

# A47 Wansford to Sutton Dualling

**Scheme Number: TR010039**

**Volume 6**

## **6.3 Environmental Statement Appendices**

### **Appendix 8.6 – Great Crested Newt Survey Report**

APFP Regulation 5(2)(a)

Planning Act 2008

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

July 2021

Infrastructure Planning

Planning Act 2008

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

A47 Wansford to Sutton  
Development Consent Order 202[x]

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**ENVIRONMENTAL STATEMENT APPENDICES**  
**Appendix 8.6 - Great Crested Newt Survey Report**

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## 1. Introduction

- 1.1.1. Sweco UK Ltd has been appointed by Highways England to undertake a great crested newt (GCN) *Triturus cristatus* survey at of a site near the A47 at Wansford in line with the Road Investment Strategy announced in 2014 (Highways England 2014). This is to inform the Environmental Statement (ES) (TR010039/APP/6.1) Chapter at PCF Stage 3 for the A47 Wansford to Sutton Scheme, hereafter referred to as 'the Proposed Scheme'.
- 1.1.2. Previous GCN surveys were carried out at PCF Stage 1 (Amey, 2017). This report provides a summary of the GCN surveys undertaken by Sweco in May 2020 and provides recommendations for mitigation and further survey work where necessary.

## 1.2. Works description

- 1.2.1. The Proposed Scheme is designed to provide a new 2.6km dual carriageway which largely follows the existing A47 at the Wansford end, crossing to the north and running parallel to the existing A47 after Sutton Heath Road. There would also be a dedicated free-flow link road from the A1 southbound to the A47 eastbound to alleviate congestion at the Wansford junctions.
- 1.2.2. The Proposed Scheme is located at Wansford and extends eastwards to Sutton and forms a section of Single carriageway that is part of the main arterial highway route connecting to Peterborough and Norwich to the east.

## 2. Ecological background

### 2.1. Previous studies

#### Desk study

- 2.1.1. As part of a desk study undertaken at PCF Stage 1 (see Section 3.1) records of protected and notable species within 2km of the Site purchased from the Cambridgeshire and Peterborough Environmental Records Centre (CPERC) returned eight historical records of GCN recorded between 1984 and 1998 (Highways England, 2018b).

#### Extended Phase 1 habitat survey

- 2.1.2. An extended Phase 1 habitat survey was undertaken in 2016 and, combined with desktop study, identified suitable habitat for GCN, including standing water, within the 100m study area for extended Phase 1 habitat survey (Highways England, 2018b).

#### PCF Stage 1

- 2.1.3. At PCF Stage 1 habitat suitability index (HSI) assessments were undertaken on 29 waterbodies within the 500m survey area for GCN, the results of which identified 15 ponds which were recommended for further survey work (Amey, 2017). The HSI scores of the 15 ponds recommended for further survey work included: three ponds below average, five ponds average, six ponds good and one pond excellent.
- 2.1.4. An environmental DNA (eDNA) survey was undertaken on these 15 ponds at PCF Stage 1 in 2016 the results of which showed negative result for GCN eDNA (Highways England, 2018b).

#### PCF Stage 2

- 2.1.5. GCN as an ecological constraint were scoped out at PCF Stage 2 as they were found likely absent from the Site in the surveys undertaken at PCF Stage 1 (see Sections 2.1.2 and 2.1.3). As such, no further surveys for GCN were proposed (Highways England, 2018b) at PCF Stage 2.

## 2.2. Legislation

- 2.2.1. The great crested newt is afforded protection under the Conservation of Habitats & Species Regulations (CHSR) 2017 (as amended), which applies to all of its life stages. The great crested newt is also listed on Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended) which makes it an offence to:

- deliberately, intentionally or recklessly kill, injure or take a great crested newt
- deliberately, intentionally or recklessly take or destroy the eggs
- possess or control any live or dead specimen or anything derived from a great crested newt
- deliberately, intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a great crested newt
- deliberately, intentionally or recklessly disturb a great crested newt while it is occupying a structure or place which it uses for that purpose

## **Mistreatment**

2.2.2. The Animal Welfare Act 2006 came into force in 2007 and places a duty of care on an individual responsible for an animal. The duty of care is placed on an individual to meet the welfare needs of the animal. The Act states that the following are an animal's welfare needs:

- A suitable environment
- A suitable diet
- The ability to exhibit normal behaviour patterns
- Needs it has to be housed with, or apart from, other animals
- Protection from pain, suffering, injury and disease

2.2.3. Should mitigation such as capture and translocation of animals be required as a result of the development, the Animal Welfare Act 2006 would apply.

