M60/M62/M66 Simister Island Interchange

TR010064

ENVIRONMENTAL STATEMENT APPENDICES

APPENDIX 8.8 GREAT CRESTED NEWT SURVEY REPORT

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ENVIRONMENTAL STATEMENT APPENDICES
APPENDIX 8.8 GREAT CRESTED NEWT SURVEY REPORT

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Appendix 8.8 Great crested newt survey report

Executive summary

This technical report represents the findings of the survey undertaken to establish the presence / likely absence of great crested newt (GCN) *Triturus cristatus* within the survey area for the M60/M62/M66 Simister Island Interchange (the 'Scheme').

In April 2021 an ecological data request was made to the Greater Manchester Ecology Unit. Habitat Suitability Index assessments were conducted in March 2021. Based on the desk and field study results ponds were identified that required further field surveys.

GCN presence / likely absence surveys were conducted between 19 April 2021 and 11 June 2021. The surveys identified the presence of GCN in 13 ponds across two meta-populations: a meta-population at Pike Fold Golf Course of a medium GCN population size class and; a meta-population at Egypt Farm of a small GCN population size class.

Biological records associated with Ponds 13-15 obtained from Greater Manchester Ecology Unit identified a third meta-population of unknown size at Unsworth Academy though this could not be confirmed due to land access issues, as such this meta-population was assumed to be present.

In consideration of the desk study and field survey data collected, it can be reasonably assumed that GCN are widely present across the survey area within areas of suitable habitat in areas of grassland, scrub, hedgerows and ponds.

GCN are considered common but declining in Greater Manchester. GCN are believed to breed in all districts of Greater Manchester. Particularly high concentrations of GCN are found in Wigan and the border between Salford and Bolton (Greater Manchester Biodiversity Project, 2009). It is therefore considered that GCN within the survey area are considered to be of **County Importance** for biodiversity.

1 Introduction

1.1 Purpose of the report

1.1.1 This report sets out the results of desk-based study and great crested newt (GCN) *Triturus cristatus* field surveys undertaken between 19 April 2021 and 11 June 2021 as part of the M60/M62/M66 Simister Island Interchange (the 'Scheme'). The aim is to establish an ecological baseline for GCN to provide supporting information for Chapter 8: Biodiversity of the Environmental Statement (TR010064/APP/6.1).

1.1.2 The report is supported by technical information contained in the following Annexes:

- Annex A: Additional information / legislation
- Annex B: Pond descriptions and photographs
- Annex C: Habitat Suitability Index (HSI) assessment results
- Annex D: GCN survey results

1.1.3 In addition, this report is supported by the following figures in Annex E:

- Figure 8.8.1: GCN Desk Study Records
- Figure 8.8.2: GCN HSI Assessment Results
- Figure 8.8.3: GCN Presence / Likely Absence

1.2 Definitions

1.2.1 The study area relates to a 2km buffer around the Order Limits available at time of study.

1.2.2 The field survey area refers to a 500m buffer around the provisional Order Limits available at the time of survey.

1.2.3 The provisional Order Limits at time of survey is discussed and presented in detail in the Environmental Scoping Report (TR010064/APP/6.6)). The provisional Order Limits are largely concurrent with the Order Limits and any substantial deviations are included within the wider study area and captured within the overall baseline.

1.3 Legislative and regulatory context

1.3.1 An assessment of the legislative and regulatory framework covering amphibians in the UK has been undertaken. Due consideration has been given to the following statutory instruments and policy frameworks in the preparation of this report (see Annex A for further details):

- Conservation of Habitats and Species Regulations 2017 (as amended)
- Wildlife and Countryside Act 1981 (as amended)

- Natural Environment and Rural Communities Act 2006

1.3.2 In summary, there are three species of amphibian fully protected under the combined measures contained in the Conservation of Habitats and Species Regulations 2017 (as amended) and the Wildlife and Countryside Act 1981 (as amended): GCN, natterjack toad *Epidalea calamita* and pool frog *Pelophylax lessonae*. Natterjack toad and pool frog have very restricted geographical ranges in the UK making it extremely unlikely that they would occur in the survey area covered by this report. The survey area is located within the known distribution of GCN and therefore this report focuses on the presence / likely absence of this species.

1.3.3 Annex A of this report provides a brief synopsis of how the above legislation relates to the protection of amphibians (including GCN) in the UK.

Nature conservation status

1.3.4 GCN are listed as Priority Species on the Greater Manchester Local Biodiversity Action Plan (LBAP) (Greater Manchester Biodiversity Project, 2009).

1.3.5 A study of GCN distribution in Greater Manchester was undertaken by Greater Manchester Biodiversity Project in 2009 (Greater Manchester Biodiversity Project, 2009). The study showed that GCN were common within Greater Manchester. However, the population was in decline.

1.3.6 Current objectives outlined in the Greater Manchester Species Action Plan (Greater Manchester Biodiversity Project, 2009) are:

- Determine the current population and range of GCN in the county
- Maintain the range, distribution and viability of GCN populations across Greater Manchester at no less than levels identified in year 2000, including new sites discovered after this date as a result of baseline survey work
- Identify potential areas for expansion of GCN distribution in the county, targeting sites that would create linkages between currently isolated populations

1.3.7 Further detail of the legislative and regulatory framework covering amphibians in the UK is presented in Annex A of this report.

2 Methodology

2.1 Desk study

2.1.1 A search was carried out using the Multi-Agency Geographic Information for the Countryside (MAGIC) website (Department for Environment, Food and Rural Affairs (Defra), 2022) to identify the presence of statutory protected nature conservation sites for GCN within 2km of the provisional Order Limits. In addition, information of Sites of Biological Importance (SBIs) within 1km of the provisional Order Limits were obtained from Greater Manchester Ecology Unit (GMEU) (GMEU, 2021).

2.1.2 Records of GCN within 2km of the provisional Order Limits were obtained from GMEU (GMEU, 2021). Records more than 10 years old (i.e. 2011 or earlier) were considered to be historical and discarded from the analysis. MAGIC (Defra, 2022) was also used to search for granted European Protected Species Mitigation Licences (EPSML), GCN class survey licence return data, and 2017-2019 GCN eDNA results within 2km of the provisional Order Limits. This search was completed on 28 February 2022. The spatial location of any GCN records or features were reviewed when the Order Limits for the application for development consent were finalised. Distances given in Section 3 of this report relate to the Order Limits.

2.1.3 A review was undertaken of the UK Habitat Classification survey data (see Appendix 8.1: UK Habitat Classification Report of the Environmental Statement Appendices (TR010064/APP/6.3)) to identify the presence of waterbodies within 500m of the provisional Order Limits. Ordnance Survey (OS) mapping and aerial photography (Google Earth, 2021) were also analysed to identify any additional ponds for survey.

2.1.4 A review of existing survey data from an earlier stage of the Scheme was also undertaken (Highways England, 2019).

2.1.5 See Figure 8.8.1: GCN Desk Study Records in Annex E of this report.

2.2 Field survey

Guidance

2.2.1 All surveys were carried out with reference to current good practice guidance:

- Evaluating the suitability of habitat for the Great Crested Newt *Triturus cristatus* (Oldham *et al.,* 2000)
- The GCN Mitigation Guidelines (English Nature, 2001)
- GCN Conservation Handbook (Langton *et al*., 2001)
- Design Manual for Roads and Bridges (DMRB) LA 108 Biodiversity (Highways England, 2020)
- Technical advice note for field and laboratory sampling of GCN (*Triturus cristatus*) environmental DNA (Biggs *et al.,* 2014)

Survey area

2.2.2 A 500m survey buffer was established around the provisional Order Limits, in accordance with best practice (Langton *et al.*, 2001). 112 ponds were identified within the survey area.

Habitat Suitability Index

2.2.3 HSI assessments were undertaken in March 2021. The HSI assessment was undertaken to assess each pond in respect of their suitability to support GCN (see Figure 8.8.2: HSI Assessment Results in Annex E of this report). A thorough description and photograph of each pond was recorded, along with information on associated terrestrial habitats.

2.2.4 The HSI assessment is a means of evaluating habitat quality and quantity. It is a numerical index between 0 and 1, where 0 indicates unsuitable habitat and 1 represents optimal habitat. Surveys were conducted following standard methodology for HSI assessments (Oldham *et al*., 2000). The HSI incorporates ten suitability indices, all of which are factors that can affect GCN as listed below:

- SI1 Geographic location
- SI2 Pond area
- SI3 Pond drying
- SI4 Water quality
- SI5 Shade
- SI6 Presence of waterfowl
- SI7 Presence of fish
- SI8 Pond density in area
- SI9 Terrestrial habitat quality
- SI10 Macrophyte cover in pond

2.2.5 Using the calculation below an index between 0 and 1 can be determined:

(SI1 x SI2 x SI3 x SI4 x SI5 x SI6 x SI7 x SI8 x SI9 x SI10)1/10

2.2.6 A scale has been published (Amphibian and Reptile Groups UK, 2010) for categorising HSI scores into the suitability of a pond for GCN. This is shown in Table 2.1.

Table 2.1 HSI scores and their GCN suitability categories

HSI score	GCN suitability
<0.5	Poor
0.5 – 0.59	Below average

HSI score	GCN suitability
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

2.2.7 It is recognised that the HSI assessment is not a substitute for presence / likely absence surveys but can be useful for evaluating the general suitability of waterbodies for GCN together with an assessment of the terrestrial habitats surrounding the ponds.

2.2.8 A number of features were identified as ponds via the desk study and online mapping resources. Some of these were subsequently ruled out of further survey during the completion of the HSI assessments as the pond didn't exist when the location was visited. As a result, pond numbering is not sequential. Where there are gaps in pond numbering it has been confirmed through direct field observations that these ponds do not exist.

Presence / likely absence survey

2.2.9 Presence / likely absence surveys for GCN were undertaken on ponds that produced a HSI assessment of below average or above (i.e. >0.50) (see Figure 8.8.3: GCN Presence / Likely Absence in Annex E of this report). As a result, presence / likely absence surveys were recommended for 46 ponds in accordance with best practice (English Nature, 2001). All surveyors were suitably qualified and either in possession of, or supervised by, someone with the appropriate Natural England Class licence to undertake surveys for GCN.

2.2.10 Where possible (refer to Section 2.4 for limitations), each pond was subject to four survey visits in May 2021, with at least two of these survey visits completed between mid-April and mid-May.

2.2.11 Each survey visit incorporated three separate methods where possible (refer to Section 2.4 for any deviations) from the following options: bottle trapping, egg searching, torchlight searches, and netting. On some occasions terrestrial searches were also carried out if one of the survey methods listed above was not deemed appropriate due to pond conditions. A brief overview of the survey methods used follows.

- **Bottle trapping** – Amphibian traps made from two-litre plastic bottles were set around the margins of waterbodies in the early evening and then retrieved the following morning. Traps were set at approximately 2m intervals along all accessible margins. All amphibians and other fauna were released back into the pond they were captured from.
- **Torch surveys** – surveyors walked around the perimeter of each waterbody after surveyors deemed the conditions to be sufficiently dark after sunset using one million candlepower torches to search the margins for amphibians.

- **Egg searching** – Egg searching involved a visual survey of marginal and submerged vegetation to identify the presence of newt eggs, which were laid on leaves folded over by a female newt. Great crested newt eggs were identified in the field by their size (approximately 5mm in diameter) and colour (light yellow). Egg searches were not continued after presence was first identified in each pond as unfolding leaves can lead to eggs experiencing an increased risk of predation, with further exposure of eggs yielding no new information. In addition, exposure to UV radiation can have a detrimental effect on survivability of eggs / embryos (English Nature, 2001). Where limited egg laying material was identified around the margins of a pond, egg strips were installed to supplement this survey technique. Egg strips consisted of a cane with strips of plastic attached to provide a suitable substrate for GCN egg-laying. Where used egg strips were left in the pond throughout the survey period and checked on each survey visit for the presence of GCN eggs.

- **Netting** – a sturdy dip-net with a 2mm mesh size was used to sweep the perimeter of the pond. Netting was undertaken for 15 minutes per 50m of pond.

- **Terrestrial Search** – When it was not possible to carry out one of the survey techniques previously described, terrestrial refuge searching was carried out as an additional survey method. This involved searching under likely places that GCN may use such as logs, bark, rocks, and debris around the pond.

Population size class assessments

2.2.12 Population size class assessments were undertaken where presence of GCN was confirmed by presence / likely absence surveys.

2.2.13 Population size class assessments require six separate visits to a pond between mid-March to mid-June, with at least three of these visits during mid-April to mid-May (English Nature, 2001). Thereafter, the maximum GCN adult count can be recorded through torch survey or bottle-trapping methods.

2.2.14 For sites where there is reasonable certainty that there is regular interchange of animals between ponds (typically, within 250m and with an absence of barriers to dispersal), counts can be summed across ponds (note that this is only done for counts obtained on the same visit). Populations are then classed as:

- ‘Small’ for maximum counts up to 10

- ‘Medium’ for maximum counts between 11 and 100

- ‘Large’ for maximum counts over 100

eDNA

2.2.15 Presence / likely absence techniques described above were not possible on four ponds (P20, P44, P46, and P49) due to antisocial behaviour in the area. As a result, eDNA surveys were undertaken at these ponds on 20 May 2021 in accordance with best practice (Biggs *et al.,* 2014) and sent for subsequent laboratory analysis by Nature Metrics.

2.3 Evaluation of importance of ecological resource

2.3.1 Ecological Impact Assessment (EcIA) uses a hierarchical geographic framework to assign importance to ecological resources. This is based on an understanding of how the ecological resource may contribute to the conservation status or distribution of the species or habitat at a particular geographical scale.

2.3.2 The following geographical frame of reference is based on DMRB LA 108 to assess the importance of GCN within the study area:

- International or European
- UK or National
- Regional e.g. North-West England
- County e.g. Greater Manchester
- Local e.g. within 2km of the Scheme.

2.4 Limitations

2.4.1 Limitations to the presence / likely absence surveys are summarised in Table 2.2.

Table 2.2 Limitations encountered during presence / likely absence surveys

Pond reference	Limitation
P1	The pond was very turbid during the surveys which limited the effectiveness of the torch surveys. Other survey methods used were effective and large numbers of fish were found within the pond reducing its suitability for GCN, the turbidity of the pond is not deemed to be a significant limitation to determining the presence of GCN.
P2	As a result of dense vegetation surrounding the perimeter of the pond, access for torch survey was limited to 75-80% of the pond. In addition, the pond was very turbid during the surveys which limited the effectiveness of the torch surveys. As other survey methods used were effective and large numbers of fish were found within the pond reducing its suitability for GCN, the turbidity of the pond is not deemed to be a significant limitation to determining the presence of GCN.
P3	The pond was turbid during the surveys which limited the effectiveness of the torch surveys. As other survey methods were used and large numbers of fish were found within the pond reducing its suitability for GCN, the turbidity of the water is not considered a significant limitation to determining the presence of GCN.

Pond reference	Limitation
P4	Dense levels of duckweed limited the effectiveness of torching as a survey method. Other survey methods were not constrained. As smooth newts and their eggs were identified within the pond, in addition to high numbers of stickleback fish, it is thought that had GCN been present they would have been identified. As a result, the turbidity of the pond is not deemed to be a significant limitation to determining the presence of GCN.
P5	Turbidity is likely to have reduced the effectiveness of torching surveys on the sixth survey visit, therefore reducing the likelihood of identifying GCN. This is not deemed to be a significant limitation as only one survey visit was affected; all prior and subsequent visits were able to be carried out without turbidity affecting visibility. In addition, GCN presence was identified on the third and fifth surveys.
P6	Dense levels of reed and algae limited the effectiveness of torching and netting surveys. Bottle trapping and egg searches were completed without being constrained. As other survey methods used were effective and large numbers of fish (sticklebacks) were found within the pond reducing its suitability for GCN, the turbidity of the pond is not deemed to be a significant limitation to determining the presence of GCN.
P9	The pond was particularly turbid during the first two surveys which limited the effectiveness of torch surveys. In addition, dense vegetation and steep banks restricted safe access to the full perimeter of the pond and therefore survey effort was focused in areas of the pond where safe access was available. An additional two visits were undertaken at this pond to increase the likelihood of determining GCN presence / likely absence. As a result, there are not considered to be any significant constraints to the survey findings.
P12	A water shrew *Neomys fodiens* was identified in P12 during the first survey visit. Water shrew are protected under Schedule 6 of the Wildlife and Countryside Act 1981(as amended) from trapping by certain methods and 'taking' from the wild. As a result, bottle trapping could not be used as a survey technique until traps with suitable small mammal escape holes had been sourced. GCN presence was identified within the pond on survey visit two. However, due to the water shrew presence, bottle trapping could not be completed on this visit alongside torching. This is not deemed a significant limitation as GCN presence was identified, and the larger GCN metapopulation for the area is within the lower-range for a medium population size and as a result, unlikely to be affected significantly had bottle traps been used for survey visit two.
P13 – P15	Access was not granted. GCN absence cannot be assumed for these ponds.
P16	Turbidity was high at this pond during the first survey visit. This is not deemed a significant limitation as it was the only occasion on which high turbidity encountered. On the fourth survey visit, the pond was too shallow to trap or net and so only two survey methods were undertaken. This is not considered a significant limitation to determining GCN presence as three survey methods were able to be carried out on all prior surveys.

Pond reference	Limitation
P17	Access to this pond was restricted in part by a fence and dense vegetation. This was not deemed to be a significant limitation to determining GCN presence as three survey techniques were used on each survey and enough of the pond margin was accessible to undertake sufficient survey effort.
P20	This pond was subject to three survey methods for the first two survey visits but due to antisocial behaviour by members of the public on the second survey, no further surveys were conducted due to the risk to surveyors. In addition, access could only be gained to 30-50% of the pond's edge. To mitigate, eDNA samples were collected. As such, this limitation is not deemed significant to determining the presence of GCN.
P21	Turbidity affected the first torch survey. This is not deemed to be a significant limitation to determining the presence of GCN as all subsequent visits were unconstrained.
P23	On the third survey visit only approximately 50% of the pond's edge could be accessed for survey. This was due to a drop in water level exposing marshy ground and deep silt making it unsafe to access the pond margins at certain points. This is not deemed to be a significant limitation to determining the presence of GCN as all other survey visits were unconstrained.
P24	Turbidity impacted torching effectiveness on the fourth survey visit. This is not deemed to be a significant limitation as an additional fifth survey visits was completed and no GCN were found.
P25	Turbidity impacted torching effectiveness on the fourth survey visit, this is not deemed to be a significant limitation as an additional fifth survey was completed and no GCN were found.
P26	Access to the perimeter of this pond was limited to 40-50%.This is not deemed a significant limitation as a small population of GCN were still identified on the first and fifth survey visit.
P29	A single GCN was identified on the first survey visit. Bottle trapping and torching was not able to be undertaken during the second survey visit due to heavy rain and the shallow depth of the water. This is not thought to be a significant constraint to the overall findings as the larger GCN metapopulation for the area surrounding this pond is within the lower range for a medium population size class and as a result, unlikely to be affected significantly had the second survey not been impacted.
P31	The water in P31 was too shallow to bottle trap and there was very limited egg laying material. As a result, survey methods utilized were mostly limited to torching which was also constrained by the turbidity of the water, and netting. Access was only possible to 50-60% of the pond's perimeter due to the presence of a fence and livestock. Survey methods were significantly constrained. Determining GCN presence / likely absence using eDNA sampling methods was scoped out due to the shallow depth of water within this pond at the time of survey. Therefore GCN absence cannot be assumed for this pond.

Pond reference	Limitation
P41	During survey visit three, access was constrained to 70% of the pond, due to health and safety concerns. This is not deemed to be a significant constraint as access was greater than 75% on all other survey visits.
P44 & P46	P44 and P46 were subject to three survey methods for the first two survey visits. However, as a result of antisocial behaviour by members of the public on the second survey, no further surveys were conducted due to the risk to surveyors. To mitigate this limitation eDNA samples were collected to determine GCN presence / likely absence.
P48	P48 was located within a locked allotment where access could not be gained. GCN absence cannot be assumed for this pond.
P49	P49 was subject to two survey visits. Subsequent survey visits were cancelled due to health and safety constraints. To mitigate for the lack of surveys, eDNA samples were taken. However, an inconclusive result was returned. As the pond is situated in the same cluster of other ponds that were surveyed and GCN likely absence was determined, and has a lower HSI score, it is deemed likely that GCN are also likely absent from this pond.
P55	Survey techniques are deemed significantly constrained at pond 55. Bottle traps were not able to be utilised for any surveys due to the presence of horses within the field. Although egg searches were attempted, the lack of suitable vegetation made this a constrained technique. For two out of the four surveys undertaken, the turbidity of the waterbody was ranked the highest score which constrained torching as a survey technique. Determining GCN presence / likely absence using eDNA sampling methods was scoped out due to the shallow depth of water within this pond at the time of survey. As a result, GCN cannot be assumed absent for this pond.
P58	Survey techniques were constrained at times due to dense vegetation and turbid water decreasing the effectiveness of torch surveys A small population of GCN was identified within the pond and therefore this is not considered to be a significant limitation.
P59	Dense vegetation cover limited the effectiveness of torching surveys. However, as GCN were identified during the surveys, this is not thought to be a significant constraint.
P61	Dense vegetation restricted full access to the perimeter of this pond, cold temperatures on the first survey prevented bottle trapping and the water was particularly turbid on the final survey. However, presence of GCN was confirmed therefore the surveys are not thought to have been significantly constrained.
P62	Dense vegetation restricted full access to the perimeter of the pond. The survey effort was focused in areas where access was available and presence of GCN was still able to be confirmed. Therefore, restricted access is not considered to be a significant limitation.

