A12 Chelmsford to A120 widening scheme TR010060

6.3 ENVIRONMENTAL STATEMENT

APPENDIX 9.13 GREAT CRESTED NEWT SURVEY REPORT

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ENVIRONMENTAL STATEMENT
APPENDIX 9.13 GREAT CRESTED NEWT SURVEY REPORT

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1 Executive Summary

1.1.1 This report is an appendix of the A12 Chelmsford to A120 widening scheme (hereon referred to as the 'proposed scheme') Environmental Statement (ES).

1.1.2 This report presents an evaluation on the presence / likely absence of great crested newts (*Triturus cristatus*) (GCN) based on field surveys undertaken between 2016 and 2021. It presents the policy and legislative context within which the Environmental Impact Assessment (EIA) process is being carried out. Likely significant effects of the proposed scheme on newts, and mitigation for newts, are considered in Chapter 9 of the ES.

1.1.3 GCN Habitat Suitability Index (HSI) surveys, environmental DNA (eDNA) surveys, presence / absence surveys and population size surveys were undertaken using guidance by Oldham *et al.* (2000), Biggs *et al.* (2014) and English Nature (2001). A study area of 500m from the Proposed Order Limits, including borrow pits, was used for the surveys.

1.1.4 Of a total 428 assessments made, GCN surveys between 2016 and 2021 recorded the presence of GCN in 21 ponds. No GCN were recorded in any ditches. Where carried out, population estimate surveys identified one medium population of GCN across four ponds considered a metapopulation and three small populations of GCN in individual ponds.

1.1.5 GCN are a European Protected Species and as such are afforded legal protection in England against a number of activities that could damage individuals and populations. Where applicable, licences can be sort from the relevant licensing body (Natural England) to permit otherwise illegal activities in relation to GCN.

1.1.6 The GCN population in the study area is considered to be of **Local** Importance for Biodiversity.

2 Introduction

2.1 Background

2.1.1 The A12 Chelmsford to A120 widening scheme comprises improvements to the A12 between junction 19 (Boreham) at TL741094, and junction 25 (Marks Tey) at TL917238, approximately 24km, or 15 miles. The proposed scheme involves widening the A12 to three lanes throughout. It includes safety improvements including closing of existing at grade accesses, and reducing access to cyclists along the dual carriageway by providing an alternative route for walkers, cyclists and horse riders.

2.1.2 The proposed scheme would require new crossings of watercourses and potential improvements to existing culvert and bridge crossings. There are eight crossings of main rivers, six of which comprise existing crossings and two of which comprise new crossings on proposed offline sections of road. Three of the crossings require minor realignments at the crossing points.

2.1.3 Land would be required both temporarily and permanently to construct, operate and maintain the proposed scheme. Permanent land-take requirements include the footprint of all the proposed highway infrastructure and associated earthworks, drainage works and access roads, together with environmental mitigation areas such as landscape planting and biodiversity habitat creation.

2.1.4 The proposed scheme is classed as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act (2008), triggering the need to apply for a Development Consent Order (DCO).

2.1.5 The selection criteria in the Infrastructure Planning Environmental Impact Assessment (Environmental Impact Assessment) Regulations 2017 have been used to screen the proposed scheme and identified the potential for significant effects. The proposed scheme is therefore required to be accompanied by an Environmental Statement (ES) to provide information on likely significant effects.

2.1.6 The Scoping Report (Highways England, 2020a), informed by an Extended Phase 1 Habitat Survey (National Highways, 2020), identified several ecological receptors which have the potential to be impacted by construction or operation of the proposed scheme.

2.1.7 Ecological surveys are required to establish an accurate baseline against which the impacts of the proposed scheme could be assessed in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) guidance for Ecological Impact Assessment (EcIA) (CIEEM, 2018) and DMRB LA 108 – Biodiversity (Highways England, 2020b).

2.1.8 Scoping opinions received from statutory and non-statutory consultees during this process were also taken into consideration (refer to Chapter 9 of the ES).

2.1.9 The Extended Phase 1 Habitat Survey confirmed the requirement to undertake the following suite of ecological surveys for the scheme as follows:

a. Botanical surveys of potential UK Biodiversity Action Plan (BAP) priority habitats

b. Hedgerow

c. Freshwater macro-invertebrates

d. Freshwater fish

e. Freshwater macrophytes

f. White-clawed crayfish (Austropotamobius pallipes)

g. River Habitat Survey (RHS)

h. Pond habitat survey (PSYM)

i. Terrestrial invertebrates

j. Birds (breeding and wintering)

k. Barn owl (*Tyto alba*)

l. Bats (bat activity, bat roost potential, and roost characterisation surveys)

m. Dormice (Muscardinus avellanarius)

n. Water vole (Arvicola amphibius)

o. Otter (Lutra lutra)

p. Badger (Meles meles)

2.2 Purpose of the report

2.2.1 This report is an appendix of the A12 Chelmsford to A120 widening scheme ES. It presents the results of GCN surveys undertaken between 2016 and 2021.

2.2.2 An evaluation of the status of GCN associated with the proposed scheme has been conducted, based on a desk-based review of records and field survey results.

2.2.3 The report presents the policy and legislative context within which the EIA is carried out. Likely significant effects on, and mitigation for GCN, are considered in Chapter 9 of the ES.

2.1 Survey Objectives

2.1.1 The key objectives of this survey were to:

a. Determine the presence or absence of GCN within the study area

b. Identify GCN distribution and status in the study area

c. Provide an evaluation for the GCN population in the study area

d. Inform the assessment of potential impacts on GCN associated with the Proposed Scheme (as detailed within the ES)

e. Provide sufficient field data for the development of appropriate mitigation if necessary (as detailed in the ES).

3 Great Crested Newt ecology

3.1.1 The GCN is a relatively widespread species across lowland England but has suffered a decline over the last century as much of their habitat has become fragmented by unfavourable land use (Gent and Gibson, 2003).

3.1.2 GCN breed in waterbodies between March and June, generally preferring small to medium sized still ponds with suitable vegetation for egg laying, as well as open, less vegetated areas to allow adult males to display in clear view of females before breeding. The most suitable ponds for GCN also have good water quality and support a good invertebrate population to provide a food source. Ponds with high numbers of fish or waterfowl are generally avoided by GCN due to high levels of predation of newts, efts (young newts) and eggs, and the absence of suitable vegetation for egg laying (Langton *et al.*, 2001).

3.1.3 Outside the breeding season, GCN spend a large proportion of the rest of the year on land. During their terrestrial phase, GCN will typically move from their breeding ponds to nearby terrestrial habitat for foraging, sheltering and hibernation. Suitable terrestrial habitats provide foraging and dispersal opportunities as well as refuges for hiding and hibernating. Typical habitats include rough grassland, scrub and woodland. GCN also utilise underground crevices, tree root systems, mammal burrows, rubble piles and old stone walls for hibernation over winter (Langton *et al.*, 2001).

3.1.4 GCN often exist in metapopulations, where newts breed in, and live around, a cluster of ponds. Even though most adults consistently return to the same pond to breed there will be some interchange of individuals between ponds. Loss of habitats can result in metapopulations becoming isolated and therefore more vulnerable to localised extinctions.

3.1.5 Studies have shown that GCN can travel up to 500m from breeding ponds but are generally found much closer (Gent and Gibson, 2003). Survey guidelines for the species therefore specify that all waterbodies inside a development boundary or within 500m of a proposed development boundary should be assessed for their potential to support breeding GCN in order to determine the presence or likely absence of the species (English Nature, 2001).

4 Legislation and policy

4.1 Legislation

4.1.1 GCN are a European Protected Species (EPS). GCN and their habitats are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 and the Countryside and Rights of Way Act 2000. This legislation taken together makes it an offence to: deliberately kill, injure or capture (take) a GCN; intentionally or recklessly obstruct access to any structure or place used for shelter or protection by a GCN; intentionally or recklessly disturb a GCN while it is occupying a structure or place which it uses for that purpose; deliberately disturb GCN in such a way as to be likely to significantly affect the ability of a population to survive over time, breed or rear or nurture their young; negatively affect the local distribution or abundance of the species; and, damage or destroy a breeding site or resting place of a GCN.

4.1.2 Licences can be granted by Natural England, the licensing authority in England, to allow activities that would otherwise be illegal (e.g., the destruction of GCN habitat because of development activity), to take place. The activities must be carried out in accordance with the provisions of the licence whereby the favourable conservation status of the species is maintained.

4.1.3 Section 40 of the Natural Environment and Rural Communities Act 2006 (NERC) places a duty on all public bodies to have regard to the conservation of biodiversity in England, when carrying out their normal functions (the biodiversity duty).

4.2 National Networks National Policy Statement

4.2.1 The National Networks National Policy Statement (NNNPS) sets out the Government's policies to deliver the development of NSIP on the national road and rail networks in England. The Secretary of State uses the NNNPS as the primary basis for making decisions on DCO applications.

4.2.2 Paragraph 5.22 of the NNNPS states that the applicant's assessment should describe any likely significant effects on internationally, nationally, and locally designated sites of ecological conservation importance; protected species; habitats (including irreplaceable habitats such as ancient woodland and veteran trees); and other species identified as being of principal importance for the conservation of biodiversity. The surveys described in this report will inform the assessment of significant effects within the ES.

4.2.3 In addition to the national policy set out in the NNNPS, the proposed scheme has had regard to relevant legislation and local plans and policy.

4.3 Priority species

4.3.1 GCN are a ‘Species of Principal Importance for the conservation of biodiversity’ listed under Section 41 of NERC. This act places a responsibility on local authorities and government departments to consider the purposes of conserving biodiversity in a manner consistent with their normal duties, such as policy and decision-making, and ties together wildlife legislation and planning policies.

5 Methodology

5.1 Desk Study

5.1.1 A desk study was undertaken in 2020 to obtain information pertaining to GCN in the study area and surrounding landscape. The extent of the data search included the length of the proposed scheme, including the borrow pits, and an additional 2km buffer. This search area also included potential borrow pits.

5.1.2 Requests for records of GCN within the study area were made to:

a. Essex Wildlife Trust Biological Records Centre

b. Essex Field Club

5.1.3 Additionally, Natural England's "GCN Class Survey Licence Returns (England)" and "Surveyed Priority Ponds (England)" open data publications were assessed to identify GCN ponds within 500m of the Proposed Order Limits, including borrow pits (Natural England, 2022a; Natural England, 2022b).

Limitations

5.1.4 Although the data provided by the consultees is the most complete set of species data available, the absence of records should not be taken as an indication of absence of species.

5.2 Field Study

Habitat suitability index assessment

5.2.1 All waterbodies within a 500m buffer around the Proposed Order Limits at the time of survey, including borrow pits, were subject to the HSI assessment process in 2019-2021. This area is hereafter referred to as the 'study area'.

5.2.2 Waterbodies which were considered to be unsuitable for breeding GCN (e.g. areas marked as waterbodies on maps/ base layers that no longer exist or waterbodies heavily stocked with fish) were immediately scoped out of further assessment. Waterbodies that did not have clear and obvious reasons to be scoped out of further assessment were then subject to a HSI assessment.

5.2.3 HSI assessments followed the method developed by Oldham *et al.* (2000). The HSI is a standardised assessment of the potential for a pond to support GCN, although it cannot be used to determine the presence or absence of the species. The HSI is calculated using ten habitat variables ('suitability indices') which are known to affect the survival of GCN. These include:

a. geographical location (with respect to GCN range within Great Britain)

b. pond surface area

c. permanence of pond (how often the pond dries)

d. water quality

e. waterbody margin shading

f. waterfowl impact

g. fish impact

h. number of other suitable waterbodies within 1 km

i. terrestrial habitat quality

j. macrophyte (aquatic plant) cover

5.2.4 The HSI is designed for use with ponds and not ditches. An initial assessment of condition and suitability to support GCN was carried out for the large number of ditches in the study area. If the ditch was wet, the same information gathered for ponds was used to assess the likelihood of suitability for GCN.

5.2.5 Each habitat variable is assessed by experienced surveyors in the field and expressed on a scale from 1 (optimal suitability) to 0 (totally unsuitable). The ten suitability indices are combined to derive the final HSI score for the pond. The HSI, expressed as a value between 0.01 and 1.0, is then categorised into a pond rating as shown in Table 5.1.

5.2.6 The HSI results presented in this report come from surveys conducted in 2019-2021, as a significant proportion of waterbodies in the study area were surveyed during this period and the results of such assessments are considered more relevant than HSI assessments previously conducted for the proposed scheme in 2016 and 2017.

Table 5.1 HSI scoring system

HSI score	Pond rating
0.01 – 0.49	Poor
0.50 – 0.59	Below average
0.60 - 0.69	Average
0.70 – 0.79	Good
0.80 – 1.00	Excellent

5.2.7 Ponds and ditches which received a score less than 0.5 (poor) were considered to be unsuitable for breeding GCN and no further assessments were made.

Environmental DNA (eDNA) survey

5.2.8 In 2017, eDNA methodology was applied to all ponds which were assessed as at least ‘below average’ using HSI methods (a HSI score of 0.50 or above) and all ditches which were assessed as suitable, where possible (i.e. where access and health and safety allowed).

5.2.9 eDNA surveys in 2017 used a survey area of 500m around the POL at the time, including borrow pits.

5.2.10 This method was completed as described by Biggs *et al.* (2014) and involved the collection of water samples from ponds and ditches which were then sent to a Natural England approved company (Nature Metrics Ltd) to test for the presence of GCN DNA. The eDNA sampling was completed in the recommended survey window for this approach, between 15 April and 30 June 2017.

5.2.11 Where a waterbody tested negative for GCN DNA, no further surveys were completed. Where the results were positive, a full six population estimate surveys were completed to determine a population estimate (where possible).

5.2.12 Where eDNA results were inconclusive, four presence / absence surveys were completed, followed by a further two surveys if GCN were subsequently recorded. Results can be inconclusive for several reasons. It may be that the samples contained sediment, either due to the nature of the waterbody or because the samples were taken from a sediment rich part of the collection bag.

5.2.13 Results of eDNA surveys presented in this report come from surveys conducted in 2017, as there were no eDNA surveys conducted in 2020 due to the covid-19 pandemic.

