

DRAFT



Oxfordshire Railfreight Limited

Proposed Oxfordshire Strategic Rail Freight Interchange

Great Crested Newt Survey Report [DRAFT]

May 2022

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1.0 INTRODUCTION

- 1.1 The following report has been prepared by FPCR Environment and Design Ltd. on behalf of Cuvette Ltd. and provides details of surveys for great crested newt *Triturus cristatus* (GCN) undertaken at Land at Ardley, Bicester, approximate central grid reference SP533263.
- 1.2 The site is approximately 413ha in extent and is located to the south of Ardley (Figure 1) where it is bounded by an active railway to the north, the B430 to the east, a road and agricultural fields to the south, and the disused RAF Upper Heyford airfield to the west.
- 1.3 Eight waterbodies occur within the site, however over 60 other ponds were identified within 500m of the site boundary. Onsite habitats are predominantly arable and improved grassland with hedgerows, trees, scrub and semi-improved grassland at the field margins. Other habitats present within the site include small plantation woodlands, a watercourse, buildings and associated hardstanding, and amenity/ornamental planting.

2.0 LEGISLATION

Great Crested Newt

- 2.1 Great crested newts are afforded full protection as a species listed under Schedule 5 of the Wildlife & Countryside Act 1981 (*as amended*) and under the Conservation of Habitats and Species Regulations 2017 (*as amended*). Under Regulation 41 of the above it is illegal to:
 - Deliberately capture, injure or kill any wild animal of a European Protected Species (EPS),
 - Deliberately disturb wild animals of an EPS (affecting ability to survive, breed or rear young) – disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young,
 - Deliberately disturb wild animals of an EPS (impairing ability to migrate or hibernate) – disturbance of animals includes in particular any disturbance which is likely to impair their ability in the case of hibernating or migratory species to hibernate or migrate,
 - Deliberately disturb wild animals of an EPS (affecting local distribution and abundance) – disturbance of animals includes in particular any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong,
 - Deliberately disturb wild animals of an EPS (whilst occupying a structure or place used for shelter or protection) – intentionally or recklessly disturb any wild animal while it is occupying a structure or place which it uses for shelter or protection,
 - Damage or destroy a breeding site or resting place of a wild animal an EPS.
- 2.2 Under the Wildlife and Countryside Act 1981 (*as amended*) it is illegal to:
 - Recklessly or intentionally kill, injures or take any wild animals included in Schedule 5.
 - Recklessly or intentionally damage or destroy, or obstruct access to any structure or place which any wild animal included in Schedule 5 uses for shelter or protection,
 - Recklessly or intentionally disturb any such animal while it is occupying a structure or place which it uses for shelter or protection.

2.3 GCN are also included on the list of species which are of Principal Importance for the Conservation of Biodiversity in England as required under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. The S41 list is used to guide decision makers, including local planning authorities, in implementing their duty under Section 40 of the Act, to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

3.0 METHODOLOGY

Great Crested Newt Survey

Habitat Suitability Index (HSI) Assessment

3.1 Accessible ponds within the site or within 500m of the site boundary were evaluated using the HSI scoring system developed by Oldham *et al*¹. The HSI scoring system produces a single index value of habitat suitability, derived from individual scores achieved under the following categories:

- Location within the UK
- Pond area
- Frequency of pond drying
- Water quality
- % shade
- Presence of water-fowl
- Presence of fish
- Number of other ponds within 1km
- Quality of surrounding terrestrial habitat
- % cover by macrophytes

A score is assigned according to the most appropriate criteria level set within each attribute and a total score calculated of between 0 and 1. Pond suitability is then determined according to the scale shown in Table 1.

Table 1: HSI Scores as a Measure of Pond Suitability

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

Presence/Absence Survey

3.2 The on-site ponds P1, P2 and P3 were initially surveyed in spring 2018.

3.3 Neighbouring ponds within the surrounding area were subsequently identified using OS maps/aerial images, and land owners for these ponds were identified through Land Registry searches. Several waterbodies were confirmed to be in private ownership, however much of the land to the east of the site is owned by Virador Land, and land to the west is under the control of Upper Heyford GP Ltd.

¹ 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), 143-155pp.

- 3.4 Landowner negotiations were still ongoing throughout 2021, and where feasible pond owners were contacted in spring to seek permission to survey. Written requests were sent by registered post to the owners of ponds P46 and P50-P52 in early April 2021. Where permission was granted, arrangements were made with land agents/landowners/tenants to access each pond for survey on the necessary number of occasions.
- 3.5 Survey work was conducted across accessible ponds in spring/summer 2021 following best practice guidance². Surveys were undertaken by surveyors who held current Natural England great crested newt survey licences, during in the appropriate survey season (all surveys were undertaken between 22nd April and 3rd June). The 2021 surveys also incorporated the three onsite ponds previously surveyed in April/May 2018.
- 3.6 At the time of writing, surveys of ponds P6, P7, P22, P23, P42, P43, P44, P50, P51, P52, and P53 are ongoing within the 2022 survey period. As surveys are ongoing a full population size-class assessment is not yet available.
- 3.7 Industry guidance states that aquatic GCN presence/absence surveys should be carried out in the season mid-March to mid-June, with half of all survey visits undertaken during the peak season from mid-April to mid-May. Surveys are to be undertaken under suitable weather conditions when the ambient air temperature exceeds 5°C, and if bottle traps are used these should be removed from the ponds sufficiently early in the morning before temperatures rise to a point where overheating and reduced oxygen levels inside the traps can occur. Strong winds and heavy rain can make torchlight survey difficult, therefore the most appropriate methods for survey are determined for each occasion.
- 3.8 Waterbodies were initially surveyed on four separate visits. Where GCN were confirmed to be present this number was increased to a total of six visits in order to inform a population size-class estimate. Where possible, a combination of three of the following survey methods was used on all survey visits, with bottle trapping, egg searching and torchlight survey being the favoured methods (N.B. if the presence of GCN is confirmed in a waterbody only two methods need to be used for that waterbody (bottle trapping and torchlight surveys where possible):
- Egg searching: Newts lay eggs singly on leaves of aquatic plants or other suitable pliable material, after which the material is folded over the egg to protect it. GCN eggs can be distinguished from those of the other newts by their size, shape and colour. Submerged and floating vegetation and leaf litter is examined for folded leaves containing newt eggs. Once a GCN egg is identified within a waterbody, no further egg searching takes place, in order to minimise further disturbance.
 - Torchlight surveys: carried out after dark using 1,000,000 candlepower torches. Surveyors slowly walk around the perimeter of each waterbody and search by torchlight for amphibians in the shallows and the deeper areas used by GCN for courtship display.
 - Bottle trapping: involves the placement of traps, comprising inverted two-litre plastic bottles fixed in place with bamboo canes, at an average of one every 2m around the margins of the pond. The traps are partially submerged with an air bubble trapped inside. The traps are then checked for the presence of amphibians early the next morning, with any captive animals released back into the pond and the traps removed.

² English Nature, 2001. *Great Crested Newt Mitigation Guidelines*, English Nature, Peterborough.

- **Netting:** using a long-handled dip-net the pond edges are swept for approximately 15 minutes per 50m of shoreline. This technique is one of the least effective for capturing adult newts, and cannot be used to estimate a population size, although can be very effective for detecting newt larvae, especially later in the season.

