

Great Crested Newt Survey Protocols – WHOLE SCHEME

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1. Introduction and Summary

This report presents the survey protocols for great crested newt *Triturus cristatus* Habitat Suitability Index (HSI) surveys and presence/absence surveys, which will be followed when undertaking surveys for the A6 Scheme.

A total of 254 potential waterbodies were identified within 500 m of the scheme, however 58 were found to no longer exist, and 35 were scoped out due to unsuitability, presence of barriers, or access was not permitted. HSI assessments were conducted on 147 known waterbodies on or within 500 m of the site. Of these, 101 were assessed by Mouchel in 2013 as being suitable for use by breeding great crested newt (GCN) and, where access was possible, subject to presence/absence and population surveys. However, inconsistencies in GCN survey data have been identified by AECOM during the survey data review process and it is apparent that there is insufficient and inadequate survey data to support a Natural England great crested newt mitigation licence application. As such, scheme-wide re-surveying of some of the ponds will be required.

Clarification is currently being sought as to which ponds will require re-surveying. It is known however that this will include a number of ponds that were not surveyed in 2013 due to access issues (details of which to be clarified by Mouchel) and an additional pond that was located during a 2014 walkover by AECOM ecologists. Ponds 34 and 139 require surveys as they have been included within a planning condition. In addition, a number of ponds that had previously been discounted due to barriers (e.g. railway) or where it had been anticipated that no earthworks were proposed, will need to be included due to the presence of earthworks and where NE have queried the reliability of the assumed barrier. It may be possible to discount some ponds where population size has already been confirmed for a particular area of the scheme, or where survey data was collected appropriately and do not form a meta population with other ponds not surveyed yet. These will be discussed with NE and confirmed to be acceptable to drop from the proposed survey schedule in writing with NE prior to removing them from the schedule. A full list of ponds to be surveyed will be produced following this confirmation.

Up to date survey information is required if a Natural England great crested newt mitigation licence is to be submitted prior to spring 2015. Guidance given by Natural England in their GCN Licence Application Method Statement *wml-a14-2_tcm6-4103.xls Application tools (4): Survey data - what kind, how much, how old?* will also be used to identify those ponds requiring re-survey and the level of survey necessary to support the mitigation licence application.

It is vital that survey data is recorded accurately and is consistent if it is to support a robust licence application. Recording forms have been compiled specifically to be used for this scheme, and can be found in Appendix A.

2. Legislation

Great crested newt is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of The Conservation of Habitats and Species Regulations 2010 (as amended) making it a European Protected Species.

It is an offence for anyone intentionally to kill, injure or disturb a great crested newt, to possess one (whether live or dead), or sell or offer for sale without a licence. It is also an offence to damage, destroy or obstruct access to any place used by great crested newt for shelter.

3. Habitat Requirements

Great crested newts require both aquatic and terrestrial habitat. Great crested newts tend to migrate to suitable aquatic breeding habitat between February and April, when conditions are favourable. Following the breeding period, breeding adults generally leave their aquatic habitat between late May and July.

Great crested newts forage for invertebrates on land as well as in water, with foraging above ground generally occurring at night. Suitable terrestrial foraging habitat includes rough grassland, scrub and woodland, with daily refuge often taking place under logs, rocks, leaf litter etc.

Moving into the winter months, when temperatures fall below 5°C (approximately), great crested newts enter a period of low activity and are generally dormant by the end of November. Over-wintering sites can include tree stump voids, animal burrows, rubble piles, log piles and dead wood.

4. Potential Impacts

New road schemes, road improvements and maintenance operations can affect great crested newts by destroying, degrading or fragmenting habitats. In addition, site clearance works and construction activities may directly cause great crested newt injury or mortality.

According to DMRB Volume 10 Section 4 Part 6 HA 98/01, new road schemes can potentially impact upon great crested newts through the following aspects of road construction and operation:

- Direct loss of habitat through land-take;
- Severance of habitat features;
- Road traffic related mortality; and
- Disruption to local hydrology.