Presence / absence survey and population estimate survey

5.2.14 In 2017, waterbodies which had received a HSI score over 0.5 and ditches which were assessed as suitable were surveyed using traditional presence or likely absence methods, which were considered standard methodology at the time (English Nature, 2001; Froglife, 2001; Langton *et al.*, 2001). Methods used comprised the following:

a. Torchlight searching (torching): the waterbody was searched systematically for GCN after dusk using a Clulite 1 million candlelight power torch.

b. Netting: a net was methodically swept around the waterbody margins in order to capture any GCN present. Care was taken to avoid damaging aquatic vegetation or stirring up sediment.

c. Bottle trapping: bottle traps (a two-litre bottle cut in half to create a funnel and suspended on a garden cane) were placed every 2 m around the edge of the waterbody (where accessible) with the funnel end below the surface and enough of the opposite end above the water surface to create an air bubble within the trap. The traps were set prior to dusk, left overnight and collected the following morning.

d. Egg searching: suitable vegetation was searched for GCN eggs which are laid on submerged or floating leaves and folded around the egg.

5.2.15 Presence / absence and population surveys in 2017 used a survey area of 500m around the POL at the time, including borrow pits.

5.2.16 A minimum of three survey methods were applied at each waterbody, with preference given to the use of bottle traps and torching where possible. Where the presence of GCN or GCN eggs were recorded at a waterbody, further egg searching and netting were discontinued for animal welfare reasons.

5.2.17 Four survey visits were completed at all waterbodies where possible, with an additional two surveys completed at waterbodies where GCN presence was confirmed, in order to provide a population estimate.

5.2.18 Population estimates were based on the peak count of adult GCN on a single survey visit, using a single survey method (torching or bottle trapping). A size class was assigned using the following criteria in line with English Nature (2001) guidance:

a. Small population: where the peak count is up to 10

b. Medium population: where the peak count is between 11 and 100

c. Large population: where the peak count exceeds 100

5.2.19 Where confirmed breeding waterbodies were located within 500m of one another (in the absence of barriers such as rivers or roads) this was considered to form a metapopulation, and the peak count for each metapopulation was calculated as the highest total number of GCN across all ponds in that metapopulation on any one survey date. This deviates slightly from standard metapopulation interpretation in that this assessment considers a greater distance between ponds as metapopulations, with standard guidance using a distance of 250m and this report using 500m (Langton *et al*., 2001).

5.2.20 Surveys were completed at a suitable time of year, between mid-March and June 2017, with at least two surveys of each waterbody (some were eliminated from further survey at this stage due to negative eDNA results). Where GCN were detected the full six surveys were conducted, with at least three of those surveys between mid-April and mid-May 2017 to coincide with the peak of GCN breeding activity.

5.2.21 Results of presence / absence and population estimate surveys presented in this report come from surveys conducted in 2017, as there were no presence / absence or population estimate surveys conducted in 2020 due to the covid-19 pandemic.

Limitations

5.2.22 Initially, GCN surveys in 2019-2021 were intended to provide a full new set of data for all waterbodies within the study area including HSI assessments, eDNA surveys and population estimates, as required. However, due to the global covid-19 pandemic and the first UK lockdown (March – June 2020), the survey season for conducting eDNA and population estimate surveys in 2020 was missed due to the associated restrictions and risks of conducting such work at the time. The results presented in this report therefore comprise a combination of surveys conducted in 2017 (eDNA surveys as well as presence / absence and population estimate surveys) and results from 2019-2020 (desk study and HSI assessments). This is not considered a significant constraint, as detailed

discussion was held with Natural England (the relevant licensing body) to determine the best approach going forward (refer to Chapter 9 of the ES). The conclusion of the discussion was that Natural England agreed that Jacobs had gathered enough data and evidence when considering the 2017 data, desk study data and HSI data from 2019-2020 to draw reasonable conclusions. The collated data provided detail of GCN metapopulations and covered an overall wide area and large number of waterbodies, such that confidence in the conclusions drawn can be considered high.

5.2.23 In general, small residential houses and associated gardens were not surveyed for GCN. It was also not possible to assess and survey all waterbodies within the study area due to the absence of access agreements. Where access was refused by landowners, waterbodies in these areas could only be assessed from adjacent land where access was agreed, and therefore not all waterbodies which were assessed could be fully surveyed. For example, it was sometimes possible to conduct an HSI of a pond or ditch from a public right of way or from adjacent land with agreed access, but it would not be possible to conduct in-pond presence / absence surveys in these situations. This is not considered a significant constraint as a significant number waterbodies, with good spatial coverage throughout the proposed scheme, were surveyed.

5.2.24 In some cases waterbodies could not be surveyed due to health and safety concerns, including presence of barbed wire fences, livestock or steep sided banks. Often, HSIs could be conducted on these waterbodies, but no further in-water surveys were possible.

5.2.25 The assessment date of some HSI assessments is missing in Table C.1 (Annex C), likely due to technology or human error. This is not considered a limitation as it is the least important information to the assessment, and the range within which the assessments were conducted can be extrapolated from the dates of the other assessments.

5.2.26 For waterbodies subject to traditional presence / absence surveys, three survey methods were applied on each survey where possible; however, some waterbodies were too shallow to use bottle trapping or netting, and the use of bottle trapping was prevented on nights when temperatures were predicted to drop below 5°C due to welfare reasons. This is not considered a significant constraint due to the application of other techniques where possible.

5.2.27 The presence of GCN in some waterbodies was only detected by eDNA methods. This is because access to these ponds was only granted at the end of the applicable GCN survey season and therefore no subsequent population surveys could be completed.

5.2.28 The distance within which ponds are considered metapopulations deviates slightly from standard guidance in that this assessment allows a greater distance between ponds to be considered. Standard guidance recommends a distance of 250m, whilst this report uses 500m (Langton *et al*., 2001). This is not considered a limitation as a greater distance is considered to be more precautionary.

5.2.29 The findings of this report represent the professional opinion of qualified ecologists and do not constitute professional legal advice. The client may wish to seek professional legal interpretation of the relevant wildlife legislation cited in this document. This report should be read in full and excerpts may not be representative of the findings. This report has been prepared exclusively for Jacobs' client and no liability is accepted for any use or reliance on the report by third parties.

6 Results

6.1 Desk Study

6.1.1 The desktop study returned 48 records of GCN within the study area from Essex Wildlife Trust. In many instances several of these records relate to the same waterbody and the results of repeat surveys at that waterbody. The nearest records to the proposed scheme are from the Springfield Business Park, Chelmsford and are approximately 50m from the Proposed Order Limits.

6.1.2 No records of GCN within 2km were returned by the Essex Field Club.

6.1.3 One pond, identified as P091 according to the GCN surveys numbering system, was identified as supporting GCN on the Surveyed priority ponds (England) database (Natural England, 2022b). Eight further GCN ponds were identified on the GCN Class Survey Licence Returns (England) database (Natural England, 2022a). The locations of GCN records are shown in Figure 1, Annex A. Full results of the desk study are shown in Annex B.

6.1.4 In 2019, 359 waterbodies (180 ditches and 179 ponds) were identified within the study area through OS mapping and aerial photography as being potentially suitable to support GCN within the study area.

6.1.5 Additionally, during informal discussions with landowners in 2019 and 2020 three ponds (P211, P213 and P345) within the 500m study area was identified as GCN ponds.

6.2 Field Study

Habitat suitability index assessment

6.2.1 A total of 428 assessments were completed on waterbodies for their potential to support breeding GCN between 26/11/2019 and 17/11/2021. The fact that this number is larger than that of the waterbodies identified through desk study owes to a number of factors, including the identification of numerous additional waterbodies, or discovery that what was once a single waterbody is now several.

6.2.2 Of the assessments made, 214 resulted in a waterbody being scoped out of all further surveys including HSI assessments. Additionally, 2 waterbodies were missing the full set of HSI data required to derive an index score and assess suitability.

6.2.3 Of the 212 HSI assessments completed, 14 were assessed as ‘excellent’, 20 as ‘good’, 51 as ‘average’, 52 as ‘below average’ and 75 were assessed as ‘poor’. Full results of the HSI assessments are shown in Annex C.

Environmental DNA (eDNA) survey

6.2.4 eDNA samples were collected from 51 waterbodies within the appropriate survey season in 2017 (15 April to 30 June). Analysis of the water samples was completed by Nature Metrics Ltd between 21/04/2017 and 30/06/2017.

6.2.5 Three waterbodies tested positive for GCN DNA, three were inconclusive and 45 were negative. Full results of eDNA testing are shown in Annex D.

Presence / absence survey and population estimate survey

6.2.6 All presence / absence surveys and population estimate surveys were carried out under suitable weather conditions. Full weather data can be found in Annex E.

6.2.7 A total of 45 waterbodies (39 ponds and 6 ditches) were surveyed between 03/04/2017 and 07/06/2017, with the presence of GCN recorded in seven ponds. No GCN were recorded in any ditches. P005, P007, P013 and P014 were located within 500 m of one another and were therefore considered to form one metapopulation (A). Of the ponds surveyed, no other confirmed GCN breeding ponds were located within 500m of one another.

6.2.8 GCN population estimates for each pond where population estimate surveys were undertaken are shown in Table 6.1. Metapopulation peak counts are based on the highest total counted across the comprising ponds on the same survey date. Full results of the traditional and population estimate surveys are shown in Annex F.

Table 6.1 GCN population estimates and metapopulation assessment

Pond reference	Max count	Population estimate	Metapopulation	Metapopulation peak count (maximum count on the same day)
P005	3	Small	A	57
P007	1	Small		
P013	6	Small		
P014	54	Medium		
P036	1	Small	B	1
P098	10	Small	C	10
P125	4	Small	D	4

7 Discussion

7.1 Summary

7.1.1 A total of 21 waterbodies within 500m of the proposed scheme were confirmed to have GCN present from a combination of desk study records, eDNA surveys and presence / absence and population estimate surveys. These waterbodies are shown in Table 7.1.

Table 7.1 Confirmed GCN waterbodies

Pond reference	Grid reference	Survey type	Metapopulation/ population reference
P005	TL 91709 23325	Population estimate survey, desk study record	J
P007	TL 91614 23296	Population estimate survey, desk study record	J
P013	TL 91576 22918	Population estimate survey	J
P014	TL 91081 22785	Population estimate survey	J
P036	TL 88303 19838	Population estimate survey, eDNA	H
P091	Tl 81432 12905	Desk study record	E
P098	TL 80768 12532	Population estimate survey	D
P099	TL 79904 12660	eDNA only	C
P125	TL 88131 20780	Population estimate survey	I
P144	TL 77893 10794	eDNA only	B
P211	TL 80887 12045	Informal discussion with landowner	C
P213	TL 80943 11992	Informal discussion with landowner	C
P345	TL 83088 15832	Informal discussion with landowner	F
Chelmsford, Springfield Business Park Attenuation Pond (1b)	TL 740 083*	Desk study record	A

Pond reference	Grid reference	Survey type	Metapopulation/ population reference
Chelmsford, Springfield Business Park Attenuation Pond (5a)	TL 740 081*	Desk study record	A
Chelmsford, Springfield Business Park, Mitigation Pond	TL 737 086*	Desk study record	A
Springfield Business Park	TL 740 079*	Desk study record	A
Springfield Business Park	TL 739 080*	Desk study record	A
Springfield Business Park	TL 736 083*	Desk study record	A
Inworth Road	TL 877 189*	Desk study record	G
Copford	TL 936 242*	Desk study record	K

*a 6-figure grid reference equates to an area of 100m x 100m and therefore an exact corresponding pond cannot be determined, however the midpoint of these grid references falls within the 500m study area

7.2 Evaluation

7.2.1 GCN are a European Protected Species. Over the last 100 years, GCN have disappeared from many sites right across Europe, mainly as a result of pond loss and intensive agriculture. Population size in the UK is considered to be large although trends suggest an overall long term decline (Langton *et al.*, 2001). In consideration of these facts the UK's populations of GCN are internationally important.

7.2.2 It is considered that a large area was covered by surveys for the proposed scheme with only a relatively small number of ponds identified as supporting GCN. Furthermore, of these ponds several only had small numbers of newts recorded from population surveys in 2017. As such, the GCN population in the study area is considered to be of **Local** Scale Importance for Biodiversity.

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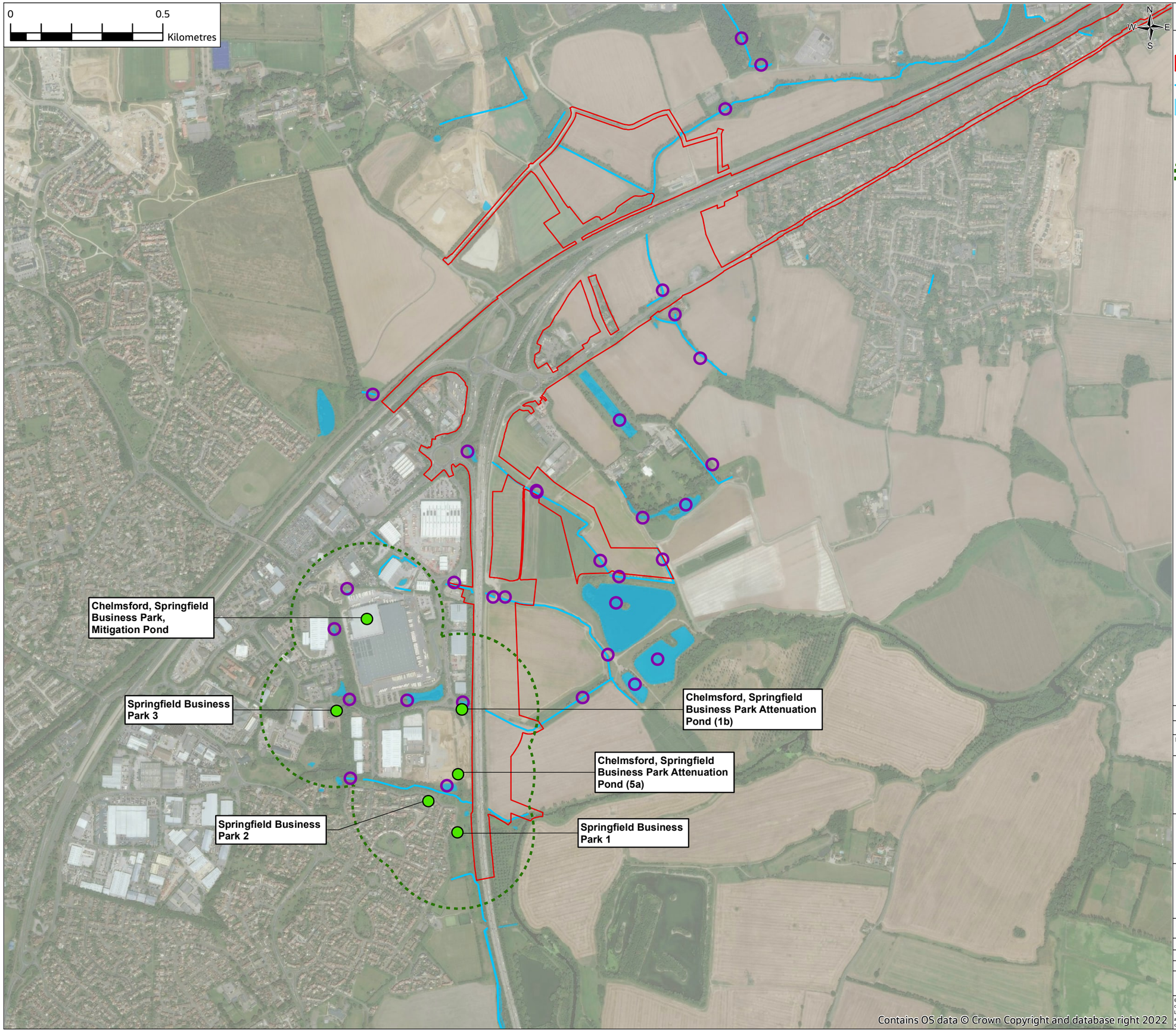
k. Oldham, R.S., Keeble, J., Swan, M.J.S. and Jeffcote, M. (2000). Evaluating the suitability of habitat for the great crested newt *Triturus cristatus*. Herpetological Journal 10(4), 143-155.