3.9 Should a population of great crested newts be confirmed, a population size-class assessment would be completed in accordance with Natural England's standard guidance within the *Great-crested Newt Mitigation Guidelines*. This assessment is based on the highest maximum count of great crested newts across connected ponds observed on a single survey occasion.

The population size-classes are as follows:

- **Small** for maximum counts up to 10
- **Medium** for maximum counts between 11 and 100
- **Large** for maximum counts over 100

3.10 The dates of each survey visit and the weather conditions are provided in Table 2. The pond locations and reference numbers are shown in Figure 1.

Table 2: Survey Visit Schedule and Conditions

Survey Dates	Air Temps	Weather Conditions During Torchlight Survey
22/04/21	8-12°C	No wind, no rain
29/04/21	4-8°C	Light wind, no rain
06/05/21	8-10°C	Light wind, no rain
13/05/21	10°C	Light wind, light drizzle
27/05/21	15-17°C	No wind, no rain
03/06/21	10-17°C	No wind, light drizzle

3.11 Ponds P1, P2 and P3 were additionally surveyed on 25th April, 30th April, 10th May and 29th May 2018, all during suitable weather conditions. The onsite water tank P4 was not accessible for survey at this time.

eDNA Sampling & Analysis

3.12 Environmental DNA (eDNA) sampling was undertaken of ponds P2 & P3 to determine the presence/absence of GCN in accordance with industry guidance³. This methodology has been approved by Natural England for the determination of GCN presence/absence.

3.13 Sampling was completed on 22nd June 2020 by appropriately licenced ecologists who collected water samples from the two ponds, using kits obtained from ADAS. The methodology comprised taking samples of agitated water from 20 locations around each waterbody and mixing thoroughly. 15ml of this water was then placed into each of the 6 sterile sample tubes containing preservative, precipitates and a DNA sequence that was used for degradation control. All samples were stored in accordance with the protocols provided by the laboratory. The samples were then transported under suitable conditions to the ADAS

³ Analytical and Methodological Development for Improved Surveillance of the Great Crested Newt, WC1067, Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA http://randd.defra.gov.uk/Document.aspx?Document=11976_WC1067_Appendix_5_TechnicalAdviceNote.pdf.

laboratory for analysis. Following analysis, the results provided by the laboratory could have one of three outcomes which are described in Table 3.

Table 3: Description of Possible Results of eDNA Analysis

Result	Description
Positive	A positive result means that eDNA from GCN was detected confirming the species was present within the water in the 20 days preceding sampling. An eDNA score would be provided indicating the number of positive replicates from a series of twelve.
Negative	DNA from GCN was not detected. In the case of negative samples the DNA extract is further tested for PCR inhibitors and degradation of the sample.
Inconclusive	Controls indicate degradation or inhibition of the sample, therefore the lack of detection of GCN DNA is not conclusive evidence for determining the absence of the species in the sample provided. Inhibition can occur through unexpected chemicals in the sample.

Limitations

- 3.14 Ponds P1 and P4 held insufficient water at the time of the eDNA survey in June 2020 to permit sampling.
- 3.15 Unfortunately, due to failure of the software for data recording application, some pond survey data was lost, comprising the results of the 3rd survey undertaken on ponds P4, P54 and T6 on 6th May 2021 and also on the 4th survey undertaken on ponds P36 and P38a on 13th May 2021. Data was successfully recorded and saved on all other survey occasions. In the context of the vast amount of data collected, the small amount of missing data is very unlikely to have an effect on the overall result for the individual ponds and would not alter the overall population size-class and therefore mitigation proposed. Repeating survey of the ponds where data went missing would not be constructive and is therefore not considered necessary..
- 3.16 Several of the waterbodies within the neighbouring airfield comprised open water storage tanks. Due to the substrate of these tanks it was not feasible to bottle trap them effectively and thus netting, torching and egg searching were the methods employed. Suitable egg laying substrate was limited or inaccessible in many of the tanks however, therefore whilst best efforts were made to undertake thorough egg searches, an exhaustive search was not always possible.

4.0 RESULTS

Great Crested Newt Survey

- 4.1 Site visits and a review of OS maps and aerial images identified a total of 60 ponds and 12 water tanks within 500m of the site boundary, including the six on-site ponds, water tank and disused swimming pool (Figure 2).
- 4.2 Pre-existing survey data indicated that the off-site tanks, though not appearing accessible to GCN due to their vertical sides, had records of GCN within them and therefore were all included within the scope of survey.
- 4.3 SP1 was a swimming pool within the site which held no water at time of survey.

- 4.4 The application site boundary was amended a number of times since the initial site surveys in 2018. Negotiations with landowners in the north were still ongoing at the time of the 2021 survey season. The owners of ponds P5, P6, P7, P21, P22, P23, P42, P43, P44, P45, P55 and P57 were not contacted in 2021 and therefore these waterbodies were not included in the pond surveys. Landowner permission was also not forthcoming for surveyors to access ponds P46-P53.
- 4.5 Pond P38 and P40 both comprised two distinct parts, and therefore for the purpose of survey were referred to as ponds P38a/P38b and P40a/P40b.
- 4.6 The surveys undertaken in spring/summer 2021 encompassed 38 ponds and 12 water tanks.
- 4.6 Of these, ponds P24 and P39 dried out between the first and second surveys, whilst pond P1, P38a and tank T3 were initially dry, but following a period of wet weather held water for the latter part of the survey season. These three waterbodies therefore were not subject to the full suite of surveys.
- 4.7 Appendix A provides the results of the HSI assessment for each pond surveyed in 2021 and Appendix B provides photos of each pond.
- 4.8 At the time of writing access has been sought to the ponds not surveyed in 2021, with surveys of ponds P6, P7, P22, P23, P42, P43, P44, P50, P51, P52, and P53 ongoing. During the initial survey ponds P43 was not present and P44 was dry having been confirmed to have been filled in by the landowner, however two old quarried pits which held water (P59 & P60) were in the area and subsequently surveyed. Pond P52 was confirmed to be dry.

Survey Results

- 4.9 Field survey results from 2021 are detailed at Appendix C.
- 4.10 Eight waterbodies occur within the red line boundary of the development: SP1, P1, P2, P3, P4, P20, P50 and P51. GCN were absent from P1, P2, P3, P4 and P20 in 2021, whereas ponds P50 and P51 could not be surveyed in 2021. Initial surveys during the 2022 period have confirmed small numbers of GCN present within ponds P50 and P51. The surveys of P1, P2 or P3 in 2018 additionally recorded no evidence of GCN, and eDNA sampling of ponds P2 and P3 in 2020 returned negative and inconclusive results respectively.
- 4.11 Beyond the site boundary but within 500m of the site GCN were confirmed present within the majority of ponds within the Virador land to the east and the Upper Heyford GP Ltd. land to the west of the site. GCN eggs were recorded within ponds P25 and P29 but no adult or juvenile GCN were recorded.
- 4.12 No evidence of GCN was recorded in waterbodies P1, P2, P3, P4, P20, P24, P37, P39 and P54, and tank T3. Ponds P37 and P39 and tank T3 all dried out during the 2021 survey season.
- 4.13 Consideration of the distribution of positive GCN records indicates that the dataset describes at least four GCN metapopulations, as indicated in Table 4 below.