## **Cambridgeshire and Peterborough Local Priority Species (LPSs)**

2.2.4. GCN are listed as Local Priority Species (LPSs) by the Cambridgeshire and Peterborough Biodiversity Group (2015).

2.2.5. The list of LPS is reviewed annually and includes species likely to be resident or breeding in Cambridgeshire and Peterborough, UK priority species including those which are not UK Biodiversity Action Plan (BAP) research only and species recorded in Cambridgeshire and Peterborough in the last 50 years.

## **East of England Biodiversity Delivery Plan**

2.2.6. GCN are also listed on priority species categories present in the East of England. The east of England biodiversity forum has produced a detailed biodiversity delivery Plan for the region (East of England Biodiversity Forum, 2021) which combines targets for habitats with species considerations.

## National Planning Policy Framework 2019 (NPPF)

2.2.7. The NPPF outlines government planning policies and how they should be applied within local authorities. The framework places an emphasis on sustainable development, encouraging the re-use of land that has previously been developed over-using land that has a higher environmental value and by minimising impacts on biodiversity. The NPPF states that developments should aim to conserve or enhance biodiversity and encourages opportunities to incorporate biodiversity in and around developments using the principles of the mitigation hierarchy. Paragraphs 170, 174 and 175 of the NPPF give policy support to the provision of measurable net gains in biodiversity. Paragraph 174 specifies that plans should identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including locally designated sites; and promote the conservation, restoration and enhancement of priority habitats and ecological networks and the protection and recovery of priority species.

## National Policy Statement for National Networks (2014)

2.2.8. The National Policy Statement for National Networks (2014) states “*development should avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives. The applicant may also wish to make use of biodiversity offsetting in devising compensation proposals to counteract any impacts on biodiversity which cannot be avoided or mitigated. Where significant harm cannot be avoided or mitigated, as a last resort, appropriate compensation measures should be sought.*”

## 2.3. Aims and objectives

2.3.1. These surveys are intended as an update to GCN surveys undertaken at PCF Stage 1 (Amey, 2017) (Section 2.1), in accordance with the Chartered Institute of Ecology and Environmental Management’s ((CIEEMs) CIEEM, 2019) guidelines on the lifespan of ecological data. Whilst the GCN surveys previously undertaken in 2016 (see Section 2.1) resulted in negative eDNA results in those waterbodies subject to survey GCN have been recorded as present within 2km of the Site from records of GCN licences and class survey licence returns (see Section 4.1). As GCN, like many other species, are mobile it is possible that the populations from the nearby locations (see Section 4.1) have dispersed onto site since the previous surveys in 2016.

2.3.2. The aims of the 2020 survey work and this report are to:

- determine the presence or likely absence of GCN in waterbodies within 500m of the Proposed Scheme boundary and subsequently determine the likely presence of GCN within the Proposed Scheme boundary
- determine the population size class of GCN if confirmed to be present
- assess the potential implications on the Proposed Scheme if GCN were found to be present and inform the design of appropriate mitigation
- provide instructions for mitigation and/or further survey work, where necessary
- ensure that the required level of survey work is conducted to apply for a licence, should one be necessary



## 3. Methodology

### 3.1. Desk study

3.1.1. At PCF Stage 3, for which the 2020 surveys were undertaken, a single route option had been chosen. Many of the ponds previously surveyed at PCF Stage 1 are now outside of the 500m survey area for GCN.

