3 – Pond drying	Never	0.9	Annually	0.1	Never	0.9	Never	0.9
SI4 – Water quality	Poor	0.33	Bad	0.01	Moderate	0.67	Poor	0.33
SI4 – Shade	5%	1	0%	1	0%	1	5%	1
SI6 – Fowl	Minor	0.67	Minor	0.67	Minor	0.67	Absent	1
SI7 – Fish	Possible	0.67	Absent	1	Possible	0.67	Possible	0.67
SI8 – Ponds	21	1	21	1	21	1	21	1
SI9 – Terr. habitat	Poor	0.33	Poor	0.33	Poor	0.33	Poor	0.33
SI10 – Macrophytes	10%	0.4	0%	0.3	45%	0.8	0%	0.3
HSI Score	**Average**	**0.67**	**Poor**	**0.34**	**Good**	**0.75**	**Average**	**0.67**

Pond Reference and Location	P88 (335921, 439774)		P89 (336402, 440228)		P90 (336356, 440567)		P91 (336348 440639)	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	2,000m^2	0.8	680m^2	1	1,100m^2	0.94	600m^2	1
SI3 – Pond drying	Never	0.9	Never	0.9	Never	0.9	Never	0.9
SI4 – Water quality	Moderate	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI4 – Shade	0%	1	80%	0.6	5%	1	10%	1
SI6 – Fowl	Minor	0.67	Absent	1	Absent	1	Minor	0.67
SI7 – Fish	Possible	0.67	Major	0.01	Possible	0.67	Absent	1
SI8 – Ponds	21	1	13	1	7	0.85	7	0.85
SI9 – Terr. habitat	Poor	0.33	Moderate	0.67	None	0.01	None	0.01
SI10 – Macrophytes	45%	0.8	10%	0.4	70%	1	10%	0.4
HSI Score	**Good**	**0.75**	**Poor**	**0.50**	**Below Average**	**0.56**	**Below Average**	**0.52**
Pond Reference and Location	**P92 (336277, 440613)**		**P93 (336417, 440775)**		**P94 (336106, 440729)**		**P94A (335902, 440754)**	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	450m^2	0.9	300m^2	0.6	350m^2	0.7	150m^2	0.15
SI3 – Pond drying	Never	0.9	Never	0.9	Never	0.9	Never	0.9
SI4 – Water quality	Moderate	0.67	Moderate	0.67	Moderate	0.67	Poor	0.33
SI4 – Shade	20%	1	60%	1	10%	1	0%	1
SI6 – Fowl	Absent	1	Absent	1	Minor	0.67	Absent	1
SI7 – Fish	Absent	1	Absent	1	Possible	0.67	Minor	0.33
SI8 – Ponds	7	0.85	7	0.85	7	0.85	7	0.85
SI9 – Terr. habitat	None	0.01	None	0.01	None	0.01	Poor	0.33
SI10 – Macrophytes	40%	0.7	30%	0.6	10%	0.4	5%	0.35
HSI Score	**Below Average**	**0.56**	**Below Average**	**0.53**	**Poor**	**0.48**	**Below Average**	**0.52**

Pond Reference and Location	P95 (335964, 440575)		P96 (335837, 440419)		P97 (335263, 440843)		P98 (335288, 441114)	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	950m^2	0.98	780m^2	1	400m^2	0.8	900m^2	1
SI3 – Pond drying	Never	0.9	Rarely	1	Never	0.9	Never	0.9
SI4 – Water quality	Moderate	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI4 – Shade	20%	1	20%	1	30%	1	40%	1
SI6 – Fowl	Minor	0.67	Minor	0.67	Minor	0.67	Minor	0.67
SI7 – Fish	Possible	0.67	Possible	0.67	Possible	0.67	Possible	0.67
SI8 – Ponds	7	0.85	5	0.8	23	1	10	0.95
SI9 – Terr. habitat	Moderate	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI10 – Macrophytes	10%	0.4	10%	0.4	30%	0.6	10%	0.4
HSI Score	**Good**	**0.76**	**Good**	**0.76**	**Good**	**0.78**	**Good**	**0.77**

Pond Reference and Location	P99 (334988, 440928)		P100 (334956, 440640)		P101 (334860, 440603)		P102 (334756, 440416)	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	5,500m^2	N/A	340m^2	0.7	290m^2	0.6	350m^2	0.7
SI3 – Pond drying	Never	0.9	Never	0.9	Never	0.9	Never	0.9
SI4 – Water quality	Moderate	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI4 – Shade	0%	1	30%	1	50%	1	30%	1
SI6 – Fowl	Major	0.01	Minor	0.67	Minor	0.67	Minor	0.67
SI7 – Fish	Possible	0.67	Possible	0.67	Possible	0.67	Possible	0.67
SI8 – Ponds	14	1	11	1	11	1	11	1
SI9 – Terr. habitat	Poor	0.33	Poor	0.33	Poor	0.33	Poor	0.33
SI10 – Macrophytes	30%	0.6	30%	0.6	30%	0.6	30%	0.6
HSI Score	**Poor**	**0.45**	**Good**	**0.72**	**Good**	**0.71**	**Good**	**0.72**

Pond Reference and Location	P103 (334737, 440759)		P104 (338059, 439562)		P105 (336889, 439740)		P106 (336113, 440429)	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	100m^2	0.2	150m^2	0.3	35m^2	0.05	75m^2	0.2
SI3 – Pond drying	Never	0.9	Never	0.9	Never	0.9	Never	0.9
SI4 – Water quality	Moderate	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI4 – Shade	40%	1	50%	1	0%	1	10%	1
SI6 – Fowl	Minor	0.67	Major	0.01	Absent	1	Absent	1
SI7 – Fish	Possible	0.67	Possible	0.67	Major	0.01	Major	0.01
SI8 – Ponds	11	1	19	1	13	1	19	1
SI9 – Terr. habitat	Poor	0.33	Moderate	0.67	Moderate	0.67	Poor	0.33
SI10 – Macrophytes	30%	0.6	70%	1	10%	0.4	0%	0.3
HSI Score	**Average**	**0.64**	**Poor**	**0.49**	**Poor**	**0.39**	**Poor**	**0.44**
Pond Reference and Location	**P106A (336060, 440453)**		**P106B (336148, 440434)**		**P107 (336375, 440018)**		**P108 (336389, 440018)**	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1	A	1	A	1
SI2 – Pond area	75m^2	0.2	150m^2	0.15	200m^2	0.4	350m^2	0.4
SI3 – Pond drying	Never	0.9	Annually	0.1	Never	0.9	Never	0.9
SI4 – Water quality	Moderate	0.67	Moderate	0.67	Poor	0.33	Moderate	0.33
SI4 – Shade	10%	1	30%	1	50%	1	30%	1
SI6 – Fowl	Absent	1	Absent	1	Minor	0.67	Minor	0.67
SI7 – Fish	Major	0.01	Absent	1	Major	0.01	Possible	0.01
SI8 – Ponds	19	1	11	1	11	1	11	1
SI9 – Terr. habitat	Poor	0.33	Poor	0.33	Moderate	0.67	Poor	0.67
SI10 – Macrophytes	0%	0.3	40%	0.7	40%	0.8	30%	0.8
HSI Score	**Poor**	**0.44**	**Below Average**	**0.55**	**Poor**	**0.46**	**Poor**	**0.46**