Pond reference	Limitation
P63	As a result of densely vegetated, sinking banks causing unsafe conditions for surveyors, the suite of survey techniques could not be completed. Although not being able to complete presence / likely absence surveys would have been considered a significant constraint, a torch survey incidentally identified a GCN on the pond bank. As a population of GCN were established within the area, restricted access is not considered to be a significant limitation.
P64	Vegetation cover was dense on the first presence / likely absence survey which limited the effectiveness of the torch surveys. No other surveys were constrained and GCN were identified within the pond, so this is not thought to be a significant limitation overall.
P65	During the first survey visit the temperature dropped below 5 degrees celcius and trapping could not be implemented. In addition, the full perimeter of the pond was not able to be surveyed on each occasion due to dense rush being in the way of surveyors. However, GCN were confirmed as present so this is not considered to be a significant limitation.
P67	Use of survey methods on this pond were constrained. The pond was too shallow to use bottle trapping methods and dense vegetation limiting access to the pond and algae within the waterbody constrained torching techniques. Suitable vegetation was also very limited for egg searching. No GCN were identified within the pond but they were found within nearby ponds. As a result, it is considered likely that the pond is used by the wider GCN metapopulation, albeit maybe not for breeding due to the lack of suitable vegetation.
P68	Dense algae were present within the pond which constrained torching surveys. Other survey methods were used in addition to torching and GCN presence was confirmed on the third survey so this is not considered a significant limitation.
P70	Vegetation cover was high on the fifth survey visit to the pond. This pond received six survey visits, of which all but one were not constrained by vegetation cover. Therefore, this is not deemed a significant limitation.
P83 – P86	Access was not granted. GCN absence cannot be assumed for these ponds.
P90 - P99	Access was not granted. GCN absence cannot be assumed for these ponds.
P101 - P106	Access was not granted. GCN absence cannot be assumed for these ponds.
P107	Pond Dry
P108 - P110	Access was not granted. GCN absence cannot be assumed for these ponds.

2.4.2 Good practice guidance (English Nature, 2001) states that '*Even if GCN are indicated to be absent from a given pond in one year, it is feasible that in future years they may colonise, depending on the surrounding populations and connectivity'*. In addition, '*presence / absence surveys may determine presence but in fact it is virtually impossible to demonstrate absence'*. Full consideration is given to these factors during interpretation of the survey results.

2.4.3 GCN surveys were undertaken in 2021. Walkover surveys and UK Habitat Classification System survey updates undertaken in October 2022 and April/May 2023 (see Appendix 8.1: UK Habitat Classification Report of the Environmental Statement Appendices (TR010064/APP/6.3) for further details) did not record any significant change in habitat types or condition within the survey area. Therefore, no significant change to the GCN survey data recorded in 2021 is anticipated and the GCN survey data obtained in 2021 is considered sufficiently robust to inform the assessment.

3 Results

3.1 Desk study

3.1.1 Previous survey work (Highways England, 2019) identified 53 ponds within the survey area. There are also records associated with ponds surveyed in this report, namely P55 (record from 2016), and P21 (record from 2012).

3.1.2 There are five Local Nature Reserves within 2km of the Order Limits but none specifically cite GCN. There are eight non-statutory sites within 1km of the Order Limits. Of these, none cite GCN populations as reasons for designation.

3.1.3 Fifty-one contemporary (post 2011) records for GCN were provided by GMEU (GMEU, 2021). see Figure 8.8.1: GCN Desk Study Records in Annex E of this report for locations and Annex B of this report for pond descriptions and photographs. A large number of records were located at the western extent of the Scheme, with several records running alongside both sides of the existing motorway. There were further records associated with Pike Fold Golf Course, Unsworth Academy, and land south of Unsworth Cricket Club. The closest record is located approximately 0.2km west of the Order Limits and relates to GCN in the ponds within the grounds of Unsworth Academy (named P13, P14, and P15 in this survey report – see Figure 8.8.2: GCN HSI Assessment Results in Annex E of this report).

3.1.4 A search of MAGIC (Defra, 2022) produced five EPSML returns for GCN between 2014 and 2020 within 2km of the Order Limits. There were three EPSML applications for GCN between 2015 and 2020; one of which is in the central crossroads of M60 J18. The EPSML returns and applications are detailed in Table 3.1 and shown in Figure 8.8.1: GCN Desk Study Records in Annex E of this report.

3.1.5 No positive eDNA results were identified through the MAGIC (Defra, 2022) search. However, there was one return from 2018 related to a negative result approximately 850m north of the Order Limits.

Table 3.1 EPSML returns and applications for GCN within the study area

Grid reference	Record date	Record type	Approximate distance from Order Limits (m)
SD 784039	2014	Licence return	1930
SD 786055	2016	Licence return	1840
SD 790055	2016	Licence return	1480
SD 792039	2016	Licence return	1210
SD 792040	2016	Licence return	1190
SD 793040	2016	Licence return	1080
SD 793041	2016	Licence return	1010

Grid reference	Record date	Record type	Approximate distance from Order Limits (m)
SD 794041	2016	Licence return	930
SD 795042	2016	Licence return	780
SD 821070	2017	Licence return	210
SD 822070	2016	Licence return	120
SD 822086	2016	Licence return	660
SD 82138 07055	2017	EPSML application	200
SD 82820 05990	2015	EPSML application	Within Order Limits
SD 80464 04606	2020	EPSML application	400

3.2 Field survey

Habitat Suitability Index

3.2.1 Descriptions and photographs of each pond subject to HSI assessment are provided in Annex C. In summary:

- The tussocky grassland of Pike Fold Golf Course provided optimal conditions for resting and sheltering GCN. However, the regularly managed grassland would be sub-optimal for GCN due to the lack of cover and refugia.
- The ponds within an unmanaged area south of Sunnybank residential area were surrounded by tussocky and/ or marshy grassland with broadleaved woodland in proximity. These habitat types provide optimal conditions for commuting, sheltering and hibernating GCN.
- Ponds were identified in pasture fields containing cows and horses; these would also be sub-optimal for GCN due to the disturbance of livestock and the lack of cover and refugia for GCN. Areas of optimal terrestrial habitat such as woodland, hedgerows and scrub were identified in the vicinity of the survey area, although GCN will use all terrestrial habitats (including those that appear to be unsuitable) for dispersal across the environment.
- Fringe vegetation around many of the permanent, unmanaged ponds was dominated by rushes *Juncus* spp. and bulrush *Typha latifolia.*

3.2.2 The full HSI assessment results are presented in Annex C with pond locations and HSI results shown on Figure 8.8.2: GCN HSI Assessment Results in Annex E of this report. The results of the HSI assessments are summarised in Table 3.2.

Table 3.2 HSI assessment results

HSI score	Pond reference	Number of ponds
Poor (<0.50)	P8, P10, P11, P18, P19, P33a, P33b, P40, P51, P52, P66, P69, P74, P75b, P81	15
Below average (0.50 – 0.59)	P9, P27, P37, P46, P49, P71, P72, P73, P75a, P77	10
Average (0.60 – 0.69)	P4, P5, P16, P21, P26, P28, P31, P34, P44, P55, P68, P70	12
Good (0.70 -0.79)	P1, P2, P3, P6, P20, P24, P25, P29, P58, P62, P64, P67	12
Excellent (>0.80)	P12, P17, P22, P23, P38, P41, P48, P53, P59, P61, P63, P65	12
Total		**61**

3.2.3 Approximately two-thirds of the ponds assessed offered average, good, or excellent habitat suitability for GCN. Many of the ponds were in proximity to other ponds with good terrestrial habitat connectivity between them, primarily through tussocky grassland.

3.2.4 Those ponds assessed as having below average or poor habitat for GCN were classified as such due to one or more of the following:

- High frequency of drying out
- Presence of heavy shading
- Poor water quality
- Disturbance by fish and / or waterfowl

Presence / likely absence surveys

3.2.5 Forty-six ponds scored 0.50 or higher in HSI assessment and were subsequently selected for presence / likely absence surveys. A summary of the survey results for these ponds is presented in Table 3.3 with full results provided in Annex D. Survey results are also illustrated on Figure 8.8.3: GCN Presence / Likely Absence in Annex E of this report.

Table 3.3 Presence / likely absence survey results

Pond number*	Peak count GCN per visit (adults)						GCN eggs present?	eDNA result	Other species identified	Approximate distance from Order Limits (m)
	1	2	3	4	5	6				
P1	0	0	0	0	N/A	N/A	No	eDNA sampling not undertaken	Toad, numerous fish	35
P2	0	0	0	0	N/A	N/A	No	eDNA sampling not undertaken	Frog, numerous fish including roach	75
P3	0	0	0	0	N/A	N/A	No	eDNA sampling not undertaken	Smooth newt, water scorpion	70
P4	0	0	0	0	N/A	N/A	No	eDNA sampling not undertaken	Smooth newt (breeding), frog, unidentified 'small' newt	20
P5	0	0	5	0	3	0	No	eDNA sampling not undertaken	Smooth and palmate newt, frog	160
P6	0	0	0	0	0	1 (+1 juvenile)	No	eDNA sampling not undertaken	Smooth newt, frog, stickleback	210

Pond number*	Peak count GCN per visit (adults)						GCN eggs present?	eDNA result	Other species identified	Approximate distance from Order Limits (m)
	1	2	3	4	5	6				
P8	Scoped out from presence / likely absence survey due to HSI score of <0.50									90
P9	0	0	0	0	0	0	No	eDNA sampling not undertaken	Frog tadpoles, fish	5
P10	Scoped out from presence / likely absence survey due to HSI score of <0.50									45
P11	Scoped out from presence / likely absence survey due to a HSI score of <0.50									140
P12	0	1	5	3	2	7	Yes	eDNA sampling not undertaken	Smooth newt, frog and tadpoles, unidentified 'small' newt, water shrew, stickleback	20
P13	Not surveyed – no access									50
P14	Not surveyed – no access									145
P15	Not surveyed – no access									150
P16	0	0	0	0	No survey undertaken	No survey undertaken	No	eDNA sampling not undertaken	None	50
P17	0	0	0	0	No survey undertaken	No survey undertaken	No	eDNA sampling not undertaken	None	80

Pond number*	Peak count GCN per visit (adults)						GCN eggs present?	eDNA result	Other species identified	Approximate distance from Order Limits (m)
	1	2	3	4	5	6				
P18	Scoped out from presence / likely absence survey due to a HSI score of <0.50									150
P19	Scoped out from presence / likely absence survey due to a HSI score of <0.50									160
P20	0	0	Surveys stopped due to H&S concerns.				No	Negative	Smooth newt and small newt eggs	160
P21	0	0	0	0	0	No survey undertaken	No	eDNA sampling not undertaken	Smooth newt (including juvenile and eft), toad tadpoles	290
P22	0	0	0	0	0	No survey undertaken	No	eDNA sampling not undertaken	Smooth newt, unidentified ‘small’ newt, frog tadpoles	260
P23	0	0	0	0	0	No survey undertaken	No	eDNA sampling not undertaken	Smooth newt (including eft)	260
P24	0	0	0	0	0	No survey undertaken	No	eDNA sampling not undertaken	Fish, diving beetle	240
P25	0	0	0	0	0	No survey undertaken	No	eDNA sampling not undertaken	Toad tadpole, ‘small’ newt eft	240

Pond number*	Peak count GCN per visit (adults)						GCN eggs present?	eDNA result	Other species identified	Approximate distance from Order Limits (m)
	1	2	3	4	5	6				
P26	2	0	0	0	1	0	No	eDNA sampling not undertaken	None	80
P27	0	0	0	0	0	0	No	eDNA sampling not undertaken	Frog, smooth newt, palmate newt	130
P28	1	1	0	0	0	0	No	eDNA sampling not undertaken	Frog, smooth newt, unidentified 'small' newt	125
P29	1	0	0	1	0	No survey undertaken	No	eDNA sampling not undertaken	Smooth newt, frog	80
P31	0	0	0	0	No survey undertaken	No survey undertaken	No	eDNA sampling not undertaken	None	140
P33a	Scoped out from presence / likely absence survey due to a HSI score of <0.50									100
P33b	Scoped out from presence / likely absence survey due to a HSI score of <0.50									180
P34	Dry at time of survey assumed GCN likely absent for District Level Licensing purposes - Scoped out from presence / likely absence survey									Within Order Limits

Pond number*	Peak count GCN per visit (adults)						GCN eggs present?	eDNA result	Other species identified	Approximate distance from Order Limits (m)
	1	2	3	4	5	6				
P37	Dry at time of survey assumed GCN likely absent for district level licensing purposes - scoped out from presence / likely absence survey									Within Order Limits
P38	Dry at time of survey assumed GCN likely absent for district level licensing purposes - scoped out from presence / likely absence survey									Within Order Limits
P40	Scoped out from presence/absence survey due to a HSI score of <0.50									60
P41	0	0	0	0	No survey undertaken	No survey undertaken	No	eDNA sampling not undertaken	None	90
P44	0	0	Surveys stopped due to H&S concerns				No	Negative	Frog tadpoles	70
P46	0	0	Surveys stopped due to H&S concerns.				No	Negative	None	150
P48	Not surveyed – no access									110
P49	0	0	Surveys stopped due to H&S concerns.				No	Inconclusive	Tadpoles	110
P51	Scoped out from presence / likely absence survey due to a HSI score of <0.50									40
P52	Scoped out from presence / likely absence survey due to a HSI score of <0.50									90
P53	Dry - Scoped out from presence / likely absence survey									240
P55	0	0	0	0	No survey	No survey	No	eDNA sampling	Frog tadpole, toad tadpole, smooth newt	50

Pond number*	Peak count GCN per visit (adults)						GCN eggs present?	eDNA result	Other species identified	Approximate distance from Order Limits (m)
	1	2	3	4	5	6				
					undertaken	undertaken		not undertaken		
P58	0	0	1	0	0	1	No	eDNA sampling not undertaken	None	170
P59	0	9	3	0	3	0	No	eDNA sampling not undertaken	Smooth and palmate newt	230
P61	0	5	2	0	0	0	Yes	eDNA sampling not undertaken	Smooth newt, fish, tadpoles	360
P62	0	0	0	0	2	0	Yes	eDNA sampling not undertaken	Smooth (breeding) and unidentified 'small' newt	385
P63	0	1*	0	0	*Scoped out of further survey due to health & safety concerns. Incidental GCN identified.		No	eDNA sampling not undertaken	N/A	340
P64	0	0	1	1	4	0	Yes	eDNA sampling	Toad, frog, smooth newt, unidentified 'small' newt	170

Pond number*	Peak count GCN per visit (adults)						GCN eggs present?	eDNA result	Other species identified	Approximate distance from Order Limits (m)
	1	2	3	4	5	6				
								not undertaken		
P65	1	1	1	2	2	6	No	eDNA sampling not undertaken	Smooth newt, toad, frog, unidentified 'small' newt	280
P66	Scoped out from presence / likely absence survey due to a HSI score of <0.50									260
P67	0	0	0	0	No survey undertaken	No survey undertaken	No	eDNA sampling not undertaken	Palmate newt	225
P68	0	0	1	0	0	0	No	eDNA sampling not undertaken	Smooth newt (including eggs), frog, unidentified 'small' newt	220
P69	Scoped out from presence / likely absence survey due to a HSI score of <0.50									180
P70	0	0	0	0	0	0	No	eDNA sampling not undertaken	Toad, frog, fish	40
P71	0	Scoped out of further survey – pond dried up. Not suitable.					No	eDNA sampling not undertaken	None	Within Order Limits

Pond number*	Peak count GCN per visit (adults)						GCN eggs present?	eDNA result	Other species identified	Approximate distance from Order Limits (m)
	1	2	3	4	5	6				
P72	Dry - Scoped out from presence / likely absence survey									80
P73	Dry at time of survey assumed GCN likely absent for District Level Licensing purposes - Scoped out from presence / likely absence survey									Within Order Limits
P74	Dry at time of survey assumed GCN likely absent for District Level Licensing purposes - Scoped out from presence / likely absence survey									Within Order Limits
P75a	0	0	0	0	0	No survey undertaken	No	eDNA sampling not undertaken	Smooth newt (breeding), palmate newt, frog tadpoles	280
P75b	Scoped out from presence / likely absence survey due to a HSI score of <0.50									30
P77	Dry - Scoped out from presence / likely absence survey									160
P81	Scoped out from presence / likely absence survey due to a HSI score of <0.50									160
P83	Not surveyed – no access									240
P84	Not surveyed – no access									360
P85	Not surveyed – no access									444
P86	Not surveyed – no access									390
P87	Not surveyed – no access									694
P88	Not surveyed – no access									930
P89	Not surveyed – no access									1200

Pond number*	Peak count GCN per visit (adults)						GCN eggs present?	eDNA result	Other species identified	Approximate distance from Order Limits (m)
	1	2	3	4	5	6				
P90	Not surveyed – no access									310
P91	Not surveyed – no access									390
P92	Not surveyed – no access									415
P93	Not surveyed – no access									265
P94	Not surveyed – no access									480
P95	Not surveyed – no access									225
P96	Not surveyed – no access									320
P97	Not surveyed – no access									575
P98	Not surveyed – no access									600
P99	Not surveyed – no access									680
P100	Not surveyed – no access									814
P101	Not surveyed – no access									215
P102	Not surveyed – no access									260
P103	Not surveyed – no access									305
P104	Not surveyed – no access									325
P105	Not surveyed – no access									470
P106	Not surveyed – no access									160

Pond number*	Peak count GCN per visit (adults)						GCN eggs present?	eDNA result	Other species identified	Approximate distance from Order Limits (m)
	1	2	3	4	5	6				
P107	Dry - Scoped out from presence / likely absence survey									200
P108	Not surveyed – no access									450
P109	Not surveyed – no access									450
P110	Not surveyed – no access									440

* A number of features were identified as ponds via the desk study and online mapping resources. Some of these were subsequently ruled out of further survey during the completion of the HSI assessments as the pond didn't exist when the location was visited. As a result, pond numbering is not sequential.

3.2.6 Thirteen ponds were confirmed to support GCN as follows: P5, P6, P12, P26, P28, P29, P58, P59, P61, P62, P64, P65, P68. GCN were also identified in the terrestrial habitat adjacent to P63. Of the thirteen ponds with confirmed GCN presence, an estimate of population size class and an evaluation of likely meta-populations are described in more below.

Population size class assessment

3.2.7 Guidelines (English Nature, 2001) state that *'for sites where there is reasonable certainty that there is regular interchange of animals between ponds (typically, within 250m and with an absence of barriers to dispersal), counts can be summed across ponds'*. As a result, it is considered likely that within the ponds surveyed in the survey area there are two meta-populations.

3.2.8 There are two groups of waterbodies, one within Pike Fold Golf Course (P5, P6, P12, P58, P59, P61, P62, P64, P65 and P68), and another within Egypt Farm (P26, P28 and P29). Within these groups, ponds with GCN presence are within 250m of one another, with no significant barriers between them.

3.2.9 At Pike Fold Golf Course, P59 had a peak count of nine GCN on Visit 2. In addition, P12, P61, P62 and P64 were confirmed as breeding ponds through the presence of eggs. This would suggest a **medium population size class** (peak population count of 12 GCN on Visit 5 on 24 and 25 May 2021).

3.2.10 At Egypt Farm, P26 had a peak count of two GCN on Visit 1(19 April 2021). P28 and P29 had a peak count of one GCN. This would suggest a **small population size class** (peak population count of three GCN on Visit 1 on 19 April 2021).

3.2.11 Four additional species of amphibian were recorded in the survey area during the GCN presence / likely absence survey: smooth newt *Lissotriton vulgaris*; palmate newt *Lissotriton helveticus*; common frog *Rana temporaria* and common toad *Bufo bufo*.

3.2.12 Survey results are presented in full in Annex D of this report.

eDNA survey

3.2.13 eDNA samples were taken from P20, P44, P46 and P49. Negative results were returned for P20, P44 and P46. An inconclusive result was returned for P49. As P49 is situated within a cluster of ponds that all produced negative eDNA results (P20, P44, P46) it is assumed that GCN are also absent from this pond.

Incidental records

3.2.14 As reported in Appendix 8.10: Reptile Survey Report of the Environmental Statement Appendices (TR010064/APP/6.3), reptile refugia surveys took place from 1 June 2021 to 15 September 2021, during which GCN were encountered within the Order Limits. Two female adult GCN were recorded on 1 September 2021 and a further two female adults were recorded on 3 September 2021. In both instances, GCN were found to the north-east of M60 J18, at SD 82864 06080 and SD 82785 06130. These locations are approximately 230m from P29 which had confirmed presence of GCN. It is therefore likely that the GCN identified during reptile refugia surveys belong to the Egypt Farm meta-population identified during the presence / likely absence surveys.

4 Evaluation

4.1.1 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. In addition, GCN are a species of principal importance in England listed in accordance with Section 41 of the Natural Environment and Rural Communities Act 2006 and are Priority Species in the Greater Manchester LBAP (Greater Manchester Biodiversity Project, 2009). A large number of GCN populations occur in the county due to the high pond density and the north-west of England is a stronghold for this species in Britain (Greater Manchester Biodiversity Project, 2009).

4.1.2 GCN are considered common but declining in Greater Manchester. GCN are believed to breed in all districts of Greater Manchester. Particularly high concentrations of GCN are found in Wigan and the border between Salford and Bolton (Greater Manchester Biodiversity Project, 2009).

4.1.3 Biological records associated with Ponds 13-15 obtained from Greater Manchester Ecology Unit identified a GCN meta-population of unknown size at Unsworth Academy, though this could not be confirmed due to land access issues, as such this meta-population was assumed to be present. Field studies have identified the presence of a further two metapopulations within the survey area: one medium (breeding) population of GCN; and one small population.

4.1.4 It is therefore considered that GCN within the survey area are considered to be of **County Importance** for biodiversity.

Acronyms

Abbreviation	Term
BAP	Biodiversity Action Plan
Defra	Department for Environment, Food and Rural Affairs
DETR	Department of the Environment, Transport and the Regions
eDNA	Environmental DNA
EPSML	European protected species mitigation licence
GCN	Great crested newt
GMEU	Greater Manchester Ecology Unit
HSI	Habitat Suitability Index
LWS	Local Wildlife Site
PSCA	Population Size Class Assessment
SBI	Site of Biological Importance

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Annex A Additional information / legislation

A.1.1 Great crested newt (GCN) *Triturus cristatus* is the largest of the three British native newt species, reaching a maximum length of 15cm for males and 17cm for females. GCN spend much of the year on land where they need a variety of different conditions to provide food, shelter and places to spend the winter. Like all amphibians, GCN rely on water for breeding and for the development of their larvae and so return to ponds in the spring to breed. Eggs are laid singly on underwater leaves near the water margin between late February and early August, but usually between April and June, with each female laying several hundred eggs. The larvae (also known as 'efts') normally take three months to develop into juvenile newts before leaving the water, but some may over-winter as larvae. Juvenile newts disperse up to 0.6 miles (1km), only returning to ponds to breed when sexually mature after one to three years (Gent and Gibson, 1998). Adult newts leave the ponds from July onwards, generally staying within 200 – 500m of the ponds. From October or November, they hibernate in damp, frost-free environments, sometimes underground. Adult newts return to their breeding ponds in February or March dependent on temperature. Most adult newts return to the same breeding pond although occasionally adults will disperse to find new breeding sites.