3.1.2. The following drawing was used to identify ponds within 500m of the Site ('the survey area'):

- *Highways England (2018d). A47 Wansford to Sutton. Figure 8.1 Phase 1 Habitat Survey Results. Drawing number: HE551492-MMSJV-EBD-000-DR-LB-00004.*

3.1.3. In addition, the following sources of information were used to identify any further waterbodies present within 500m of the Site, and in the case of Multi-agency Geographical Information for the Countryside (*MAGIC*) maps any previously granted GCN licences or class survey licence returns within 2km of the Site:

- Ordnance Survey mapping (to identify potentially notable habitats including waterbodies)
- *MAGIC* maps
- Aerial imagery

3.1.4. In addition, a desk study undertaken in 2020 included the purchase of ecological records from the Cambridgeshire and Peterborough Environmental Records Centre (CPERC) and the Northamptonshire Biological Records Centre (NBRC).

### 3.2. Waterbody descriptions

3.2.1. During the Site visits between 26 and 28 May 2020 by Sweco, descriptions of each waterbody within 500m of the site were noted including information on water depth, water quality, bank profile, presence of aquatic, emergent and surrounding vegetation, as well as suitability of the surrounding terrestrial habitat to determine the waterbodies' suitability as breeding habitat for great crested newts. The assessment was based on guidance within *Langton T. E. S. et al, (2003)* and *ARG UK, (2010)*. Waterbodies within 500m of the Proposed Scheme boundary but having a significant barrier to newt dispersal between them and the Site were excluded. Examples of significant barriers include motorways, major roads, busy railway lines, large expanses of bare habitat and fast-flowing rivers.

### 3.3. Habitat suitability index (HSI) assessment

3.3.1. In accordance with *English Nature's Great Crested Newt Mitigation Guidelines (2001)* waterbodies within 500m of the Site were subject to HSI assessments, which were undertaken between 26 and 28 May 2020. The HSI assessment provides an objective method for assessing the suitability of a waterbody as habitat for great crested newts (*Oldham et al., 2000; ARG UK, 2010*). The system provides an index between 0 and 1, with 0 indicating unsuitable habitat and 1 optimal habitat. Ten suitability indices are used to calculate the index score, each representing a factor considered to affect great crested newts. These factors are listed and briefly explained below:

1. Location: that is where the waterbody is located in the British Isles. Lowlands are generally thought to be most suitable; suitability declines with increases in altitude.
2. Waterbody area: that is the water surface area of a waterbody. Suitability peaks at approximately 800m<sup>2</sup>.
3. Waterbody drying: how often a particular waterbody dries out. Waterbodies which dry out more frequently are less suitable.
4. Water quality: an indication of water quality based on the invertebrate diversity present. High invertebrate diversity indicates high water quality and suitability.
5. Shade: an estimate of the total shaded perimeter of a waterbody. Shoreline shade below 60% is optimal.
6. Fowl: indication of impact by waterfowl. High waterfowl numbers are generally considered detrimental.
7. Fish: indication of fish abundance. High fish numbers are generally considered detrimental.
8. Waterbody count: based on the density of waterbodies occurring within 1km of a particular waterbody. Suitability is positively correlated with waterbody density.
9. Terrestrial habitat: based on the availability of suitable habitat in the waterbody vicinity, e.g. rough grassland, scrub and woodland. For this assessment, the categories provided in *ARG UK, (2010)* were used. This differs from the assessment criteria by *Oldham et al. (2000)* and is based on work by *Lee Brady (unpublished)*.
10. Macrophytes: based on an estimate of the percentage cover by emergent and aquatic vegetation. Suitability peaks at between 70% and 80% cover.

3.3.2. The results are also compared against a categorical scale developed by *Lee Brady (unpublished)*. Results from individual waterbodies are categorised as follows:

- <0.5 = poor

- 0.5 – 0.59 = below average
- 0.6 – 0.69 = average
- 0.7 – 0.79 = good
- >0.8 = excellent

3.3.3. Natural England suggests a threshold HSI score of 0.5 as an indication that a waterbody is of very low value and unlikely to support great crested newts (*Natural England, 2019*). Further presence/likely absence surveys are normally undertaken at waterbodies with HSI scores above 0.5.

3.3.4. The survey was undertaken by Chelsea Edwards (Senior Ecologist, Sweco), Mike Youdale (Senior Ecologist, Sweco) and Beth Mell (Consultant Ecologist, Sweco) accredited agents under the Natural England class survey licence WML-CL08 (GCN Class 1) reg. number: CLS001791, reference number 2018-34133-CLS-CLS.