Pond Reference and Location	P108A (336514, 439823)		P110 (336770, 439649)	
Suitability Index	**Field Score**	**SI Score**	**Field Score**	**SI Score**
SI1 – Location	A	1	A	1
SI2 – Pond area	100m^2	0.1	200m^2	0.2
SI3 – Pond drying	Annually	0.1	Never	0.9
SI4 – Water quality	Poor	0.33	Good	1
SI4 – Shade	100%	0.2	10%	1
SI6 – Fowl	Absent	1	Absent	1
SI7 – Fish	Absent	1	Absent	1
SI8 – Ponds	17	1	17	1
SI9 – Terr. habitat	Good	1	Good	1
SI10 – Macrophytes	10%	0.4	50%	0.8
HSI Score	**Poor**	**0.44**	**Excellent**	**0.82**

ANNEX B – PRESENCE/ABSENCE SURVEYS AND POPULATION SIZE CLASS ASSESSMENT

Table 8-1: P5 Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 25			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
27/03/17	9	0	5	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
11/04/17	12	0	5	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
26/04/17	5	0	5	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
09/05/17	9	0	5	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):					0											0					0		0	

Comments and Constraints:

During the first survey the owner claimed the pond is tidal and as such saline and stickleback were seen during bottle trapping.

On the third survey the owner asked not to trap as the estuary tide was high and the pond will flood, therefore dip netting was undertaken

Table 8-2: P104 Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 0			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	Y
27/03/17	9	1	5	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	1	N
11/04/17	12	2	5	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
26/04/17	5	2	3	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
09/05/17	9	2	3	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):								0								0					0		1	

Comments and Constraints:

The pond was stone-lined, making it extremely difficult to undertake bottle trapping.

Table 8-3: P19 Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 0			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
27/03/17	9	2	2	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity																					
11/04/17				Adult Σ:																				
(3) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(4) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):																								

Comments and Constraints:

During the first survey it was noted that the water level was low and bottle trapping was not suitable.

The pond was dry during the second survey visit

Table 8-4: P7A Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 10				Sex/life stage:	M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
27/03/17	9	4	0	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
11/04/17	12'	3	0	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
26/04/17	5	4	0	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
09/05/17	9	4	2	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):					0											0					0		0	

Comments and Constraints:

The pond was found to be almost dry during the third survey; however, still water present on fourth survey.

Table 8-5: P15 Population Size Class Assessment

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 10			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	1	0	N	N	0	0	0	0	0	0	N	N	0	N	1	Y
27/03/17	9	5	3	Adult Σ:	0			1					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	2	N
11/04/17	12'	4	3	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	Y
26/04/17	5	5	4	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
09/05/17	9	5	5	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):					1			**Small population size class**					0						0			2		

Comments and Constraints:

The pond was densely vegetated and required waders to get to open water during the first survey visit.

The pond was too shallow to trap during the fourth survey visit.

Pond was dry on fifth survey visit.

Table 8-6: P20 Population Size Class Assessment

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 20			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	1	Y
28/03/17	8	3	3	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	1	0	0	N	N	0	0	0	2	0	0	N	N	0	N	1	Y
11/04/17	12	3	1	Adult Σ:	0			1					0			0				2				
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	3	0	0	N	N	0	0	0	5	2	0	N	N	0	N	0	N
26/04/17	5	3	1	Adult Σ:	0			3					0			7				7				
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	Y	1	Y
09/05/17	9	3	1	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity		1	0		0	0	0	Y	N	0	0		0	0	0	N	N	0	N	1	N
22/05/17	12	3	1	Adult Σ:	1			0					0			0								
(6) Date:	Air temp	Veg cover	Turbidity		0	0		0	0	0	N	N	0	0		0	0	0	N	N	0	N	0	N
30/05/17	6	3	1	Adult Σ:	0			0					0			0								
Peak adult count for this pond in any one visit (by torch, trap or net):					3			**Small population size class**								7					0		1	

Comments and Constraints:

Couldn't torch the pond due to livestock.

Bottle traps should be placed further into the pond where the vegetation clears as bottle traps placed here were the most successful

Table 8-7: P12A Population Size Class Assessment

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 10			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		2	7	0	2	2	0	Y	N	1	2	0	3	1	0	Y	N	0	N	0	N
28/03/17	8	3	1	Adult Σ:	9			4					3			4								
(2) Date:	Air temp	Veg cover	Turbidity		8	2	0	3	0	0	Y	N	3	1	0	0	0	0	Y	N	0	N	0	N
11/04/17	12’	3	2	Adult Σ:	10			0					4			0								
(3) Date:	Air temp	Veg cover	Turbidity		4	1	0	0	0	0	Y	N	1	2	0	0	0	0	Y	N	0	N	0	N
26/04/17	5	4	3	Adult Σ:	5			0					3			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	2	1	0	Y	N	0	0	0	2	0	0	Y	N	0	N	0	N
09/05/17	9	4	3	Adult Σ:	0			3					0			2								
(5) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	1	0	N	N	0	0	0	0	0	0	N	N	0	N	2	N
22/05/17	12	5	4	Adult Σ:	0			1					0			0								
(6) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
30/05/17	6	5	4	Adult Σ:	0			0					0			0								
Peak adult count for this pond in any one visit (by torch, trap or net):								10			**Small population size class**					4					0		2	

Comments and Constraints:

During the second survey visit netting was undertaken due to obscurity of the pond by duck weed. Water level had dropped during second survey; however, the owner confirmed that the pond never dries but the water level drops annually.

Table 8-8: P12C Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 10			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
11/04/17	12	2	4	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
24/04/17	4	2	2	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
27/04/17	6	2	2	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
09/05/17	9	2	2	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):					0											0					0		0	

Comments and Constraints:

Trees and dense vegetation located around the pond made access to surveys difficult, with areas of the pond inaccessible.