Table 4: GCN Metapopulation Peak Counts and Size-Class

Metapopulation	Location	Waterbodies	No. waterbodies GCN recorded	Metapopulation Peak GCN Count	Metapopulation Size-Class Assessment*
1	West of site Boundary	P4, P56, T1, T2, T3, T4, T5, T6, T8, T9, T10, T11, T12 and T13.	All except T3	106 (recorded 27/05/21)	Large
2	East of site boundary	P8, P9, P10, P11, P12, P13, P14, P15, P16, P17 and P18	All	53 (recorded 13/05/21)	Medium
3	Further East, spanning Railway	P19a, P25, P26, P27, P28, P29, P30, P31, P32, P33, P34, P35, P36, P37, P38a, P38b, P40a, P40b, P41 and P58.	All except P37 and P39	161 (recorded 27/05/21)	Large
4	North spanning the highway works	P47, P48, P46, P50, P51, P52, P53	P50 and P51	To be confirmed	To be confirmed

*Small population size-class: < 10, Medium population size-class: 10-100, Large population size-class: > 100.

- 4.14 It was not possible to determine the likely presence or absence of GCN within the ponds in the vicinity of the proposed motorway connection road works to the north (P46-P53) at the time of the 2021 survey. At the time of writing initial surveys of ponds P50 and P51 have confirmed the presence small numbers of GCN which support a fourth metapopulation, although the population size-class is yet to be determined.
- 4.15 Within Metapopulation 1 to the west of the application site, the number of GCN recorded within individual tanks varied from zero (T3) to 37 (T4). The HSI assessment indicated each had between 'average' and 'excellent' suitability to support GCN, and with the exception of T3 all appeared capable of supporting 'Good' numbers of GCN. Collectively, this metapopulation constitutes a Large population size-class.
- 4.16 Within Metapopulation 2, the number of GCN recorded within individual ponds varied from zero (P16) to 31 (P13). The HSI assessment indicated all had 'good' to 'excellent' suitability to support GCN. Collectively, this metapopulation constitutes a Medium population size-class.
- 4.17 The number of GCN recorded within individual ponds within Metapopulation 3 varied from zero (P25, P29, P37 and P39) to 135 (P41, recorded on the 27/05/21). Waterbodies within this metapopulation varied between 'below average' and 'excellent' suitability to support GCN according to the HSI assessment, and all (with the possible exception of P39 if it dries out early annually) appeared capable of supporting GCN. Collectively, this metapopulation constitutes a Large population size-class.

- 4.18 Evidence of GCN egg laying was recorded within Metapopulations 2 and 3. GCN eggs were recorded within ponds P11, P12, P13, P16, P17, P18, P25, P26, P27, P28, P29, P30, P31, P32 and P34 confirming these ponds support breeding populations. Despite the lack of evidence of egg-laying activity recorded within Metapopulation 1, this cannot be discounted.
- 4.19 As there is over 500m separating the nearest ponds of each metapopulation, it is considered that each are distinct metapopulations. Furthermore the absence of GCN during surveys of these ponds in 2018 and 2021 indicates they do not form part of either metapopulation.
- 4.20 No access was obtained to survey ponds P6, P7, P22 and P23 in 2021, however pre-existing field records indicate that historically these have supported breeding GCN. For the purpose of this assessment it is therefore assumed that these ponds continue to support GCN and that they form a component part of Metapopulation 1. At the time of writing small numbers of GCN have been confirmed within pond P23 as part of the 2022 surveys, though it was also noted that all four ponds are heavily stocked with fish
- 4.21 Smooth newt *Lissotriton vulgaris* were recorded in most ponds surveyed, coexisting with GCN, and in small numbers only. Smooth newt eggs were only positively identified in two ponds (P38a and P38b). Common frogs *Rana temporaria* were recorded in small numbers in ponds P1, P2, P35, P41 and P58, and common toads *Bufo bufo* were recorded in pond P19a on three survey occasions with a top count of 7. Small numbers of toads were also noted present within in P37 and P54.

5.0 DISCUSSION & RECOMMENDATIONS

- 5.1 GCN were recorded within the majority of the 38 ponds and 12 water tanks surveyed in 2021. From the distribution of waterbodies and positive GCN records it is considered likely that there are effectively four separate GCN metapopulations within the survey area (see Figure 2), with breeding activity confirmed within ponds within Metapopulations 2 and 3, and assumed within Metapopulation 1. Whilst initial survey results of ongoing surveys in 2022 confirm the presence of the fourth Metapopulation within the north of the survey area associated with ponds P50 and P51, full survey results are outstanding.
- 5.2 Waterbodies from each metapopulation occur within 250m of proposed works area, therefore in the absence of appropriate mitigation the proposals have potential to impact upon all four.
- 5.3 Potential impacts to GCN comprise disturbance to terrestrial habitat only, no ponds where GCN have been recorded are to be lost or modified to facilitate the proposed works. GCN tend to reside on land for the majority of the year, only returning to water annually in the early spring to breed, and only once they reach sexual maturity at approximately 2-3 years. The hedgerows, scrub, woodland and taller grassland habitats of the site provide potential cover and foraging opportunities for GCN and other amphibians during their terrestrial phase.
- 5.4 The proposals will not divide or sever links to functionally linked habitat that currently sustains Metapopulation 1 to the west of the application site. Likewise, Metapopulation 2 lies entirely offsite to the east and will not be fragmented or otherwise isolated from existing supporting habitats. Metapopulation 3 however spans the railway line to the north, therefore the proposals in this area have potential to inhibit the migration of GCN between ponds north and south of the railway for the duration of works. Metapopulation 4 lies within the proposed






- Junction 10 improvement works and although ponds P50 and P51 are to be retained the proposals will impact on adjacent terrestrial habitats.
- 5.5 In the absence of mitigation, potential developmental impacts on GCN associated with ponds within 500m of works include potential disturbance, killing and injury of individuals during site clearance, and loss of terrestrial habitat. Mitigation measures under licence are therefore necessary to ensure GCN continue to have access to good quality terrestrial habitats.
- 5.6 The development provides an opportunity to enhance both Metapopulations 1 and 2 by retaining and protecting GCN from disturbance during the construction phase, and through creation of additional wetland/pond habitat within the proposed green infrastructure at the peripheries and within the south of the site. Provision of appropriate aquatic and terrestrial habitats that connect with retained habitats in the wider area would enhance and expand opportunities for all four local metapopulations in the long term.
- 5.7 Licencing and appropriate mitigation will be administered either through the standard European Protected Species Licencing (EPSL) route or through the District Level Licencing route. A Letter of No Impediment will be required from Natural England to accompany the application submission and as such any licenced operations will need to be agreed in principle prior to granting the scheme permission. If the EPSL route is to be used, the licence itself would then be granted once planning permission has been obtained. The alternative DLL option, via the South Midlands Great Crested Newt District Licence scheme, will involve a fixed charge tariff administered by the NatureSpace Partnership and agreements tying the proposals and all mitigation necessary to protect the conservation status of GCN into the strict requirements of the Licence.
- 5.8 Either an EPSL or DLL route are feasible and cost benefit analysis will determine the preferred route. A vast amount of survey data has been collected thus far, however, to support validation of an EPSL, data in addition to the above will be required. Ponds P5, P21, P46 – P53 in the north and P42-P44 and P54 and P55 in the south of the site were not surveyed because land use negotiations were ongoing during the survey season 2021 and permission to approach owners of these ponds was not available. As such, in readiness for a potential EPSL application, these ponds are currently being surveyed (during the 2022 survey period).
- 5.9 In the event that the EPSL route is followed the mitigation outlined in the following paragraphs demonstrates that the Favourable Conservation Status of this species will not only be maintained but enhanced as a result of the proposals. The precise details of these proposals will be agreed through the granting of a development licence and are therefore subject to change, dependent on the final wording of the agreed licence.
- 5.10 To prevent killing or injury of GCN during site clearance it will be necessary to undertake a programme of trapping and translocation of individuals from within parts of the site. Furthermore, in order to provide a safe location into which to move the captured individuals, maintain connectivity across the site between breeding ponds and maintain the Favourable Conservation Status of the species post development, receptor areas will need to be created within the site. These will need to be situated in appropriate locations for each metapopulation in an area that is safe from disturbance and is directly linked to the associated breeding habitat.