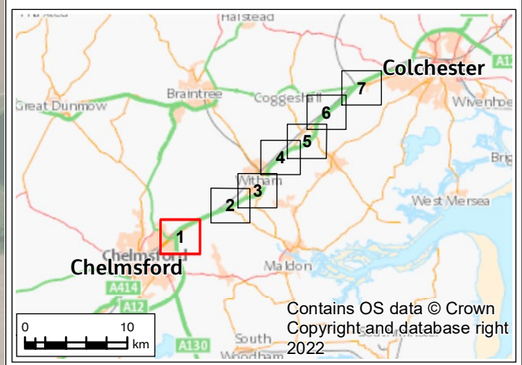
Annex A. Location of confirmed GCN breeding ponds in relation to the study area



APPENDIX 9.13 - FIGURE 1

Legend

- Order Limits
- Ditch
- Pond
- HSI Assessment Undertaken
- Confirmed GCN Pond
- Confirmed GCN Pond - 250m Buffer



Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	06/07/22	For DCO application	JC	LW	NP	SG

Development Consent Order Drawing Number: TR010060/APP/6.3

APFP Regulation: Regulation 5(2)(l)

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

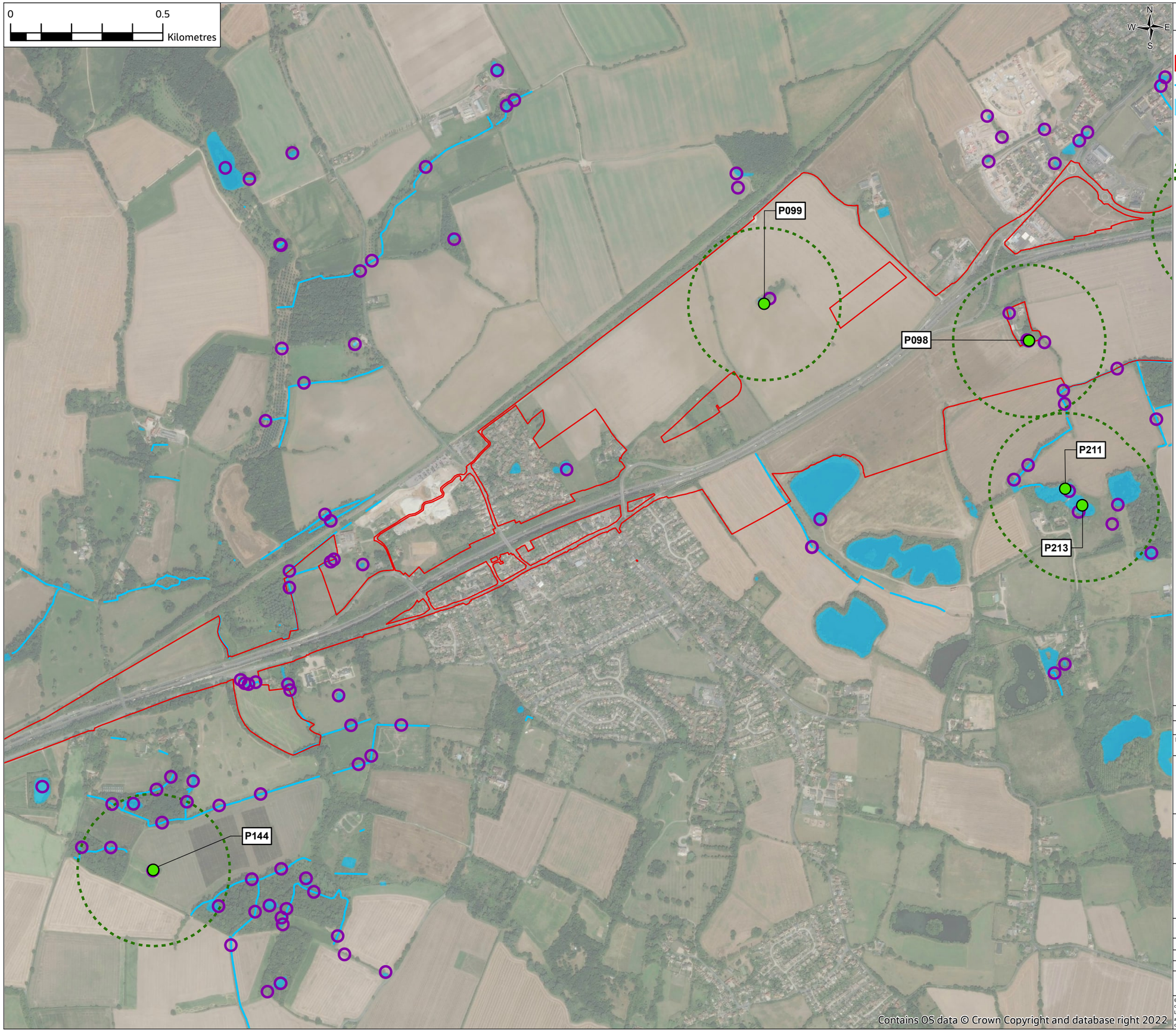
Drawing Title: ENVIRONMENTAL STATEMENT
GREAT CRESTED NEWT SURVEY RESULTS
SHEET 1 OF 7

Drawing Status: S4 - SUITABLE FOR STAGE APPROVAL

Scale @ A3	1:12000	DO NOT SCALE
Jacobs No.	B36601D1	
Client No.	HE551497	Rev P01

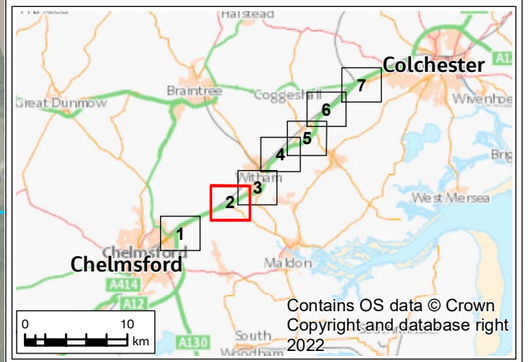
Drawing Number: HE551497-JAC-LDC-SCHW-SK-GI-0763

APPENDIX 9.13 - FIGURE 1



Legend

- Order Limits
- Ditch
- Pond
- HSI Assessment Undertaken
- Confirmed GCN Pond
- Confirmed GCN Pond - 250m Buffer



Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	06/07/22	For DCO application	JC	LW	NP	SG

Development Consent Order Drawing Number: TR010060/APP/6.3

APFP Regulation: Regulation 5(2)(l)

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

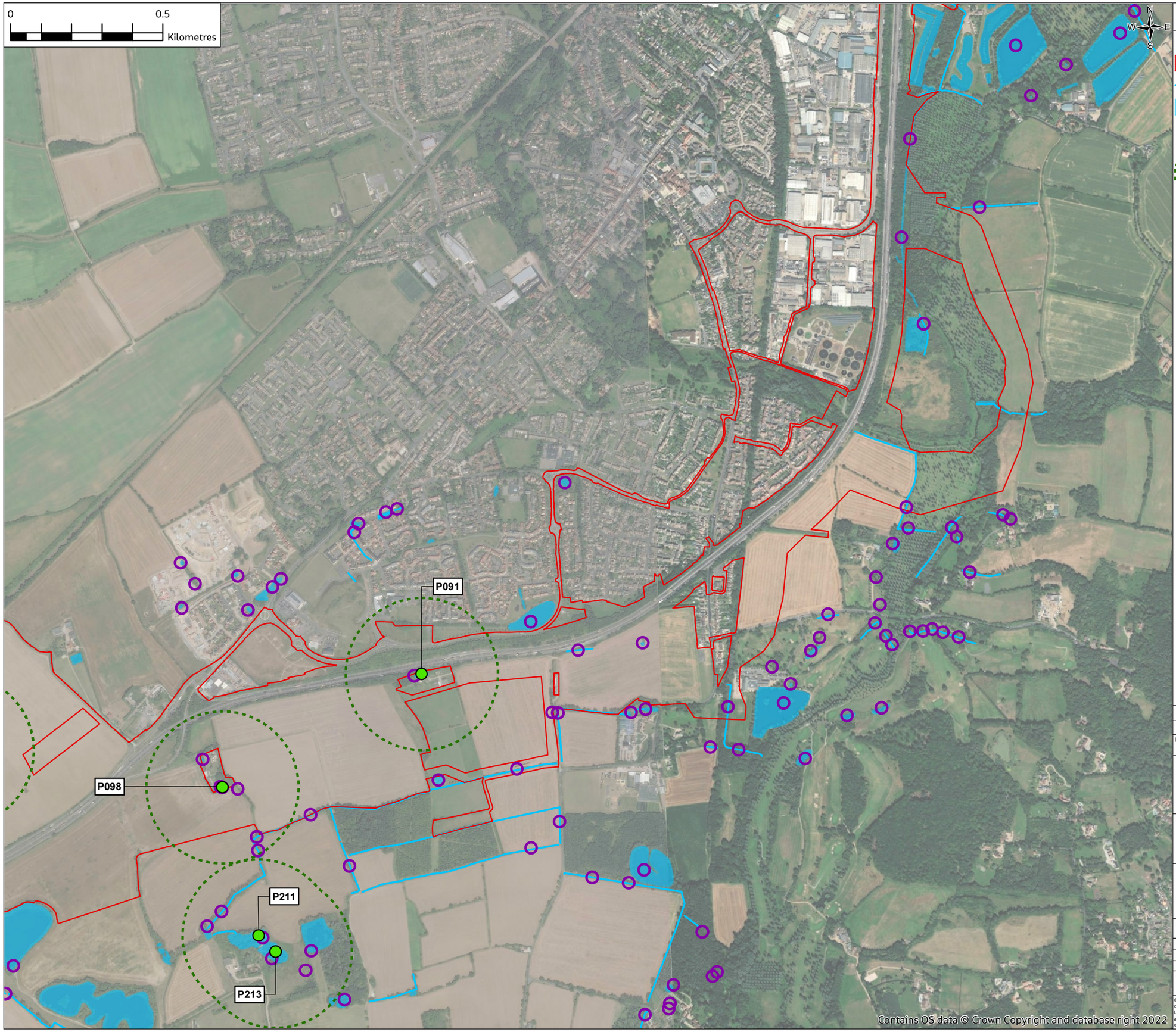
Drawing Title: ENVIRONMENTAL STATEMENT
GREAT CRESTED NEWT SURVEY RESULTS
SHEET 2 OF 7

Drawing Status: S4 - SUITABLE FOR STAGE APPROVAL

Scale @ A3	1:12000	DO NOT SCALE
Jacobs No.	B36601D1	
Client No.	HE551497	Rev P01

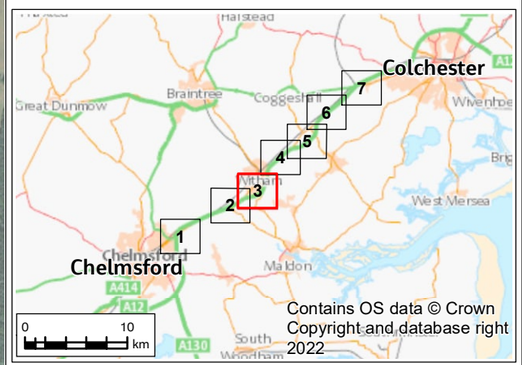
Drawing Number: HE551497-JAC-LDC-SCHW-SK-GI-0764

APPENDIX 9.13 - FIGURE 1



Legend

- Order Limits
- Ditch
- Pond
- HSI Assessment Undertaken
- Confirmed GCN Pond
- Confirmed GCN Pond - 250m Buffer



Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	06/07/22	For DCO application	JC	LW	NP	SG

Development Consent Order Drawing Number: TR010060/APP/6.3

APFP Regulation: Regulation 5(2)(l)

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title: ENVIRONMENTAL STATEMENT
GREAT CRESTED NEWT SURVEY RESULTS
SHEET 3 OF 7

Drawing Status: S4 - SUITABLE FOR STAGE APPROVAL

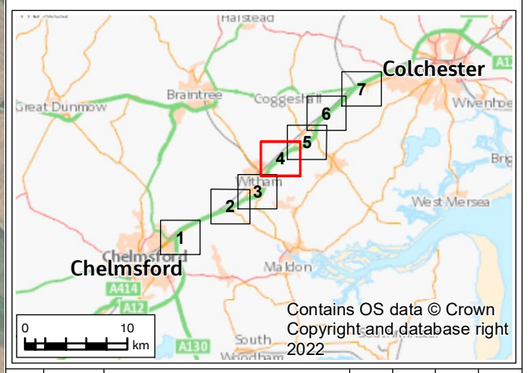
Scale @ A3	1:12000	DO NOT SCALE
Jacobs No.	B36601D1	
Client No.	HE551497	Rev P01