Table 8-9: P14 Population Size Class Assessment

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 20			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		51	6	0	0	1	0	Y	N	0	1	0	0	0	0	Y	N	0	N	0	N
11/04/17	8	2	2	Adult Σ:	57			1					1			0								
(2) Date:	Air temp	Veg cover	Turbidity		18	3	0	6	3	0	Y	N	1	0	0	0	0	0	Y	N	1	N	0	N
24/04/17	6	2	3	Adult Σ:	21			9					1			0								
(3) Date:	Air temp	Veg cover	Turbidity		15	10	0	0	0	0	Y	N	2	2	0	0	0	0	Y	N	0	N	0	Y
27/04/17	6	2	2	Adult Σ:	25			0					4			0								
(4) Date:	Air temp	Veg cover	Turbidity		6	1	0	0	0	0	Y	N	1	1	0	0	0	0	Y	N	0	N	0	N
09/05/17	9	2	2	Adult Σ:	7			0					2			0								
(5) Date:	Air temp	Veg cover	Turbidity		1	4	0	5	1	0	Y	N	0	1	0	2	0	0	N	N	0	N	1	N
22/05/17	12	2	1	Adult Σ:	5			6					1			0								
(6) Date:	Air temp	Veg cover	Turbidity		1	9	0	1	2	0	Y	N	1	1	0	0	0	0	N	N	0	N	0	N
30/05/17	6	2	1	Adult Σ:	10			3					2			0								
Peak adult count for this pond in any one visit (by torch, trap or net):								57			**Medium population size class**					4					1		1	

Comments and Constraints:

Table 8-10: P63 Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 25			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	1	N	11	N
28/03/17	8	1	3	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	1	N	0	Y
12/04/17	10	1	3	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	2	0	0	0	0	N	N	0	N	0	N
25/04/17	5	2	1	Adult Σ:	0			0					2			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
10/05/17	9	2	3	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):					0											2					1		11	

Comments and Constraints:

Fish were identified within the pond during the first survey.

Table 8-11: P64 Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 15			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	1	N
28/03/17	8	3	2	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
12/04/17	10	3	4	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	1	N
25/04/17	5	3	4	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	1	N
10/05/17	9	3	4	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):								0								0					0		1	

Comments and Constraints:

Table 8-12: P62A Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 10			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	Y
29/03/17	11	2	3	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
12/04/17	10	2	3	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
25/04/17	5	2	3	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
10/05/17	9	2	2	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):					0											0					0		0	

Comments and Constraints:

Fish were identified during the first survey visit within the pond.

Table 8-13: P62B Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 10			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	1	0	4	0	0	N	N	0	N	0	N
29/03/17	11	2	3	Adult Σ:	0			0					1			4								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	1	1	0	N	N	0	N	0	N
12/04/17	10	2	1	Adult Σ:	0			0					0			2								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
25/04/17	5	2	1	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	1	0	N	N	0	N	0	N
10/05/17	9	2	2	Adult Σ:	0			0					0			1								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):								0								0					0		0	

Comments and Constraints:

Table 8-14: P61 Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 10			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	Y
29/03/17	11	1	5	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	Y
12/04/17	10	1	5	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
25/04/17	5	1	4	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
10/05/17	9	2	5	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):					0											0					0		0	

Comments and Constraints:

Pond was steep sided with a stone base and dense bankside vegetation, as such, not all sides were accessible.

Table 8-15: P59 Population Size Class Assessment

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 20			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	5	N	8	Y
29/03/17	11	2	3	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	1	N	0	N
12/04/17	10	2	3	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
25/04/17	5	2	3	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
10/05/17	9	2	3	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	3	Y
24/05/17	19	2	3	Adult Σ:	0			0					0			0								
(6) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
31/05/17	6	2	3	Adult Σ:	0			0					0			0								
Peak adult count for this pond in any one visit (by torch, trap or net):								0								0					5		8	

Comments and Constraints:

Stoney base to pond; however, 20 bottles could be installed. Four large koi carp identified within the pond. Even though no great crested newt were identified 6 surveys were completed due to the positive eDNA result.

Table 8-16: P110 Population Size Class Assessment

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 7			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	1	N	0	N
30/03/17	12	3	3	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	1	0	N	N	0	0	0	0	0	0	N	N	0	N	0	Y
04/04/17	14	3	3	Adult Σ:	0			1					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
26/04/17	5	3	3	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
10/05/17	9	3	3	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	1	N	3	N
24/05/17	19	4	2	Adult Σ:	0			0					0			0								
(6) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
31/05/17	6	4	3	Adult Σ:	0			0					0			0								
Peak adult count for this pond in any one visit (by torch, trap or net):					1			**Small population size class**								0					1		3	

Comments and Constraints:

The pond level had significantly dropped by the fourth survey.

Table 8-17: P83 Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 10			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	1	1	0	N	N	0	N	0	N
30/03/17	12	3	2	Adult Σ:	0			0					0			2								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	1	0	0	0	0	N	N	0	N	0	Y
04/04/17	9	3	3	Adult Σ:	0			0					1			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
26/04/17	5	3	3	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
10/05/17	9	3	4	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	1	0	0	0	0	N	N	0	N	0	N
24/05/17	19	2	3	Adult Σ:	0			0					1			0								
(6) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
31/05/17	6	3	3	Adult Σ:	0			0					0			0								
Peak adult count for this pond in any one visit (by torch, trap or net):								0								2					0		0	

Comments and Constraints:

Pond surveyed 6 times due to positive eDNA result.

Table 8-18: P68 Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 20			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	24	N	11	Y
30/03/17	12	1	3	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	1	Y
04/04/17	10	1	4	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	Y
26/04/17	5	1	4	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	3	Y	0	Y
10/05/17	9	1	4	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	Y
25/05/17	19	1	3	Adult Σ:	0			0					0			0								
(6) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	Y	0	Y
31/05/17	6	1	3	Adult Σ:	0			0					0			0								
Peak adult count for this pond in any one visit (by torch, trap or net):								0								0					24		11	

Comments and Constraints:

Fish were caught in bottle traps. Pond surveyed 6 times due to positive eDNA result.

Table 8-19: P69 Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 10			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
29/03/17	11	0	5	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
04/04/17	10	0	5	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
11/05/17	9	0	5	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
31/05/17	6	0	5	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):								0								0					0		0	

Comments and Constraints:

Pond was extremely turbid due to presence of resident geese. The owner confirmed the pond was constructed for geese.

Table 8-20: P71 Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 10			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
29/03/17	11	0	5	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
04/04/17	10	0	5	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
11/05/17	9	0	5	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
31/05/17	6	0	5	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):					0											0					0		0	

Comments and Constraints:

Pond was extremely turbid due to presence of resident geese. The owner confirmed the pond was constructed for geese.