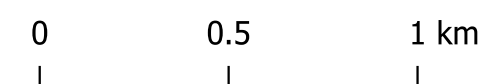
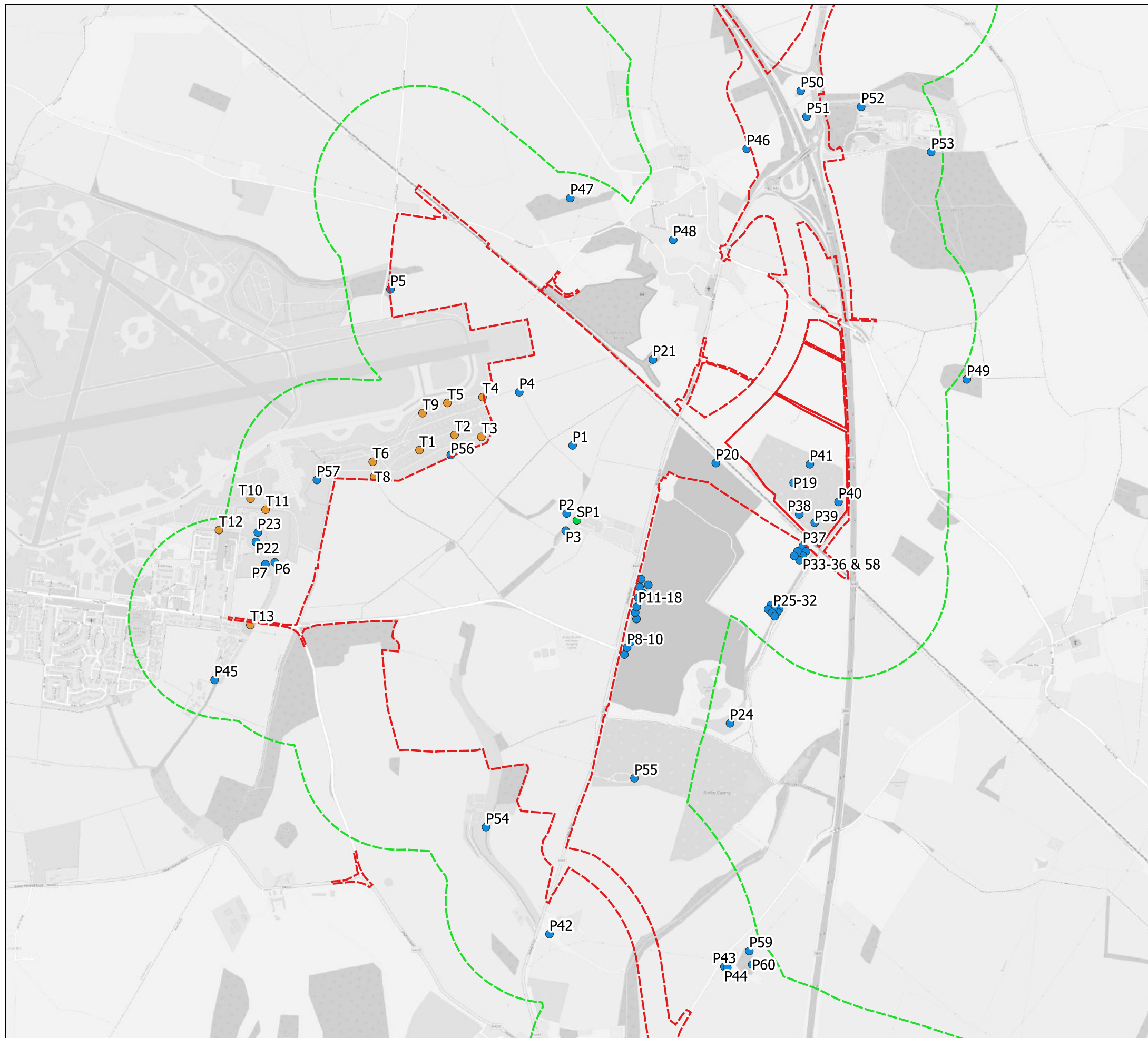
- 5.11 The management of receptor areas shall be adapted ahead of the translocation to establish a tall vegetation sward with a tussocky structure and log piles and/or hibernacula will be created within these areas to provide suitable refuge. Receptor sites will be created prior to any other mitigation works and protected from neighbouring working areas by appropriate amphibian-proof fencing where necessary.
- 5.12 Additional mitigation is required necessary as GCN have been found to occur in the north of the site around the proposed motorway junction works. This may include specific design features such as box culverts (> 1m width, 0.5m - 1m height) to allow connectivity where proposed road works may otherwise sever connectivity. Further consideration of this will be undertaken when more survey data and detail of proposals is available.
- 5.13 The installation of amphibian-proof fencing and a trapping and translocation exercise will be undertaken as agreed under the conditions of the licence. Any GCN or other herptiles or mammals found will be removed and placed carefully into a receptor area.
- 5.14 The receptor area must be protected from adverse impacts throughout construction, and a management plan should be devised and adhered to ensure that the area continues to support optimal habitat for GCN.
- 5.15 The green infrastructure proposed provides opportunities to create additional wildlife ponds and offer enhancement and expansion of the network of breeding ponds. A series of swales and ditches will also be created as part of the SuDS for the scheme and these should be designed to maximise their biodiversity value. The proposed scheme will therefore result in the site providing enhanced suitable terrestrial and aquatic habitats with good connectivity. With the implementation of the mitigation measures outlined, proposals are expected to have a beneficial impact on GCN at a local level.