### **3.4. Presence or likely absence surveys**

3.4.1. Due to time constraints imposed by the COVID-19 Pandemic and its associated restrictions, presence/likely absence eDNA water sampling surveys were undertaken in conjunction with, as opposed to following, HSI assessments between 26 and 28 May 2020.

3.4.2. eDNA water sampling surveys followed the guidance in the *Natural England protocol (Biggs, J. et al. 2014)*. The eDNA sampling kits were collected from, and upon completion returned to, the SureScreen Scientifics laboratory in Derby.

### **3.5. Limitations**

3.5.1. The results of this survey will remain valid until March 2022. Beyond this period, if works have not commenced, it is recommended that a new review of the ecological conditions is undertaken.

3.5.2. Due to delays in surveys commencing and land access being arranged for the surveys as part of the COVID-19 restrictions, six waterbodies were not surveyed because of the lack of access. The six waterbodies which were not subject to any survey are 20, 21a, 21c, 22, 22a and 23a.

## 4. Results

### 4.1. Desk study

- 4.1.1. GCN records returned include the below mentioned record of positive eDNA dated April 2019 (see Section 4.1.4), a further nine records dated between 1983 – 1998 and one record approximately 1,454m south-west in Old Sulehay Forest SSSI dated 2006.
- 4.1.2. The *MAGIC* maps website identified the following records of granted European Protected Species (EPS) licences within 2km of the Site:
- A licence starting in 2013 and ending in 2019 to allow for the impact upon and destruction of a breeding place, and destruction of a resting place used by GCN. This licence record is located approximately 630m west of the Site. Licence reference: EPSM2012-4014.
  - A nulled GCN licence with reference number 2014-4686-EPS-MIT for which there is no further information located approximately 630m west of the Site.
- 4.1.3. Within the same parcel of land as the above licences there is a record, identified on *MAGIC* maps, of a GCN class survey licence return recording the presence of GCN in May 2016. The record is located approximately 612m west of the Site. A further four records of GCN class survey licence returns are located in four locations approximately 1900m – 2000m west of the Site recording GCN presence in May 2014, April 2015, May 2016 in three locations and, at the fourth location, GCN presence in June 2016, on two occasions in May 2017 and in June 2017.
- 4.1.4. In addition to the above, the *MAGIC* website also identified the results of previous GCN surveys (including habitat suitability index (HSI) assessments, egg searches, visual searches and environmental DNA (eDNA) surveys) undertaken at two further waterbodies within 2km of the Proposed Scheme, the details of which are below:
- A waterbody, located approximately 940m south of the Proposed Scheme boundary and the village of Sutton, was subject to survey in April 2019. The HSI assessment classed the waterbody as 'good' suitability for great crested newt, however great crested newt were confirmed absent due to negative results in the remaining three survey methodologies.
  - A waterbody located approximately 1,936m south of the Proposed Scheme boundary at Water Newton, was subject to survey in April 2019. The HSI assessment classed the waterbody as 'good' suitability for great crested newt and the eDNA survey confirmed great crested newt presence with an eDNA PCR score of 11. A record of this positive eDNA test result was also provided by CPERC.

- 4.1.5. At the time of survey and of writing this report information regarding the locations of the 29 waterbodies previously subject to survey in 2016 (Amey, 2017) was not available. As such it is difficult to determine how many of the previously surveyed waterbodies are still within the 2020 survey area at PCF Stage 3.
- 4.1.6. MAGIC, aerial imagery and the results of a previously undertaken extended Phase 1 habitat survey (see Section 3.1.2.) identified 40 waterbodies within the survey area discounting Wittering Brook and the River Nene which are, as running waterbodies, unsuitable for breeding GCN. See Annex A for the locations of all 40 waterbodies within the survey area.
- 4.1.7. Prior to survey, nine waterbodies (including waterbodies six to nine, 9b, 9c and 10 to 12) were scoped out of further assessment as they are located at the opposite side of the River Nene to the Site. The River Nene is a significant, flowing watercourse and would act as a barrier to GCN dispersal preventing any GCN which might be present in those waterbodies from being present on-site. As such it is not necessary to survey these waterbodies further.