Drawing Number: HE551497-JAC-LDC-SCHW-SK-GI-0765

APPENDIX 9.13 - FIGURE 1

Legend

- Order Limits
- Ditch
- Pond
- HSI Assessment Undertaken
- Confirmed GCN Pond
- Confirmed GCN Pond - 250m Buffer



Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	06/07/22	For DCO application	JC	LW	NP	SG

Development Consent Order Drawing Number: TR010060/APP/6.3

APFP Regulation: Regulation 5(2)(l)

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

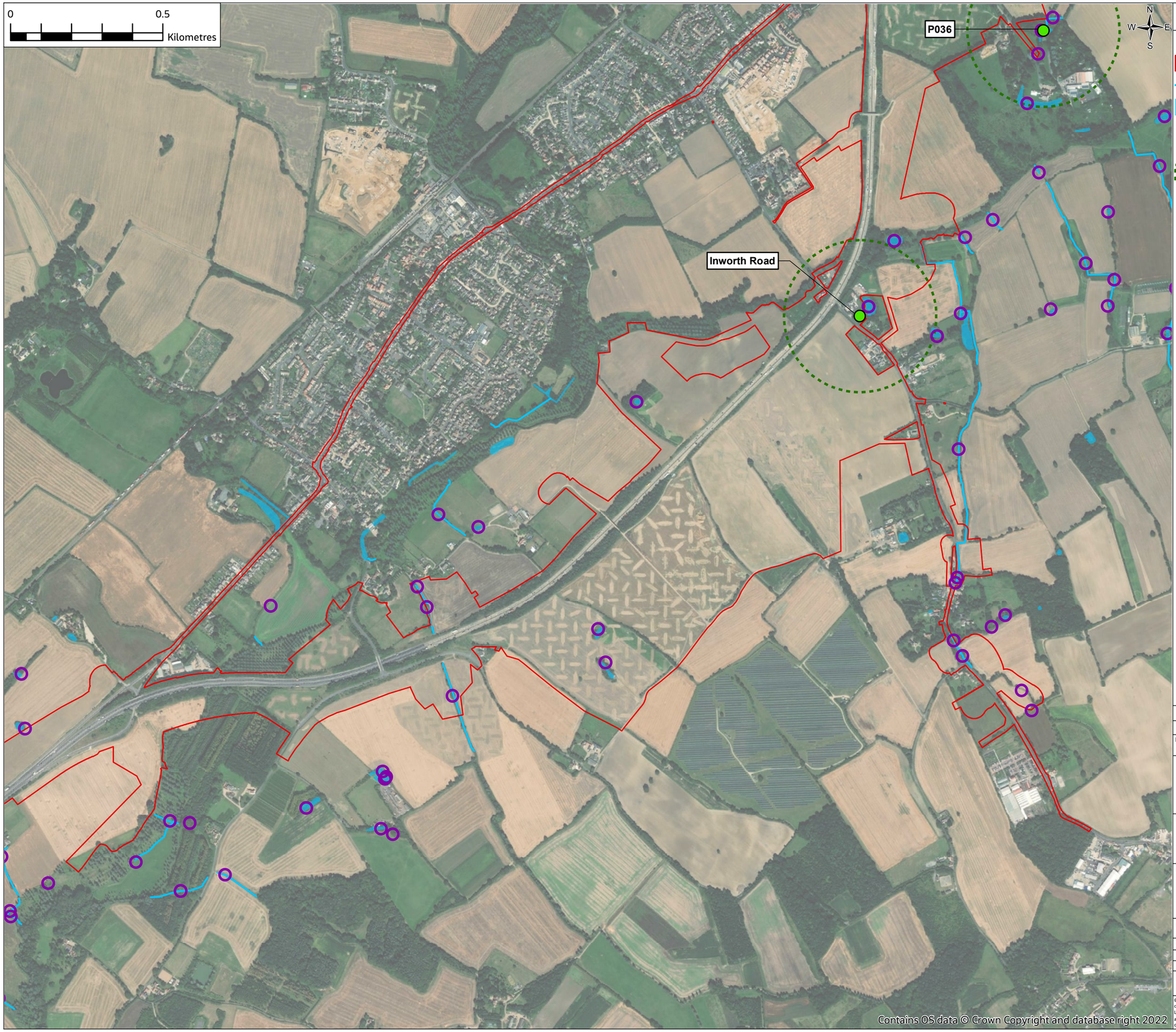
Drawing Title: ENVIRONMENTAL STATEMENT
GREAT CRESTED NEWT SURVEY RESULTS
SHEET 4 OF 7

Drawing Status: S4 - SUITABLE FOR STAGE APPROVAL

Scale @ A3	1:12000	DO NOT SCALE
Jacobs No.	B36601D1	Rev P01
Client No.	HE551497	

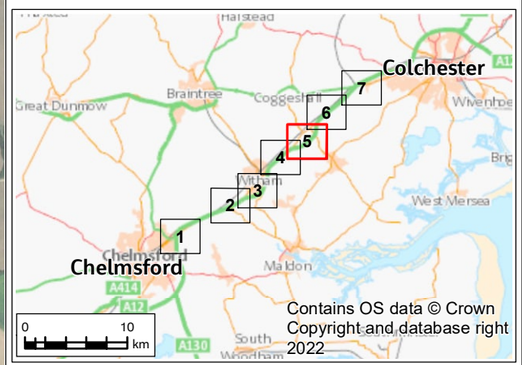
Drawing Number: HE551497-JAC-LDC-SCHW-SK-GI-0766

APPENDIX 9.13 - FIGURE 1



Legend

- Order Limits
- Ditch
- Pond
- HSI Assessment Undertaken
- Confirmed GCN Pond
- Confirmed GCN Pond - 250m Buffer



Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	06/07/22	For DCO application	JC	LW	NP	SG

Development Consent Order Drawing Number: TR010060/APP/6.3

APFP Regulation: Regulation 5(2)(l)

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title: ENVIRONMENTAL STATEMENT
GREAT CRESTED NEWT SURVEY RESULTS
SHEET 5 OF 7

Drawing Status: S4 - SUITABLE FOR STAGE APPROVAL

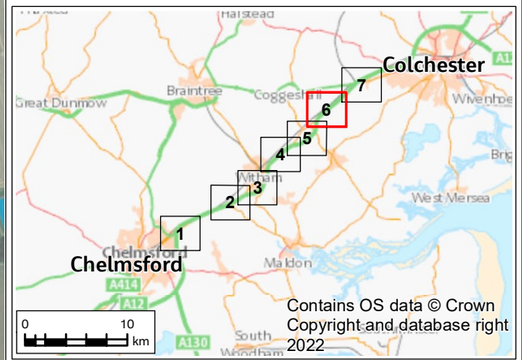
Scale @ A3	1:12000	DO NOT SCALE	
Jacobs No.	B36601D1	Rev	P01
Client No.	HE551497		

Drawing Number: HE551497-JAC-LDC-SCHW-SK-GI-0767

APPENDIX 9.13 - FIGURE 1

Legend

- Order Limits
- Ditch
- Pond
- HSI Assessment Undertaken
- Confirmed GCN Pond
- Confirmed GCN Pond - 250m Buffer



Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	06/07/22	For DCO application	JC	LW	NP	SG

Development Consent Order Drawing Number: TR010060/APP/6.3

APFP Regulation: Regulation 5(2)(l)

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

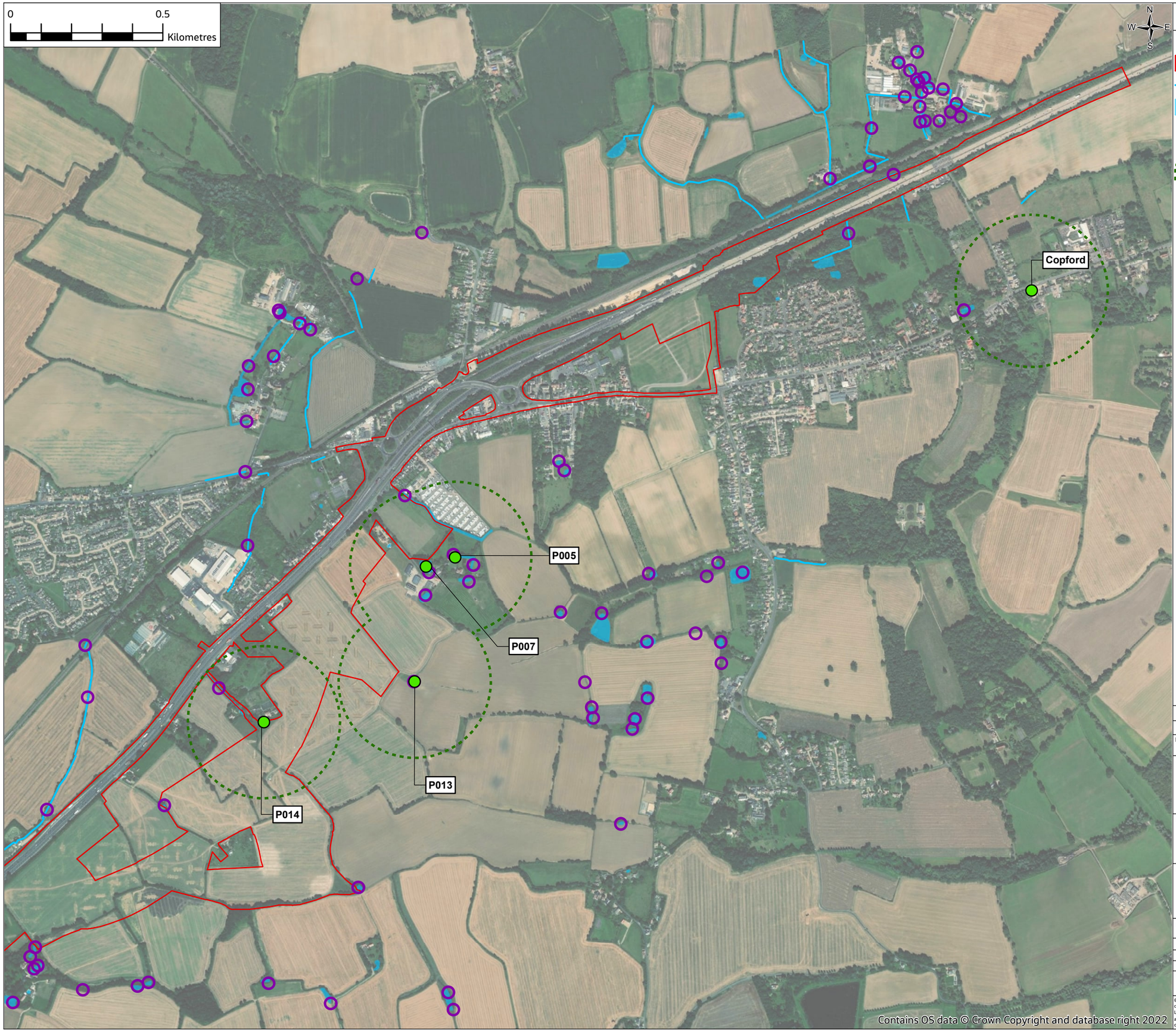
Drawing Title: ENVIRONMENTAL STATEMENT
GREAT CRESTED NEWT SURVEY RESULTS
SHEET 6 OF 7

Drawing Status: S4 - SUITABLE FOR STAGE APPROVAL

Scale @ A3	1:12000	DO NOT SCALE
Jacobs No.	B36601D1	
Client No.	HE551497	Rev P01

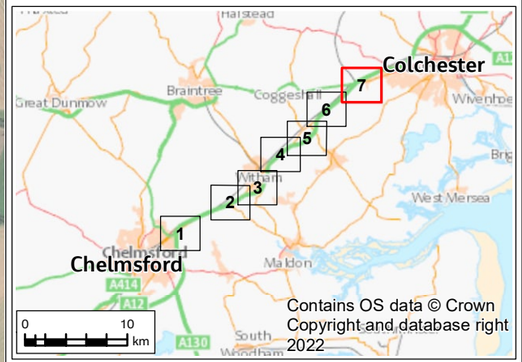
Drawing Number: HE551497-JAC-LDC-SCHW-SK-GI-0768

APPENDIX 9.13 - FIGURE 1



Legend

- Order Limits
- Ditch
- Pond
- HSI Assessment Undertaken
- Confirmed GCN Pond
- Confirmed GCN Pond - 250m Buffer



P01	06/07/22	For DCO application	JC	LW	NP	SG
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Development Consent Order Drawing Number: TR010060/APP/6.3

APFP Regulation: Regulation 5(2)(l)

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title: ENVIRONMENTAL STATEMENT
GREAT CRESTED NEWT SURVEY RESULTS
SHEET 7 OF 7

Drawing Status: S4 - SUITABLE FOR STAGE APPROVAL

Scale @ A3	1:12000	DO NOT SCALE
Jacobs No.	B36601D1	
Client No.	HE551497	Rev P01

Drawing Number: HE551497-JAC-LDC-SCHW-SK-GI-0769

Annex B. Desk study results

Table B.1 Desk study results within 2km of the proposed scheme 2020

Location	Grid reference	Date	Abundance	Source
Little Baddow, nr Whitwell house	TL75120780	29/05/2012	5 Count of Female	Essex Wildlife Trust
Little Baddow, Phillows farm	TL75400786	01/05/2012	3 Count of Adult Male	Essex Wildlife Trust
Little Baddow, nr Whitwell house	TL75120780	13/06/2012	1 Count of Adult Male	Essex Wildlife Trust
Little Baddow, Phillows farm	TL75400786	13/06/2012	1 Count of Female	Essex Wildlife Trust
Little Baddow, nr Whitwell house	TL75120780	30/04/2012	16 Count of Adult Male	Essex Wildlife Trust
Little Baddow, nr Whitwell house	TL75120780	07/06/2012	2 Count of Female	Essex Wildlife Trust
Little Baddow, nr Whitwell house	TL75120780	13/06/2012	1 Count of Female	Essex Wildlife Trust
Little Baddow, nr Whitwell house	TL75120780	07/06/2012	2 Count of Adult Male	Essex Wildlife Trust
Little Baddow, Phillows farm	TL75400786	30/05/2012	3 Count of Adult Male	Essex Wildlife Trust
Little Baddow, Phillows farm	TL75400786	30/05/2012	2 Count of Female	Essex Wildlife Trust
Little Baddow, nr Whitwell house	TL75120780	17/05/2012	7 Count of Female	Essex Wildlife Trust