A.1.2 GCN occupy a range of habitats with their main ones comprising farm ponds, mineral workings, temporary pools, ditches, scrub, hedgerows, arable field and pasture, marsh, gardens and sand dunes. Their populations often rely on the presence of several ponds close together linked by suitable terrestrial habitat (English Nature, 2001). On land, GCN are found in cool, moist conditions under debris or in dense vegetation. They feed on both land and in water, eating small aquatic animals such as water fleas and insect larvae and terrestrial invertebrates, especially worms. GCN often exist as meta-populations i.e. the GCN in one area form a series of sub-populations that are linked as newts move between water bodies (English Nature, 2001). The distribution of ponds and the importance of meta-populations are therefore often key to the survival of the species within geographical areas. Loss of habitat, such as through destruction of ponds for example, can result in meta-populations becoming isolated and more vulnerable to localised extinction.

Nature conservation status

A.1.3 GCN have suffered a significant decline in recent years largely due to habitat loss (English Nature, 2001). This decline can be attributed to loss of suitable breeding ponds caused by water table reduction, in-filling for development, changing farming practices, waste disposal, pond neglect or fish stocking, and the degradation, loss and fragmentation of terrestrial habitats. Despite the decline of this species in recent years, GCN are still quite widespread in Great

Britain and are numerous locally in parts of lowland England. Studies in the 1980s indicated a national rate of colony loss of approximately 2% over five years. The British population remains amongst the largest in Europe, and Britain therefore has an international responsibility for the species (DETR, 1995).

Legislation and policy framework

Conservation of Habitats and Species Regulations 2017 (as amended) and Wildlife and Countryside Act 1981 (as amended)

A.1.4 GCN are fully protected under the Wildlife and Countryside Act 1981 (WCA) and The Conservation of Habitats and Species Regulations 2017 (as amended). The 2017 regulations transpose Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into UK law. The Regulations provide for the designation and protection of 'European Sites', the protection of 'European Protected Species' (EPS), and the adaptation of planning and other controls for the protection of European Sites. EPS are listed on Schedule 2 of the Conservation Regulations.

A.1.5 Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to:

- Intentionally kill, injure or take certain animals listed in Schedule 5 (including GCN)
- Intentionally or recklessly damage or destroy any structure or place which any wild animal specified in Schedule 5 uses for shelter or protection
- Intentionally or recklessly disturb any such animal while it is occupying a structure or place which it uses for shelter or protection
- intentionally or recklessly obstruct access to any structure or place which any such animal uses for shelter or protection

A.1.6 In addition, under this legislation there are offences relating to sale, possession and control of wild animals listed in Schedule 5.

A.1.7 Under the Conservation of Habitats and Species Regulations 2017 (as amended) it is an offence to:

- Deliberately capture, injure or kill any wild animal listed as an EPS
- Deliberately disturb wild animals of any such species in such a way as to be likely:
  - To impair their ability:
    - To survive, to breed or reproduce, or to rear or nurture their young, or;
    - In the case of animals of a hibernating or migratory species (including GCN), to hibernate or migrate, or;

- To significantly affect the local distribution or abundance of the species to which they belong.

- Deliberately take or destroy the eggs of such an animal
- Damage or destroy a breeding site or resting place of such an animal

A.1.8 In addition, under this legislation there are offences relating to possession, control sale and exchange of an EPS.

A.1.9 The legislation applies to all life stages of a GCN, including eggs, juveniles and adults. Impacts upon each individual GCN as the result of an illegal act constitute a separate offence under the above legislation.

Natural Environment and Rural Communities (NERC) Act 2006

A.1.10 Section 40 of the Act concerns biodiversity and states: “every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.”

A.1.11 Section 41 of the NERC Act sates that: “the Secretary of State must, as respects England, publish a list of the living organisms and types of habitat which in the Secretary of State’s opinion are of principal importance for the purpose of conserving biodiversity”. Common toad, Natterjack toad, pool frog and GCN have been listed as ‘Species of Principal Importance’ under the NERC Act.

A.1.12 The Act stresses “it is important that public authorities seek not only to protect important habitats and species, but actively seek opportunities to enhance biodiversity through development proposals, where appropriate. Incorporating enhancement opportunities into projects may help applicants to achieve planning permission.”

Local Biodiversity Action Plan (Manchester LBAP)

A.1.13 GCN are a UK BAP Priority Species. The LBAP for Manchester contains nine habitat and nine species action plans (Greater Manchester Biodiversity Project, 2009). GCN have a plan relating to the species that includes objectives and targets for the conservation of the species across the region.

National status

A.1.14 The GCN is widespread in south-east and north-west England but rarer in the south-west, Scotland and Wales. It is absent from Ireland.

A.1.15 Numbers are believed to have declined since the 1940s. Studies in the 1980s estimated the current national rate of colony loss at 2% every five years. Approximately 3.000 colonies have been identified but it is estimated that there are still about 18.000 colonies in the whole of Britain.

Regional status

A.1.16 The north-west of England is a stronghold for this species in Britain as a whole. An audit of 487 ponds carried out in the north-west in 1995 / 6 found the species in 26% of ponds.

A.1.17 There are healthy populations in the Greater Manchester area, the outskirts of Liverpool and the coastal plain of Lancashire, including the Fylde, though there has been a notable loss of sites adjacent to urban areas. There are also numerous breeding sites in Cheshire and scattered populations in Cumbria.

A.1.18 The great crested newt is promoted by English Nature as a 'Regional Biodiversity Indicator' for sustainable development in the north-west.

Local status

A.1.19 GCN are considered common but declining in greater Manchester. GCN are believed to breed in all districts of Greater Manchester. Particularly high concentrations of GCN are found in Wigan and the border between Salford and Bolton (Greater Manchester Biodiversity Project, 2009).

Annex B Pond descriptions and photographs

Table B.1 Pond descriptions and photographs

Pond ref	Description	Photograph
P1	Pond associated with Pike Fold Golf Course. One mature ash *Fraxinus excelsior* tree was identified on the north aspect of the pond, scattered ash, alder *Alnus glutinosa*, and willow *Salix* sp. scrub was also present on the banks. The water was murky and turbid with no submerged aquatic plant species identified. The pond perimeter was fringed with compact rush *Juncus conglomeratus* and the terrestrial habitat in the immediate area appeared to be regularly cut amenity grassland. A vantage survey from the pond bankside appeared to show the water depth at approximately 1.5m deep.	

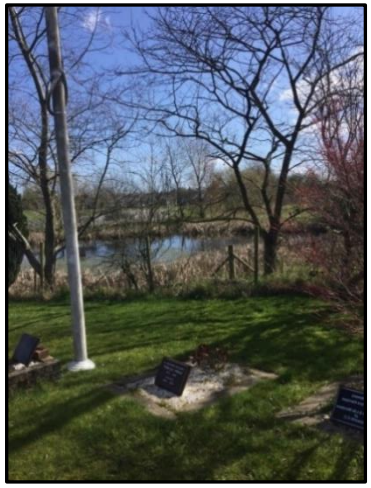
Pond ref	Description	Photograph
P2	Pond associated with Pike Fold Golf Course. Willow and alder scrub was identified on the pond banks. The water appeared murky and turbid. The survey identified compact rush and rosebay willowherb *Chamaenerion angustifolium* fringing the pond perimeter. The habitat within the immediate area was identified as regularly cut amenity grassland. A vantage survey from the pond bankside appeared to show the water depth at approximately 1.5m deep.	
P3	Pond associated with Pike Fold Golf Course. Alder scrub was identified on the bankside of the pond. The water appeared murky and turbid. The pond banksides were fringed with compact rush and soft rush *Juncus effusus* with occasional bulrush *Typha latifolia*. A vantage survey from the pond bankside appeared to show the water depth at approximately 1.5m deep.	

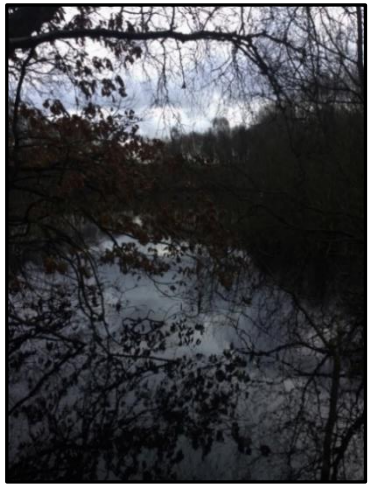
Pond ref	Description	Photograph
P4	Pond associated with Pike Fold Golf Course. The survey identified young birch *Betula* sp. surrounding the pond. Marginal species included occasional bulrush and aquatic species included the non-native least duckweed *Lemna sp.*, with water starwort *Callitriche stagnalis* also present. The terrestrial habitat surrounding the pond included the birch woodland and regularly cut amenity grassland. A survey from the bankside appeared to show the water depth approximately 1.5m deep.	
P5	Pond associated with Pike Fold Golf Course. Pond was identified within the rough of the golf course with tussocky grassland located within the immediate surrounding habitat. The pond was adjacent to a stream, but no hydrological connection was identified. A vantage point survey from the pond banks showed a shallow depth <0.5m. Approximately 90% of the pond was choked with bulrush. Willow scrub surrounded the pond edge.	

Pond ref	Description	Photograph
P6	Pond associated with Pike Fold Golf Course. Pond was identified within the rough of the golf course with tussocky grassland located within the immediate surrounding habitat. Approximately 90% of the pond was chocked with bulrush. Pond was hydrological connected to an adjacent stream and would drain into the stream during heavy rainfall. A vantage point survey from the pond banks showed a shallow depth <0.5m.	
P8	Pond associated with Pike Fold Golf Course. Marginal vegetation included soft rush, common reed *Phragmites australis* and bulrush. A survey from the pond bankside appeared to show the water depth >1.5m with water starwort also present. The terrestrial habitat within the immediate area comprised regularly cut amenity grassland.	

Pond ref	Description	Photograph
P9	Pond associated with Pike Fold Golf Course. Species located on the banks included scattered willow and alder and soft rush. Marginal species included occasional bulrush. This pond was hydrological connected to a wet ditch on the field boundary. A vantage survey from the pond bankside appeared to show the water depth >1.5m.	
P10	Pond associated with Pike Fold Golf Course. Bankside vegetation identified during the survey included soft rush, rosebay willowherb and scattered willow and alder. The terrestrial habitat surrounding the pond included regularly cut amenity grassland and tussocky rough grassland. A vantage survey from the pond bankside appeared to show the water depth >1.5m.	

Pond ref	Description	Photograph
P11	Pond associated with Pike Fold Golf Course. Willow and alder scrub was identified on the pond banks along with soft rush and common nettles *Urtica dioica*. A vantage survey from the pond bankside appeared to show the water depth >1.5m.	
P12	Pond associated with Pike Fold Golf Course. Alder and willow trees line the northern edge of the pond banks. Marginal and aquatic species comprise bulrush and water starwort. A vantage survey from the pond bankside appeared to show the water depth >1.5m.	
P13	Not surveyed (inaccessible)	N/A
P14	Not surveyed (inaccessible)	N/A

Pond ref	Description	Photograph
P15	Not surveyed (inaccessible)	N/A
P16	Associated with an unmanaged area around Unsworth Cricket and Tennis Club. It is suspected that this pond had been created to migrate water away from the playing fields in the area. The banks of the pond were shaded by willow scrub or comprised tussocky grassland. Much of the pond comprised bulrush (~90%). An area of rubble was identified next to the pond, potentially used as a refugia area for amphibians. The pond is located adjacent to Pond 17.	
P17	Associated with an unmanaged area around Unsworth Cricket and Tennis Club. It is suspected that this pond had been created to migrate water away from the playing fields in the area. The pond banks were shaded by willow scrub. Bulrush was frequently present and duckweed was also identified.	

Pond ref	Description	Photograph
P18	Large fishing pond located within an agricultural field. Mature oak *Quercus* sp. trees along east side of perimeter. Marginal species included bulrush and soft rush. The terrestrial habitat within the immediate area included arable field with broadleaved woodland located in the west. The pond banks were approximately 60-90 degrees. A vantage survey from the pond bankside appeared to show the water depth >2m with turbid water.	
P19	Heaton Park hidden lake. This lake was heavily shaded by semi-natural broadleaved woodland comprising silver birch *Betula pendula* and willow. Marginal species included common reed and rush *Juncus* sp..	

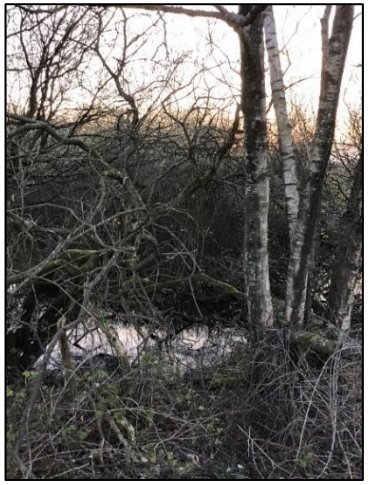
Pond ref	Description	Photograph
P20	Pond associated with Heaton Park. This pond was located within a naturalised area of Heaton Park and was noted to have steep banks (30 º - 90º). Dense willow scrub surrounded the banks. Marginal species included bulrush and water forget-me-not *Myosotis scorpioides*. A vantage survey from the pond bankside appeared to show the water depth at approximately 1m.	
P21	Pond south of Sunnybank residential area. A series of ponds that may have been created for mitigation purposes. This pond was located within a rough grassland field surrounded by marshy grassland. Aquatic and marginal species included water plantain *Alisma plantago-aquatica* and floating sweet grass *Glyceria fluitans*. A vantage survey from the pond bankside appeared to show the water depth at approximately 0.5m with clear water with some algae present.	

Pond ref	Description	Photograph
P22	Pond south of Sunnybank residential area. A series of ponds that may have been created for mitigation purposes. This pond was located within a rough grassland field surrounded by marshy grassland. Soft rush dominated the pond banks with bulrush present within and the margins of the pond. A vantage survey from the pond bankside appeared to show the water depth at approximately 0.3m with clear water present.	
P23	Pond south of Sunnybank residential area. A series of ponds that may have been created for mitigation purposes. Soft rush dominated the perimeter of the pond with bulrush also present. A vantage survey from the pond bankside appeared to show the water depth at approximately 0.3m with clear water present. Marsh marigold *Caltha palustris* was identified on the margins.	

Pond ref	Description	Photograph
P24	Pond south of Sunnybank residential area. A series of ponds that may have been created for mitigation purposes. Soft rush dominated the pond perimeter and bulrush dominated the margins and centre of this pond. A vantage survey from the pond bankside appeared to show the water depth at approximately 0.5m.	
P25	Pond south of Sunnybank residential area. A series of ponds that may have been created for mitigation purposes. Soft rush dominated this pond. A vantage survey from the pond bankside appeared to show the water depth at approximately 0.3m with clear water.	

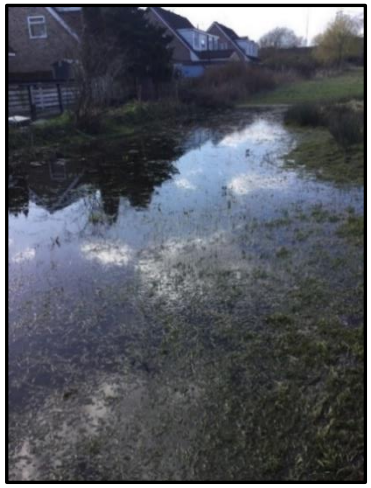
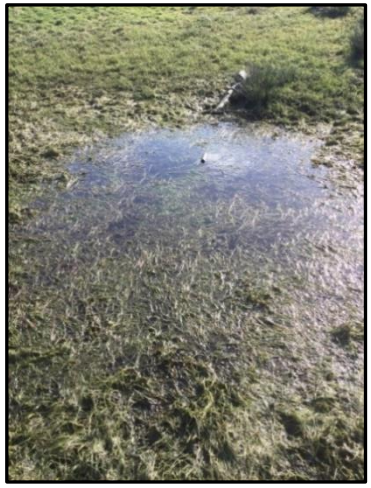
Pond ref	Description	Photograph
P26	A natural pond located within a garden. This pond was surrounded by non-native shrubs alongside holly *Ilex aquifolium,* sycamore *Acer pseudoplatanus*, and mature willow trees. The pond did not appear to be lined and had steep banks and a stone wall to the south. Bulrush was occasionally present on the pond. A vantage survey from the pond bankside appeared to show the water depth at >1m with turbid water.	

Pond ref	Description	Photograph
P27	Pond located within a horse pasture field surrounded by mature willow and hawthorn *Crataegus monogyna* scrub. Pond also surrounded by a live electric fence. No macrophytes identified at the time of the survey. Pond situated adjacent to Pond 28.	 

Pond ref	Description	Photograph
P28	Pond located within a horse pasture field surrounded by mature willow and hawthorn scrub. Pond also surrounded by a live electric fence. No macrophytes identified at the time of the survey. Pond situated adjacent to Pond 27.	 

Pond ref	Description	Photograph
P29	Pond located within a horse pasture field surrounded by tussocky grassland. The landowner informed the surveyors that the pond was created >5 years ago to provide GCN mitigation. Bulrush and rush species present on pond banks and algae was frequent on the water. One young willow tree identified in the centre of the pond.	
P31	A field depression located in a horse pasture field. No aquatic or marginal species identified during the survey. A vantage survey from the pond bankside appeared to show the water depth at <0.5m and was assessed as likely to dry out during the summer period.	

Pond ref	Description	Photograph
P33a	A residential ornamental pond located in the garden surrounded by concrete flags and a lawn. This pond was covered with net and had a dense fish population.	
P33b	A lake in residential area. Willow scrub, bulrush and rushes bordered the edge of the pond. A large population of fish and wildfowl were both identified during the survey.	

Pond ref	Description	Photograph
P34	A wet field depression in horse pasture. Aquatic species included frequent floating sweet-grass, occasional water starwort and algae blooms. A vantage survey from the pond bankside appeared to show the water depth at 0.3m likely to dry out seasonally. Pond also adjacent to residential gardens.	
P37	A wet field depression in horse pasture. Floating sweet-grass dominated. A vantage survey from the pond bankside appeared to show the water depth at <0.1m likely to dry out seasonally.	

Pond ref	Description	Photograph
P38	A flooded area of water within marshy grassland. Pond dominated by soft rush with floating sweet grass also frequent. The surrounding land comprised marshy grassland and a motorway. A vantage survey from the pond bankside appeared to show the water depth at <0.2m.	
P40	A field depression within a pasture field. No defined banks but scattered rushes present. The surrounding field had been grazed by horses. A vantage survey from the pond bankside appeared to show the water depth at <0.1m.	

Pond ref	Description	Photograph
P41	Pond with a pasture field. No bank formation but scattered hawthorn and willow present on the pond edges. Aquatic vegetation included dominant duckweed with floating sweet-grass. The surrounding habitat included modified grassland and tall ruderal species such as rosebay willowherb. A vantage survey from the pond bankside appeared to show the water depth at <0.2m.	
P44	Depression in pasture field with no defined banks. The surrounding habitat included modified grassland and semi natural broadleaved woodland. Aquatic species included occasional floating sweet-grass. A vantage survey from the pond bankside appeared to show the water depth at <0.5m.	

Pond ref	Description	Photograph
P46	Depression in pasture field with no defined banks. Macrophytes included water starwort. The surrounding habitat comprised heavily grazed modified grassland and broadleaved woodland. A vantage survey from the pond bankside appeared to show the water depth at 0.2m.	
P48	Pond artificially created in an allotment for drainage purposes. A small drainage ditch joined up to the pond. Macrophytes included frequent water starwort and bulrush. The pond banks were dominated by bramble scrub, rush species and the non-native invasive species, Himalayan balsam. Algae blooms present in the pond, depth unknown but likely > 0.5m.	

Pond ref	Description	Photograph
P49	Depression in a pasture field with no defined banks. The surrounding habitat included grazed modified grassland and broadleaved woodland. Aquatic species included abundant floating sweet-grass. A vantage survey from the pond bankside appeared to show the water depth at 0.5m.	
P51	Depression in a horse pasture field with no defined banks. The surrounding habitat included grazed modified grassland and a residential area. No macrophytes were identified during the survey. A vantage survey from the pond bankside appeared to show the water depth at <0.1m.	

Pond ref	Description	Photograph
P52	Depression in a horse pasture field with no defined banks. The surrounding habitat included grazed modified grassland and a residential area. No macrophytes were identified during the survey. A vantage survey from the pond bankside appeared to show the water depth at <0.1m.	
P53	Pond located in waterlogged pasture field. The pond margins appeared to be dominated by rush species. Aquatic species included floating sweet grass and algae. A vantage survey from the pond bankside appeared to show the water depth at <0.1m.	

Pond ref	Description	Photograph
P55	A depression in horse pasture field. No banks or aquatic or marginal species present. A vantage survey from the pond bankside appeared to show turbid water at a depth of 1.5m.	
P58	Pond associated with Pike Fold Golf Course. This pond appeared to have a hydrological connection to a watercourse but the connection was dry at the time of the survey. Pond banks included scattered scrub and soft rush with the wider area comprising tussocky grassland.	

Pond ref	Description	Photograph
P59	Pond associated with Pike Fold Golf Course. This pond was completely inundated with bulrush with additional willow scrub located on the south side. Compact rush was also identified on the banks. The surrounding area included regularly mown grassland.	
P61	Pond associated with Pike Fold Golf Course. Scattered willow scrub and compact rush were identified on the pond banks. Marginal species included dominant bulrush with floating sweet-grass and duckweed also present. The surrounding area comprised well-maintained and regularly mown grassland. A vantage survey from the pond bankside appeared to show turbid water at a depth >0.5m.	

Pond ref	Description	Photograph
P62	Pond associated with Pike Fold Golf Course. Marginal species included common reed and soft rush. Scattered willow was present on the banks. The surrounding habitat included regularly mown grassland with patches of marshy grassland. The west end of the pond included semi-natural woodland. A vantage survey from the pond bankside appeared to show water at a depth >1m.	
P63	Pond associated with Pike Fold Golf Course. Pond located in the rough, tussocky grassland with scattered hawthorn, willow and rush species surrounding the pond edge. Bulrush dominated the pond.	

Pond ref	Description	Photograph
P64	Pond associated with Pike Fold Golf Course. Macrophytes included common reed and bulrush species with marginal species including compact and soft rush. The surrounding habitat included well managed, regularly mown grassland as well as rough tussocky grassland. Pond was hydrologically linked to a drainage ditch that was dry at the time of the field survey. A vantage survey from the pond bankside appeared to show water at a depth >1m.	
P65	Pond associated with Pike Fold Golf Course. Pond surrounded by marshy grassland within the rough of the golf course. Marshy grassland dominated the banks and also appeared in the centre of the pond. Marginal species included occasional bulrush. A vantage survey from the pond bankside appeared to show water at a depth 0.5m.	