## 4.2. Initial field survey findings (including habitat descriptions)

- 4.2.1. Fourteen waterbodies were found to be dry, or else almost dry, at the time of survey and as such were not subject to HSI assessment and eDNA survey. Waterbody 17d was inaccessible due to the dense vegetation surrounding it. The waterbody was in a depression in the ground and no water was seen through the vegetation and as such it was considered dry.
- 4.2.2. Running water is considered unsuitable habitat for breeding GCN and five waterbodies were found to contain running water and were scoped out of further survey.
- 4.2.3. Waterbody 17c was found to not exist.
- 4.2.4. Table 4.2-1 below details initial findings for the above 20 waterbodies which were scoped out of further survey.

Table 4.2-1: initial findings for waterbodies scoped out of further assessment

Waterbody number	Initial findings and reason for no further survey
1b	Running tributary of Wittering Brook - unsuitable for breeding GCN due to running water
2	Mostly dry pond, although damp reedbed in areas
3	Dry pond in rifle range in semi-improved grassland
5a	Running water through a waterbody in the centre of Wittering Brook which has been subject to modifications for aesthetic and

Waterbody number	Initial findings and reason for no further survey
	recreational purposes - unsuitable for breeding GCN due to running water
5b	Dry ditch
5c	Dry ditch
14	Dry woodland pond
15	Ditch with shallow running water – unsuitable for breeding GCN due to running water
17a	Running water in ditch/stream - unsuitable for breeding GCN due to running water
17b	Dry ditch/stream
17c	Not present
17d	. Dry – no standing water.
18a	Dry ditch
18b	Mostly dry ditch. Small amount of very shallow water present at the northern extent
18c	Shallow running (trickle) water in ditch - unsuitable for breeding GCN due to running water
19	Dry farmland pond
21b	Dry small section of ditch
23	Dry pond in woodland copse
23b	Dry ditch
24	Dry garden pond

4.2.5. Due to the COVID-19 Pandemic and associated restrictions (see Section 3.5.2) land access was not arranged for six waterbodies (waterbodies 20, 21a, 21c, 22, 22a and 23a) which were therefore not subject to survey.

4.2.6. Detailed descriptions of each of the five waterbodies within the survey area subject to HSI assessment are given in Table 4.2-2 below. The purpose of these descriptions is to determine the waterbodies' suitability as breeding habitat for great crested newts. Therefore, information on water depth, water quality, bank profile, presence of emergent vegetation, as well as suitability of the surrounding terrestrial habitat has been provided. A grid reference is provided for each waterbody; refer to Annex A for their positions in relation to the Site.

Table 4.2-2: summary of waterbodies subject to HSI assessment

Waterbody Number	Description	Location and approximate Grid Reference
1a	Moderate-sized farmland pond. No shade is cast over the pond by adjoining habitats. A minor impact by waterfowl was recorded in addition to small numbers of small fish. 100% of the pond surface was covered by macrophytes and the water quality was considered good.	North of Wansford, east of the A1, south-east of Thornhaugh TF 07137 00320
4	A large mill pond at Sacrewell Farm. Significant numbers of waterfowl (including mallard <i>Anas platyrhynchos</i> , geese and mute swan <i>Cygnus olor</i> ) were present suggesting a large impact. Water quality was measured as good and the surrounding terrestrial habitat considered moderate. Some banks of the pond, towards the mill house, are reinforced with stone banks whereas those away from the buildings are natural sloped banks.	North-east of the Wansford A1/A47 junction, at Sacrewell Farm TF 07819 00052
13	Overgrown, neglected, man-made garden pond in the old Station House garden with stone walls. Heavily shaded by overgrown vegetation. Water level had receded prior to the time of survey. Access and egress for GCN was entirely possible. No macrophytes or evidence of waterfowl was recorded.	East of the Wansford A1/A47 junction, adjacent to the north of the A47 west of Sutton Heath Road TL 08920 99631
16	A very shallow pool at the source of a stream with cattle-poached banks. The surrounding terrestrial habitat is considered good for GCN and water quality is judged as good.	West off Sutton Heath Road within the SSSI TF 08880 00180
21	A large, open reservoir in a plot of land within the wider arable landscape. A small amount of reed <i>Phragmites</i> is present on the margins of the waterbody. The reservoir is in open habitat with no shade cast from adjacent habitats and a minor impact by waterfowl was noted (small numbers of waterfowl were present).	Adjacent to the A1 north of the A1/A47 junction. TF 07127 01427