5. Habitat Suitability Index (HSI) Survey Protocol

The Habitat Suitability Index (HSI)¹ is a tool used to provide a numerical indication of the quality of a waterbody in terms of great crested newt breeding and associated habitat requirements on a scale of 0-1 (0 indicating unsuitable habitat, 1 representing optimal habitat). HSI scores incorporate ten Suitability Indices (SI), all of which are factors thought to affect great crested newt, namely;

- SI 1 site location;
- SI 2 size of the pond;
- SI 3 pond drying;
- SI 4 water quality;
- SI 5 perimeter shading;
- SI 6 presence of waterfowl;
- SI 7 presence of fish;
- SI 8 number of ponds within 1km;
- SI 9 terrestrial habitat; and
- SI 10 macrophyte cover.

Once a measurement or category has been given for each SI this can be converted to a figure between 0 and 1 for use in the HSI calculation. This figure is either translated from an assigned category or measurement or read from a graph in the case of a percentage or number.

The HSI is then calculated from the following formula:

$$\text{HSI} = (\text{SI1} \times \text{SI2} \times \text{SI3} \times \text{SI4} \times \text{SI5} \times \text{SI6} \times \text{SI7} \times \text{SI8} \times \text{SI9} \times \text{SI10})$$

This will give a final HSI result between 0 and 1 presenting a measure of habitat suitability for GCN. Typically, presence/absence surveys would be undertaken on waterbodies considered to offer suitable habitat opportunities, i.e. those which receive a score between 0.5 and 1.

All ponds where a HSI has not been completed to date will be subject to a HSI in conjunction with the first presence/likely absence survey in order to establish its suitability. In addition, a pond description and photograph will be obtained.

HSIs of ponds and the terrestrial habitat must be reviewed/ground truthed no earlier than 3 months prior to a licence application. Therefore all ponds and habitats within the licensable areas of the A6 require revisiting within 3 months of the licence submission. A HSI recording form can be found in Appendix A. It will also be necessary for surveyors to carry a copy of ARG UK Advice Note 5, which provides GCN HSI guidance.

6. Presence/ likely absence survey protocol

Great crested newt presence/likely absence surveys are typically undertaken on those waterbodies which receive HSI scores between 0.5 and 1. It must be noted however that the great crested newt Habitat Suitability Index is a supportive tool only and not a standalone assessment. The experience and judgement of a trained ecologist is also very important when assessing ponds for their suitability.

The ponds which have been assessed as offering suitable habitat opportunities for great crested newt will be subject to great crested newt presence/likely absence surveys.

The great crested newt presence/ likely absence survey methodology will follow guidance provided in English Nature (2001) 'Great Crested Newt Mitigation Guidelines' which will involve employing at least three appropriate survey methodologies (where possible), including; bottle trapping, torch surveys, refuge search, netting and egg searching.

Each waterbody will require four survey visits in suitable weather conditions, between mid-March to mid-June.

¹ Oldham R.S., Keeble J., Swan M.J.S & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological journal 10 (4), 143-155

For each pond, (where access is agreed in time) at least two of the initial four survey visits will be undertaken between mid-April to mid-May. The surveys will be spread through the survey period as far as possible to maximise the chance of finding newts if they are using the waterbodies.

Two additional surveys will need to be undertaken on any waterbody where GCN are identified, to give an estimation of the population size and to support any Natural England development licence application.

ALL surveys must be undertaken between mid-March and mid-June unless a season extension is granted by NE where the temperatures are suitable.

Surveys, particularly torch surveys and bottle trapping, will only be carried out when the night time-time air temperature is at least, or higher than, 5°C and there is no/little wind or rain.

More information on the survey techniques is provided below:

Bottle Trapping

Bottle traps (normally made from 2-litre plastic bottles) are set around the margin of the waterbody at dusk and left overnight to catch adults during the breeding season. Traps are set at an approximate density of one trap per two metres of shoreline dependent on individual site variations. The guidelines set out by Natural England (previously known as English Nature) must be followed strictly to ensure the welfare of trapped newts and other aquatic organisms, in particular with reference to the temperature – i.e. no trapping must take place at temperatures below 5°C. This includes the following:

- Submerged bottle traps with an air bubble must not go unchecked for longer than 17 hours overnight, and should be checked between 06:00 and 11:00 hours.
- Bottle traps must not be set in full summer sunlight or at night during periods of very hot weather as the temperature of the water within the bottle would rise and oxygen levels would fall.
- Should water shrews be trapped inadvertently, trapping will be halted at that particular pond and another survey method will be used.