Table 8-21: P77 Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 15			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	Y
05/04/17	11	2	4	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
12/04/17	10	2	2	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
25/04/17	5	2	1	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
11/05/17	9	2	1	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	2	N
24/05/17	19	2	1	Adult Σ:	0			0					0			0								
(6) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
31/05/17	6	2	1	Adult Σ:	0			0					0			0								
Peak adult count for this pond in any one visit (by torch, trap or net):								0								0					0		2	

Comments and Constraints:

Six survey visits were completed due to positive eDNA result.

Table 8-22: P81 Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 15			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	1	Y
05/04/17	9	2	1	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(3) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(4) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):								0								0					0		1	

Comments and Constraints:

Table 8-23: P96 Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 15			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
05/04/17	9	2	3	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	1	0	0	N	N	0	N	0	N
11/04/17	10	2	4	Adult Σ:	0			0					0			1								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	1	0	0	0	0	0	N	N	0	Y	0	Y
25/04/17	5	2	2	Adult Σ:	0			0					1			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	Y	3	Y
11/05/17	8	2	3	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):					0											1					0		3	

Comments and Constraints:

Table 8-24: P106B Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 10			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	18	11	0	0	0	0	N	N	0	N	0	N
11/04/17	10	3	1	Adult Σ:	0			0					29			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
24/04/17	6	3	4	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	4	0	0	0	0	N	N	0	N	0	N
27/04/17	6	3	2	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	4	9	1	3	0	0	N	N	0	N	2	N
11/05/17	8	3	3	Adult Σ:	0			0					13			3								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):					0											29					0		2	

Comments and Constraints:

Table 8-25: P108A Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 0			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
30/03/17	12	3	1	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	Y	0	Y
24/04/17	6	5	1	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	Y	0	Y
27/04/17	6	5	1	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	Y	0	Y
11/05/17	8	5	1	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):					0											0					0		0	

Comments and Constraints:

Pond was discovered during the first survey (when owner of ponds 107 and 108 was torching with surveyors) so no bottle traps were placed during the initial survey. The pond was too shallow to bottle trap on subsequent visits. The owner stated that the pond dries every summer and during the second survey the pond had become dense with duckweed.

Table 8-26 P80 Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 25			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
05/04/17	9	2	2	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
12/04/17	10	2	1	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
25/04/17	6	2	1	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
11/05/17	8	2	1	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):					0											0					0		0	

Comments and Constraints:

Pond was heavily polluted with an oil drum identified within the pond.

Table 8-27: P107 Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 0			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
30/03/17	12	2	5	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
24/04/17	6	3	5	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
27/04/17	6	3	5	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
11/05/17	8	3	5	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):					0											0					0		0	

Comments and Constraints:

Pond was lined so no bottle traps could be installed. Fish were present within the pond.

Table 8-28: P108 Presence / Absence Survey

Method / Species:					Great crested newt: Torch			Great crested newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Smooth newt: Torch			Smooth newt: Bottle-trap			Eggs (Y/N)	Larvae (Y/N)	Toad total	Toad egg/ larvae (Y/N)	Frog total	Frog egg/ larvae (Y/N)
No. of traps used in pond: 0			Sex/life stage:		M	F	I	M	F	I			M	F	I	M	F	I						
(1) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
30/03/17	12	2	4	Adult Σ:	0			0					0			0								
(2) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
24/04/17	6	3	5	Adult Σ:	0			0					0			0								
(3) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
27/04/17	6	3	5	Adult Σ:	0			0					0			0								
(4) Date:	Air temp	Veg cover	Turbidity		0	0	0	0	0	0	N	N	0	0	0	0	0	0	N	N	0	N	0	N
11/05/17	8	3	5	Adult Σ:	0			0					0			0								
(5) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
(6) Date:	Air temp	Veg cover	Turbidity																					
				Adult Σ:																				
Peak adult count for this pond in any one visit (by torch, trap or net):					0											0					0		0	

Comments and Constraints:

Pond was lined so no bottle traps could be installed. Fish were present within the pond.

ANNEX C – SURVEY AREA SELECTION

The following paragraphs are adapted from Natural England's "Template for Method Statement to support application for licence under Regulation 53(2)e of The Conservation of Habitats and Species Regulations 2010 (as amended) in respect of great crested newts *Triturus cristatus*. Form WML-A14-2 (Version December 2015)".

Great crested newts tend to be present at increasingly low density the further one looks from ponds, and the task of detecting and capturing them becomes more problematic. Further from ponds, there is a corresponding reduction in the scale of impact on populations. Given that great crested newts can disperse over 1km from breeding ponds, the potential for offences may seem vast, yet the probability of an offence outside the core breeding and resting area (definitions below) is often rather small, and even if an offence takes place, the effect on the population may be negligible.

Terrestrial habitats are categorised in the Great Crested Newt Mitigation Guidelines (English Nature, 2001) by the radius within which they are situated from a pond where breeding has been confirmed:

- Core: ≤ 50m radius
- Intermediate: 50–250m radius
- Distant: ≥ 250m radius

Natural England prefers a proportionate and risk-based approach, and thus provide guidance on reasonable survey boundaries. explain that ponds up to around 500m from a development might need to be surveyed. The decision on whether to survey depends primarily on how likely it is that the development would affect newts using those ponds. For developments resulting in habitat loss at distances over 250m from the nearest pond, they advise that careful consideration is given as to whether a survey is appropriate. Surveys of land at this distance from ponds are normally appropriate when all of the following conditions are met: (a) maps, aerial photos, walk-over surveys or other data indicate that the pond(s) has potential to support a large great crested newt population, (b) the footprint contains particularly favourable habitat, especially if it constitutes the majority available locally, (c) the development would have a substantial negative effect on that habitat, and (d) there is an absence of dispersal barriers.

Based on the information obtained (from the above desk-based study, the Phase 1 Habitat Survey and Habitat Suitability Index results), the Draft Order Limits footprint does not contain particularly favourable habitat and for the most part; and the existing A585 and associated roads do, to varying degrees, provide barriers to dispersal. Therefore, for the Scheme, the survey of ponds greater than 250m appears un-proportionate/unnecessary.

Nevertheless, the Great Crested Newt Mitigation Guidelines (English Nature, 2001) state that the following aspects should be considered when interpreting survey results to assess overall site importance (i.e. site status assessment):

- Quantitative: the number and size of populations

- Qualitative: nature of the habitats and the population – how typical or unusual are they? Does breeding occur on site?
- Functional: how does the site contribute to the connectivity or fragmentation of populations in the area (are newts on the site part of a wider metapopulation?)
- Contextual: the local significance of the population, and its relation to wider great crested newt status

The functional (and to a lesser degree the contextual) assessment can under certain circumstances, dictate the size of the survey area. All roads inhibit great crested newt movements to some degree. This can be from direct mortality (i.e. collisions with traffic. However, movements most often take place at night, probably to reduce the risk of predation and desiccation, so heavy rush-hour and daylight traffic is probably not relevant); avoidance behaviour (brought about from the dry, exposed nature of the road); and direct inhibition of movements from kerb stones, concrete safety barriers and gully pots. However, great crested newts do cross roads when circumstances dictate a need to (such as ponds close to roads or severing historic dispersal pathways), or when the population is sufficiently large to support wide range dispersal.