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Key

-  Site Boundary
-  500m Pond Buffer
-  Pond
-  Swimming Pool
-  Tank












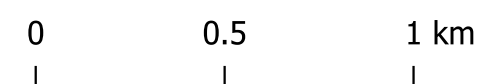
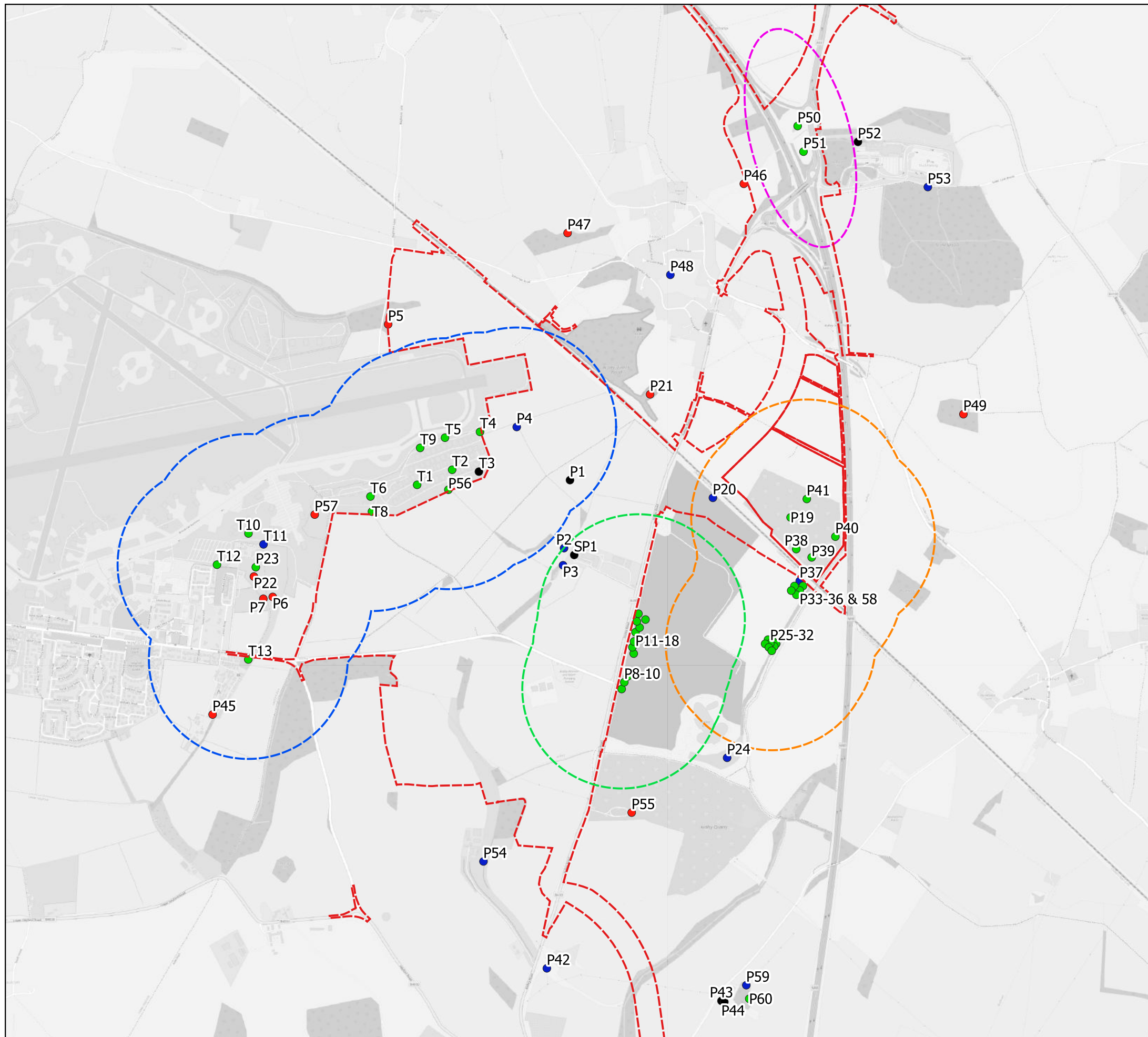
 client: Oxfordshire Railfreight Limited
project: Proposed Oxfordshire Strategic Rail Freight Interchange
drawing title: Waterbody Locations Plan
scale: 1:20000
drawing / figure number: **Figure 1**
drawn: NG / LFR
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rev: -

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Key

-  Site Boundary
-  Metapopulation 1
-  Metapopulation 2
-  Metapopulation 3
-  Metapopulation 4
-  GCN Present
-  No GCN Present
-  Dry
-  No Access






APPENDIX A – HABITAT SUITABILITY ASSESSMENT

Pond	SI -1		SI -2		SI -3		SI -4		SI -5		SI -6		SI -7		SI -8		SI -9		SI -10		HSI score	Pond suitability	Predicted presence
	geographical location		pond area		pond drying		water quality		shade (perimeter)		fowl		fish		ponds		terrestrial habitat		macrophytes				
	Field result (A,B,C)	SI score	Field result (m2)	SI score	Field result	SI score	Field result	SI score	Field result (% cover)	SI score	Field result	SI score	Field result	SI score	Field result	SI score	Field result	SI score	Field result	SI score			
1	A	1	225	0.4	Never	0.9	Moderate	0.67	20	1	Absent	1	Absent	1	12+	1	Moderate	0.67	40	0.5	0.78	Good	79%
2	A	1	400	0.8	Rarely	0.9	Moderate	0.67	10	1	Minor	0.67	Absent	1	12+	1	Good	1	50	0.7	0.86	Excellent	93%
3	A	1	200	0.4	Never	1	Moderate	0.67	30	1	Minor	0.67	Possible	0.67	12+	1	Moderate	0.67	30	0.8	0.76	Good	79%
4	A	1	100	0.2	Rarely	0.9	Poor	0.33	30	1	Absent	1	Absent	1	12+	1	Moderate	0.67	5	0.35	0.65	Average	55%
8	A	1	225	0.4	Rarely	0.9	Moderate	0.67	0	1	Absent	1	Absent	1	12+	1	Moderate	0.67	5	0.35	0.75	Good	79%
9	A	1	200	0.4	Rarely	0.9	Moderate	0.67	0	1	Absent	1	Absent	1	12+	1	Moderate	0.67	5	0.35	0.75	Good	79%
10	A	1	200	0.4	Rarely	0.9	Moderate	0.67	0	1	Absent	1	Absent	1	12+	1	Moderate	0.67	5	0.35	0.75	Good	79%
11	A	1	225	0.4	Never	1	Good	1	5	1	Absent	1	Absent	1	12+	1	Good	1	20	0.5	0.85	Excellent	93%
12	A	1	300	0.4	Rarely	0.9	Good	1	5	1	Absent	1	Absent	1	12+	1	Good	1	20	0.5	0.84	Excellent	93%
13	A	1	200	0.4	Rarely	0.9	Good	1	0	1	Absent	1	Absent	1	12+	1	Good	1	25	0.55	0.85	Excellent	93%
14	A	1	200	0.4	Rarely	0.9	Good	1	20	1	Absent	1	Absent	1	12+	1	Good	1	30	0.6	0.86	Excellent	93%
15	A	1	400	0.8	Rarely	0.9	Good	1	10	1	Absent	1	Absent	1	12+	1	Good	1	15	0.45	0.89	Excellent	93%
16	A	1	400	0.8	Rarely	0.9	Good	1	5	1	Minor	0.67	Absent	1	12+	1	Good	1	15	0.45	0.86	Excellent	93%
17	A	1	400	0.8	Rarely	0.9	Good	1	10	1	Minor	0.67	Possible	0.67	12+	1	Good	1	15	0.45	0.82	Excellent	93%
18	A	1	600	1	Rarely	0.9	Good	1	10	1	Minor	0.67	Possible	0.67	12+	1	Good	1	20	0.5	0.85	Excellent	93%
19a	A	1	800	1	Rarely	0.9	Good	1	15	1	Minor	0.67	Possible	0.67	12+	1	Moderate	0.67	30	0.6	0.83	Excellent	93%
20	A	1	200	0.4	Sometimes	0.5	Poor	1	0	1	Absent	1	Absent	1	12+	1	Moderate	0.67	10	0.4	0.75	Good	79%
24	A	1	1000	1	Annually	0.1	Poor	0.33	0	1	Absent	1	Absent	1	12+	1	Moderate	0.67	5	0.35	0.61	Average	55%
25	A	1	25	0.05	Sometimes	0.5	Moderate	0.67	0	1	Absent	1	Absent	1	12+	1	Good	1	30	0.6	0.63	Average	55%
26	A	1	25	0.05	Sometimes	0.5	Moderate	0.67	10	1	Minor	0.67	Possible	0.67	12+	1	Good	1	20	0.5	0.57	Below Average	20%
27	A	1	50	0.05	Sometimes	0.5	Moderate	0.67	0	1	Minor	0.67	Possible	0.67	12+	1	Good	1	20	0.5	0.57	Below Average	20%
28	A	1	100	0.2	Sometimes	0.5	Moderate	0.67	0	1	Minor	0.67	Possible	0.67	12+	1	Good	1	40	0.7	0.68	Average	55%
29	A	1	20	0.05	Sometimes	0.5	Moderate	0.67	10	1	Absent	1	Absent	1	12+	1	Good	1	70	1	0.66	Average	55%
30	A	1	30	0.05	Rarely	0.9	Moderate	0.67	10	1	Minor	0.67	Possible	0.67	12+	1	Good	1	15	0.45	0.60	Average	20%
31	A	1	100	0.2	Rarely	0.9	Moderate	0.67	10	1	Minor	0.67	Possible	0.67	12+	1	Good	1	30	0.6	0.71	Good	79%
32	A	1	100	0.2	Rarely	0.9	Moderate	0.67	20	1	Minor	0.67	Possible	0.67	12+	1	Good	1	30	0.6	0.71	Good	79%
33	A	1	100	0.2	Rarely	0.9	Moderate	0.67	20	1	Absent	1	Possible	0.67	12+	1	Good	1	50	0.8	0.76	Good	79%