Torch Survey

The waterbody is thoroughly searched using a torch between dusk and midnight. Powerful torches should be used, with 50,000 candlepower as a recommended minimum. 1,000,000 candlepower torches are also used but can however cause greater disturbance. To allow comparison between ponds, the same power of torch should be used on every survey occasion. Surveys must be undertaken during little to no wind or rain, and not during low temperatures as they would be ineffective.

The surveyors walk slowly around the perimeter of the waterbody at least once (where access is possible), checking for newts in the beam of the torchlight. Care should be taken to minimise disturbance to the newts and other wildlife which may be present (e.g. nesting birds).

Egg Search

Submerged and floating aquatic vegetation is checked by the surveyor in order to confirm presence/absence of great crested newt eggs. This is often a very effective method for detecting great crested newt presence, but eggs can prove difficult to find in heavily vegetated ponds with small newt populations, or those with no accessible vegetation. Searches are made for folded leaves of suitable vegetation. These are unfolded carefully to establish what species of newt has laid an egg. Where possible this is replaced. Where little or no standard plant species used as egg laying strata are present, then searches are made of other species, including reeds, grasses and leaf litter within the edges of the ponds as these can also be used by newts.

Egg searches *must be* terminated when the presence of GCN is confirmed to avoid excess damage to the eggs. This method is unreliable for population estimates.

Refuge Search

This technique involves lifting up and looking under objects such as logs, stones etc close to the pond perimeter, which may be used by great crested newts for refuge purposes.

Netting

Great crested newts can be captured by sampling areas around the pond edge. This involves sweep netting the pond, using a long-handled pond net, for 15 minutes per 50m of pond perimeter. Netting can be useful to for finding larvae during late summer and can be carried out during the day or at night, although at night is likely to produce better results as the adult newts will be in open water.

Summary of survey standards:

Method: Three survey methods (preferably torch survey, bottle-trapping and egg search) per pond, per survey visit.
Effort: Four survey visits in suitable weather conditions, with an additional two surveys if GCN are found.

Timing: mid-March to mid-June, with at least half of the survey visits during mid-April to mid-May.

A survey recording form can be found in Appendix A.

7. Population Size Class Assessment

Should GCN be found in any of the ponds then two additional surveys will need to be undertaken to give an estimation of the population size and to support any Natural England development licence application. When a pond is subjected to six surveys (four initial surveys, plus two for population size estimate), at least three of these must be undertaken between mid-April to mid-May.

8. Health and Safety

Appropriate Risk Assessments will be prepared and surveyors will be aware of potential biohazards such as Weil's disease. If when conducting the surveys, surveyors identify further risks/hazards, these will be reported and added to the Risk Assessment.

Surveyors will work in pairs. Appropriate Personal Protective Equipment (PPE), in particular safety footwear and high visibility jackets will be required at all times. A life vest will be worn if required; however, ponds will not be entered where it is not required. Should it be necessary to enter a pond, one surveyor must remain on the bank and the pond should not be entered above wellington boot height.

9. Implications for the A6 scheme

Previous surveys undertaken by Mouchel during 2013 indicated a number of ponds with no access. These have been identified for survey during 2014, with the addition of a pond (259a) detected during a 2014 walkover survey undertaken by AECOM ecologists.

Clarification has been sought from Mouchel as to which of the ponds access had been denied for and would require to be surveyed during spring 2014 due to inconsistencies between the documents and maps from the Environmental Statement, GCN survey report and the GCN mitigation licence. The list of ponds provided will be included with those ponds identified as requiring further surveys within this report.

Ponds 34 and 139 require surveys as they have been included within a planning condition. In addition, a number of ponds that had previously been discounted due to barriers (e.g. railway) or where it had been anticipated that no earthworks were proposed, will need to be included due to the presence of earthworks and where NE have queried the reliability of the assumed barrier.

In addition to these, it has become apparent that the majority of the ponds were surveyed under unsuitable conditions and will require re-surveying in order to support a NE licence application. NE has denied the GCN licence application for Styal Golf Course with this as one of the reasons.

It may be possible to discount some ponds where population size has already been confirmed for a particular area of the scheme, or where survey data was collected appropriately and do not form a meta population with other ponds not surveyed yet. These will be discussed with NE and confirmed to be acceptable to drop from the proposed survey schedule in writing with NE prior to removing them from the schedule. A full list of ponds to be surveyed will be produced following this confirmation.