Ponds scoped out of further assessment

As above, the existing landscape is already fragmented by the A585 and associated road networks. Consequently, the functional importance of most ponds within the study area is restricted and this allows several ponds to be scoped out of further detailed survey. A total of 123 ponds were identified within. Ponds were typically associated with agricultural fields, occasionally within small copses and several were associated with residential gardens. Of these, the following were scoped out of further occupancy survey:

- The eDNA results produced a total of 56 negative results and with the exception of 4 ponds (P62A, P62B, P63 and P81; see below), these ponds have been scoped out of further assessment
- P1, P52 and P53 are situated within or adjacent to the River Wyre Caravan Park, c. 40–170m north of the Scheme. Nevertheless, the Scheme does not require any modification outside of the existing road network at this location (the nearest modification is situated c. 300m east and to the south of the existing A585)
- P16–P18, P21–P23 and P43–P47 are situated within the agricultural fields to the south of the Scheme. They are all situated greater than 250m from the Scheme (between c. 27 m and 43 m) and had very limited connectivity with the Scheme, restricted to field boundaries (hedgerows and ditches). Further, as the A585 provides an existing barrier to dispersal to the north of these ponds, and there are no favourable terrestrial habitats within the Scheme footprint at this location (i.e. no motivation for dispersal north of these pond/in the direction of the Scheme), the Scheme is not considered to have the potential to impact upon the function of these ponds should great crested newts be present
- P25 is no longer present
- P32-35A are situated within Windy Harbour Holiday Park approximately 300-

420 m north of the Scheme. Similar to above, there is only limited connectivity between these ponds and the Scheme and the Scheme is not considered to have the potential to impact upon the function of these ponds should great crested newts be present

- P36-P40 and P48-P51 are either situated within a former landfill site comprising short poor semi-improved grassland that was historically subject to high levels of disturbance, or within the agricultural fields with limited connectivity to the wider landscape. They are situated between 60 and 320 m form the eastern most extent of the Scheme where only minor modification is required to the existing road layout
- P84-P88 are situated within pastureland approximately 125 to 430 m south and north of the Scheme. Main Dyke is situated between the ponds and the Scheme and this is considered to provide a minor natural barrier to dispersal. Further, these ponds were surveyed by ERUP (2013) in support of a proposed residential development (Planning Reference: 15/00298/LMAJ). No great crested newts were discovered during these surveys
- P97, P98, P99, P100, P101, P102 and P103 are situated approximately 220–460m west of the Scheme, at the western most extent of the Scheme, where only minor modification is required to the existing road layout
- P106B is situated within the rear garden of a residential property off the A585 at Mains Lane. The property owner/occupier refused access during the 2016 surveys. Nevertheless, the pond is terrestrially isolated from the Scheme by the residential properties and existing A585

ANNEX D – DRAWINGS

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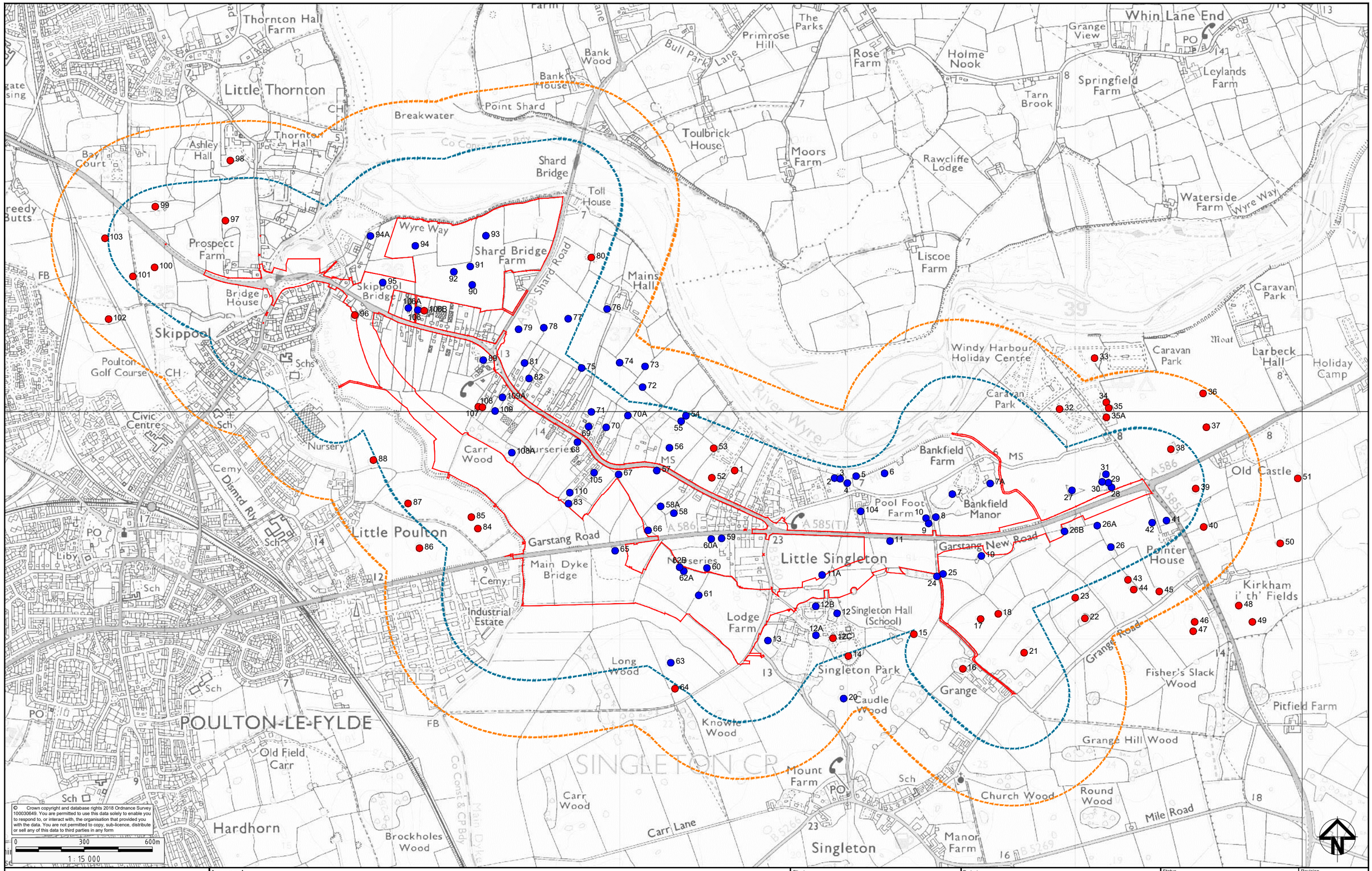