Pond ref	Description	Photograph
P66	Pond associated with Pike Fold Golf Course. An artificially created pond with an exposed lining. No aquatic or marginal vegetation was identified during the survey. The surrounding area comprised tussocky grassland.	
P67	Pond associated with Pike Fold Golf Course. Habitat surrounding the pond included marshy grassland and dense willow scrub. A vantage survey from the pond bankside appeared to show water at < 0.1m deep, despite a sign indicating that deep water was present.	

Pond ref	Description	Photograph
P68	Pond associated with Pike Fold Golf Course. The surrounding habitat included regularly mown grassland. No aquatic or marginal species were identified at the time of the survey but one mature willow was located on the south side of the pond. Three drainage pipes from the golf course field fed into this pond. A vantage survey from the pond bankside appeared to show water at 0.5m deep.	
P69	A wet depression associated with Pike Fold Golf Course. Bulrush was frequent across the pond with frequent rush species surrounding the pond. The wider area included grassland that was regularly cut. A vantage survey from the pond bankside appeared to show water at <0.1m deep.	

Pond ref	Description	Photograph
P70	Pond associated with Pike Fold Golf Course. Marginal species included abundant bulrush and soft rush. The southern banks included willow and alder scrub habitat. The aquatic species water starwort was identified during the survey. A wooden bridge was located across the pond. A vantage survey from the pond bankside appeared to show a very varied water depth ranging from <0.1m deep but up to 0.5m at one point.	
P71	A wet depression in a pasture field. Aquatic species identified included algae and floating sweet grass. A vantage survey from the bankside appeared to show water at <0.2m deep.	

Pond ref	Description	Photograph
P72	A wet depression in a pasture field. No macrophytes were identified at the time of the survey. A vantage survey from the bankside appeared to show water at <0.2m deep.	
P73	A wet depression in a pasture field. Aquatic species identified included algae, water starwort, water plantain and floating sweet grass. The surrounding habitat comprised marshy grassland dominated by rushes. A vantage survey from the bankside appeared to show water at <0.2m deep therefore likely to dry out seasonally.	

Pond ref	Description	Photograph
P74	A wet depression in a pasture field. Aquatic species identified included algae and floating sweet grass. A vantage survey from the bankside appeared to show water at <0.5m deep likely to dry out seasonally.	
P75a	Pond south of Sunnybank residential area. A series of ponds that may have been created for mitigation purposes. This pond was located within a rough grassland field surrounded by marshy grassland. Aquatic and marginal species included bulrush and floating sweet-grass. A vantage survey from the pond bankside appeared to show the water depth at approximately 0.5m.	

Pond ref	Description	Photograph
P75b	Pond within council owned broadleaved woodland, located on the edge of a public footpath. Pond had no defined banks and abundant leaf litter present. No macrophytes were identified at the time of the survey. A vantage survey from the bankside appeared to show water at <0.2m deep.	
P77	Pond within council owned broadleaved woodland, located on the edge of a public footpath. The habitat surrounding the pond was being managed by volunteers at the time of the survey. Marginal and aquatic species included yellow flag iris *Iris pseudacorus* and water starwort. The gradient of the banks were shallow, approximately 30 degrees and comprised broadleaved woodland bramble scrub. A vantage survey from the bankside appeared to show water at 0.3m deep.	
P81	Pond could only be viewed from afar due to dense scrub hindering access to the pond margins and being fenced off.	No photograph taken

Annex C HSI assessment results

Legend

HSI scores: <0.50 = Poor; 0.50 – 0.59 = Below average; 0.60 – 0.69 = Average; 0.70 – 0.79 = Good; >0.80 = Excellent

SI1 Geographic location; SI2 Pond area; SI3 Pond drying; SI4 Water Quality; SI5 Shade; SI6 Presence of waterfowl; SI7 Presence of fish; SI8 Pond density in 1km area; SI9 Terrestrial habitat quality; SI10 Macrophyte cover in pond.

Table C.1 Habitat Suitability Index assessment results

Pond ref	SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	SI9	SI10	Result
P1	1.00	0.895	0.9	0.33	1	0.67	0.67	1	0.67	0.35	0.70
P2	1.00	0.8	0.9	0.33	1	0.67	0.67	1	0.67	0.4	0.70
P3	1.00	0.91	0.9	0.33	1	0.67	0.67	1	0.67	0.4	0.71
P4	1.00	0.985	0.9	0.33	0.4	0.67	0.67	1	1	0.4	0.68
P5	1.00	0.55	0.5	0.33	0.4	0.67	1	1	1	1	0.69
P6	1.00	0.6	0.5	0.33	1	1	1	1	1	0.9	0.79
P7	Not present/no pond feature at location.										
P8	1.00	0.865	0.9	0.67	1	0.01	0.67	1	0.67	0.4	0.49
P9	1.00	0.895	0.9	0.67	1	0.67	0.01	1	0.67	0.45	0.50
P10	1.00	0.8	0.9	0.67	1	0.01	0.67	1	0.33	0.4	0.46
P11	1.00	0.8	0.9	0.67	1	0.67	0.01	1	0.33	0.6	0.48
P12	1.00	0.8	0.9	0.67	1	0.67	0.67	1	0.67	1	0.82
P13	Access not granted										

Pond ref	SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	SI9	SI10	Result
P14	Access not granted										
P15	Access not granted										
P16	1.00	0.6	0.1	0.67	1	1	1	1	0.67	0.9	0.69
P17	1.00	0.97	0.9	0.67	1	1	0.67	1	0.67	0.5	0.82
P18	1.00	0.8	0.9	0.67	1	0.01	0.01	0.84	1	0.45	0.34
P19	1.00	0.8	0.9	0.67	0.2	0.01	0.33	0.95	1	0.3	0.40
P20	1.00	0.4	0.9	0.67	0.7	1	0.67	1	1	0.4	0.73
P21	1.00	0.1	0.5	0.67	1	1	1	1	1	0.3	0.63
P22	1.00	0.97	1	0.67	1	1	1	1	1	0.7	0.92
P23	1.00	0.5	1	0.67	1	1	1	1	1	0.7	0.86
P24	1.00	1.00	0.1	0.67	1	1	1	1	1	0.8	0.75
P25	1.00	1.00	0.1	0.67	1	1	1	1	1	0.8	0.75
P26	1.00	0.8	0.9	0.67	0.2	1	0.67	1	1	0.4	0.69
P27	1.00	0.6	0.9	0.33	0.2	1	0.67	1	0.67	0.3	0.59
P28	1.00	0.88	0.9	0.33	0.2	1	0.67	1	0.67	0.3	0.61
P29	1.00	0.4	0.5	0.67	1	1	1	1	0.67	0.45	0.73
P30	Not present/no pond feature at location.										
P31	1.00	0.88	1	0.33	1	0.67	0.67	0.84	0.33	0.3	0.64

Pond ref	SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	SI9	SI10	Result
P32	Not present/no pond feature at location.										
P33a	1.00	0.05	0.9	0.67	1	1	0.01	1	0.33	0.3	0.35
P33b	1.00	0.8	0.9	0.67	1s	0.01	0.01	0.84	1	0.35	0.33
P34	1.00	0.25	0.5	0.67	1	1	1	1	0.67	0.4	0.68
P35	Not present/no pond feature at location.										
P36	Not present/no pond feature at location.										
P37	1.00	0.05	0.1	0.67	1	1	1	1	0.67	0.9	0.54
P38	1.00	0.985	1	0.67	1	1	1	1	1	0.5	0.90
P39	Not present/no pond feature at location.										
P40	1.00	0.05	0.1	0.01	1	1	1	1	0.33	0.3	0.29
P41	1.00	0.7	1	0.67	1	1	1	1	0.67	0.35	0.80
P42	Not present/no pond feature at location.										
P43	Not present/no pond feature at location.										
P44	1.00	0.9	0.1	0.33	1	1	1	0.95	1	0.35	0.63
P45	Not present/no pond feature at location.										
P46	1.00	0.2	0.1	0.33	1	1	1	0.75	0.67	0.45	0.52
P47	Not present/no pond feature at location.										
P48	1.00	0.65	1	0.67	1	1	1	0.84	1	0.7	0.87

Pond ref	SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	SI9	SI10	Result
P49	1.00	0.1	0.1	0.33	1	1	1	1	1	0.7	0.54
P50	Not present/no pond feature at location.										
P51	1.00	0.1	0.1	0.33	1	1	1	1	0.33	0.3	0.45
P52	1.00	0.05	0.1	0.33	1	1	1	1	0.33	0.3	0.42
P53	1.00	0.8	1	0.67	1	0.67	1	1	1	0.4	0.82
P54	Not present/no pond feature at location.										
P55	1.00	0.94	0.5	0.33	1	0.67	0.67	0.89	0.33	0.3	0.60
P56	Not present/no pond feature at location.										
P57	Not present/no pond feature at location.										
P58	1.00	0.7	0.9	0.33	1	0.67	0.67	1	1	0.4	0.72
P59	1.00	0.75	1	0.33	1	1	1	1	0.67	0.85	0.82
P60	Not present/no pond feature at location.										
P61	1.00	0.97	0.9	0.67	1	0.67	0.67	1	1	0.8	0.86
P62	1.00	0.3	0.9	0.33	1	0.67	1	1	0.67	0.7	0.70
P63	1.00	1.00	1	0.67	1	1	1	1	1	0.8	0.94
P64	1.00	0.925	0.9	0.67	1	0.67	0.67	1	1	0.3	0.77
P65	1.00	0.6	1	0.67	1	1	1	1	1	0.3	0.81
P66	1.00	0.1	0.1	0.01	1	0.67	1	1	0.67	0.3	0.33

Pond ref	SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	SI9	SI10	Result
P67	1.00	0.85	1	0.67	0.2	1	1	1	1	0.3	0.71
P68	1.00	0.25	1	0.33	1	1	1	1	0.33	0.3	0.62
P69	1.00	0.05	0.1	0.33	1	1	1	1	0.33	0.3	0.42
P70	1.00	0.8	0.1	0.67	1	1	1	1	0.67	0.6	0.68
P71	1.00	0.1	0.1	0.67	1	1	1	1	0.67	0.35	0.52
P72	1.00	0.7	0.1	0.33	1	1	1	0.85	0.33	0.3	0.54
P73	1.00	0.05	0.1	0.67	1	1	1	1	1	0.6	0.54
P74	1.00	0.1	0.1	0.67	1	1	1	1	0.33	0.35	0.49
P75a	1.00	0.05	0.5	0.67	1	1	1	1	1	0.3	0.59
P75b	1.00	0.05	0.1	0.67	0.2	1	1	1	1	0.3	0.43
P76	Not present/no pond feature at location.										
P77	1.00	0.2	0.5	0.67	0.2	1	1	1	1	0.45	0.60
P78	Not present/no pond feature at location.										
P79	Not present/no pond feature at location.										
P80	Not present/no pond feature at location.										
P81	1.00	0.8	0.9	0.33	0.2	0.67	0.01	0.84	0.67	0.30	0.37
P82	Not present/no pond feature at location.										
P83	Not surveyed – outside of survey area at time of HSI survey										

Pond ref	SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	SI9	SI10	Result
P84	Not surveyed – outside of survey area at time of HSI survey										
P85	Not surveyed – outside of survey area at time of HSI survey										
P86	Not surveyed – outside of survey area at time of HSI survey										
P87	Not surveyed – outside of survey area at time of HSI survey										
P88	Not surveyed – outside of survey area at time of HSI survey										
P89	Not surveyed – outside of survey area at time of HSI survey										
P90	Not surveyed – outside of survey area at time of HSI survey										
P91	Not surveyed – outside of survey area at time of HSI survey										
P92	Not surveyed – outside of survey area at time of HSI survey										
P93	Not surveyed – outside of survey area at time of HSI survey										
P94	Not surveyed – outside of survey area at time of HSI survey										
P95	Not surveyed – outside of survey area at time of HSI survey										
P96	Not surveyed – outside of survey area at time of HSI survey										
P97	Not surveyed – outside of survey area at time of HSI survey										
P98	Not surveyed – outside of survey area at time of HSI survey										
P99	Not surveyed – outside of survey area at time of HSI survey										
P100	Not surveyed – outside of survey area at time of HSI survey										
P101	Not surveyed – outside of survey area at time of HSI survey										

Pond ref	SI1	SI2	SI3	SI4	SI5	SI6	SI7	SI8	SI9	SI10	Result
P102	Not surveyed – outside of survey area at time of HSI survey										
P103	Not surveyed – outside of survey area at time of HSI survey										
P104	Not surveyed – outside of survey area at time of HSI survey										
P105	Not surveyed – outside of survey area at time of HSI survey										
P106	Not surveyed – outside of survey area at time of HSI survey										
P107	Pond Dry										
P108	Not surveyed – outside of survey area at time of HSI survey										
P109	Not surveyed – outside of survey area at time of HSI survey										
P110	Not surveyed – outside of survey area at time of HSI survey										

Annex D GCN survey results

Table D.1 2021 GCN Survey Results Visit One

Pond	Survey Date	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad max. count	Common frog max. count	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg search	Net	Terrestrial search												
P1	20/04/21	0	0	0	-	-	0	0	1	0	Fish	4	1	5	5	0	Dry	None
P2	20/04/21	0	0	0	-	-	0	0	0	0	0	4	4	5	5	0	Dry	Access available to approx. 80% of perimeter due to dense vegetation
P3	20/04/21	0	0	0	-	-	0	0	0	0	0	4	1	5	5	0	Dry	None
P4	20/04/21	0	0	0	-	-	4	0	0	2	Stickleback	1	4	5	5	0	Dry	Duckweed present.
P5	22/04/21	-	0	0	0	-	0	0	0	0	0	1	3	-1	-1	0	Dry	Temperature too cold to trap.
P6	22/04/21	-	0	0	0	-	0	0	0	0	Stickleback	4	3	-1	-1	0	Dry	Temp-erature too cold to trap. Limited vegetation so an egg strip has been added for future surveys.
P8	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P9	20/04/21	-	0	0	0	-	0	0	0	0	0	4	1	5	5	1	Dry	Access to approximat-ely 95% of water's edge due to dense reed
P10	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P11	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	

Pond	Survey Date	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad max. count	Common frog max. count	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg search	Net	Terrestrial search												
P12	20/04/21	0	0	0	-	-	0	0	0	1	Water shrew	1	3	5	5	0	Dry	Water shrew identified during the survey.
P13	NOT SURVEYED – NO ACCESS																	
P14	NOT SURVEYED – NO ACCESS																	
P15	NOT SURVEYED – NO ACCESS																	
P16	19/04/21	0	0	0	-	-	0	0	0	0	0	4	4	6	6	0	Dry	None
P17	19/04/21	0	0	0	-	-	0	0	0	0	0	3	3	6	6	0	Dry	None
P18	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P19	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P20	21/04/21	-	0	0	0	-	0	0	0	0	0	3	2	1	1	0	Dry	Temper-ature too cold to trap. 50% of pond accessible only.
P21	21/04/21	-	0	0	0	-	2 adult, 19 juvenile	0	Tadpoles	0	0	3	2	1	1	0	Dry	Temper-ature too cold to trap.
P22	21/04/21	-	0	0	0	-	0	0	0	Tadpoles	0	3	2	1	1	0	Dry	Temper-ature too cold to trap.
P23	21/04/21	-	0	0	0	-	3 eft, 1 adult	0	0	0	0	3	2	1	1	0	Dry	Temper-ature too cold to trap.
P24	21/04/21	-	0	0	0	-	2 eft	0	0	0	0	3	2	1	1	0	Dry	Temper-ature too cold to trap.
P25	21/04/21	-	0	0	0	-	2 efts	2 efts	Tadpoles	0	0	2	2	1	1	0	Dry	Temper-ature too cold to trap.

Pond	Survey Date	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad max. count	Common frog max. count	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg search	Net	Terrestrial search												
P26	19/04/21	2	0	-	-	-	0	0	0	0	0	1	2	5	5	1	Dry	Access available to 45-50% of the pond edge only. 1 male, 1 female GCN found.
P27	19/04/21	0	0	-	0	-	0	0	0	0	0	1	1	5	5	1	Dry	Approx. 80% of pond edge accessible
P28	19/04/21	1	0	-	-	-	2 small female			0	0	1	0	5	5	0	Dry	Approx. 75% of pond edge accessible
P29	19/04/21	0	1	0	-	-	0	0	0	0	0	1	3	5	5	0	Dry	1 male GCN found.
P31	22/04/21	-	0	-	0	-	0	0	0	0	0	5	0	-1	-1	3	Dry	Temper-ature too cold to bottle trap and not trapped due to horses present. Turbid. No macro-phytes to egg search.
P33a	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P33b	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P34	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P37	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P38	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P40	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P41	22/04/21	-	0	0	0	-	0	0	0	0	0	3	1	-1	-1	1	Dry	Temper-ature too

Pond	Survey Date	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad max. count	Common frog max. count	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg search	Net	Terrestrial search												
																		cold to bottle trap
P44	21/04/21	-	0	0	0	-	0	0	0	Tadpoles	0	5	1	1	1	1	Dry	Temper-ature too cold to bottle trap
P46	21/04/21	-	0	0	0	-	0	0	0	0	0	1	4	1	1	1	Dry	Temper-ature too cold to bottle trap
P48	NOT SURVEYED – NO ACCESS																	
P49	21/04/21	-	0	0	0	-	0	0	0	0	0	3	2	1	1	1	Dry	Temper-ature too cold to bottle trap
P51	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P52	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P53	SCOPED OUT FROM FURTHER SURVEY - DRY																	
P55	20/04/2021	-	-	0	0	0	0	0	Tadpoles	0	0	3	1	4	4	1	Dry	Very shallow water. Horse in field with access to bottle traps. Limited vegetation to check for terrestrial search and limited vegetation for egg search.
P58	21/04/21	-	0	0	0	-	0	0	0	0	0	3	5	1	1	1	Dry	Temper-ature too cold to trap. Approx-imately 80% of waterline

Pond	Survey Date	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad max. count	Common frog max. count	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg search	Net	Terrestrial search												
																		accessible for survey.
P59	21/04/2021	-	0	0	0	--	1 small			0	0	1	4	1	1	1	Dry	Temper-ature too cold to trap.
P61	21/04/21	-	0	1	-	-	1	0	0	0	Fish	3	3	1	1	1	Dry	Temper-ature too cold to trap. Access only available to 50-60% of pond
P62	21/04/21	-	0	0	0	-	0	0	0	0	0	1	3	1	1	1	Dry	Temper-ature too cold to trap. Approx. 40% of pond edge accessible
P63	21/04/21	-	-	-	0	-	0	0	0	0	0	n/a	5	1	1	1	Dry	Temper-ature too cold to trap. Surrounded by wetland with sinking ground – H&S access issue
P64	21/04/21	-	0	0	0	-	1 small		0	0	Stickleback	1	4	1	1	2	Dry	Temper-ature too cold to trap. Some wind ripple in water but not impacting survey
P65	21/04/21	-	1	0	-	-	0	0	0	0	0	1	3	1	1	1	Dry	Temper-ature too cold to trap.

Pond	Survey Date	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad max. count	Common frog max. count	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg search	Net	Terrestrial search												
P66	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P67	21/04/21	-	0	0	0	-	0	0	0	0	0	3	3	1	1	1	Dry	Temper-ature too cold and water too shallow to trap. Approx. 40% of pond edge accessible
P68	21/04/21	-	0	0	0	-	0	0	0	0	0	4	4	1	1	3	Dry	Temper-ature too cold to trap. Lots of algae in pond
P69	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P70	20/04/21	0	0	0	-	-	0	0	0	0	Stickleback	2	3	5	5	0	Dry	None
P71	21/04/21	-	0	0	0	-	0	0	0	0	0	4	1	1	1	1	Dry	Temper-ature too cold to trap. Frequently dry pond
P72	SCOPED OUT FROM FURTHER SURVEY - DRY																	
P73	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P74	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P75a	21/04/21	0	-	0	0	-	1 adult 2 juvenile	0	0	0	0	2	3	3	3	1	Dry	None
P75b	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P77	SCOPED OUT FROM FURTHER SURVEY - DRY																	
P81	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P83	NOT SURVEYED – NO ACCESS																	

Pond	Survey Date	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad max. count	Common frog max. count	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg search	Net	Terrestrial search												
P84	NOT SURVEYED – NO ACCESS																	
P85	NOT SURVEYED – NO ACCESS																	
P86	NOT SURVEYED – NO ACCESS																	
P87	NOT SURVEYED – NO ACCESS																	
P88	NOT SURVEYED – NO ACCESS																	
P89	NOT SURVEYED – NO ACCESS																	
P90	NOT SURVEYED – NO ACCESS																	
P91	NOT SURVEYED – NO ACCESS																	
P92	NOT SURVEYED – NO ACCESS																	
P93	NOT SURVEYED – NO ACCESS																	
P94	NOT SURVEYED – NO ACCESS																	
P95	NOT SURVEYED – NO ACCESS																	
P96	NOT SURVEYED – NO ACCESS																	
P97	NOT SURVEYED – NO ACCESS																	
P98	NOT SURVEYED – NO ACCESS																	
P99	NOT SURVEYED – NO ACCESS																	
P100	NOT SURVEYED – NO ACCESS																	
P101	NOT SURVEYED – NO ACCESS																	
P102	NOT SURVEYED – NO ACCESS																	
P103	NOT SURVEYED – NO ACCESS																	
P104	NOT SURVEYED – NO ACCESS																	
P105	NOT SURVEYED – NO ACCESS																	
P106	NOT SURVEYED – NO ACCESS																	
P107	SCOPED OUT FROM FURTHER SURVEY – DRY																	
P108	NOT SURVEYED – NO ACCESS																	
P109	NOT SURVEYED – NO ACCESS																	
P110	NOT SURVEYED – NO ACCESS																	

*Turbidity (0 – completely clear to 5 – very turbid)