The desk-based study suggests that potentially none of the 'no access' ponds will be lost to the development and therefore there will be no requirement for additional new ponds above those already proposed. It also appears that none of the no access ponds are located within areas of proposed newt fencing, although the proximity of ponds to the fencing will need to be assessed on site to ensure no damage is caused through fence installation.

For those ponds given suitable HSI scores, GCN presence/likely absence surveys will be undertaken, in accordance with appropriate survey protocol.

If GCN are found to be present within any of the no access ponds surveyed, or new populations of GCN are found in the re-surveyed ponds, then the mitigation that has been previously proposed by Mouchel for this species will need to be adapted accordingly. This could require adjustment of proposed amphibian fencing, adding in new lengths of fence and increasing the trapping effort; to ensure that GCN are captured and removed from the development area. Similarly, if larger populations are found in those ponds already known to support GCN trapping effort may need to be increased, more ponds may be required to be trapped out and replaced, and new areas of mitigation may be required where GCN are found and not previously identified to be present. In this scenario, the CPO boundary may not be sufficient to incorporate the areas of mitigation required in the locations required.

APPENDIX A – HSI and Survey Forms

A6 HSI Recording Form to be completed by an experienced ecologist

Date:		Surveyors (please provide full names):		
Pond number:		Photo number:		
H&S issues <i>e.g. steep sides, deep water, livestock etc.</i>				
Environmental risks <i>e.g. breeding birds, Crassula, Azolla present etc.</i>				
Adjacent land use:				
SI₁ Location	Grid Ref	A (optimal)	B (marginal)	C (unsuitable)
		✓ SI1	-	-
SI₂ Pond Area (m²)			Graph Reading	
SI₃ Pond Drying	Never	Rarely	Sometimes	Annually
SI₄ Water Quality	Good	Moderate	Poor	Bad
SI₅ Shade (<i>% perimeter shaded to at least 1m from shore</i>)			Graph Reading	
SI₆ Waterfowl	Absent	Minor	Major	
SI₇ Fish	Absent	Possible	Minor	Major
SI₈ Pond Count Number <i>desk-based - ponds within unobstructed 1km radius of pond divided by 3.14</i>			Graph Reading	
SI₉ Terrestrial Habitat	Good	Moderate	Poor	None
SI₁₀ Macrophytes <i>estimate % of pond surface area occupied by macrophyte cover (between May and end of September)</i>			Graph Reading	
Additional Information: Please include a pond description and an aquatic plant species list				

A6 Amphibian Survey Recording Form

<u>Amphibian Survey Recording Form – please fill in all sections prior to returning the form</u>		
Project Title	A6 SEMMMS	
Pond No		
Location (Scheme Area)		
Date		
Surveyors (please provide full names)		
Pond Survey Visit No		
Turbidity (0-5)		
Vegetation Cover (0-5)		
Pond Description		
<u>Survey Methods-Use at least three methods per survey visit (torch, bottle trapping and egg search as the priority). Egg search to cease once confirmed GCN breeding pond.</u>		
Egg Search Results		
Date		
Netting Results		
Date		
Refuge Search Results		
Date		
Torch Survey Results		
Date		
Time		
Conditions (recent rain etc)		
Air Temp (°C)		
Humidity(%)		
Cloud cover (okta)		
Wind speed (Beaufort scale)		
Results	GCN Female	
	GCN Male	
	GCN Unknown	
	GCN Juvenile	
	Smooth newts (M and F)	
	Palmate newts (M and F)	
	Other species	
Bottle Trap Setting		
Date		
Time		
Conditions (recent rain etc)		
Air Temp(°C) / Water Temp(°C)		
Humidity		
Cloud cover (okta)		
Wind speed (Beaufort scale)		
No of bottle traps set		
Bottle Trap Removal		
Date		
Time		
Conditions (recent rain etc)		
Air Temp(°C)		
Humidity		

Cloud cover (octares)		
Wind speed (Beaufort scale)		
No of bottle traps removed – confirm that this matches the number set – never leave a pond until all bottles are collected in.		
Results	GCN Female	
	GCN Male	
	GCN Unknown	
	GCN Juvenile	
	Smooth newts (M and F)	
	Palmate newts (M and F)	
	Other species	
Additional Comments- including any survey limitations which must be communicated to AECOM ecologists		