### 4.3. HSI assessment

- 4.3.1. The results for the HSI assessment revealed two waterbodies in the ‘good’ category, two waterbodies in the ‘below average’ category and one waterbody in the ‘poor’ category.
- 4.3.2. Table 4.3-1 below lists the HSI score’s and categories for each of the five waterbodies subject to HSI assessment. The HSI scores give each waterbody a score category (‘excellent’, ‘good’, ‘average’, ‘below average’ or ‘poor’) which indicates its suitability for GCN. Waterbodies in the ‘excellent’ category have a 93% chance of containing GCN whilst waterbodies in the ‘good’ category have a 79% chance, those in the ‘average’ category have a 55% chance, waterbodies in the ‘below average’ category have a 20% chance and those waterbodies in the ‘poor’ category have a 3% chance of containing GCN.

4.3.3. See Annex B for the full HSI assessment results of the five waterbodies subject to assessment.

Table 4.3-1: a summary of the HSI scores and categories for the waterbodies subject to HSI

Waterbody	HSI score	HSI category
1a	0.76	Good
21	0.76	
13	0.55	Below average
16	0.52	
4	0.44	Poor



## 5. Presence or likely absence surveys

- 5.1.1. Due to Natural England's threshold score of 0.5 to indicate that waterbodies below are unlikely to support GCN industry-wide good practice is generally to undertake further surveys of waterbodies with HSI score if 0.5 or above (see Section 3.3.3). However, due to survey limitations as a result of the COVID-19 Pandemic and its associated constraints (see Section 3.5.2) eDNA surveys were undertaken simultaneously with HSI surveys between 26 and 28 May 2020.
- 5.1.2. Four of the five waterbodies subject to HSI assessment were also subject to eDNA survey. Waterbody 16 was not subject to eDNA survey as it was too shallow to collect water samples without causing great disturbance to the sediment in the bed which would result in an unsuitable sample. As such waterbodies one, four, 13 and 21 were subject to eDNA survey.
- 5.1.3. The samples were taken to SureScreen Scientific laboratory in Derby for analysis on 29 May 2020.
- 5.1.4. The results indicate that GCN eDNA is absent from the four waterbodies subject to eDNA survey.

## 6. Impact assessment and conclusions

- 6.1.1. GCN are confirmed absent from the four waterbodies subject to eDNA survey (waterbodies one, four, 13 and 21 (see Section 5)).
- 6.1.2. The absence of GCN from all waterbodies within the survey area (the Proposed Scheme boundary plus 500m), and therefore the terrestrial habitat within the Proposed Scheme boundary, has not been confirmed due to limitations on the 2020 surveys posed by the COVID-19 Pandemic preventing access to, and therefore any survey of, six waterbodies.
- 6.1.3. Future survey requirements include the HSI assessment of all waterbodies which were inaccessible in 2020 (those six where no access was granted). In conjunction with the HSI surveys of the inaccessible waterbodies, the fourteen waterbodies which were found dry in 2020 ((see Table 4.2-1) in particular waterbody 17d which was overgrown and inaccessible due to vegetation which obstructed surveyors view)) should be revisited and, if water is found present, subject to HSI assessment. eDNA surveys should be undertaken on those waterbodies with a HSI score of below average or above. eDNA surveys can be undertaken between mid-April and June (Biggs *et al.*, 2014).
- 6.1.4. To summarise, in order to confirm either the presence of likely absence of GCN within the Proposed Scheme boundary and confirm or negate the need for licence and mitigation the following surveys should be undertaken prior to the commencement of works on-site:
- HSI assessments of all six waterbodies, where water is found present, which were not surveyed in 2020 due to lack of access (waterbodies 20, 21a, 21c, 22, 22a and 23a).
  - A re-visit to all 14 waterbodies found dry during the 2020 surveys to confirm they remain dry or else undertake HSI assessments should they be found to hold water (including waterbodies two, three, 5b, 5c, 14, 17b, 17d, 18a, 18b, 19, 21b, 23, 23b and 24).
  - Subsequent eDNA surveys of all waterbodies with a HSI score of below average or above which have not already been subject to eDNA in 2020.
- 6.1.5. As general mitigation trenches/excavations should be covered overnight to prevent harm to animals. If this is not possible a means of escape, such as a ramp, should be inserted into the trench/excavation to prevent entrapment of animals. Pollution prevention measures would be employed during construction. Guidance on best practice in relation to pollution prevention and water management is set out in Construction Industry research and Information Association (CIRIA) Guidelines ((Soubry (2001), Murnane et al. (2006), Charles and Edwards (2015)), and the Environment Agency's approach to groundwater