34	A	1	150	0.3	Rarely	0.9	Moderate	0.67	20	1	Absent	1	Possible	0.67	12+	1	Good	1	50	0.8	0.79	Good	79%
35	A	1	150	0.3	Rarely	0.9	Moderate	0.67	30	1	Minor	0.67	Possible	0.67	12+	1	Good	1	30	0.6	0.74	Good	79%
36	A	1	100	0.2	Rarely	0.9	Moderate	0.67	20	1	Absent	1	Possible	0.67	12+	1	Good	1	40	0.7	0.75	Good	79%
37	A	1	100	0.2	Sometimes	0.5	Moderate	0.67	5	1	Minor	0.67	Possible	0.67	12+	1	Moderate	0.67	10	0.4	0.62	Average	55%
38a	A	1	200	0.4	Annually	0.1	Moderate	0.67	10	1	Absent	1	Absent	1	12+	1	Moderate	0.67	20	0.5	0.62	Average	55%
38b	A	1	600	1	Sometimes	0.5	Moderate	0.67	5	1	Minor	0.67	Possible	0.67	12+	1	Moderate	0.67	20	0.5	0.74	Good	79%
39	A	1	40	0.05	Sometimes	0.5	Moderate	0.67	30	1	Absent	1	Absent	1	12+	1	Good	1	90	1	0.66	Average	55%
40a	A	1	400	0.8	Rarely	0.9	Moderate	0.67	30	1	Minor	0.67	Possible	0.67	12+	1	Moderate	0.67	30	0.6	0.78	Good	79%
40b	A	1	300	0.4	Sometimes	0.5	Moderate	0.67	15	1	Minor	0.67	Possible	0.67	12+	1	Moderate	0.67	60	0.9	0.72	Good	79%
41	A	1	1000	1	Rarely	0.9	Moderate	0.67	10	1	Minor	0.67	Possible	0.67	12+	1	Moderate	0.67	30	0.6	0.80	Excellent	93%
54	A	1	600	1	Rarely	0.9	Moderate	0.67	30	1	Major	0.33	Major	0.33	12+	1	Moderate	0.67	10	0.4	0.67	Average	55%
50	A	1	1800	0.83	Never	1	Moderate	0.67	5	1	Minor	0.67	Possible	0.67	12+	1	Moderate	0.67	50	0.8	0.82	Excellent	93%
51	A	1	3250	0.61	Rarely	0.9	Moderate	0.67	1	1	Minor	0.67	Possible	0.67	12+	1	Moderate	0.67	80	1	0.81	Excellent	93%
56	A	1	100	0.2	Sometimes	0.5	Moderate	0.67	10	1	Absent	1	Absent	1	12+	1	Moderate	0.67	10	0.4	0.67	Average	55%
58	A	1	100	0.2	Rarely	0.9	Moderate	0.67	20	1	Absent	1	Possible	0.67	12+	1	Moderate	0.67	10	0.4	0.68	Average	55%
T1	A	1	225	0.4	Never	1	Moderate	0.67	0	1	Absent	1	Absent	1	12+	1	Poor	0.33	0	0.3	0.70	Good	79%
T2	A	1	100	0.2	Never	1	Moderate	0.67	0	1	Absent	1	Absent	1	12+	1	Poor	0.33	5	0.35	0.66	Average	55%
T3	A	1	100	0.2	Annually	0.1	Poor	0.33	0	1	Absent	1	Absent	1	12+	1	Poor	0.33	0	0.3	0.48	Poor	3%
T4	A	1	100	0.2	Never	1	Moderate	0.67	0	1	Absent	1	Absent	1	12+	1	Poor	0.33	0	0.3	0.65	Average	55%
T5	A	1	100	0.2	Never	1	Moderate	0.67	0	1	Absent	1	Absent	1	12+	1	Poor	0.33	2	0.3	0.65	Average	55%
T6	A	1	225	0.4	Never	1	Moderate	0.67	5	1	Absent	1	Absent	1	12+	1	Poor	0.33	2	0.3	0.70	Good	79%
T8	A	1	225	0.4	Never	1	Moderate	0.67	15	1	Absent	1	Absent	1	12+	1	Moderate	0.67	20	0.5	0.79	Good	79%
T9	A	1	100	0.2	Never	1	Moderate	0.67	0	1	Absent	1	Absent	1	12+	1	Poor	0.33	0	0.3	0.65	Average	55%
T10	A	1	225	0.4	Sometimes	0.5	Moderate	0.67	5	1	Absent	1	Absent	1	12+	1	Moderate	0.67	50	0.8	0.77	Good	79%
T11	A	1	225	0.4	Never	1	Moderate	0.67	40	1	Absent	1	Absent	1	12+	1	Moderate	0.67	2	0.3	0.75	Good	79%
T12	A	1	300	0.4	Never	1	Moderate	0.67	30	1	Absent	1	Absent	1	12+	1	Moderate	0.67	50	0.8	0.82	Excellent	93%
T13	A	1	250	0.4	Sometimes	0.5	Moderate	0.67	10	1	Absent	1	Absent	1	12+	1	Moderate	0.67	50	0.8	0.77	Good	79%





APPENDIX B – POND PHOTOS




Pond Ref.	Photo	Pond Ref.	Photo
P1	No Image	P2	
P3		P4	





Pond Ref.	Photo	Pond Ref.	Photo
P8		P9	
P10		P11	




Pond Ref.	Photo	Pond Ref.	Photo
P12	 A photograph of a pond in a grassy field. The pond is surrounded by tall grasses and some trees in the background. The sky is blue with scattered white clouds. A wooden post is visible in the foreground on the right side.	P13	 A photograph of a pond with reeds and trees. The scene is captured during sunset or sunrise, with a warm, golden light. The water reflects the sky and the surrounding vegetation.
P14	 A photograph of a pond with reeds and trees. The scene is captured during sunset or sunrise, with a warm, golden light. The water reflects the sky and the surrounding vegetation.	P15	 A photograph of a pond with reeds and trees. The scene is captured during sunset or sunrise, with a warm, golden light. The water reflects the sky and the surrounding vegetation.