0 300 600m

1 : 15 000

Legend

- Draft Order Limits
- 250m Buffer
- 500m Buffer
- Ponds scoped out
- Ponds scoped in for further assessment

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd
0	S8	OCT 2018	DCO SUBMISSION	RG	ST	PO

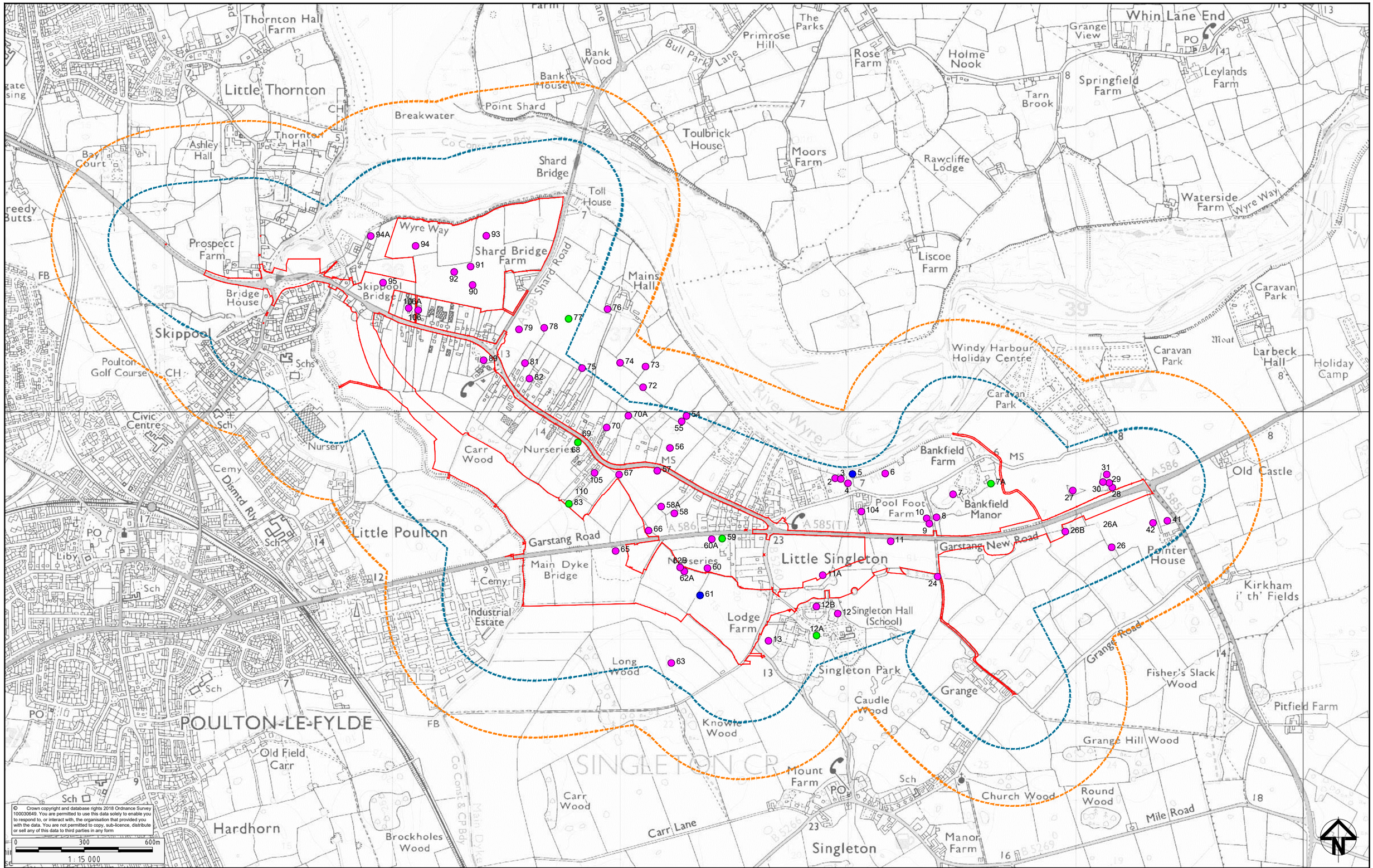
Client: highways england

Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing Title: ENVIRONMENTAL STATEMENT REGULATION 5(2)(a) STUDY AREA AND PONDS

Status	S8 - DCO SUBMISSION	Revision	0
Scale	1:15000	Date	OCT 2018
Drawn By	R.GRUBB		
Checked By	P.OWEN		
Approved By	D.HOURD		
PINS No.	TR010035		FIGURE 8.2.1

Drawing number: HE548643-ARC-EGN-SZ_ZZ_000-DR-LE-3107



0 300 600m

1 : 15 000

Legend

- Draft Order Limits
- 250m Buffer
- 500m Buffer
- eDNA - Positive
- eDNA - Negative
- eDNA - Inconclusive

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd
0	S8	OCT 2018	DCO SUBMISSION	RG	ST	PO