Location	Grid reference	Date	Abundance	Source
Little Baddow, nr Whitwell house	TL75120780	17/05/2012	7 Count of Adult Male	Essex Wildlife Trust
Little Baddow, nr Whitwell house	TL75120780	30/04/2012	7 Count of Female	Essex Wildlife Trust
Little Baddow, nr Whitwell house	TL75120780	29/05/2012	2 Count of Adult Male	Essex Wildlife Trust
Little Baddow, Phillows farm	TL75400786	07/06/2012	1 Count of Adult Male	Essex Wildlife Trust
Little Baddow, Phillows farm	TL75400786	19/05/2012	1 Count of Female	Essex Wildlife Trust
Little Baddow, Phillows farm	TL75400786	01/05/2012	2 Count of Female	Essex Wildlife Trust
Chelmsford	TL739080	03/04/2014	16 Count	Essex Wildlife Trust
Springfield CP	TL73520818	13/04/2015 - 11/06/2015	Present Count	Essex Wildlife Trust
Springfield CP	TL73280815	06/10/2015	Present Count	Essex Wildlife Trust
Chelmsford, Springfield Business Park Attenuation Pond (1b)	TL740083	20/04/2016	7 Count	Essex Wildlife Trust
Chelmsford, Springfield Business Park Attenuation Pond (1b)	TL740083	16/05/2016	2 Count	Essex Wildlife Trust
Chelmsford, Springfield Business Park Attenuation Pond (5a)	TL740081	20/04/2016	34 Count	Essex Wildlife Trust

Location	Grid reference	Date	Abundance	Source
Chelmsford, Springfield Business Park Attenuation Pond (5a)	TL740081	16/05/2016	1 Count	Essex Wildlife Trust
Chelmsford, Springfield Business Park Mitigation Pond	TL740080	20/04/2016	19 Count	Essex Wildlife Trust
Chelmsford, Springfield Business Park Mitigation Pond	TL740080	16/05/2016	8 Count	Essex Wildlife Trust
Chelmsford, Springfield Business Park, Mitigation Pond	TL737086	2016	20 Count	Essex Wildlife Trust
Chelmsford, Springfield Business Park, Mitigation Pond	TL737086	2016	Present Count of Egg	Essex Wildlife Trust
Chelmsford, Springfield Business Park, Mitigation Pond	TL737086	2016	19 Count	Essex Wildlife Trust
Chelmsford, Springfield Business Park, Pond 1b	TL737086	2016	9 Count	Essex Wildlife Trust
Chelmsford, Springfield Business Park, Pond 1b	TL737086	2016	Present Count of Egg	Essex Wildlife Trust
Chelmsford, Springfield Business Park, Pond 1b	TL737086	2016	8 Count	Essex Wildlife Trust

Location	Grid reference	Date	Abundance	Source
Chelmsford, Springfield Business Park, Pond 5a	TL737086	2016	34 Count	Essex Wildlife Trust
Chelmsford, Springfield Business Park, Pond 5a	TL737086	2016	27 Count	Essex Wildlife Trust
Chelmsford, Springfield Business Park, Pond 5b	TL737086	2016	1 Count	Essex Wildlife Trust
A12, Ewell Hall Chase	TL864171	04/04/2017	2 Count of Juvenile	Essex Wildlife Trust
Eight Ash Green	TL9294526274	16/03/2017	6 Count	Essex Wildlife Trust
Chelmer Village, Plot N Chelmsford Research Park	TL735081	04/04/2017	10 adult Count of Male; 18 adult Count of Female	Essex Wildlife Trust
Chelmer Village, Plot N Chelmsford Research Park	TL735081	10/04/2017	10 adult Count of Male; 17 adult Count of Female	Essex Wildlife Trust
Chelmer Village, Plot N Chelmsford Research Park	TL735081	02/05/2017	5 adult Count of Male; 6 adult Count of Female	Essex Wildlife Trust
Chelmer Village, Plot N Chelmsford Research Park	TL735081	07/05/2017	5 adult Count of Male; 7 adult Count of Female	Essex Wildlife Trust
Chelmer Village, Plot N Chelmsford Research Park	TL735081	15/05/2017	7 adult Count of Female; 9 adult Count of Male	Essex Wildlife Trust

Location	Grid reference	Date	Abundance	Source
Chelmer Village, Plot N Chelmsford Research Park	TL735081	05/06/2017	1 adult Count of Male; 4 adult Count of Female	Essex Wildlife Trust
Stanway, Rosemary Almshouse, London Road	TL939244	10/05/2018	4 Count of Adult	Essex Wildlife Trust
Stanway, Rosemary Almshouse, London Road	TL939244	14/05/2018	5 Count of Adult	Essex Wildlife Trust
Stanway, Rosemary Almshouse, London Road	TL939244	22/05/2018	1 Count of Adult	Essex Wildlife Trust
Stanway, Rosemary Almshouse, London Road	TL939244	08/05/2018	9 Count of Adult	Essex Wildlife Trust
Mark's Tey	TL914233	03/05/2018	Present Count	Essex Wildlife Trust
P091	TL8143212905	14/05/2018	1 (does not mention life stage)	Surveyed Priority Ponds (England) (Natural England, 2022b)
Springfield Business Park	TL740079	03/04/2014	Only mentions presence	GCN Class Survey Licence Returns (England) (Natural England, 2022a)
Springfield Business Park	TL739080	02/04/2014	Only mentions presence	GCN Class Survey Licence Returns (England) (Natural England, 2022a)
Springfield Business Park	TL740083	04/04/2014	Only mentions presence	GCN Class Survey Licence Returns (England) (Natural England, 2022a)

Location	Grid reference	Date	Abundance	Source
Springfield Business Park	TL737086	10/04/2016	Only mentions presence	GCN Class Survey Licence Returns (England) (Natural England, 2022a)
Springfield Business Park	TL736081	30/05/2015	Only mentions presence	GCN Class Survey Licence Returns (England) (Natural England, 2022a)
Springfield Business Park	TL736083	09/06/2015	Only mentions presence	GCN Class Survey Licence Returns (England) (Natural England, 2022a)
Inworth Road	TL877189	06/04/2017	Only mentions presence	GCN Class Survey Licence Returns (England) (Natural England, 2022a)
Copford	TL936242	26/05/2015	Only mentions presence	GCN Class Survey Licence Returns (England) (Natural England, 2022a)

Annex C. Habitat suitability index assessment results

Table C.1 Habitat suitability index assessment results 2019-2020

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
11/02/2020	D11	1	0.05	0.5	0.67	0.4	1	1	1	1	0.35	0.55	Below Average	Southern side: negligible GCN and low water vole potential. Northern side: moderate GCN and low water vole potential.
26/11/2019	D25a	1	1.00	0.5	0.67	0.3	1	0.67	0.96	1	0.4	0.69	Average	-
20/02/2020	D28a	1	0.05	0.5	0.33	0.8	1	1	0.98	0.33	0.3	0.48	Poor	May dry by GCN season but it is fairly deep, at least 30cm, and connected by a ditch network (dry in places but

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
														can use for movement).
26/11/2019	D33	1	0.05	1	0.67	1	0.67	0.67	1	0.33	0.5	0.55	Below Average	-
16/01/2020	D48	1	0.1	1	0.67	0.7	0.67	0.33	1	1	1	0.63	Average	-
16/01/2020	D48a	1	0.05	0.1	0.33	0.7	0.67	0.33	1	1	0.3	0.39	Poor	-
-	D58	1	0.2	1	0.33	0.7	1	0.67	0.97	0.33	0.9	0.62	Average	-
02/12/2019	D59	1	0.2	0.5	0.67	0.7	1	1	0.88	0.67	0.7	0.67	Average	Large, long ditch with very slow flow.
02/12/2019	D59a	1	0.05	0.5	0.67	1	1	1	0.88	0.67	0.8	0.62	Average	Ditch connected to culverts/ pipes but doesn't appear to have any flow.
02/12/2019	D62	1	0.05	0.1	0.67	1	1	1	0.88	0.67	0.7	0.52	Below Average	Likely has slow flow, currently too shallow to bottle trap.

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
14/01/2020	D66	1	0.35	0.1	0.67	1	1	1	1	0.67	1	0.66	Average	May be unsuitable if connected to stream.
14/01/2020	D66a	1	0.3	0.1	0.67	0.6	1	0.67	1	0.67	0.8	0.58	Below Average	-
15/01/2020	D68	1	0.05	0.1	0.33	0.4	0.67	1	1	0.33	0.35	0.37	Poor	-
05/02/2020	D69	1	0.1	0.1	0.67	0.7	1	1	1	0.67	0.3	0.50	Poor	Dependent on water depth.
15/01/2020	D73	1	0.2	0.1	0.01	0.7	1	0.67	1	0.33	1	0.35	Poor	-
15/01/2020	D75	1	0.1	0.1	0.33	1	1	1	1	0.33	0.3	0.45	Poor	No macrophyte shade due to trees and shrubs towering over.
15/01/2020	D79	1	0.05	0.1	0.33	0.7	1	1	1	0.67	0.3	0.43	Poor	-
15/01/2020	D80	1	0.05	0.1	0.33	1	1	1	1	0.67	0.55	0.48	Poor	-

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
07/02/2020	D91	1	0.05	0.1	0.67	0.2	1	1	1	1	0.8	0.47	Poor	-
-	D92	1	0.05	0.1	0.01	0.6	1	1	1	0.67	1	0.34	Poor	-
-	D96	1	0.05	0.5	0.33	1	1	1	1	0.33	0.55	0.52	Below Average	Potential for water levels to drop so bottle trap may not be possible.
-	D96a	1	0.05	0.1	0.33	0.7	1	1	1	0.33	0.3	0.40	Poor	-
08/01/2020	D98	1	0.4	1	0.33	0.4	0.67	0.67	1	0.33	0.4	0.56	Below Average	Lacks depth to bottle trap.
18/02/2020	D100a	1	0.05	0.5	0.33	1	1	0.67	1	0.67	0.5	0.53	Below Average	-
10/03/2020	D117a	1	0.25	0.1	0.67	0.6	1	1	1	0.33	0.3	0.50	Below Average	Flowing ditch, likely to dry during summer, unsuitable for GCN.
03/12/2019	D121	1	0.05	0.1	0.33	0.8	1	1	1	0.67	0.8	0.48	Poor	-
03/12/2019	D122	1	0.4	0.1	0.33	0.8	1	1	1	0.67	0.9	0.60	Average	-

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
03/12/2019	D125	1	0.05	0.1	0.01	0.2	1	1	1	0.67	0.3	0.27	Poor	Overflow from pond, only surveyable in times of flood.
03/12/2019	D126	1	0.1	0.1	0.33	0.2	1	1	1	1	0.3	0.43	Poor	Woodland ditch likely to be dry all year.
03/12/2019	D127	1	0.05	0.1	0.01	1	1	1	1	0.33	0.3	0.29	Poor	Hedge leading into ditch, next to horse field.
03/12/2019	D128	1	0.1	0.1	0.33	0.2	1	1	1	0.67	0.3	0.41	Poor	-
03/12/2019	D129	1	0.3	0.1	0.01	0.4	0.67	1	1	0.67	0.9	0.37	Poor	Small area surveyable if wet.
11/12/2019	D144	1	0.05	1	1	1	0.67	0.67	1	0.67	0.7	0.63	Average	-
22/01/2020	D148	1	0.1	0.1	0.33	0.7	1	1	1	0.67	0.55	0.49	Poor	Slight flow towards northeast end.
12/02/2020	D158	1	0.5	0.5	1	0.2	1	1	1	1	0.35	0.67	Average	Unsuitable for GCN, unlikely to

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
														support water vole or otter, at best as a commuting corridor. Photographs taken for D193 and not for HSI form.
19/02/2020	D159a	1	0.7	1	0.67	0.8	0.67	1	1	1	0.45	0.80	Excellent	Variable suitability and water depth along length. Will depend on amount of rainfall before breeding season. Very isolated due to road and rivers.
11/03/2020	D176	1	0.9	0.9	0.67	1	0.67	0.01	0.85	0.33	0.7	0.48	Poor	-
22/01/2020	D191a	1	0.05	0.1	0.33	0.2	1	1	1	1	0.3	0.40	Poor	-

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
12/02/2020	D193	1	0.5	0.5	1	0.2	1	1	1	1	0.35	0.67	Average	Unsuitable for GCN, unlikely to support water vole or otter, at best as a commuting corridor. Photographs taken for D193 and not for HSI form.
22/01/2020	D194a	1	0.05	0.1	0.33	1	1	1	1	0.67	0.3	0.45	Poor	-
12/02/2020	D197	1	0.5	0.5	1	0.2	1	1	1	1	0.35	0.67	Average	Unsuitable for GCN, unlikely to support water vole or otter, at best as a commuting corridor. Photographs taken for D193 and not for HSI form.