**Vegetation cover (0 – no vegetation, 5 – completely obscured)

***Wind Speed (Beaufort scale)

Ponds highlighted green were confirmed to support GCN in 2021

Table D.2 2021 GCN Survey Results Visit Two

Pond	Survey Date	Max. GCN Count					Smooth newt max. Count	Palmate newt max. Count	Common toad max. Count	Common frog max. Count	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg search	Netting	Terrestrial search												
P1	27/04/21	0	0	0	0	-	0	0	0	0	0	5	2	9	9	1	Scattered showers	None
P2	27/04/21	0	0	0	0	-	0	0	0	0	Roach	5	1	9	9	1	Scattered showers	None
P3	27/04/21	0	0	0	0	-	0	0	0	0	0	5	2	9	9	1	Scattered showers	Buffer left around moorhen nests to avoid disturbance
P4	27/04/21	0	0	-	0	-	0	0	0	0	Stickleback	2	1	9	9	1	Scattered showers	Egg strips inserted. Duckweed. Buffer left around moorhen nests to avoid disturbance
P5	26/04/21	0	0	-	0	-	0	0	0	0	0	3	3	9	9	1	Scattered showers	Egg strips inserted
P6	26/04/21	0	-	0	0	-	0	0	0	0	0	2	5	9	9	1	Scattered showers	Lots of broken reed obscuring view
P8	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P9	26/04/21	-	0	0	0	-	0	0	0	0	Stickleback	1	1	9	9	1	Scattered showers	Dense scrub surrounding pond, access difficult
P10	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P11	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P12	26/04/21	-	1	0	-	-	0	0	0	0	0	2	2	9	9	1	Scattered showers	Third technique (netting) not undertaken due to known presence of GCN Trapping not possible due to presence of water shrew
P13	NOT SURVEYED – NO ACCESS																	
P14	NOT SURVEYED – NO ACCESS																	
P15	NOT SURVEYED – NO ACCESS																	
P16	28/04/21	-	0	0	0	-	0	0	0	0	0	2	3	3	3	1	Dry	Temperature too cold to trap.
P17	28/04/21	-	0	0	0	-	0	0	0	0	0	2	3	3	3	1	Dry	Temperature too cold to trap.
P18	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P19	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	

Pond	Survey Date	Max. GCN Count					Smooth newt max. Count	Palmate newt max. Count	Common toad max. Count	Common frog max. Count	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg search	Netting	Terrestrial search												
P20	28/04/21	-	0	0	0	-	2 and eggs	0	0	0	0	1	2	3	3	1	Dry	Survey aborted early due to antisocial behaviour from members of the public. Temperature too cold to trap.
P21	28/04/21	-	0	0	0	-	0	0	0	0	0	1	2	3	3	1	Dry	Temperature too cold to trap.
P22	28/04/21	-	0	0	0	-	0	0	0	0	0	1	2	3	3	1	Dry	Temperature too cold to trap.
P23	28/04/21	-	0	0	0	-	0	0	0	0	0	1	2	3	3	1	Dry	Temperature too cold to trap.
P24	28/04/21	-	0	0	0	-	0	0	0	0	0	1	2	3	3	1	Dry	Temperature too cold to trap.
P25	28/04/21	-	0	0	0	-	0	0	0	0	0	4	3	3	3	1	Dry	Temperature too cold to trap.
P26	27/04/21	0	0	-	-	-	0	0	0	0	0	3	2	9	9	1	Scattered showers	None
P27	27/04/21	0	-	0	0	-	0	0	1 Adult	0	0	2	1	9	9	1	Scattered showers	Torching not possible towards the end of the night due to heavy rainfall – other methods used
P28	27/04/21	0	-	0	0	-	0	0	0	0	0	2	0	9	9	1	Scattered showers	Torching not possible towards the end of the night due to heavy rainfall – other methods used
P29	27/04/21	-	-	0	0	0	0	0	0	0	0	2	3	9	9	2	Scattered showers	Too shallow to trap and heavy rain so could not torch.
P31	28/04/21	-	0	-	0	-	0	0	0	0	0	4	0	3	3	2	Dry	Trapping prohibited due to livestock and no egg laying material present. Approximately 60% of perimeter surveyed
P33a	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P33b	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P34	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P37	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P38	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P40	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P41	28/04/21	-	0	0	0	-	0	0	0	0	0	3	3	3	3	1	Dry	No trapping possible due to presence of water shrew
P44	29/04/21	-	0	0	0	-	0	0	0	0	0	4	1	3	3	1	Dry	Survey aborted early due to antisocial behaviour from members of the public
P46	29/04/21	-	-	0	0	-	0	0	0	0	0	4	1	3	3	1	Dry	Survey aborted early due to antisocial behaviour from members of the public

Pond	Survey Date	Max. GCN Count					Smooth newt max. Count	Palmate newt max. Count	Common toad max. Count	Common frog max. Count	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg search	Netting	Terrestrial search												
P48	NOT SURVEYED – NO ACCESS																	
P49	29/04/21	-	-	0	0	-	0	0	0	0	0	3	1	3	3	1	Dry	Netting and egg searching carried out only due to antisocial behaviour from members of the public
P51	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P52	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P53	SCOPED OUT FROM FURTHER SURVEY – DRY																	
P55	28/04/21	-	0	-	0	-	0	0	0	0	0	5	0	3	3	1	Dry	No egg laying material and unsuitable for egg strips. Temperature too cold to trap
P58	26/04/21	0	-	0	0	-	0	0	0	0	0	2	3	9	9	1	Scattered showers	Artificial egg strip inserted
P59	26/04/21	9	-	0	0	-	0	0	0	0	0	3	4	9	9	1	Scattered showers	Artificial egg strip inserted 4 GCN male and 5 GCN female found
P61	26/04/21	-	0	1	-	-	1 Adult	0	0	0	Fish	3	3	1	1	1	Dry	Temperature too cold to trap. Access only available to 50-60% of pond
P62	26/04/21	-	0	0	0	-	0	0	0	0	0	1	3	1	1	1	Dry	Temperature too cold to trap. Approx. 40% of pond edge accessible
P63	26/04/21	-	-	-	0	-	0	0	0	0	0	n/a	5	1	1	1	Dry	Temperature too cold to trap. Surrounded by wetland with sinking ground – H&S access issue
P64	26/04/21	-	0	0	0	-	1	0	0	0	0	1	4	1	1	1	Dry	Temperature too cold to trap.
P65	26/04/21	-	1	0	-	-	0	0	0	0	0	1	3	1	1	1	Dry	Temperature too cold to trap.
P66	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P67	26/04/21	-	0	0	0	-	0	0	0	0	0	3	3	1	1	1	Dry	Temperature too cold and water too shallow to trap. Approx. 40% of pond edge accessible
P68	26/04/21	0	0	0	-	-	0	0	0	1 adult	0	1	4	9	9	1	Dry	None
P69	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P70	26/04/21	-	0	0	0	-	0	0	0	0	0	1	4	9	9	1	Dry	None
P71	26/04/21	-	0	0	0	-	0	0	0	0	0	4	1	9	9	1	Dry	None

Pond	Survey Date	Max. GCN Count					Smooth newt max. Count	Palmate newt max. Count	Common toad max. Count	Common frog max. Count	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg search	Netting	Terrestrial search												
P72	SCOPED OUT FROM FURTHER SURVEY – DRY																	
P73	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P74	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P75a	28/04/21	-	0	0	0	-	0	0	0	0	0	2	2	9	9	1	Dry	None
P75b	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P77	SCOPED OUT FOR FURTHER SURVEY – DRY																	
P81	SCOPED OUT FOR FURTHER SURVEY – DRY																	
P83	NOT SURVEYED – NO ACCESS																	
P84	NOT SURVEYED – NO ACCESS																	
P85	NOT SURVEYED – NO ACCESS																	
P86	NOT SURVEYED – NO ACCESS																	
P87	NOT SURVEYED – NO ACCESS																	
P88	NOT SURVEYED – NO ACCESS																	
P89	NOT SURVEYED – NO ACCESS																	
P90	NOT SURVEYED – NO ACCESS																	
P91	NOT SURVEYED – NO ACCESS																	
P92	NOT SURVEYED – NO ACCESS																	
P93	NOT SURVEYED – NO ACCESS																	
P94	NOT SURVEYED – NO ACCESS																	
P95	NOT SURVEYED – NO ACCESS																	
P96	NOT SURVEYED – NO ACCESS																	
P97	NOT SURVEYED – NO ACCESS																	
P98	NOT SURVEYED – NO ACCESS																	
P99	NOT SURVEYED – NO ACCESS																	
P100	NOT SURVEYED – NO ACCESS																	
P101	NOT SURVEYED – NO ACCESS																	

Pond	Survey Date	Max. GCN Count					Smooth newt max. Count	Palmate newt max. Count	Common toad max. Count	Common frog max. Count	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg search	Netting	Terrestrial search												
P102	NOT SURVEYED – NO ACCESS																	
P103	NOT SURVEYED – NO ACCESS																	
P104	NOT SURVEYED – NO ACCESS																	
P105	NOT SURVEYED – NO ACCESS																	
P106	NOT SURVEYED – NO ACCESS																	
P107	SCOPED OUT FROM FURTHER SURVEY – DRY																	
P108	NOT SURVEYED – NO ACCESS																	
P109	NOT SURVEYED – NO ACCESS																	
P110	NOT SURVEYED – NO ACCESS																	

*Turbidity (0 – completely clear to 5 – very turbid)

**Vegetation cover (0 – no vegetation, 5 – completely obscured)

***Wind Speed (Beaufort scale)

Ponds highlighted green were confirmed to support GCN in 2021

Table D.3 2021 GCN Survey Results Visit Three

Pond	Survey Date	Max. GCN Count					Smooth newt max. Count	Palmate newt max. Count	Common toad	Common frog	Other species	*Turbidity	**Vegetation cover	Temp when torching	Min overnight temp	***Wind	Rain	Notes
		Bottle trap	Torch	Egg search	Netting	Terrestrial search												
P1	12/05/21	-	0	0	0	-	0	0	0	0	0	4	1	10	8	1	Dry	Too cold to trap
P2	12/05/21	-	0	0	0	-	0	0	0	0	0	4	1	10	8	1	Dry	Too cold to trap. Dense scrub preventing full access to pond edge – 86pprox.. 75% surveyed.
P3	12/05/21	-	0	0	0	-	0	0	0	0	0	4	1	10	8	3	Light rain	Too cold to trap.
P4	12/05/21	-	0	0	0	-	1	0	0	0	0	3	4	10	8	3	Light rain/heavy rain	Too cold to trap. Duckweed present.
P5	12/05/21	5	0	-	-	-	1	1	0	0	0	0	4	10	8	2	Light rain	3 male GCN, 2 female GCN
P6	11/05/21	0	0	0	-		3	0	0	0	Stickleback and great water diving beetles	2	4	9	8	0	Dry	None
P8	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P9	12/05/21	-	0	0	0	-	0	0	0	0	0	2	1	8	8	1	Dry	Dense scrub surrounding pond, access difficult – approximately 40% accessed
P10	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P11	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P12	11/05/21	5	0	-	-	-	0	0	0	1 Adult and tadpoles	0	1	3	8	8	1	Heavy rain	Heavy rain therefore torching survey moved to following day 2 male GCN, 3 female GCN
P13	NOT SURVEYED – NO ACCESS																	
P14	NOT SURVEYED – NO ACCESS																	

Pond	Survey Date	Max. GCN Count					Smooth newt max. Count	Palmate newt max. Count	Common toad	Common frog	Other species	*Turbidity	**Vegetation cover	Temp when torching	Min overnight temp	***Wind	Rain	Notes
		Bottle trap	Torch	Egg search	Netting	Terrestrial search												
P15	NOT SURVEYED – NO ACCESS																	
P16	10/05/21	-	0	0	0	-	0	0	0	0	0	3	4	6	6	1	Dry	Pond drying
P17	10/05/21	-	0	0	0	-	0	0	0	0	0	3	3	6	6	1	Dry	None
P18	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P19	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P20	SCOPED OUT FROM FURTHER SURVEY – ANTISOCIAL BEHAVIOUR BY MEMBERS OF THE PUBLIC																	
P21	10/05/21	-	0	0	0	-	0	0	0	0	0	2	3	6	6	1	Dry	None
P22	10/05/21	-	0	0	0	-	0	0	0	0	0	2	3	6	6	1	Dry	None
P23	10/05/21	-	0	0	0	-	0	0	0	0	0	2	2	6	6	1	Dry	Approximately 50% of pond could be accessed for survey only.
P24	10/05/21	-	0	0	0	-	0	0	0	0	0	2	2	6	6	1	Dry	None
P25	10/05/21	-	0	0	0	-	0	0	0	0	0	2	3	6	6	1	Dry	None
P26	10/05/21	0	0	-	-	-	0	0	0	0	0	3	2	6	6	2	Dry	Approximately 40% of the water's edge could be accessed for torch survey
P27	10/05/21	0	0	0	-	-	2	1	0	4	0	2	1	6	6	1	Dry	None
P28	10/05/21	1	0	-	-	-	2	0	0	4	0	2	0	6	6	1	Dry	1 male GCN
P29	10/05/21	0	0	-	-	-	1	0	0	0	0	2	3	6	6	1	Dry	None
P31	10/05/21	-	0	0	0		0	0	0	0	0	4	1	6	6	1	Dry	Vegetation limited. Could not trap due to presence of water shrew Approximately 50% of pond surveyed only due to access limitations.
P33a	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P33b	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	

Pond	Survey Date	Max. GCN Count					Smooth newt max. Count	Palmate newt max. Count	Common toad	Common frog	Other species	*Turbidity	**Vegetation cover	Temp when torching	Min overnight temp	***Wind	Rain	Notes
		Bottle trap	Torch	Egg search	Netting	Terrestrial search												
P34	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P37	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P38	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P40	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P41	10/05/21	-	0	0	0	-	0	0	0	0	0	2	3	6	6	1	Dry	Could not trap due to presence of water shrew. 70% of pond surveyed due to access limitations.
P44	SCOPED OUT FROM FURTHER SURVEY – ANTISOCIAL BEHAVIOUR BY MEMBERS OF THE PUBLIC																	
P46	SCOPED OUT FROM FURTHER SURVEY – ANTISOCIAL BEHAVIOUR BY MEMBERS OF THE PUBLIC																	
P48	NOT SURVEYED – NO ACCESS																	
P49	SCOPED OUT FROM FURTHER SURVEY – ANTISOCIAL BEHAVIOUR BY MEMBERS OF THE PUBLIC																	
P51	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P52	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P53	SCOPED OUT FROM FURTHER SURVEY – DRY																	
P55	10/05/21	-	0	0	0	-	1	0	0	0	0	3	1	6	6	1	Dry	No trapping due to livestock.
P58	11/05/21	1	0	0	-	-	0	0	0	0	0	2	4	8	8	0	Light rain	1 male GCN
P59	11/05/21	3	1	-	-	-	2	1	0	0	0	3	4	8	8	3	Dry	Bottle trapping: 1 male GCN, 2 female GCN. Torching: 1 male GCN
P61	11/05/21	0	2	-	-	-	0	0	0	0	0	2	3	8	8	2	Light rain	1 male GCN, 1 female GCN.
P62	11/05/21	0	0	1	-	-	1	0	0	0	0	1	3	8	8	3	Light rain	None
P63	11/05/21	-	0	-	-	-	0	0	0	0	0	1	5	8	8	3	Light rain	Access constrained to main waterbody torch margin
P64	12/05/21	1	0	1	-	-	1 small newt		1	1	0	1	0	9	8	2	Dry	1 male GCN

Pond	Survey Date	Max. GCN Count					Smooth newt max. Count	Palmate newt max. Count	Common toad	Common frog	Other species	*Turbidity	**Vegetation cover	Temp when torching	Min overnight temp	***Wind	Rain	Notes
		Bottle trap	Torch	Egg search	Netting	Terrestrial search												
P65	12/05/21	0	2	-	-	-	1 smooth newt, 2 small newt		0	0	0	1	3	9	8	3	Rain	2 female GCN. Light rain whilst torching – not a constraint
P66	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P67	12/05/21	0	0	0	0	-	0	2	0	0	0	2	5	9	8	0	Light rain	Vegetation matt causing unsafe conditions. Light rain whilst torching – not a constraint. Pond drying out therefore egg search material limited and netting a constrained technique.
P68	12/05/21	0	1	0	0	-	2 smooth newt, min 1 small newt		0	0	0	2	0	9	8	0	Light rain	Small newt eggs identified
P69	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P70	12/05/21	-	0	0	0	-	0	0	4	1	0	1	4	9	8	1	Dry	Too shallow to trap
P71	SCOPED OUT FROM FURTHER SURVEY – DRY																	
P72	SCOPED OUT FROM FURTHER SURVEY – DRY																	
P73	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P74	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P75a	10/05/21	-	0	0	0	-	1	5	0	0	0	2	3	6	6	1	Dry	None
P75b	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P77	SCOPED OUT FROM FURTHER SURVEY – DRY																	
P81	SCOPED OUT FOR FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P83	NOT SURVEYED – NO ACCESS																	
P84	NOT SURVEYED – NO ACCESS																	
P85	NOT SURVEYED – NO ACCESS																	

Pond	Survey Date	Max. GCN Count					Smooth newt max. Count	Palmate newt max. Count	Common toad	Common frog	Other species	*Turbidity	**Vegetation cover	Temp when torching	Min overnight temp	***Wind	Rain	Notes
		Bottle trap	Torch	Egg search	Netting	Terrestrial search												
P86	NOT SURVEYED – NO ACCESS																	
P87	NOT SURVEYED – NO ACCESS																	
P88	NOT SURVEYED – NO ACCESS																	
P89	NOT SURVEYED – NO ACCESS																	
P90	NOT SURVEYED – NO ACCESS																	
P91	NOT SURVEYED – NO ACCESS																	
P92	NOT SURVEYED – NO ACCESS																	
P93	NOT SURVEYED – NO ACCESS																	
P94	NOT SURVEYED – NO ACCESS																	
P95	NOT SURVEYED – NO ACCESS																	
P96	NOT SURVEYED – NO ACCESS																	
P97	NOT SURVEYED – NO ACCESS																	
P98	NOT SURVEYED – NO ACCESS																	
P99	NOT SURVEYED – NO ACCESS																	
P100	NOT SURVEYED – NO ACCESS																	
P101	NOT SURVEYED – NO ACCESS																	
P102	NOT SURVEYED – NO ACCESS																	
P103	NOT SURVEYED – NO ACCESS																	
P104	NOT SURVEYED – NO ACCESS																	
P105	NOT SURVEYED – NO ACCESS																	
P106	NOT SURVEYED – NO ACCESS																	
P107	SCOPED OUT FROM FURTHER SURVEY - DRY																	
P108	NOT SURVEYED – NO ACCESS																	
P109	NOT SURVEYED – NO ACCESS																	
P110	NOT SURVEYED – NO ACCESS																	

*Turbidity (0 - completely clear to 5 - very turbid)

**Vegetation cover (0 - no vegetation, 5 - completely obscured)

***Wind Speed (Beaufort scale)

Ponds highlighted green were confirmed to support GCN in 2021

Table D.4 2021 GCN Survey Results Visit Four

Pond	Survey Date	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad	Common frog	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg Search	Netting	Terrestrial Search												
P1	18/05/21	0	0	0	-	-	0	0	0	0	Fish	4	1	15	9	1	Dry	None
P2	18/05/21	0	0	0	-	-	0	0	0	1	0	4	1	15	9	2	Dry	None
P3	18/05/21	0	0	0	-	-	3 adults	0	0	0	Water scorpion	4	1	15	9	2	Dry	None
P4	18/05/21	0	0	0	-	-	8 adults	0	0	1 adult	0	2	4	15	9	2	Dry	Smooth newt eggs found
P5	17/05/21	0	-	0	-	-	0	0	0	1	Fish	2	4	15	9	2	Dry	None
P6	17/05/21	0	0	0	-	-	1	0	0	0	Stickleback	2	4	15	9	2	Dry	Stickleback identified during the survey.
P8	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P9	20/05/21	0	0	0	-	-	0	0	0	Tadpoles	Fish	3	1	8	5	4	Heavy rain	Dense scrub surrounding pond, access available to 50% only.
P10	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P11	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P12	20/05/21	3	0	1	-	-	3	0	0	0	Fish	2	3	8	5	4	Heavy rain	Limited traps due to shallow depth Trapping: 1 male GCN, 2 female GCN. GCN egg identified
P16	19/05/21	-	0	0	-	-	3	0	0	0	0	3	4	9	9	4	Dry	Pond too shallow to trap or net.
P17	19/05/21	0	0	0	-	-	0	0	0	0	0	3	3	9	9	4	Dry	Access restricted. Approx. 45% accessed during torch survey and 25% accessed for bottle trapping
P18	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P19	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P20	SCOPED OUT FROM FURTHER SURVEY - ANTISOCIAL BEHAVIOUR BY MEMBERS OF THE PUBLIC																	
P21	19/05/21	0	0	0	-	-	15	0	0	0	0	3	3	9	9	4	Dry	None
P22	19/05/21	0	0	0	-	-	3	0	0	0	0	3	3	9	9	4	Dry	None
P23	19/05/21	0	0	0	-	-	0	0	0	0	0	2	3	9	9	4	Dry	None

Pond	Survey Date	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad	Common frog	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg Search	Netting	Terrestrial Search												
P24	19/05/21	0	0	0	-	-	0	0	0	0	0	4	3	9	9	4	Dry	None
P25	19/05/21	0	0	0	-	-	0	0	0	0	0	4	3	9	9	4	Dry	None
P26	17/05/21	0	0	-	-	-	0	0	0	2	0	4	4	15	9	2	Dry	None
P27	17/05/21	0	0	-	-	-	0	0	0	0	0	3	1	15	9	2	Dry	None
P28	17/05/21	0	0	-	-	-	0	0	0	3	0	3	0	15	9	2	Dry	None
P29	17/05/21	0	1	-	-	-	2	0	0	0	0	1	2	15	9	2	Dry	None
P31	19/05/21	-	0	0	0	-	0	0	0	0	0	4	1	9	9	3	Dry	Little suitable vegetation for egg search. 60% access for torching
P33a	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P33b	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P34	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P37	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P38	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P40	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P41	19/05/21	0	0	0	-	-	0	0	0	0	0	3	1	9	9	3	Dry	80% access for torching. Duckweed present
P44	SCOPED OUT FROM FURTHER SURVEY - ANTISOCIAL BEHAVIOUR BY MEMBERS OF THE PUBLIC																	
P46	SCOPED OUT FROM FURTHER SURVEY - ANTISOCIAL BEHAVIOUR BY MEMBERS OF THE PUBLIC																	
P48	NOT SURVEYED – NO ACCESS																	
P49	SCOPED OUT FROM FURTHER SURVEY - ANTISOCIAL BEHAVIOUR BY MEMBERS OF THE PUBLIC																	
P53	SCOPED OUT FROM FURTHER SURVEY - DRY																	
P55	19/05/21	-	0	0	0	-	0	0	0	Tadpoles	0	5	1	5	5	3	Dry	None
P58	17/05/21	0	0	0	-	-	0	0	0	0	0	3	4	7	6	2	Dry	None
P59	17/05/21	0	0	0	-	-	1	0	0	0	0	2	1	7	6	2	Dry	None
P61	17/05/21	0	0	-	0	-	4	0	0	0	0	2	3	7	7	2	Dry	40% access to pond for netting
P62	17/05/21	0	0	-	-	-	1	0	0	0	0	3	3	7	6	2	Dry	50% access to pond for survey