protection (Environment Agency, 2017) and groundwater protection guides (Environment Agency, 2017a), as required under the Water Framework Directive. Further guidance on pollution prevention measures can be obtained from GOV.UK (2019).

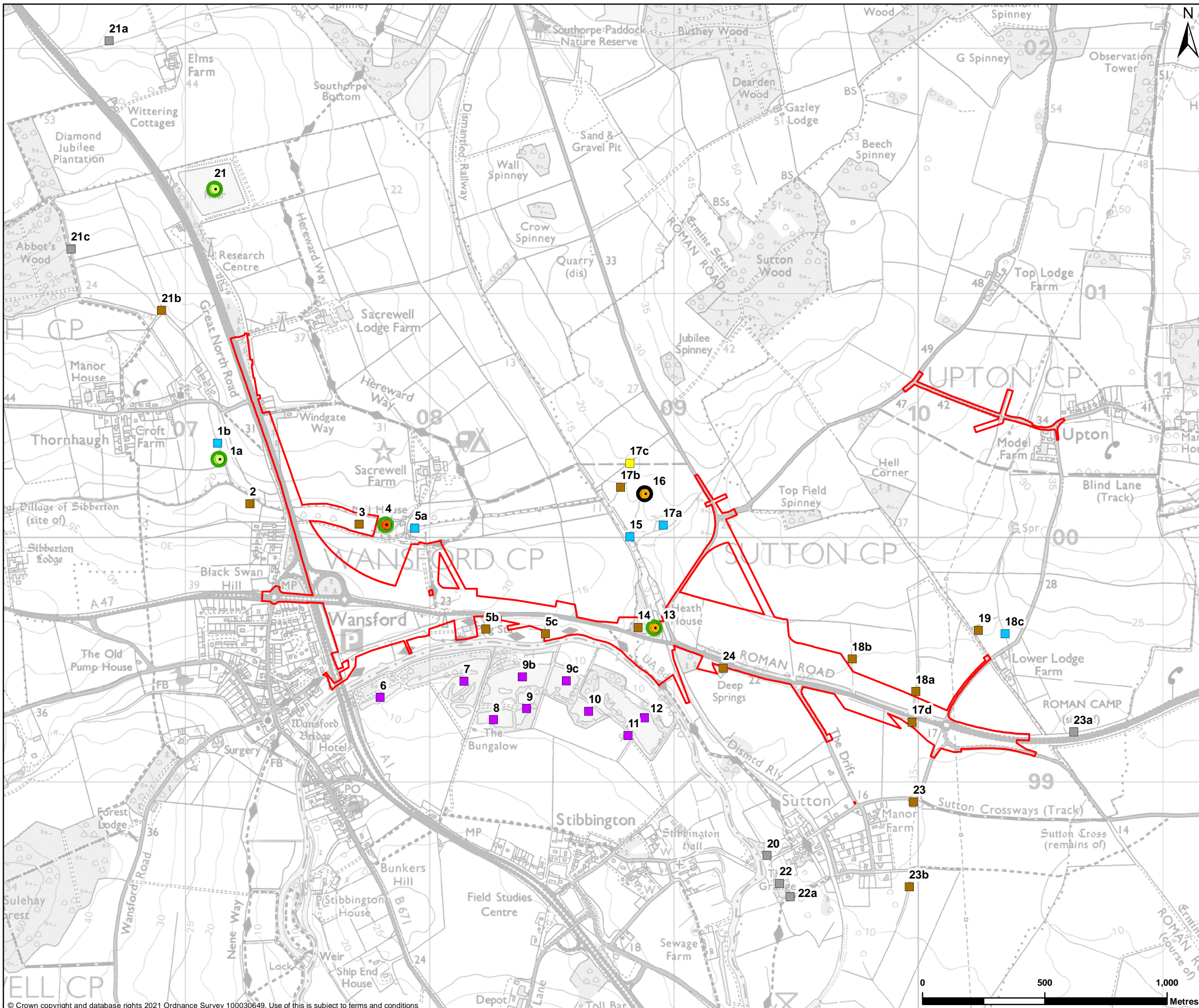
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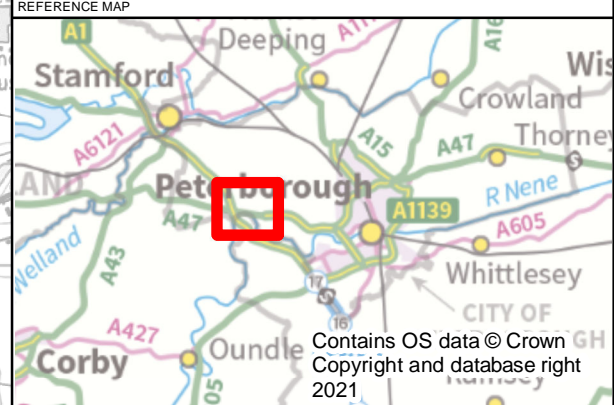
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## **Annex A. Waterbody locations and results**