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
08/01/2020	D208	1	0.05	1	0.33	0.8	0.67	0.67	1	0.67	0.4	0.52	Below Average	-
11/02/2020	D309	1	0.05	0.1	0.67	1	1	1	0.97	1	0.4	0.51	Below Average	-
-	D316	1	0.05	0.1	0.33	1	1	1	1	0.33	0.4	0.43	Poor	-
15/01/2020	D331	1	0.1	0.1	0.33	1	1	1	1	0.33	0.3	0.45	Poor	Shade 0% from no macrophytes. High shade from trees / shrubs.
04/12/2019	D335	1	1	1	0.33	0.8	1	1	0.97	0.67	0.7	0.81	Excellent	Some water mint, and egg laying material.
20/02/2020	D358	1	0.1	0.9	0.67	1	1	0.67	1	1	0.35	0.65	Average	Some water mint, floating sweet grass. Up to 50cm deep.
-	D364a	1	0.05	0.5	0.33	0.6	1	0.67	1	0.67	1	0.54	Below Average	-
04/12/2019	D367a	1	0.3	0.1	0.33	1	1	1	1	0.67	0.3	0.54	Below Average	-
19/02/2020	D374	1	0.45	1	0.33	1	1	0.67	1	0.67	0.35	0.69	Average	Seems inaccessible at far west

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
														end. Sluggish flow nearly, static in places.
03/12/2019	D384	1	0.05	0.5	0.67	1	1	1	1	0.67	0.7	0.62	Average	-
-	D394	1	0.1	0.5	0.67	1	0.67	0.67	1	0.33	0.8	0.58	Below Average	-
-	P3	1	0.6	0.9	0.33	0.6	0.67	0.01	1	0.33	0.55	0.41	Poor	-
13/02/2020	P4	1	0.4	0.9	0.33	1	0.67	0.01	1	0.67	0.5	0.44	Poor	Carp present. Clay lined.
19/02/2020	P5	1	0.6	0.9	0.67	1	0.67	0.67	1	1	0.4	0.76	Good	-
19/02/2020	P6	1	0.45	1	0.67	1	1	1	1	1	0.4	0.81	Excellent	-
19/02/2020	P7	1	1	0.9	1	1	0.67	0.67	1	1	0.65	0.87	Excellent	50% of margin not accessible due to dense bramble.
19/02/2020	P8	1	0.45	0.9	0.67	1	0.67	0.33	1	1	0.35	0.68	Average	-
09/01/2020	P12	1	0.3	1	0.67	1	0.67	0.67	1	0.67	0.5	0.70	Good	-

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
09/01/2020	P13	1	0.1	0.5	0.67	0.6	0.67	1	1	0.67	0.4	0.57	Below Average	-
16/01/2020	P16	1	0.05	1	0.33	0.4	1	0.67	1	0.33	0.3	0.46	Poor	-
-	P17	1	0.25	1	0.33	0.4	0.67	0.67	1	1	0.3	0.58	Below Average	Access for bottle trapping may be difficult.
-	P18a	1	0.05	0.1	0.33	0.2	1	1	1	0.67	0.3	0.38	Poor	-
04/02/2020	P19	1	0.1	0.5	0.67	0.4	1	0.67	1	0.67	0.3	0.53	Below Average	-
04/02/2020	P22	1	0.5	0.9	0.33	1	0.01	0.67	1	0.33	0.3	0.40	Poor	Steep banks, bottle traps not possible
10/01/2020	P24	1	0.75	0.5	0.67	1	0.67	0.67	1	1	1	0.80	Excellent	-
26/11/2019	P25	1	0.955	1	1	1	0.67	0.67	0.98	1	0.8	0.90	Excellent	-
20/02/2020	P26	1	0.1	1	0.33	1	0.67	0.67	1	0.67	0.3	0.56	Below Average	-
20/02/2020	P30	1	0.3	1	0.33	1	1	0.67	1	0.67	0.35	0.66	Average	-
20/02/2020	P31	1	0.1	1	0.33	0.2	1	0.67	1	0.33	0.3	0.46	Poor	-

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
20/02/2020	P33	1	0.05	0.5	0.33	1	1	1	0.98	0.33	0.35	0.50	Poor	-
26/11/2019	P34	1	0.25	0.9	0.33	1	0.01	0.33	0.81	0.67	0.3	0.36	Poor	Hedge and woodland covering over half edge.
11/12/2019	P36	1	0.4	1	1	0.8	0.67	0.67	1	1	0.9	0.81	Excellent	Connected to ditch/ moat system.
05/12/2019	P39	1	0.6	0.9	0.67	1	0.01	0.67	1	0.67	0.45	0.49	Poor	Pond with bulrush and suitable protective shoreline vegetation for GCN.
21/01/2020	P41	1	0.88	0.9	0.67	0.7	0.67	0.67	1	0.67	0.9	0.79	Good	Access to entire perimeter would be difficult, most of western edge can't be accessed due to trees, unsure about

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
														eastern bank.
12/02/2020	P42	1	0.4	0.9	0.33	0.7	0.01	0.67	1	0.33	0.3	0.38	Poor	Generally, very poor.
05/02/2020	P43	1	1	0.5	0.33	1	1	0.67	0.88	0.67	0.3	0.67	Average	-
	P44	1	0.25	0.5	0.33	0.6	1	0.67	0.85	0.33	0.3	0.52	Below Average	-
17/01/2020	P45	1	0.5	1	0.67	1	0.67	0.67	0.76	0.33	0.55	0.68	Average	-
13/02/2020	P49	1	0.91	0.9	0.67	1	0.67	0.67	1	0.67	0.4	0.76	Good	Possibly unsafe in places to set bottle traps.
05/02/2020	P51	1	0.835	0.9	0.33	0.6	0.67	0.67	1	0.33	0.3	0.61	Average	-
03/03/2020	P55	1	0.3	0.9	0.67	1	0.67	0.67	1	0.67	0.35	0.67	Average	Pond margin not easily accessible from south. Put in bottle traps from north side of ditch. No dense scrub there.

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
03/03/2020	P55a	1	1	0.9	0.67	0.4	0.01	0.67	1	1	0.35	0.47	Poor	Heavy shrub on east side.
18/02/2020	P58	1	0.1	1	0.33	0.3	1	1	1	0.67	0.3	0.54	Below Average	-
18/02/2020	P59	1	0.25	0.5	0.67	0.4	1	1	1	0.33	0.3	0.57	Below Average	-
-	P60	1	0.5	1	0.33	0.2	0.67	0.67	1	0.67	0.3	0.56	Below Average	-
02/12/2019	P65	1	0.6	1	1	0.8	0.67	0.67	0.88	0.67	0.9	0.81	Excellent	-
15/01/2020	P67	1	0.1	1	0.01	1	0.67	0.67	1	0.33	0.35	0.37	Poor	Shade from bank side trees prevents marginal and macrophyte vegetation growth.
10/03/2020	P71	1	0.8	0.9	0.67	1	0.01	0.01	1	0.67	0.35	0.32	Poor	Unsuitable for bottle trapping, heavily utilised by anglers with large fish presence.

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
														Suitable for eDNA.
-	P72	1	0.4	1	0.33	1	0.67	0.67	1	0.33	0.8	0.66	Average	Pond currently flooded.
-	P85	1	1	1	0.67	1	0.67	0.33	1	0.33	1	0.74	Good	-
-	P85a	1	0.4	0.1	0.33	0.6	0.67	1	1	0.33	1	0.53	Below Average	-
08/01/2020	P87	1	0.05	1	0.33	1	1	0.67	1	0.33	0.4	0.52	Below Average	-
14/01/2020	P88	1	0.6	0.9	0.67	0.8	0.67	0.01	1	0.67	0.5	0.48	Poor	Due to presence of large fish, pond is considered highly unlikely to support GCN
04/12/2019	P89	1	0.1	0.9	0.33	0.2	0.67	0.67	1	0.67	0.4	0.48	Poor	-
-	P93	1	0.25	0.5	0.33	1	0.67	1	0.92	0.33	0.3	0.55	Below Average	-
-	P94	1	0.1	1	0.01	0.6	1	0.67	0.96	0.33	0.3	0.36	Poor	-
-	P94a	1	0.05	0.1	0.01	1	1	1	0.96	0.33	0.3	0.29	Poor	-
05/02/2020	P95	1	0.1	1	0.33	0.6	1	0.67	0.96	0.33	0.3	0.51	Below Average	-

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
10/12/2019	P96	1	0.8	0.9	0.67	1	0.67	0.67	0.98	0.67	0.35	0.74	Good	Steep banks
13/02/2020	P97	1	0.05	0.9	0.67	1	1	0.01	1	0.33	0.4	0.36	Poor	No bottle traps due to lining.
18/02/2020	P98	1	0.35	1	0.33	1	0.67	0.67	1	0.67	0.35	0.64	Average	-
13/02/2020	P98	1	0.1	0.5	0.33	0.4	0.67	1	1	0.67	0.3	0.50	Poor	Limited access
18/02/2020	P99	1	0.835	0.5	0.67	1	0.67	1	0.76	0.67	0.35	0.71	Good	Signs of dead tall ruderal in middle of pond may dry in summer. Seems generally okay for GCN although connectivity is poor.
13/02/2020	P101	1	0.8	0.9	0.67	0.7	0.01	0.01	1	0.33	0.4	0.29	Poor	Invasive. 100000 bottle traps are unrealistic.

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
11/02/2020	P105	1	0.1	0.9	0.67	1	0.67	0.67	0.85	0.67	1	0.66	Average	Surrounded by amenity grassland between two houses. Better terrestrial habitat to the west.
03/12/2019	P106	1	0.25	1	1	1	0.67	0.67	1	0.67	1	0.77	Good	-
03/12/2019	P109	1	0.7	0.9	0.67	0.8	0.67	0.67	1	0.67	0.4	0.73	Good	-
03/12/2019	P110	1	1	0.9	0.01	0.2	0.01	0.67	1	1	0.4	0.29	Poor	-
22/01/2020	P111	1	0.05	0.1	0.67	0.7	1	1	1	1	1	0.55	Below Average	-
10/03/2020	P112	1	0.8	0.9	0.67	1	0.67	0.33	0.96	0.67	0.35	0.69	Average	Generally low suitability, very few macrophytes for egg laying around margins. Suggest eDNA.

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
10/03/2020	P114	1	0.25	1	0.33	0.6	1	1	0.98	0.67	0.45	0.66	Average	Willow Carr causing succession and drying of pond within sunken area, water depth maximum 40cm, leaf litter build up. Floating sweet grass and small areas of juncus present within channel. Dead wood and ruderal vegetation present around pond basin.
12/12/2019	P119	1	0.8	0.9	1	1	0.01	0.33	0.96	0.67	1	0.52	Below Average	Likely to have large fish.
12/12/2019	P121	1	1	1	0.33	0.2	1	1	0.98	0.67	0.3	0.65	Average	Possible run off pond

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
21/01/2020	P124	1	0.6	0.5	0.33	1	1	1	1	0.33	0.3	0.63	Average	-
06/02/2020	P132	1	0.8	0.9	0.67	0.4	0.67	0.67	0.88	1	0.9	0.76	Good	Contact mentioned 'management signed up to a GCN thing for this pond'. Nearby site to the south had GCN fencing present. Possible GCN mitigation pond.
10/12/2019	P133	1	0.4	0.9	0.67	1	0.67	0.67	1	1	0.3	0.71	Good	Both a dead duck and dead rabbit in pond.
22/01/2020	P144	1	0.1	1	0.33	0.7	1	1	1	0.67	0.3	0.58	Below Average	Dense vegetation prevents access to most of pond.

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
09/01/2020	P148	1	1	1	0.33	0.4	0.67	0.33	0.96	0.67	1	0.67	Average	Pond is at TL7401808332
-	P153	1	0.925	1	0.33	0.4	0.67	0.33	0.96	0.33	1	0.62	Average	GCN fencing present at nearby development. Pond at TL7395308055
-	P159	1	0.05	0.5	0.33	0.7	1	0.67	0.88	1	1	0.57	Below Average	-
12/12/2019	P173	1	0.955	1	0.67	0.8	0.67	0.67	0.98	0.67	0.9	0.82	Excellent	-
12/02/2020	P188	1	0.8	0.9	0.67	1	0.01	0.01	1	0.67	0.4	0.32	Poor	-
22/01/2020	P189	1	0.985	0.9	0.33	0.4	0.67	0.67	1	1	0.3	0.66	Average	-
22/01/2020	P190	1	0.97	1	0.33	0.4	0.67	0.67	1	1	0.3	0.67	Average	-
22/01/2020	P192	1	0.1	0.1	0.33	0.2	1	1	1	0.67	0.3	0.41	Poor	-
22/01/2020	P193	1	0.1	0.1	0.33	0.2	1	1	1	1	0.3	0.43	Poor	-

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
12/02/2020	P194	1	0.25	0.9	0.67	0.2	0.01	0.67	1	0.33	0.4	0.35	Poor	-
22/01/2020	P195	1	0.8	0.9	0.67	0.5	0.67	0.67	1	1	0.4	0.73	Good	No obvious egg laying vegetation present. Some water mint on north bank.
22/01/2020	P198	1	0.3	0.5	0.33	0.2	1	1	1	0.33	0.7	0.54	Below Average	Due to density of vegetation, would be difficult to get many traps in.
05/03/2020	P199	1	0.3	0.9	1	1	1	0.67	0.96	1	0.35	0.76	Good	-
12/02/2020	P200	1	0.97	1	0.67	1	0.67	0.67	1	0.33	0.55	0.75	Good	-
05/03/2020	P204	1	0.35	0.5	0.67	0.4	0.67	1	0.92	1	0.35	0.63	Average	-
12/02/2020	P207	1	0.45	0.9	0.33	0.4	0.67	0.67	1	0.67	0.35	0.60	Below Average	-
08/01/2020	P209	1	0.9	0.9	0.33	0.7	0.67	0.67	1	0.67	0.3	0.66	Average	Steep sided bank into deep water.

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
														Bank vegetation will make trapping difficult.
06/12/2019	P211	1	0.9	0.9	1	1	0.67	1	1	1	0.8	0.92	Excellent	Landowner states GCN present, plenty of egg laying vegetation.
27/11/2019	P212	1	0.1	0.9	0.33	1	0.67	0.67	1	1	0.3	0.58	Below Average	No bottle traps as no bank present. Only net etc. Newts could be present trapped in waterbody. E/N 580897 211468
06/12/2019	P213	1	0.925	0.9	1	1	0.01	0.01	1	1	0.5	0.36	Poor	Landowner states GCN present, plenty of egg laying vegetation.