Pond Ref.	Photo	Pond Ref.	Photo
P16		P17	
P18		P19	No Image

Pond Ref.	Photo	Pond Ref.	Photo
P20		P24	
P25		P26	

Pond Ref.	Photo	Pond Ref.	Photo
P27		P28	
P29		P30	

Pond Ref.	Photo	Pond Ref.	Photo
P31		P32	
P33		P34	

Pond Ref.	Photo	Pond Ref.	Photo
P35		P36	
P37		P38a	

Pond Ref.	Photo	Pond Ref	Photo
P38b	No Image	P39	

Pond Ref.	Photo	Pond Ref.	Photo
P40a		P40b	
P41		P58	

Pond Ref.	Photo	Pond Ref.	Photo
P54	No Image		
P56	No Image		
Tanks	No Images		

APPENDIX C – GCN AQUATIC SURVEY RAW DATA

Ponds Not Included Within GCN Metapopulation								
Pond Ref.	Survey Dates	All Survey Methods	Survey Occasion					
			1	2	3	4	5	6
			Peak Count of Amphibians Recorded per Survey Occasion					
P1	22/04/21 29/04/21 06/05/21 13/05/21 27/05/21 03/06/21	Bottle trap, Torchlight, Egg search	Dry					
P2	22/04/21 29/04/21 06/05/21 13/05/21	Netting, Torchlight, Egg search	-	-	-	1♂ SN 1 frog	N/A	
P3	As above	Bottle trap, Torchlight, Egg search	-	-	-	-	N/A	
P20	22/04/21 29/04/21 06/05/21 13/05/21	Bottle trap, Torchlight, Egg search	-	-	-	-	N/A	
P24	22/04/21	Netting, Torchlight, Egg search	-	Dry				
P54	22/04/21 29/04/21 06/05/21 13/05/21	Bottle trap, Torchlight, Egg search	5 toads	-	Lost Data	1♂ SN	N/A	

Metapopulation 1 Ponds								
Pond Ref.	Survey Dates	All Survey Methods	Survey Occasion					
			1	2	3	4	5	6
			Peak Count of Amphibians Recorded per Survey Occasion					
P4	As above	Bottle trap, Torchlight, Egg search	-	-	Lost Data	-	N/A	
P56 (2)	22/04/21 29/04/21 06/05/21 13/05/21 27/05/21 03/06/21	Bottle trap, Torchlight, Egg search	-	1♀ GCN	1♀ SN	-	1♀ GCN	2♀ GCN
T1 (5)	As above	Netting, Torchlight, Egg search	2♀ GCN	-	-	3♂ 2♀ GCN	2♂ 1♀ GCN	-
T2 (12)	As above	Netting, Torchlight, Egg search	8♂ 4♀ GCN	5♂ 1♀ GCN	-	1♂ 1♀ GCN	5♂ 6♀ GCN	-
T3	As above	Netting, Torchlight, Egg search	Dry	Dry	Dry	-	-	-
T4 (37)	As above	Netting, Torchlight, Egg search	13♂ 8♀ GCN	1♂ 3♀ GCN 1♀ SN	5♂ 5♀ GCN	4♂ 6♀ GCN	19♂ 18♀ GCN	5♂ 6♀ GCN 1♂ SN
T5 (9)	As above	Netting, Torchlight, Egg search	4♂ 4♀ GCN	1♂ 1♀ GCN	7♀ GCN	3♀ GCN	2♂ 7♀ GCN	2♂ 7♀ GCN
T6 (11)	As above	Netting, Torchlight, Egg search	2♂ 2♀ GCN	1J GCN	Lost Data	3♂ 3♀ GCN	6♂ 5♀ GCN 2♀ SN	-

T8 (11)	As above	Netting, Torchlight, Egg search	1♀ GCN	1♀GCN 3♀ SN	-	-	6♂ 5♀ GCN 2♀ SN	1♂ 2♀ GCN 1♂ 1♀ SN
T9 (18)	As above	Netting, Torchlight, Egg search	2♂ 2♀ GCN	-	1♂ 3♀ GCN	3♂ 3♀ GCN 1♀ SN	8♂ 10♀ GCN	4♂ 8♀ GCN
T10 (2)	As above	Netting, Torchlight, Egg search	-	-	1♀ SN	-	1♂ 1♀ GCN	-
T11	As above	Netting, Torchlight, Egg search	1♀ SN	-	-	-	-	-
T12 (3)	As above	Netting, Torchlight, Egg search	1♂ 1♀ GCN 1♂ 2♀ SN	-	1♂ 1♀ GCN 1♂ 2♀ SN	2♂ 2♀ SN	3♂ GCN	1♂ 2♀ GCN
T13 (1)	As above	Netting, Torchlight, Egg search	-	-	1♀ GCN	-	-	-
Adult GCN Total:			57	14	24	32	106	40

Metapopulation 2 Ponds

Pond Ref.	Survey Dates	All Survey Methods	Survey Occasion					
			1	2	3	4	5	6
			Peak Count of Amphibians Recorded per Survey Occasion					
P8 (1)	22/04/21 29/04/21 06/05/21 13/05/21 27/05/21 03/06/21	Bottle trap, Torchlight, Egg search	-	-	1♂ GCN 1♂ SN	11♂ 1♀ SN	3♂ 4♀ 1J SN	2♂ 2♀ SN

P9 (2)	As above	Bottle trap, Torchlight, Egg search	-	1♂ GCN 1♂ 2♀ SN	1♀ 1U GCN	3♂ 7♀ SN	1♂ 1U GCN 3♂ 1♀ SN	2♂ 3♀ SN
P10 (7)	As above	Bottle trap, Torchlight, Egg search	-	-	6♂ 1♀ GCN 1♂ 3♀ SN	1♀ 2J GCN 3♂ 6♀ SN	1♂ 1♀ GCN 6♂ 11♀ SN	1♀ GCN 2♂ 1♀ SN
P11 (6)	As above	Bottle trap, Torchlight, Egg search	-	GCN eggs	1♂ 5♀ GCN 3♂ 1♀ SN	1♂ 4♀ 1U GCN 1♂ 3♀ SN	1♂ 1♀ 1J GCN	3♀ GCN
P12 (8)	As above	Bottle trap, Torchlight, Egg search	2♀ SN	GCN eggs	6♂ 1♀ 1U GCN 1♂ SN	5♂ 2♀ GCN 1♂ 2♀ SN	1♂ 3♀ GCN 1♂ SN	2♀ GCN 2♀ SN
P13 (31)	As above	Bottle trap, Torchlight, Egg search	-	GCN eggs	3♂ 1♀ GCN	27♂ 4♀ 1J GCN 2♂ 2♀ SN	3♂ 2♀ GCN	1♀ GCN 1♂ 1♀ SN
P14 (23)	As above	Bottle trap, Torchlight, Egg search	1U GCN 1♀ SN	11♂ 4♀ 8U GCN 2♂ SN	8♂ 3♀ GCN 1♂ 2♀ SN	1♂ 1♀ GCN 2♂ 2♀ SN	1♂ SN	2♀ GCN 1♀ SN
P15 (3)	As above	Bottle trap, Torchlight, Egg search	1♀ SN	1♂ 1♀ 1U GCN	2♂ 1♀ GCN 3♂ SN	GCN eggs 1♂ SN	2♂ 1♀ GCN	1♀ GCN
P16 (0)	As above	Bottle trap, Torchlight, Egg search	-	GCN eggs	-	-	1♂ SN	-
P17 (7)	As above	Bottle trap, Torchlight, Egg search	1U SN	3♂ 4♀ GCN	3♂ 1♀ 1U GCN 1U SN	1♂ 1♀ GCN GCN eggs	-	2♂ 2♀ GCN 1♀ SN
P18 (6)	As above	Bottle trap, Torchlight, Egg search	4♀ GCN 2♂ SN	GCN eggs	3♂ 2♀ GCN	1♂ 2♀ GCN	3♂ 3♀ 1J GCN	2♂ 2♀ GCN