**LEGEND**

- Proposed Scheme
- ▭ Proposed Scheme Boundary
- Habitat Suitability Index**
- Good
- Below average
- Poor
- Not surveyed
- Great Crested Newt eDNA Result**
- Negative
- Not surveyed
- Other Waterbody Location**
- Dry
- Scoped Out
- Scoped Out - Running Water
- Not Present
- No Access



P01	18/05/2021	FIRST EDITION	RMT	ZW	MM
REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

**SWECO**

CONTRACTOR

**GallifordTry**

CLIENT

**highways  
england**

PROJECT TITLE

A47 WANSFORD TO SUTTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

ANNEX A: WATERBODY LOCATIONS AND RESULTS

TR010039/APP/6.2

SUITABILITY

FOR INFORMATION

SHEET SIZE	SCALE	STATUS
A3	1:15,000	S2

DRAWING NUMBER

HE551494-GTY-EGN-000-DR-GI-30080

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## **Annex B. Full habitat suitability index (HSI) assessment results**



Table A. Full habitat suitability index (HSI) assessment results

Ref	Geographic location	Surface area (m2)	Waterbody permanence	Water quality	Shading (%)	Impact of waterfowl	Fish	No of waterbodies within 1km	Terrestrial habitat quality	Macrophyte cover (%)	HSI score Total
1a	Zone A	650	Never dries	Good	0	Minor	Minor	1	Good	100	<b>Good</b>
	1.00	1.00	0.90	1.00	1.00	0.67	0.33	0.4	1.00	0.80	0.76
4	Zone A	4200	Never dries	Good	10	Major	Minor	2	Moderate	30	<b>Poor</b>
	1.00	N/A	0.90	1.00	1.00	0.01	0.33	0.55	0.67	0.60	0.44
13	Zone A	70	Never dries	Good	95	Absent	Possible	3	Moderate	0	<b>Below average</b>
	1.00	0.10	0.90	1.00	0.30	1.00	0.67	0.65	0.67	0.30	0.55
16	Zone A	<50	Sometimes dries	Good	5	Minor	Possible	3	Moderate	<5	<b>Below average</b>
	1.00	0.05	0.50	1.00	1.00	0.67	0.67	0.65	0.67	0.30	0.52
21	Zone A	40,980	Never dries	Good	0	Minor	Possible	6	Moderate	5	<b>Good</b>
	1.00	N/A	0.90	1.00	1.00	0.67	0.67	0.85	0.67	0.35	0.76