Pond	Survey Date	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad	Common frog	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg Search	Netting	Terrestrial Search												
P63	19/05/21	-	0	-	-	-	0	0	0	0	0	1	5	4	9	3	Dry	Not a huge area torched. Not very accessible safely
P64	19/05/21	1	1	-	-	-	2 smooth 3 small		0	0	0	2	1	4	9	3	Dry	Barn owl identified flying along golf course. 1 female GCN found during trapping and torching.
P65	19/05/21	1	1	-	-	-	1 small newt		0	0	0	2	4	4	9	3	Dry	Access to 50% of pond for survey 1 male GCN, 1 female GCN
P67	19/05/21	-	0	0	0	-	0	0	0	0	0	3	4	4	9	3	Dry	Area suitable for torching limited
P68	19/05/21	0	0	-	-	-	1 small newt		0	0	0	2	1	4	9	3	Dry	None
P69	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P70	20/05/21	0	0	0	-	-	0	0	0	0	0	2	4	8	5	4	Light rain	40 – 50% of pond surveyed. Light rain when torching – not a constraint
P71	SCOPED OUT FROM FURTHER SURVEY - DRY																	
P72	SCOPED OUT FROM FURTHER SURVEY - DRY																	
P73	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P75a	19/05/21	0	0	0	-	-	1	0	0	Tadpoles	0	1	3	2	5	3	Dry	None
P77	SCOPED OUT FROM FURTHER SURVEY - DRY																	
P81	SCOPED OUT FOR FURTHER SURVEY - DRY																	
P83	NOT SURVEYED – NO ACCESS																	
P84	NOT SURVEYED – NO ACCESS																	
P85	NOT SURVEYED – NO ACCESS																	
P86	NOT SURVEYED – NO ACCESS																	
P87	NOT SURVEYED – NO ACCESS																	
P88	NOT SURVEYED – NO ACCESS																	
P89	NOT SURVEYED – NO ACCESS																	

Pond	Survey Date	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad	Common frog	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg Search	Netting	Terrestrial Search												
P90	NOT SURVEYED – NO ACCESS																	
P91	NOT SURVEYED – NO ACCESS																	
P92	NOT SURVEYED – NO ACCESS																	
P93	NOT SURVEYED – NO ACCESS																	
P94	NOT SURVEYED – NO ACCESS																	
P95	NOT SURVEYED – NO ACCESS																	
P96	NOT SURVEYED – NO ACCESS																	
P97	NOT SURVEYED – NO ACCESS																	
P98	NOT SURVEYED – NO ACCESS																	
P99	NOT SURVEYED – NO ACCESS																	
P100	NOT SURVEYED – NO ACCESS																	
P101	NOT SURVEYED – NO ACCESS																	
P102	NOT SURVEYED – NO ACCESS																	
P103	NOT SURVEYED – NO ACCESS																	
P104	NOT SURVEYED – NO ACCESS																	
P105	NOT SURVEYED – NO ACCESS																	
P106	NOT SURVEYED – NO ACCESS																	
P107	SCOPED OUT FROM FURTHER SURVEY – DRY																	
P108	NOT SURVEYED – NO ACCESS																	
P109	NOT SURVEYED – NO ACCESS																	
P110	NOT SURVEYED – NO ACCESS																	

*Turbidity (0 – completely clear to 5 – very turbid)

**Vegetation cover (0 – no vegetation, 5 – completely obscured)

***Wind Speed (Beaufort scale)

Ponds highlighted green were confirmed to support GCN in 2021

Table D.5 2021 GCN Survey Results Visit Five

Pond	Survey Date	Max. GCN Count					Smooth newt max. Count	Palmate newt max. Count	Common toad	Common frog	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg Search	Netting	Terrestrial Search												
P1	SCOPED OUT FROM FURTHER SURVEY – GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P2	SCOPED OUT FROM FURTHER SURVEY – GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P3	SCOPED OUT FROM FURTHER SURVEY – GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P4	SCOPED OUT FROM FURTHER SURVEY – GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P5	24/05/21	3	0	-	-	-	1	0	0	0	0	3	4	8	5	0	Dry	3 male GCN
P6	24/05/21	0	0	0	0	-	1	0	0	Adults and Tadpoles	Stickleback	3	3	8	5	0	Dry	None
P8	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P9	26/05/21	0	0	-	-	-	0	0	0	0	0	3	1	10	4	1	Dry	Dense scrub surrounding pond, access to 80% possible
P10	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P11	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P12	26/05/21	2	0	1	-	-	0	0	0	0	0	1	3	10	4	2	Dry	2 female GCN. GCN eggs found
P13	NOT SURVEYED – NO ACCESS																	
P14	NOT SURVEYED – NO ACCESS																	
P15	NOT SURVEYED – NO ACCESS																	
P16	SCOPED OUT FROM FURTHER SURVEY – GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P17	SCOPED OUT FROM FURTHER SURVEY – GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P18	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P19	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P20	SCOPED OUT FROM FURTHER SURVEY – ANTISOCIAL BEHAVIOUR BY MEMBERS OF THE PUBLIC																	
P21	25/05/21	0	0	-	0	-	13	0	0	0	0	2	3	10	4	2	Dry	None
P22	25/05/21	0	0	-	0	-	0	0	0	0	0	2	3	10	4	2	Dry	None
P23	25/05/21	0	0	0	-	-	1	0	0	0	0	2	3	10	4	2	Dry	None
P24	25/05/21	0	0	0	-	-	0	0	0	0	0	2	3	10	4	2	Dry	None
P25	25/05/21	0	0	0	-	-	6	0	0	0	0	2	3	10	4	2	Dry	None

Pond	Survey Date	Max. GCN Count					Smooth newt max. Count	Palmate newt max. Count	Common toad	Common frog	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg Search	Netting	Terrestrial Search												
P26	25/05/21	1	0	-	-	-	0	0	0	0	0	2	2	8	4	2	Dry	None
P27	25/05/21	0	0	0	-	-	1	0	0	0	0	2	1	8	4	0	Dry	None
P28	25/05/21	0	0	-	-	-	1	0	0	3 and tadpoles	0	3	0	8	4	0	Dry	None
P29	25/05/21	0	0	-	-	-	1	0	0	0	0	0	2	8	4	0	Dry	None
P31	SCOPED OUT FROM FURTHER SURVEY – GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P33a	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P33b	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P34	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P37	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P38	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P41	SCOPED OUT FROM FURTHER SURVEY – GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P44	SCOPED OUT FROM FURTHER SURVEY – ANTISOCIAL BEHAVIOUR BY MEMBERS OF THE PUBLIC																	
P46	SCOPED OUT FROM FURTHER SURVEY – ANTISOCIAL BEHAVIOUR BY MEMBERS OF THE PUBLIC																	
P48	SCOPED OUT FROM FURTHER SURVEY – NO ACCESS																	
P49	SCOPED OUT FROM FURTHER SURVEY – ANTISOCIAL BEHAVIOUR BY MEMBERS OF THE PUBLIC																	
P51	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P52	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P53	SCOPED OUT FROM FURTHER SURVEY – DRY																	
P55	SCOPED OUT FROM FURTHER SURVEY- GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P58	24/05/21	0	0	0	-	-	0	0	0	0	0	4	2	8	5	0	Dry	None
P59	24/05/21	3	1	-	-	-	0	0	0	0	0	2	4	8	5	0	Dry	Torch: 1 male GCN, trap: 2 male GCN, 1 female GCN
P61	24/05/21	0	0	-	-	-	5	0	0	0	0	2	3	8	5	0	Dry	None
P62	24/05/21	2	0	-	-	-	6	0	0	0	0	2	3	8	5	0	Dry	2 female GCN
P63	SCOPED OUT FROM FURTHER SURVEY																	

Pond	Survey Date	Max. GCN Count					Smooth newt max. Count	Palmate newt max. Count	Common toad	Common frog	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg Search	Netting	Terrestrial Search												
P64	24/05/21	4	2	-	-	-	3	0	0	Tadpoles	0	3	4	8	5	1	Dry	Torch: 1 male and 1 female GCN; trap: 3 male, 1 female GCN
P65	24/05/21	0	2	-	-	-	1	0	0	0	0	2	2	8	5	1	Dry	1 male and 1 female GCN; only 50% of the pond surveyed.
P66	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P67	SCOPED OUT FROM FURTHER SURVEY – GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P68	24/05/21	0	0	-	-	-	0	0	0	0	0	3	1	8	5	2	Dry	None
P69	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P70	26/05/21	-	0	-	0	-	0	0	0	1	0	1	4	5	4	1	Dry	60-70% of pond surveyed
P71	SCOPED OUT FROM FURTHER SURVEY DRY																	
P72	SCOPED OUT FROM FURTHER SURVEY – DRY																	
P73	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P74	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P75a	25/05/21	0	0	-	-	-	2	0	0	0	0	2	3	10	4	1	Dry	None
P75b	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P77	SCOPED OUT FROM FURTHER SURVEY – DRY																	
P81	SCOPED OUT FOR FURTHER SURVEY – DUE TO A HSI SCORE OF <0.50																	
P83	NOT SURVEYED – NO ACCESS																	
P84	NOT SURVEYED – NO ACCESS																	
P85	NOT SURVEYED – NO ACCESS																	
P86	NOT SURVEYED – NO ACCESS																	
P87	NOT SURVEYED – NO ACCESS																	
P88	NOT SURVEYED – NO ACCESS																	
P89	NOT SURVEYED – NO ACCESS																	
P90	NOT SURVEYED – NO ACCESS																	
P91	NOT SURVEYED – NO ACCESS																	

Pond	Survey Date	Max. GCN Count					Smooth newt max. Count	Palmate newt max. Count	Common toad	Common frog	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg Search	Netting	Terrestrial Search												
P92	NOT SURVEYED – NO ACCESS																	
P93	NOT SURVEYED – NO ACCESS																	
P94	NOT SURVEYED – NO ACCESS																	
P95	NOT SURVEYED – NO ACCESS																	
P96	NOT SURVEYED – NO ACCESS																	
P97	NOT SURVEYED – NO ACCESS																	
P98	NOT SURVEYED – NO ACCESS																	
P99	NOT SURVEYED – NO ACCESS																	
P100	NOT SURVEYED – NO ACCESS																	
P101	NOT SURVEYED – NO ACCESS																	
P102	NOT SURVEYED – NO ACCESS																	
P103	NOT SURVEYED – NO ACCESS																	
P104	NOT SURVEYED – NO ACCESS																	
P105	NOT SURVEYED – NO ACCESS																	
P106	NOT SURVEYED – NO ACCESS																	
P107	SCOPED OUT FROM FURTHER SURVEY - DRY																	
P108	NOT SURVEYED – NO ACCESS																	
P109	NOT SURVEYED – NO ACCESS																	
P110	NOT SURVEYED – NO ACCESS																	

*Turbidity (0 - completely clear to 5 - very turbid)

**Vegetation cover (0 - no vegetation, 5 - completely obscured)

***Wind Speed (Beaufort scale)

Ponds highlighted green were confirmed to support GCN in 2021

Table D.6 2021 GCN Survey Results Visit Six

Pond	Survey Date	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad	Common frog	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg Search	Netting	Terrestrial Search												
P1	SCOPED OUT FROM FURTHER SURVEY - GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P2	SCOPED OUT FROM FURTHER SURVEY - GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P3	SCOPED OUT FROM FURTHER SURVEY - GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P4	SCOPED OUT FROM FURTHER SURVEY - GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P5	09/06/21	0	0	-	-	-	0	0	0	0	0	5	5	15	11	1	Dry	Torching very constrained
P6	09/06/21	2 (1 adult, 1 juvenile)	0	-	-	-	0	0	0	0	Stickleback	2	4	15	11	1	Dry	1 female GCN, 1 juvenile GCN
P8	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P9	08/06/21	0	0	0	-	-	0	0	0	0	0	3	1	16	12	2	Dry	None
P10	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P11	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P12	08/06/21	1	6	-	-	-	1	0	0	0	0	1	3	16	12	2	Dry	Six female and one male GCN
P13	NOT SURVEYED – NO ACCESS																	
P14	NOT SURVEYED – NO ACCESS																	
P15	NOT SURVEYED – NO ACCESS																	
P16	SCOPED OUT FROM FURTHER SURVEY - GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P17	SCOPED OUT FROM FURTHER SURVEY - GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P18	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P19	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P20	SCOPED OUT FROM FURTHER SURVEY - ANTISOCIAL BEHAVIOUR BY MEMBERS OF THE PUBLIC																	
P21	SCOPED OUT FROM FURTHER SURVEY - GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P22	SCOPED OUT FROM FURTHER SURVEY - GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P23	SCOPED OUT FROM FURTHER SURVEY - GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P24	SCOPED OUT FROM FURTHER SURVEY - GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P25	SCOPED OUT FROM FURTHER SURVEY - GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	

Pond	Survey Date	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad	Common frog	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg Search	Netting	Terrestrial Search												
P26	10/06/21	0	0	-	-	-	0	0	0	0	0	4	1	18	18	2	Dry	None
P27	10/06/21	0	0	-	-	-	0	0	0	7	0	2	1	18	18	1	Dry	None
P28	10/06/21	0	0	-	-	-	0	0	0	11	0	2	1	18	18	1	Dry	None
P29	10/06/21	-	0	-	0	0	0	0	0	0	Toad	2	2	18	18	2	Scattered showers	Too shallow to trap.
P31	SCOPED OUT FROM FURTHER SURVEY - GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P33a	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P33b	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P34	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P37	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P38	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P40	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P41	SCOPED OUT FROM FURTHER SURVEY - GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P44	SCOPED OUT FROM FURTHER SURVEY - ANTISOCIAL BEHAVIOUR BY MEMBERS OF THE PUBLIC																	
P46	SCOPED OUT FROM FURTHER SURVEY - ANTISOCIAL BEHAVIOUR BY MEMBERS OF THE PUBLIC																	
P48	NOT SURVEYED – NO ACCESS																	
P49	SCOPED OUT FROM FURTHER SURVEY - ANTISOCIAL BEHAVIOUR BY MEMBERS OF THE PUBLIC																	
P51	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P52	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P53	SCOPED OUT FROM FURTHER SURVEY - DRY																	
P55	SCOPED OUT FROM FURTHER SURVEY - GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P58	09/06/21	1	0	-	-	-	0	0	0	0	0	4	5	15	11	2	Dry	1 female GCN
P59	09/06/21	0	0	-	-	-	0	0	0	0	0	4	5	15	11	2	Dry	None
P61	09/06/21	0	0	-	-	-	0	0	0	Tadpoles	0	4	4	16	11	3	Dry	Approx. 40% of pond accessible
P62	09/06/21	0	0	-	-	-	0	0	0	0	0	3	2	15	11	3	Dry	Approx. 50% pond accessible for survey

Pond	Survey Date	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad	Common frog	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg Search	Netting	Terrestrial Search												
P63	SCOPED OUT FROM FURTHER SURVEY - ANTISOCIAL BEHAVIOUR BY MEMBERS OF THE PUBLIC																	
P64	08/06/21	0	0	-	-	-	0	0	1	0	0	1	4	15	12	2	Light rain	None
P65	09/06/21	6	0	-	-	-	1	0	1	0	0	2	3	15	12	2	Light rain	Limited access due to unsafe conditions, 50% surveyed. 6 GCN, sex not recorded.
P66	SCOPED OUT FROM FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P67	SCOPED OUT FROM FURTHER SURVEY - GCN ABSENCE CONFIRMED THROUGH PRESENCE / LIKELY ABSENCE SURVEYS																	
P68	08/06/21	0	0	-	-	-	0	0	0	0	0	1	1	16	12	1	Dry	None
P70	08/06/21	-	0	-	-	-	0	0	1	1	0	2	4	16	12	2	Dry	Too shallow to trap
P71	SCOPED OUT FROM FURTHER SURVEY - DRY																	
P72	SCOPED OUT FROM FURTHER SURVEY - DRY																	
P73	DRY AT TIME OF SURVEY ASSUMED GCN LIKELY ABSENT FOR DISTRICT LEVEL LICENSING PURPOSES - SCOPED OUT FROM PRESENCE / LIKELY ABSENCE SURVEY																	
P75a	SCOPED OUT FROM FURTHER SURVEY - GCN ABSENCE CONFIRMED THROUGH PRESENCE / ABSENCE SURVEYS																	
P77	SCOPED OUT FROM FURTHER SURVEY - DRY																	
P81	SCOPED OUT FOR FURTHER SURVEY DUE TO A HSI SCORE OF <0.50																	
P83	NOT SURVEYED – NO ACCESS																	
P84	NOT SURVEYED – NO ACCESS																	
P85	NOT SURVEYED – NO ACCESS																	
P86	NOT SURVEYED – NO ACCESS																	
P87	NOT SURVEYED – NO ACCESS																	
P88	NOT SURVEYED – NO ACCESS																	
P89	NOT SURVEYED – NO ACCESS																	
P90	NOT SURVEYED – NO ACCESS																	
P91	NOT SURVEYED – NO ACCESS																	
P92	NOT SURVEYED – NO ACCESS																	
P93	NOT SURVEYED – NO ACCESS																	

Pond	Survey Date	Max. GCN Count					Smooth newt max. count	Palmate newt max. count	Common toad	Common frog	Other species	*Turbidity	**Vegetation cover	Temp when torching (°C)	Min overnight temp (°C)	***Wind	Rain	Notes
		Bottle trap	Torch	Egg Search	Netting	Terrestrial Search												
P94	NOT SURVEYED – NO ACCESS																	
P95	NOT SURVEYED – NO ACCESS																	
P96	NOT SURVEYED – NO ACCESS																	
P97	NOT SURVEYED – NO ACCESS																	
P98	NOT SURVEYED – NO ACCESS																	
P99	NOT SURVEYED – NO ACCESS																	
P100	NOT SURVEYED – NO ACCESS																	
P101	NOT SURVEYED – NO ACCESS																	
P102	NOT SURVEYED – NO ACCESS																	
P103	NOT SURVEYED – NO ACCESS																	
P104	NOT SURVEYED – NO ACCESS																	
P105	NOT SURVEYED – NO ACCESS																	
P106	NOT SURVEYED – NO ACCESS																	
P107	SCOPED OUT FROM FURTHER SURVEY - DRY																	
P108	NOT SURVEYED – NO ACCESS																	
P109	NOT SURVEYED – NO ACCESS																	
P110	NOT SURVEYED – NO ACCESS																	

*Turbidity (0 - completely clear to 5 - very turbid)

**Vegetation cover (0 - no vegetation, 5 - completely obscured)

***Wind Speed (Beaufort scale)

Ponds highlighted green were confirmed to support GCN in 2021

Annex E Figures

Figure 8.8.1: GCN Desk Study Records

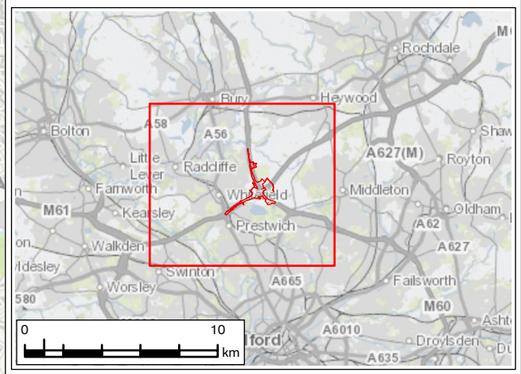
Figure 8.8.2: GCN HSI Assessment Results

Figure 8.8.3: GCN Presence / Likely Absence

ENVIRONMENTAL STATEMENT APPENDIX 8.8 FIGURE 8.8.1

Legend

- Order Limits
- Study Area based on 2km area around Provisional Order Limits
- Great Crested Newt Desk Study Record
- European Protected Species Mitigation Licence application
- European Protected Species Mitigation Licence Return



P01	JAN 24	For DCO application	LT	MS	JR	BB
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Development Consent Order Number:	Development Consent Order Drawing Number:
TR010064	6.3

Client

national highways

Project

REGIONAL DELIVERY PARTNERSHIP
M60/M62/M66 SIMISTER ISLAND INTERCHANGE

Drawing Title

GREAT CRESTED NEWT DESK STUDY RECORDS

Drawing Status	S4 – SUITABLE FOR STAGED APPROVAL	
Scale @ A3	1:30,000	DO NOT SCALE
Jacobs No.	B36601F0	
Client No.	HE548642	Rev P01

Drawing Number

HE548642-JAC-LDC-SII_MLT-SK-LE-0028

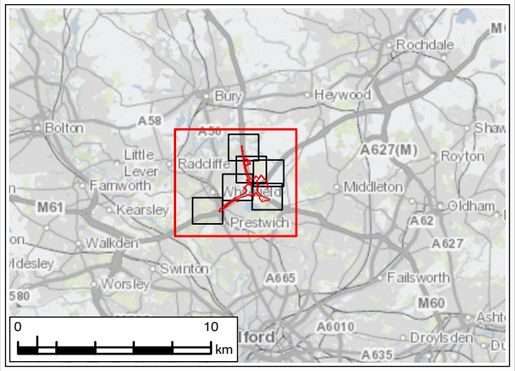
ENVIRONMENTAL STATEMENT APPENDIX 8.8 FIGURE 8.8.2

Legend

- Order Limits
- Survey Area based on 250m area around Provisional Order Limits
- Survey Area based on 500m area around Provisional Order Limits

Habitat Suitability Index Result

- Excellent
- Good
- Average
- Below Average
- Poor
- Pond Not Surveyed (due to access constraints or ponds located outside of survey area at the time of HSI survey)
- Dry



P01	JAN 24	For DCO application	LT	MS	JR	BB
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Development Consent Order Number: TR010064

Development Consent Order Drawing Number: 6.3

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
M60/M62/M66 SIMISTER ISLAND INTERCHANGE