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
29/01/2020	P214a	1	0.4	0.9	1	1	0.67	0.67	1	1	0.7	0.80	Excellent	Newly identified pond
29/01/2020	P216	1	1	1	0.67	0.4	0.67	1	1	1	0.35	0.76	Good	Steep banks and high water level. Landowner thinks he has GCN.
14/01/2020	P218	1	0.05	0.1	0.67	1	1	1	0.76	0.33	1	0.49	Poor	Ditches mapped as inside pond area are one and the same. May be unsuitable due to drying and connection to possible stream
11/03/2020	P221	1	0.985	0.9	0.33	0.8	0.67	0.67	1	1	0.3	0.71	Good	No vegetation present, deep leaf litter within channel. Encroachment of willow, pond likely to

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
														be slowly drying.
11/03/2020	P222	1	0.8	0.9	0.33	1	0.01	0.01	1	0.67	0.4	0.30	Poor	Large geese population on lake and previously stocked with fish
05/12/2019	P226a	1	0.6	0.5	0.67	1	0.01	0.67	1	1	0.9	0.51	Below Average	Landowner says GCN are present, floods yearly, muddy puddle in summer, herons frequent. Over 500m from Order Limits.
05/12/2019	P226b	1	0.05	0.1	0.33	0.8	0.67	0.67	1	1	1	0.48	Poor	Pond in woodland with suitable vegetation margins.
05/12/2019	P227a	1	0.05	0.9	0.33	1	0.67	1	1	0.33	0.35	0.51	Below Average	-
05/12/2019	P227b	1	0.05	0.9	0.33	1	0.67	1	1	0.33	0.3	0.50	Below Average	Concrete. Not

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
														trappable. Torch only.
-	P228a	1	0.4	0.1	0.33	0.7	0.67	1	1	0.33	0.7	0.52	Below Average	-
18/02/2020	P312	1	0.5	1	0.67	0.6	1	0.33	1	1	0.4	0.70	Average	P312 and P319 are the same water body
22/01/2020	P317	1	0.75	1	0.33	0.2	0.67	1	1	0.67	0.3	0.61	Average	-
-	P320	1	1	0.9	0.67	1	0.67	0.67	1	0.33	0.6	0.75	Good	-
-	P324	1	0.65	0.9	0.33	1	0.01	0.67	1	0.33	0.4	0.42	Poor	-
-	P326	1	0.925	0.5	0.01	1	0.67	0.67	0.85	0.33	0.4	0.43	Poor	Up to 75 bottle traps needed if to be surveyed.
-	P328	1	0.9	0.9	0.33	1	0.67	0.33	1	0.33	0.55	0.64	Average	-
04/03/2020	P329	1	0.6	0.9	1	1	0.01	0.67	1	1	0.4	0.52	Below Average	-
17/11/2021	P329a	1	0.1	1	0.67	1	0.67	0.67	1.00	0.67	0.35	0.609307783	Average	-
17/11/2021	P329b	1	0.1	1	0.33	1	0.67	0.33	1.00	0.67	0.55	0.553291524	Below Average	-

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
05/12/2019	P329c	1	0.3	0.9	0.33	1	0.67	0.67	1	0.67	0.4	0.64	Average	Sedge around the outside of the pond. Suitable egg laying vegetation.
-	P330	1	0.3	0.1	0.01	1	1	0.67	0.85	0.33	0.5	0.35	Poor	-
14/01/2020	P336	1	0.5	0.1	0.67	1	1	1	0.76	0.67	0.8	0.65	Average	Currently little water but possible to see small pools of water in the pond's footprint.
17/01/2020	P343	1	0.1	0.1	0.33	0.7	0.67	1	1	1	0.3	0.46	Poor	-
17/01/2020	P353	1	0.8	0.1	0.33	0.8	0.67	1	1	1	0.3	0.58	Below Average	-
-	P353b	1	0.05	0.1	0.33	0.6	1	1	1	0.33	0.3	0.40	Poor	-
20/02/2020	P355	1	0.05	0.5	0.33	0.4	1	0.67	1	0.33	0.3	0.43	Poor	-
26/11/2019	P363	1	1	1	0.67	0.6	0.67	0.67	1	0.67	0.95	0.81	Excellent	Looks good for GCN, likely pollution if

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
														cows use the field nearby.
21/01/2020	P369a	1	0.2	0.1	0.33	0.6	1	1	1	0.33	0.35	0.46	Poor	-
26/11/2019	P370	1	0.6	0.9	0.67	1	0.67	0.33	1	0.67	0.4	0.68	Average	Managed pond in garden.
03/03/2020	P376	1	0.05	0.9	0.01	1	0.67	0.67	1	0.67	0.35	0.37	Poor	-
03/03/2020	P378	1	0.05	0.9	0.67	0.4	0.67	0.67	1	1	0.35	0.53	Below Average	Hard to estimate bottle trap number as main part of waterbody is just outside buffer. If just inside buffer no more than 15, if whole waterbody perhaps 50+?
20/02/2020	P383	1	0.05	0.5	0.33	1	1	1	1	0.33	0.3	0.49	Poor	Looks flooded out, may dry soon. Willow growing in middle.

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
04/03/2020	P385	1	0.3	1	0.33	0.3	1	0.67	0.81	0.67	0.35	0.57	Below Average	-
	P388	1	0.8	0.9	0.33	1	0.01	0.01	1	0.67	0.3	0.29	Poor	-
20/02/2020	P389, P444 and P445 all one pond	1	0.835	0.9	1	1	0.01	0.33	1	1	0.7	0.53	Below Average	-
20/02/2020	P390	1	0.1	0.5	0.33	0.8	1	1	1	0.33	0.3	0.51	Below Average	Not good suitability, no egg laying material at present.
20/02/2020	P391, P393	1	0.25	1	0.33	0.7	1	1	1	0.67	0.35	0.65	Average	Should be logged as one pond.
29/02/2020	P395	1	0.05	0.5	0.33	0.6	1	1	1	0.33	0.3	0.47	Poor	Would be difficult to bottle trap. Lots of debris in pond and small.
20/02/2020	P396	1	0.8	0.9	0.67	1	0.01	0.01	1	0.67	0.35	0.32	Poor	-

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
20/02/2020	P396a	1	0.05	0.9	0.67	1	0.67	0.33	1	0.67	0.55	0.55	Below Average	-
20/02/2020	P397	1	0.4	1	0.67	0.6	0.67	1	1	0.67	0.35	0.69	Average	-
06/12/2019	P398	1	0.25	0.1	0.33	1	0.67	0.67	1	0.33	1	0.51	Below Average	-
09/01/2020	P400	1	0.3	0.5	0.67	0.4	1	1	1	0.67	0.3	0.62	Average	-
13/12/2019	P403	1	0.3	1	0.67	1	0.67	0.33	1	0.67	0.4	0.64	Average	Probably unsuitable due to flow.
13/12/2019	P403a	1	0.05	0.5	0.67	1	1	1	1	1	0.35	0.60	Below Average	Landowner has only dug out pond about a month ago, hasn't yet finished planting or smoothing edges, etc.
13/12/2019	P403b	1	0.05	0.5	0.67	1	1	0.67	1	0.67	0.8	0.60	Below Average	Vegetation is almost exclusively Norfolk reed, landowner said it took over pond. Is

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
														currently an additional section to pond but landowner said has plans to fill that section in so assessment is only for section that will remain.
03/03/2020	P407	1	0.35	0.9	0.67	0.4	0.67	0.67	1	0.67	0.4	0.63	Average	-
21/01/2020	P409	1	0.9	1	0.33	1	0.67	0.67	1	0.33	0.3	0.65	Average	-
16/01/2020	P412	1	0.4	0.5	0.01	0.7	1	0.67	1	0.67	0.3	0.42	Poor	Flooded at time of survey.
06/12/2019	P415	1	0.4	0.5	0.33	0.2	0.67	0.67	1	0.67	0.8	0.56	Below Average	Inaccessible pond margins.
06/12/2019	P415a	1	0.1	0.1	0.33	0.2	1	1	1	0.33	0.3	0.38	Poor	Scrape next to another pond which would be suitable for GCN.

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
04/03/2020	P416	1	0.5	0.9	0.67	0.3	0.67	1	1	1	0.35	0.68	Average	-
28/11/2019	P417	1	0.1	0.1	0.33	1	0.67	1	1	1	0.3	0.48	Poor	Low at time of survey.
28/11/2019	P417a	1	0.05	0.1	0.33	1	1	1	1	0.33	0.3	0.42	Poor	Boundary vegetation overgrown. No channel aquatic plants.
-	P418	1	0.8	0.9	0.67	1	0.01	0.33	1	0.67	0.35	0.45	Poor	-
03/03/2020	P419	1	0.6	0.9	0.33	1	1	1	1	0.33	0.35	0.68	Average	-
04/03/2020	P420	1	0.5	0.9	0.67	0.3	0.67	1	1	1	0.35	0.68	Average	-
04/12/2019	P422	1	0.895	0.9	0.33	1	0.01	0.01	1	0.67	0.4	0.31	Poor	Large carp seen in pond. with no cover for GCN.
28/11/2019	P423	1	0.05	0.5	0.67	1	0.67	0.67	1	0.67	0.4	0.54	Below Average	Pond appears to have recently been dredged. Smaller than

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
														indicated on pond layer.
09/01/2020	P425	1	0.1	0.5	0.67	0.4	0.67	1	1	0.67	0.3	0.53	Below Average	-
06/02/2020	P430	1	0.2	0.9	0.33	0.6	0.67	0.67	1	0.67	0.3	0.56	Below Average	-
03/03/2020	P432	1	0.35	0.9	1	1	1	0.67	1	1	0.6	0.81	Excellent	-
06/02/2020	P434	1	0.1	0.1	0.01	0.8	1	1	1	0.67	0.35	0.34	Poor	-
28/11/2019	P435	1	0.985	1	0.67	0.2	0.67	0.67	1	0.67	1	0.72	Good	-
28/11/2019	P435a	1	0.05	0.1	0.33	0.2	1	1	1	0.33	0.3	0.36	Poor	Wet stagnant ditch overgrown heavily by bankside vegetation.
04/12/2019	P438	1	0.45	0.9	0.67	0.9	0.67	0.67	1	0.67	0.7	0.74	Good	Decent pond on field margins. Marginal vegetation of rush, spindle and willow herb with good areas

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
														of clear water and good marina.
04/03/2020	P441	1	1	0.9	0.67	1	1	1	0.85	0.67	0.35	0.81	Excellent	-
13/12/2019	P446	1	0.05	0.9	1	1	0.67	0.67	1	0.67	0.8	0.64	Average	-
09/01/2020	P448	1	0.9	0.9	0.33	1	0.01	0.01	1	0.33	0.3	0.28	Poor	Brick margin, no bottle trap possible.
04/12/2019	P449	1	0.925	0.9	1	1	0.67	0.01	1	0.67	0.6	0.54	Below Average	-
28/11/2019	P450	1	0.05	0.1	0.67	0.2	1	1	1	0.67	0.3	0.41	Poor	Pond is fed from culvert connected to ditch, so water level is likely to fluctuate.
28/11/2019	P450a	1	0.05	0.1	0.33	1	1	1	1	0.33	0.35	0.42	Poor	Near pond area slightly stagnant. Shallow but could be suitable for small population. Managed

Assessment date	Pond reference	Location	Pond area	Pond drying	Water quality	Shade	Waterfowl presence	Fish presence	Pond density	Terrestrial habitat	Macrophyte cover	HSI index	Suitability rating	Notes
														side vegetation cut.
06/02/2020	P451	1	0.985	0.9	0.67	1	0.67	0.67	1	0.67	0.3	0.75	Good	-
04/03/2020	P453	1	1	0.9	0.67	1	0.67	0.33	1	0.33	0.35	0.66	Average	-

Annex D. GCN eDNA results

Table D.1 GCN eDNA results 2017

Waterbody reference	Sample date	Result
D053	12/05/2017	Negative
D058b/D059	12/05/2017	Inconclusive
D068a	12/05/2017	Negative
D068b	12/05/2017	Negative
D071	12/05/2017	Negative
D143	21/04/2017	Negative
D144	21/04/2017	Negative
P012	21/04/2017	Negative
P016	21/04/2017	Negative
P019	30/06/2017	Negative
P021	30/06/2017	Negative
P024	21/04/2017	Negative
P025	12/05/2017	Negative
P029	21/04/2017	Negative
P030	12/05/2017	Negative
P031	12/05/2017	Negative
P034	12/05/2017	Negative
P035	12/05/2017	Negative

Waterbody reference	Sample date	Result
P036	21/04/2017	Positive
P036B	21/04/2017	Negative
P037	21/04/2017	Negative
P038	21/04/2017	Inconclusive
P041	21/04/2017	Negative
P042	12/05/2017	Negative
P043	12/05/2017	Negative
P045	21/04/2017	Negative
P051	12/05/2017	Negative
P055	21/04/2017	Negative
P06	21/04/2017	Negative
P060	21/04/2017	Negative
P062	21/04/2017	Negative
P065	12/05/2017	Negative
P067	12/05/2017	Negative
P072	12/05/2017	Negative
P08	21/04/2017	Negative
P085	21/04/2017	Negative
P085a	21/04/2017	Negative
P087	21/04/2017	Negative
P089	21/04/2017	Negative

Waterbody reference	Sample date	Result
P099	30/06/2017	Positive
P105	30/06/2017	Negative
P112	30/06/2017	Negative
P113	21/04/2017	Negative
P117	30/06/2017	Negative
P119	19/05/2017	Negative
P121	19/05/2017	Negative
P124	21/04/2017	Inconclusive
P131	30/06/2017	Negative
P133	30/06/2017	Negative
P143	30/06/2017	Negative
P144	30/06/2017	Positive

Annex E. Presence / absence survey and population estimate survey weather data

Table E.1 Presence / absence survey and population estimate survey weather data 2017

Survey date	Air temperature (°C)		Rainfall	Wind	Ground conditions
	PM	AM			
03/04/2017	15.0	7.0	None	Calm	Dry
04/04/2017	9.8	7.0	None	Calm	Damp
05/04/2017	13.7	4.3	None	Calm	Dry
06/04/2017	18.1	4.2	None	Calm	Dry
18/04/2017	7.0	3.0	None	Calm	Dry
19/04/2017	3.3	6.6	None	Calm	Dry
20/04/2017	13.4	12.3	None	Calm	Dry
09/05/2017	15.5	7.0	None	Calm	Dry
10/05/2017	10.8	6.0	None	Light	Dry
11/05/2017	11.0	10.5	None	Calm	Dry
15/05/2017	16.1	14.9	None	Calm	Dry
16/05/2017	18.4	15.2	Light	Calm	Damp
17/05/2017	14.0	10.3	Moderate	Calm	Wet
18/05/2017	12.1	4.4	None	Calm	Dry
22/05/2017	13.0	14.1	None	Calm	Damp
23/05/2017	16.7	19.8	None	Light	Dry
31/05/2017	14.7	17.2	None	Calm	Dry
01/06/2017	16.0	16.0	None	Calm	Damp

Survey date	Air temperature (°C)		Rainfall	Wind	Ground conditions
	PM	AM			
05/06/2017	13.3	12.0	Light	Light breeze	Damp
06/06/2017	12.5	6.2	Moderate	Light breeze	Wet