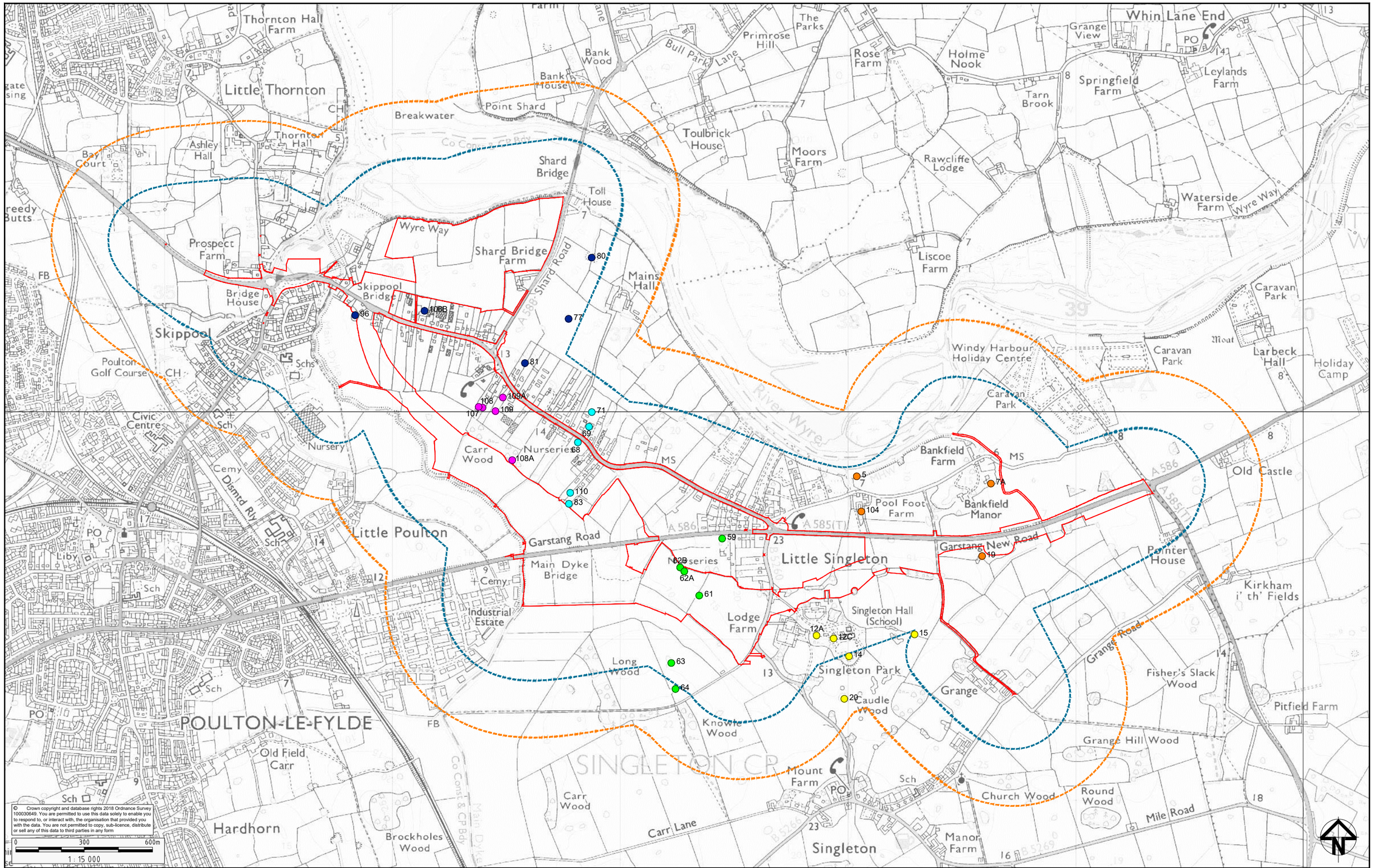
Client: highways england

Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing Title: ENVIRONMENTAL STATEMENT REGULATION 5(2)(a) eDNA SURVEY RESULTS

Status	S8 - DCO SUBMISSION
Revision	0
Scale	1:15000
Date	OCT 2018
Drawn By	R.GRUBB
Checked By	P.OWEN
Approved By	D.HOURD
PINS No.	TR010035
	FIGURE 8.2.2

Drawing number: HE548643-ARC-EGN-SZ_ZZ_000-DR-LE-3108



0 300 600m

1 : 15 000

Legend

- Draft Order Limits
- 250m Buffer
- 500m Buffer

Great Crested Newt Survey Areas

- Area 1
- Area 2
- Area 3
- Area 4
- Area 5
- Area 6

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd
0	S8	OCT 2018	DCO SUBMISSION	RG	ST	PO

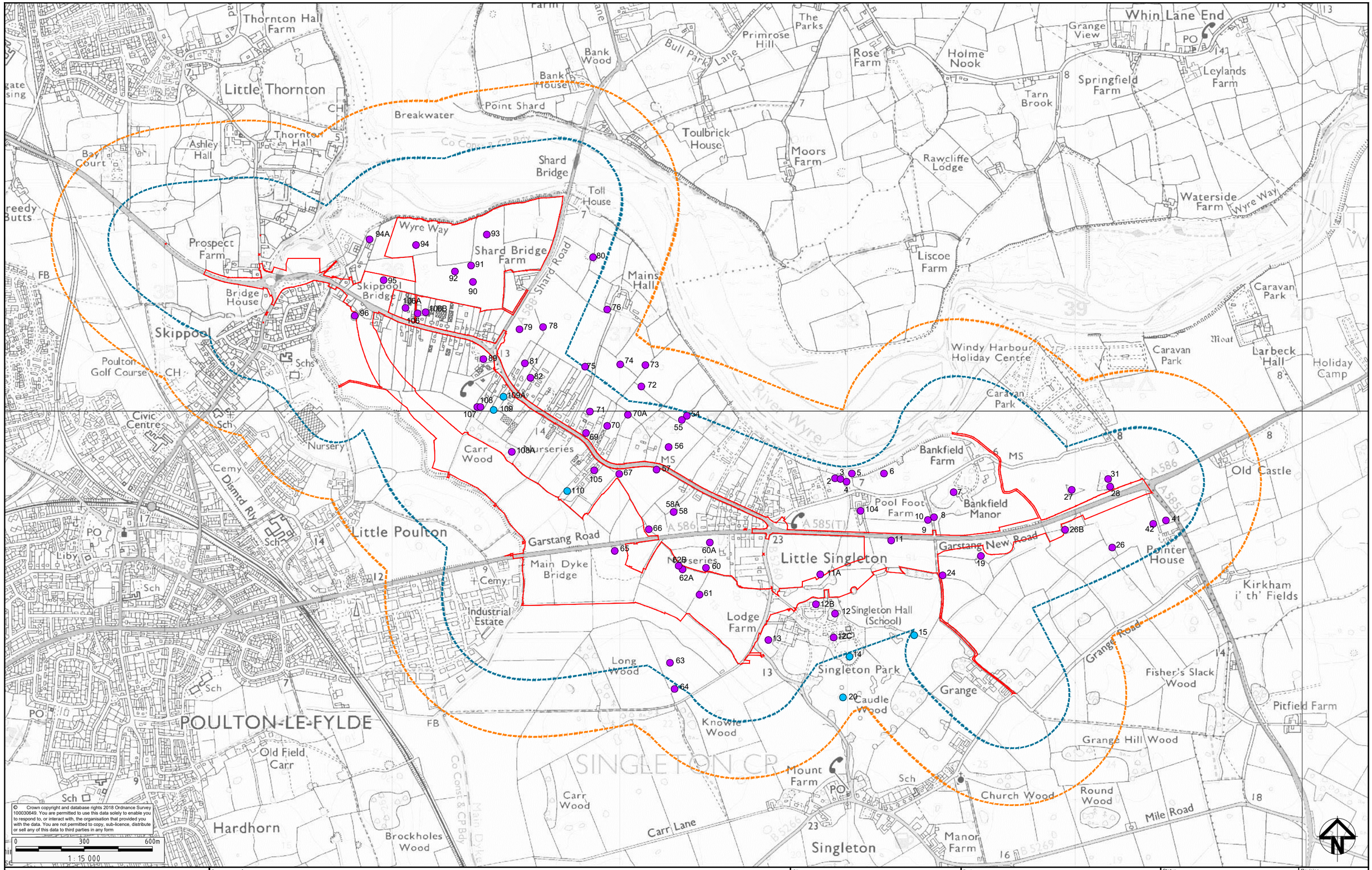
Client: highways england

Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing Title: ENVIRONMENTAL STATEMENT REGULATION 5(2)(a) PRESENCE AND ABSENCE SURVEY AREAS