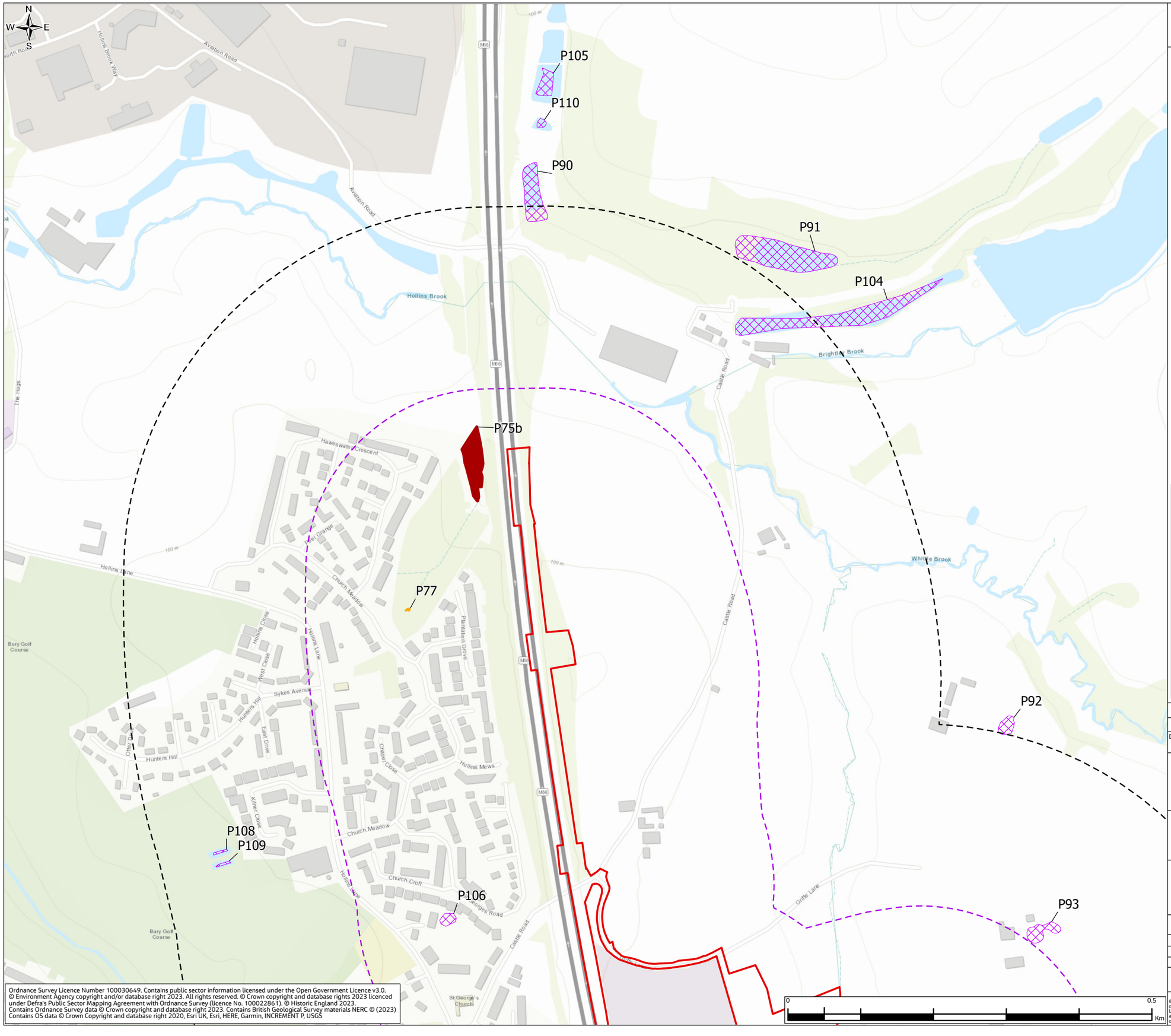
Drawing Title: GREAT CRESTED NEWT HABITAT SUITABILITY INDEX ASSESSMENT RESULTS SHEET 1 OF 7

Drawing Status: S4 – SUITABLE FOR STAGED APPROVAL

Scale @ A3	1:22,000	DO NOT SCALE
Jacobs No.	B36601F0	
Client No.	HE548642	Rev P01

Drawing Number: HE548642-JAC-LDC-SII_MLT-SK-LE-0029

ENVIRONMENTAL STATEMENT APPENDIX 8.8 FIGURE 8.8.2

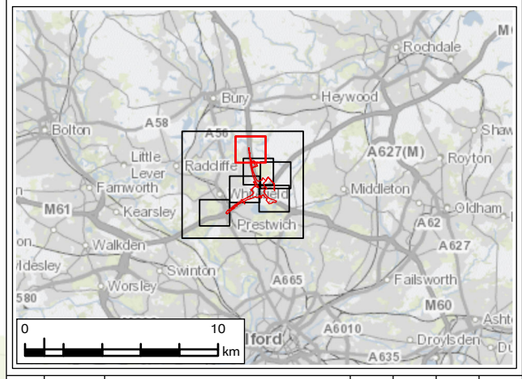


Legend

- Order Limits
- Survey Area based on 250m area around Provisional Order Limits
- Survey Area based on 500m area around Provisional Order Limits

Habitat Suitability Index Result

- Excellent
- Good
- Average
- Below Average
- Poor
- Pond Not Surveyed (due to access constraints or ponds located outside of survey area at the time of HSI survey)
- Dry



P01	JAN 24	For DCO application	LT	MS	JR	BB
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Development Consent Order Number:	Development Consent Order Drawing Number:
TR010064	6.3

Client

national highways

Project

REGIONAL DELIVERY PARTNERSHIP
M60/M62/M66 SIMISTER ISLAND INTERCHANGE

Drawing Title

GREAT CRESTED NEWT HABITAT SUITABILITY INDEX ASSESSMENT RESULTS
SHEET 2 OF 7

Drawing Status

S4 – SUITABLE FOR STAGED APPROVAL

Scale @ A3	1:5,000	DO NOT SCALE
Jacobs No.	B36601F0	
Client No.	HE548642	Rev P01

Drawing Number

HE548642-JAC-LDC-SII_MLT-SK-LE-0029

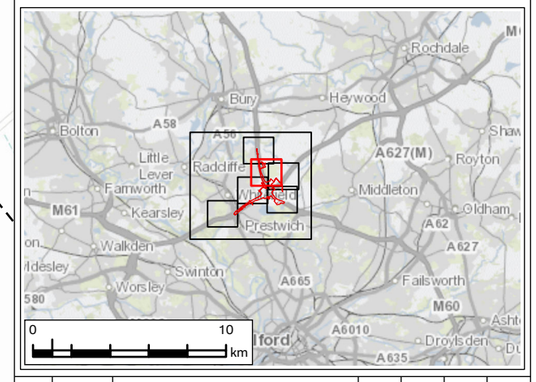
ENVIRONMENTAL STATEMENT APPENDIX 8.8 FIGURE 8.8.2

Legend

- Order Limits
- Survey Area based on 250m area around Provisional Order Limits
- Survey Area based on 500m area around Provisional Order Limits

Habitat Suitability Index Result

- Excellent
- Good
- Average
- Below Average
- Poor
- Pond Not Surveyed (due to access constraints or ponds located outside of survey area at the time of HSI survey)
- Dry



P01	JAN 24	For DCO application	LT	MS	JR	BB
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Development Consent Order Number:	Development Consent Order Drawing Number:
TR010064	6.3

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
M60/M62/M66 SIMISTER ISLAND INTERCHANGE

Drawing Title: GREAT CRESTED NEWT HABITAT SUITABILITY INDEX ASSESSMENT RESULTS
SHEET 3 OF 7

Drawing Status: S4 – SUITABLE FOR STAGED APPROVAL

Scale @ A3	1:5,000	DO NOT SCALE
Jacobs No.	B36601F0	
Client No.	HE548642	Rev P01

Drawing Number: HE548642-JAC-LDC-SII_MLT-SK-LE-0029

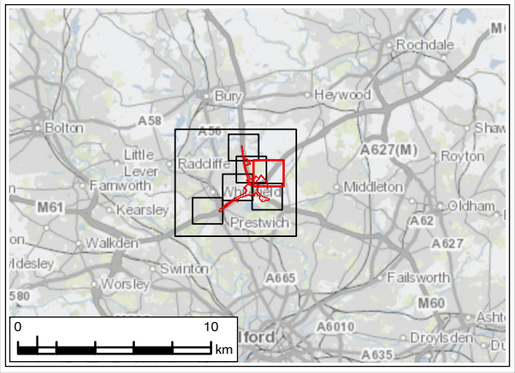
ENVIRONMENTAL STATEMENT APPENDIX 8.8 FIGURE 8.8.2

Legend

- Order Limits
- Survey Area based on 250m area around Provisional Order Limits
- Survey Area based on 500m area around Provisional Order Limits

Habitat Suitability Index Result

- Excellent
- Good
- Average
- Below Average
- Poor
- Pond Not Surveyed (due to access constraints or ponds located outside of survey area at the time of HSI survey)
- Dry



P01	JAN 24	For DCO application	LT	MS	JR	BB
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Development Consent Order Number:	Development Consent Order Drawing Number:
TR010064	6.3

Client

national highways

Project

REGIONAL DELIVERY PARTNERSHIP
M60/M62/M66 SIMISTER ISLAND INTERCHANGE

Drawing Title

GREAT CRESTED NEWT HABITAT SUITABILITY INDEX ASSESSMENT RESULTS
SHEET 4 OF 7

Drawing Status

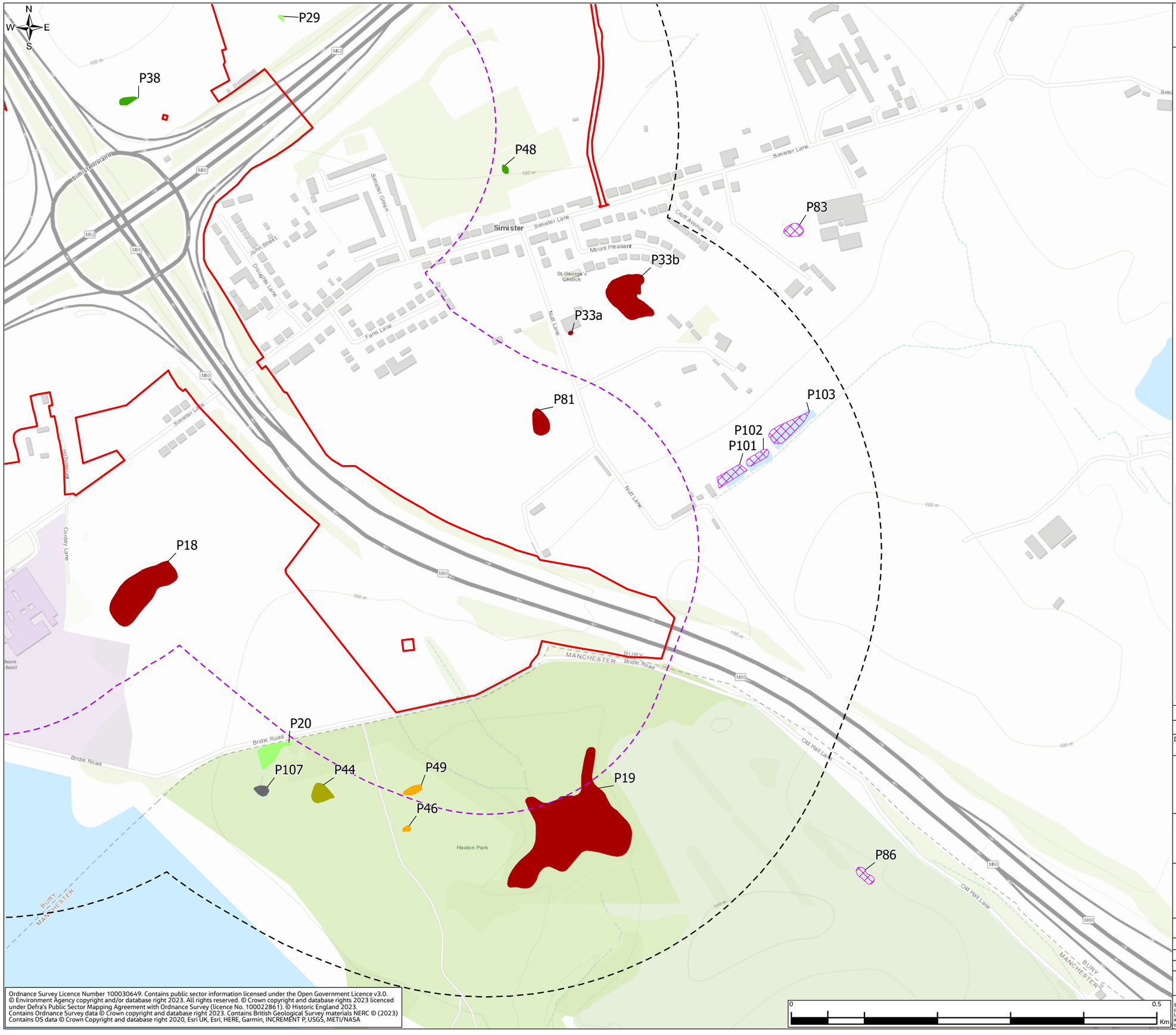
S4 – SUITABLE FOR STAGED APPROVAL

Scale @ A3	1:5,000	DO NOT SCALE
Jacobs No.	B36601F0	
Client No.	HE548642	Rev P01

Drawing Number

HE548642-JAC-LDC-SII_MLT-SK-LE-0029

ENVIRONMENTAL STATEMENT APPENDIX 8.8 FIGURE 8.8.2

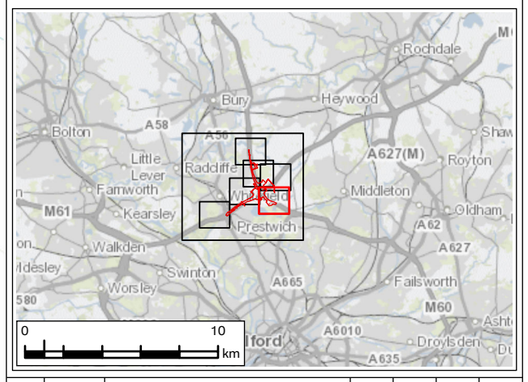


Legend

- Order Limits
- Survey Area based on 250m area around Provisional Order Limits
- Survey Area based on 500m area around Provisional Order Limits

Habitat Suitability Index Result

- Excellent
- Good
- Average
- Below Average
- Poor
- Pond Not Surveyed (due to access constraints or ponds located outside of survey area at the time of HSI survey)
- Dry



Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
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Development Consent Order Number:	Development Consent Order Drawing Number:
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Client

national highways

Project

REGIONAL DELIVERY PARTNERSHIP
M60/M62/M66 SIMISTER ISLAND INTERCHANGE

Drawing Title

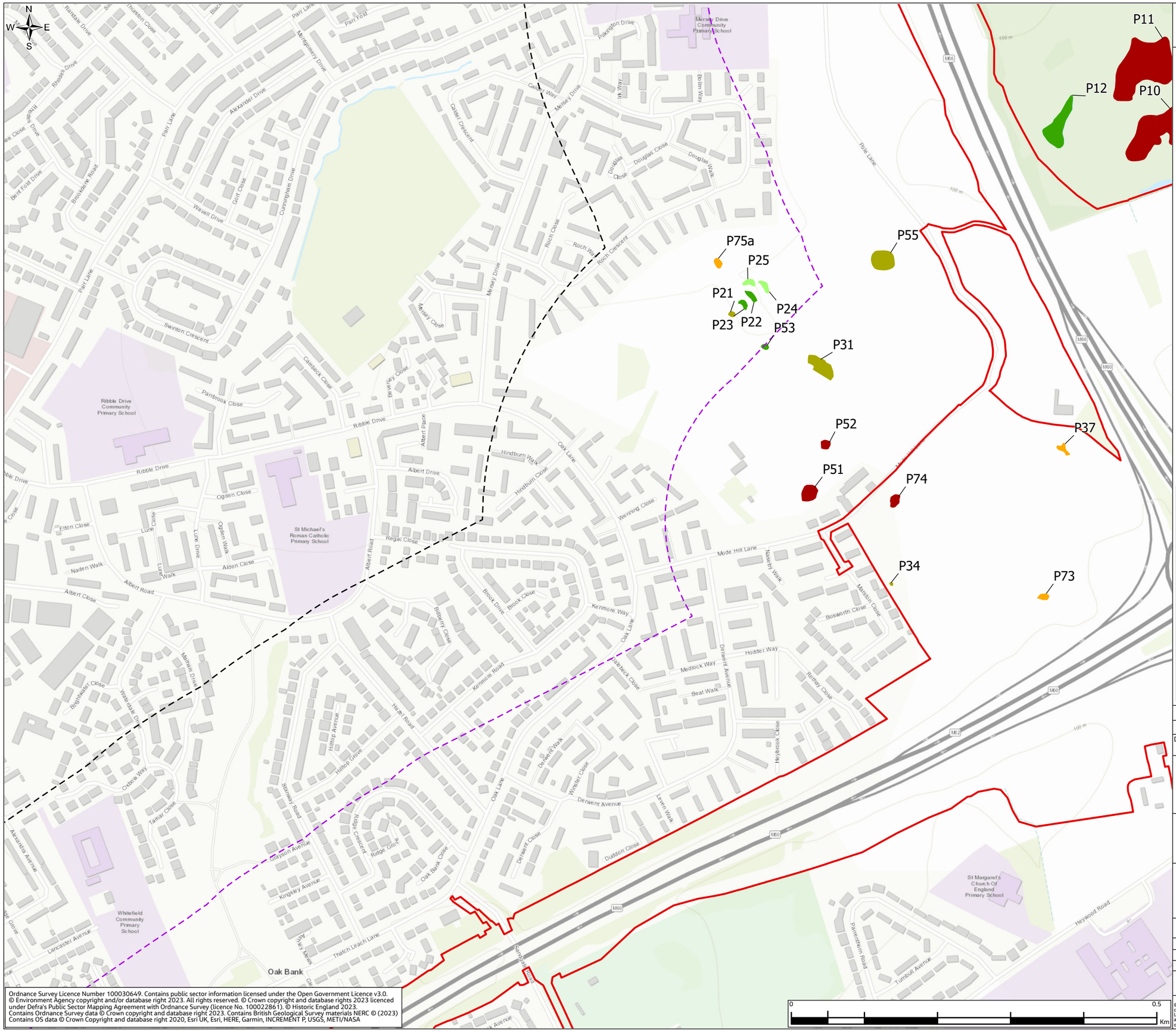
GREAT CRESTED NEWT HABITAT SUITABILITY INDEX ASSESSMENT RESULTS
SHEET 5 OF 7

Drawing Status: S4 – SUITABLE FOR STAGED APPROVAL

Scale @ A3	1:5,000	DO NOT SCALE
Jacobs No.	B36601F0	Rev P01
Client No.	HE548642	

Drawing Number: HE548642-JAC-LDC-SII_MLT-SK-LE-0029

ENVIRONMENTAL STATEMENT APPENDIX 8.8 FIGURE 8.8.2



Legend

- Order Limits
- Survey Area based on 250m area around Provisional Order Limits
- Survey Area based on 500m area around Provisional Order Limits

Habitat Suitability Index Result

- Excellent
- Good
- Average
- Below Average
- Poor
- Pond Not Surveyed (due to access constraints or ponds located outside of survey area at the time of HSI survey)
- Dry

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Development Consent Order Number:	Development Consent Order Drawing Number:
TR010064	6.3

Client

national highways

Project

REGIONAL DELIVERY PARTNERSHIP
M60/M62/M66 SIMISTER ISLAND INTERCHANGE

Drawing Title

GREAT CRESTED NEWT HABITAT SUITABILITY INDEX ASSESSMENT RESULTS
SHEET 6 OF 7

Drawing Status	S4 – SUITABLE FOR STAGED APPROVAL	
Scale @ A3	1:5,000	DO NOT SCALE
Jacobs No.	B36601F0	
Client No.	HE548642	Rev P01

Drawing Number

HE548642-JAC-LDC-SII_MLT-SK-LE-0029

ENVIRONMENTAL STATEMENT APPENDIX 8.8 FIGURE 8.8.2

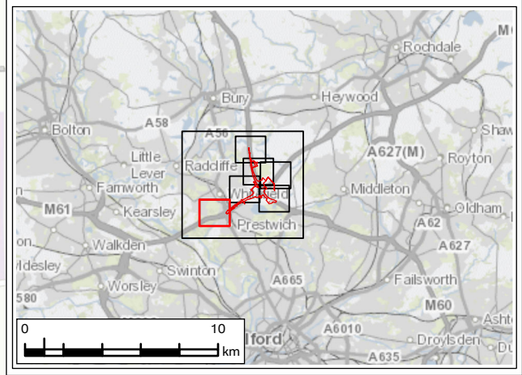
Legend

- Order Limits
- Survey Area based on 250m area around Provisional Order Limits
- Survey Area based on 500m area around Provisional Order Limits

Habitat Suitability Index Result

- Excellent
- Good
- Average
- Below Average
- Poor
- Pond Not Surveyed (due to access constraints or ponds located outside of survey area at the time of HSI survey)
- Dry

P100
P87
P88
P89



P01	JAN 24	For DCO application	LT	MS	JR	BB
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Development Consent Order Number:	Development Consent Order Drawing Number:
TR010064	6.3

Client

national highways

Project

REGIONAL DELIVERY PARTNERSHIP
M60/M62/M66 SIMISTER ISLAND INTERCHANGE

Drawing Title

GREAT CRESTED NEWT HABITAT SUITABILITY INDEX ASSESSMENT RESULTS
SHEET 7 OF 7

Drawing Status: S4 – SUITABLE FOR STAGED APPROVAL

Scale @ A3	1:5,000	DO NOT SCALE
Jacobs No.	B36601F0	
Client No.	HE548642	Rev P01

Drawing Number: HE548642-JAC-LDC-SII_MLT-SK-LE-0029

0 0.5 Km

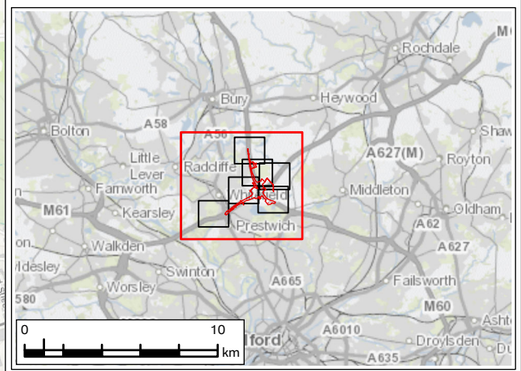
ENVIRONMENTAL STATEMENT APPENDIX 8.8 FIGURE 8.8.3

Legend

- Order Limits
- Survey Area based on 250m area around Provisional Order Limits
- Survey Area based on 500m area around Provisional Order Limits