Annex F. Presence / absence survey and population survey results

Table F.1 Presence / absence survey and population survey results 2017

Waterbody	Date	Survey number	Torching	Netting	Bottle trapping	Egg search (found Y/N)	Other species	Notes
P005	03/04/2017	1	none	none	GCN female x1	n/a	Common frog adult common frog eggs	
	18/04/2017	2	none	n/a	n/a	n/a	Smooth newt male	No trapping, night temp below 5°C.
	15/05/2017	3	GCN male x1 GCN female x2	n/a	GCN male x1 GCN female x1	n/a	Smooth newt male smooth newt female	
	22/05/2017	4	none	n/a	none	n/a	Smooth newt female common frog adult	
	31/05/2017	5	none	n/a	GCN male x2	n/a	Smooth newt male smooth newt female	
	05/06/2017	6	none	n/a	none	n/a	none	
P006	03/04/2017	1	none	none	none	N	Smooth newt female	
	18/04/2017	2	none	none	n/a	N	none	No trapping, night temp below 5°C. No further surveys due to negative eDNA result.
P007	03/04/2017	1	none	n/a	GCN male x1	n/a	Smooth newt male	

Waterbody	Date	Survey number	Torching	Netting	Bottle trapping	Egg search (found Y/N)	Other species	Notes
							smooth newt female common frog adult common frog eggs	
	18/04/207	2	none	n/a	n/a	n/a	Common frog larvae	No trapping, night temp below 5°C.
	15/05/2017	3	none	n/a	none	n/a	None	
	22/05/2017	4	none	n/a	GCN male x1	n/a	Smooth newt male	
	31/05/2017	5	none	n/a	none	n/a	none	
	05/06/2017	6	none	n/a	none	n/a	none	
P008	03/04/2017	1	none	none	none	N	Smooth newt male common frog adult	
	18/04/2017	2	none	none	n/a	N	Smooth newt male	No trapping, night temp below 5°C. No further surveys due to negative eDNA result.
P012	03/04/2017	1	none	none	none	N	none	
	18/04/2017	2	none	none	n/a	N	none	No trapping, night temp below 5°C. No further surveys due to negative eDNA result.
P013	03/04/2017	1	none	n/a	GCN female x4	N	Smooth newt female stickleback	
	18/04/2017	2	none	none	n/a	N	none	No trapping, night temp below 5°C.
	15/05/2017	3	none	n/a	none	N	Smooth newt male smooth newt female	

Waterbody	Date	Survey number	Torching	Netting	Bottle trapping	Egg search (found Y/N)	Other species	Notes
	22/05/2017	4	GCN male x1 GCN adult x2	n/a	GCN male x4 GCN female x2	n/a	Smooth newt male	
	31/05/2017	5	GCN male x2 GCN female x1	n/a	GCN male x3 GCN adult x3	n/a	Smooth newt male smooth newt female	
	05/06/2017	6	none	n/a	none	n/a	Smooth newt female	
P014	03/04/2017	1	GCN male x10 GCN female x11	n/a	GCN male x6 GCN female x3	Y	Smooth newt male smooth newt female	
	18/04/2017	2	GCN male x3 GCN female x1	n/a	n/a	n/a	Smooth newt male	No trapping, night temp below 5°C.
	15/05/2017	3	GCN male x25 GCN female x29	n/a	GCN male x21 GCN female x21 GCN juvenile x1	n/a	Smooth newt male smooth newt female	
	22/05/2017	4	GCN male x23 GCN female x1 GCN adult x4	n/a	GCN male x6 GCN female x6	n/a	Smooth newt male smooth newt female	
	31/05/2017	5	GCN male x17 GCN female x15 GCN adult x3 GCN juvenile x1	n/a	GCN male x9 GCN female x6 GCN juvenile x1	n/a	Smooth newt male smooth newt female	
	05/06/2017	6	GCN female x2	n/a	GCN male x1 GCN female x5	n/a	none	

Waterbody	Date	Survey number	Torching	Netting	Bottle trapping	Egg search (found Y/N)	Other species	Notes
					GCN juvenile x1			
P016	03/04/2017	1	none	n/a	none	N	none	
	18/04/2017	2	none	none	n/a	N	none	No trapping, night temp below 5°C. No further surveys due to negative eDNA result.
P024	03/04/2017	1	none	n/a	none	N	Smooth newt male smooth newt female	
	18/04/2017	2	none	none	n/a	N	none	No further surveys due to negative eDNA result.
P025	16/05/2017	1	none	n/a	none	N	Smooth newt male smooth newt female common frog adult common frog juvenile	
	11/05/2017	2	none	n/a	none	N	Common toad juvenile	No further surveys due to negative eDNA result.
P029	04/04/2017	1	none	n/a	none	N	none	
	18/04/2017	2	none	none	n/a	N	none	No trapping, night temp below 5°C. No further surveys due to negative eDNA result.
P030	10/05/2017	1	none	n/a	none	N	Smooth newt female	
	16/05/2017	2	none	n/a	none	N	Smooth newt male smooth newt female	No further surveys due to negative eDNA result.

Waterbody	Date	Survey number	Torching	Netting	Bottle trapping	Egg search (found Y/N)	Other species	Notes
P031	10/05/2017	1	none	n/a	none	N	Smooth newt male	
	16/05/2017	2	none	none	n/a	N	none	No further surveys due to negative eDNA result.
P034	10/05/2017	1	none	n/a	none	N	Smooth newt male	
	16/05/2017	2	none	n/a	none	N	Smooth newt male smooth newt female	No further surveys due to negative eDNA result.
P035	10/05/2017	1	none	n/a	none	N	None	
	16/05/2017	2	none	n/a	none	N	None	No further surveys due to negative eDNA result.
P036	04/04/2017	1	none	n/a	none	N	Common toad stickleback	
	19/04/2017	2	none	none	n/a	N	Smooth newt male smooth newt female common frog larvae	No trapping, night temp below 5°C.
	16/05/2017	3	none	n/a	none	n/a	Smooth newt male smooth newt female common frog adult common frog larvae stickleback	
	22/05/2017	4	none	n/a	GCN male x1	n/a	Smooth newt male	

Waterbody	Date	Survey number	Torching	Netting	Bottle trapping	Egg search (found Y/N)	Other species	Notes
							smooth newt female common toad larvae stickleback	
	01/06/2017	5	none	n/a	none	n/a	Smooth newt male smooth newt female common toad adult stickleback	
	06/06/2017	6	none	n/a	none	n/a	Smooth newt male smooth newt female	
P036b	04/04/2017	1	none	n/a	none	N	Smooth newt male Common toad adult	
	19/04/2017	2	none	none	n/a	N	Smooth newt male	No trapping, night temp below 5°C. No further surveys due to negative eDNA result.
P037	04/04/2017	1	none	n/a	none	N	Common frog adult common toad adult common toad larvae	
	19/04/2017	2	none	none	n/a	N	Common frog larvae	No trapping, night temp below 5°C. No further surveys due to negative eDNA result.
P038	04/04/2017	1	none	n/a	none	N	None	

Waterbody	Date	Survey number	Torching	Netting	Bottle trapping	Egg search (found Y/N)	Other species	Notes
	19/04/2017	2	none	n/a	n/a	N	None	
	16/05/2017	3	none	n/a	none	n/a	Smooth newt female	
	22/05/2017	4	none	n/a	none	n/a	Common frog adult	
P041	06/04/2017	1	none	n/a	none	N	None	
	20/04/2017	2	none	n/a	none	N	Stickleback	No further surveys due to negative eDNA result.
P042	09/05/2017	1	none	n/a	none	N	Smooth newt female	
	15/05/2017	2	none	none	none	N	Smooth newt male smooth newt female	No further surveys due to negative eDNA result.
P043	09/05/2017	1	none	n/a	none	N	Common frog larvae	
	15/05/2017	2	none	none	none	n/a	Smooth newt male	No further surveys due to negative eDNA result.
P045	05/04/2017	1	none	n/a	none	N	Smooth newt male smooth newt female	
	19/04/2017	2	none	none	n/a	N	Smooth newt male smooth newt female	No trapping, night temp below 5°C. No further surveys due to negative eDNA result.
P051	09/05/2017	1	none	n/a	none	N	none	

Waterbody	Date	Survey number	Torching	Netting	Bottle trapping	Egg search (found Y/N)	Other species	Notes
	15/05/2017	2	none	none	none	n/a	Smooth newt female	No further surveys due to negative eDNA result.
P055	05/04/2017	1	none	n/a	none	N	Smooth newt male smooth newt female	
	19/04/2017	2	none	none	n/a	N	Smooth newt female	No trapping, night temp below 5°C. No further surveys due to negative eDNA result.
P060	05/04/2017	1	none	n/a	none	N	Smooth newt male	
	19/04/2017	2	none	none	n/a	N	None	No further surveys due to negative eDNA result.
P062	05/04/2017	1	none	none	none	N	None	
	20/04/2017	2	none	n/a	none	N	None	No further surveys due to negative eDNA result.
P065	17/04/2017	1	none	n/a	none	N	Smooth newt male smooth newt female common toad adult	
	09/05/2017	2	none	n/a	none	N	None	
P067	11/05/2017	1	none	n/a	none	N	Smooth newt male smooth newt female	No further surveys due to negative eDNA result.
P068a	11/05/2017	1	none	n/a	none	N	None	No further surveys due to negative eDNA result.
P072	11/05/2017	1	none	n/a	none	N	None	No further surveys due to negative eDNA result.

Waterbody	Date	Survey number	Torching	Netting	Bottle trapping	Egg search (found Y/N)	Other species	Notes
P085	06/04/2017	1	none	n/a	none	N	Smooth newt male smooth newt female	
	20/04/2017	2	none	n/a	none	N	Smooth newt male smooth newt female common frog larvae	No further surveys due to negative eDNA result.
P085a	06/04/2017	1	none	n/a	none	N	Smooth newt male smooth newt female palmate newt female	
	20/04/2017	2	none	n/a	none	N	Smooth newt male smooth newt female palmate newt female Common frog adult	No further surveys due to negative eDNA result.
P087	06/04/2017	1	none	none	none	N	Smooth newt male smooth newt female	
	20/04/2017	2	none	n/a	none	N	None	No further surveys due to negative eDNA result.
P089	06/04/2017	1	none	n/a	none	N	None	

Waterbody	Date	Survey number	Torching	Netting	Bottle trapping	Egg search (found Y/N)	Other species	Notes
	20/04/2017	2	none	n/a	none	N	None	No further surveys due to negative eDNA result.
P098	05/04/2017	1	GCN male x1 GCN adult x1	n/a	GCN male x6 GCN female x2 GCN juvenile x1	N	Smooth newt female	
	19/042017	2	GCN male x3	n/a	none	Y	Smooth newt male	No trapping, night temp below 5°C.
	17/05/2017	3	none	n/a	none	n/a	Smooth newt male smooth newt female	
	23/05/2017	4	GCN female x1	n/a	GCN male x2 GCN female x8 GCN juvenile x1	n/a	Smooth newt male smooth newt female	
	01/06/2017	5	None	n/a	GCN female x1 GCN juvenile x8	n/a	Smooth newt male smooth newt female smooth newt juvenile	
	06/06/2017	6	GCN female x1	n/a	none	n/a	Smooth newt male Smooth newt female	
P113	05/04/2017	1	None	None	none	N	Smooth newt female	
	19/04/2017	2	None	None	none	N	None	No further surveys due to negative eDNA result.

Waterbody	Date	Survey number	Torching	Netting	Bottle trapping	Egg search (found Y/N)	Other species	Notes
P124	06/04/2017	1	None	None	n/a	N	Small newts (i.e. either smooth newts or palmate newts but unable to ID)	The banks of this pond were very muddy, slippery and lacked marginal vegetation suitable for egg laying. Due to health and safety concerns, torching became the only suitable method after two visits.
	20/04/2017	2	None	None	n/a	N	Tadpoles (no species ID)	
	17/05/2017	3	none	n/a	n/a	n/a	Smooth newt female	
	23/05/2017	4	none	n/a	n/a	n/a	Smooth newt male smooth newt female	
P125	04/04/2017	1	GCN male x1 GCN female x3	n/a	GCN female x1	Y	Smooth newt male smooth newt female small newts (i.e. either smooth newts or palmate newts but unable to ID) common frog adult	
	18/04/2017	2	GCN male x1 GCN female x1	n/a	n/a	n/a	Smooth newt male smooth newt female	No trapping, night temp below 5°C. No egg search or netting as eggs already previously confirmed.
	17/05/2017	3	none	n/a	none	n/a	None	
	22/05/2017	4	none	n/a	none	n/a	Smooth newt male	

Waterbody	Date	Survey number	Torching	Netting	Bottle trapping	Egg search (found Y/N)	Other species	Notes
							smooth newt female	
	01/06/2017	5	none	n/a	GCN female x1	n/a	Smooth newt male smooth newt female	
	06/06/2017	6	none	n/a	none	n/a	None	
D053	09/05/2017	1	none	n/a	none	N	none	
	17/05/2017	2	none	n/a	none	N	none	No further surveys due to negative eDNA result.
D058b/ D059	11/05/2017	1	none	n/a	none	N	Smooth newt male common frog larvae	eDNA test returned inconclusive result so continued with four presence/absence visits.
	17/05/2017	2	none	n/a	none	N	Smooth newt male smooth newt female common toad larvae stickleback	
	23/05/2017	3	none	n/a	none	N	Smooth newt male common toad larvae	
	01/06/2017	4	none	n/a	none	N	Smooth newt male stickleback	
D071	11/05/2017	1	none	n/a	none	N	none	No further surveys due to negative eDNA result.

Waterbody	Date	Survey number	Torching	Netting	Bottle trapping	Egg search (found Y/N)	Other species	Notes
D096	06/04/2017	1	none	none	none	n/a	none	
	20/04/2017	2	n/a	n/a	n/a	n/a	n/a	Ditch completely dry, could not survey further.
D143	04/04/2017	1	none	n/a	none	N	Common frog adult	
	18/04/2017	2	none	none	n/a	N	Common frog adult	No trapping due to shallow water. No further surveys due to negative eDNA result.
D144	04/04/2017	1	none	n/a	none	N	None	
	19/04/2017	2	none	none	n/a	N	Stickleback	No trapping, night temp below 5°C. No further surveys due to negative eDNA result.