Adult GCN Total:		5	33	52	53	24	18	
Metapopulation 3 Ponds								
Pond Ref.	Survey Dates	All Survey Methods	Survey Occasion					
			1	2	3	4	5	6
			Peak Count of Amphibians Recorded per Survey Occasion					
P19a (6)	As above	Bottle trap, Torchlight, Egg search	3♀ GCN 1 toad	-	3♂ 2♀ GCN 1♂ 1♀ SN	5♂ 1♀ GCN 2♂ 4♀ SN 4 toads	2♂ GCN 2♂ 7♀ 1J SN	1♂ 2♀ GCN 1♀ 1J SN 7 toads
P25 (0)	22/04/21 29/04/21 06/05/21 13/05/21 27/05/21 03/06/21	Bottle trap, Torchlight, Egg search	GCN eggs	-	1♀ SN	GCN eggs	-	-
P26 (12)	As above	Bottle trap, Torchlight, Egg search	2♂ 2♀ GCN 2♂ SN	-	10♂ 2♀ GCN 1♂ 2♀ SN	GCN eggs	1♂ 2♀ GCN 1♀ SN	2♀ GCN 2♂ 1♀ SN
P27 (10)	As above	Netting, Bottle trap, Torchlight, Egg search	1♀ GCN 1U SN	1♂ 1♀ SN	5♂ 5♀ GCN 2♂ 2♀ SN	GCN eggs	1♀ GCN 1♂ 2♀ SN	1♂ 4♀ GCN 2♂ SN
P28 (2)	As above	Bottle trap, Torchlight, Egg search	GCN eggs	-	1♂ GCN 1♀ SN	GCN eggs	2♀ GCN 1♂ 1♀ SN	-
P29 (0)	As above	Bottle trap, Torchlight, Egg search	GCN eggs	-	1♀ SN	-	-	2♂ 1♀ SN

P30 (4)	As above	Bottle trap, Torchlight, Egg search	GCN eggs 1♀ SN	2♂ 1J SN	3♂ 1♀ GCN 1♂ 1♀ SN	GCN eggs	3♂ GCN 2♂ SN	-
P31 (19)	As above	Bottle trap, Torchlight, Egg search	7♂ 3♀ GCN 3♂ 2♀ 1U SN	1♀ 1U GCN 1♂ SN	11♂ 8♀ GCN 1♂ 2♀ SN	GCN eggs	1♀ GCN	1♂ 2♀ GCN 1♂ 1♀ SN
P32 (7)	As above	Bottle trap, Torchlight, Egg search	3♂ 2♀ 1U GCN 2♂ 5♀ SN	1♀ GCN	3♂ 1♀ GCN 1♂ 2♀ SN	GCN eggs	7♀ GCN 1♀ SN	2♂ 4♀ GCN
P33 (4)	As above	Bottle trap, Torchlight, Egg search	3♂ 1♀ GCN	5♂ 2♀ SN	3♂ GCN 3♂ 1♀ 1J SN	-	1♂ 1♀ SN	1♀ GCN 3♂ SN
P34 (15)	As above	Bottle trap, Torchlight, Egg search	2♂ 6♀ GCN 1♂ 2♀ SN	1♂ 1J GCN 1♂ SN	7♂ 8♀ GCN	1♂ 4♀ GCN 1U SN	2♀ GCN 1♂ 1♀ SN GCN eggs	1♀ GCN 6♂ 1♀ SN
P35 (16)	As above	Bottle trap, Torchlight, Egg search	11♂ 3♀ 2U GCN 5♂ 2♀ 3U SN 1 frog	3♀ GCN	8♂ 6♀ GCN	-	2♂ GCN	1♀ GCN 4♂ 2♀ SN
P36 (4)	As above	Bottle trap, Torchlight, Egg search	1♀ GCN 1♂ SN	-	2♀ SN	Lost Data	1♀ SN	1♂ 2♀ 1U GCN 1♂ SN
P37	22/04/21 29/04/21 06/05/21 03/06/21	Netting, Bottle trap, Torchlight, Egg search	1♂ 1♀ SN 1 toad	-	-	N/A		-
P38a (3)	22/04/21 29/04/21 06/05/21 13/05/21 27/05/21 03/06/21	Netting, Bottle trap, Torchlight, Egg search	3♂ 4♀ SN SN eggs	Dry	Dry	Lost Data	1♂ 2♀ GCN 2♀ SN SN eggs	2♂ 1♀ SN

P38b (10)	As above	Bottle trap, Torchlight, Egg search	3♂ GCN 5♂ 22♀ SN	1 toad	2♂ 8♀ GCN 1♂ 20♀ SN	3♂ GCN 7♂ 7♀ 2J SN	1♂ GCN 3♂ 5♀ 2J SN	2♀ GCN 4♂ 4♀ SN
P39	22/4/21	Netting Torchlight, Egg search	-	Dry				
P40a (3)	As above	Netting, Bottle trap, Torchlight, Egg search	-	-	-	2♂ 1♀ SN	1♂ 1♀ GCN 1♂ 1♀ SN	1♂ 2♀ GCN 1♀ SN
P40b (2)	As above	Bottle trap, Torchlight, Egg search	-	-	1♀ SN	1J GCN	1♂ 1♀ GCN 1♀ SN	-
P41 (135)	As above	Bottle trap, Torchlight, Egg search	-	-	12♂ 4♀ GCN 2♂ 2♀ SN	8♂ 14♀ 1J GCN 5♀ SN	66♂ 69♀ GCN 17♂ 36♀ SN	2♂ 6♀ GCN 4♂ 8♀ SN 1 frog
P58 (2)	As above	Bottle trap, Torchlight, Egg search	2♂ GCN 1U SN 1 frog	-	-	-	2♀ GCN	-
Adult GCN Total:			58	8	113	36	167	38

2018 Data						
Pond Ref.	Survey Dates	All Survey Methods	Survey Occasion			
			1	2	3	4
			Peak Count of Amphibians Recorded per Survey Occasion			
P1	25/04/18 30/04/18 10/05/18 29/05/18	Bottle trap, Torchlight, Egg search	14 U SN	-	-	-
P2	As above	Bottle trap, Torchlight, Egg search	-	-	1 frog	2♀ SN
P3	As above	Bottle trap, Torchlight, Egg search	-	1♂ 4♀ SN	4♂ 3♀ SN	2♂ 11♀ SN