Great Crested Newt Ponds

- Great Crested Newt Present
- Great Crested Newt Likely Absent
- Great Crested Newt Absent - Survey Methods Significantly Constrained
- Dry
- Pond Not Surveyed
- Pond Not Surveyed - Scoped Out



P01	JAN 24	For DCO application	LT	MS	JR	BB
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Development Consent Order Number:	Development Consent Order Drawing Number:
TR010064	6.3

Client

national highways

Project

REGIONAL DELIVERY PARTNERSHIP
M60/M62/M66 SIMISTER ISLAND INTERCHANGE

Drawing Title

GREAT CRESTED NEWT PRESENCE/LIKELY ABSENCE
SHEET 1 OF 7

Drawing Status: S4 – SUITABLE FOR STAGED APPROVAL

Scale @ A3	1:22,000	DO NOT SCALE
Jacobs No.	B36601F0	
Client No.	HE548642	Rev P01

Drawing Number: HE548642-JAC-LDC-SII_MLT-SK-LE-0030

0 0.5 Km

ENVIRONMENTAL STATEMENT APPENDIX 8.8 FIGURE 8.8.3

Legend

- Order Limits
- Survey Area based on 250m area around Provisional Order Limits
- Survey Area based on 500m area around Provisional Order Limits

Great Crested Newt Ponds

- Great Crested Newt Present
- Great Crested Newt Likely Absent
- Great Crested Newt Absent - Survey Methods Significantly Constrained
- Dry
- Pond Not Surveyed
- Pond Not Surveyed - Scoped Out

P01	JAN 24	For DCO application	LT	MS	JR	BB
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Development Consent Order Number: TR010064

Development Consent Order Drawing Number: 6.3

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
M60/M62/M66 SIMISTER ISLAND INTERCHANGE

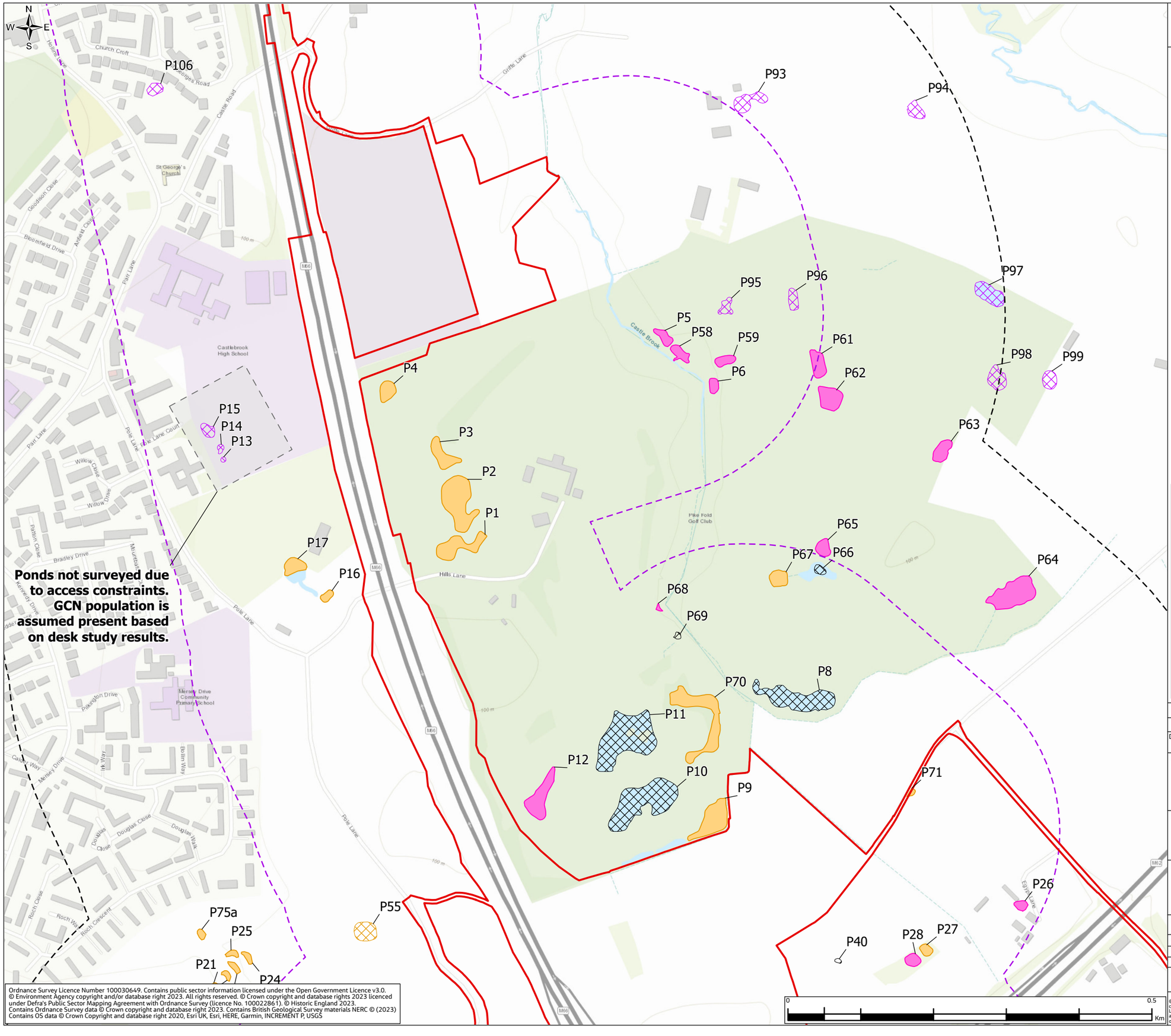
Drawing Title: GREAT CRESTED NEWT PRESENCE/LIKELY ABSENCE SHEET 2 OF 7

Drawing Status: S4 – SUITABLE FOR STAGED APPROVAL

Scale @ A3	1:5,000	DO NOT SCALE
Jacobs No.	B36601F0	
Client No.	HE548642	Rev P01

Drawing Number: HE548642-JAC-LDC-SII_MLT-SK-LE-0030

ENVIRONMENTAL STATEMENT APPENDIX 8.8 FIGURE 8.8.3



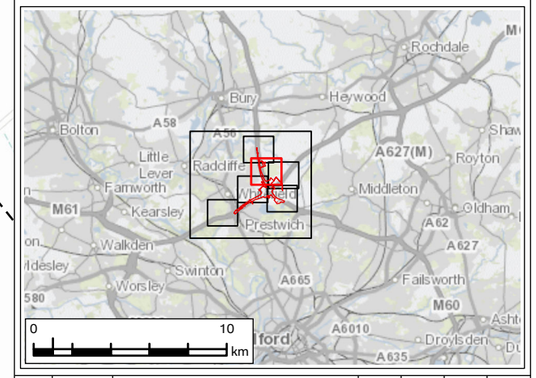
Ponds not surveyed due to access constraints. GCN population is assumed present based on desk study results.

Legend

- Order Limits
- Survey Area based on 250m area around Provisional Order Limits
- Survey Area based on 500m area around Provisional Order Limits

Great Crested Newt Ponds

- Great Crested Newt Present
- Great Crested Newt Likely Absent
- Great Crested Newt Absent - Survey Methods Significantly Constrained
- Dry
- Pond Not Surveyed
- Pond Not Surveyed - Scoped Out



Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	JAN 24	For DCO application	LT	MS	JR	BB

Development Consent Order Number:	Development Consent Order Drawing Number:
TR010064	6.3

Client: national highways

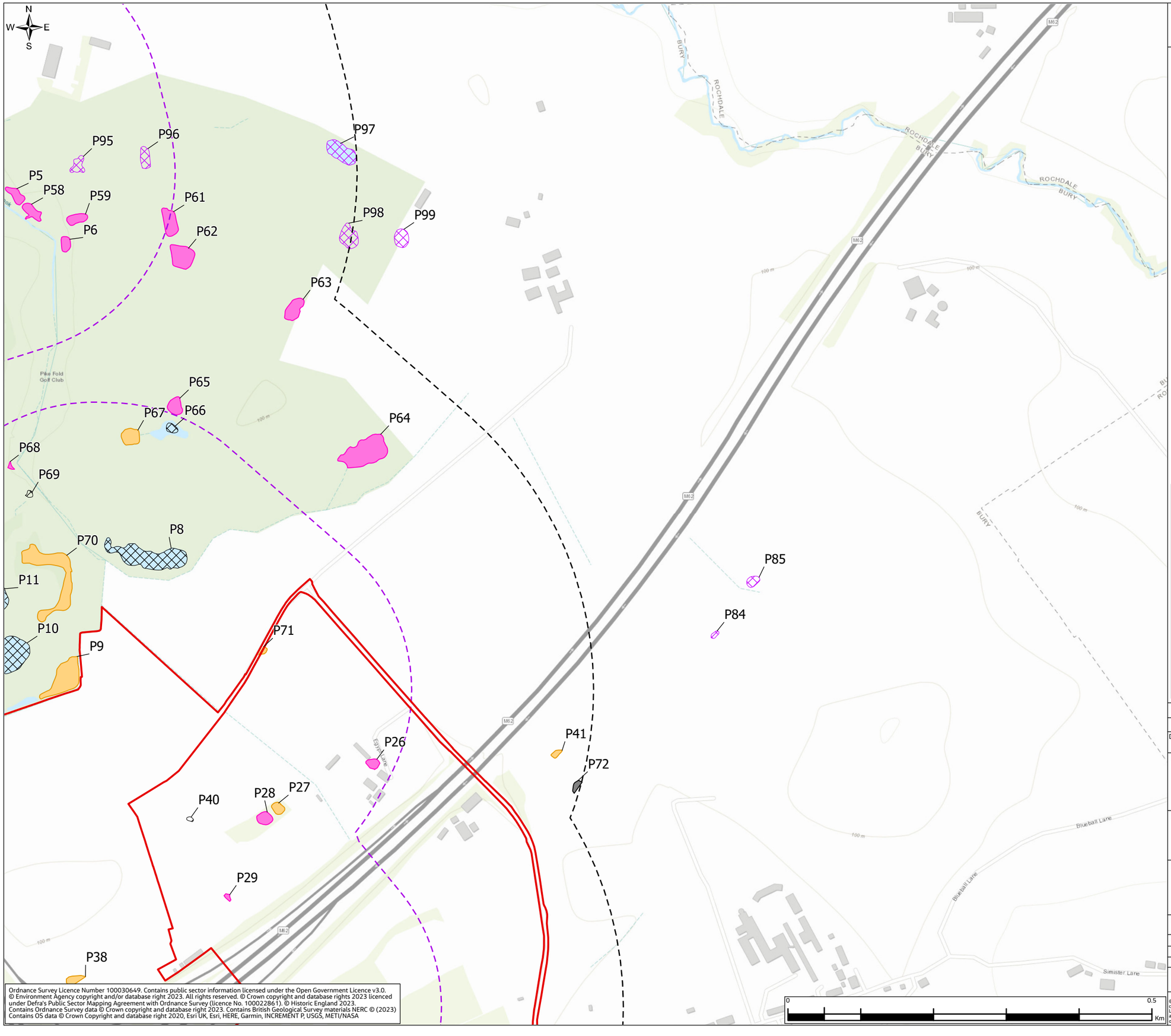
Project: REGIONAL DELIVERY PARTNERSHIP
M60/M62/M66 SIMISTER ISLAND INTERCHANGE

Drawing Title: GREAT CRESTED NEWT PRESENCE/LIKELY ABSENCE SHEET 3 OF 7

Drawing Status	S4 – SUITABLE FOR STAGED APPROVAL	
Scale @ A3	1:5,000	DO NOT SCALE
Jacobs No.	B36601F0	
Client No.	HE548642	Rev P01

Drawing Number: HE548642-JAC-LDC-SII_MLT-SK-LE-0030

ENVIRONMENTAL STATEMENT
APPENDIX 8.8 FIGURE 8.8.3



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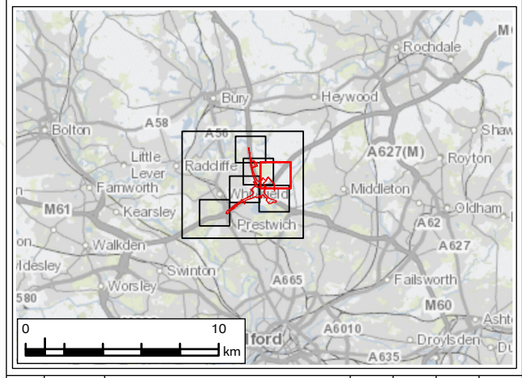
Legend

- Order Limits
- Survey Area based on 250m area around Provisional Order Limits
- Survey Area based on 500m area around Provisional Order Limits

Great Crested Newt Ponds

- Great Crested Newt Present
- Great Crested Newt Likely Absent
- Great Crested Newt Absent - Survey Methods Significantly Constrained
- Dry
- Pond Not Surveyed
- Pond Not Surveyed - Scoped Out



Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	JAN 24	For DCO application	LT	MS	JR	BB

Development Consent Order Number:	Development Consent Order Drawing Number:
TR010064	6.3

Client

national highways

Project

REGIONAL DELIVERY PARTNERSHIP
M60/M62/M66 SIMISTER ISLAND INTERCHANGE

Drawing Title

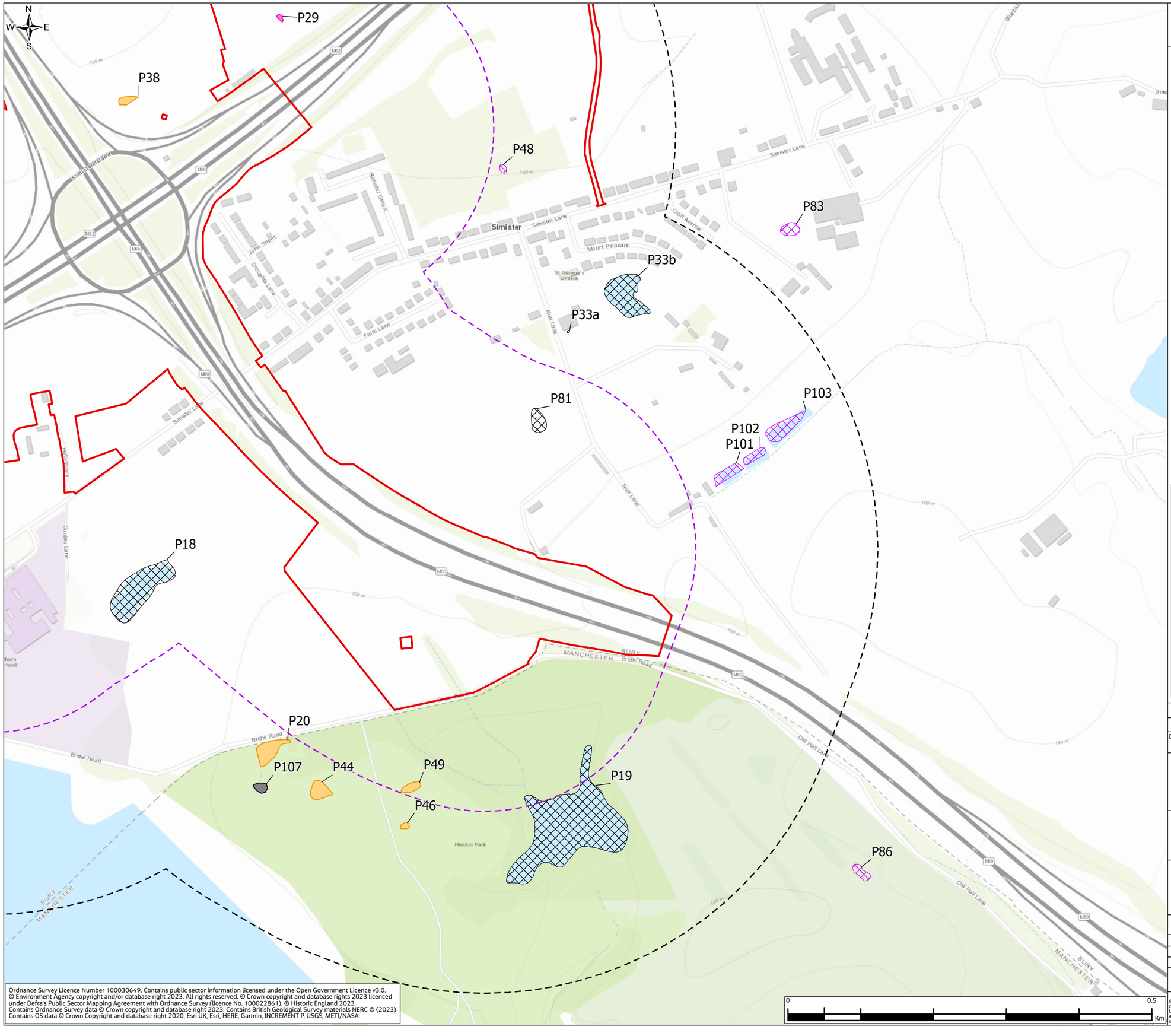
GREAT CRESTED NEWT PRESENCE/LIKELY ABSENCE
SHEET 4 OF 7

Drawing Status: S4 – SUITABLE FOR STAGED APPROVAL

Scale @ A3	1:5,000	DO NOT SCALE
Jacobs No.	B36601F0	
Client No.	HE548642	Rev P01

Drawing Number: HE548642-JAC-LDC-SII_MLT-SK-LE-0030

ENVIRONMENTAL STATEMENT
APPENDIX 8.8 FIGURE 8.8.3



Legend

- Order Limits
- Survey Area based on 250m area around Provisional Order Limits
- Survey Area based on 500m area around Provisional Order Limits

Great Crested Newt Ponds

- Great Crested Newt Present
- Great Crested Newt Likely Absent
- Great Crested Newt Absent - Survey Methods Significantly Constrained
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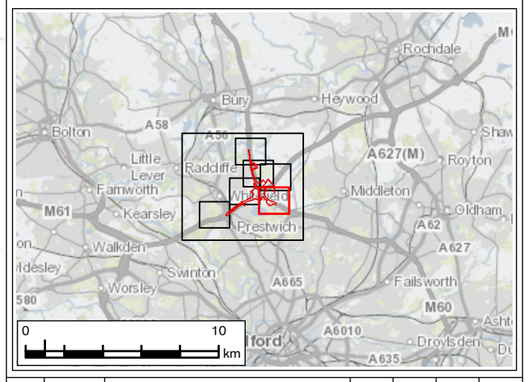
- Pond Not Surveyed
- Pond Not Surveyed - Scoped Out



Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
P01	JAN 24	For DCO application	LT	MS	JR	BB

Development Consent Order Number:	Development Consent Order Drawing Number:
TR010064	6.3

Client

national highways

Project

REGIONAL DELIVERY PARTNERSHIP
M60/M62/M66 SIMISTER ISLAND INTERCHANGE

Drawing Title

GREAT CRESTED NEWT PRESENCE/LIKELY ABSENCE
SHEET 5 OF 7

Drawing Status: S4 – SUITABLE FOR STAGED APPROVAL

Scale @ A3	1:5,000	DO NOT SCALE
Jacobs No.	B36601F0	Rev P01
Client No.	HE548642	

Drawing Number: HE548642-JAC-LDC-SII_MLT-SK-LE-0030

ENVIRONMENTAL STATEMENT APPENDIX 8.8 FIGURE 8.8.3

Legend

- Order Limits
- Survey Area based on 250m area around Provisional Order Limits
- Survey Area based on 500m area around Provisional Order Limits

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- Great Crested Newt Likely Absent
- Great Crested Newt Absent - Survey Methods Significantly Constrained
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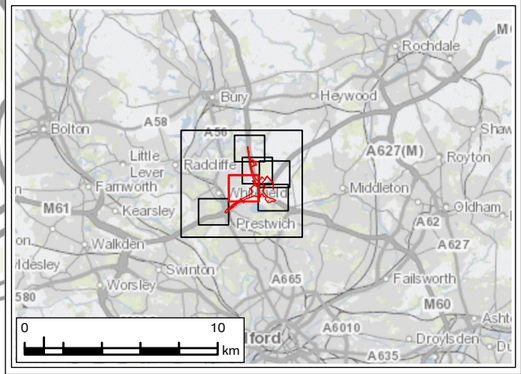

P01	JAN 24	For DCO application	LT	MS	JR	BB
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Development Consent Order Number: TR010064

Development Consent Order Drawing Number: 6.3

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
M60/M62/M66 SIMISTER ISLAND INTERCHANGE

Drawing Title: GREAT CRESTED NEWT PRESENCE/LIKELY ABSENCE
SHEET 6 OF 7

Drawing Status: S4 – SUITABLE FOR STAGED APPROVAL

Scale @ A3	1:5,000	DO NOT SCALE
Jacobs No.	B36601F0	
Client No.	HE548642	Rev P01

Drawing Number: HE548642-JAC-LDC-SII_MLT-SK-LE-0030

0 0.5 Km

ENVIRONMENTAL STATEMENT APPENDIX 8.8 FIGURE 8.8.3

Legend

- Order Limits
- Survey Area based on 250m area around Provisional Order Limits
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Great Crested Newt Ponds

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- Great Crested Newt Absent - Survey Methods Significantly Constrained
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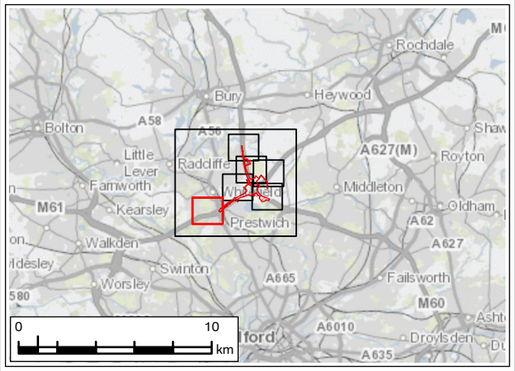

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P01	JAN 24	For DCO application	LT	MS	JR	BB

Development Consent Order Number: TR010064

Development Consent Order Drawing Number: 6.3

Client: national highways

Project: REGIONAL DELIVERY PARTNERSHIP
M60/M62/M66 SIMISTER ISLAND INTERCHANGE

Drawing Title: GREAT CRESTED NEWT PRESENCE/LIKELY ABSENCE
SHEET 7 OF 7

Drawing Status: S4 – SUITABLE FOR STAGED APPROVAL

Scale @ A3	1:5,000	DO NOT SCALE
Jacobs No.	B36601F0	
Client No.	HE548642	Rev P01

Drawing Number: HE548642-JAC-LDC-SII_MLT-SK-LE-0030

0 0.5 Km