Status	S8 - DCO SUBMISSION	Revision	0
Scale	1:15000	Date	OCT 2018
Drawn By	R.GRUBB		
Checked By	P.OWEN		
Approved By	D.HOURD		
PINS No.	TR010035		FIGURE 8.2.3

Drawing number (HE PIN | Originator | Volume | Location | Type | Role | Number): HE548643-ARC-EGN-SZ_ZZ_000-DR-LE-3109



0 300 600m

1 : 15 000

Legend

- Draft Order Limits
- 250m Buffer
- 500m Buffer
- Survey Results - Present
- Survey Results - Absent

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd
0	S8	OCT 2018	DCO SUBMISSION	RG	ST	PO

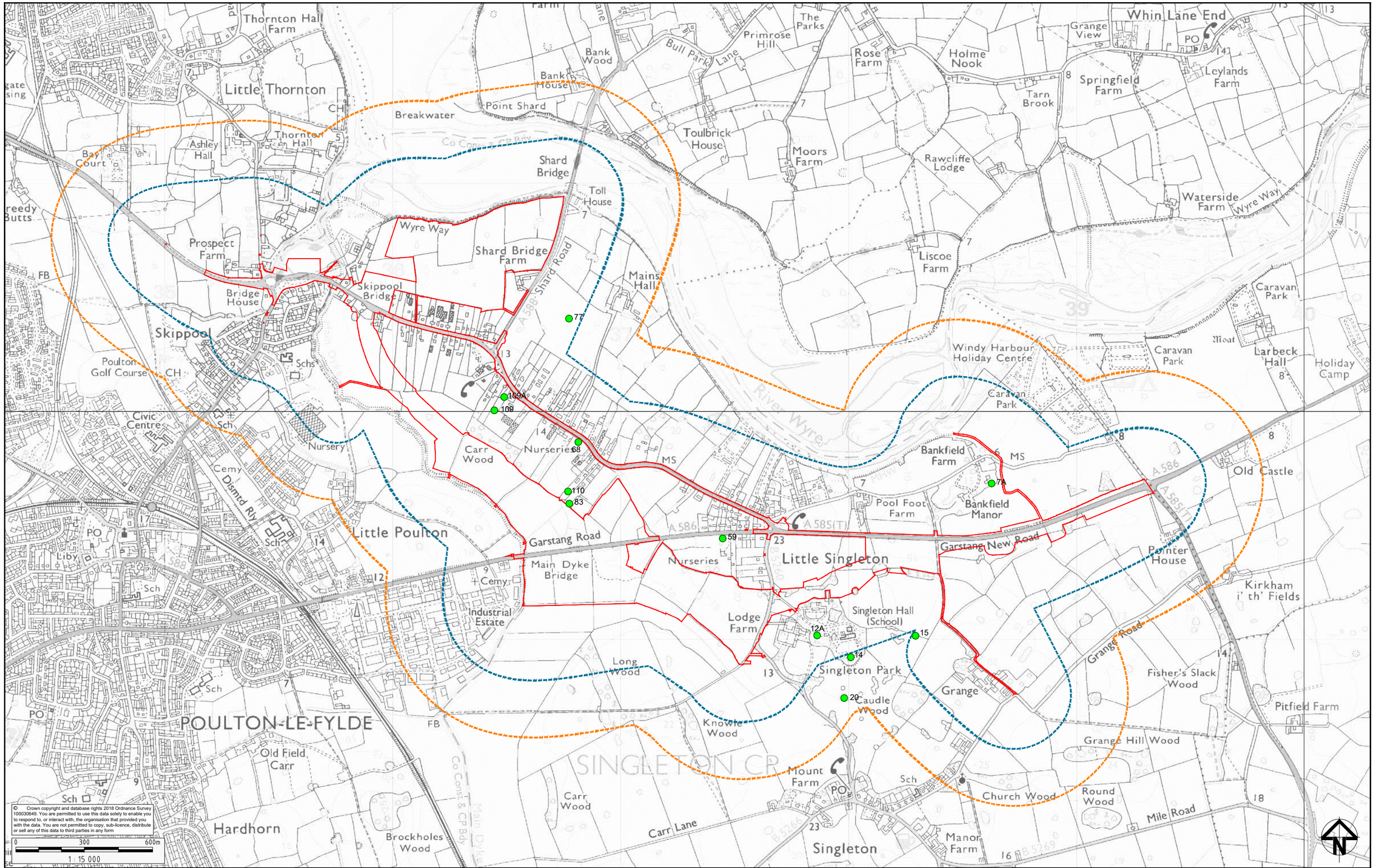
Client: highways england

Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing Title: ENVIRONMENTAL STATEMENT REGULATION 5(2)(a) PRESENCE AND ABSENCE SURVEY RESULTS

Status	S8 - DCO SUBMISSION	Revision	0
Scale	1:15000	Date	OCT 2018
Drawn By	R.GRUBB		
Checked By	S.TOOBY		
Approved By	D.HOURD		
PINS No.	TR010035		FIGURE 8.2.4

Drawing number: HE548643-ARC-EGN-SZ_ZZ_000-DR-LE-3110



0 300 600m

1 : 15 000

Legend

- Draft Order Limits
- 250m Buffer
- 500m Buffer
- Combined Survey Results - Positive

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd
0	S8	OCT 2018	DCO SUBMISSION	RG	ST	PO

Client: highways england

Project: A585 WINDY HARBOUR TO SKIPPOOL IMPROVEMENT SCHEME

Drawing Title: ENVIRONMENTAL STATEMENT REGULATION 5(2)(a) PONDS WITH CONFIRMED GREAT CRESTED NEWT PRESENCE

Status	S8 - DCO SUBMISSION	Revision	0
Scale	1:15000	Date	OCT 2018
Drawn By	R.GRUBB		
Checked By	S.TOOBY		
Approved By	D.HOURD		
PINS No.	TR010035		FIGURE 8.2.5

Drawing number (HE PIN | Originator | Volume | Location | Type | Role | Number): HE548643-ARC-EGN-SZ_ZZ_000-DR-LE-3111